

## Sustainable Buildings – time for a radical rethink?

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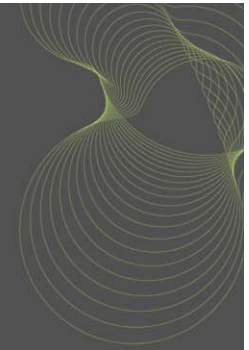
resource05

Bizarre!



Even more bizarre!

- Not smart, just plain dumb!



# Climate change: key impacts of the built environment

- Energy used within buildings accounts for nearly 50% of UK CO<sub>2</sub> emissions with a further 10% arising from the production of construction materials
- Each year the UK construction industry uses 6 tonnes of building materials per head of population
- Waste from materials production and construction amount to 151 million tonnes per annum or 35% of UK total waste.

*“We shape our buildings and afterwards our buildings shape our lives.”*

*- Sir Winston Churchill*



If the UK is serious about tackling climate change

We need less of this!



To deliver less of this!



## Lessons from the past - vernacular architecture



- Vernacular architecture has a form and function which enables:
  - comfortable conditions to be achieved (often in very hostile climatic conditions)
  - optimum and sustainable use of indigenous materials
  - low environmental impact

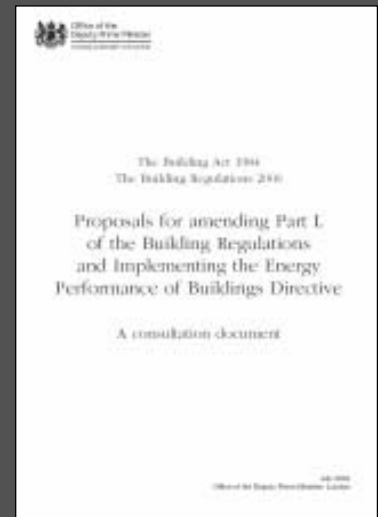
## Lessons from nature - biomimicry



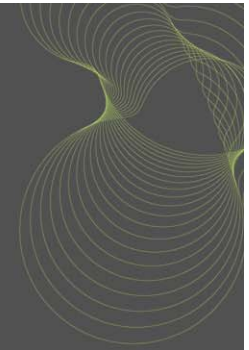
- Buildings should fully exploit the natural systems available **for free** to provide :
  - ventilation
  - cooling
  - heating
  - Daylighting
- Climate excluding vs. climate adaptive buildings
  - Bio-climatic design is much more challenging
  - Greater care required in construction, operation and maintenance to achieve optimum performance

# The architectural landscape is about to change dramatically!

- Introduction of building energy labelling
  - EPBD
- Building Regulations Part L 2005 will require a 25%-27% reduction in CO2 emissions compared with Part L 2002
  - additional requirements when refurbishing buildings
  - encouragement to consider low and zero carbon systems during design
  - greater use of the buildings thermal capacity coupled with night cooling/passive ventilation
  - greater emphasis on the avoidance of solar overheating whilst maximising daylighting
  - Introduction of mandatory pressure testing



# Sustainable Buildings – Golden age or missed opportunity?



- Major commercial and business opportunities associated with:-
  - Design, construction and operation of low environmental impact buildings
  - Energy rating/certification and plant inspection
  - Energy efficient/low carbon products and services
- Requires clear and unambiguous leadership by Government
  - Part L/EPBD
  - Code for Sustainable building
  - Effective compliance verification/enforcement

# Why is amending Part L and implementing the EPBD so important?

- Total projected saving identified in the UK Climate Change Plan (CCP) by 2010 = 15.2Mtc/p.a.
- Building regs (Part L) and EPBD contribution:-
  - *Part L 2002 Revision* 1.4Mtc p.a.
  - *Part L 2005 Revision* 1.2 Mtc p.a.
  - *Condensing boiler requirements* 1.3 Mtc p.a.
  - TOTAL 3.9 Mtc p.a.

= 25% of **total** UK CCP saving
- Delays, weak compliance enforcement and skill shortages make delivery increasingly unlikely

