

Good Quality building materials and systems

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Natural Building Technologies

The problem

What do we mean by good quality?

What does it refer to and who is it for?

The Context

- No proper data on or testing of building performance in homes for past 30 years
- No proper data or assessment of embodied impact
- Minimal research on health, comfort etc
- Minimal understanding of sustainable building materials or practice in the industry
- No clear definition of good quality
- No joined up thinking!

Difference in thermal performance of good building practice and bad

	Designed U value	Good practice	Bad practice	Difference designed to bad
Cavity full fill with mineral wool	0.22	0.22	0.40	80%
Partial cavity fill with rigid boards	0.21	0.24	0.99	370%

Source: Hens et al Belgium 2007

The Green Guide

- **Green Guide 2008 ratings**

- Building type > [Domestic](#) Category > [External Wall Construction](#) Sub-category > [Blockwork Cavity Wall](#) Element type > Brick, Stone & Block Cavity Wall

Element number Summary

rating [Brickwork outer leaf, insulation, aircrete blockwork inner leaf, cement mortar, plaster, paint 806170028](#) A+ [Brickwork outer leaf, insulation, aircrete blockwork inner leaf, cement mortar, plasterboard on battens, paint 806170615](#) A+ [Brickwork outer leaf, insulation, aircrete blockwork inner leaf, cement:lime mortar, plaster, paint 806170061](#) A+ [Brickwork outer leaf, insulation, aircrete blockwork inner leaf, cement mortar, plaster, paint 806170065](#) A+ [Brickwork outer leaf, insulation, cellular dense blockwork inner leaf, cement mortar, plaster, paint 806170091](#) A+ [Brickwork outer leaf, insulation, cellular dense blockwork inner leaf, cement mortar, plasterboard on battens, paint 806170090](#) A+ [Brickwork outer leaf, insulation, cellular dense blockwork inner leaf, cement:lime mortar, plaster, paint 806170092](#) A+ [Brickwork outer leaf, insulation, cellular dense blockwork inner leaf, cement:lime mortar, plasterboard on battens, paint 806170093](#) A+ [Brickwork outer leaf, insulation, dense solid blockwork inner leaf, cement mortar, plaster, paint 806170027](#) A+ [Brickwork outer leaf, insulation, dense solid blockwork inner leaf, cement mortar, plasterboard on battens, paint 806170033](#) A+ [Brickwork outer leaf, insulation, dense solid blockwork inner leaf, cement:lime mortar, plaster, paint 806170060](#) A+ [Brickwork outer leaf, insulation, dense solid blockwork inner leaf, cement:lime mortar, plasterboard on battens, paint 806170066](#) A+ [Brickwork outer leaf, insulation, lightweight solid blockwork inner leaf, cement mortar, plasterboard on battens, paint 806170616](#) A+ [Brickwork outer leaf, insulation, medium dense solid blockwork inner leaf, cement mortar, plaster, paint 806170046](#) A+ [Brickwork outer leaf, insulation, medium dense solid blockwork inner leaf, cement mortar, plasterboard on battens, paint 806170047](#) A+ [Brickwork outer leaf, insulation, medium dense solid blockwork inner leaf, cement:lime mortar, plaster, paint 806170084](#) A+ [Brickwork outer leaf, insulation, medium dense solid blockwork inner leaf, cement:lime mortar, plasterboard on battens, paint 806170087](#) A+ [Brickwork outer leaf, insulation, superlightweight solid blockwork inner leaf, cement mortar, plaster, paint 806170030](#) A+ [Brickwork outer leaf, insulation, superlightweight solid blockwork inner leaf, cement mortar, plasterboard on battens, paint 806170063](#) A+ [Brickwork outer leaf, insulation, superlightweight solid blockwork inner leaf, cement:lime mortar, plaster, paint 806170020](#) A+ [Brickwork outer leaf, insulation, superlightweight solid blockwork inner leaf, cement:lime mortar, plasterboard on battens, paint 806170023](#) A+ [Limestone split faced outer leaf, insulation, dense solid blockwork inner leaf, cement mortar, plasterboard on battens and paint 806170022](#) A+ [Reclaimed brickwork outer leaf, insulation, aircrete blockwork inner leaf, cement mortar, plasterboard on battens, paint 806170617](#) A+ [Reclaimed brickwork outer leaf, insulation, lightweight solid blockwork inner leaf, cement mortar, plasterboard on battens, paint 806170618](#) A+ [Sandstone split faced outer leaf, insulation, dense solid blockwork inner leaf, cement mortar, plasterboard on battens, paint 806170039](#) A+

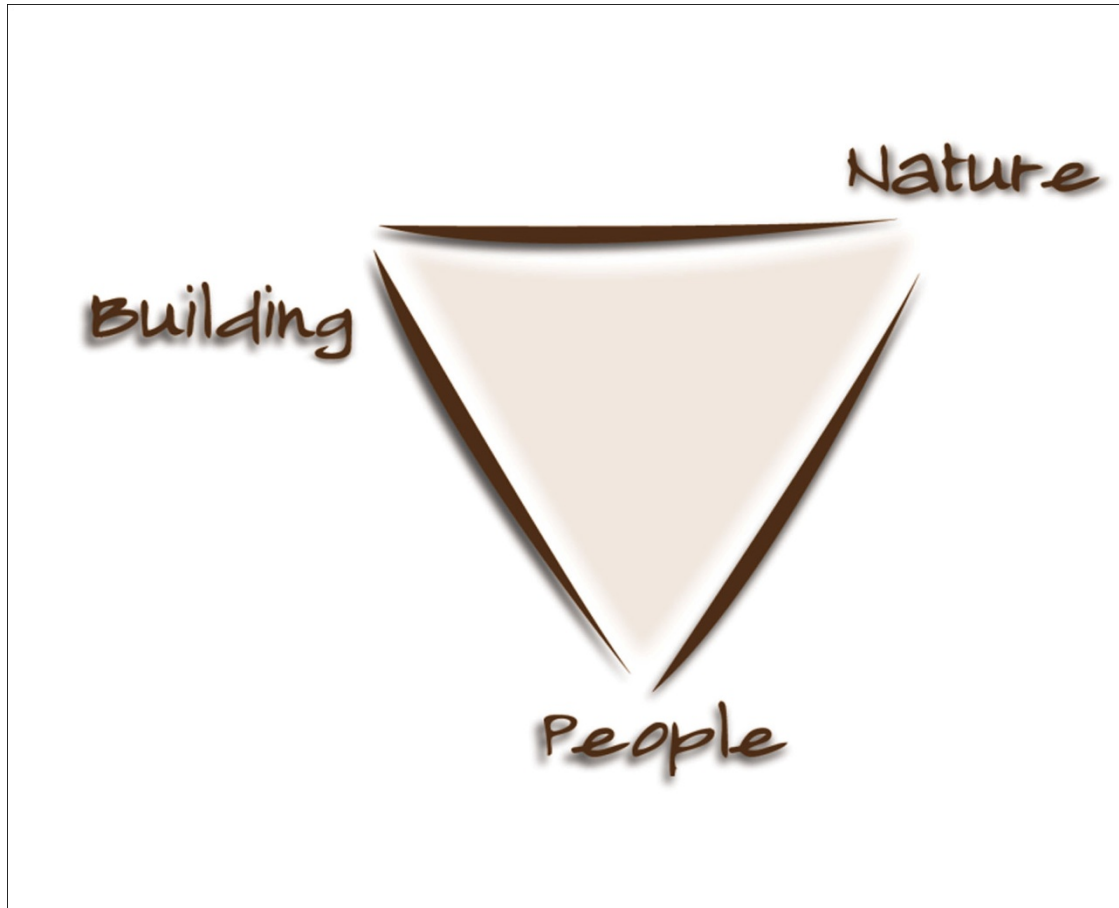
Problems with the Green Guide as it is now

- Lack of good data
- Lack of transparency
- Methodological flaws:
 - Generic ratings
 - Ratings A+ to E
 - Elemental ratings – double trouble (aggregation and functionality)
 - Carbon sequestration
- Inhibits learning, improvement and innovation

Issues for people

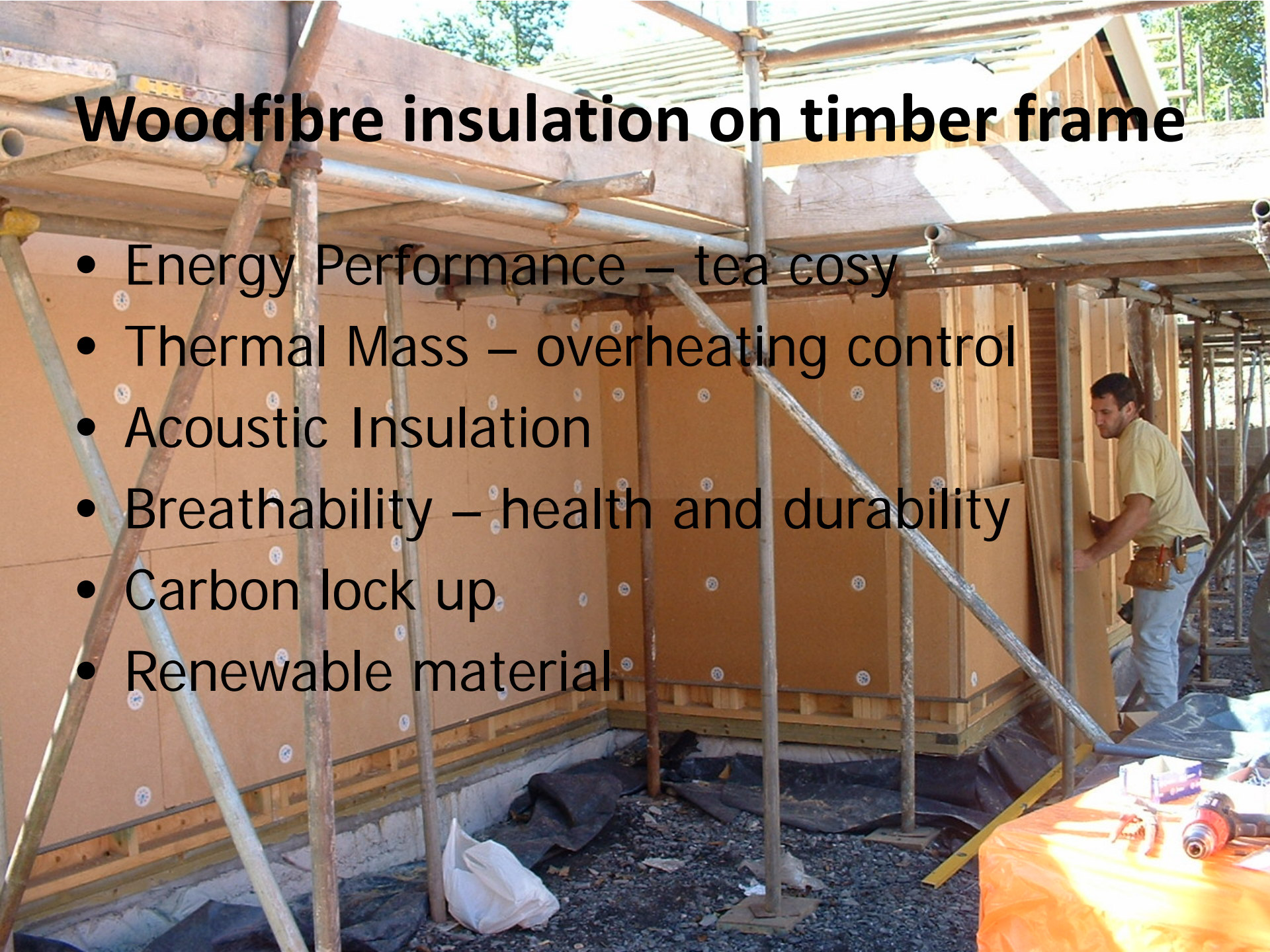
- Physical health - asthma and allergies
- Acoustics
- Comfort
- Mental health and well being

Good quality is a positive relationship



Woodfibre insulation on timber frame

- Energy Performance – tea cosy
- Thermal Mass – overheating control
- Acoustic Insulation
- Breathability – health and durability
- Carbon lock up
- Renewable material



Barriers to quality

- Disjunction of construction and performance
- Financial models of housebuilders/ UK financial sector
- Contracting, tendering and Quantity Surveyors
- Poorly resourced & expensive certification
- Poor legislation (part L, CSH etc)
- Lack of knowledge and research into issues of quality (health, durability and performance)

Building Control?

Building / Warranty Providers cannot make up for

- Lack of knowledge
- Bad legislation
- Lack of skills
- Poor certification processes

What we need

- Building systems/ designs that
 - Deliver designed performance in reality
 - Have low environmental impact in use
 - Have low embodied impact
 - Are durable, robust and easy to use and maintain
 - Are healthy and comfortable
 - Are relatively easy to test and assess

But this needs

- Properly funded publicly owned and accessible knowledge and research
- Certification that is intelligent, quick and cheap
- New financial models
- Informed clients, designers and contractors
- Culture change?

Critical path

- Do less
- Do it slower
- Do it right
- Enjoy!

The slow food approach to building materials...