

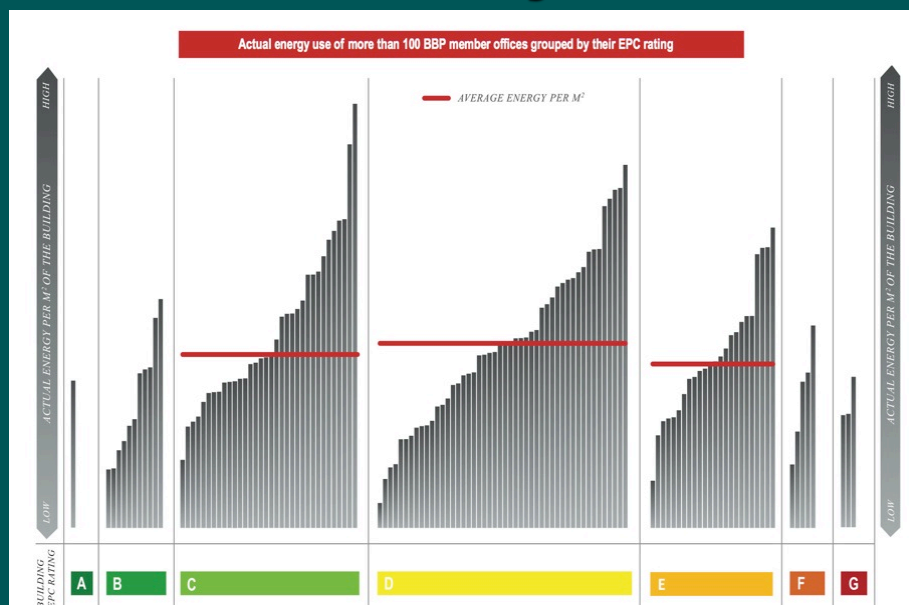
Lets Measure Something Meaningful

Doug King

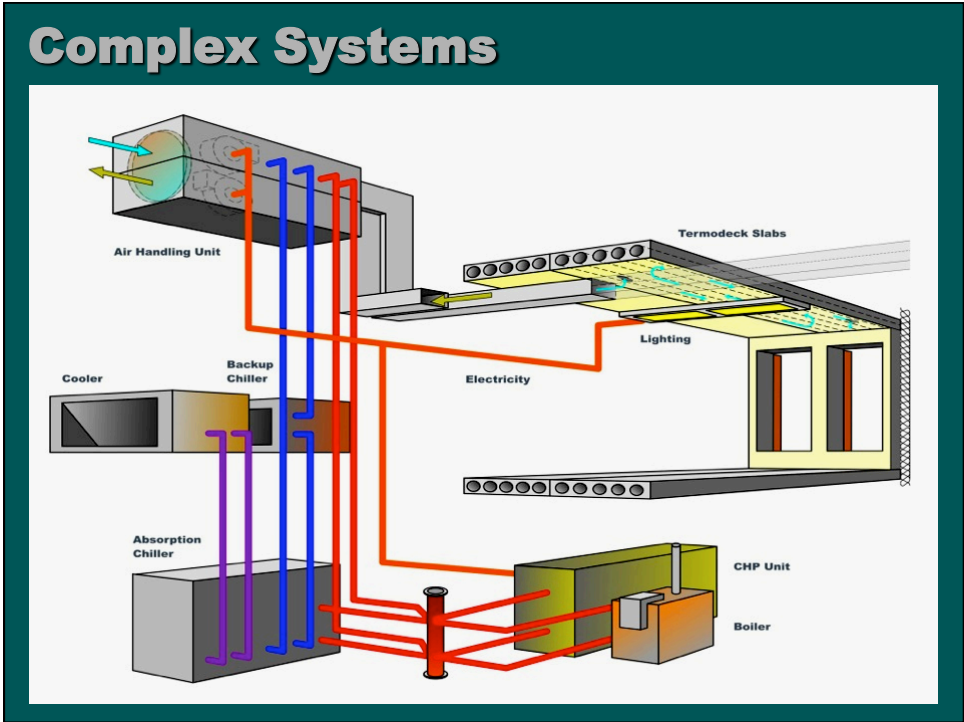
FREng HonFRIBA

www.douging.co.uk

Prediction vs Reality



Source: Jones Lang Lasalle 2012



Multi-Criteria Decision Making



Cost
Efficiency
Safety

Comfort
Aesthetics
Power

Multi-Criteria Decision Making



OUR ENERGY RATING

E

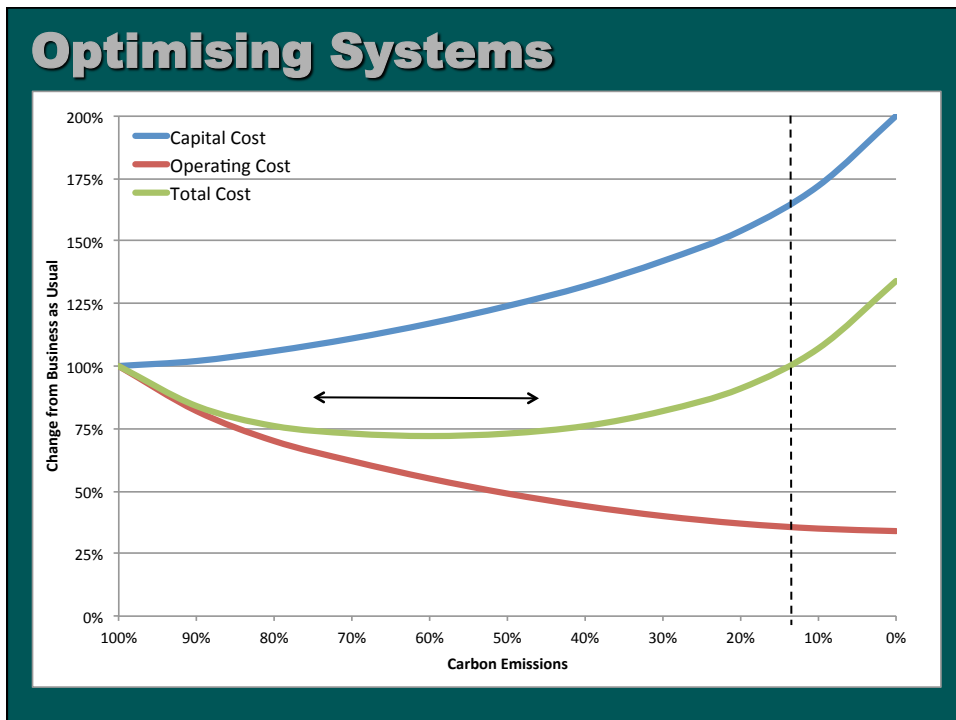
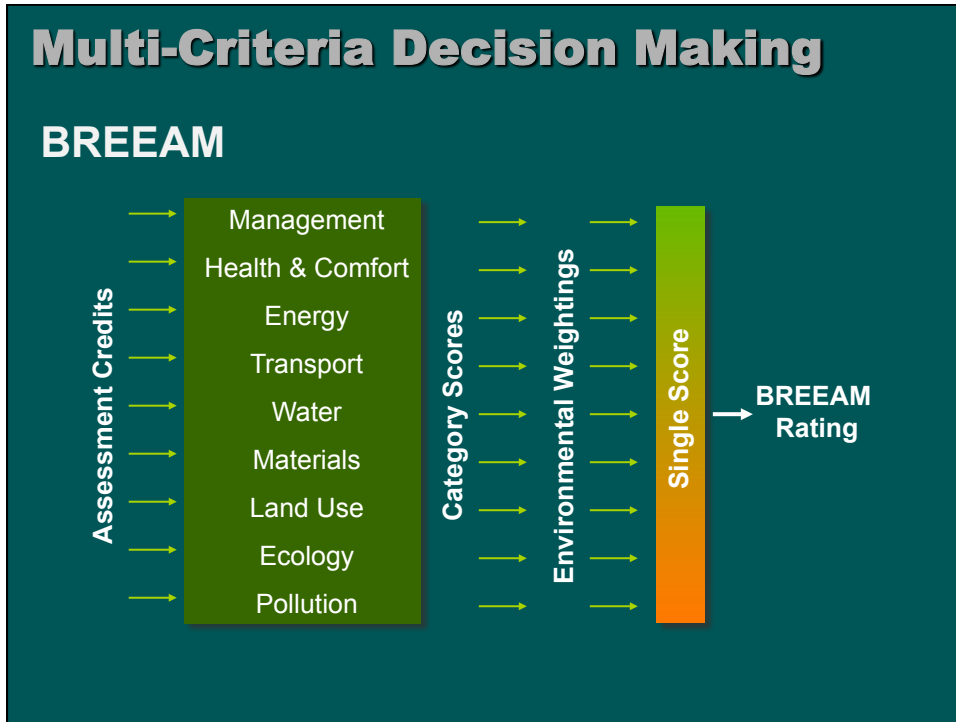
How efficiently is this building being used?

Our operational energy use:
144 kWh/m² per year
64 kWh/m² per year
0% reduction

Previous operational energy:
2009 2010 2011

144 kWh/m² per year
144 kWh/m² per year
144 kWh/m² per year

144 kWh/m² per year
144 kWh/m² per year
144 kWh/m² per year



Innovate Green Office

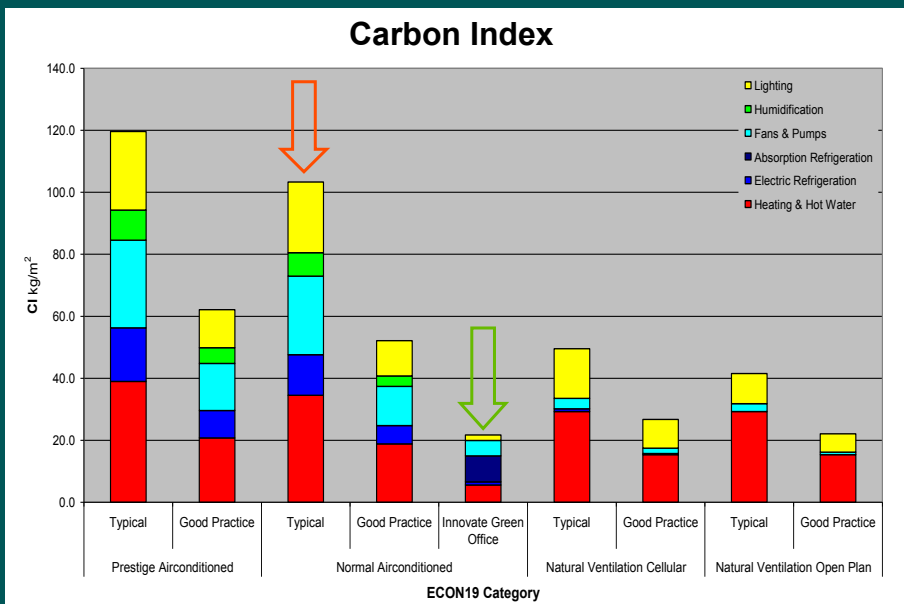


- Passive design
- Super insulation
- Thermal mass
- Daylight design
- Termodeck
- Heat recovery
- Night cooling
- Mixed mode ventilation
- CHP tri-generation
- Rainwater WC flushing
- Vacuum drainage
- High efficiency lighting
- Lighting control

No On-Site Renewables

Innovate Green Office

Carbon Index



Source: King 2007

Innovate Green Office

Results

**Predicted energy cost for Innovate Office,
Sherwood Park in 2007 = £2.24 / sf**

**Predicted energy cost for Innovate Green
Office, Leeds in 2007 = £0.65 / sf**

Annual saving approx = £1.60 / sf

Typical commercial rent = £15-17 / sf

Approximate 10% increase in yield

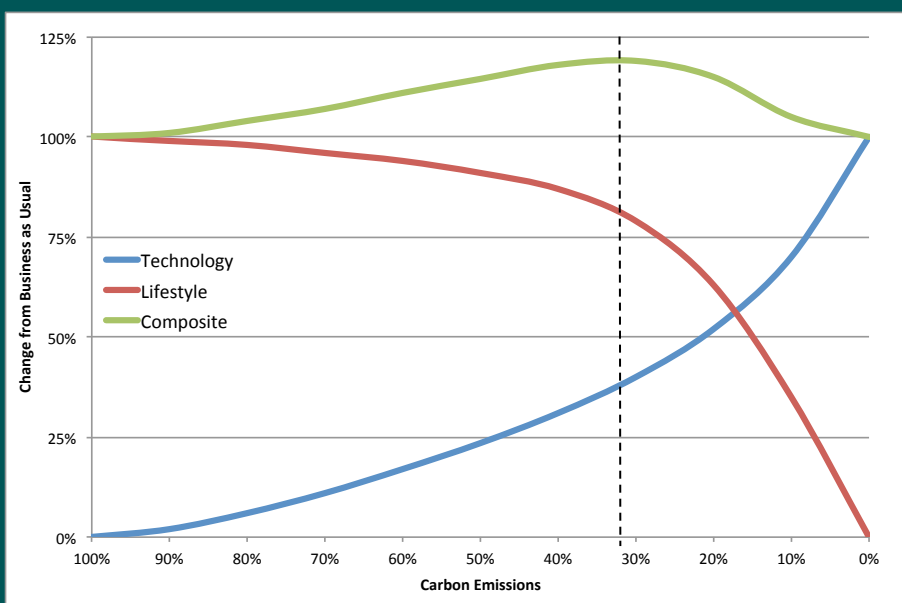
Zero Carbon Homes



Zero Carbon Homes



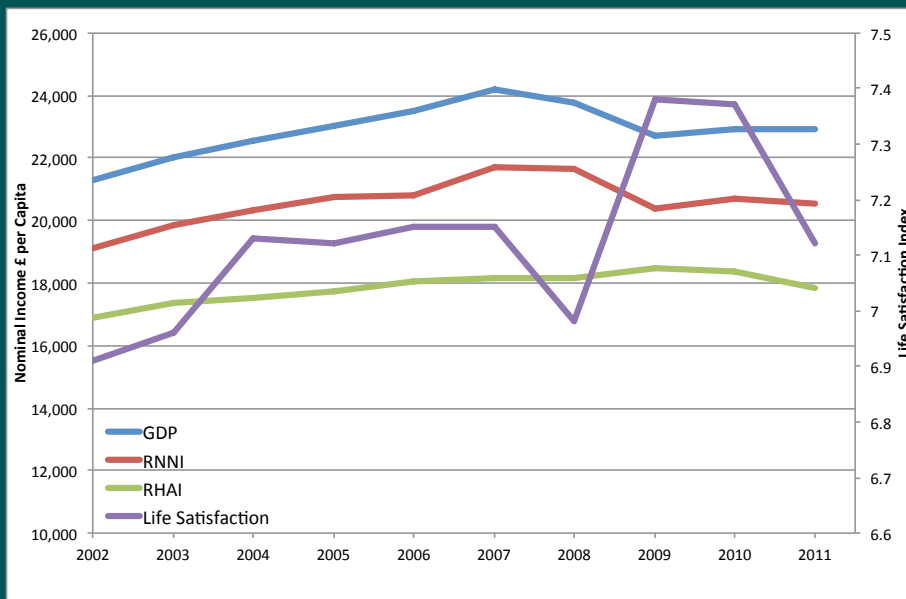
Zero Carbon Homes



Socio-Economic System



Indicators of "Progress"



Source: ONS 2012

Suitable Metrics?



Suitable Metrics?



Suitable Metrics?



Suitable Metrics?



Suitable Metrics?

Everything: CO₂ per m² floor area

Hotel: CO₂ per bed space

Hospital: CO₂ per bed
CO₂ vs recovery times

School: CO₂ per student
CO₂ vs learning outcomes
CO₂ vs teacher stress index

Office: CO₂ per desk space
CO₂ vs units of productivity

Suitable Metrics?



Romero House, CAFOD HQ



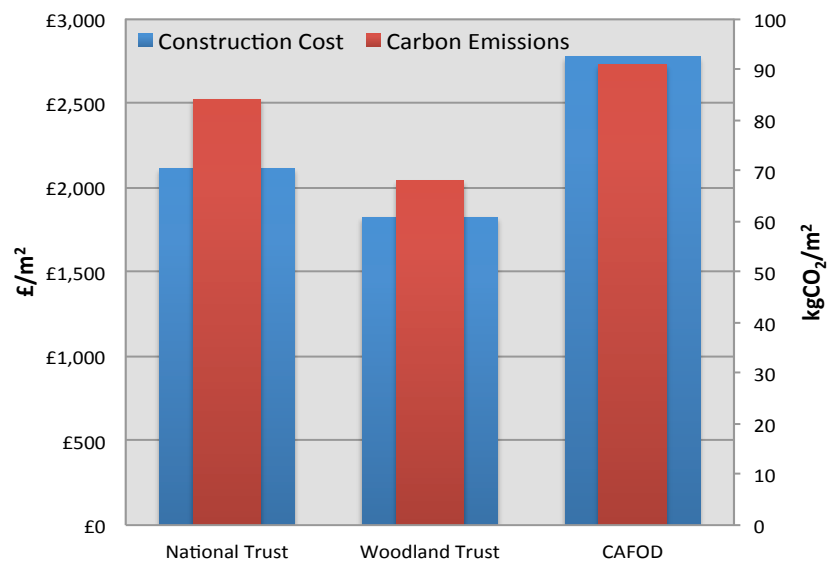
Heelis, National Trust HQ

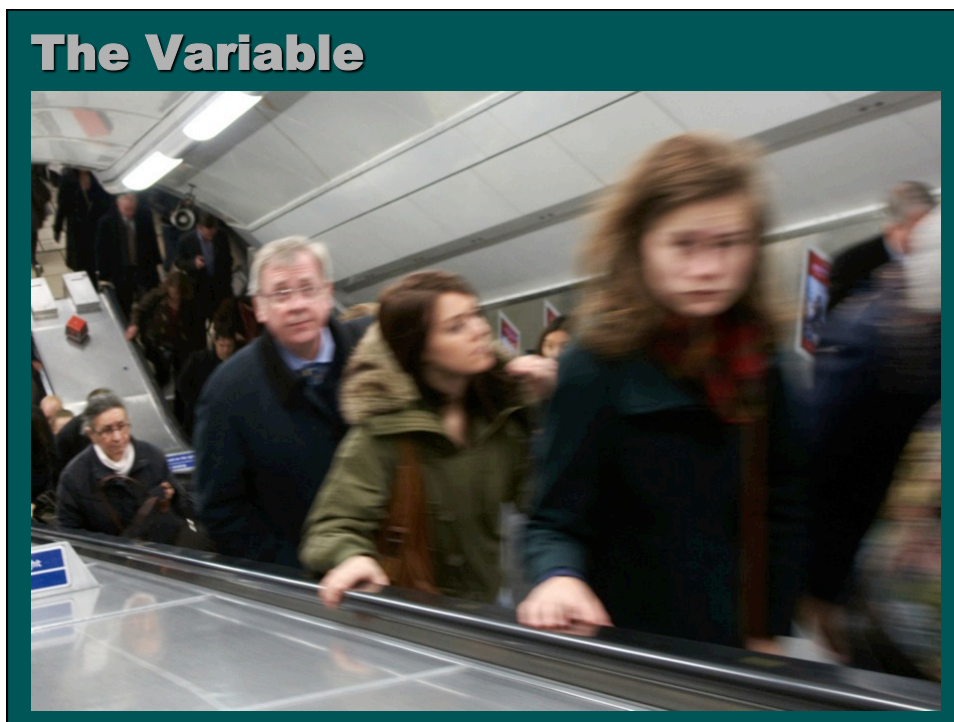
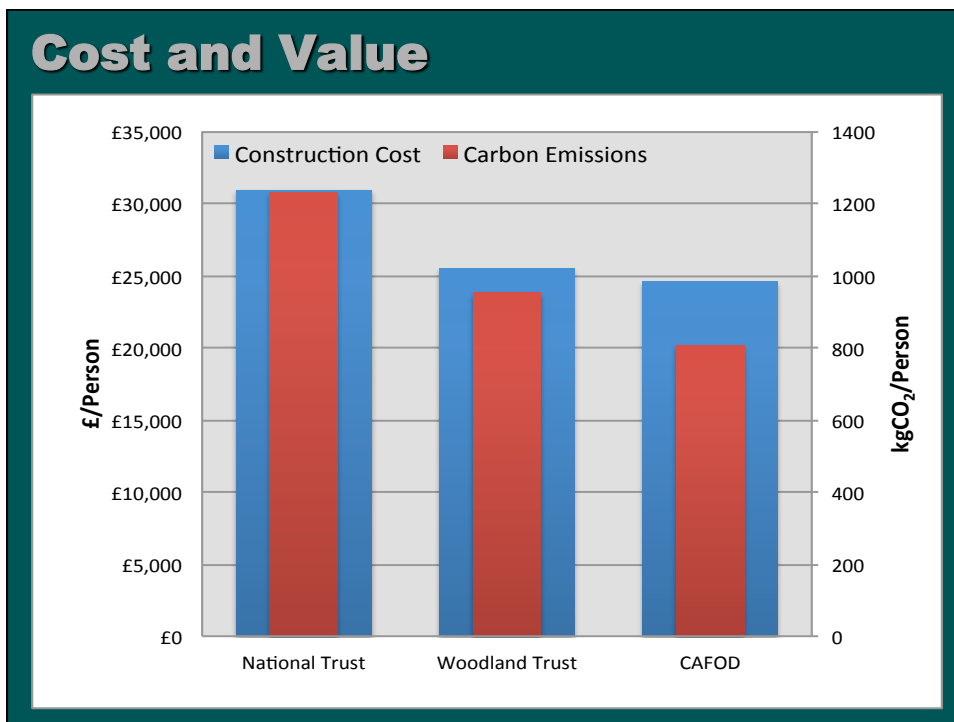


Woodland Trust HQ



Cost and Value





The Gasworks, Belfast



The Gasworks, Belfast



The Gasworks, Belfast



Romero House, CAFOD HQ



Romero House, CAFOD HQ



Romero House, CAFOD HQ



Romero House, CAFOD HQ

