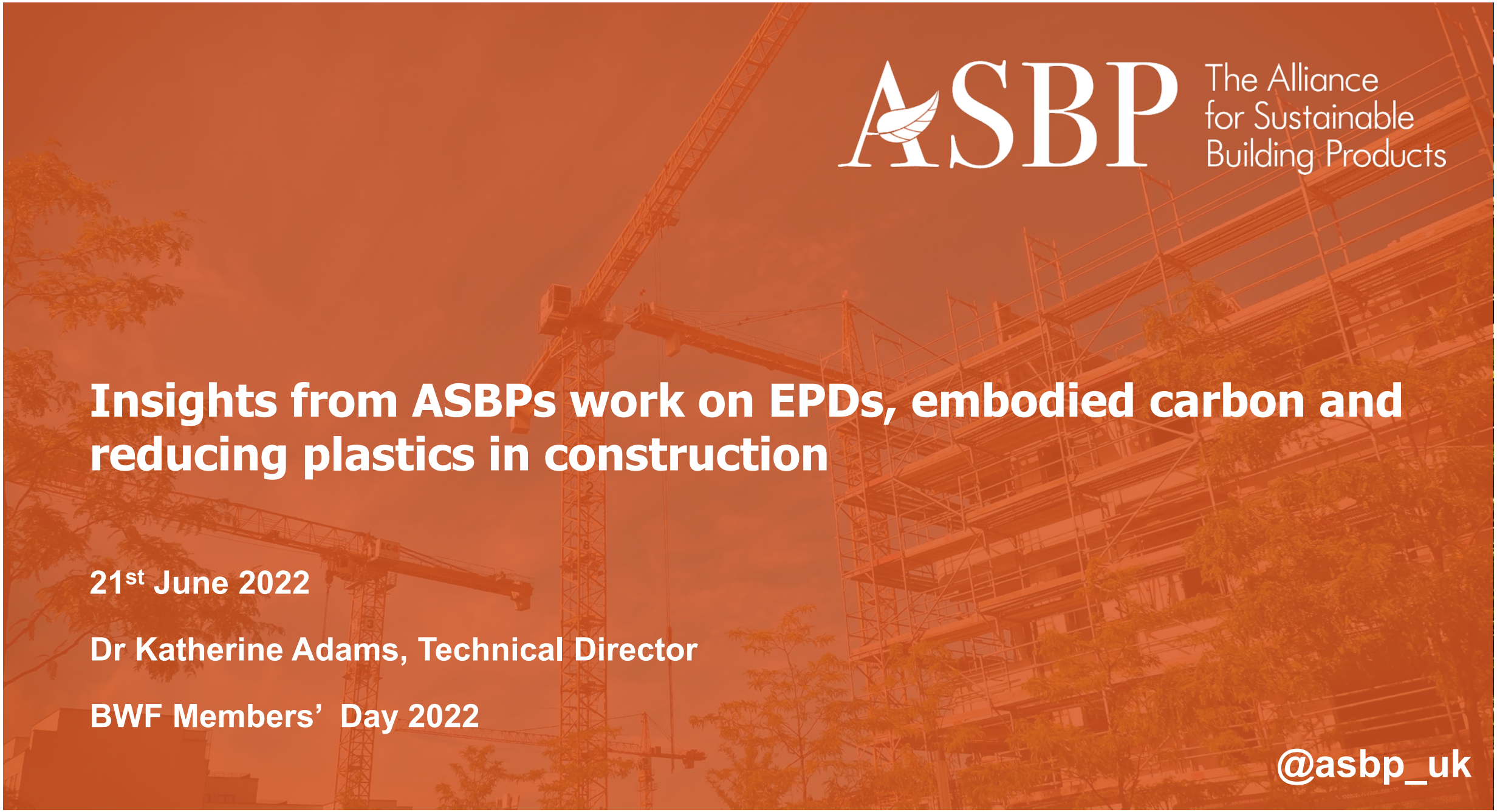


ASBP The Alliance for Sustainable Building Products

# Insights from ASBPs work on EPDs, embodied carbon and reducing plastics in construction

21st June 2022

Dr Katherine Adams, Technical Director

BWF Members' Day 2022

@asbp_uk

## Who we are

ASBP The Alliance for Sustainable Building Products

**Not-for-profit, mission led, membership organisation**

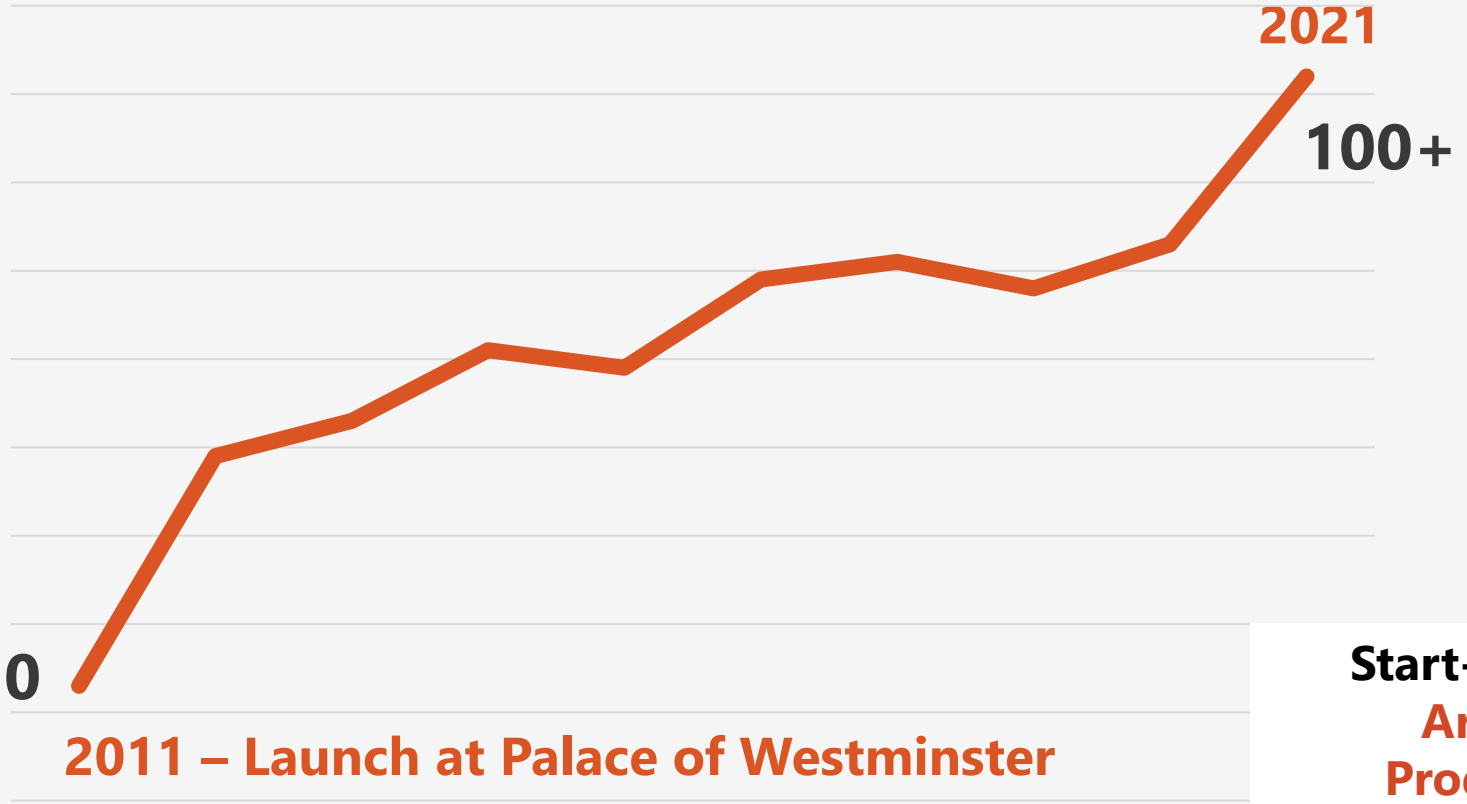
**"To accelerate the transformation to a healthy, low carbon built environment by championing the use of demonstrably sustainable building products"**

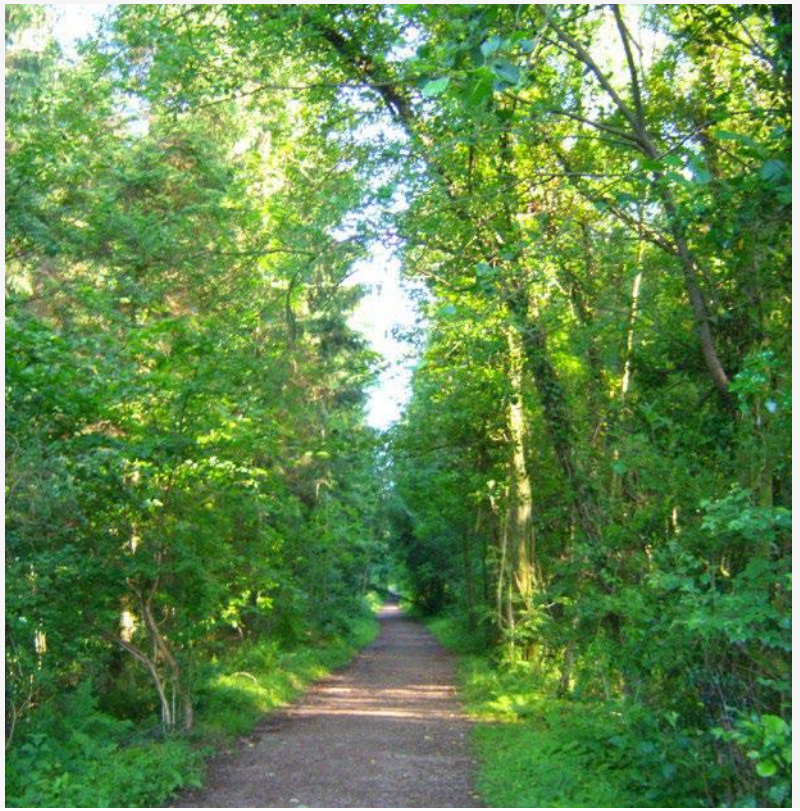
## What we do

**Share learning through events, participate in research projects, advocate product standards, respond to policy consultations.**

# Our Alliance – 100 members and counting…

**We recently donated 100 trees to Caerphilly Woodlands Trust to mark our 100th member milestone.**



**Start-ups, SMEs and multi-national orgs**
**Architects, Specifiers, Contractors**
**Product manufacturers, Trade bodies**
**Academia and more**

# Snapshot of activities


ASBP Awards


Innovation Pitch Series


Healthy Buildings

Timber Accelerator Hub

Reducing Plastics

Natural Fibre Insulation

Embodied Carbon/EPD

Circular Economy/Reuse

# Working groups

# Reducing Plastics in Construction Group

**“A collaborative stakeholder group seeking to identify solutions and alternatives that can help to reduce the over-use of plastic building products and packaging in the construction industry.”**

# Plastics in Construction Group - Context

- Continued the momentum from our 2019 ‘Plastics in Construction’ Healthy Building Conference and Expo
- Collaborative, cross-supply chain network
- Identify challenges facing industry and propose solutions/outputs/guidance
- Connect with other initiatives & recruit members that can help provide solutions
- Identify funding opportunities
- 4 quarterly meetings each year – Meeting #12 in January 2022.

HEALTHY BUILDINGS
CONFERENCE & EXPO 2019
PRODUCTS • PEOPLE • PLANET

## Members’ interests

Microplastics & nurdles

Product packaging

Robust alternatives

Plastic waste/recycling

# What are our Plastics Group members up to?

Interreg North-West Europe CHARM
European Regional Development Fund

"Accord Housing are developing 12 virtually plastic free houses as part of the CHARM Interreg research project."

mace Time to Act!

## INITIATIVES/ RESEARCH

Aluminium guttering

Clay blocks

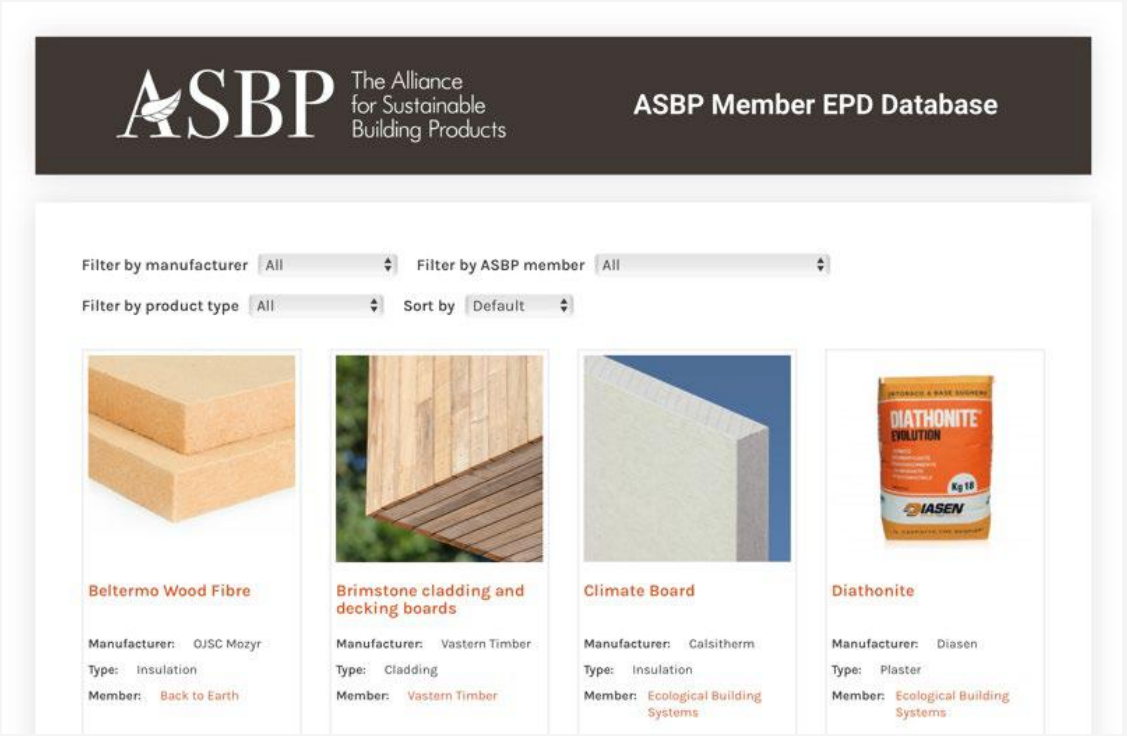
Timber windows and doors

Copper pipes

## ALTERNATIVES

# FREE Resources - Interactive house and EPD database

- Check out our Interactive House of ASBP members' products – broken down into windows, services, insulation, flooring, structural elements, guttering etc.
- New database of ASBP members' products with Environmental Product Declarations.



# Natural Fibre Insulation Group

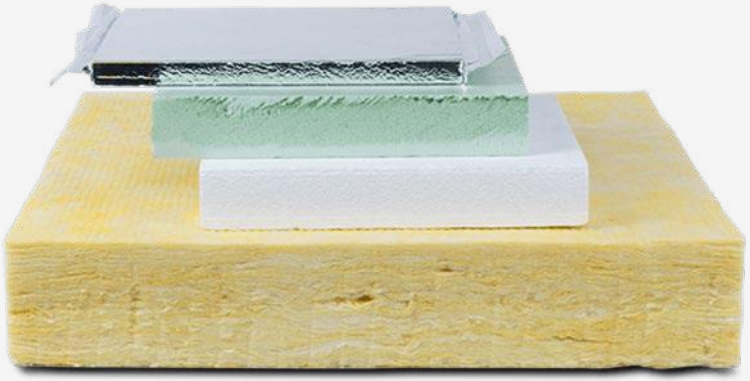
- **The Natural Fibre Insulation Group (NFIG) is a collective of ASBP members who are the leading manufacturers and suppliers of natural fibre insulation in the UK.**
- **The purpose of the group is to work collaboratively to better communicate the many benefits of natural insulation products and systems.**
- **Natural fibre insulation products and systems are derived from natural materials such as wood fibre, hemp, straw, cellulose, wool, cotton and flax.**

NATURAL FIBRE INSULATION GROUP

backtoearth · ecological BUILDING SYSTEMS · ecomerchant · IndiNature · lime|green · MIKE WYE · SCHOOL OF NATURAL BUILDING · SOPREMA · STEICO engineered by nature · therma fleece Nature's finest insulation

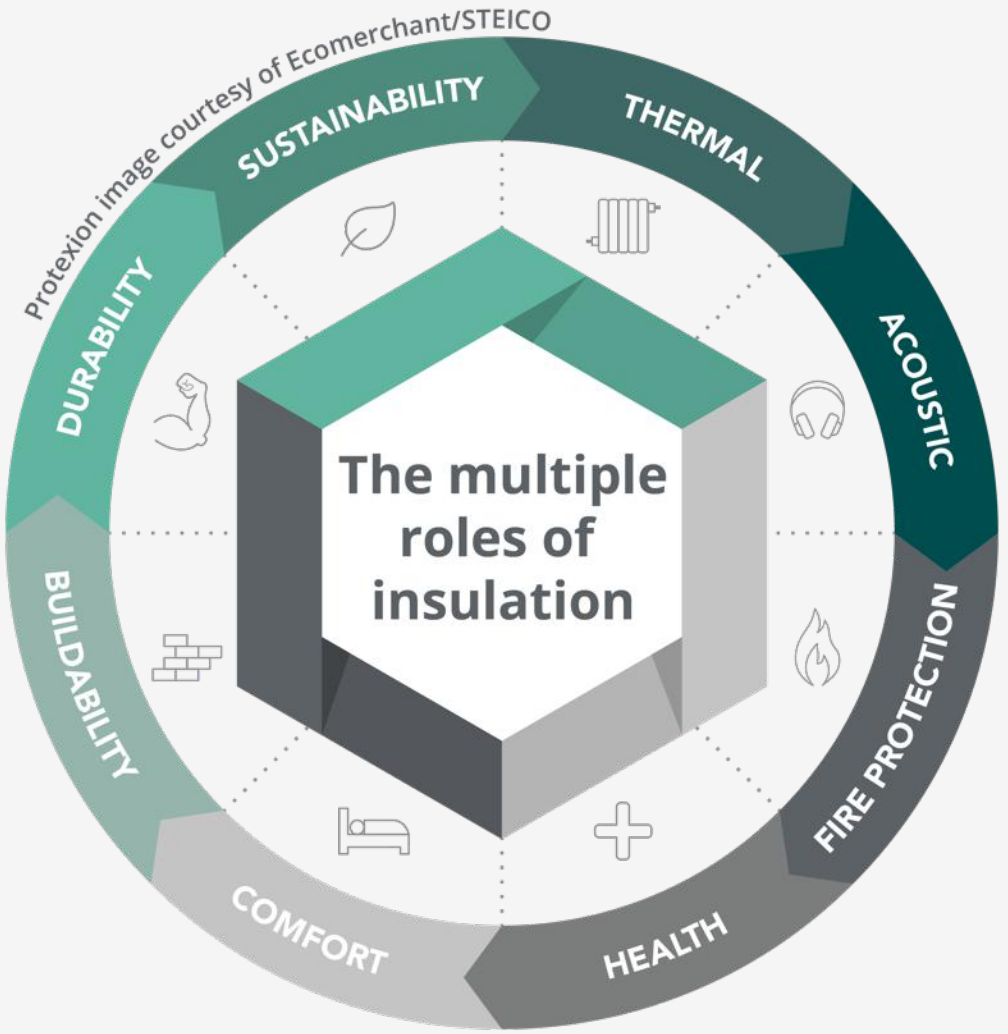
# Context

- 99.5% (UK)  of insulation products sold are carbon intensive, mostly derived from petrochemicals.
- Natural insulation (NFI) generally present 2/3 times lower global warming potential than conventional products, without including biogenic carbon.
- Most NFI still require some form of plastic binder which improves durability.



# Key theme - The multiple roles of insulation

- **Insulation profoundly influences the performance of buildings. Balanced consideration of this multi-functionality often makes natural fibre insulation the superior choice.**
- **Group members work together to agree on consistent messaging and terminology.**
- **Published briefing papers on multiple roles of insulation and breathability.**
- **Delivered CPDs on "Insulation – More than just U-values".**



# Aims and outputs

- Collaborative market development activities
- Briefing papers - Health and wellbeing benefits of NFI; breathability, airtightness & vapour control; Environmental Product Declarations
- Events, CPDs, workshops
- Training – New online training portal
- Market intelligence/insight
- Policy - giving evidence to EAC inquiries

# Paints & Finishes Group

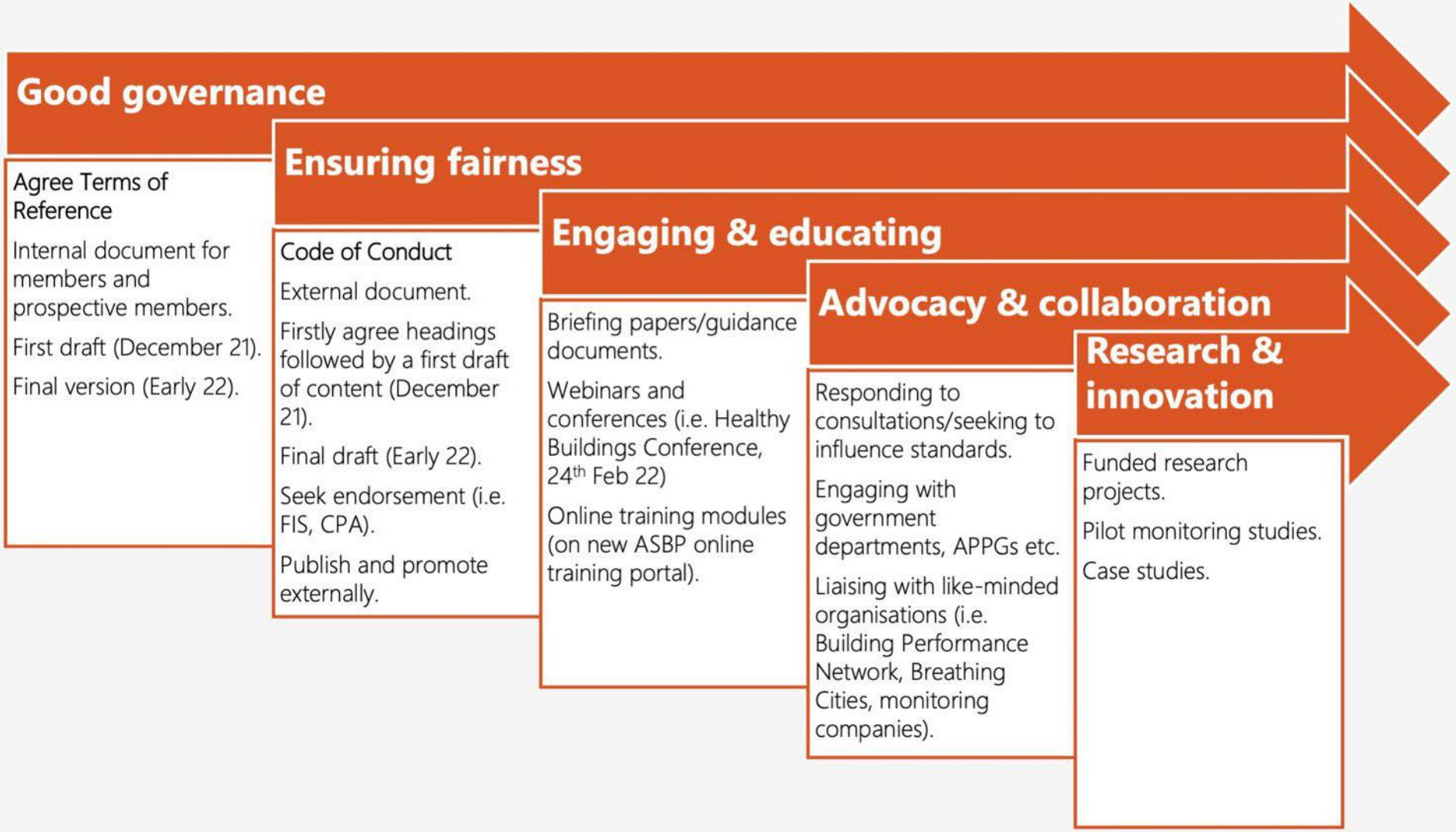
- **The ASBP Paints and Finishes Group brings together manufacturers and suppliers of natural and healthy paints & finishes in the UK.**
- **Agree on a 'Code of Conduct' in relation to fair marketing of product properties and performance, i.e. 'Zero-VOCs'.**
- **Recent report found "Paint appears as the largest source of microplastic leakage into oceans and waterways".**
- **Explore health and wellbeing issues, embodied carbon, plastic content, circularity and more.**

PAINTS AND FINISHES GROUP

CELTIC sustainables
Clayworks
CORNISH LIME
earthborn
ecomerchant
EDWARD BULMER NATURAL PAINT
KEIM
MIKE WYE

PAINTS AND FINISHES GROUP

# Proposed group themes/outputs



# Reusable Products and Buildings Network

- **ASBP has been active in the development of circular economy thinking for nearly 10 years, including on a number of successful collaborative research projects which have aimed to identify the barriers and make the business case for the 'reuse' of existing building components and the development of new 'reusable' products which can be dismantled and reused at end of life.**
- **The ASBP Reusable Products and Buildings Network brings together forward-thinking organisations in the sector (clients, designers, manufacturers, contractors, demolition and more) to share learning, fill gaps in knowledge and further the awareness and development of reusable products and buildings that can contribute towards a more resource efficient built environment.**

ASBP
REUSABLE
BUILDINGS
NETWORK

# Projects

# Steel reuse – DISRUPT project

- **ASBP is leading the DISRUPT project (Delivering Innovative Steel ReUse ProjecT) which seeks to explore the innovative reuse of structural steel in construction and encourage the adoption of new circular economy business models.**
- **The DISRUPT project team is made up of steel reuse experts Cleveland Steel and Tubes Ltd, global construction company ISG and the National Federation of Demolition Contractors.**
- **Real life case studies will track the 'journey' of reused steel from start to finish. The project will deliver new costed circular business models that can act as a blueprint for other companies interested in entering the reuse sector.**

# Bio and Circular Insulation for Resourceful Construction (BIO-CIRC)

## We are a partner in a 2 year EU-funded Interreg research project called BIO-CIRC.

- Investigate the waste bedding sector and the reuse of a problematic waste source - polyester duvets, resulting in the development of 3 novel insulation prototypes.
- Conduct market intelligence of the insulation market to identify growth opportunities for natural and recycled fibre insulation (NRFI) materials.
- Review air quality and health & well-being characteristics, and raise awareness of the benefits of NRFI amongst our diverse networks of construction professionals.

nomadéis ASBP BACKTOEARTH Building Performance Specialists therma fleece Nature's finest insulation

Interreg EUROPEAN UNION
France ( Channel Manche ) England

**The project has been awarded by Interreg France (Channel) England, which is co-financed by the European Regional Development Fund (ERDF), who will fund 80% of the project budget (€399,600).**

# Water damage caused by plastic pipe failures in buildings

**The aim of this research project is to build upon anecdotal evidence and conduct primary research (surveys, interviews, workshops) by engaging with a range of stakeholders including insurers, loss adjusters, clients, facilities management, surveyors, contractors and more.**

It is hoped that the findings of this research project will allow us to build an evidence base of plastic pipe failures in buildings and help make the case for the adoption of **robust alternative materials** with **lower environmental impacts** across their **whole life cycle.**

**News article: Insurers pay out £1.8m for escape of water claims every day**

Escape of water isn't only the leading cause of home insurance claims, it's also one of the most expensive. According to ABI (The Association of British Insurers), insurers pay out £1.8m for escape of water claims every day.

- Good meetings with Aviva, Gallacher, Marsh, Association of British Insurers (ABI) and Chartered Institute of Loss Adjusters (CILA).
- Next focus for interviews – Large loss adjusters and forensic scientists.
- Project runs until the summer with support from Mueller Europe and Lawton Tubes.

# The ZAP Project

**ZAP Project - Zero Avoidable Packaging Waste in Construction.**

**We are delighted that our ZAP Project bid was one of 4 successful projects in the second phase of the Ecosurety Exploration Fund!**

Research project runs throughout 2022 with partners ASBP, Cullinan Studio, Bankside Open Spaces Trust, Mace and Morgan Sindall.

"To generate a better understanding of and reduce packaging waste in the construction industry, minimise contamination and explore end of life scenarios and innovative solutions."

https://www.ecosurety.com/impact/education/zap/ https://asbp.org.uk/project/zap-project

BANKSIDE OPEN SPACES TRUST

CULLINAN STUDIO

mace

MORGAN SINDALL CONSTRUCTION

ASBP The Alliance for Sustainable Building Products

# Why is this needed?

- No overall understanding of the types and amounts of packaging used for construction products
- A lack of granularity in terms of the polymer type
- A  lack of understanding of how it is managed on site and disposed of
- Lack of knowledge on what manufacturers are doing and can do

**All of the above means its very hard to put in any interventions in and know what the outcome will be!**

# Interventions

# Opportunities

**Design and procurement**

- Use of packaging reduction, reuse and recycling targets and clauses in procurement and specifications
- Assessing the opportunities for increasing recycled content in plastic-based construction products (using recyclate from construction plastic packaging)

**Manufacture**

- Continued reduction of packaging through film thickness, length etc
- Increasing the recycled content, especially in LDPE products
- More take back of packaging from manufacturers/merchants (learning from other take back schemes)
- Use of bulking to reduce packaging use
- Consistent and appropriate labelling

**Construction**

- Increasing segregation of plastics on construction sites
- Looking at how plastic packaging could also be treated with other plastics from construction sites (increasing the volume)
- Use of balers on site at appropriate points in the construction programme

**Resource management**

- How plastic packaging could also be treated with other plastics from construction sites
- Bulking up of plastics
- Specification for recycling
- Agree reporting

# Other activities

# Embodied Carbon Guidance

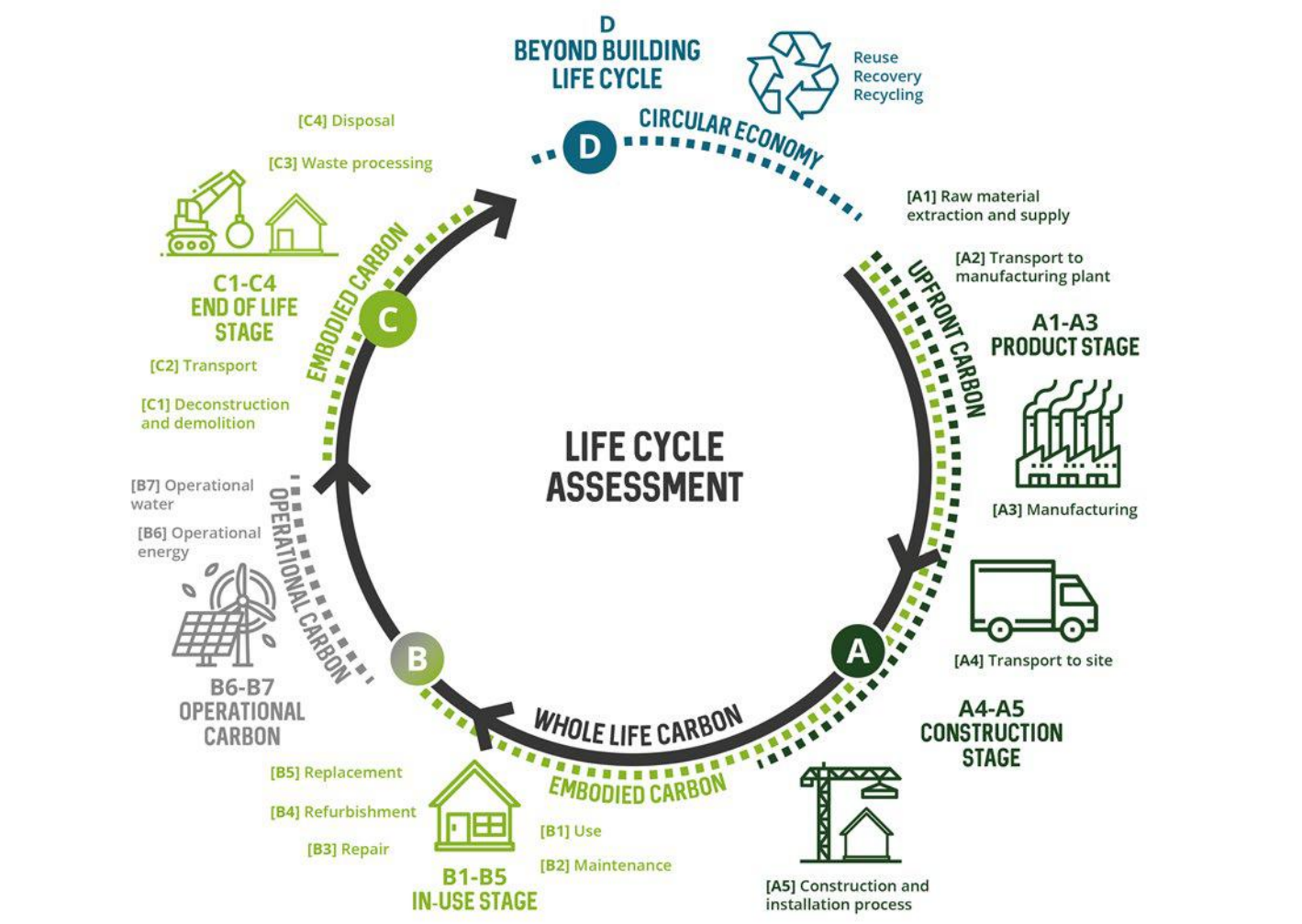
## Contents



Available at:

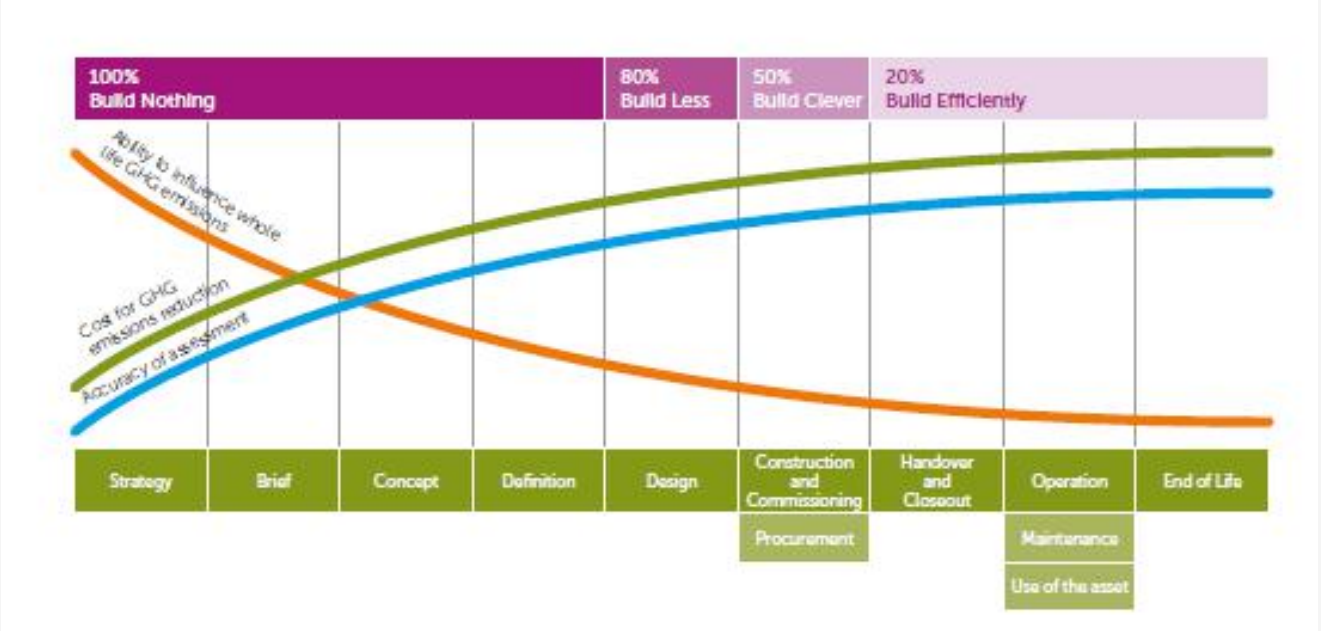
https://woodknowledge.wales/wkw-resource/hgh-ec-guidance

# What is embodied carbon?



# Approaches to reducing carbon

| RIBA STAGES | EMBODIED CARBON REDUCTION STRATEGIES |
|---|---|
| 0 STRATEGIC DEFINITION | • Consider the need for a new building<br>• Consider reuse and retrofit of existing buildings<br>• Reduce land used by built environment (intensification) and minimise need for infrastructure<br>• Intensify the use of buildings – share space and uses |
| 1 PREPARATION AND BRIEF | • Ensure embodied carbon measurement, targets and outcomes are included in the brief<br>• Identify a carbon champion to drive carbon reduction<br>• Consider designing for adaptability and extending building life |
| 2 CONCEPT DESIGN | • Optimise building form and layout<br>• Consider simple, repetitive structural solutions<br>• Consider prefabrication/off-site manufacuring<br>• Compare whole life carbon impacts of different building services and energy supply options<br>• Use resource efficient construction approaches<br>• Use resource efficient construction approaches<br>• Consider lightweight construction<br>• Increase biogenic carbon storage within the building<br>• Design for deconstruction and disassembly<br>• Report on upfront and embodied carbon at design stage |
| 3 DEVELOPED DESIGN | • Increase use of reused and recycled materials<br>• Use materials with lower impacts<br>• Design out waste<br>• Use materials which can be reused or recycled |
| 4 TECHNICAL DESIGN | • Use products with lower impacts<br>• Increase material efficiency<br>• Minimise any over-specification<br>• Design for low maintenance and easy access to shorter life or critical components<br>• Optimise service life and durability<br>• Ensure the tender documents clearly state the embodied carbon goals<br>• Report on upfront & embodied carbon and justify any increase from design stage assessment |
| 5 CONSTRUCTION | • Communicate the embodied carbon intent during tender and appointment to ensure cooperation from contractors and the supply chain<br>• Use local materials, especially aggregate, concretes and timber<br>• Use efficient construction processes<br>• Monitor and reduce energy and water usage<br>• Monitor and reduce waste arising and maximise reuse and recovery, minimise downcycling<br>• Report on the embodied carbon impacts of any variations |
| 6 HANDOVER/ CLOSE OUT | • Evaluate the as-built upfront and embodied carbon and include in the O&M Manual<br>• Compare to initial assessments and identify lessons learnt<br>• Offset whole life carbon<br>• Ensure guidance on the operation and maintenance of the building is provided at handover<br>• Ensure information on how to repair and replace components is provided in the O&M manual |
| 7 IN USE | • Maintain components to optimise service life<br>• Review actual service life data against predicted impacts<br>• Consider embodied carbon when specifying replacements and refurbishment<br>• Include embodied carbon in any post occupancy evaluation |
| END OF LIFE | • Consider retaining structure and fabric where possible<br>• Deconstruct rather than demolish<br>• Increase reuse and recovery of waste at end of life<br>• Minimise downcycling of waste |



# Form factor

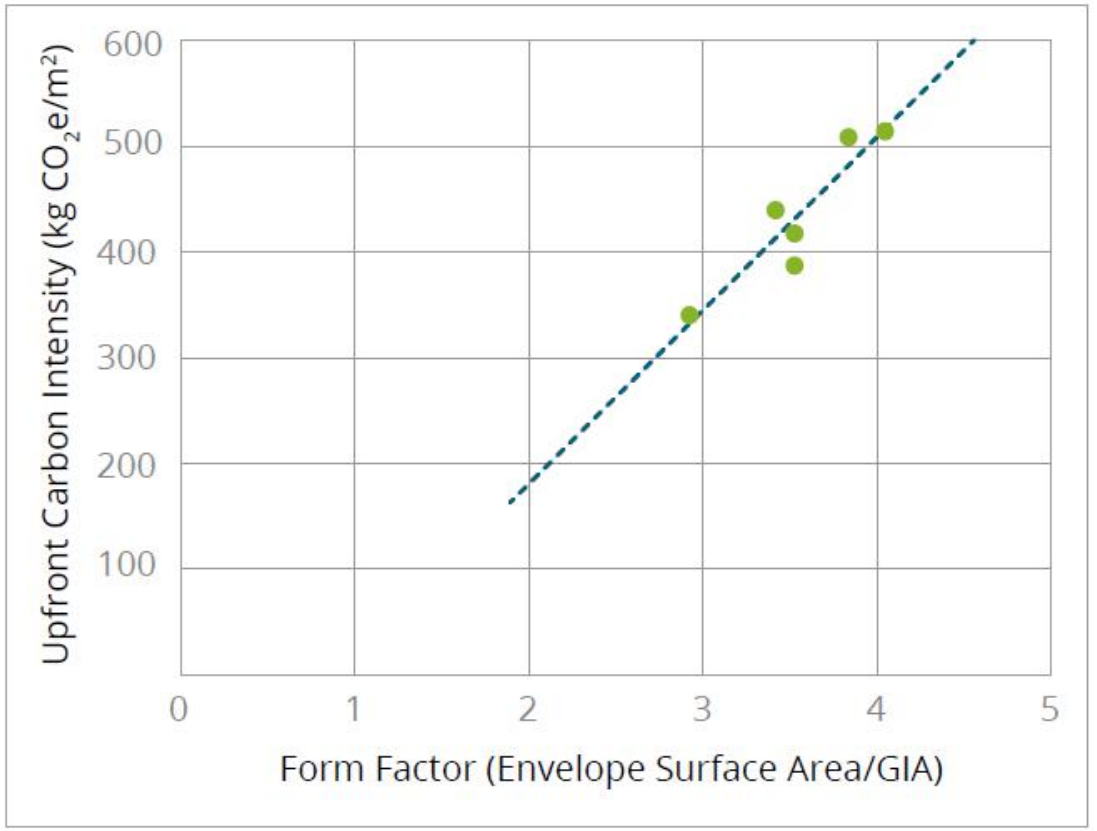
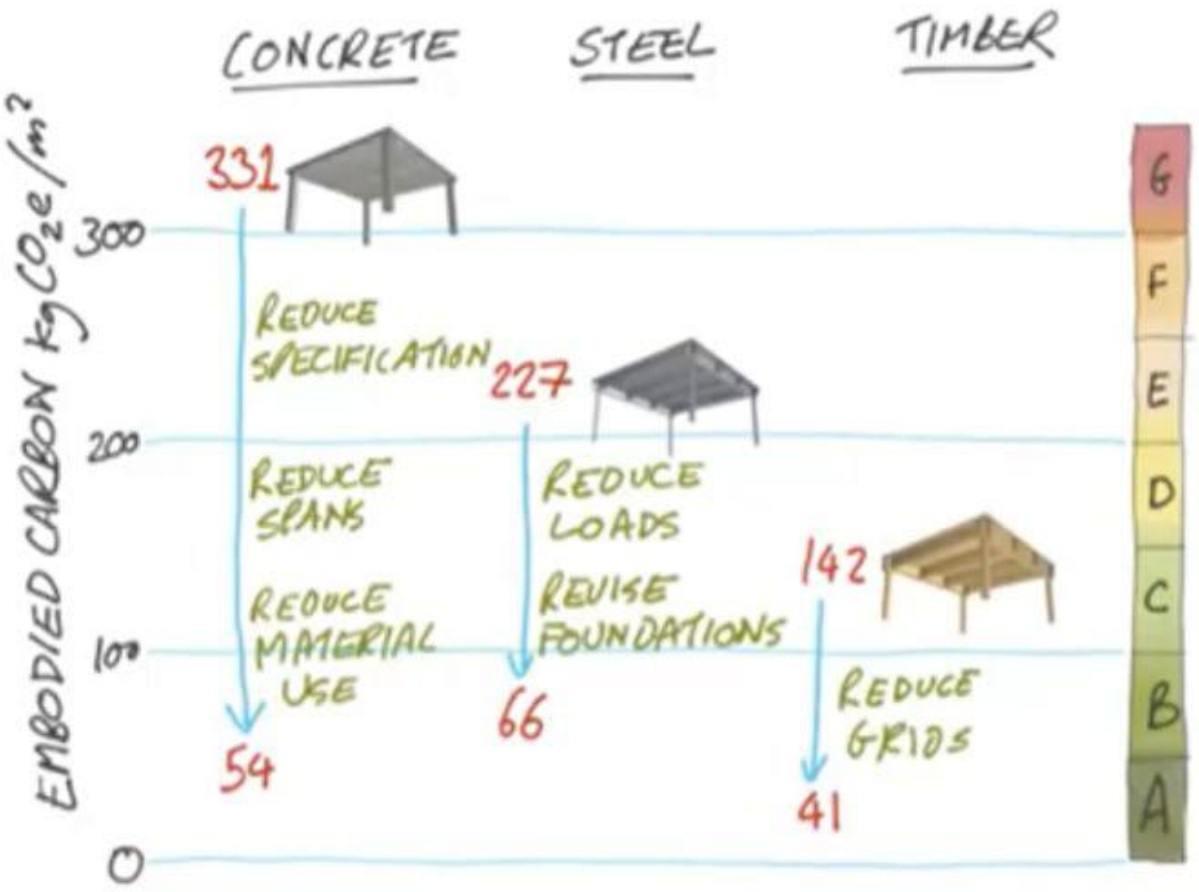



*Figure 17*
*Form Factor v Upfront Carbon for the most common dwelling types - Gwynfaen Development. Data courtesy Stride Treglown.*

# Structural




Based on **Embodied carbon: structural sensitivity study**
By Buro Happold
https://www.istructe.org/resources/case-study/embodied-carbon-structural-sensitivity-study/

# Materials


28242.0
Aluminium sheet
26573.0
Roof panel (steel)
22923.1
Galvanised steel
12433.8
Copper sheet
12209.4
Zinc
Structural steel
5733.5
EPDM foil
4095.1
Vinyl flooring (PVC)
2651.0
Paint, matte
1725.3
Ceramic tiles
1694.
Cement-bonded particle board
1367.3
Slate
1172.7
Aluminium frame window
898.2
Brick, red, double-fired
781.4
PIR insulation
762.6
Wood-Aluminium frame window
699.0
Fibre cement boards
618.0
Clinker – stoneware
565.1
Brick, red, single-fired
Fired clay brick
474.1
Wood frame window
420.1
Brick roof tiles
415.6
Glass pane, triple-glazed
407.8
Roofing felt V60
375.1
plaster
366.1
Concrete roof tiles
Concrete C30/37
271.5
PP roofing membrane
266.1
Glass pane, double-glazed
266.3
PE film (vapour barrier)
244.8
Lime sandstone
244.2
Foam glass
229.0
Concrete C20/25
202.3
Lightweight concrete elements
190.6
Lime render
180.0
Aerated concrete blocks
169.6
Gypsum board
138.
Poroton bricks
123.3
PUR insulation
90.1
XPS insulation
93.
Unfired clay brick
93.2
Clay plaster
91.2
Gypsum fibre board (paper)
83.5
Linoleum
80.4
EPS insulation
70.4
Stone wool
60.1
Expanded perlite
21.5
Glass wool
19.2
Hemp fleece / PE
9.3
Rammed earth wall
6.2
Paper wool
4.9
Reused brick
-128.2
Straw
-173.1
Wood fibre insulation
-182.9
Wood fibre board
-519.
Modified wood
-535.9
Parquet floor, 14 mm
-610.0
Glulam
-649.0
Plywood
-664.0
Cross-laminated-timber CLT
-680.0
Construction timber
Spruce
Oak tree

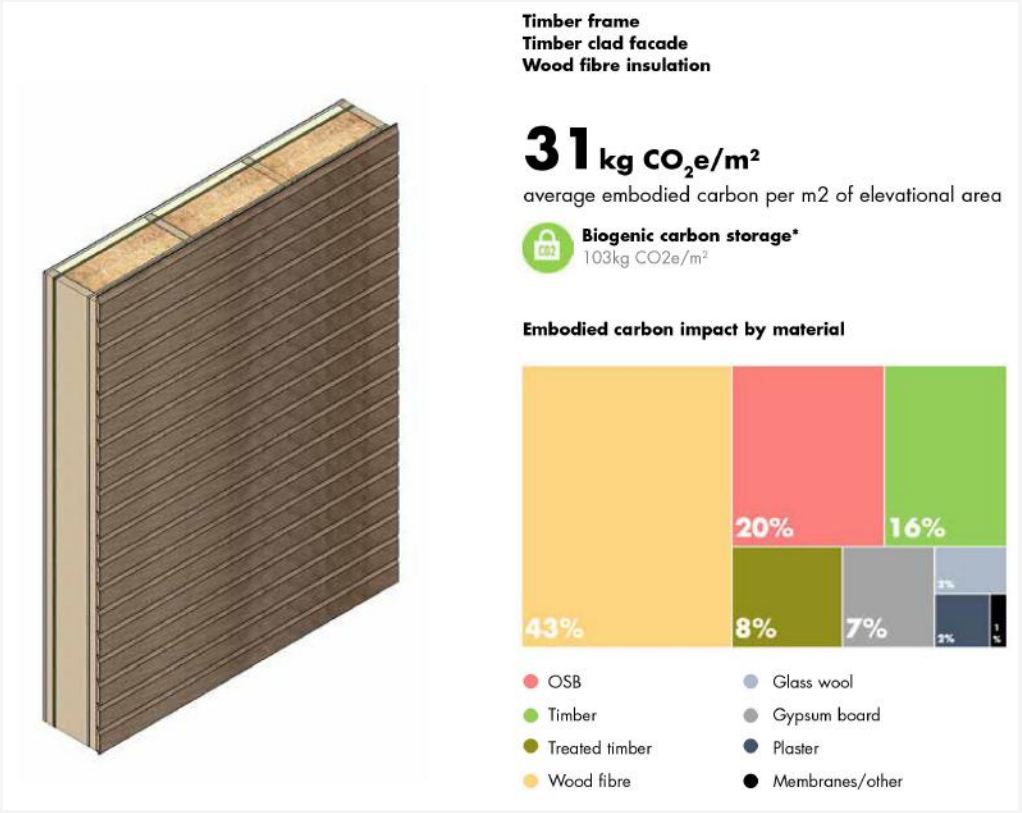
# Upfront material choices

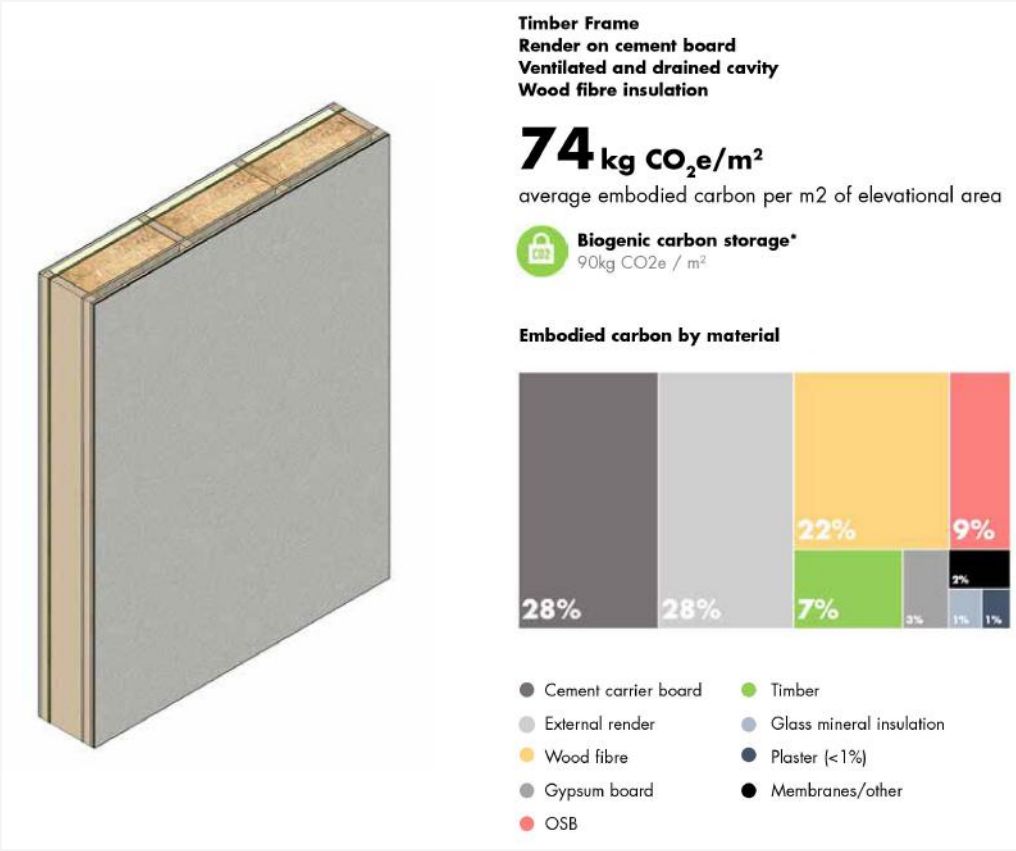
| Element | Base Specification | kg $CO_2$e/m² | Improved Specification | kg $CO_2$e/m² | Reduction |
|---|---|---|---|---|---|
| Foundations | OPC concrete | 135 | 40% PFA concrete | 115 | 15% |
| Upper floors | | 10 | | 10 | |
| Roof | Clay roof tiles | 40 | Concrete roof tiles | 25 | 37.5% |
| External walls | Brick and block | 135 | Reclaimed brick<br>PFA in blocks | 65 | 52% |
| Windows & ex doors | u-PVC | 43 | Alu-clad timber | 38 | 11.6% |
| Internal walls | | 13 | | 13 | |
| Internal doors & finishes | | 59 | | 59 | |
| M&E | | 40 | | 40 | |
| External works | Asphalt (virgin) | 125 | Asphalt<br>(50% recycled planings) | 120 | 4% |
| Reduced waste | | 0 | 50% reduction in waste* | -35 | 50% |
| **TOTAL** | | **600** | | **450** | **25%** |

*Additional production due to wastage should be considered in A5 but has been considered in A1-A3 in this study.

*Figure 20*
*Approaches to reducing Upfront Carbon for a typical house*

# Gwynfaen houses – Stride Treglown




https://media.stridetreglown.com/wp-content/uploads/2021/03/23114044/152858_LCA-Case-Study_Gwynfaen-final.pdf

# Elemental analysis


*Figure 35*
*Examples of facades with similar aesthetics and functionality but very different embodied carbon, from H\B:ERT presentation, 2019*

# Carbon Storage


*Figure 13*
*The benefits of carbon storage for a house (Timber framed timber clad house designed for Gwynfaen. Data from Stride Treglown (2020)*

# Timber

- Biggest impact is from use of fossil fuels in kilning and processing
- Big variation in use of fossil fuels
- Transport can be relevant
- Sustainable timber (e.g. FSC, PEFC) sequesters “biogenic” carbon
- Sustainable timber used in buildings stores carbon out the atmosphere
- Recycling and reusing timber keeps this carbon out the atmosphere for longer
- Using timber for energy emits $CO_2$ but offsets typical energy production

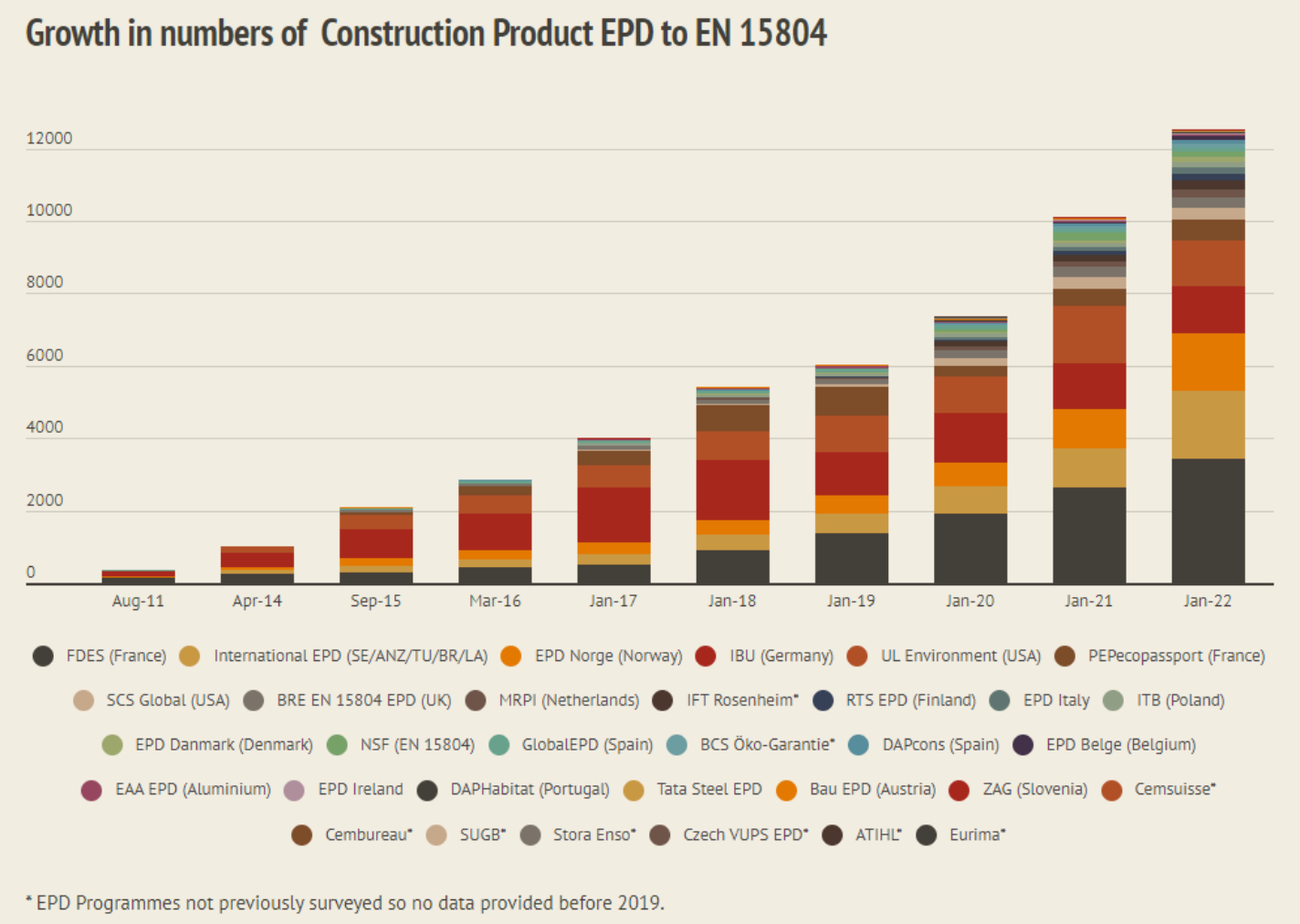
# Environmental Product Declarations


LCA
Life Cycle Assessment

PCR
Product Category Rules

EPD Environmental
Product Declaration

# Now over 10,000 EPDs




https://constructionlca.co.uk/

# ASBP Briefing Papers

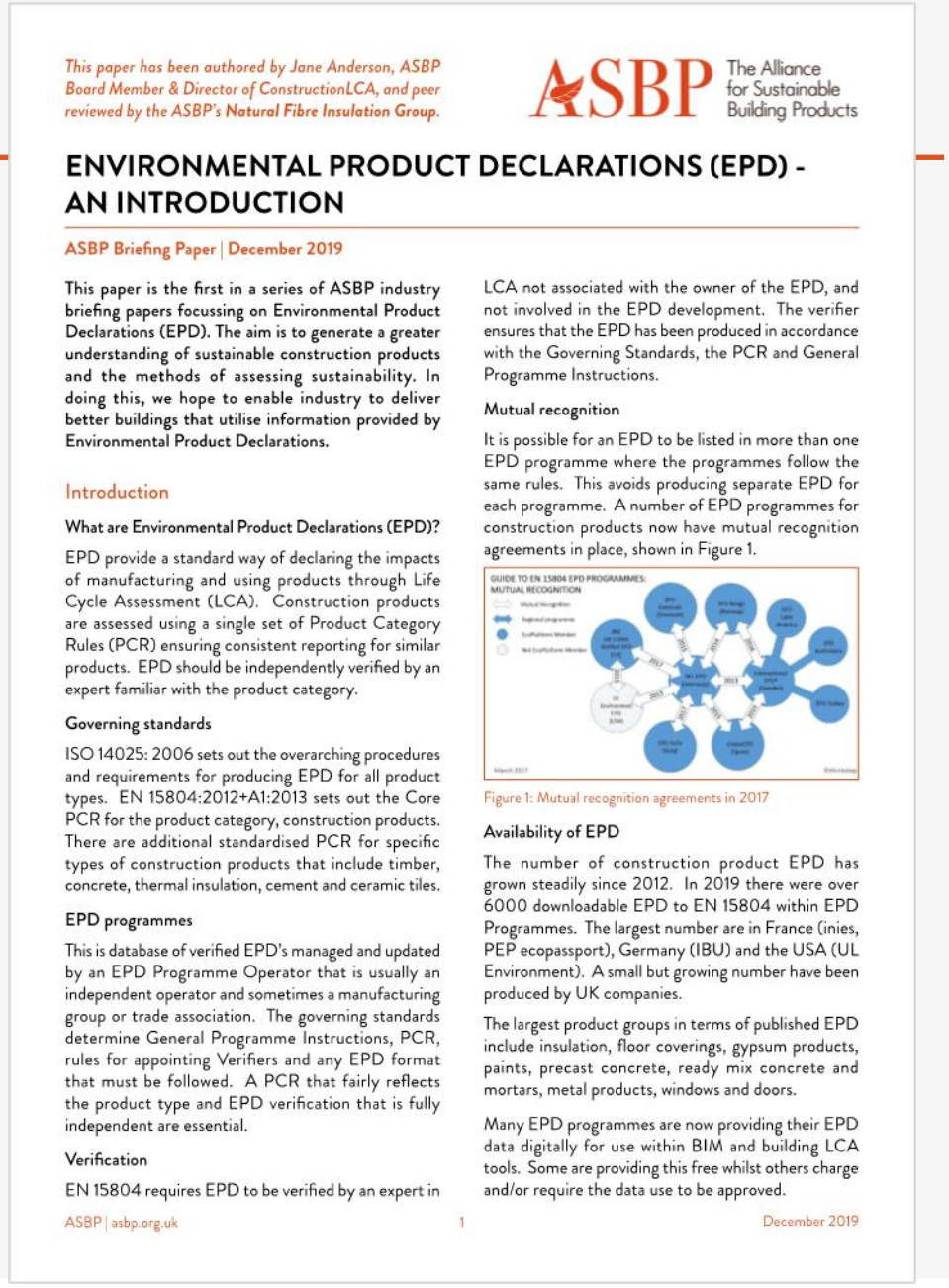
EPD – An Introduction

EPD – How to Use

EPD – Where to Find Them

EPDs - for ASBP Members

www.asbp.org.uk/resources



*This paper has been authored by Jane Anderson, ASBP Board Member & Director of ConstructionLCA, and peer reviewed by the ASBP's Natural Fibre Insulation Group.*

ASBP The Alliance for Sustainable Building Products

## ENVIRONMENTAL PRODUCT DECLARATIONS (EPD) - AN INTRODUCTION

ASBP Briefing Paper | December 2019

**This paper is the first in a series of ASBP industry briefing papers focussing on Environmental Product Declarations (EPD). The aim is to generate a greater understanding of sustainable construction products and the methods of assessing sustainability. In doing this, we hope to enable industry to deliver better buildings that utilise information provided by Environmental Product Declarations.**

### Introduction

**What are Environmental Product Declarations (EPD)?**

EPD provide a standard way of declaring the impacts of manufacturing and using products through Life Cycle Assessment (LCA). Construction products are assessed using a single set of Product Category Rules (PCR) ensuring consistent reporting for similar products. EPD should be independently verified by an expert familiar with the product category.

**Governing standards**

ISO 14025: 2006 sets out the overarching procedures and requirements for producing EPD for all product types. EN 15804:2012+A1:2013 sets out the Core PCR for the product category, construction products. There are additional standardised PCR for specific types of construction products that include timber, concrete, thermal insulation, cement and ceramic tiles.

**EPD programmes**

This is database of verified EPD's managed and updated by an EPD Programme Operator that is usually an independent operator and sometimes a manufacturing group or trade association. The governing standards determine General Programme Instructions, PCR, rules for appointing Verifiers and any EPD format that must be followed. A PCR that fairly reflects the product type and EPD verification that is fully independent are essential.

**Verification**

EN 15804 requires EPD to be verified by an expert in LCA not associated with the owner of the EPD, and not involved in the EPD development. The verifier ensures that the EPD has been produced in accordance with the Governing Standards, the PCR and General Programme Instructions.

**Mutual recognition**

It is possible for an EPD to be listed in more than one EPD programme where the programmes follow the same rules. This avoids producing separate EPD for each programme. A number of EPD programmes for construction products now have mutual recognition agreements in place, shown in Figure 1.




Figure 1: Mutual recognition agreements in 2017

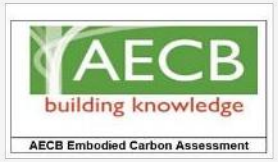
**Availability of EPD**

The number of construction product EPD has grown steadily since 2012. In 2019 there were over 6000 downloadable EPD to EN 15804 within EPD Programmes. The largest number are in France (inies, PEP ecopassport), Germany (IBU) and the USA (UL Environment). A small but growing number have been produced by UK companies.

The largest product groups in terms of published EPD include insulation, floor coverings, gypsum products, paints, precast concrete, ready mix concrete and mortars, metal products, windows and doors.

Many EPD programmes are now providing their EPD data digitally for use within BIM and building LCA tools. Some are providing this free whilst others charge and/or require the data use to be approved.

# Tools for measurement















| Tool name | Carbon Designer by OneClickLCA | ECCOlab by Rapiere Software Ltd | eToolLCD by eTool | H\B:ERT by Hawkins Brown | PHRibbon by Tim Martel for AECB | One Click LCA Planetary | One Click LCA |
|---|---|---|---|---|---|---|---|
| Cost for users? | Yes, costs on request | Starts at £27pm | Between $50 USD and $500 USD per month | Free beta version<br>ICE database | £105 + Passivhaus Planning Package (PHPP) | Free in UK through UKGBC partnership | Yes, costs on request[73] |
| Where does it source its data for materials? | One Click LCA Database<br>- Generic Data (EN15804 compliant and 3rd party verified)<br>EPD data | EPD data<br>ICE database | - Default eTool Datasets (ecoinvent)<br>- EPD data<br>- BRE IMPACT* | Users can enter data from EPDs etc. | EPD data<br>ICE database | Only includes ten most important construction materials and selected essential assemblies. Global generic (average) data, as well as manufacturer specific, 3rd party verified EPDs | One Click LCA Database<br>- Generic Data (EN15804 compliant and 3rd party verified)<br>- EPD data<br>- BRE IMPACT* |
| Life cycle modules included? | A1-A5, B1- B7, C1-C4 + Module D<br>Users can add A5, B1, B3, B6, B7. | A1-A4, B4, B6, C4<br>Further stages in development. | A1-A5, B1- B7, C1-4 + Module D | A1-A5, B4, C1-C4 | A1-A5, B1-B7, C1-C4 + Module D<br>Users can add B3 and B5. | A1-A3 | A1-A5, B1, B3- B7, C1- C4 + Module D |
| Which environmental indicators does it include? | Embodied Carbon | Embodied Carbon | Embodied Carbon EN15804+A1<br>Material Efficiency Metrics | Embodied Carbon | Embodied Carbon | Embodied Carbon | Embodied Carbon<br>BREEAM LCA categories EN 15804+A1 and A2 |
| Where is scenario data sourced from? | One Click LCA Database which has UK localised data or User input | RICS Professional Statement, CIBSE, Insurance data, EPDs. Assumes incineration at End of Life.<br>User input for Transport<br>Plugin for Sketchup<br>IFC from Revit | Industry average eTool defaults<br>User input | RICS Professional Statement | RICS Professional Statement<br>EPD data | n/a | Industry average localised One Click LCA Database<br>EPD data<br>User input |
| Links with CAD/BIM tools and other tools | Can upgrade to full OneClickLCA tool | Can import .gbxml | Revit<br>Excel | Must use Revit 2017, 2018, 2019 as a Revit Plugin | Must be used in Passivhaus Planning Package (PHPP)* | No | REVIT, IES-VE, IFC etc see website |
| Results export? | Excel | Excel, Word | Excel, Word, PDF | Excel, PDF | Excel | No | Excel, Word |
| Additional features | Add-ons: Whole life costing, Circularity Statements, LCA for BREEEAM | Included: Whole life costing, Energy Plus energy modeller, BREEAM Credits Report | Included: Life Cycle Costing | | Included: PHRibbon functionality<br>Add-on: Costing module gives capital and 30-year heating cost. | No | Add-ons: LCC, Building circularity, Carbon Designer, Carbon benchmarking, EPD Generator |
| What help is available to users? | Customer support centre / Email / Helpfiles / Online tutorials / Webchat | Email / Manual / Online tutorials / Webchat | Email / Online Training / Online Tutorials, | Email / Online Training / Online Tutorials, | Manual / Online tutorials / Online monthly Q&A / Telephone | Online resources only | Customer support centre / Email / Helpfiles / Online tutorials/ Webchat |
| Checking or auditing service? | Yes on request. | On agreement | Third Party Verification by eTool is included. | | Yes on request. | No | Yes on request. |

# Targets and benchmarks

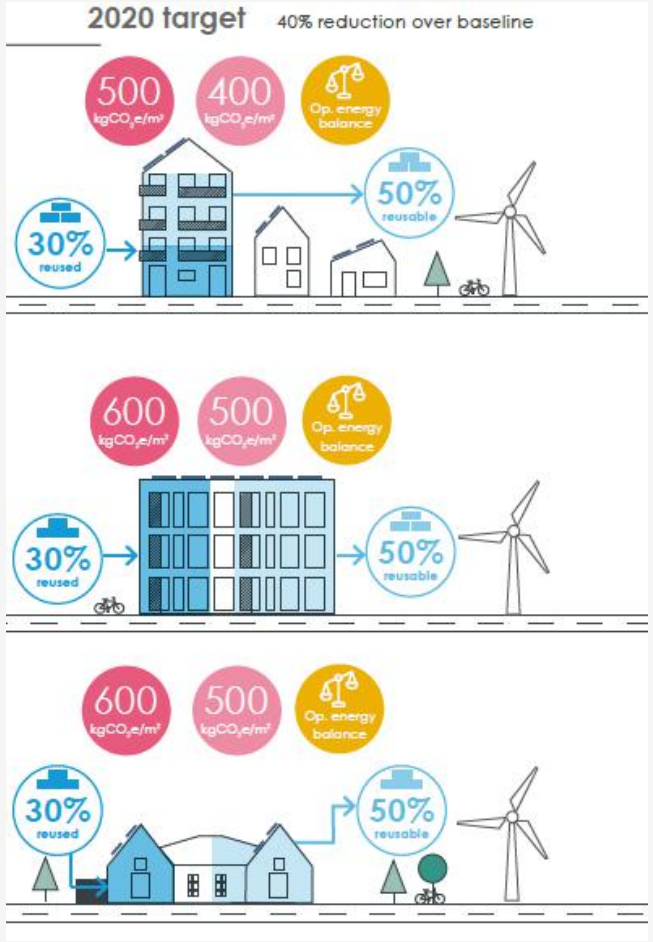
| Woodknowledge WalesTargets | Low-Rise Housing | Medium and High-Rise Housing |
|---|---|---|
| Upfront Carbon | 300 kg $CO_2e/m^2$ | 450 kg $CO_2e/m^2$ |
| Embodied Carbon | 400 kg $CO_2e/m^2$ | 750 kg $CO_2e/m^2$ |

RIBA 2030 Climate Challenge target metrics for domestic buildings

| RIBA Sustainable Outcome Metrics | Current Benchmarks | 2020 Targets | 2025 Targets | 2030 Targets |
|---|---|---|---|---|
| Operational Energy kWh/m²/y | 146 kWh/m² /y (Ofgem benchmark) | <105 kWh/m²/y | <70 kWh/m²/y | <0 to 35 kWh/m²/y |
| Embodied Carbon $kgCO_2e/m^2$ | 1000 $kgCO_2e/m^2$ (M4i benchmark) | <600 $kgCO_2e/m^2$ | <450 $kgCO_2e/m^2$ | <300 $kgCO_2e/m^2$ |

RIBA 2030 Climate Challenge target metrics for non-domestic buildings

| RIBA Sustainable Outcome Metrics | Current Benchmarks | 2020 Targets | 2025 Targets | 2030 Targets |
|---|---|---|---|---|
| Operational Energy kWh/m²/y | 225 kWh/m²/y DEC D rated (CIBSE TM46 benchmark) | <170 kWh/m²/y DEC C rating | <110 kWh/m²/y DEC B rating | <0 to 55 kWh/m²/y DEC A rating |
| Embodied Carbon $kgCO_2e/m^2$ | 1100 $kgCO_2e/m^2$ (M4i benchmark) | <800 $kgCO_2e/m^2$ | <650 $kgCO_2e/m^2$ | <500 $kgCO_2e/m^2$ |



# Built Environment Carbon Database consultation

- The Built Environment Carbon Database (BECD) for the UK is envisioned to become the main source of carbon estimating and benchmarking for the UK construction sector and a practical instrument to support the decarbonisation of the built environment.
- The database will be developed to collect and supply product data and entity level data to the industry through its own portal and by interacting with existing databases and software solutions.
- Consultation survey open until 30th June - https://www.becd.co.uk.

BECD

# EAC Committee

*“the single most significant policy the Government could introduce is a mandatory requirement to undertake whole-life carbon assessments for buildings. This requirement should be set within building regulations and the planning system. Following introduction of whole-life carbon assessments, the Government should develop progressively ratcheting carbon targets for buildings, to match the pathway to net zero. A clear timeline for introducing this should be set by the end of 2022. This policy will incentivise greater retrofitting, the development and use of low-carbon materials, and investment in low-carbon construction skills”.*

https://publications.parliament.uk/pa/cm5803/cmselect/cmenvaud/103/summary.html

# Circular economy

- Goes beyond resource efficiency, reuse, recycling
- Increasing the **productivity** of materials, products and components by doing the same or more with less
- Maintaining or increasing the **value** of materials, environmentally and economically
- **Thinking in systems** by studying the flows of material through industrialised systems, understanding the links, how they influence each other and the consequences, enabling closed-loop processes where waste serves as an input
- **Eliminating waste** by defining materials as either **technical** or **biological** nutrients enabling them to be within material loops

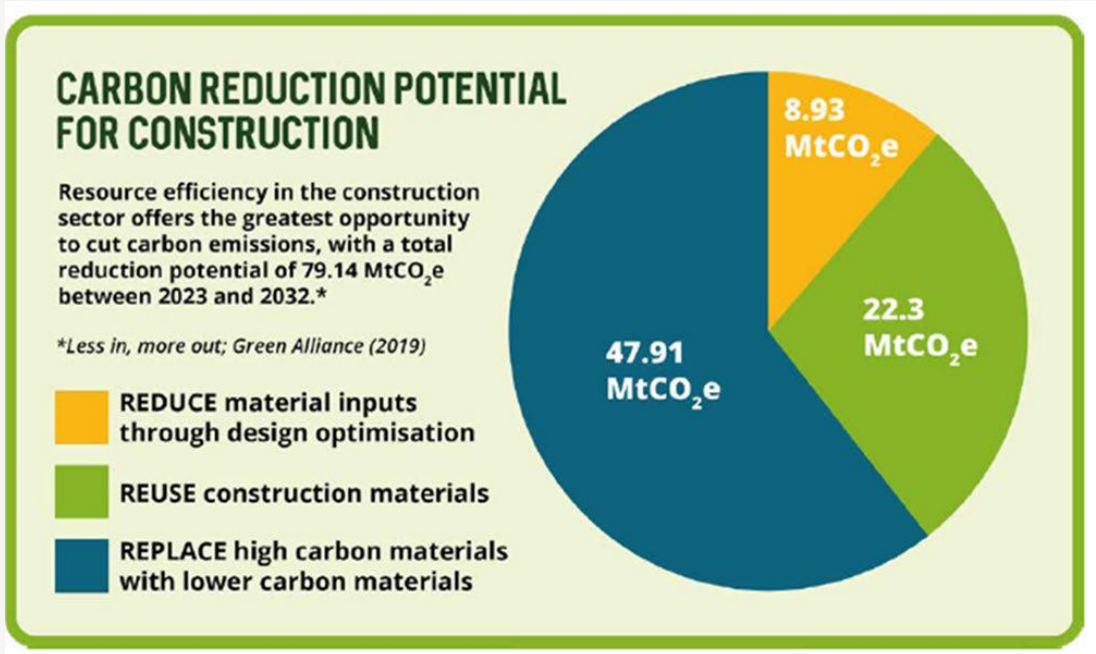
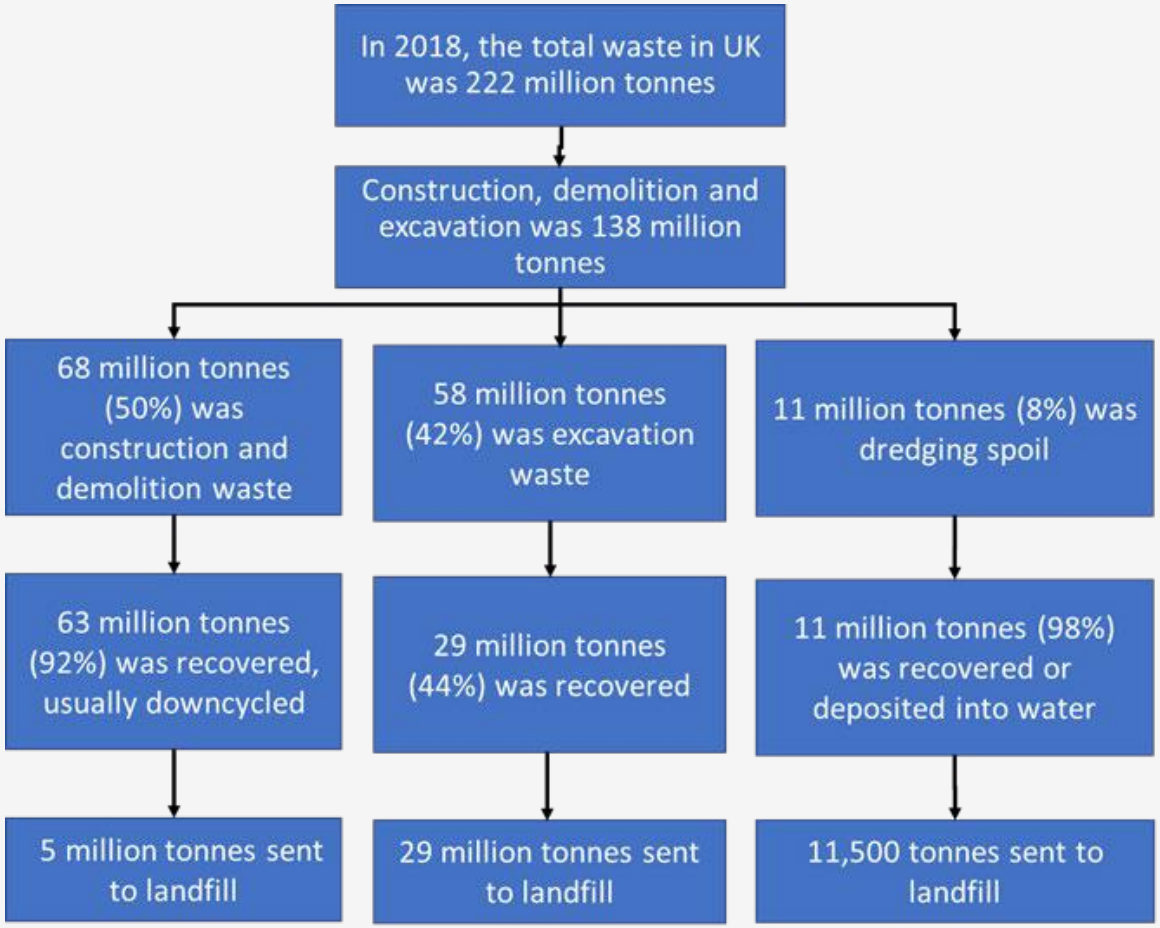


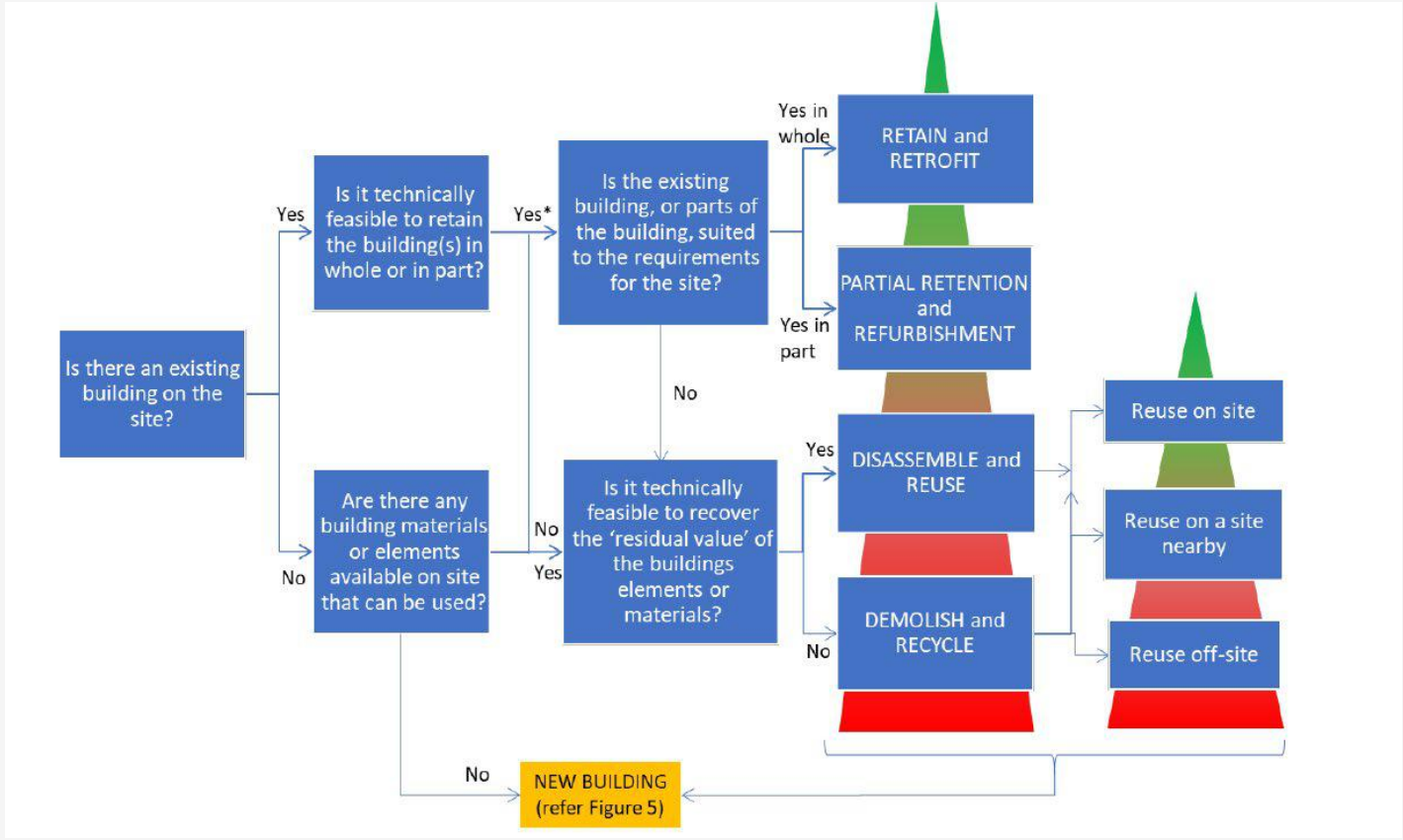

*Figure 5*
*Opportunities from increasing resource efficiency in construction*

# Construction, demolition and excavation waste

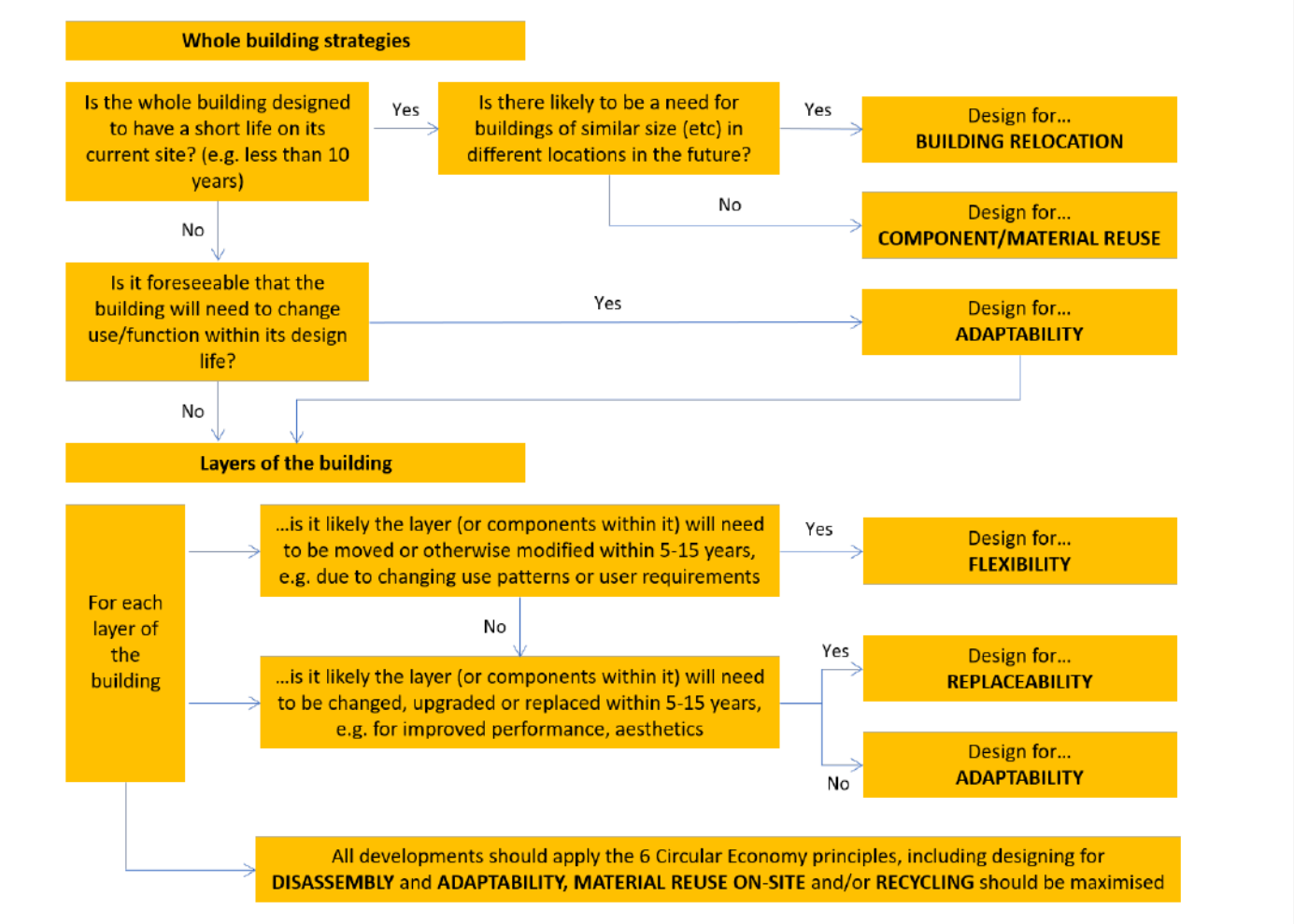


# Refurbishment v new build

RetroFirst



# Whole building strategy (new)



# There are lots of opportunities…

| Design | Manufacture and supply | Construction | In use | End of life |
|---|---|---|---|---|
| Design for deconstruction<br>Design for adaptability and flexibility<br>Design for standardisation<br>Designing out waste<br>Modularity<br>Specifying reclaimed materials<br>Specifying recycled materials | Ecodesign principles<br>Using less materials/ optimising material use<br>Using less hazardous materials<br>Increasing the life span<br>Designing for disassembly<br>Designing for standardisation<br>Using more secondary materials<br>Take back schemes<br>Reverse logistics | Minimise construction waste<br>Procuring reused materials<br>Procuring recycled materials<br>Off site construction | Minimise waste<br>Minimal maintenance<br>Easy repair and upgrade<br>Adaptability<br>Flexibility<br>Utilising assets<br>Sharing space | Deconstruction<br>Selective demolition<br>Reuse of products and components<br>Closed loop recycling<br>Open loop recycling |
| Management of information including metrics and datasets; new business models | | | | |

# Circularity examples

# Healthy Buildings Conference

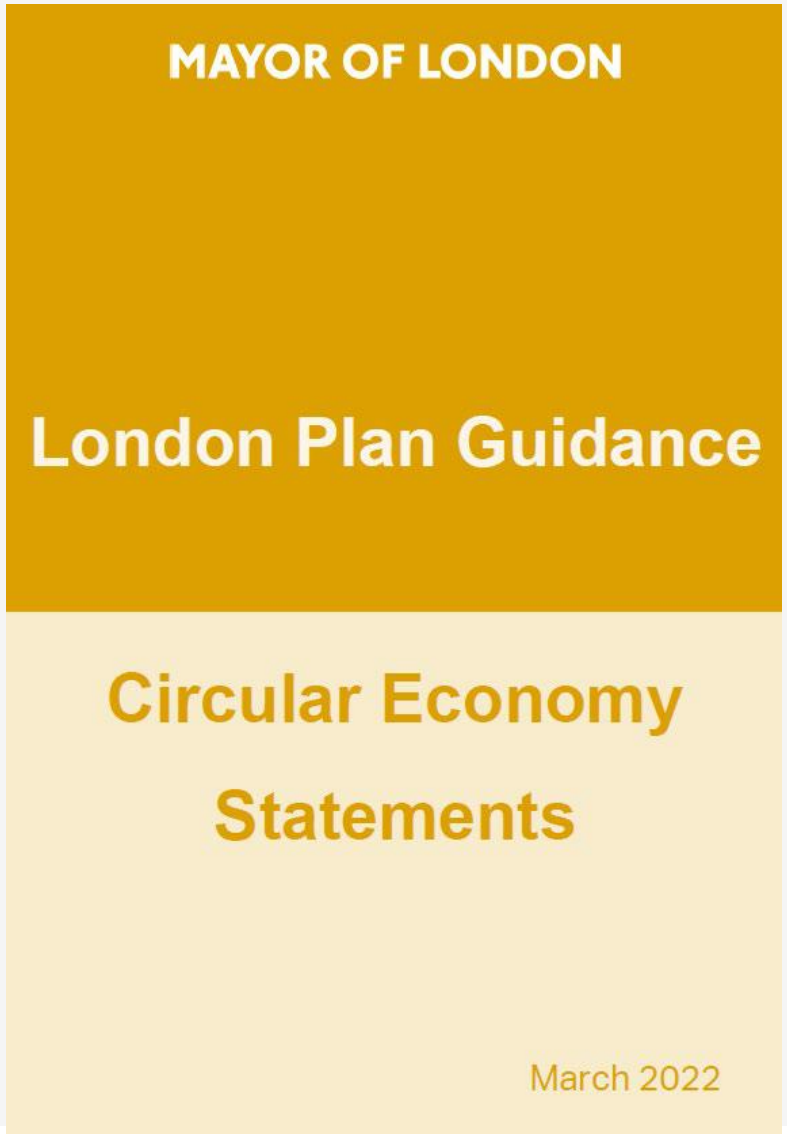
## 2022 event is the 6th annual ASBP Healthy Buildings Conference.

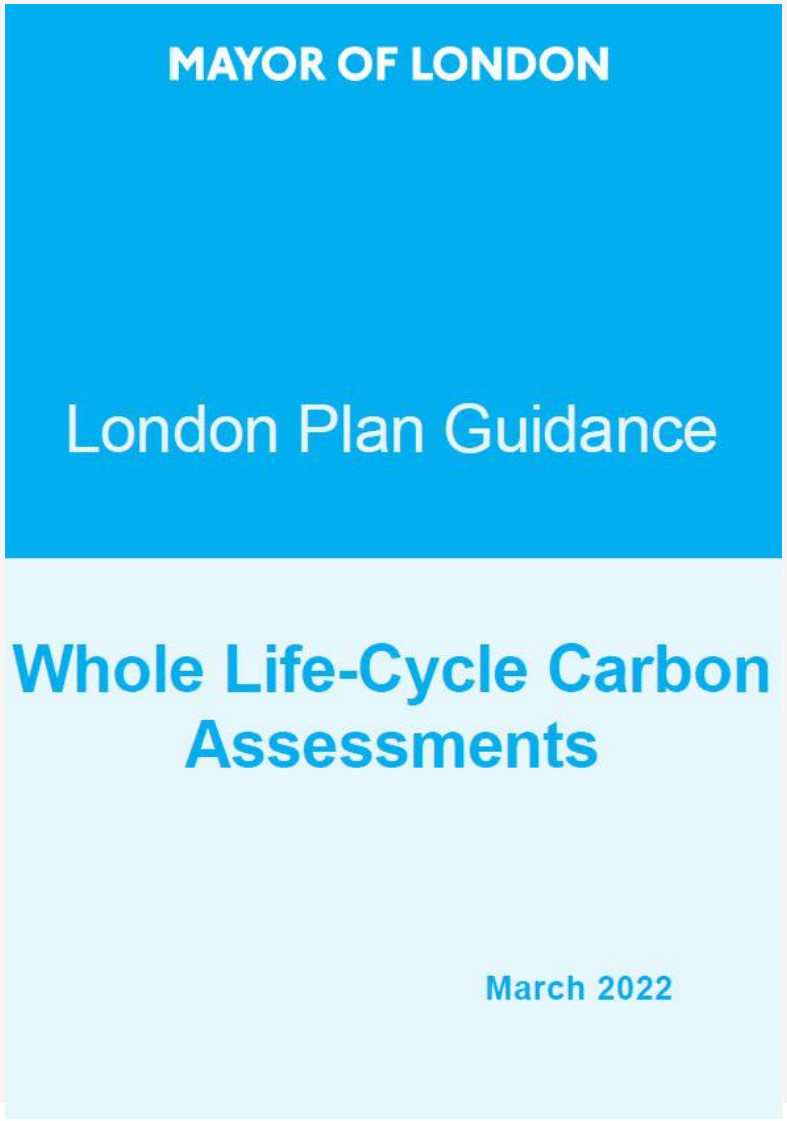
**Joined by a number of speakers at the forefront of their professions, with talks on indoor air quality and healthy product research, important new health & wellbeing standards, neurodiversity and cutting-edge case studies.**

**Previous conferences have explored plastics in construction, external-internal air transmission, healthy building products, fire safety, embodied carbon and more!**



# Planning examples



# UNECE Centre of Excellence status

- At COP26, the UNECE (United Nations Economic Commission for Europe) recognised the Sustainable Development Foundation (SDF) as an International Centre of Excellence (ICE) for High Performance Buildings.
- One of just ten such centres in the world, the SDF is tackling the climate and ecological emergency by transforming how we design, build, operate and maintain buildings to make them fit for the future, now.
- ASBP was originally set up by the SDF in 2011 and will be a key partner in the International Centre of Excellence as part of the SDF Alliance, which includes progressive sustainability organisations such as Passivhaus Trust, Good Homes Alliance and Building Performance Network.

# Anti-Greenwash Charter

- ASBP and specialist communications agency Gusto have partnered to launch the Anti-Greenwash Charter in response to the alarming finding by the Competitions and Markets Authority (CMA) that up to 40% of green claims made online in 2021 could be misleading.
- Signing the Charter enables organisations from the sector to make a public commitment to uphold these standards and eradicate unsubstantiated ‘green claims’ from their marketing and communication campaigns, whilst also participating in a learning programme exploring how to promote their business more responsibly.
- To ensure the Charter’s standards are upheld, signatories will be subject to periodic reviews of their marketing practices, carried out by Gusto.


**Let’s Stamp Out Greenwashing!**

# ASBP Awards 2023

**The 5th annual ASBP Awards return for 2022-23 and are set to be our biggest yet, with recognition given to exemplary sustainable building projects, innovative products and forward-thinking initiatives.**


**Last years' winners**

ASBP AWARDS

CALL FOR SPONSORS

**Call for sponsors! Packages from £1k. Contact Richard@asbp.org.uk for more information.**

# Thank you

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**Wednesday 29th June 2022; 12:00 - 12:45**

## The Retrofit Opportunity – Why retrofitting buildings is crucial to meet 2050 targets

**Wednesday 6th July 2022; 10:00 - 11:30**

## How to retrofit walls internally with natural insulation

**Wednesday 13th July 2022; 10:00 - 11:30**

## How to retrofit walls externally with natural insulation