Leading Examples of Energy Efficiency in Buildings & Industry

Achieving an 80% carbon reduction in the home: experiences from Retrofit for the Future projects



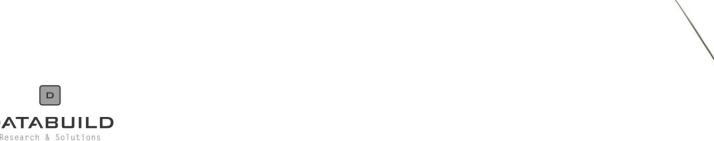


What will be covered...

o UK policy context

o The RFF and our evaluation

o Key findings and implications to date





Current UK energy policy

- o Government climate change targets:
 - > 30% of electricity from renewable sources by 2020
 - > cut greenhouse gas emissions by 50% on 1990 levels by 2025 (80% on 1990 levels by 2050)
- o Targets enshrined in the Energy White Paper (May 2007) and Low Carbon Transition Plan (July 2009); updated in the 2012 Energy Bill.
- o Primary responsibility lies with the Department of Energy and Climate Change (DECC)





Retrofit for the Future

- Multi-million pound competition organised by the Technology Strategy Board
- Enables building and renovation companies to retrofit and refurbish social housing. Grants of up to £150k per property.
- o Aims are to:
 - ▶ Demonstrate how far whole-house retrofit can contribute to CO₂ emissions reduction targets.
 - > Provide evidence of actual in-use performance benefits and costs.
 - ➤ Kick start for the retrofit market and prepare UK business for the opportunity (including skills development).
 - > Find innovative and cost effective solutions and evaluate them for future procurement.





The evaluation

- o Home visits, walkthroughs and 'a week in the life' energy use diaries with households.
- Interviews with project managers, architects and installers.
- o Aims are to:
 - Explore occupant experience and interaction with measures.
 - ➤ Help to explain physical monitoring data and variance from 'as designed' performance.
 - Ultimately, shape future schemes





Caveats in extrapolating findings from the project

- o Little commercial risk (funding was from TSB)
- o Participants were not paying customers
- o Participants were sometimes not in situ





Designing the retrofit: things to consider



- Plan ahead and secure supply
- Level of contractor skills / experience of technologies
- Cost of purchase and installation complexity; few cost models for pioneering whole house retrofit
- Need for planning permission





Selecting and engaging households



- Mixture of approaches to household selection competition or convenience.
- Pioneering nature of the works not always sold (but it could make people more grateful / understanding of issues).
- o Easier and more efficient to work on an empty property?





Installation



- Expect the unexpected e.g. asbestos.
- Incentives allay a lot of reservations.
- Need to manage expectations dissatisfaction with level of disruption to lives and length of time taken to complete the works
- Multiple contractors must be carefully managed and coordinated.





Occupant experience and understanding

- Some controls difficult to use
- Some occupants not given adequate instruction

Leads to risks of:

- -going to sources providing the wrong information
- -people being scared of the measures and so not setting them to achieve optimal (or even improved) performance
- -resorting to quick fixes that negate benefits





Outcomes and customer satisfaction

- Increased warmth / comfort tangible for almost all (excessive air tightness an issue for a minority)
- Additional benefits: health, security, financial. No energy use monitoring data yet to verify.
- 86% prefer the property as it is now. Most very proud of the property – a definite 'envy factor' from family, friends and neighbours.
- o People will affect performance and this should be factored in.





Value of the program

- Savings can be achieved, but 80% is very challenging and to achieve it can affect occupants adversely
- o Pioneering retrofit measures can be delivered, can be palatable and even desirable
- There are opportunities through pilots of driving sector excellence and building skills





Key lessons for project design

- Build construction and architecture expertise to ensure the industry can deliver (scheme can act as an incentive for this)
- Good to be ambitious but better to do less well than lots badly?
- Recommend occupant handover and measure guidance approaches and give partners clear responsibility for this
- Establish aftercare and monitoring.





Thank you.

Any questions...?



