Cynulliad Cenedlaethol Cymru | National Assembly for Wales
Y Pwyllgor Newid Hinsawdd, Amgylchedd a Materion Gwledig
Climate Change, Environment and Rural Affairs Committee
Ymchwiliad i Dlodi Tanwydd | Inquiry into Fuel Poverty
FP 34
Ymateb gan : Canolfan Adeiladu Gweithredol
Evidence from : Active Building Centre

Background: The Active Building Centre

The Active Building Centre (ABC) is funded by UKRI as part of Transforming Construction Challenge through the Industrial Challenge Fund (ISCF) to support the adoption of innovation and benefits from smart technologies; and seeks to transform the way the UK designs, constructs and operates buildings. Active Buildings have the potential to substantially reduce both the operational costs of buildings and their demand on the UK energy infrastructure including those arising from EV integration. Active Buildings have the potential to reduce fuel poverty whilst improving the quality of life for occupants through user-inspired design and engineering approaches. New homes and buildings constructed and retrofitted to become Active Buildings provides an ambitious change to the way millions of people can heat their homes, or businesses.

Questions response:

Q2: Why the Welsh Government failed to meet its statutory target of eradicating fuel poverty in Wales by 2018;

a) Innovation

Current NEST, ECO and ARBED schemes do not include a provision for innovation or the use of advanced technologies, nor a provision for evolving energy policies that increasingly include a central role for local energy generation, storage and supply. Being able to implement innovation and alternative approaches to energy in the home will be fundamental in delivering green growth in Wales, reduce fuel bills, improve health & wellbeing and enhance Wales' ability to design out fuel poverty. For example, there are an increasing number of robust energy storage technologies, batteries and other approaches, yet none were included within the scope of the NEST programme.

b) Flawed energy efficiency building methodologies, building compliance tools and the way buildings are accounted for within the UK's energy systems

Current energy policies and building performance compliance methodologies are unable to keep up with the pace of technology advances, passing unnecessary costs onto consumers. For instance, the national calculation methodologies (SAP & RdSAP[1]) used to generate Energy Performance Certificates are based on methodologies over 20 years old, and have fallen behind technology advances (UKCCC, 2019). This often means that homes are built to outdated designs, using older technologies, resulting in higher fuel costs being passed onto consumers and the most vulnerable. Fuel poverty could be exacerbated if new homes continue to be built to low energy efficiency standards (the CCC note that 8 per cent of homes built in 2018 were only at EPC D, and therefore already in line for a retrofit) or with limited attention to the energy capture, control and storage potential each home might offer.

An independent study (Bankovskis, 2017) modelled the benefits of this approach calculating what would happen if the "Active Homes design" used for a development in Neath, South Wales were applied to a million homes. It revealed that the average saving per household could be as much as £600 (a reduction of more than 60%), whilst also reducing carbon dioxide emissions by nearly 80 million tonnes over 40 years and reducing the need for the provision of peak generation capacity by 3,000 megawatts – equivalent to a very large power station.

A better understanding of how technology integration, and the needs and practices of homes occupiers should be considered taking full account of governance, equity and energy justice issues. For example, Active Buildings have the potential to substantially reduce both the operational costs of buildings and their demand on the UK energy infrastructure including EV integration. Yet, Welsh Government economic impacts for fuel poverty are unable to model the social economic

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[1] https://www.gov.uk/guidance/standard-assessment-procedure The Standard Assessment Procedure (SAP for new buildings and RdSAP for existing dwellings), is the methodology used by the Government to assess and compare the energy and environmental performance of dwellings. Its purpose is to provide accurate and reliable assessments of dwelling energy performances that are needed to underpin energy and environmental policy

improvements of Active Buildings towards tackling fuel poverty (Calvin Jones, 2018)[2]. This needs to change.

Q3. How Welsh Government action to date has helped to combat fuel poverty, in particular the, impact of the Warm Homes Programme (including Nest and Arbed) and the Welsh Housing Quality Standard

The Welsh Housing Quality Standard is a step in the right direction but more still needs to be done, as detailed in the rest of our response.

Q4. How the Welsh Government's successor to the fuel poverty strategy (due for consultation in Autumn 2019) should differ from its 2010 strategy;

Delivering the fuel poverty strategy for Wales should become an integral part of meeting its sustainable development goals under its Future Generations Act. Tackling fuel poverty must simultaneously address improved understanding and access to the energy market and alleviation of fuel debt in efforts to lift people out of fuel poverty alongside the energy efficiency of the property[2].

Therefore, Welsh government needs to do more to support the adoption of innovation and benefits from smart technologies, such as Active Buildings and we would welcome the opportunity to discuss this in greater detail with committee members.

5. What steps the Welsh Government should take to ensure that new-build homes, as well as existing homes, are highly energy efficient to prevent them causing fuel poverty in the future.

Welsh government needs to support the adoption of innovation and benefits from smart technologies, such as Active Buildings and we would welcome the opportunity to discuss this in greater detail with committee members.

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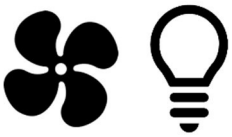
[2] NatCen Social Research and Centre for Sustainable Energy (2014)

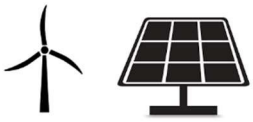
https://www.citizensadvice.org.uk/Global/CitizensAdvice/Energy/DataForFuelPovertyTargetingReport.pdf

Active Building General Principles

1. Building fabric and passive design – integrated engineering and architectural design approach including consideration of orientation and massing, fabric efficiency, natural day lighting and natural ventilation. Designed for occupant comfort and low energy by following passive design principles



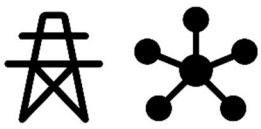
2. Energy efficient systems – intelligently controlled & energy efficient systems to minimise loads – HVAC, lighting, vertical transportation. Data capture via inbuilt monitoring & standard naming schemas to enable optimisation and refinement of predictive control strategies



3. On-site renewable energy generation – renewable energy generation be incorporated where appropriate. Renewable technologies should be selected holistically, given site conditions and building load profiles

4. Energy storage – thermal and electrical storage should be considered to mitigate peak demand, reduce the requirement to oversize systems, and enable greater control

5. Electric vehicle integration – where appropriate Active Buildings integrate electric vehicle charging. As technology develops, bi-directional charging will allow electric vehicles to deliver energy to buildings as required



6. Intelligently manage integration with micro-grids & national energy network – in addition to intelligent control of building systems, Active Buildings manage their interaction with wider energy networks, e.g. demand side response, load shifting & predictive control methods

See more at www.activebuildingcentre.com

References

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