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Where are the green houses?

The government has missed the chance to make new homes environmental trailblazers, says Jo Williams

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Building sight ... horses in a field in Tilbury, in the Thames Gateway area, where the government plans thousands of new homes. Photograph: David Levene

The housing crisis has resulted in the government introducing the most ambitious housing growth policies since the 60s. The impact of these policies on carbon emissions will be dramatic.

It is estimated that the new housing could generate 5.7m tonnes of carbon dioxide in construction and 9.9m tonnes of carbon dioxide annually whilst in operation. Yet the UK has committed to a long-term target of reducing emissions of greenhouse gases by 60% by 2050. Reducing energy use or substitution with non-fossil fuels in the housing sector will be critical to the achievement of this target, since the sector accounts for 27% of all carbon emissions.

The government claims that cost-effective changes to existing homes would only deliver 17% of all housing-based carbon emissions annually. Thus there is a need to also tackle the performance of new-build stock if targets are to be achieved. The government hopes to do this through regulation by 2016 – at which point all new housing will be "zero-carbon". But what about the homes built in the meantime – how will emissions from these be tackled?

Current building regulations imposed on new homes fall considerably short of the zero-carbon standard. The recently introduced Code for Sustainable Homes encourages higher standards but is only mandatory for publicly subsidised units. Thus housing built with private funds (the majority) is not subject to these requirements. The code sets out a variety of sustainability objectives that need to be met. To achieve zero-carbon status can be technically more difficult

and more expensive than achieving other objectives set out in the code. This is likely to mean that developers try to meet the criteria for a higher performance rating without tackling the thorny problem of delivering zero-carbon homes.

A study published today in the [Journal of Environmental Planning and Management](#) shows that current government strategy is unlikely to drive the required increase in technological, infrastructural, service and knowledge capacity needed to deliver zero-carbon homes. If it is going to meet its carbon targets the government should make the current "code 6-star rating" (ie zero-carbon standard) mandatory for all new housing, and invest in the technology, infrastructure and knowledge needed to support its delivery.

The study also reveals that 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 to suit their colour scheme. Thus even if zero-carbon homes are built, their long-term effectiveness is in question.

Residents questioned in the study complained about lack of diversity and poor access to zero-carbon technologies. It seems that if a wider variety of technologies could be supplied by the local DIY shop, residents would more likely to maintain and retain them.

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. Training programmes or handbooks for residents to improve their use of the technologies provided were shown to have limited success, particularly in developments where residents were "time-poor" or with a high proportion of rental units.

In reality it is going to be tricky (although entirely possible) to deliver zero-carbon homes and even more difficult to ensure zero-carbon lifestyles amongst those living in them. A combination of passive technologies maintained and managed by external service providers in new housing and a centralised zero-carbon energy supply is the most likely to be effective. This reduces householder responsibility in the delivery of carbon reductions within the home and leaves them with task of reducing the rest of their carbon budget.

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. However, it would provide a marvellous opportunity to tackle climate change. With adequate regulation and investment the UK could also become world leaders in the delivery of zero-carbon homes, providing excellent opportunities for UK businesses to offer this expertise to others seeking to achieve similar targets overseas. Potentially this is a win-win situation.

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