

ENERGY SAVING KITS – EDUCATING AND EMPOWERING END USERS? A Cross-Country Case Study Comparison

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Keywords: Demand-Side Information, Energy efficiency, Behaviour, Residential, Energy Saving Kits

EXTENDED ABSTRACT

There are many ways to approach Demand-Side Management (DSM) and Demand-Side Information (DSI) programmes, from the rather complex (e.g. smart meter and energy feedback device data) to the rather simple (e.g. social media campaigns). This paper formed part of a special session on “recent developments in DSM and DSI to reduce energy consumption”. The International Energy Agency’s Demand-Side Management Programme’s (IEA DSM) Task 24 is called “Behaviour Change in DSM” and has been studying behaviour change theory (Phase 1) and practice (Phase 2) for almost 7 years now. Here, we will focus on a residential case study in Ireland that uses Energy Saving Kits in an attempt to educate and empower Irish householders on their home’s energy performance. We will also present an international case study comparison of similar programmes, based on interviews with programme managers in Canada, Australia, the US and New Zealand.

Task 24 has tested the usefulness of a “Collective Impact Approach” (CIA) [1] in field research settings, including the one described here in Ireland. This approach is premised on the belief that no single policy, government department, organisation or programme can tackle or solve the increasingly complex problems we face as a society. The approach calls for multiple organisations or entities from different sectors to compromise on a common agenda, shared measurement and alignment of effort. In addition to following the CIA, a “Behaviour Changer Framework” [2] was created to provide an overview of the social ecosystem, focusing on all relevant stakeholders, i.e. the *Behaviour Changers* from the different sectors and their relationships with one another, and the *End User*. This approach was used to guide the development of a collaborative field research pilot using public libraries to loan out Energy Saving Kits.

Public libraries have been used as “Middle Actors” to loan out Energy Saving Kits since the early 90s, when the idea was first implemented in Southern Australia. There are now many such programmes, especially in the English-speaking world, and they are generally regarded as highly successful – despite lack of measuring direct behavioural outcomes or impacts. A typical Energy Saving Kit, such as in Ireland, contains 6 measurement tools to assess current energy use, or determining/fixing the (in)efficiency of: **heating** (radiator key), **appliances** (plug-in energy monitor), **insulation** (thermal leak detector), **fridge/freezer** (fridge thermometer), **thermal envelope** (digital thermometer and humidity metre), **water** (stopwatch to measure water flow in e.g. shower). Some of these tools are very simple to use (e.g. stopwatch) and some require more reading instructions and effort (e.g. plug-in energy monitor). Some are simply to provide insights into the current situation, including showing potential issues like

leaks or draughts or energy-draining appliances which would require further investment or the call-out of professional tradespeople. Others can be used to immediately remedy a problem – e.g. the fridge/freezer thermometer or radiator key used to bleed radiators to improve their efficiency.

In addition to using a Collective Impact Approach and the Behaviour Changer Framework, we also used another Task 24 tool called “Beyond kWh” to partly evaluate the impact of the Irish programme. All programme managers interviewed regarded their programmes as highly successful, due to long waiting lists and high loan rates of the kits. However, hardly any conducted additional surveys of householders who borrowed the kits and none could point to any definitive changes in energy literacy or energy efficiency and conservation behaviours associated with the tools in the kits. The Irish programme, in addition to using qualitative surveys, focus groups and interviews to determine end user experiences with the kits, also used Pre- and Post-Beyond kWh surveys, based on psychometric testing [3],[4].

35 (out of 44 recruited) households completed pre- and post-kit surveys measuring their attitudes toward the kits themselves (e.g., perceived utility, positive experience), frequency of energy-saving behaviours (e.g., limiting shower time), and attitudes toward environmental issues (e.g., concern about ecological damage). Respondents were between the ages of 18 and 60+. The majority were home owners ($n = 32$), and identified as male ($n = 23$). In addition to evaluating the overall descriptive summaries, we analysed whether there were any pre-to-post kit differences in frequency of environmental behaviours, and attitudes toward climate change and community environmental issues. Bayesian hierarchical regression models were utilised to examine whether there were positive changes in user’s energy-related behaviours and environmental attitudes when comparing their pre-kit scores to their post-kit scores.

Close to half of the participants ($n = 15$) used the kit for environmental reasons, and the majority ($n = 26$) heard about the kits from friends and family. Overall, 33 out of 35 users indicated that they would recommend the kit to others. Users had very positive appraisals of the kits, with the majority agreeing that the kit met their expectations ($n = 32$), made them think about their home energy use ($n = 34$), and encouraged them to consider replacing appliances ($n = 19$). The thermal leak detector was rated as the most useful tool in the kit, while the stopwatch and radiator key were the least useful. Results of the longitudinal analyses reveal small but potentially important differences between pre-kit and post-kit attitudes and behaviours, suggesting the potential for energy reduction through kit usage.

We presented the most interesting differences in Energy Saving Kit programmes in a cross-country case study comparison [5] and delved in more detail into why the Irish case study, informed by the Task 24 “Toolkit for Behaviour Changers” yielded more promising outcomes and results [6,7]. This included a step-by-step walk-through of the entire process, from identifying the issue to disseminating the work. *We would like to thank the Sustainable Energy Authority of Ireland for data collection and co-funding.*

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