

Green Retrofit buildings: from sustainability to profitability



Dr. Wisdom Kwawu

University of Reading

On secondment to the British Institute of Facilities Management

Background

- ❖ **Corporate Social Responsibility and efficiency are highly valued**
- ❖ **Rising utility and maintenance costs**, existing building stock embodies significant potential for sustainable retrofits
- ❖ **Sustainability has moved from being a ‘nice-to-have’ to a ‘must have’ programme**
- ❖ **Significant operating cost savings by taking simple steps or modifications to their facilities.** *Boost profitability and productivity through the well-being of occupants, whilst minimising utility consumption*

Sustainable retrofit buildings

- ❖ Reduce environmental impact
- ❖ Maximise efficiency and productivity
- ❖ Minimise operating costs
- ❖ Maximise overall profitability



Reduce environmental impact

- **Minimise carbon footprints, waste disposal, water and energy use**
- **Minimise usage of limited resources,** hence *'meeting present needs without compromising the ability of future generations to meet their own needs'*
- **Improve the well-being of occupants and users**



Maximise efficiency and productivity

- ❖ Flexibility and efficiency of workspaces – comfortable work environment
- ❖ Modern operating and management practices
- ❖ Energy Conservation Measures (ECMs) can be used to improve **sustainability**. *Lighting upgrades and controls and Building management system controls*



Minimise operating costs

- ❖ Minimise use of utilities and consumables such as energy, water and office stationery
- ❖ Adopt the ‘Reduce – Reuse – Recycle’ methodology where appropriate
- ❖ Identify opportunities for untapped cost savings
- ❖ Minimise on-going maintenance and repair costs



Minimise operating costs

Building fabric issues	Technological	Occupant Behaviour
<ul style="list-style-type: none"> ✓ Increase insulation ✓ Improve air tightness (e.g.. draft stripping) ✓ Double glaze/secondary glaze ✓ Consideration of passive architecture (e.g.. solar gain) 	<ul style="list-style-type: none"> ✓ Low energy lighting solutions (e.g. PIR sensors) ✓ Improved heating and ventilation control ✓ Voltage optimisation unit ✓ Upgrade equipment and appliances ✓ Use 'Eco buttons' ✓ Upgrade building services (e.g.. boiler plant, AHU) ✓ Install renewable energy technologies (e.g. micro wind turbine) ✓ Grey water systems 	<ul style="list-style-type: none"> ✓ Adjust system set points ✓ Use programs and timers ✓ Configure office equipment power settings ✓ Thermal comfort using clothing level ✓ Switch lights and equipment off ✓ Shared equipment (e.g. printers) ✓ Recycle consumables ✓ Switch energy tariff to 'Green' or 'Good CHP'

Maximise overall profitability

- ❖ Opportunity to translate sustainability into profitability
- ❖ Lower construction costs
- ❖ Government incentives



Sustainability to profitability key processes

- ❖ Mobilize commitment
- ❖ Create a shared vision and value
- ❖ Identify, and analyse processes and systems
- ❖ Create monitoring and targeting strategies that ensures optimal operation
- ❖ Review progress

Mobilize commitment

- ❖ **Staff buy-in from the outset is needed at all levels in the organisation.** *Everybody needs to be prepared for the discipline involved in operating the building in the correct way*
- ❖ **Appoint sustainability champions** to promote active user engagement
- ❖ **Plan for managing change,** *users need to understand why things have to operate in a particular way*
- ❖ **Plan rollout ,** *phased operations enable ideas to be tested, outcomes communicated, plans refined before significant changes*

Create a shared vision and value

- **Create interest at all levels within the organisation.** *Get staff teams to compete with each other in energy savings and waste reduction*
- **Facilitate open communication**
- **Analyse opportunities**
- **Cultivate integrated value positions** *with Good Practice Guides*

Identify and analyse processes and systems

- ❖ **Ask staff to identify opportunities and challenges** *to ensure they feel part of the assessment process*
- ❖ **Relate action to several objectives .**
Couple of KPIs for each objective
- ❖ **Identify non financial paybacks** *which are good news stories, as many retrofits may not pay back quickly*



Create monitoring and targeting strategies that ensures optimal operation

- ❖ **Monitor feedbacks.** *Sustainable solutions should be informed by real-world experiences of staff*
- ❖ **Monitor efficiency of equipment frequently**
- ❖ **Define the KPIs used for evaluating stated goals.**
Measure several elements such as occupancy, utilisation rate, staff engagement for a wider picture of the change's impact
- ❖ **Communicate successes to all stakeholders**

Review progress

- ❖ Re-evaluate and improve strategies and plans
- ❖ Check progress against costs and savings
- ❖ Avoid danger of a single measure
- ❖ Review unintended consequences

Final thought

- ❖ Sustainability has moved from being a ‘nice-to-have’ to a ‘must have’ programme
- ❖ Sustainable retrofitting existing buildings provides substantial operational cost savings *while contributing towards reducing carbon emissions and environmental footprints*
- ❖ Green retrofit buildings can help businesses **boost profitability** *but need to consider the human interface in all strategies*
- ❖ Buildings and facilities do not use utilities such as energy and water, people do!!



Thank you

Wisdom Kwawu, University of Reading

w.e.k.kwawu@reading.ac.uk