University of Reading

Sustainability in FM: Trends in Policy and FM competence consequences

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EPSRC
Engineering and Physical Sciences Research Council

IMRC
Innovative Manufacturing Research Centres

Sustainability in FM

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ADVANCING OUR PROFESSION

Outline

- Background
- The challenge
- Sustainability in FM
- Leadership and Operation Case studies
- Rethinking SFM: SFM Index
- Conclusion

Background

- The practice of sustainable FM is rapidly evolving due to the three Cs of customer demands, competition from competitors and climate change

- Although, this is an opportunity for FM professionals to make a real and measurable difference in improving businesses they seem not to have easy access to the specialist knowledge, tools and case study material necessary to make this a reality

  - There is a need for sustainability toolkits, techniques and information in FM

  - The objectives are to provide insights to the relevant knowledge, skill sets and best practice that enhance professional competencies in delivering sustainability developments and practices.

Importance of FM in driving sustainability

- **Sustainability is now a major obligation and expectation across many businesses (Stern 2006) due to pressure from key stakeholders, governments and competitors.**

- **Traditionally, FM professionals were responsible for managing the non-core business activities that support the core business strategies. Increasingly facilities managers are at the forefront making valuable strategic contributions toward their organisation's sustainable business as sustainability and CSR become a core business in many organisations (Loch 2000; van Ree 2007).**

SFM

What do we need to know about?

Aims and research method

❖AIM:

To investigate emerging trends and issues influencing FM professionals' engagement with sustainable practices and how to support professional and trade organisations interested in sustainability to develop more effective approaches to interact with FM audience.

❖Research method:

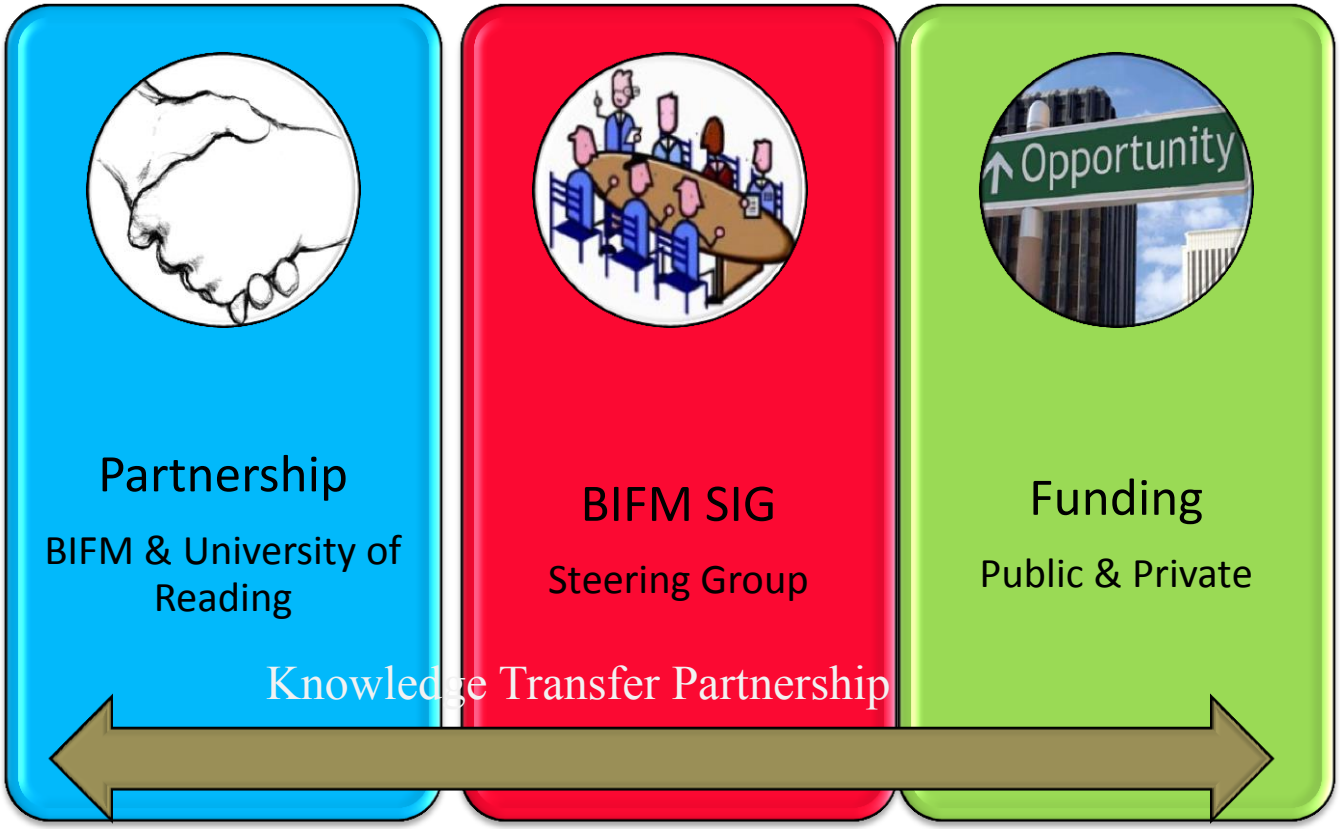
A longitudinal study using online survey of facilities managers of over four years (2007, 2008, 2009, 2010).

- **Limitations:**
  - **No support for respondents who had difficulty in understanding some specific questions.**
  - **Respondents could not be prompted to explain their views or reasoning.**

Sustainability in FM

Where does it come from?

- **Project Structure**



Sustainability in FM

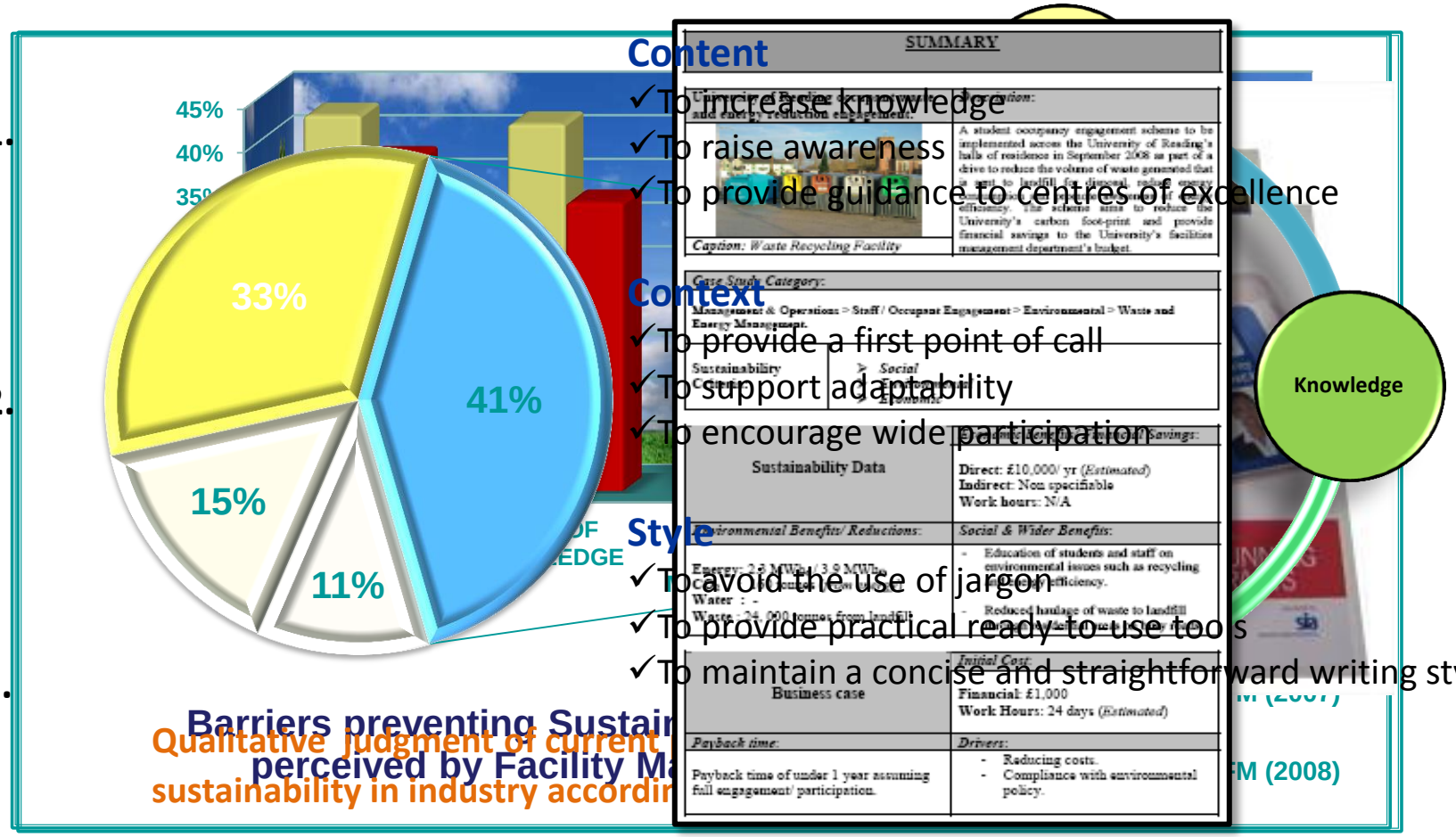
What has it achieved so far?

- **Main Outcomes**

1.

2.

3.



Content

- ✓To increase knowledge
- ✓To raise awareness
- ✓To provide guidance to centres of excellence

Context

- ✓To provide a first point of call
- ✓To support adaptability
- ✓To encourage wide participation

Style

- ✓To avoid the use of jargon
- ✓To provide practical ready-to-use tools
- ✓To maintain a concise and straightforward writing style

Sustainability in FM

Where is it going?

- **Information Dissemination**

  - ✓ **How?**
    - **"Sustainability in FM"**

  - ✓ **What?**
    - **Case Studies**
    - **Information on Sustainability issues**
    - **Links to sources of excellence**

  - ✓ **Where?**
    www.sustainabilityinfm.org.uk

Sustainability in FM

Long term goal

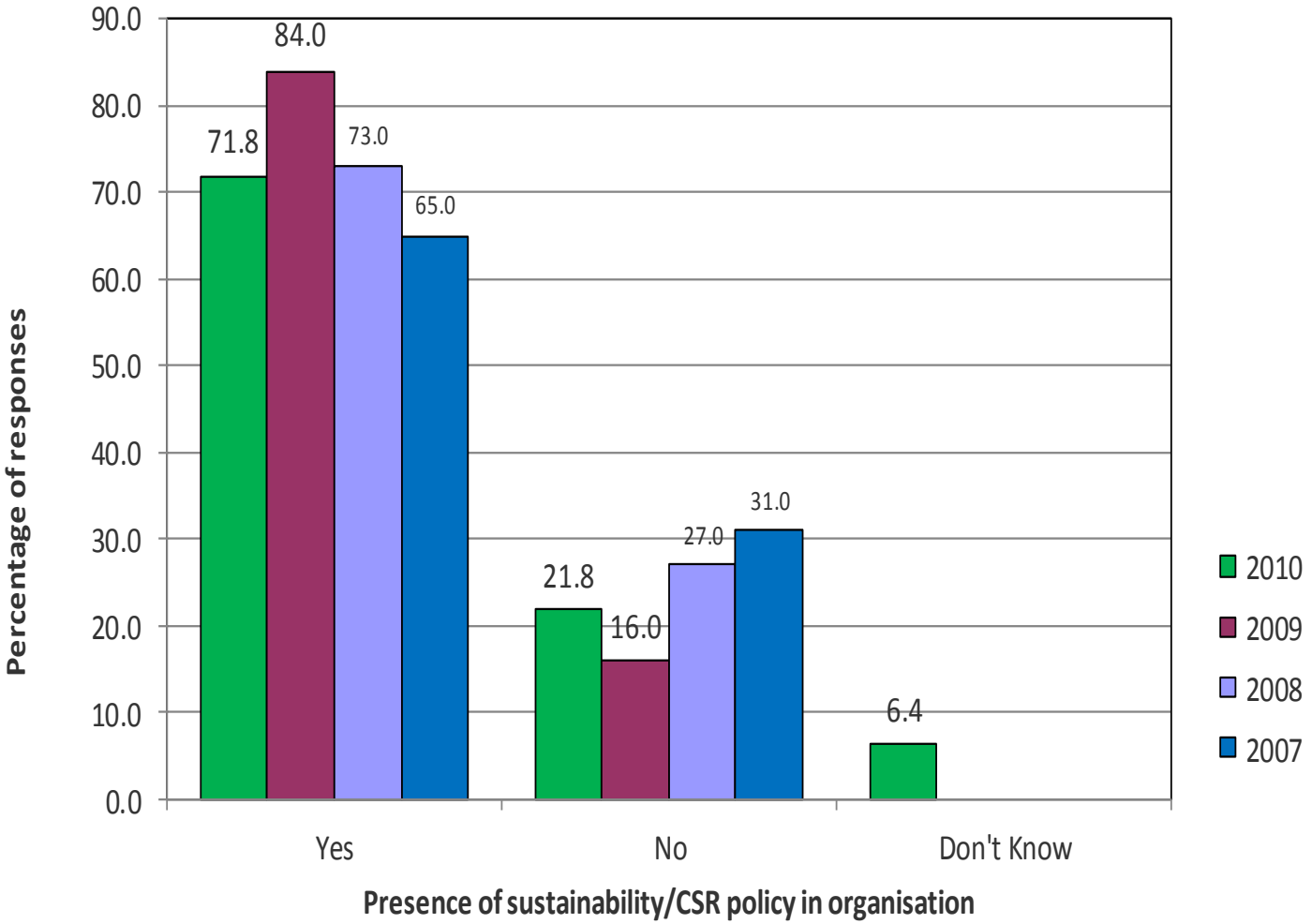
- **2009/1014 Targets**

  - ✓100+ Case Studies across 14 Sustainability Topics
  - ✓50+ articles (14 topics / sustainability issues)
  - ✓Enable feedback / forum

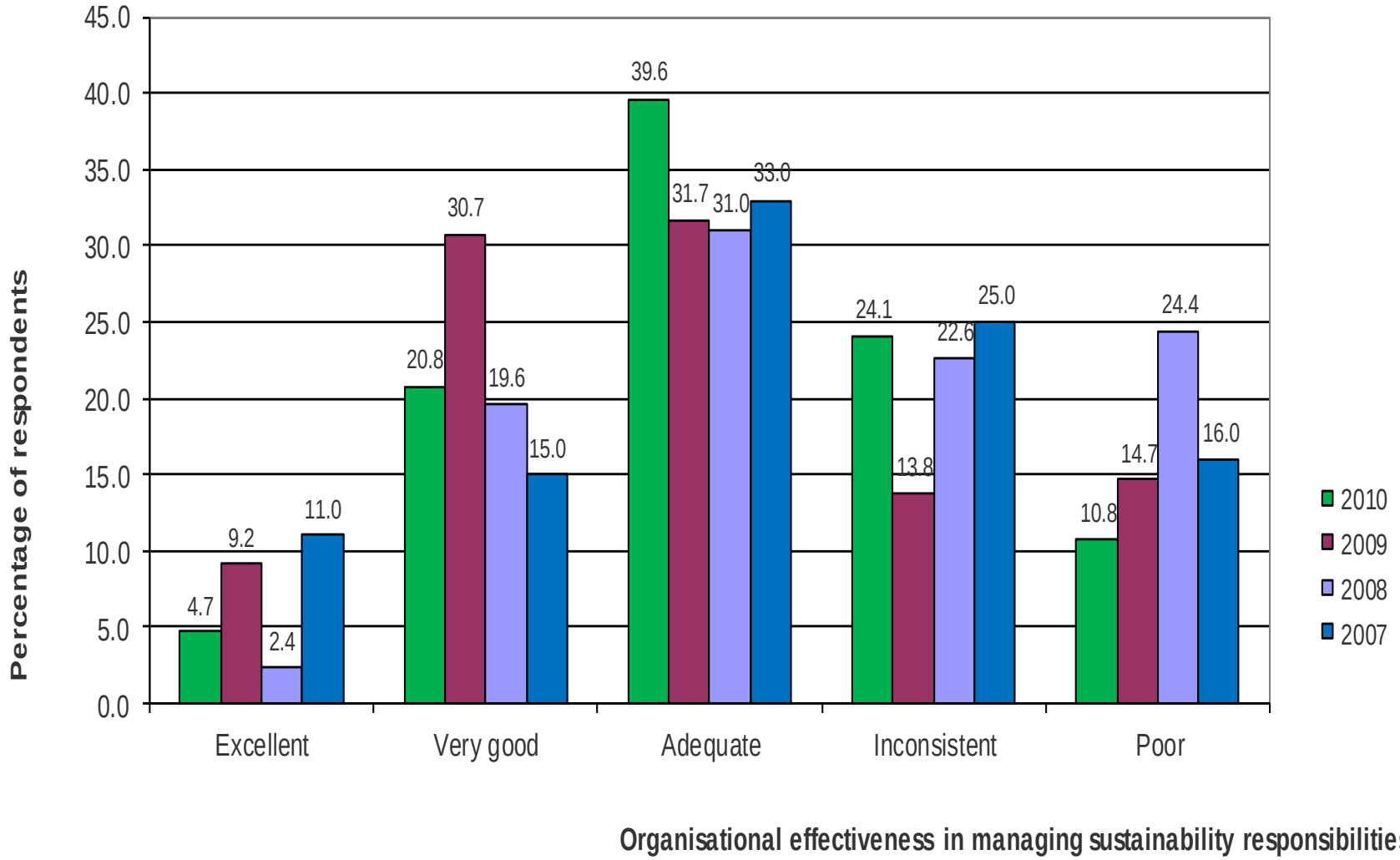
www.sustainabilityinfm.org.uk

Results and Discussion

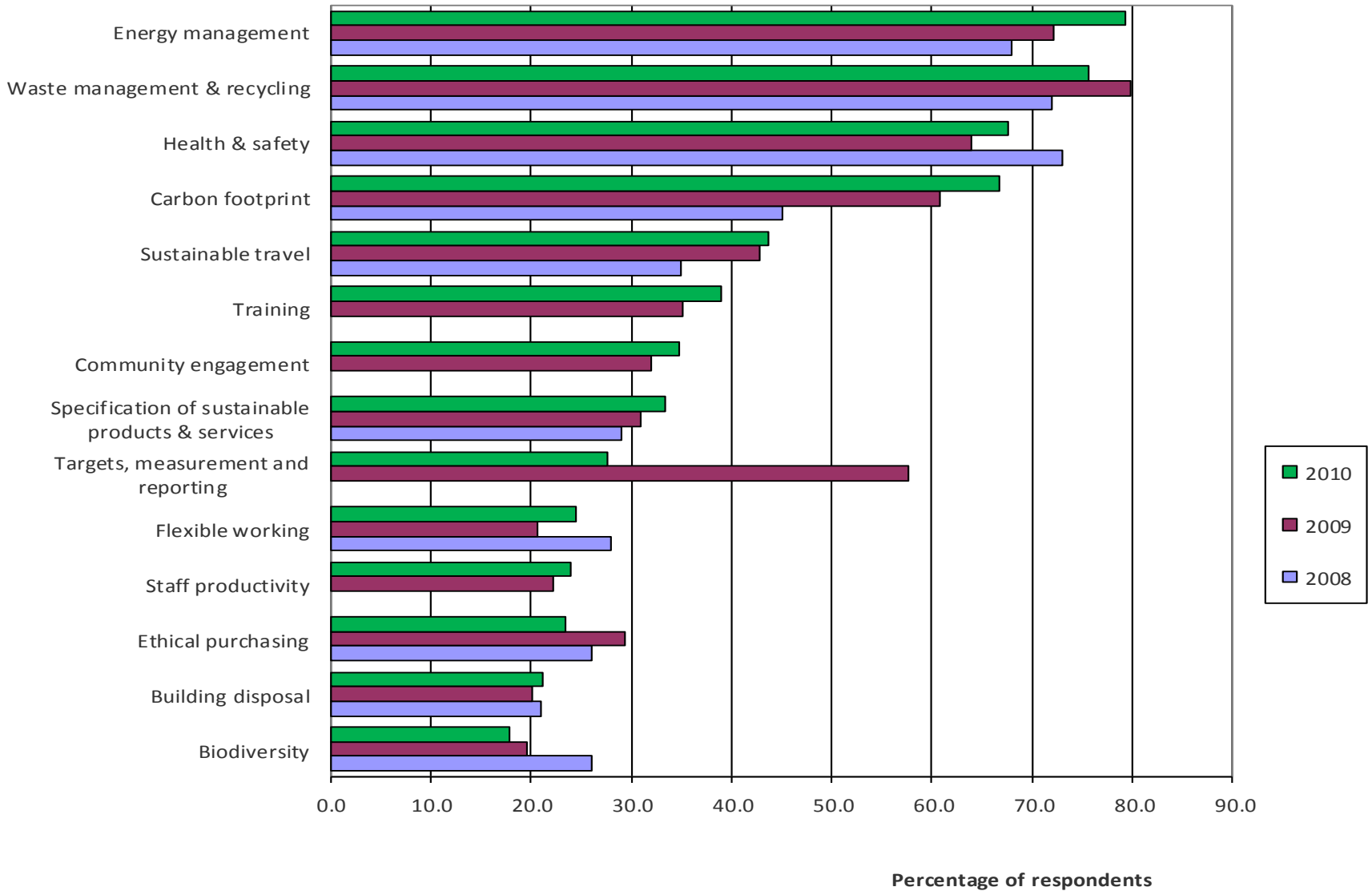
Organisations with a Sustainability/CSR policy



Organisational effectiveness of implementing and managing Sustainability/CSR responsibilities over last four years



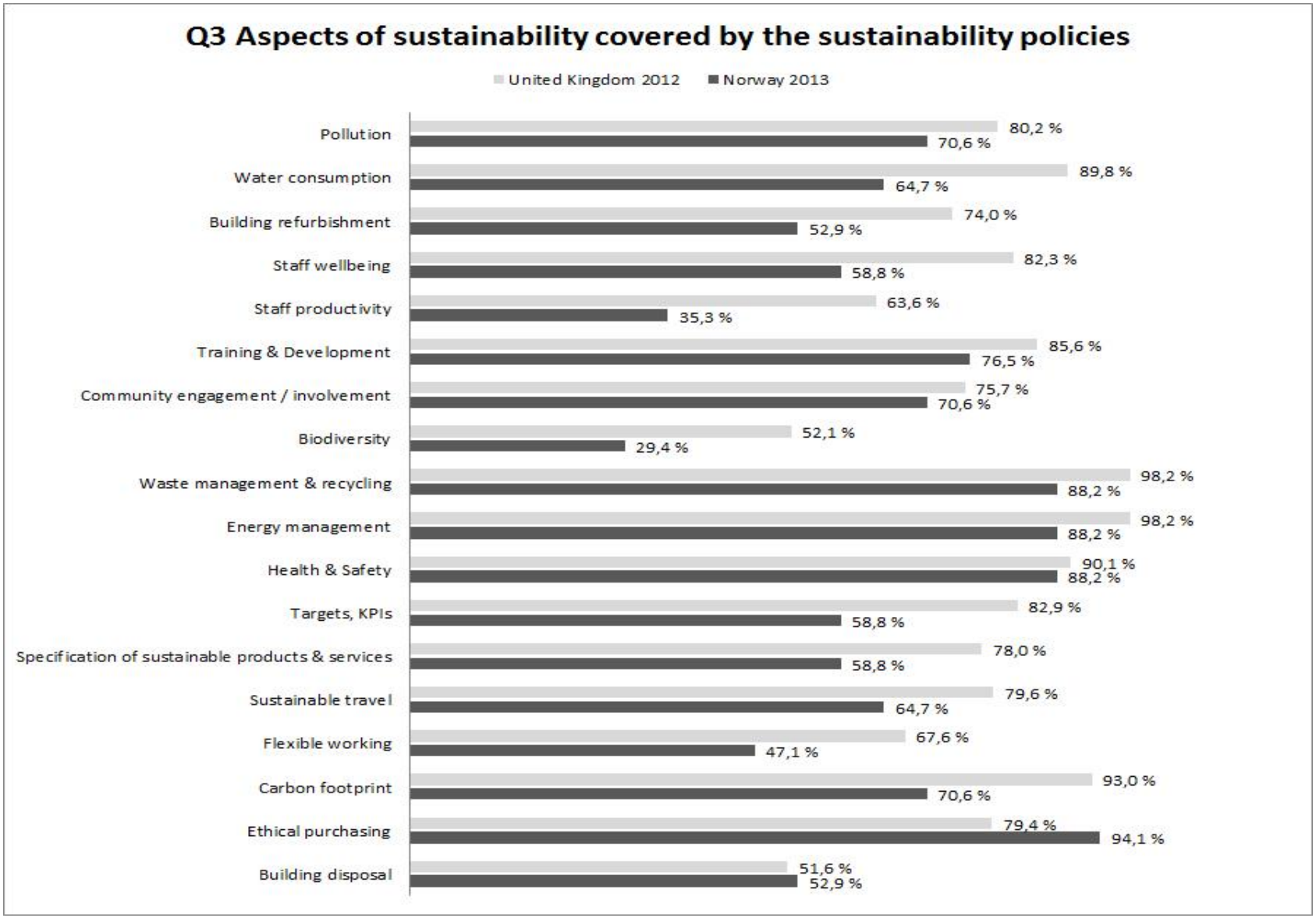
Aspects covered in sustainability reports



Uptake of sustainability policy, and associated barriers to implementation

- **The findings indicate that 72% of respondents believe that their organisations have sustainability/CSR policies in place.**
- **It is evident that the importance and relevance of sustainability in FM continues to grow as a primary requirement and expectation. Therefore there is a need to encourage all FM professionals to improve their competencies and skills in sustainability and CSR issues.**
- **Institutions like the BIFM can provide relevant information and knowledge resources by raising members' awareness through the education and training services it offers.**

SFM: comparative study between the UK and Norway



Case Study

University of Reading

- 17,000 students, 4,000 staff
- Higher Education Carbon Management Programme
- EcoCampus

Case Study

Provide detailed and meaningful data

Carrington Building

Case Study

How It Works | Detailed Monitoring | Live Energy Usage | Star Chart

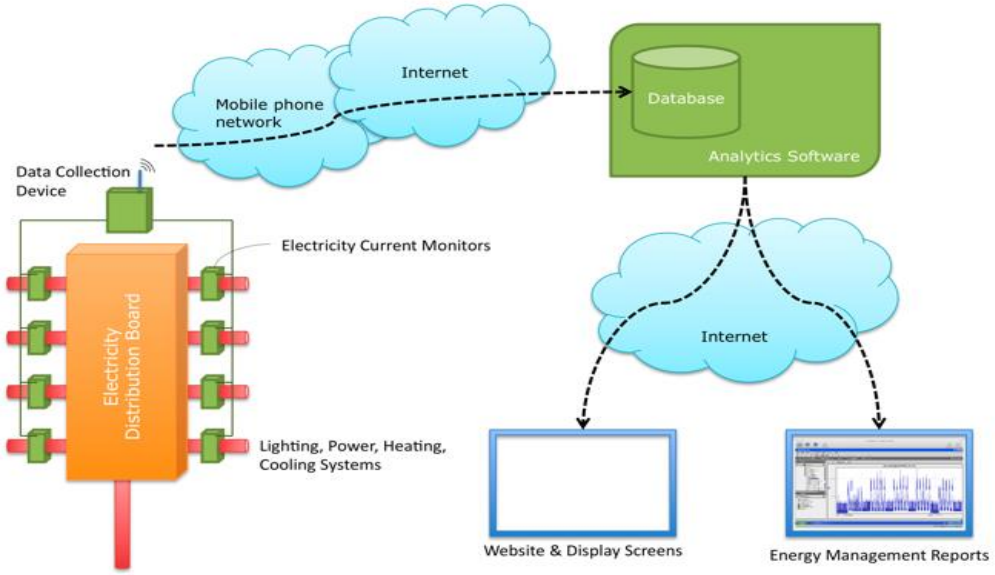
University of Reading

35%

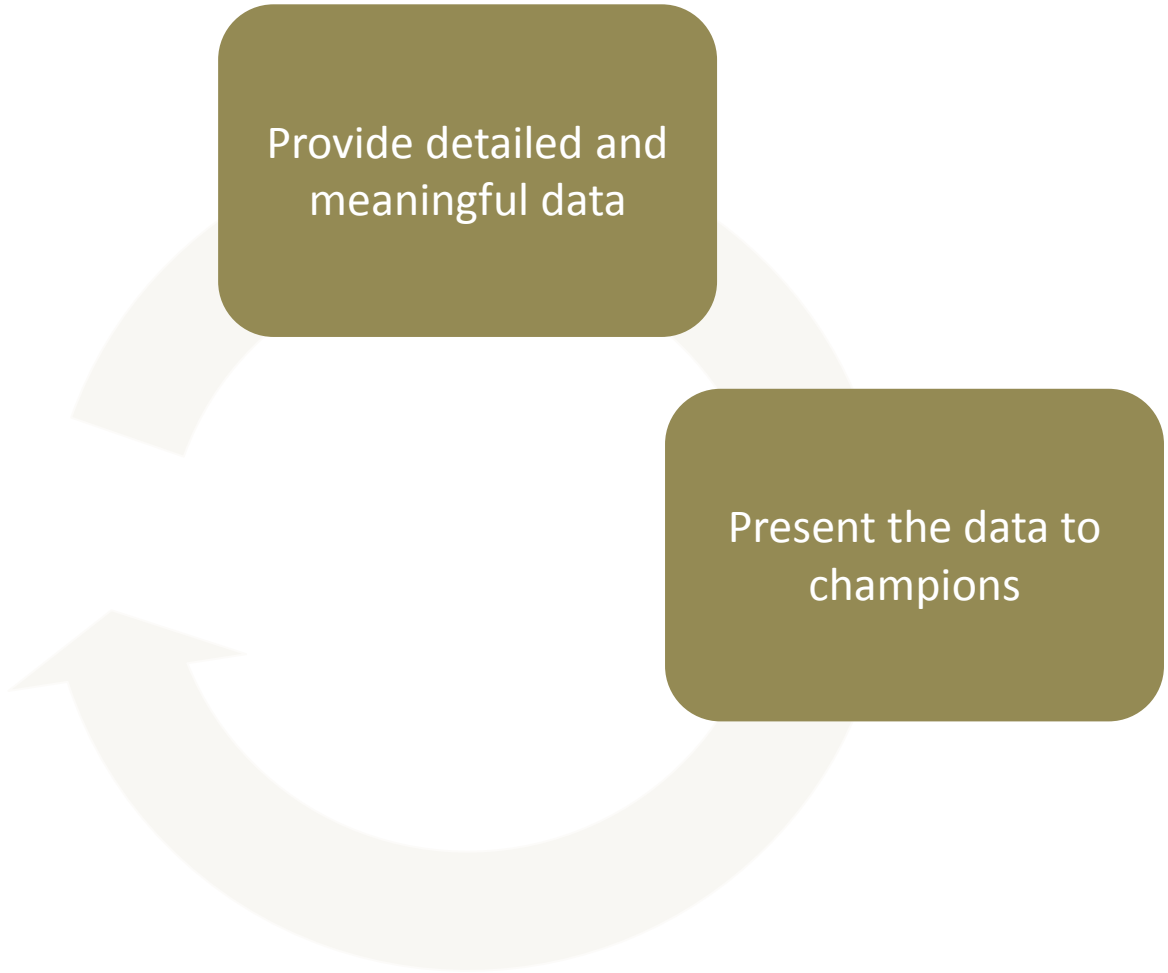
Energy Monitoring & Management — **Carrington Building**

How It Works

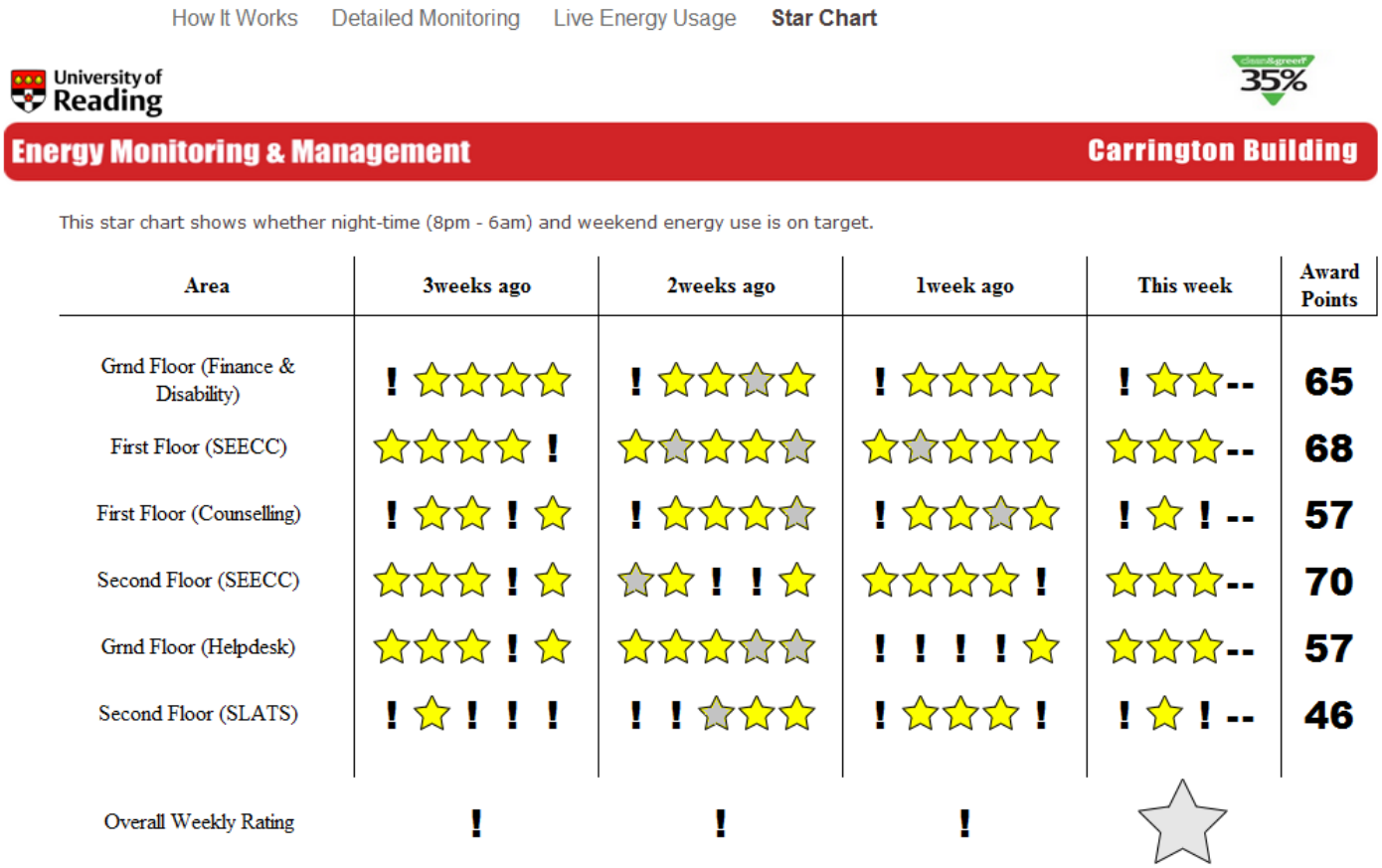
The university's energy management team has partnered with staff at the Carrington building and Carnego Systems Ltd to install state-of-the art electrical monitoring across the building. This solution monitors energy use around the clock in fine detail. It enables us to measure and analyse existing energy use and help us to target savings. The detail of the monitoring means that we can size how the different areas of the building are performing and identify unneeded energy use.



Case Study


Provide detailed and meaningful data
Present the data to champions

Case Study



How It Works Detailed Monitoring Live Energy Usage **Star Chart**

University of Reading

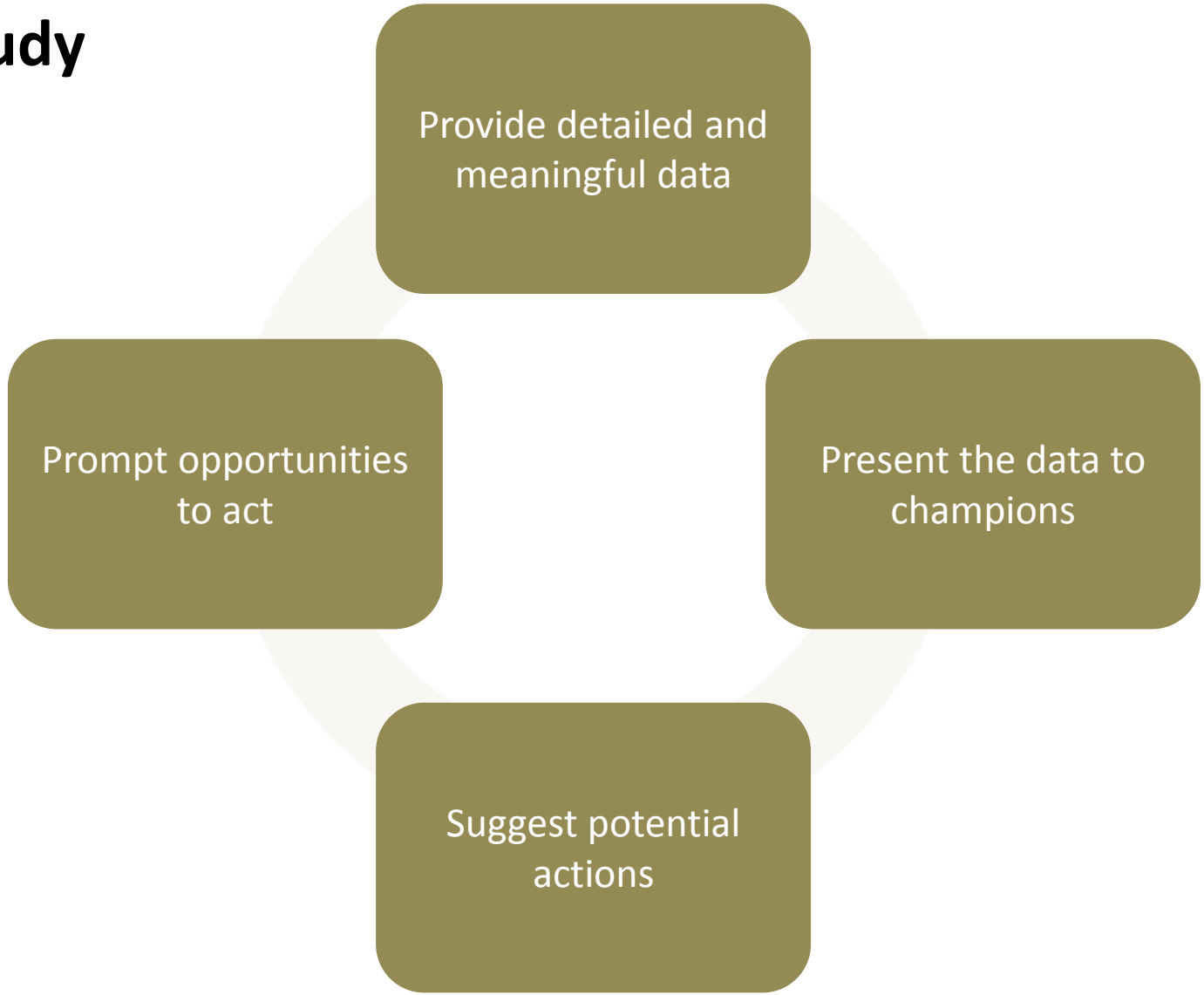
35%

Energy Monitoring & Management — **Carrington Building**

This star chart shows whether night-time (8pm - 6am) and weekend energy use is on target.

Area	3weeks ago	2weeks ago	1week ago	This week	Award Points
Grnd Floor (Finance & Disability)	! ★★★★	! ★★★☆	! ★★★★	! ★★--	65
First Floor (SEECC)	★★★★ !	★☆★★★	★☆★★★	★★★--	68
First Floor (Counselling)	! ★★ ! ★	! ★★★☆	! ★★☆★	! ★ ! --	57
Second Floor (SEECC)	★★★ ! ★	☆★ ! ! ★	★★★★ !	★★★--	70
Grnd Floor (Helpdesk)	★★★ ! ★	★★★☆☆	! ! ! ! ★	★★★--	57
Second Floor (SLATS)	! ★ ! ! !	! ! ☆★★	! ★★★ !	! ★ ! --	46
Overall Weekly Rating	!	!	!	☆	

Case Study


Provide detailed and meaningful data
Present the data to champions
Suggest potential actions
Prompt opportunities to act

Case Study

How It Works **Detailed Monitoring** Live Energy Usage Star Chart

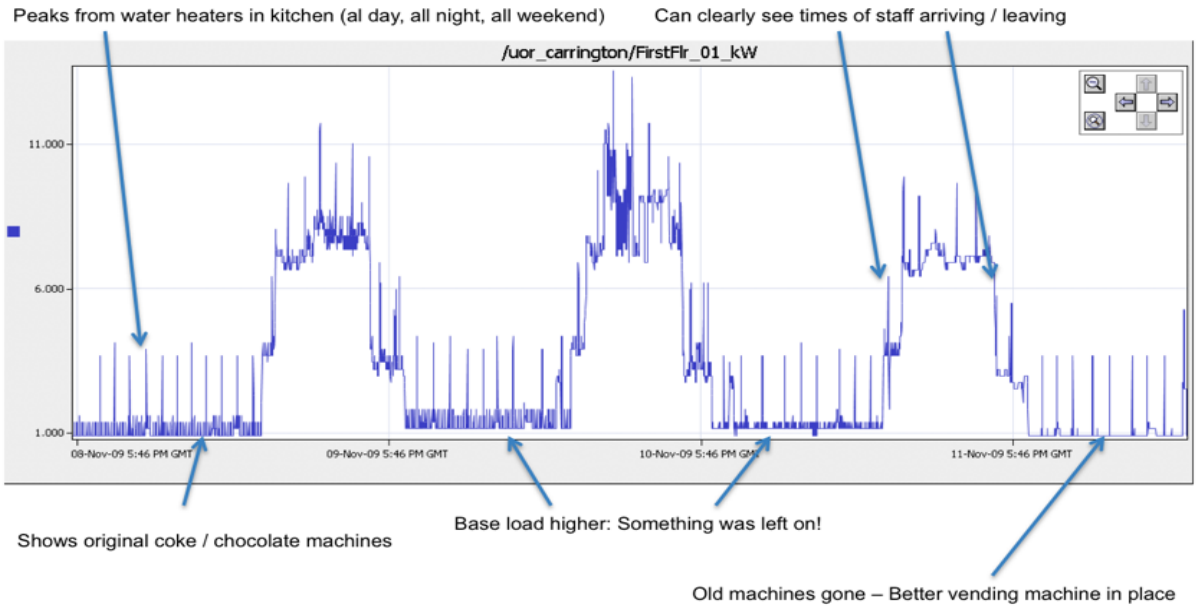
University of Reading

35%

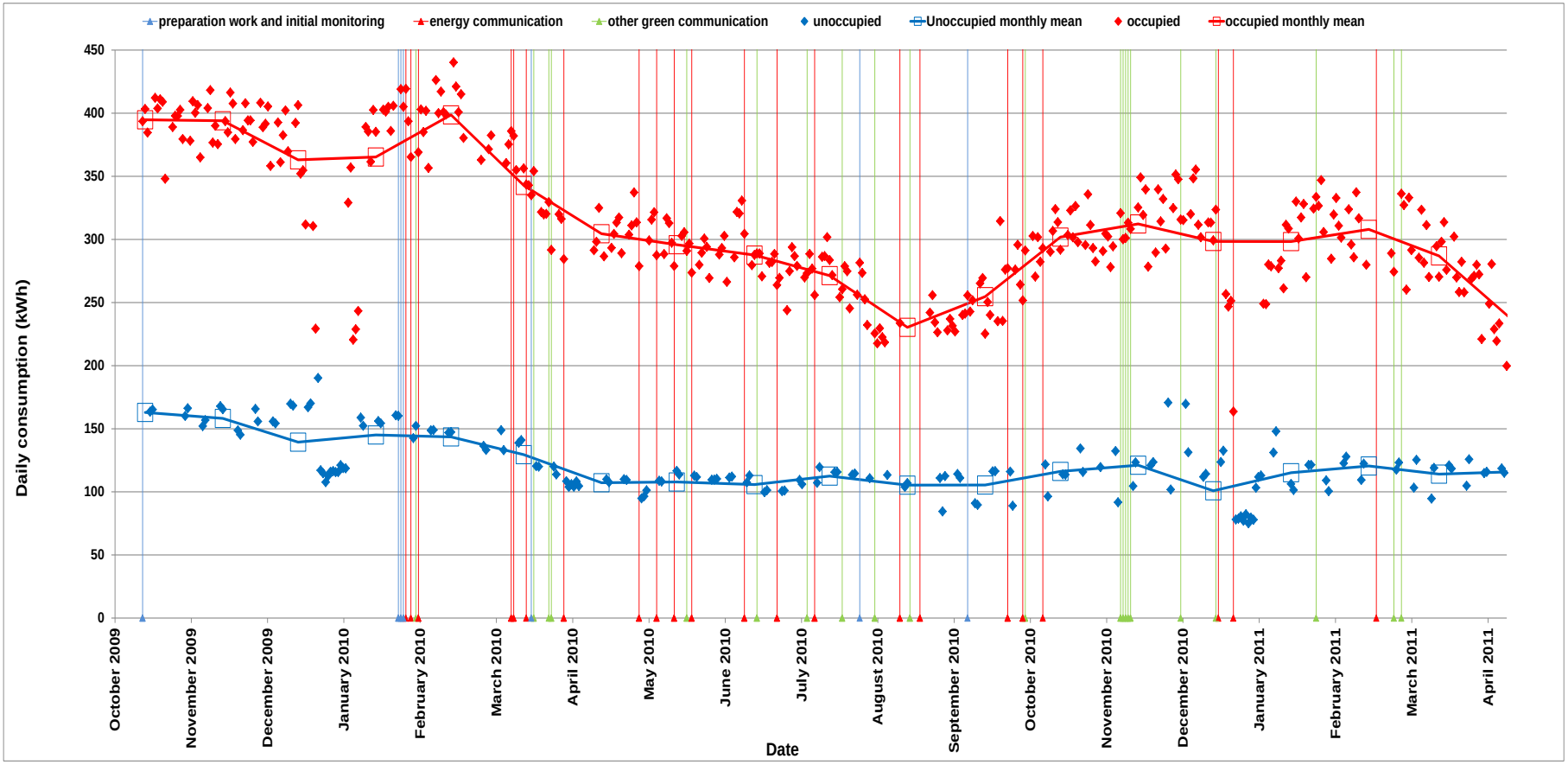
Energy Monitoring & Management **Carrington Building**

Detailed Monitoring

The energy monitoring service installed across the Carrington building provides highly detailed analysis of electricity. By monitoring on a minute by minute basis, details of energy use can be seen that are normally invisible. The graph below shows examples of how the energy monitoring reveals details of how energy is being used across Carrington.

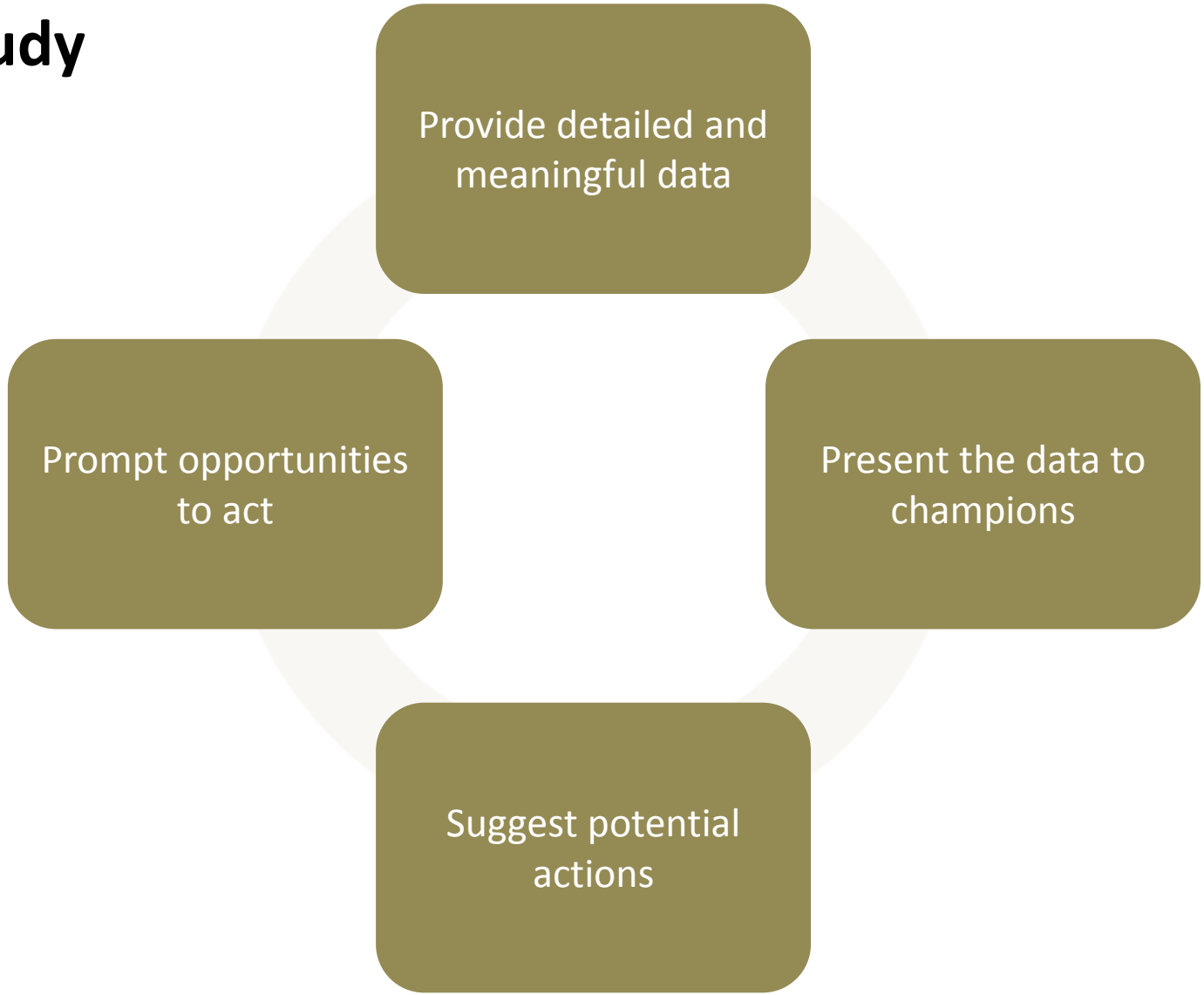


Case Study



Daily energy consumption, occupied and unoccupied and interventions

Case Study


Provide detailed and meaningful data
Present the data to champions
Suggest potential actions
Prompt opportunities to act

Case Study

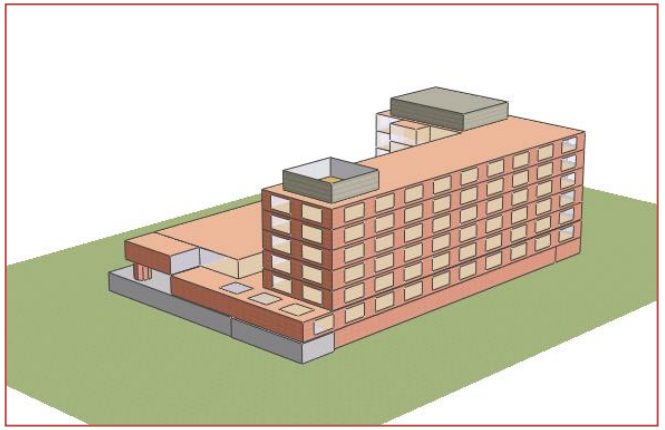

£63,000
Come and see
Carrington Building energy efficiency
The Carrington Building is part of a pilot project to understand energy consumption patterns on campus and reduce our carbon footprint in the following ways:
1 Discover whether building structure or occupant behaviour makes the biggest difference to energy consumption
2 Find the best means of communicating energy advice
3 Identify and prevent unnecessary energy use
4 Promote energy saving at home as well as on campus
5 Operate the ground source heat pump even more efficiently
Install
Two energy meters are installed per floor in the Carrington Building. The heat pump is also metered.
Monitor
Electricity consumption is monitored minute by minute on the meters.
Analyse
The charts are then analysed to spot trends in the data. This highlights opportunities to reduce energy consumption.
Working with the users of the building, inefficient equipment and wasteful behaviour can be identified and improved.
How much could we save?

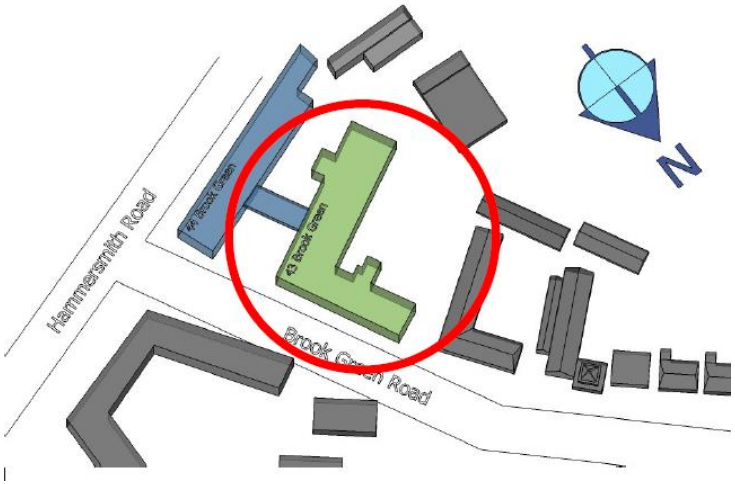
Case Study

Halcrow's current HQ

- 5-storey building in London
- Built in 1930s
- Recently refurbished

and occupied by 450 employees





Refurbishment: Technology

Old HQ (Vineyard House)

- Naturally ventilated
- Manual lighting controls
- Perimeter radiators
- Portable heaters and fans

New HQ (Elms House)

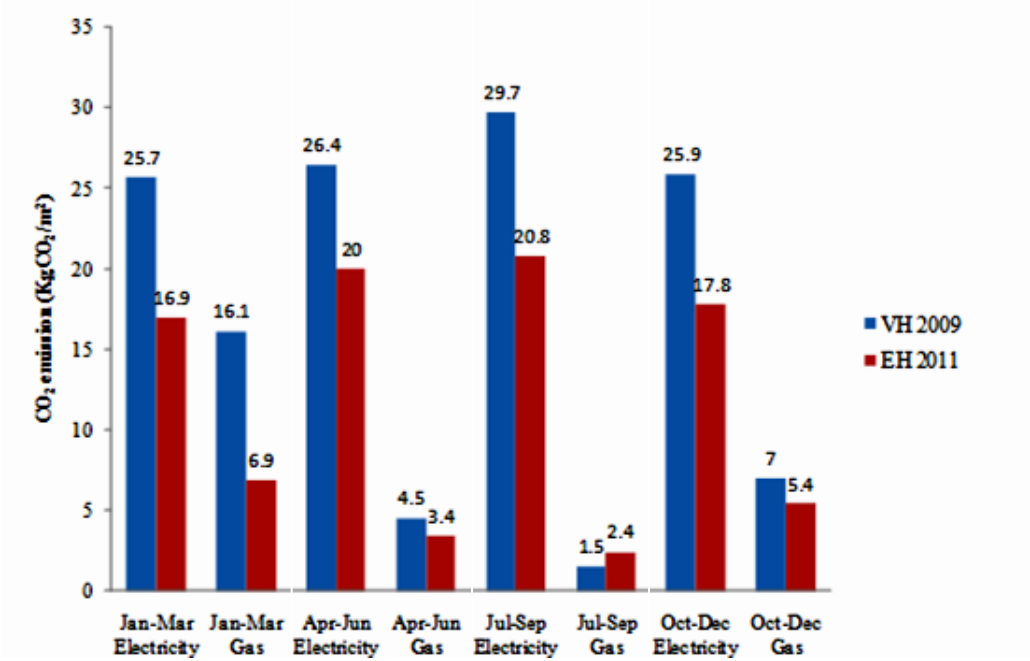
- Mechanically ventilated
- New Fan-coil units
- New AHUs with heat recovery “recouperators”
- PIR and daylight sensors,
- HVAC controlled by BMS

Employee surveys, Results

- Response rates: 31% for both pre- and post-occupancy surveys
- EH was a more satisfactory environment compared with VH
- The main problematic areas at VH and EH:

	Physical conditions	Interior use of space	Indoor facilities
VH	Indoor temperature, air quality, personal control	Meeting areas, contemplation areas, auditory privacy	Shower facilities, Canteen facilities
EH	Indoor temperature in winter, personal control	Auditory privacy	Nil

CO_2 emission: EH vs. VH, EH vs. Benchmarks



- EH CO_2 performance was *19%* worse than the "good practice" standard benchmark (CIBSE,TM22), but *33%* better than the "typical" benchmark.
- The total CO_2 emission at EH was 93.6 $kgCO_2/m^2$ which was *32%* less than that measured at VH.

Performance Gap

Rethinking Sustainable FM

Increase in the delivery of sustainability services by the facilities management sector to clients - whether internal or external – driven by legislation stakeholders' pressure

There is still significant variability in the level and scope of sustainability performance - 'greenwashing'

Such issues cause confusion for the wider property sector and general public and can damage the progress that has already been made.

The intent for this Index is to raise the performance and delivery of sustainability by showcasing achievement and highlighting excellence. It is also intended to provide a positive change within the sector, through both internal performance and external perception.

Rethinking Sustainable FM

Methodology:

Using multi-methods based on Action Research Approach.

State of the art literature review;

Study of existing indices;

Desktop study of FM organisations being publically listed, and achieving 25% of business turnover;

Questionnaire survey (2014);

Case studies (2014);

Focus Group Workshops (2014);

Delphi-technique (2014).

Rethinking Sustainable FM

Sustainable FM Index: Developing the Criteria

6	SOCIAL
Health and safety	The company carries out internal and external health and safety audits and the board manager with responsibility undertakes regular site visits. Performance data and targets are available externally and certified (OHSAS 18001).
Employment	The company has a commitment to employing local labour. It can provide examples of local employment initiatives and strategies for combating long-term unemployment.
Sustainable communities	The company is dedicated to developing a relationship with the local community. It can provide examples of projects where it has developed a long-term community engagement strategy.
Stakeholder engagement	The company has identified its key stakeholders and can provide examples of detailed stakeholder dialogue as well as open, proactive relationships with NGOs and other organisations seeking to promote best practice in sustainability.
Supplier management	The company engages with its supply chain in a proactive manner to encourage innovation. It provides timely payment terms and promotes the use of small and medium enterprises to work in collaboration
Employees	Regular two way dialogue with staff, including POE studies to optimise working conditions, productivity and wellbeing leading to reduced sickness and turnover rates. Evidence of practices that have been used to achieve the aims

Rethinking Sustainable FM

Sustainable FM Index: Developing the Criteria

7	MANAGEMENT AND GOVERNANCE
Risk management	Reporting includes detailed description of approach to both financial and non- financial risk management.
Board commitment	The company has secured board level commitment to sustainability and has a high-level committee to integrate sustainability issues into business decision-making. The company has either internal or external resources to assist with implementing the sustainability strategy.
Sustainability policies	The company has a board-approved comprehensive sustainability policy integrating environmental, social and governance responsibilities and publishes its policies in its cores (reports) and supplementary (websites, etc.) disclosure.
Disclosure	Supplementary disclosure has external assurance and contains full descriptive issue coverage (environmental, social and governance) with management targets and extensive performance data, targets and priorities for the next year.
Financial	Specific ring-fenced budgets are available for investment, with capital spend reviewed for sustainability impact and financial and non-financial benefits.
Compliance	Structured approach to managing legal compliance in a proactive manner with commentary around any breaches or civil sanctions imposed e.g. new CRC regime.
Contracts	Use of sustainable clauses and other mechanisms to encourage collaboration and innovation all parties to deliver sustainability benefits to reference supply chain, and other reference stakeholders.

Rethinking Sustainable FM

Sustainable FM Index: Developing the Criteria

8	ENVIRONMENTAL
Management systems	The company has an environmental management system certified to ISO 14001 or other management systems such as ISO 50001, PAS99 and makes its environmental performance data available to external stakeholders, is 3rd party verified to create a robust certified management system and communicates the scope of the system
Ecology	The company states that full biodiversity action plans are completed for not only corporate activities but across all sites and implementation is monitored. Biodiversity planning is recognised to add value to their business and operations.
Climate change mitigation	The company recognises climate change as a critical business issue and demonstrates a commitment to achieving high standards of thermal efficiency, lighting solutions, on-site renewable energy and energy efficiency and can provide examples of projects (in progress or completed). The company can also provide performance data and targets relating to its climate change impacts.
Water	The company can provide examples of projects that have incorporated water minimisation devices, specified water-efficient equipment, used rainwater harvesting, and grey-water recycling systems that have integrated sustainable urban drainage systems. The company can also provide performance data and targets relating to its water impacts.
Waste	The company integrates the waste management hierarchy and can provide examples of projects that have delivered significant reductions in waste, reuse and closed loop recycling, as well as facilities for composting organic waste. The company can also provide performance data and targets relating to its waste and resources impacts.
Transport	The company acknowledges the importance of reducing vehicle dependency (staff and supply chain), states a commitment to upgrade fleet travel and promote public transport, and can provide examples of innovative initiatives to reduce vehicle dependency and the environmental impacts of vehicle travel.
Materials	The company states that it has a consistent and detailed process for considering the environmental impacts of materials and specifies the use of recycled/reclaimed materials, materials with low embodied energy and high recycled content, and timber from FSC-certified sources. The company discusses with its suppliers their approach to environmental impacts.
Projects	Lifecycle reviews of projects are undertaken to embed sustainability practices, with a structured approach to involve FM in the design, commissioning and knowledge transfer exercise. Evidence of examples where this has been implemented.

Conclusion

- **Sustainability is emerging as a core business strategy and FM professionals are at the forefront of implementing and managing it in the workplace. H**
- **Sustainability and CSR are increasingly employed by FM organisations**
- **The findings indicate that the issues covered within sustainability policies are ultimately reflected in sustainability reports.**
- **There is evidence of a gap in the coverage of environmental and social components of sustainability agenda which are most appropriate for the built environment.**
- **Therefore there is a need to encourage all FM professionals to improve their competencies and skills in sustainability and CSR issues.**
- **Professional institutions like the BIFM can improve its members understanding of sustainability by providing relevant information, knowledge and guidance materials that are up to date especially where it is less emphasised. Awareness and understanding sustainability issues can be aligned with the core competence requirements of members.**

Humanity and the planet

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Sustainability in FM

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