

ESEE Abstract (600 – 1200 words)

The Energy Efficient Retrofit (EER) of both residential and commercial buildings is considered fundamentally important in many countries, particularly in Europe, for a variety of environmental and social reasons. Lowering carbon emissions, ensuring energy is affordable for everyone and enhancing the security of energy provision, all influence national motivations toward improving the existing building stock's energy efficiency (DECC, 2014). Increasingly the improved energy performance of buildings is being appreciated in terms of the multiple benefits on offer (IEA, 2014) (Cambridge Econometrics, 2014). These analyses consider energy efficiency improvement in macroeconomic and public health terms, essentially highlighting the positive externalities that are rarely included in conventional economic evaluations of EER, and energy efficiency in general. A fuller appreciation of the value of EER could result in a sea change in implementation levels, but these positive externalities often fall outside the realm of the private individual making the decision and accrue to the state. Alternative appreciations of value by the individual can be seen in the purchase of new kitchens and bathrooms that offer next to no possibility of economic payback, but currently receive substantially more investment than EER. Despite multiple studies that demonstrate the possible options for EER, significant lethargy exists in relation to activity, in many countries across Europe. Innovative facilitation schemes are being trialled in countries across the continent (IEA, 2008), trying to overcome some of the barriers to action such as access to capital, information asymmetry and the hassle factor.

The UK presents an acute case study when focusing on the importance of EER, and levels of EER implementation. It has one of oldest building stocks in Europe and one that is considered amongst the most energy inefficient (BPIE, 2011). Major EER schemes that have taken place in the UK have demonstrated the considerable benefits that can be achieved, but government policy designed to encourage EER uptake, has been criticised for not promoting a full suite of measures and instead has targeted the most cost-effective or the lowest hanging fruit. Energy efficiency policy from 2002 onwards has involved Energy Supplier Obligations (ESO) where funds are levied from large energy suppliers to reduce the energy consumption of their customers. Independent analysis of the uptake of EER in this period has seen the most cost effective measures largely meet their intended uptake targets. ESO policies have, however, done little to encourage EER measures that are equally necessary in terms of carbon emission and fuel poverty reduction, but that are not as favourable in terms of the conventional economic rationale of payback periods or net present value (CCC, 2014). This paper evaluates the use of a revolving fund as an innovative means of financing greater EER activity. A revolving fund can help to implement measures that are equally necessary but are not necessarily economic.

The fund utilises on-bill financing to capture some of the savings from the most cost-effective measures to help finance the less cost-effective options. A greater suite of measures can be implemented whenever EER measures are implemented alongside each other rather than those with the shortest payback periods being cherry-picked, and those that offer equal or greater overall value being left on the shelf. Using an ex-post evaluation of the costs and savings of one of the largest EER schemes to take place in the UK (Kirklees Warm Zone) (Webber, 2014), alongside a model designed specifically to assess a revolving fund's operation, the potential for recycled investment is examined. A variety of different scenarios for how the recycled investment could be spent are considered including a max carbon benefit option, a max financial benefit option and a scheme that looks solely

at funding solid wall insulation. The analysis reveals considerable potential for recycled investment from such a scheme, whilst acknowledging the substantial barriers to public acceptance and potential implementation.