Sustainability in the UK

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NBS Sustainability Survey 2012

NBS carried out their first survey into sustainability and the attitudes and practices of construction professionals. You can see some of the highlights below. A full report will follow in the New Year.

Thinking about your organisation, generally how important are the following aspects of sustainability to the projects you work on?

- Environmental
- Economic
- Social

Each star above represents 2% of the respondents surveyed.

Top 5 'Very Important' Aspects of Sustainability in Respondents' Projects

1. Health
2. Water Use & Pollution
3. Air Pollution
4. Waste
5. CO₂

How often is sustainability, as you define it, achieved on your projects?

- Never
- Rarely
- About Half the Time
- Usually
- Always

10% Never
29% Rarely
29% About Half the Time
40% Usually
9% Always

How confident are you in your knowledge and skills of sustainable design?

- Very
- At All
- Not Very
- Not At All

38% Very
35% In-Between
12% Not Very
2% Not At All

Does your organisation...

- Have any form of environmental certification?
- Produce environmental impact statements?
- Have a sustainability policy?
- Offer an environmental assessment service?

YES
NO
How often is sustainability, as you define it, achieved on your projects?

<table>
<thead>
<tr>
<th>Frequency</th>
<th>Percentage</th>
</tr>
</thead>
<tbody>
<tr>
<td>Always</td>
<td>9%</td>
</tr>
<tr>
<td>Usually</td>
<td>40%</td>
</tr>
<tr>
<td>About half the time</td>
<td>29%</td>
</tr>
<tr>
<td>Rarely</td>
<td>19%</td>
</tr>
<tr>
<td>Never</td>
<td>2%</td>
</tr>
</tbody>
</table>
Thinking about your organisation, generally how important are the following aspects of sustainability to the projects you work on?

<table>
<thead>
<tr>
<th>Aspect</th>
<th>Important</th>
<th>Very Important</th>
</tr>
</thead>
<tbody>
<tr>
<td>Health risks</td>
<td>37%</td>
<td>52%</td>
</tr>
<tr>
<td>Waste</td>
<td>49%</td>
<td>40%</td>
</tr>
<tr>
<td>Water use and pollution</td>
<td>43%</td>
<td>43%</td>
</tr>
<tr>
<td>Air pollution</td>
<td>40%</td>
<td>41%</td>
</tr>
<tr>
<td>The local community</td>
<td>50%</td>
<td>29%</td>
</tr>
<tr>
<td>Operational carbon</td>
<td>45%</td>
<td>33%</td>
</tr>
<tr>
<td>Ecosystem</td>
<td>46%</td>
<td>30%</td>
</tr>
<tr>
<td>Recycled content</td>
<td>48%</td>
<td>28%</td>
</tr>
<tr>
<td>Transport</td>
<td>52%</td>
<td>23%</td>
</tr>
<tr>
<td>Embodied carbon</td>
<td>49%</td>
<td>23%</td>
</tr>
<tr>
<td>Aesthetic degradation</td>
<td>47%</td>
<td>24%</td>
</tr>
</tbody>
</table>
Thinking about your organisation and sustainability, how strongly do you agree with the following statements?

<table>
<thead>
<tr>
<th>Statement</th>
<th>Disagree</th>
<th>Neither agree nor disagree</th>
<th>Agree</th>
</tr>
</thead>
<tbody>
<tr>
<td>Given the current state of the construction industry, sustainability comes behind getting work</td>
<td>14%</td>
<td>20%</td>
<td>66%</td>
</tr>
<tr>
<td>A building shouldn’t receive an award, like the Stirling Prize, unless it’s sustainable</td>
<td>17%</td>
<td>22%</td>
<td>61%</td>
</tr>
<tr>
<td>Once we’re out of recession, sustainability will become more important</td>
<td>16%</td>
<td>23%</td>
<td>61%</td>
</tr>
<tr>
<td>We think of ourselves as leading the way with sustainability</td>
<td>23%</td>
<td>36%</td>
<td>41%</td>
</tr>
<tr>
<td>We look to central government to tell us how sustainable buildings have to be</td>
<td>33%</td>
<td>32%</td>
<td>35%</td>
</tr>
<tr>
<td>We will only work on projects where sustainability is at the core of the project</td>
<td>49%</td>
<td>32%</td>
<td>19%</td>
</tr>
<tr>
<td>Clients are only interested in sustainability if they have responsibility for a building long enough to see a cost saving</td>
<td>6%</td>
<td>13%</td>
<td>81%</td>
</tr>
<tr>
<td>Clients are more interested in the appearance of sustainability than real sustainability</td>
<td>10%</td>
<td>20%</td>
<td>70%</td>
</tr>
<tr>
<td>Sustainability is a way of helping clients save money</td>
<td>20%</td>
<td>25%</td>
<td>45%</td>
</tr>
<tr>
<td>We use sustainability as a way of getting clients to work with us</td>
<td>20%</td>
<td>35%</td>
<td>45%</td>
</tr>
<tr>
<td>Sustainability is a matter for the client. We just deliver the brief</td>
<td>57%</td>
<td>22%</td>
<td>21%</td>
</tr>
</tbody>
</table>
At what stage in the building process do you start to take into account sustainability?

<table>
<thead>
<tr>
<th>Stage</th>
<th>Percentage</th>
</tr>
</thead>
<tbody>
<tr>
<td>Appraisal</td>
<td>34%</td>
</tr>
<tr>
<td>Design Brief</td>
<td>36%</td>
</tr>
<tr>
<td>Concept</td>
<td>14%</td>
</tr>
<tr>
<td>Design Development</td>
<td>9%</td>
</tr>
<tr>
<td>Technical Design</td>
<td>3%</td>
</tr>
<tr>
<td>Production Information</td>
<td>1%</td>
</tr>
<tr>
<td>Tender Documentation</td>
<td>1%</td>
</tr>
<tr>
<td>Tender Action</td>
<td>1%</td>
</tr>
<tr>
<td>Mobilisation</td>
<td>0%</td>
</tr>
<tr>
<td>Construction to Practical Completion</td>
<td>1%</td>
</tr>
<tr>
<td>Does your organisation...</td>
<td>20%</td>
</tr>
<tr>
<td>---------------------------------</td>
<td>-----</td>
</tr>
<tr>
<td>Have a sustainability policy?</td>
<td>75%</td>
</tr>
<tr>
<td>Have any form of environmental certification?</td>
<td>37%</td>
</tr>
<tr>
<td>Offer an Environmental Assessment service?</td>
<td>25%</td>
</tr>
<tr>
<td>Produce Environmental Impact Statements?</td>
<td>34%</td>
</tr>
</tbody>
</table>
When it comes to sustainability, what roles do you carry out?

<table>
<thead>
<tr>
<th>Role</th>
<th>Percentage</th>
</tr>
</thead>
<tbody>
<tr>
<td>Green product selection</td>
<td>41%</td>
</tr>
<tr>
<td>Client Advisor on sustainability</td>
<td>40%</td>
</tr>
<tr>
<td>Energy calculations</td>
<td>30%</td>
</tr>
<tr>
<td>Project (e.g. BREEAM) assessment</td>
<td>27%</td>
</tr>
<tr>
<td>None</td>
<td>24%</td>
</tr>
<tr>
<td>Managing corporate sustainability</td>
<td>16%</td>
</tr>
<tr>
<td>Other</td>
<td>13%</td>
</tr>
<tr>
<td>Green Deal Advisor</td>
<td>3%</td>
</tr>
</tbody>
</table>
How confident are you in your knowledge and skills of sustainable design?

- Not confident: 15%
- In between: 38%
- Confident: 47%

What qualifications do you have in sustainability?

- Energy Assessor: 9%
- Certified Passivhaus Designer: 1%
- BREEAM Assessor: 6%
- Green Deal Advisor: 1%
- Code of Sustainable Homes Assessor: 5%
- STEP: 0%
- Other: 11%
- None: 73%
When working on projects, which of the following assessment methods have you used to help you create sustainable building?

- **The Building Regulations**
  - On all projects: 73%
  - On most projects: 12%
  - On some projects: 7%

- **LEED**
  - 1%
  - 5%
  - 16%

- **BES 6001**
  - 13%
  - 4%
  - 2%

- **ISO 14001**
  - 24%
  - 12%
  - 9%

- **The Code for Sustainable Homes**
  - 40%
  - 16%
  - 3%

- **Lifetime Homes Standard**
  - 30%
  - 11%
  - 3%

- **BREEAM**
  - 43%
  - 21%
  - 6%

- **Passivhaus**
  - 23%
  - 4%
  - 1%
How useful would you rate the methods you have used in terms of helping you create sustainable buildings?

<table>
<thead>
<tr>
<th>Method</th>
<th>Useful</th>
<th>Very useful</th>
</tr>
</thead>
<tbody>
<tr>
<td>The Building Regulations</td>
<td>45%</td>
<td>33%</td>
</tr>
<tr>
<td>LEED</td>
<td>53%</td>
<td>21%</td>
</tr>
<tr>
<td>BES 6001</td>
<td>44%</td>
<td>12%</td>
</tr>
<tr>
<td>ISO 14001</td>
<td>43%</td>
<td>22%</td>
</tr>
<tr>
<td>The Code for Sustainable Homes</td>
<td>48%</td>
<td>33%</td>
</tr>
<tr>
<td>Lifetime Homes Standard</td>
<td>52%</td>
<td>19%</td>
</tr>
<tr>
<td>BREEAM</td>
<td>46%</td>
<td>33%</td>
</tr>
<tr>
<td>Passivhaus</td>
<td>50%</td>
<td>33%</td>
</tr>
</tbody>
</table>
Please tell us how reliable you find the following sources of information about sustainability

<table>
<thead>
<tr>
<th>Source</th>
<th>Reliable</th>
<th>Very reliable</th>
</tr>
</thead>
<tbody>
<tr>
<td>Sustain</td>
<td>40%</td>
<td>19%</td>
</tr>
<tr>
<td>GreenSpec</td>
<td>52%</td>
<td>19%</td>
</tr>
<tr>
<td>CIRIA</td>
<td>46%</td>
<td>19%</td>
</tr>
<tr>
<td>BSRIA</td>
<td>40%</td>
<td>24%</td>
</tr>
<tr>
<td>UK Green Building Council</td>
<td>51%</td>
<td>22%</td>
</tr>
<tr>
<td>NBS</td>
<td>53%</td>
<td>24%</td>
</tr>
<tr>
<td>RIBA</td>
<td>54%</td>
<td>22%</td>
</tr>
<tr>
<td>BRE</td>
<td>50%</td>
<td>38%</td>
</tr>
</tbody>
</table>
NBS and BREEAM
**BRE environmental assessment**

- Three BRE environmental assessment levels:
  - Whole buildings (BREEAM itself).
  - Elements/systems, pre-configured generic (Green guide).
  - Products, branded (Environmental profiles).
- **Lower two** are fabric-only; only BREEAM itself deals with fabric & services.
- **IMPACT** integrates the lower two levels with project geometry.
  - It doesn’t give a BREEAM compliance report.
- **Uniclass2** is not used for object coding, yet.
NBS & National BIM Library

• Four levels of specification in NBS Create:
  – Entities.
  – Elements (*planned*).
  – Systems, branded and generic.
  – Products, branded and generic.

• Three levels of pre-configured geometry in NBL:
  – Elements.
  – Systems, branded and generic.
  – Products, branded and generic.

• NBS Create & NBL cover fabric & services.

• iCIM *demonstrated* the integration of NBS Create and NBL with project geometry, but fabric-only.

• Draft Uniclass 2 is used for object coding.
# Object classes

<table>
<thead>
<tr>
<th>Impact</th>
<th>BRE + project geometry: <em>fabric only</em></th>
<th>BRE environmental assessment</th>
<th>Uniclass2 <em>object class</em></th>
<th>NBS Create: <em>fabric &amp; services</em></th>
<th>National BIM Library: <em>fabric &amp; services</em></th>
<th>NBS + NBL + project geometry: <em>fabric only</em></th>
</tr>
</thead>
<tbody>
<tr>
<td>BRE Green guide to specification: <em>fabric only</em></td>
<td>BREEMAM: <em>fabric &amp; services</em></td>
<td>Entities</td>
<td>★</td>
<td>not planned</td>
<td></td>
<td></td>
</tr>
<tr>
<td>BRE Environmental profiles: <em>fabric only</em></td>
<td>BRE Green guide to specification: <em>fabric only</em></td>
<td>Elements</td>
<td>planned</td>
<td></td>
<td>★</td>
<td></td>
</tr>
<tr>
<td></td>
<td>BRE Green guide to specification: <em>fabric only</em></td>
<td>Systems</td>
<td>★</td>
<td></td>
<td>★</td>
<td></td>
</tr>
<tr>
<td></td>
<td>BRE Green guide to specification: <em>fabric only</em></td>
<td>Products</td>
<td>★</td>
<td></td>
<td>★</td>
<td>iCIM</td>
</tr>
</tbody>
</table>
**BREEAM timeline**

- Three tools with consistent approaches to whole-building environmental assessment:
  - Master planning: **Communities**.
  - Design & construction: **New construction & Refurbishment**.
  - Operation: **In-use**.
NBS Create timeline

• Three NBS products connected in a BIM-ready chain with a consistent approach to specification:
  – NBS Create Briefing: *preliminary work underway*.
  – NBS Create FM: *preliminary work underway*.

• NBS Create Briefing will support BREEAM Communities, and fully support BREEAM New construction & Refurbishment.
### Uniclass2 Project phases

<table>
<thead>
<tr>
<th>Phase</th>
<th>Pre-project</th>
<th>Feasibility</th>
<th>Briefing</th>
<th>Concept design</th>
<th>Design development</th>
<th>Technical design</th>
<th>Documentation</th>
<th>Construction</th>
<th>Contractor O&amp;M</th>
<th>Owner O&amp;M</th>
<th>Closure</th>
<th>Post-project</th>
</tr>
</thead>
</table>

### BREEAM
- Communities
- New construction & Refurbishment
- In-use

### NBS Create
- **Briefing:** planned
- Specification
- **FM:** planned

### Districts
- Complexes
- Entities
- Activities
- Spaces
- **Elements**
- Systems
- **Products**

### Uniclass2 object class
Bringing them together

BRE data: IMPACT2

Open-BIM geometry e.g. Revit

Uniclass2 data structures: NBS/NBL

Allows on-the-fly type comparisons

 Allows on-the-fly whole-building impact reporting
Work to be done

• Fabric & services throughout.
• Configurable & pre-configured throughout.
• Branded & generic throughout.
• Uniclass2 into BRE products & services.
• BREEAM 2011, Green guide & Ecoprofiles into NBS Create & NBL.
  – BREEAM 2011 re-training underway.
• Integrate IMPACT, iCIM etc.
• Develop NBS Create Briefing & FM.
What’s new
Construction Products Regulation

• Regulation (EU) No 305/2011.

• Replacing *Construction Products Directive 89/106/EEC* due to inconsistent national implementation.

• From 1 July 2013, CE marking *mandated*.
CPR Annex 1

• Basic requirements for construction works:
  – Mechanical resistance and stability.
  – Safety in case of fire.
  – Hygiene, health and the environment.
  – Safety and accessibility in use.
  – Protection against noise.
  – Energy economy and heat retention.
  – Sustainable use of natural resources.
Environmental Product Declarations

- ISO 14025:2006 Environmental labels and declarations – Type III environmental declarations – Principles and procedures.
- BRE Global Environmental Profiles:  
  - www.bre.co.uk/page.jsp?id=53  
  - search at www.greenbooklive.com/search/scheme.jsp?id=246
- GreenSpec EPDs:  
  - www.greenspec.co.uk/greenspec-epd.php
**Embodied carbon**

- TSB-funded projects: Flavour of the month.
- **IMPACT**: Phase 1 launched October 2012 – LCA and LCC in IES VE software, Phase 2 (IFC) due in 2013.
  - BRE environmental data.
  - [www.impactwba.com/](http://www.impactwba.com/)
- **iCIM**: Prototype launched at Ecobuild 2012.
  - NBS & NBL data structures, ICE carbon data, WRAP waste data.
  - access via Google Chrome at [http://bim.northumbria.ac.uk/iCimWebAppEco/](http://bim.northumbria.ac.uk/iCimWebAppEco/)
Embodied carbon

• Carbon Trust Certification to PAS 2050 & WRI/WBCSD Greenhouse Gas Protocol Product Standard:
  – www.carbontrustcertification.com/
  – Carbon Reduction Label, e.g. CEMEX Cement.
  – Carbon Label.
  – PAS 2050 only, internal purposes.
Resource efficiency (RE)

• WRAP:
  – [www.wrap.org.uk/content/resource-efficient-construction](http://www.wrap.org.uk/content/resource-efficient-construction)

• Two reports on RE and BIM, by Sweett, RIBAE, BIM Academy and Solstice Associates, prepared for WRAP in 2012 – work continues.
Environmental retrofit

• DECC Green Deal, under Energy Act 2011: In place from 1st October 2012.

• BREEAM Domestic Refurbishment: Launched June 2012.
  – [www.breeam.org/page.jsp?id=228](http://www.breeam.org/page.jsp?id=228)

• BREEAM Non-domestic Refurbishment: Not yet launched.
  – [www.breeam.org/page.jsp?id=381](http://www.breeam.org/page.jsp?id=381)