

Responsible Life Cycle Analysis of CLT vs non-biological materials



Life Cycle Analysis



Phase 5
**Demolition to
point of reuse**



Phase 1
Production



Phase 4
**Replacement,
Refurbishment,
Retrofit**



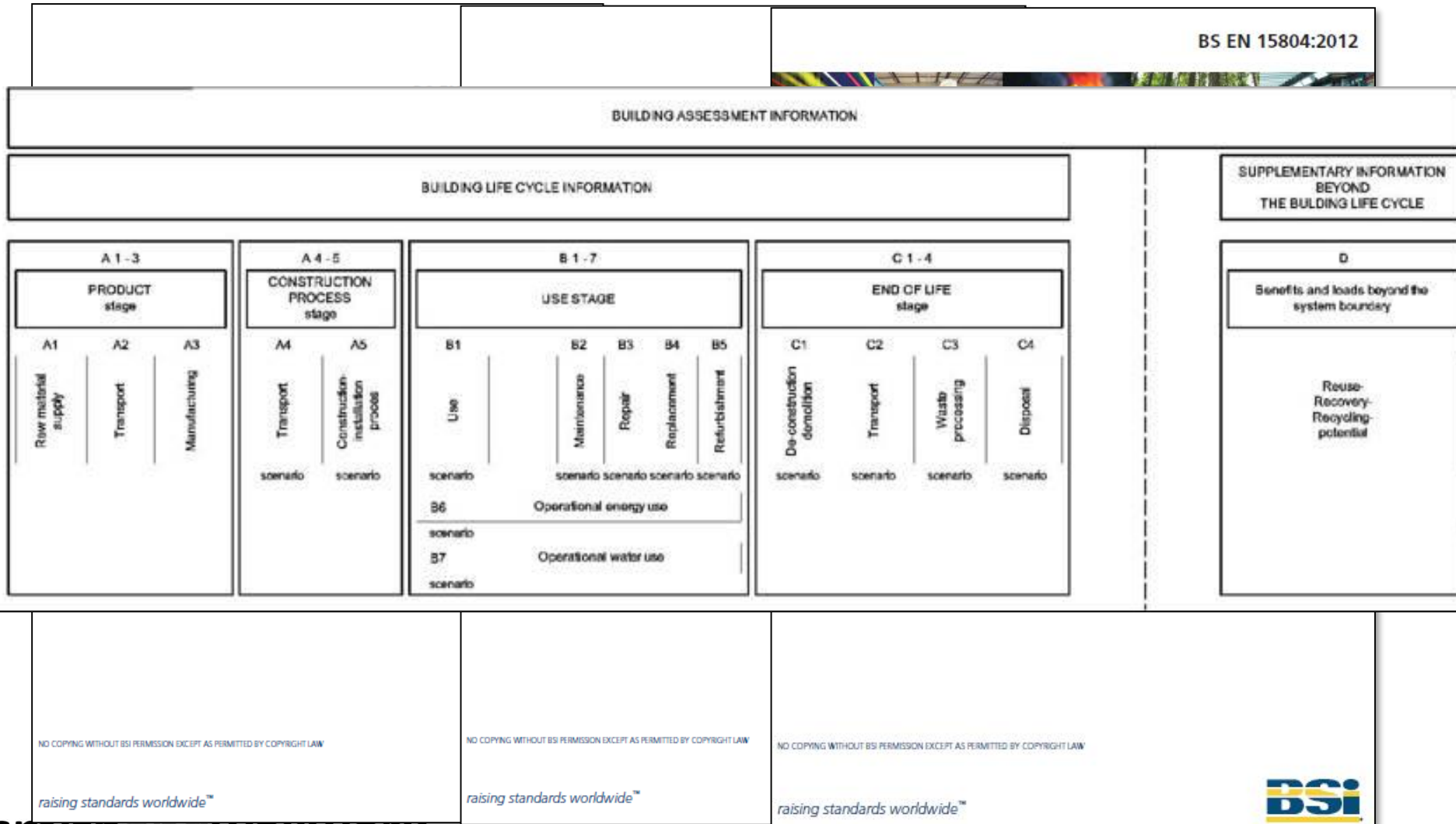
Phase 3
**Construction
footprint**



Phase 2
**Transport to
site**

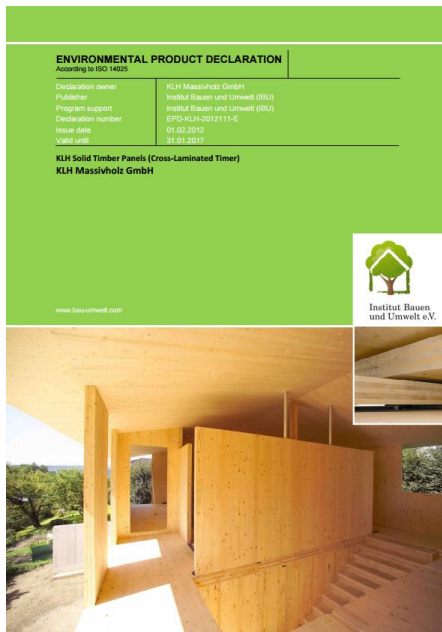
**Energy, CO₂ and
other impacts**

Life Cycle Analysis: CEN/TC350 methodology





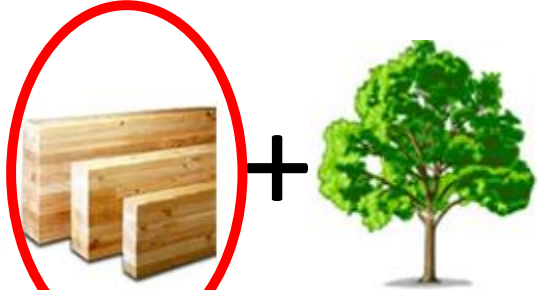
Environmental Product Declarations

Within the last 5 years...



Carbon and Timber: special relationship

Sequestration: Justifiable for sustainably managed forests

Before timber product manufacture	After timber product manufacture	After tree re-growth (~50yrs)
 <p>Carbon store: 1 unit</p>	 <p>Carbon store: 1 unit</p>	 <p>Carbon store: 2 units</p>

After timber product end-of-life?

End-of-Life for Timber Products



Recycled



Incinerated



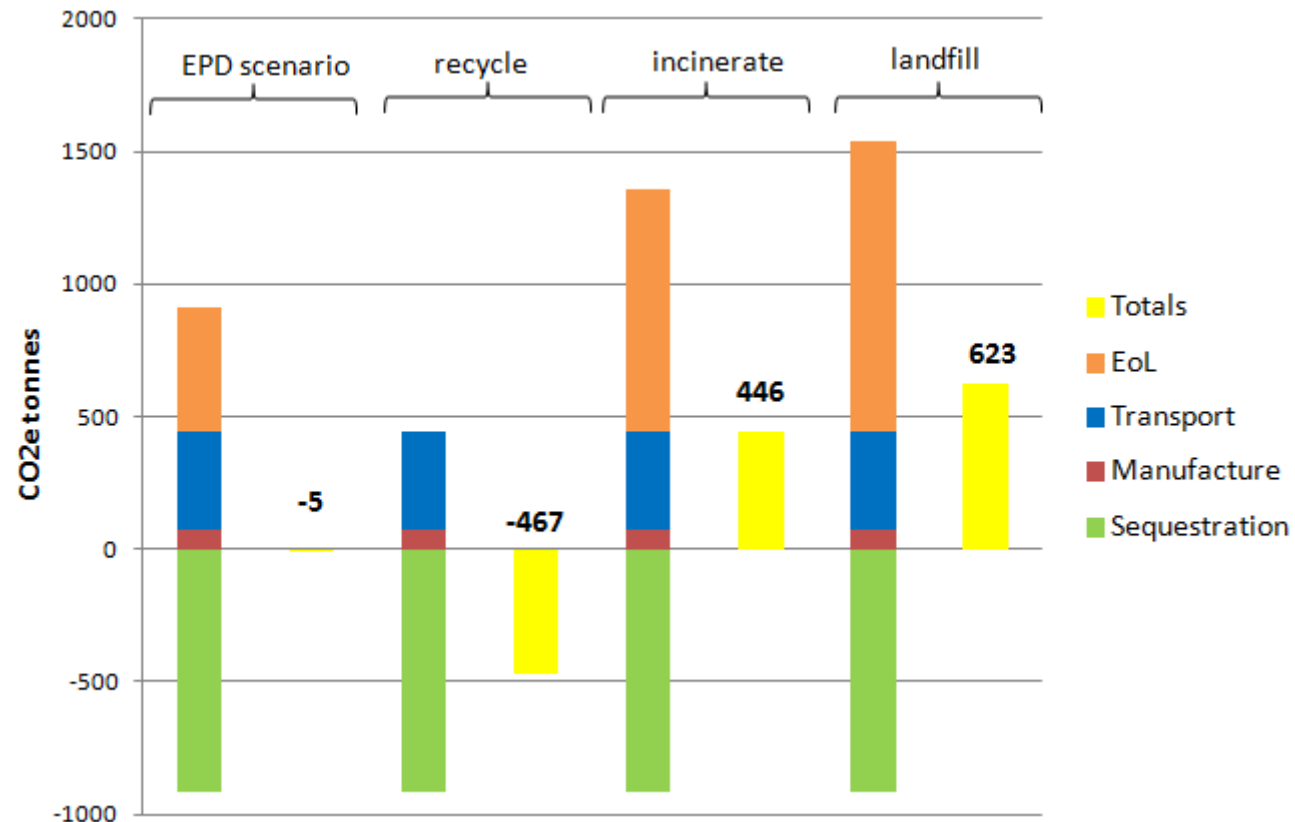
Landfilled

Different carbon impacts for each

Case Study: Comparing CO₂ impacts



Forte, Australia
1000m³ CLT

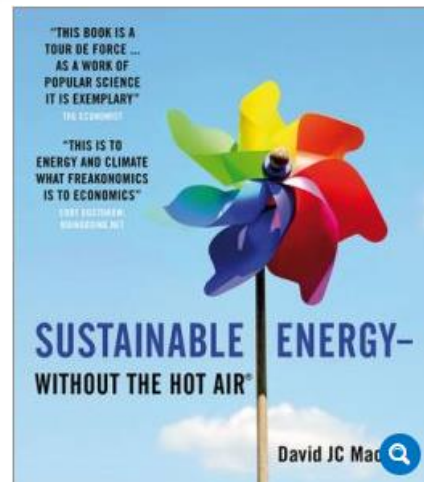
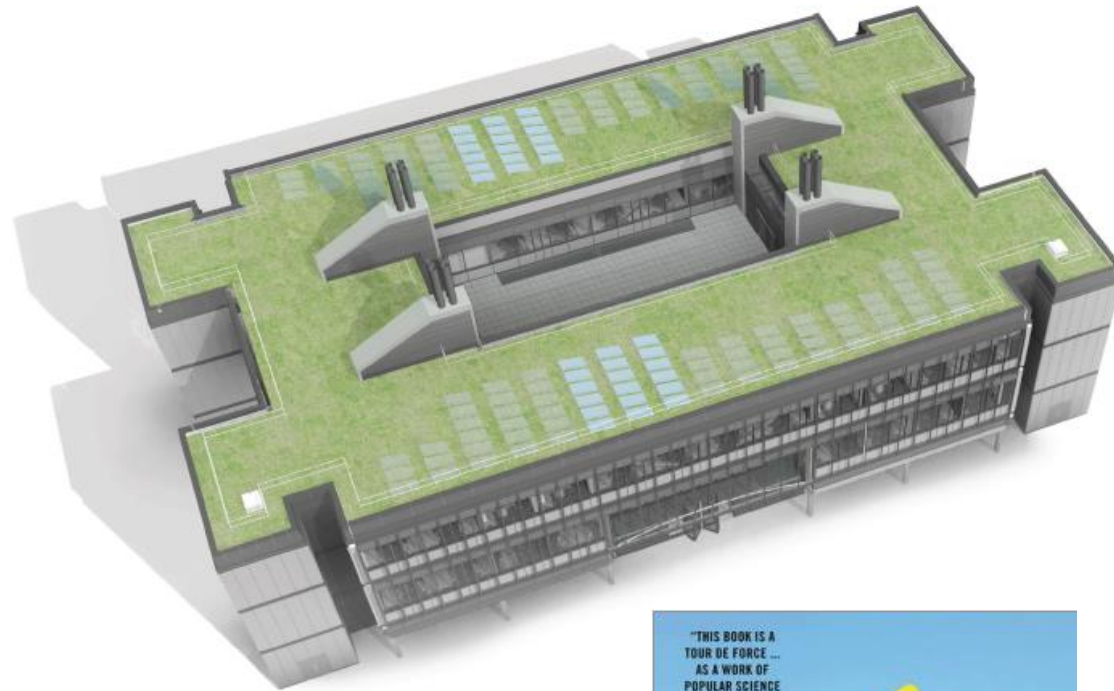


What about Energy?

Cambridge University
Engineering Department:
Civil Engineering Building

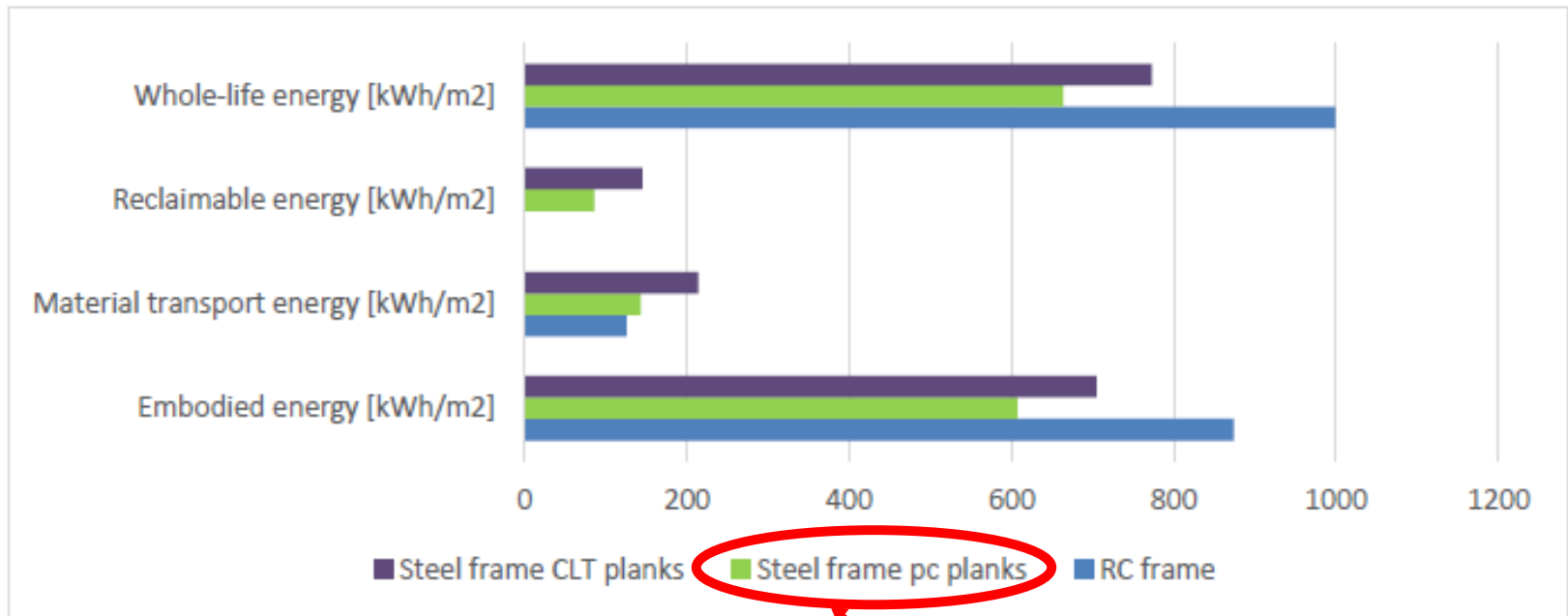
4300m³, 3 storey building

Client internal Energy Board
led sustainability drivers,
chaired by late Prof. David
MacKay, author and UK
Government Advisor



What about Energy?

- Frame analysis at scheme design: used Energy, not CO₂, for comparison



This scheme taken forward

Conclusions

To be 'Responsible', a Life Cycle Analysis of timber products must consider:

- Is the timber source (forest) sustainable?
- What is the likely End-of-Life scenario?
- Is energy a better indicator of impacts ('blind' to sequestration)?