Decarbonisation in Retrofitting

The Implications of Swansea City & County Council's Response to Decarbonisation in Retrofitting their Housing Stock

Mark Davies

Supervisor: Mr Allan Nantel

School *of* Engineering

Introduction

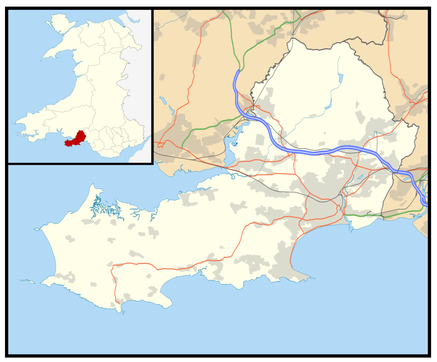
The Welsh Government has a legally binding target to reduce greenhouse gas emissions by 'at least 80% in 2050, in the Environment (Wales) Act. They have instructed all of their Local Authorities to reduce carbonisation by 80% by 2050. Housing Stock needs to be bring down carbon emissions by 2030.

Welsh Housing Quality Standard (WHQS)

Decarbonisation started in Swansea City & County Council's (SCCC) housing stock back in 2016 when the WHQS was introduced. Each council dwelling has and will be:

- *In a good state of repair*
- *Safe and Secure*
- *Adequately heated, fuel efficient and well insulated*
- *Fitted with up to date kitchens and bathrooms*
- *Located in attractive and safe environments*
- *Suit the specific requirements of the household*

SCCC have approx. completed 12,000 properties of their 14,000 stock. By completion of the WHQS target, SCCC would have spent in excess of £200m on their stock.



Map of Wales, highlighting the City & County of Swansea (Bing Images, 2020)

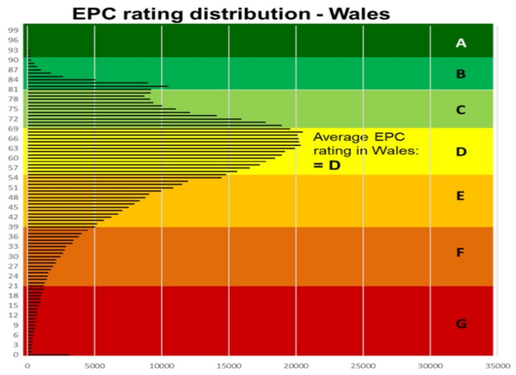
Research Aim & Objectives

To critically analyse how SCCC is going to achieve decarbonisation in all of their housing stock by 2050.

1. To analyse available literature / publications by way of a literature review to assess how decarbonisation by means of retrofitting will have an impact on the local authority.
2. To identify the views and perceptions of decarbonisation in domestic dwellings by professionals in this field by means of primary research through interviews.
3. To evaluate the findings from primary research and highlight areas of concerns and considerations as to whether decarbonisation to SCCC housing stock is feasible.

Energy Performance Certificate

By 2050 the entire housing stock should be retrofitted to Energy Performance Certificate (EPC) Band A, recognising that not all homes will be able to achieve this. Welsh Government should set a 2030 target of EPC Band A for homes in social ownership and privately-owned homes in fuel poverty.



EPC Welsh Housing (WHQ, 2019)

Literature Review

The researcher reviewed the following literature to gain an insight into the challenges SCCC faced.

1) *Better Homes, Better Wales, Better World*
2) *Welsh Advisory Group*
3) *Each Homes Count*
4) *Homes as Adopted Power Stations*
5) *Active Homes*
6) *SOLCER House*
7) *Housing Retrofits*



Ffordd Ellen Property (SCCC, 2019)

Retrofitting

- Craig Cefn Parc, Clydach
- Retrofitting 6no 1970's bungalows
- 2 bedroom properties
- Fitted with renewable energies i.e. Ground Source Heat Pumps, Photovoltaic Panels, Mechanical Ventilation Heat Recovery Systems & Tesla Batteries.
- Cost per bungalow to retrofit approx. £80k



Milford Way, Penderry Ward – Proposed Design (SCCC 2020)

New Build

- More Homes Programme
- 18 New homes in Milford Way
- Passivhaus Standard
- £2m Project

Decarbonisation

"the process of replacing fossil fuels with fuel that is less harmful to the environment"

Research Methods

Primary Research was the main method the author used for this research. The researcher arranged to interview 5no. Individuals who have a vast amount of experience in their chosen professional fields. The exact same questions were asked to each interviewee.

It is important to collect a range of answers for the research, and by selecting individuals from different backgrounds from one another then the responses were varied. The research collected from the interviews was non-biased towards the research, however it is worth noting that the answers were the thoughts and opinions of that particular individual and not collectively.

Results & Conclusion

The author approached 5no professionals who work in the construction / architectural and design industry. Following the interviews it was evident that the interviewees with a technological design background was focused on "how important it is to install the new renewable energy technologies" whereas the interviewees who are employed by SCCC have a clear idea of "how financially and practically difficult it will be to install these technologies".

The conclusion from this research is that the aim of SCCC is to retrofit all of their housing stock by 2050. In order to do this they need to make the retrofit offer increasingly attractive to all of the tenants, and they need to acquire sufficient funding for each year of the retrofits. The challenge is to make decarbonising a home as easy, as desirable and as socially normal as having a new kitchen or bathroom.

Acknowledgements

UWTSD Lecturer
Mr Allan Nantel

Swansea City & County Council
Mr Darrel Barnes & Mr Andrew Jackett

BRE
Mr Colin King

ACTIVE Building
Dr Jonathan Williams

Welsh School of Architecture
Dr Jo Patterson

References

Swansea.gov.uk. (2020) *Swansea - Welsh Housing Quality Standard - Capital Programme Update - Autumn 2018*. [online] Available at: <https://www.swansea.gov.uk/article/45170/Welsh-Housing-Quality-Standard---Capital-Programme-update---Autumn-2018> [Accessed 10 January 2020].

WHQ. (2020) *Taking a Lead on Climate Change - WHQ*. [online] Available at: <https://whq.org.uk/the-magazine/issue/116/taking-a-lead-on-climate-change/> [Accessed 18 December 2019].

Craig Cefn Parc (2019) *Ffordd Ellen – A Retrofit Case Study*, viewed November 2019. P17.

GOV.WALES. (2020) *Better Homes, Better Wales, Better World.* [online] Available at: <https://gov.wales/sites/default/files/publications/2019-07/independent-review-on-decarbonising-welsh-homes-report.pdf> [Accessed 20 November 2019].