Consortiwm Awdurdodau Lleol Cymru
Consortium of Local Authorities in Wales
CLAW
Hyrwyddo Eiddo'r Sector Cyhoeddus
Promoting Public Sector Property

The Home-Grown Homes Project
Presented to the CLAW Sustainable Housing Conference
November 2024

by David Hedges
david.hedges@woodknowledgewales.co.uk

PROSIECT CARTREFI O BREN LLEOL
THE HOME-GROWN HOMES PROJECT

Visit our website

What we do

Our focus currently is on **housing and construction** as two related areas with big impacts on planet and people. Both areas have a massive potential to support Wales' transition to a socially just low-carbon society. We organise our work into three categories:

1. **Knowledge Creation & Exchange** e.g. research, technical support, communities of practice, events and communication.
2. **Advocacy** e.g. national and local policy development, government consultations and participation in working groups.
3. **Strategic Interventions** e.g. collaborative innovation projects, feasibility studies, application of research findings in exemplar housing and manufacturing projects.

Our Board & Staff Team

The Board

Julie Godefroy

Julie Godefroy Sustainability

Prof John Healey

Bangor University

Rachel Moxey

Pembrokeshire County Council

Jasper Meade

PYC Construction

Doug Hughes

Hughes Architects

Staff visiting the Super Sitka – February 2024

Our 73 Members

woodknowledge WALES

Home-Grown Homes Project – 2 Phases

The Home-Grown Homes Project
Creating a more climate resilient future by expanding the use of timber in social housing to accelerate decarbonisation of the natural & built environments.

Phase 1 (2018 - 21): applied knowledge gained from delivery of high performance, low carbon, timber social housing to inspire the development of Wales' forest industries and identify policy opportunities.

Phase 2 (2023 - 25): supporting implementation of new policies across decarbonisation, social housing, forestry and the circular and foundational economy to drive sector development and inform Wales’ first Timber Industrial Strategy.

Home-Grown Homes Project – Phase 1

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Featured publications

Home-Grown Homes Project – Phase 2 Objectives

- Supporting LAs & HAs to assess & reduce upfront and embodied carbon in their housing stock, developing tools to measure embodied carbon
- Considering options to pay for Greenhouse Gas Removal from wood in construction.
- Working with sawmills and processing sector to increase the supply of high-quality construction grade timber in Wales.
- Working to develop markets for use of timber-based construction products, such as wood fibre insulation, timber windows.

Home-Grown Homes Project – Phase 2 Objectives

- Working across secondary education, FE, and HE on training programmes and syllabuses to enable skills development to deliver a Welsh Wood Economy.
- Assessing Wales' future timber supply needed to de-carbonise the economy and support the forestry sector in woodland creation to meet these needs.
- Supporting Welsh Government in the development of the Timber Industrial Strategy for Wales, providing expertise and guidance where required.
- Providing expertise & supporting to develop the National Forest to supply high quality construction timber, plus recreation and health benefits.

We’re in a Climate Emergency

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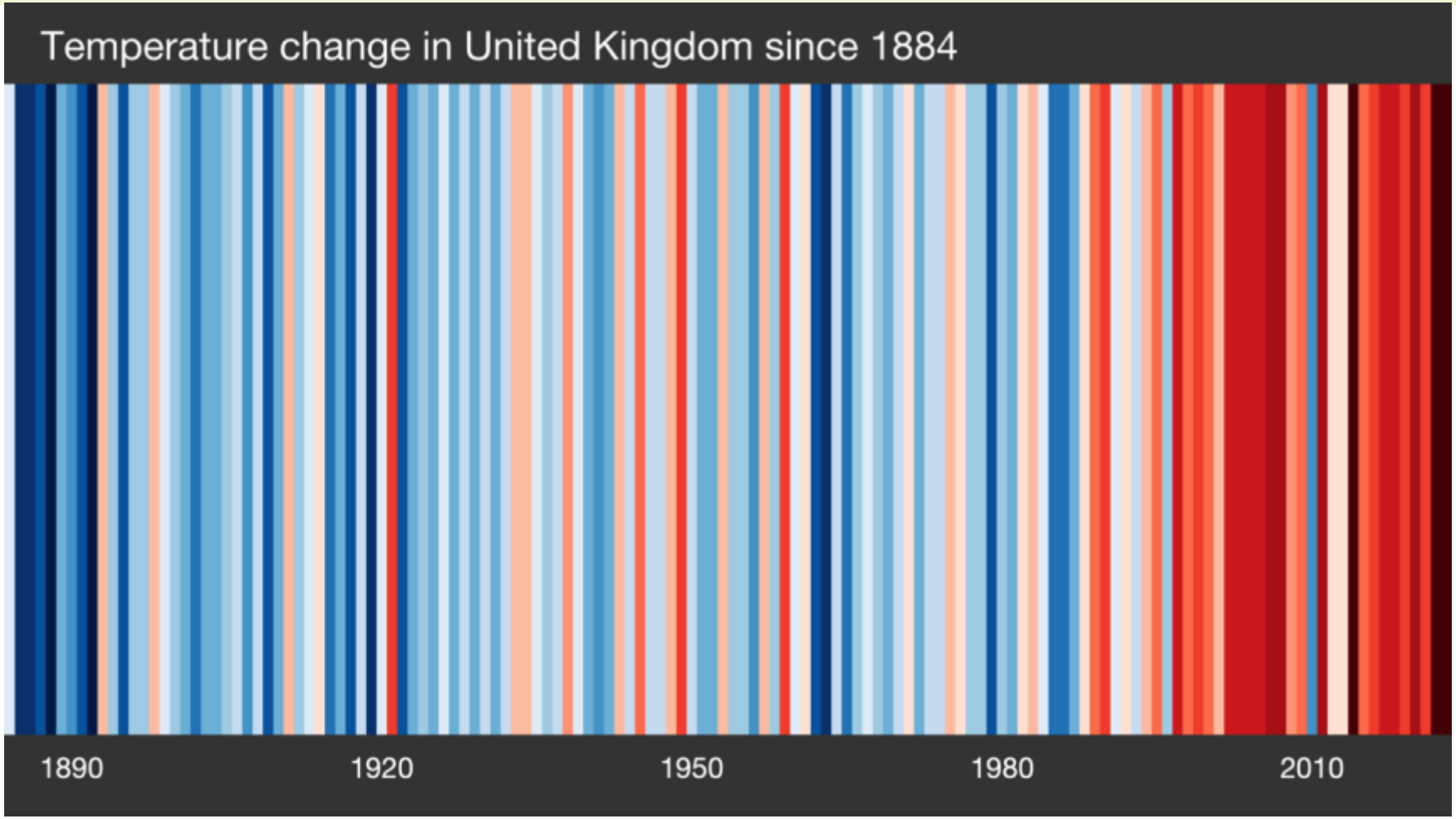

Graphics and lead scientist: Ed Hawkins, National Centre for Atmospheric Science, University of Reading.

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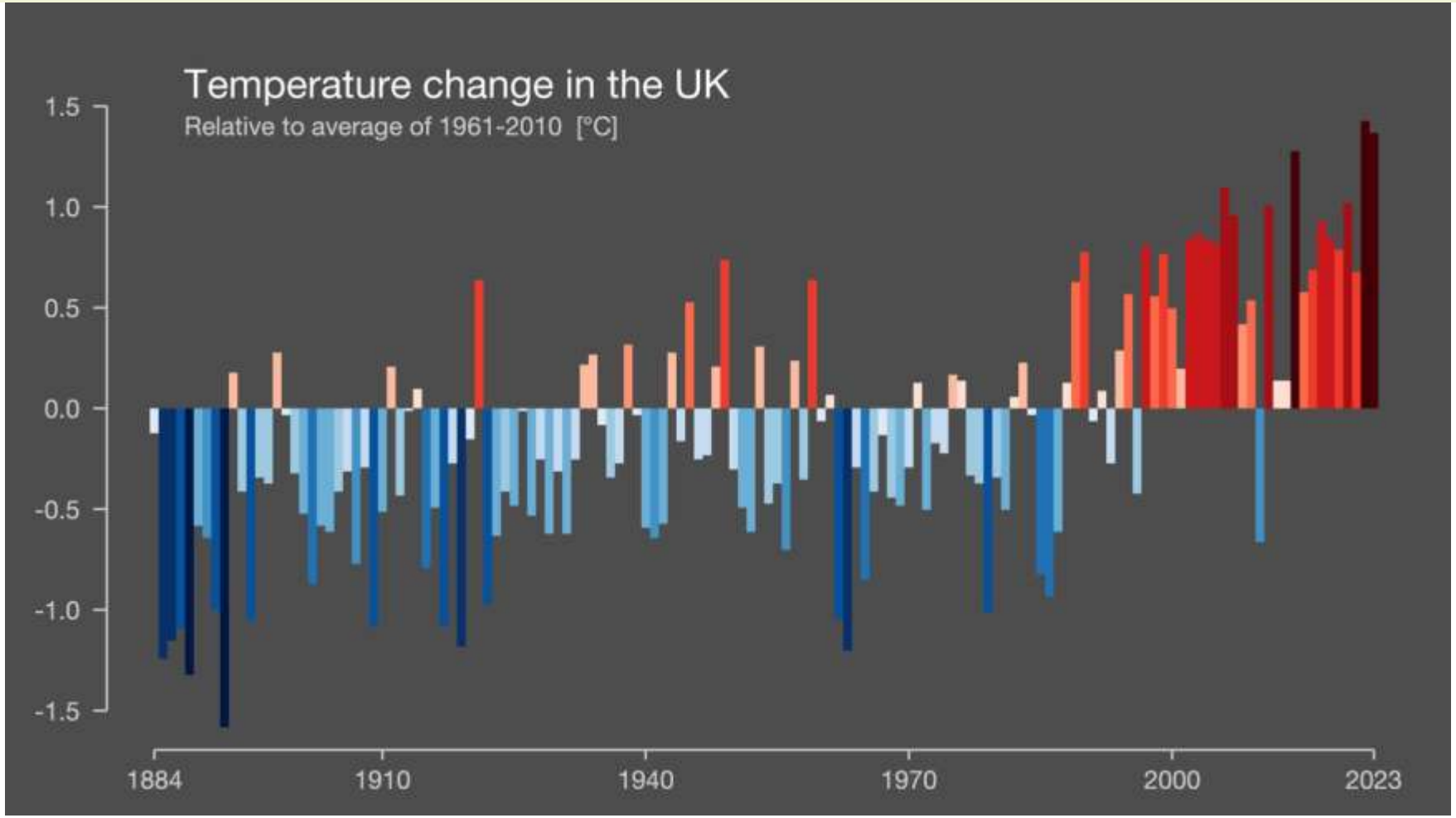

Graphics and lead scientist: Ed Hawkins, National Centre for Atmospheric Science, University of Reading., National Centre for Atmospheric Science, UoR.

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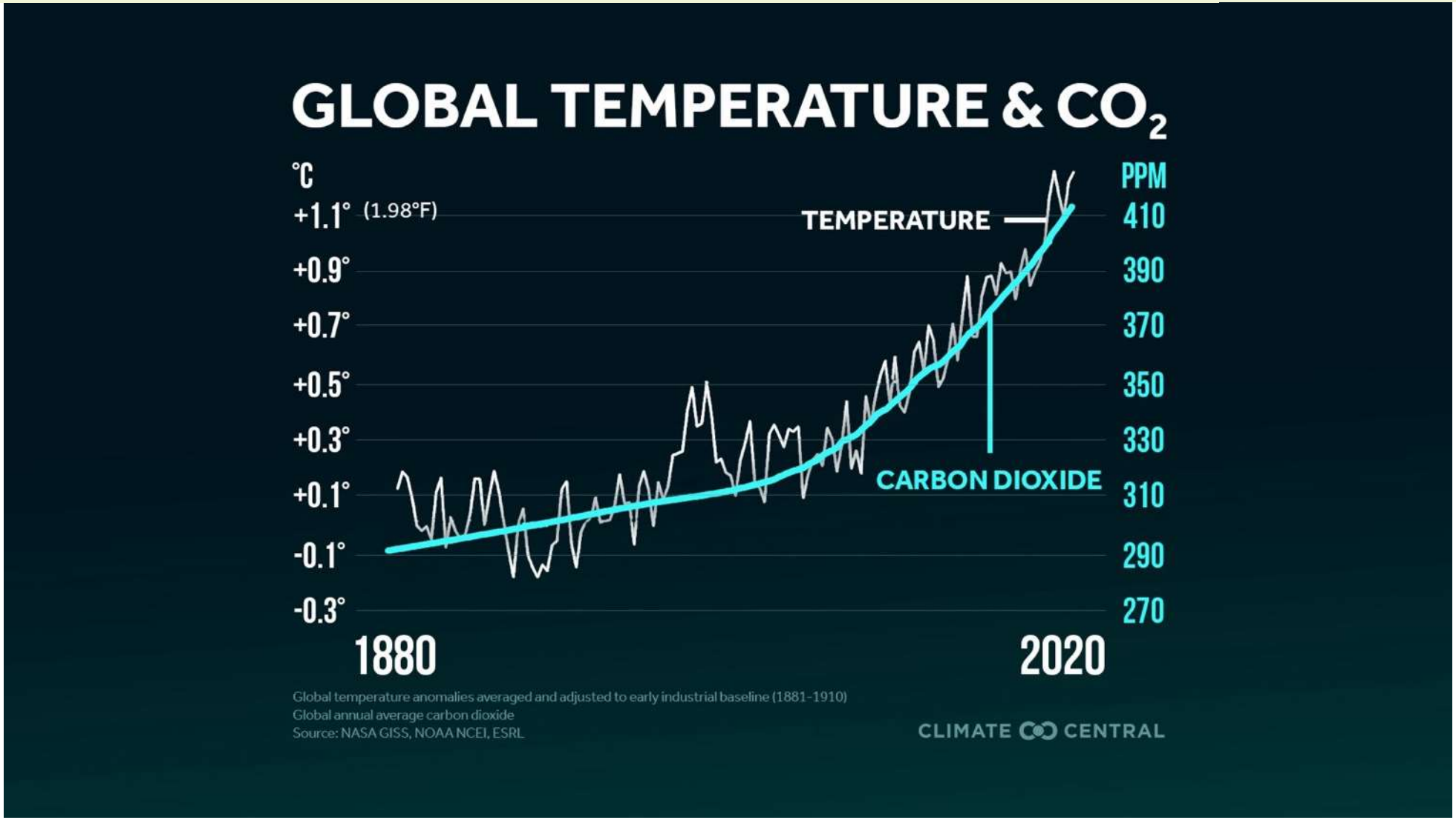

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- Air temperatures 1.2°C above pre-industrial levels. Highest in 10,000 years
- 2023 - warmest on record – near 1.5°C above pre-industrial levels
- People, nature & infrastructure facing damaging impacts of climate change
- We need
  - Mitigation – cutting our emissions – by setting targets
  - Adaptation – increasing capacity to respond to vulnerability
- Global warming is inevitable - 30 years of warming climate
- Wetter winters and increasing flood risk
- Warmer drier summers, more intense heatwaves/drought risk
- Extreme events – increased frequency and size

We’re in a Climate Emergency

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WoodBUILD 2023
Storing carbon in the built environment is how we repair and not despair.....

Prof. John Schellnhuber
PIK / Bauhaus Earth

Timber as a carbon store

Trees absorb massive amounts of carbon dioxide as they grow, with approximately half of their dry mass coming from captured carbon. When trees are harvested and turned into timber products, this carbon is stored indefinitely, as long as the wood stays intact. This means that using timber as a building material prevents the carbon stored in trees from returning to the atmosphere as quickly as it would through processes like decomposition. Every dry tonne of wood used in construction preserves 1.8 tonnes of CO_2.

Image from Metsä Group

Supporting LAs & HAs to assess & reduce upfront and embodied carbon

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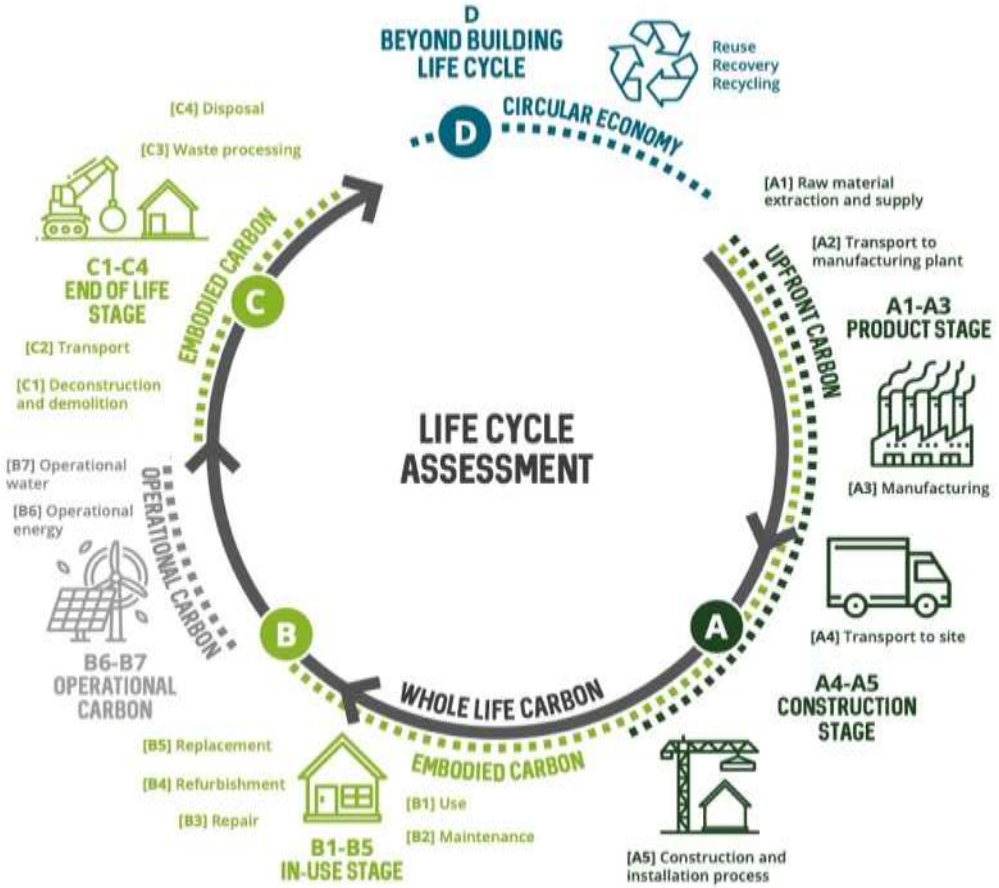

Insights

Building decarbonisation in the construction sector

The built environment is responsible for 40% of annual global emissions. This means almost half of all emissions around the world are linked to the construction, running, or demolition of buildings.

Of these emissions, 27% is generated during the operation of buildings, while 13% comes from construction and demolition. Reducing emissions during a building's operation has received significant attention. However, addressing the carbon emissions embodied within the building itself has attracted less focus.

Understanding and managing embodied emissions will be a critical part of our transition to a Net Zero world. For construction companies, the first step is to complete carbon footprinting of their value chains.

29 September 2023

Sam Lloyd
Senior Consultant, The Carbon Trust

Supporting LAs & HAs to assess & reduce upfront and embodied carbon

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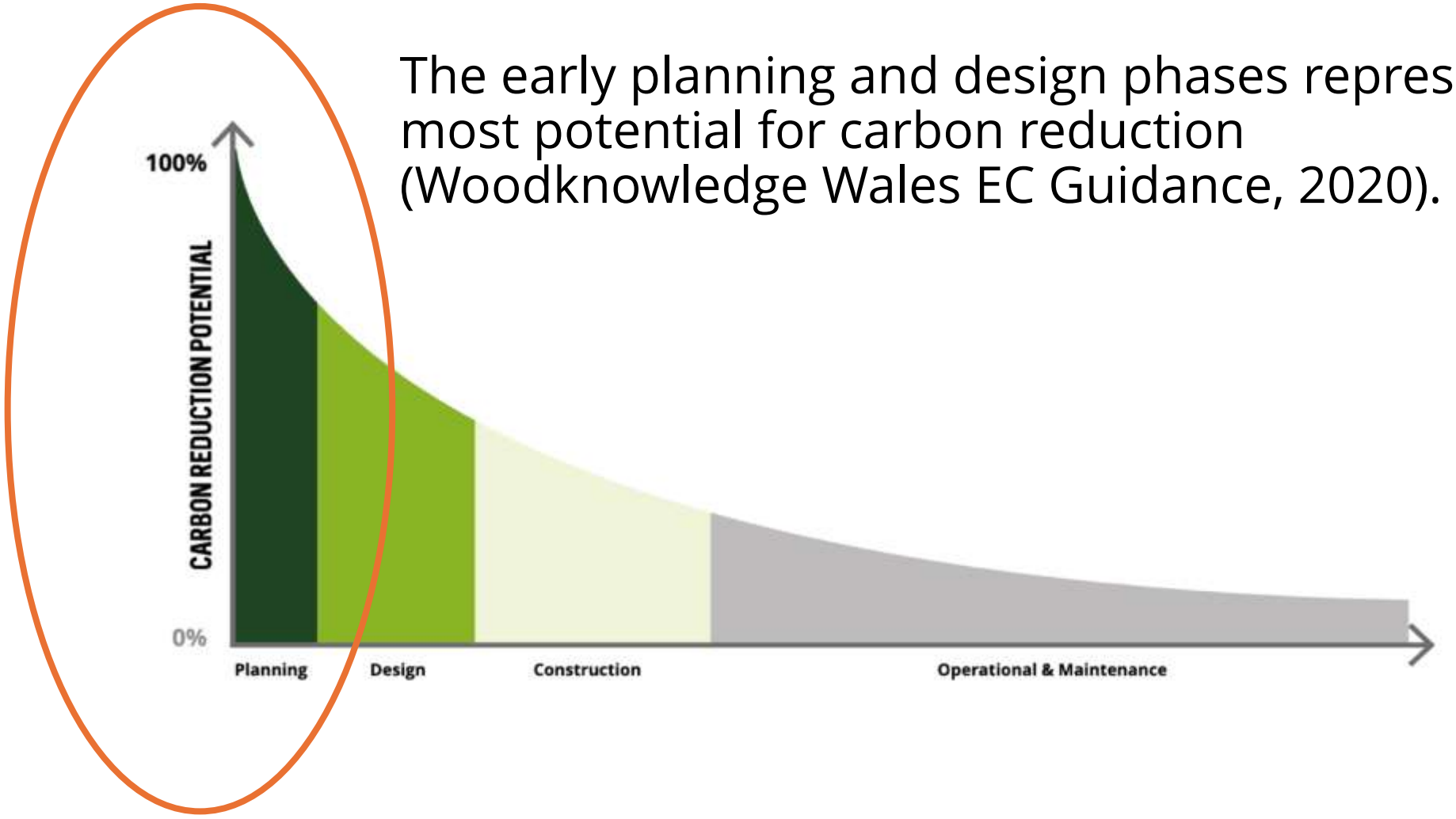

The early planning and design phases represent the most potential for carbon reduction (Woodknowledge Wales EC Guidance, 2020).

Supporting LAs & HAs to assess & reduce upfront and embodied carbon - ESECT

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Early Stage Embodied Carbon Tool

This Early Stage Embodied Carbon Tool has been developed for Woodknowledge Wales as part of the Homes Grown Homes 2 Project.

Supporting LAs & HAs to assess & reduce upfront and embodied carbon – Embodied carbon analysis

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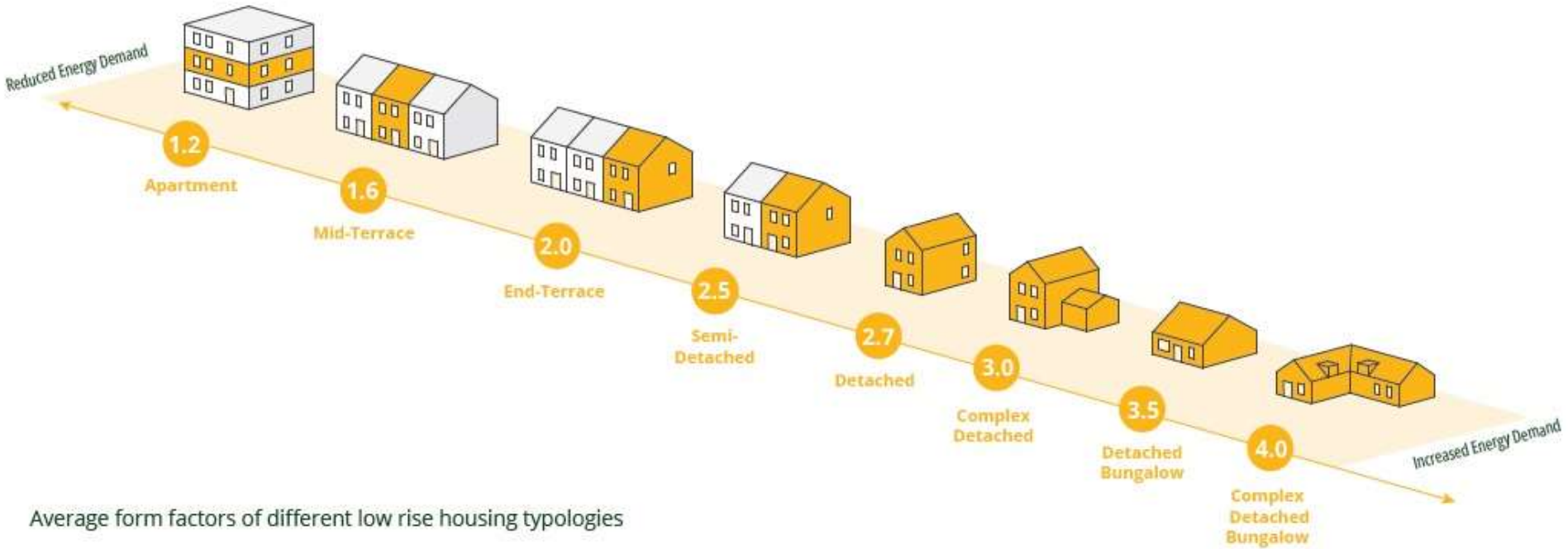

Average form factors of different low rise housing typologies

Supporting LAs & HAs to assess & reduce upfront and embodied carbon – Embodied carbon analysis

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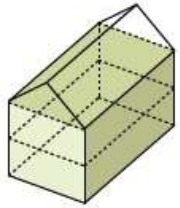
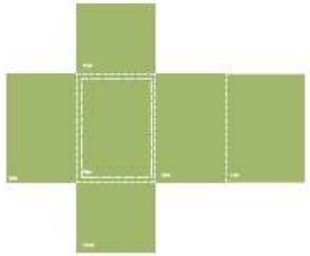
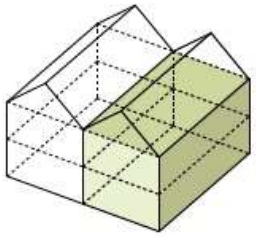


DETACHED

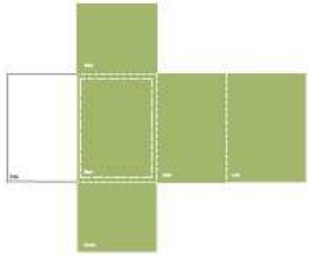
Floor Area:	92.8m2
Surface Area:	285.3m2
Form Factor:	3.1

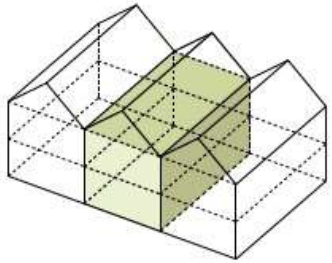




SEMI DETACHED

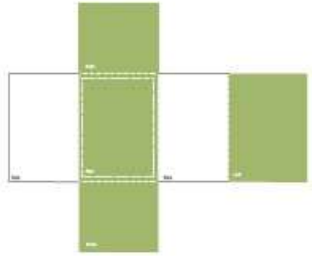
Floor Area:	92.8m2
Surface Area:	231.8m2
Form Factor:	2.5





TERRACED

Floor Area:	92.8m2
Surface Area:	178.3m2
Form Factor:	1.9



Supporting LAs & HAs to assess & reduce upfront and embodied carbon – Building Performance

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Supporting LAs & HAs to assess & reduce upfront and embodied carbon – Building Performance

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U-Value Measurements (Heat 3D): Walls, floors & celings.
Airtightness Evaluation (Pulse and Blower Door tests).
Ventilation and Heating system performance checks checks

Supporting LAs & HAs to assess & reduce upfront and embodied carbon – New homes

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Clwyd Alyn

Carmarthenshire Council

Supporting LAs & HAs to assess & reduce upfront and embodied carbon – new homes

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Bron Afon

Pobl

Supporting LAs & HAs to assess & reduce upfront and embodied carbon – new homes

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Powys Council

Wales & West Housing

Wood in construction as a Greenhouse Gas Removal Tool

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Working with sawmills and processing sector to increase construction timber supply

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Community of Practice members visit Pontrilas Sawmills

Working with sawmills and processing sector to increase construction timber supply

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Community of Practice members visit Sevenoaks Modular and the Gwynfaen Project

Working with sawmills and processing sector to increase construction timber supply

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Have we got enough trees?

- Annual softwood harvest - c1.6M m^3 roundwood = 4,384 m^3 /day
- Estimated yield of structural grade material (C16) - 18% = 789 m^3 / day
- c10 m^3 structural sawn wood per house = 78.9 houses / day
- Social housing target - 20,000 or 4,000/year or 11/ day
- It takes 51 days to grow the timber for 4,000 homes
- Estimated housing need - 8,000/year (22/day)
- There is ample material (82%) remaining for other construction uses such as battens and wood fibre insulation.

All figures are for Wales and are approximate based on WkW research & published data

Skills development for a Welsh Wood Economy

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Inspiring today's generation for the future of the Forest Industries in Wales

Supporting the development of the Timber Industrial Strategy for Wales

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Case studies:

- Growing trees
- Processing timber
- Manufacturing off-site
- Timber homes
- Circular economy
- Wood culture

Carbon Isaf – Placemaking and low carbon

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WoodBUILD 2025

Be in the right room at the right time

SAVE THE DATES: 3 - 4 June, Llandudno