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Welsh Government

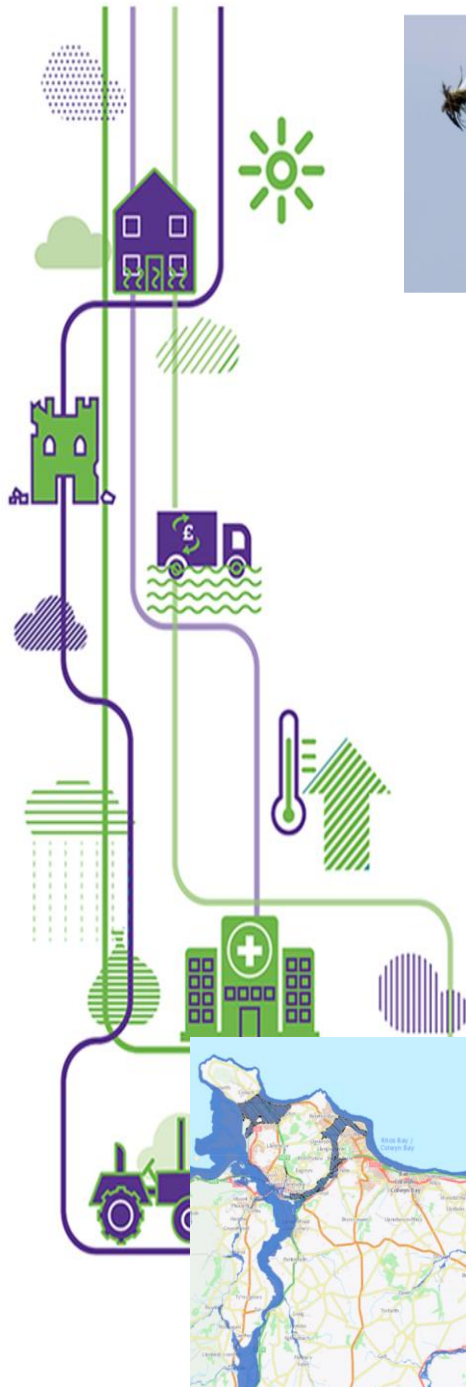
Net Zero Wales

John Howells

Director of Climate Change, Energy and Planning



UN CLIMATE CHANGE CONFERENCE UK 2021



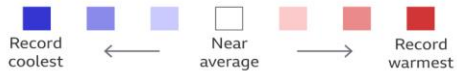
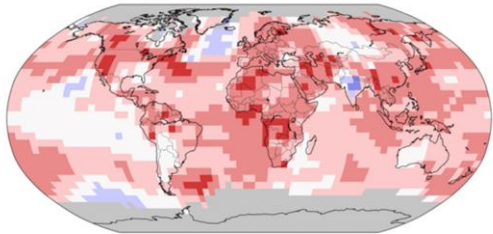
Threat to nature in numbers

- 666** out of 3,902 species in Wales (17%) at threat of extinction
- 73** species lost already
- 523** of 6,500 species found in Wales (8%) at threat of extinction from Britain
- 35%** fall in kittiwake population
- 15** days earlier for arrival of swallows
- 11** days earlier when great tits lay their eggs, compared to 1968

Source: State of Nature report, 2019



High temperatures recorded in June 2021

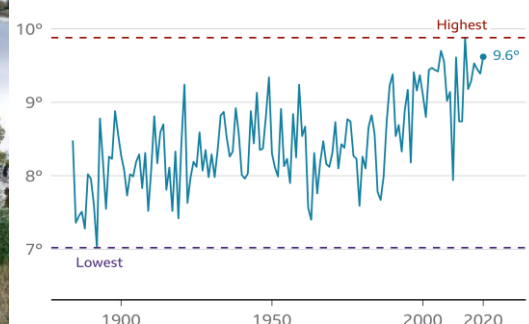


Source: US National Oceanic and Atmospheric Administration (NOAA) **BBC**



Temperatures in 2020 close to highest ever

Mean temperature in the UK 1884-2020 (°C)



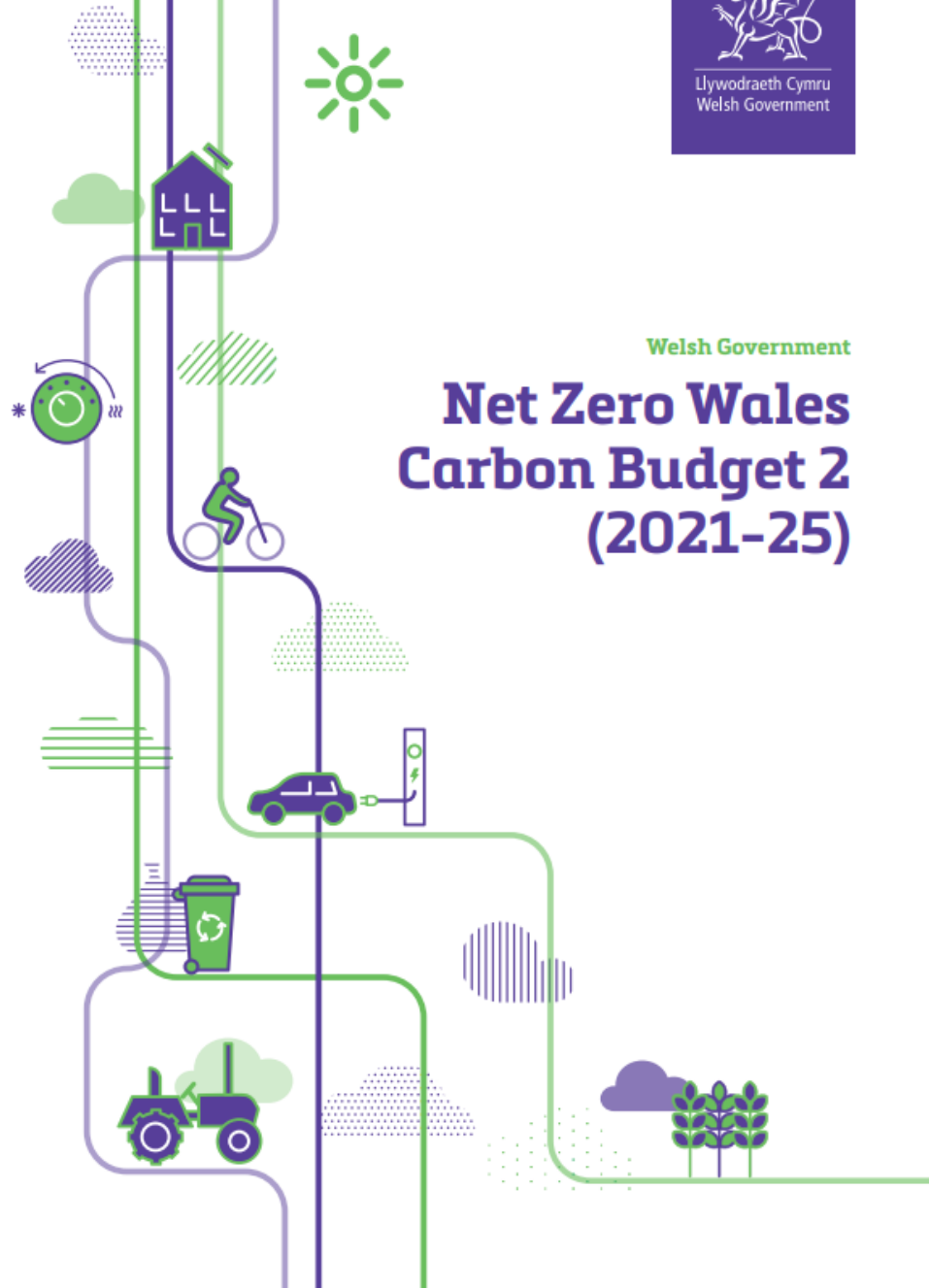
Source: Met Office **BBC**



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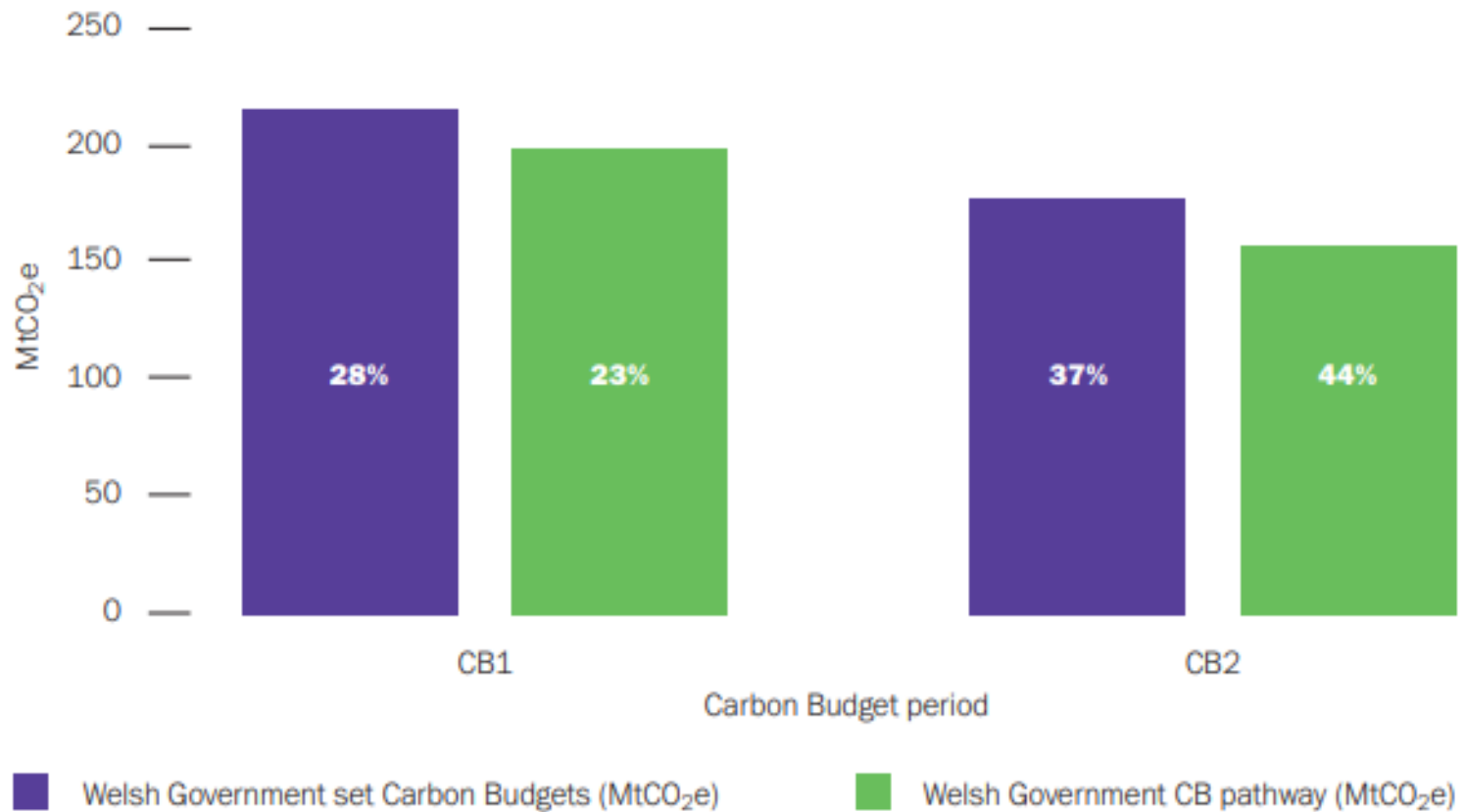
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Net Zero Wales Carbon Budget 2 (2021-25)

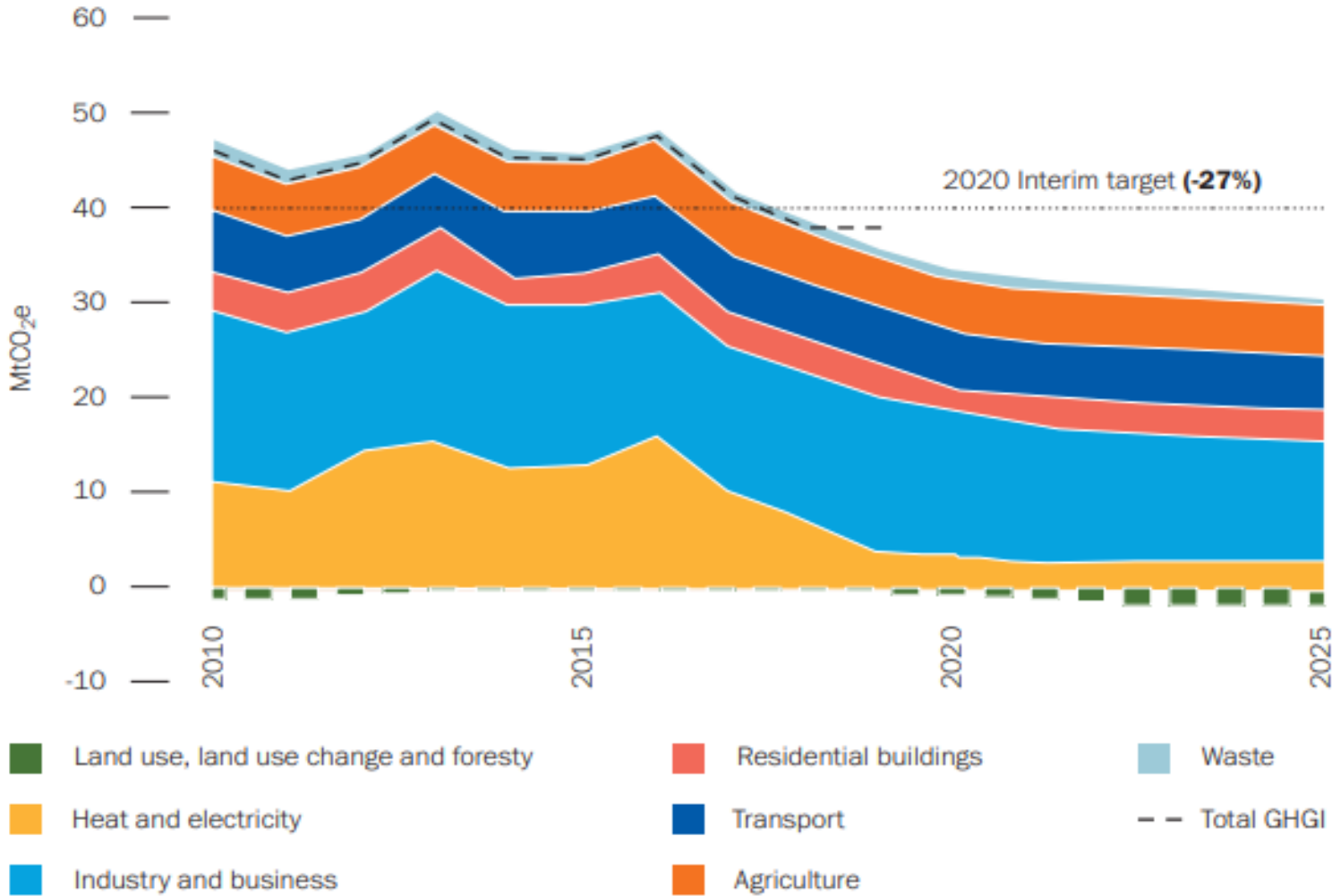


Adding it up

Figure 2: Welsh Government Carbon Budget 2 Pathway



Adding it up



Net Zero Wales

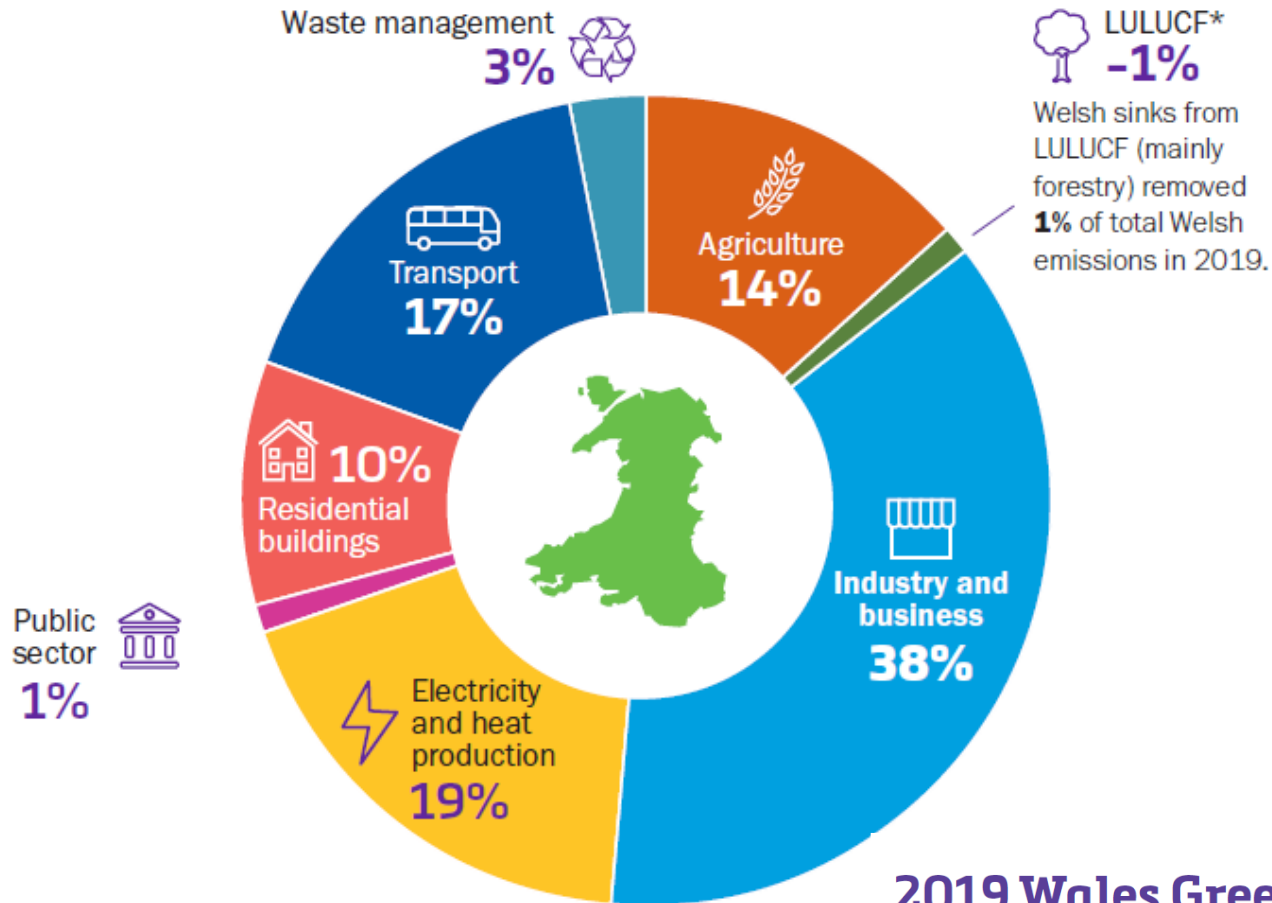


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- all Wales plan
- CB2 2025
- CB3 2030
- key emission sectors



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2019 Wales Greenhouse Gas Emissions

Greenhouse Gas Emissions in Wales

* Land use, land use change and forestry



Croeso i Zero2050

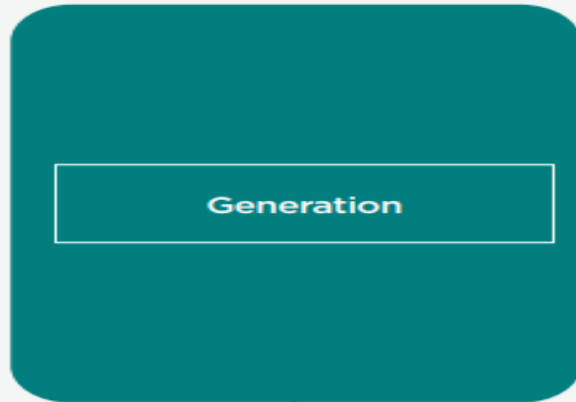
Welcome to Zero2050



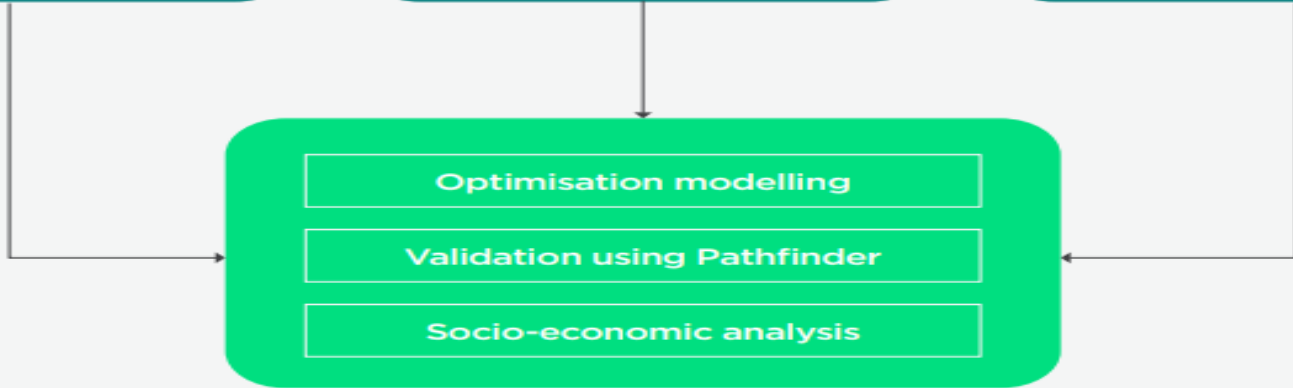
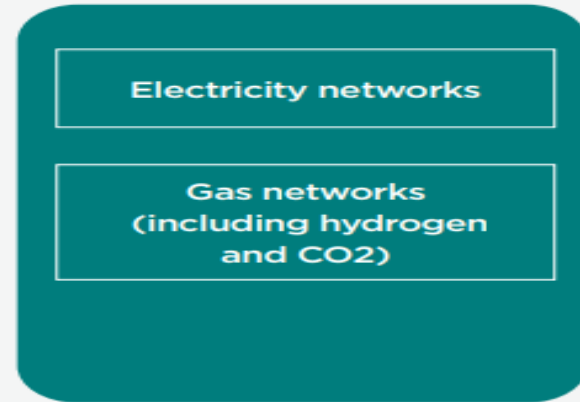
WHAT ARE THE FUTURE ENERGY DEMANDS?



WHAT IS THE POTENTIAL FOR ENERGY GENERATION?



WHAT NETWORKS ARE REQUIRED?

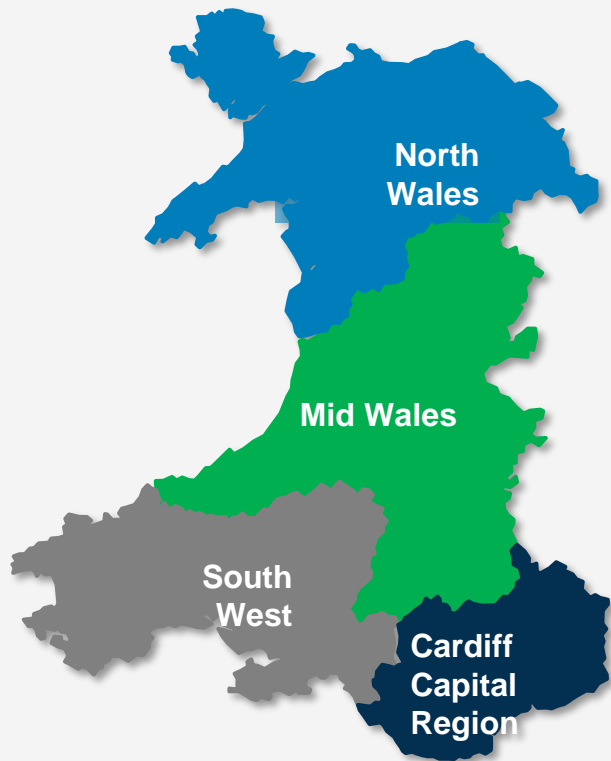


WHAT COULD A FUTURE ENERGY SYSTEM LOOK LIKE?

Regional Energy Strategies



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- Provide a strategic vision and identify high level priorities
- Clarify and initiate the scale of change
- WGES* coordinated development and production of the strategies
- Focussed on emissions associated with power, heat and transport

***WGES is delivered by Carbon Trust and Energy Saving Trust with support from Local Partnerships**



Mid Wales Energy Strategy

Our vision for

2035

"To achieve a zero-carbon energy system that delivers social and economic benefits, eliminates fuel poverty, better connects Mid Wales to the rest of the UK, and contributes to wider UK decarbonisation."

Our priorities

Drive forward the decarbonisation of the region's housing & building stock

Work proactively to ensure that electricity & gas grids in the region are suitable for a 100% decarbonised future

Boost the use of renewable energy through new generation and storage

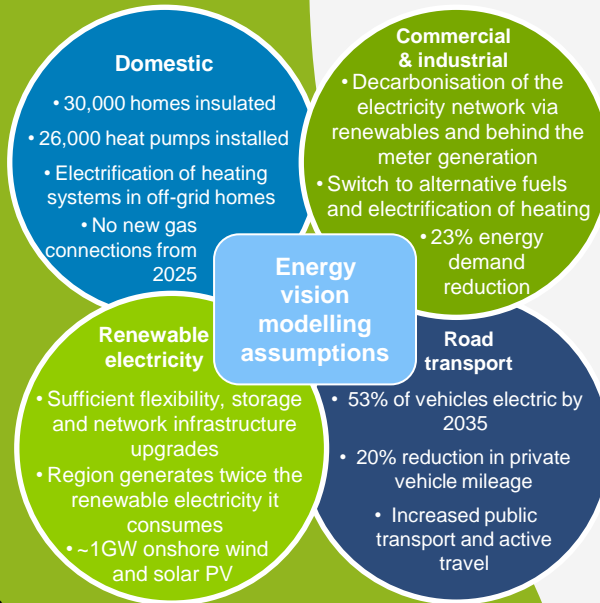
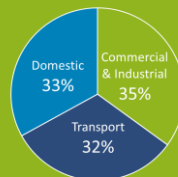
Accelerate the shift to zero carbon transport whilst also improving the region's connectivity

Develop & harness the potential of agriculture to contribute to zero carbon energy

Harness innovation to support decarbonisation and clean growth

Our baseline energy assessment

- We consume **6%** of total energy consumed in Wales
- We host **25%** of Wales' onshore wind capacity
- **2%** of our homes use a biomass boiler or heat pump
- We have **412 MW** of renewable energy installed in the region, of which **12%** is locally owned
- Our total energy consumption fell by **14%** between 2005 and 2013
- Since 1990 greenhouse gas emissions from our energy system have fallen by **40%**
- Our sectoral energy demand split:



Energy vision modelling assumptions

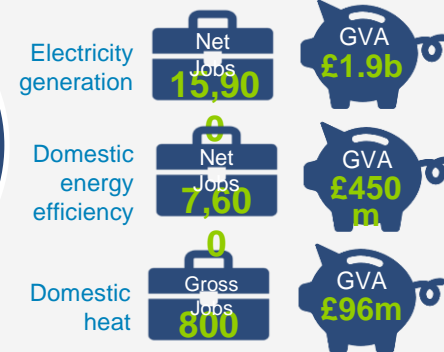
Achieving our energy vision

To be on track for net zero by 2050, we need to reduce emissions from our energy system by **55% by 2035**. Energy modelling achieves this reduction split by sector as follows:



Our energy vision is also supportive of the ambitions of the Wellbeing of Future Generations (Wales) Act 2015.

Estimated economic impacts of achieving our energy vision:



£2.5 billion spend required to achieve our energy vision

Not all of the jobs will be held by Mid Wales Region residents; some jobs will be held by persons outside of the region

The additional jobs associated with this vision will require strengthening and building new skills within the region

* all figures shown are approximate values

WG Infrastructure Plans



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- 20,000 low carbon homes
- 21st Century Schools
- Metros/ Roads?
- NHS



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Decarbonisation Challenges

- Optimised retrofit
- School Refurbishment
- Leisure centres
- Council offices and depots



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Gwasanaeth Ynni Energy Service

Heat in the Welsh Public Sector (1/2)

Yn cefnogi ymgyrch Cymru dros economi carbon isel lwyddiannus

Supporting Wales' drive towards a successful low carbon economy

From analysis of DEC and footprinting data there are:

- 4,610 listed Welsh public sector sites / building assets
- 12.1million m² of floor area
- 1,650GWh of estimate yearly heat demand

This provides 380,000 tCO₂e emissions each year associated with heat generation

The greatest volume of number of sites are schools (~2000) totalling 45%

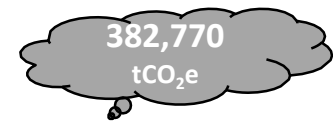
Healthcare sites contribute the greatest to emissions, with 110 accounting for 27% of emissions. This includes CHP heat.

In terms of DEC ratings, 62% of sites fall into a C or D rating, another 23% of sites are rated E or less

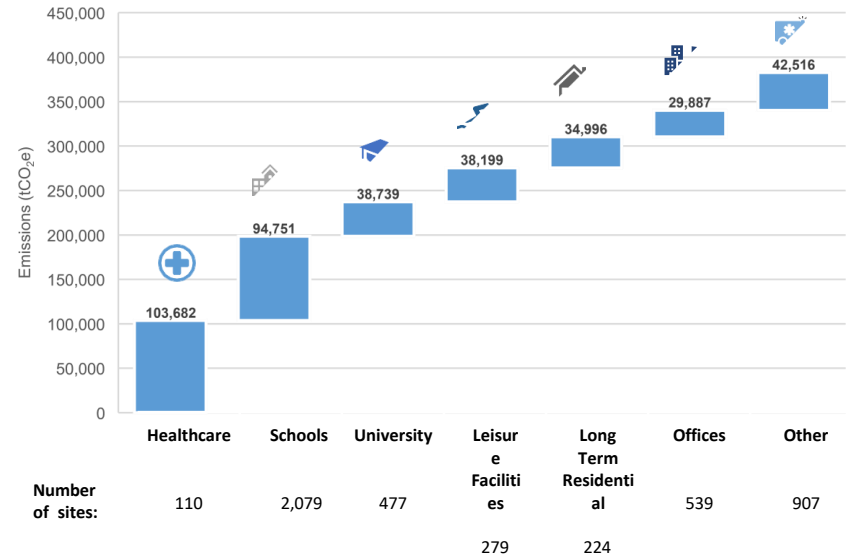
92% of heat demand is served by natural gas, 5.5% by oil, 1% by biomass, and 0.6% of sites are stated as electrically heated

The overall existing revenue costs associated with public sector heat is estimated as £79m

Total emissions from Welsh public sector heat:



Carbon emissions for heat in the Welsh Public Sector



Heat in the Welsh Public Sector (2/2)

Yn cefnogi ymgyrch Cymru dros economi carbon isel lwyddiannus

Supporting Wales' drive towards a successful low carbon economy

Ranking the relative percentage of carbon emissions against number of sites indicates the volumes of sites requiring retrofit for a scale of emission reduction.

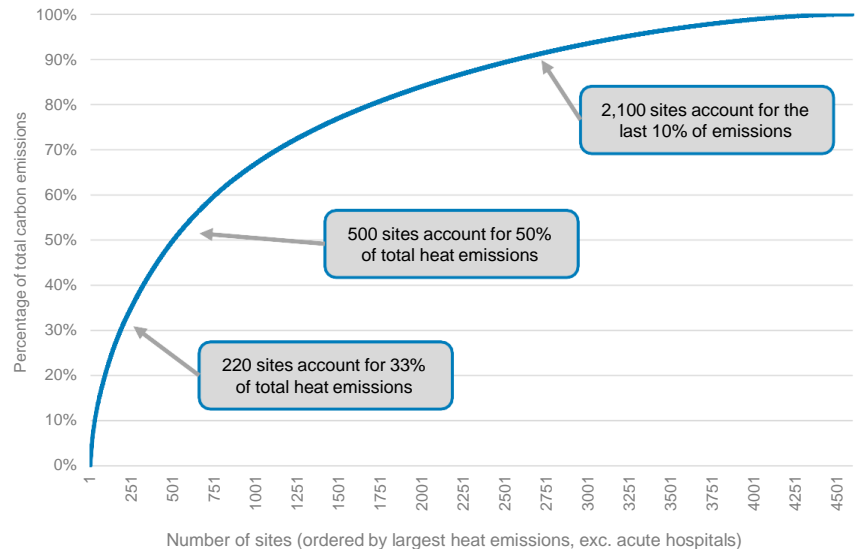
Large heat loads within acute hospital sites (16) have been removed from the analysis, which also removes CHP heat impact.

The top 500 sites accounting for 50% of emissions are in the general size floor area of greater than 4500m²

The top 220 sites accounting for 33% of emissions are in the general size floor area of greater than 6500m²

The top 25 sites account for 10% of the heat emissions (excluding acute hospitals). These sites tend to be larger than 10,000m² and are attributed to healthcare / residential / swimming pools.

Distribution of heat emissions in the Public Sector (exc. acute hospitals)



Suggested Implementation Phasing (1/2)

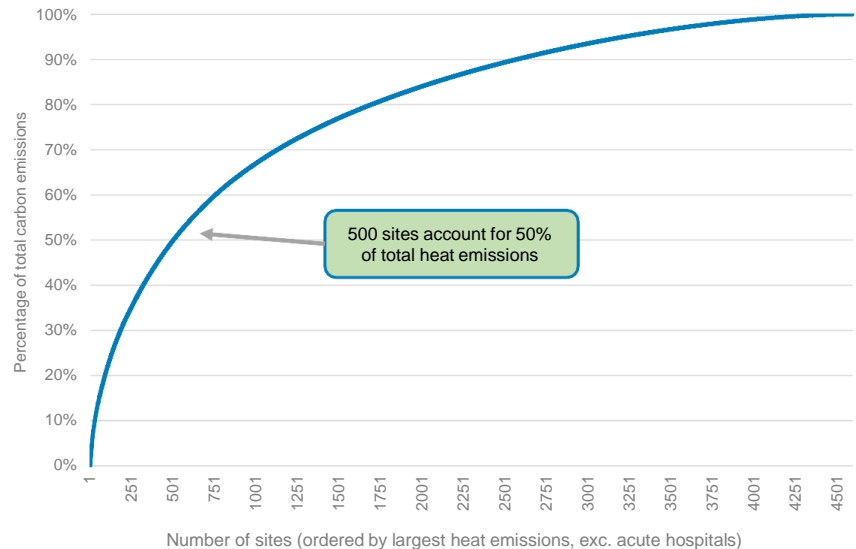
Yn cefnogi ymgyrch Cymru dros economi carbon isel lwyddiannus

Supporting Wales' drive towards a successful low carbon economy

It is suggested that only the top ~50% of sites are considered, this would include:

- 115 school buildings
- 58 healthcare sites
- 31 offices
- 51 long term residential
- 80 university buildings
- 30 swimming pool centres
- 47 dry leisure centre sites
- 38 other sites

Distribution of heat emissions in the Public Sector (exc. acute hospitals)





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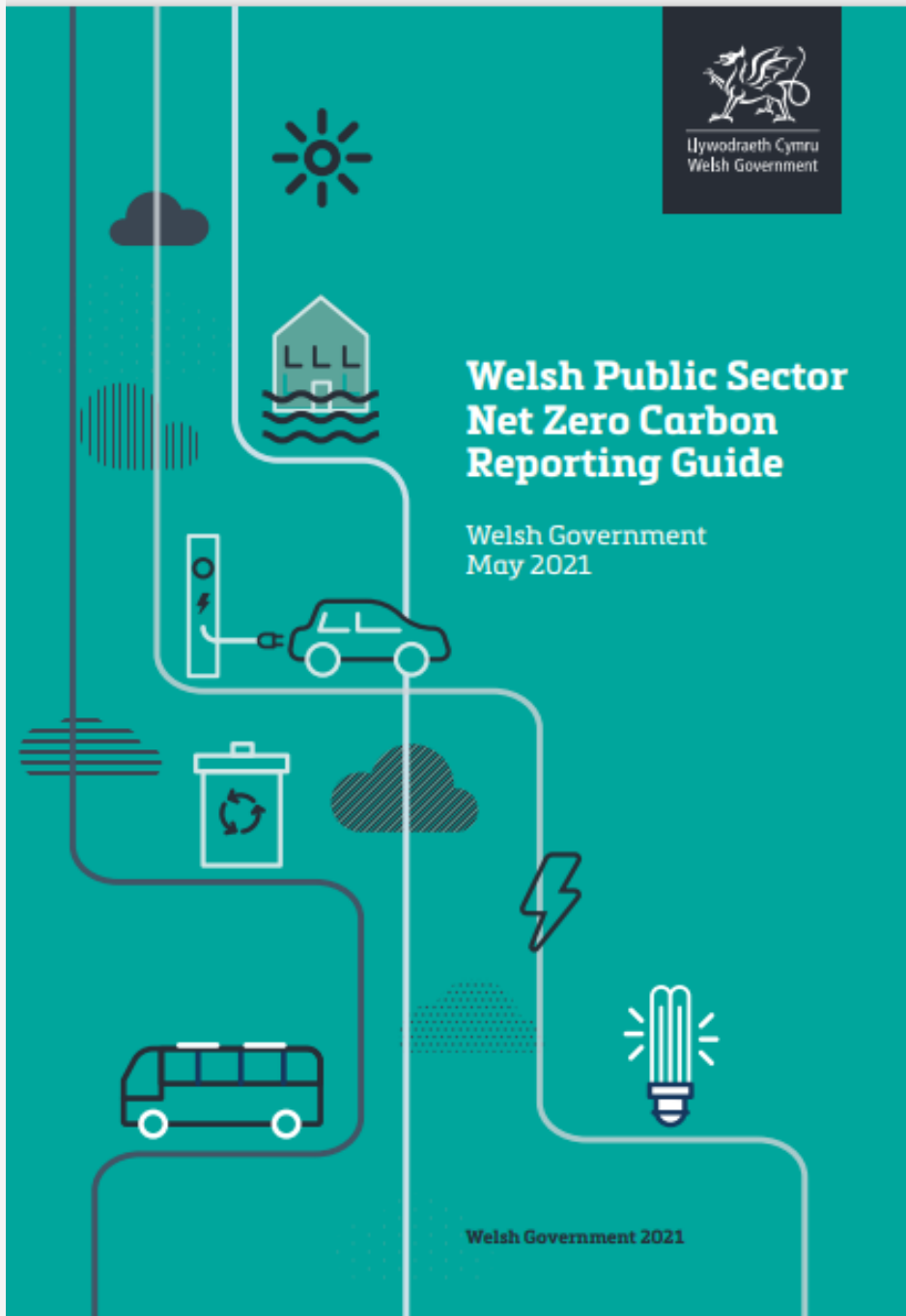


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Welsh Public Sector Net Zero Carbon Reporting Guide

Welsh Government
May 2021

Welsh Government 2021





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Questions

- Reporting Arrangements
- Joint working structures
- Welsh Government Energy Service