Fourth Door Research

Research at the edge of Nature and Technology

Would you like to be part of Fourth Door's **Forest 4.0 Balancer** project?

As an initial project for this element of the relaunched **Annular** site the **Forest 4.0 Balancer** project is set to explore relationships between forests, carbon footprints and construction.

Below is an overview of London city's Leadenhall (the Cheese-grater) building's embodied emissions. It includes the total figure of embodied emissions which comes to 92,210 metric tonnes.

I am inviting a spectrum of people involved in sustainability, timber, building and forests to speculate on what they could do construction-wise with 92,210 metric tonnes, given the opportunity. For instance…

- How many affordable - or non-affordable - houses could you build?
- How many schools, health and community centres could you design and build?
- What scale and kind of forest might you grow?
- What would be the most exciting inspirational kind of eco-development you could design and build for 92, 210 tons?
- How many years of work carbon footprint would the amount cover - when would you and your team use your 92,210 tonnes up - 2035? Earlier/later.

Or compose your own question/s and then answer it/them.

Usual carbon accounting methodologies can be used, ie, those use by architects, engineers and promotional organisations, (eg Wood for Good, Eurban etc.) If you want to do your own accounting, these two figures are starting points.

- 900kg C02 in a tree = 1 m^3
- 750kg of CO2 stored = 1 m CLT m^3(after the production process.) This figure can also be used for other engineered timber.

We are not looking for responses to be scientifically absolute and rigorous. Rather the point that is being conveyed is the serious difference in carbon footprints if natural building, particularly timber, are used, compared to conventional fossil fuel materials.

If you want to explore the complexity of forest, wood and tree carbon footprinting, see this archived *Forest Research Group* explainer document **here**, this *Trees for the Future* discussion document **here**, and a reader-friendly version walking one through the process of carbon measuring trees is on *Geogy* **here**.

Fourth Door Research
P.O.Box 2662 Lewes Sussex Britain BN7 1RQ Telephone (01273) 473501
e-mail fourthdoor@pavilion.co.uk www.fourthdoor.co.uk

The Leadenhall Building

The Leadenhall building embodied energy is calculated to amount to 92, 210 carbon tonnes

Here we have converted the breakdown of the Leadenhall buildings embodied energy by materials etc, into the amounts to the square meterage of Arctic Sea ice loss.

Embodied material	% Carbon Tonnes	Arctic Sea Ice sq meterage loss
Steel	37% = 34, 117.7 ct	102,353.1
Cement	23% = 21, 208.3 ct	63, 624.9
Internal Walls & Services	13% = 11, 987.3 ct	35,961.9
Façade & External works	11% = 10, 143.1 ct	30,429.3
On site energy use -	7% = 6454.7 ct	19,364.1
Transport of materials	6% = 5532.6 ct	16,597.8
Wastage	3% = 2766.3 ct	8,298.9
Total	100% = 92,210 ct	276,630. 0

The Leadenhall Building's embodied energy footprint equals 276, 630 square metres of Arctic Sea Ice lost.

The Forest 4.0 project is looking to frame these amounts in the forest, trees and timber context though reversing the calculations to show and highlight what could be made, grown, or created from 92,210 carbon tonnes, in place, speculatively at least, of the Leadenhall building.

We are happy to assist in preparing material and responding to questions etc.

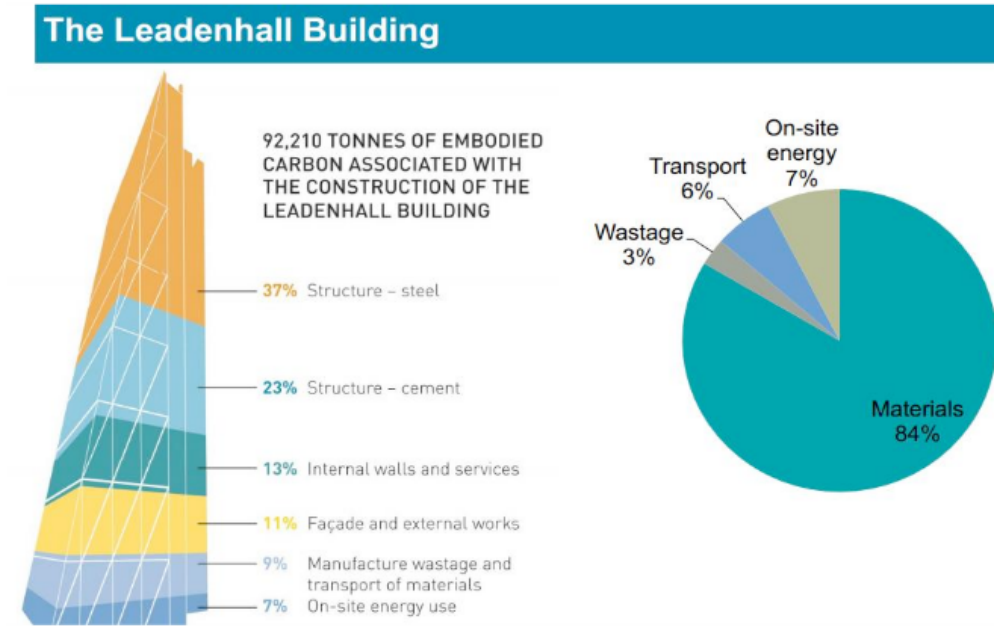

Figure 3: Proportions of embodied carbon in the different elements of the Leadenhall Building (courtesy of British Land)

Further information on Fourth Door Research and Oliver Lowenstein

Fourth Door Research

Fourth Door Research is a project-based research network, generally working in collaboration with a variety of partners. In addition *Fourth Door Research* provides one-off consultancy and research. It is co-ordinated by writer, editor and green theoretician, Oliver Lowenstein (see below.)

At present *Fourth Door Research's* principal three projects are *The Cycle Stations Project* – sustainable architecture, design and transport project focused on cycle networks; *Arborescence* – tree focused distributed new media project; *Roots Architecture* - humanitarian Architecture workshops and events project running annually at the WOMAD world music festival. *Fourth Door Research* has significant experience in research and consultancy across a wide spectrum of expertise.

Fourth Door Research has conceived, developed, design led and curated a significant number of exhibitions over the last decade, including *Building Biographies: Scottish Contemporary Architecture* at the Lighthouse, Glasgow 2008, *Riding On Empty: Transport infrastructure after the end of Oil*, CCANW, and touring, and several exhibitions with and for Making Lewes, including *The Bio-Base*, *ReMake, ReModel* and *New Vernaculars for a New Century.*

Oliver Lowenstein

Oliver Lowenstein is a writer and the editor of the award-winning cultural review magazine, *Fourth Door Review*. He is an established specialist writer on sustainable, timber and regionalist architecture, writing both popular and technical pieces for among others, *Financial Times, The Guardian, Blueprint, the AJ, the Architectural Review* and is the UK architectural correspondent for *Detail Green*. He works as lead partner in the research network, Fourth Door Research, on the boundary line between actionist, ideas pollinator, and imaginer. As such Lowenstein has catalysed a number of concept-based projects, including the *Cycle Stations Project* and *Roots Architecture*.

www.fourthdoor.co.uk
editorial@fourthdoor.org
PO Box 2632, Lewes, Sussex, BN7 2XZ