Resource West Project

Pilot project to test the feasibility of utility companies' joint advice and messaging on domestic energy and water consumption

Final Report

WALES&WEST UTILITIES

Nationalgrid

UWE Bristol | University of the West of England

BRISTOL WATER

Executive Summary

The members of the partnership are:

- Wales & West Utilities
- National Grid
- Bristol Water (now part of South West Water)
- University of the West of England

The group collaborated to design a 6–month project to reduce domestic energy and water usage. This involved the recruitment of participants willing to make behavioural changes in their domestic routines and to report their results following their receipt of advice and communication tools to support the changes. The pilot project ran over the winter of 2022-23 to identify and quantify specific measured improvements. This report summarises the findings.

- The overall perceived value was 6.9 on the scale of 1 to 10. The split reflects the age demographic split to an extent. This can be considered a success.
- The predominant change implemented, over half the respondents, was from making more efficient use of appliances. This reflected the initial objectives set by participants.
- Over 1/3 of participants did not find any problems with following the advice. A substantial group encountered problems reading meters, interpreting bills and then deciding whether it was worth spending money to make savings. The problems were unaffected by the type of meter, smart or otherwise.
- There is not much change in their perception as a result of the project as regards energy but a greater sense of the importance of water. This is likely to have arisen in part from the very dry summer and restrictions arising during the summer of 2022.

For the participants providing us with sufficient readings,

- **Gas usage reduction was 4.4% - average kWh/day/household from 33.09 to 31.65**
- **Electricity reduction was 14.6% - average kWh/day household from 7.65 to 6.53**
- **Water usage per capita consumption (PCC) was down by 7.6% with litres/person/day from 105 to 97**
- **The average financial saving per participant was £88 per household over the period of the trial. This would increase over a full year.**

The partnership of organisations has worked extremely well and laid the foundations for further cooperation. These results are sufficiently impressive to support a future Ofwat Innovation Bid in UWE's opinion.

Expanding the project to a much wider cross-section of the public will need careful consideration to make it a practical proposition. The content of the advice and combination of water and energy messaging has worked well for many participants. This should apply to the public more widely. The data collection methodology needs to be streamlined if an increased scale of project is to be considered.

There was considerable in-kind investment in time from the partners, but the external cash cost was less than £16k. An expansion of the project would probably need increased investment to allow for the need for a 3rd party provider to be the main contact point.

Table of Contents

1 BACKGROUND TO THE RESOURCE WEST PROJECT AND ITS OBJECTIVES

The origin of the project was the Bristol Water Social Contract programme. The aim was to bring utility companies together to address several inter-related objectives to improve environmental resilience and protection. Following a review in the Spring of 2022, the partners agreed on a narrower range of objectives focussed on the energy driven cost of living crisis, reduction in water consumption and related education needs.

More specifically, the first target was the construction of a pilot project to run over the winter of 2022-23 to identify and quantify specific measured improvements following the development of advice and communication tools to support the changes. As this was a limited scale pilot project, Bristol Water's on-line customer panel was used as a recruitment source. While this is not a perfectly representative sample of the public since the group had already an expressed interest in water related issues and the environment, if the approach worked with this relatively well-informed group, it should be successful more widely. This report summarises the initial findings.

The members of the partnership are:

- Wales & West Utilities
- National Grid
- Bristol Water (now part of South West Water)
- University of the West of England

A memorandum of understanding has been signed and data sharing arrangements formalised as necessary.

Statement of Objectives

The Resource West's project aim is to encourage the public to save money and help protect the environment by reducing the consumption of energy and water while still maintaining warm homes. It achieves this by bringing local utility companies together to provide single consistent messages about how to make savings and get help in doing so.

More specifically this means the following.

- Encourage the public to reduce the consumption of resources by:
  - Illustrating the means to save money by reducing the use of energy and water while maintaining a healthy home environment
  - Providing advice and guidance on the benefits and use of devices, patterns of use, smart and other meters to minimise water, gas and electricity use in a safe and healthy way
  - Signposting the means to get financial advice and support with paying utility bills
  - Measuring, recording and tracking the impact of the changes made
  - Indicating the assistance which utility companies themselves can provide including for those with priority needs
  - Providing simple financial illustrations for many of these points to deepen the public's understanding of these financial, practical and environmental issues
  - Reducing energy consumption through the installation of better insulation methods and the sources of help for doing this

- Inform and educate the public about:
  - The importance to the environment of reducing the consumption of energy and water
  - The potential situation and consequences for everyone if demand is not reduced
  - How gas, electricity and water distribution systems work and are affected by daily, seasonal or long-term changes in demand
  - What the utilities are doing themselves to reduce the waste of resources and what steps they take to protect the environment and safeguard supplies in future
- Work with local authorities, charities and other agencies to achieve the above educational and support aims
- Provide funding to support the above aims and make use of contractors to provide services to enable these aims to be achieved including but not limited to promotional and educational activities and events
- Determine the most effective ways of collaborating to be able to extend and widen the effectiveness of this programme

2 ACTIONS TAKEN AND PROGRESS MADE

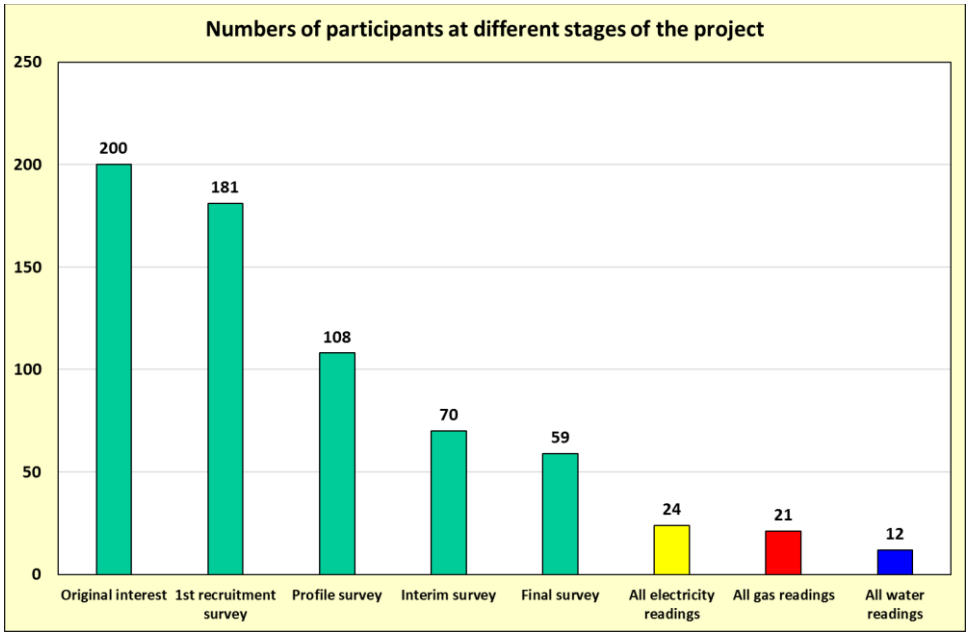
The group collaborated to design a 6–month project to recruit participants willing to make behavioural changes in their domestic routines and to report their results. The pilot project ran over the winter of 2022-23 to identify and quantify specific measured improvements following the development of advice and communication tools to support the changes.

• Finalisation of objectives and modus operandi	July 2022
• Initial recruitment and survey of expectations	September 2022
• Design of initial summary advice	October 2022
• Completion of follow-up more focussed follow-up advice	January 2023
• Intermediate participant survey	January 2023
• Final meter reading collection	March 2023
• Final survey feedback	March 2023

The purpose in having three surveys was to explore any changes in perception about the value of the advice, the practical changes possible and in environmental awareness between the start and the intermediate and final surveys. The quantifiable results presented later reflect the experiences of the participants able to provide all the readings.

Initially there seemed to be a great deal of interest in participating in the project. This level of interest reduced over the considerable time period (see chart overleaf). Sustaining interest through the project's duration will need to be addressed in any future project.

Although all the final survey participants (and many earlier people) had provided some meter readings, relatively few had been able to provide all the readings necessary to provide "before" and "after" analyses of energy and water usage. The difference between electricity and gas is explained by the use or not of a gas supply. There was a more serious difficulty with participants providing water readings with many comments about inaccessibility, reading problems and even the location of water meters.

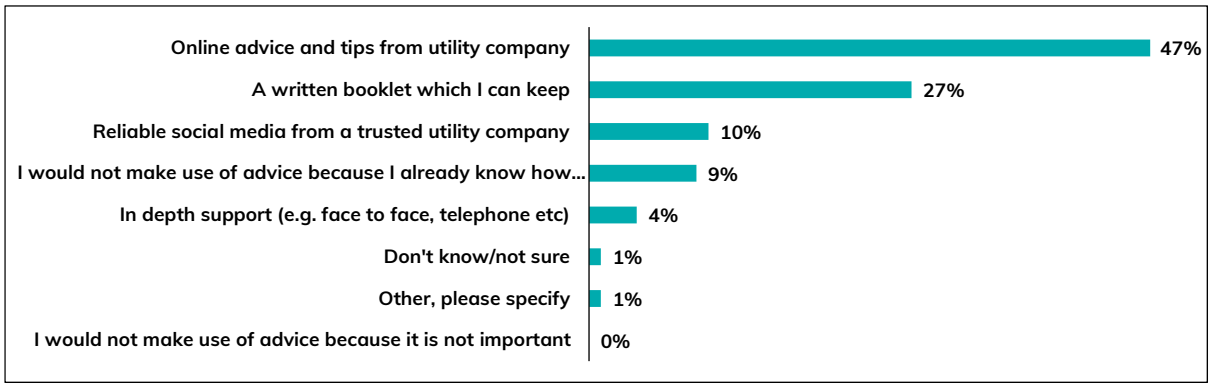


3 INITIAL PERCEPTIONS

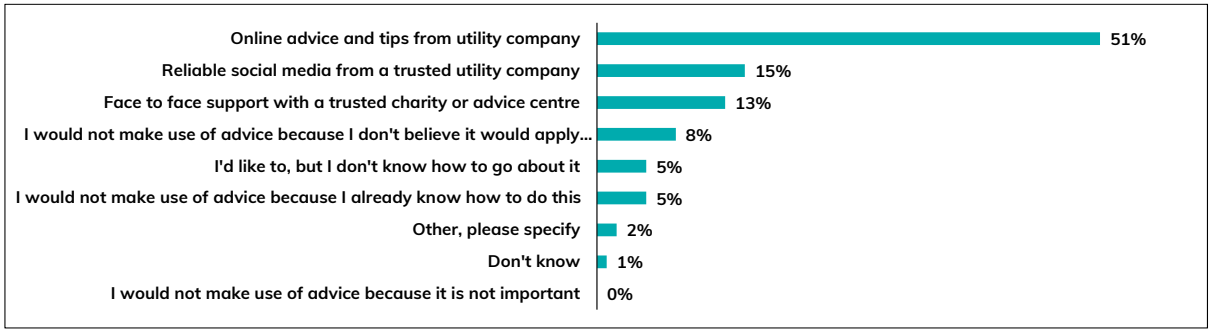
The initial survey was used to confirm the plans for how to proceed to ensure we provided support in a way most useful to prospective participants.

3.1 Initial preferred communications sources and routes

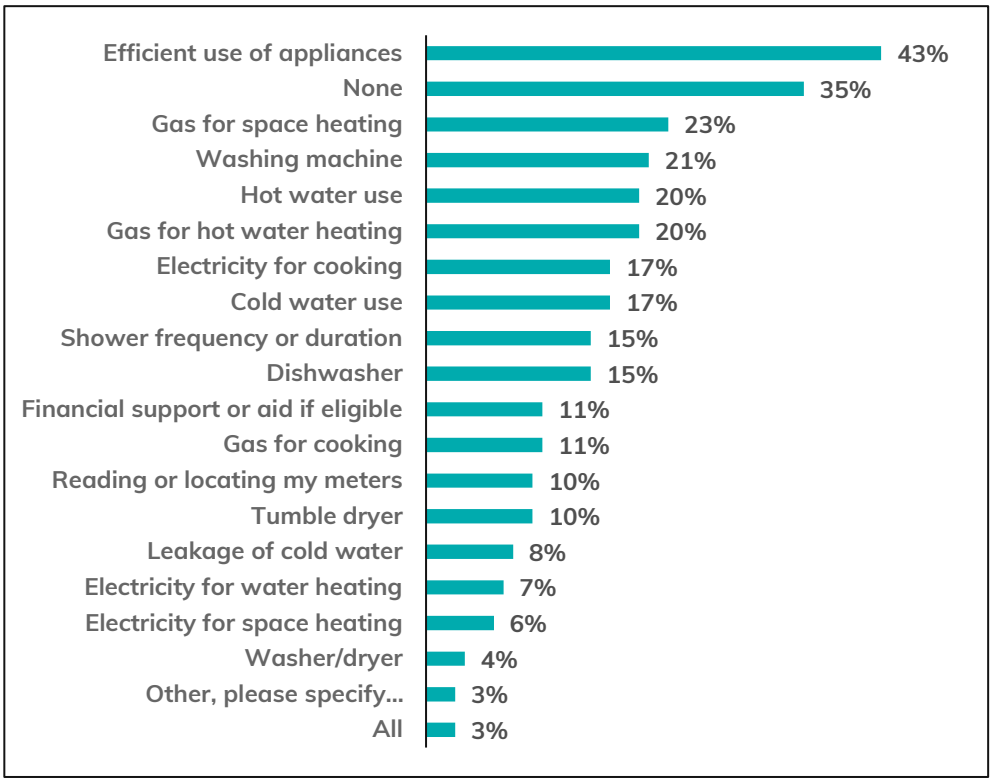
3.1.1 Preferred communication routes



3.1.2 Preferred sources of information

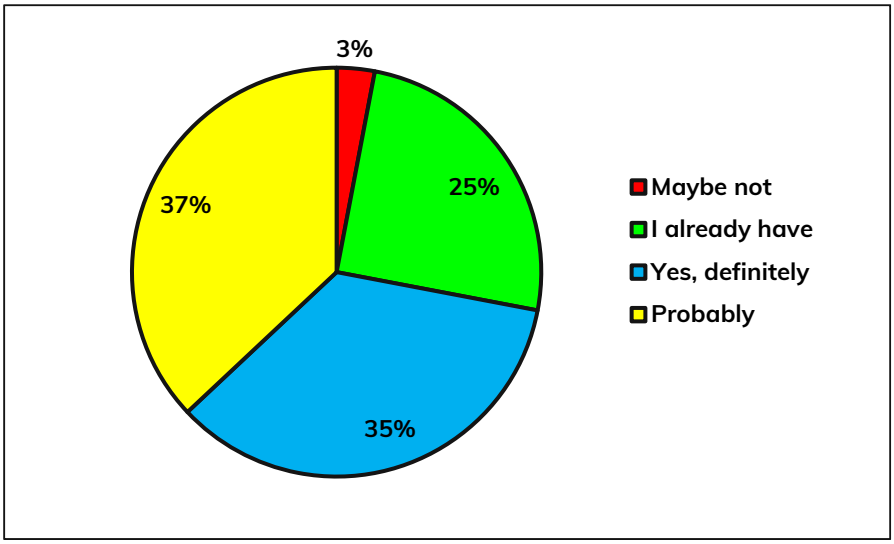


3.2 Areas of assistance perceived to be most beneficial



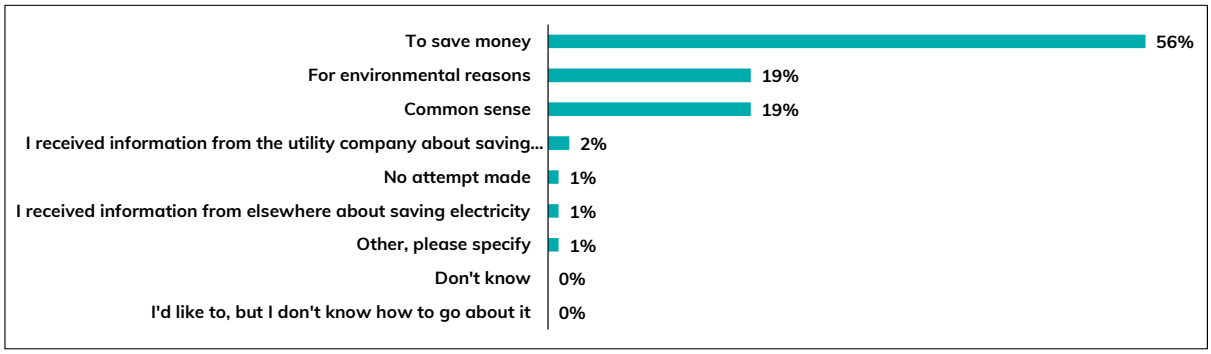
Many of the higher priorities are to be expected but the emphasis on the more efficient use of appliances being such a strong leading objective was surprising.

3.3 Willingness to spend more money on efficient devices

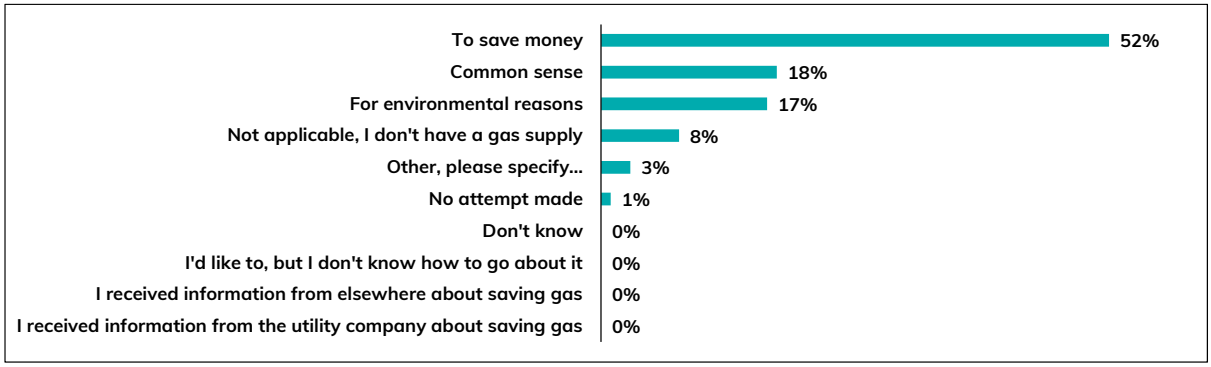


3.4 Motivations for addressing these issues

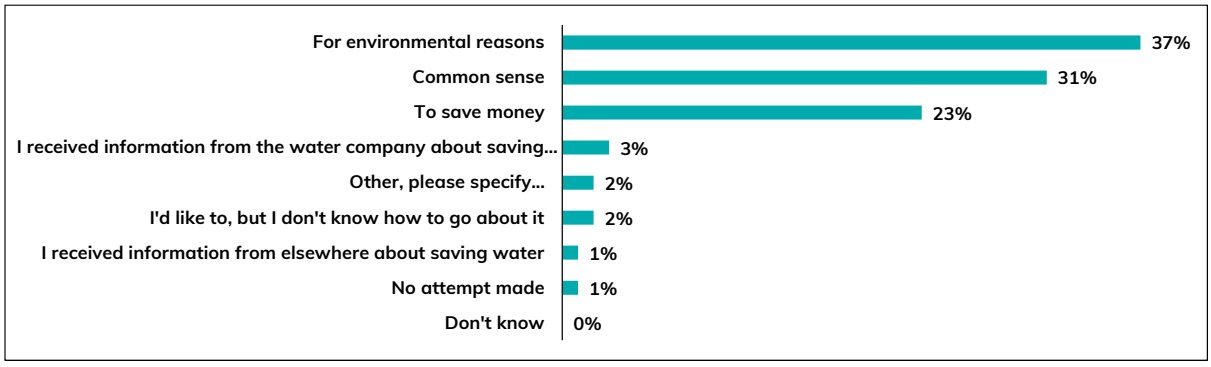
3.4.1 Electricity



3.4.2 Gas

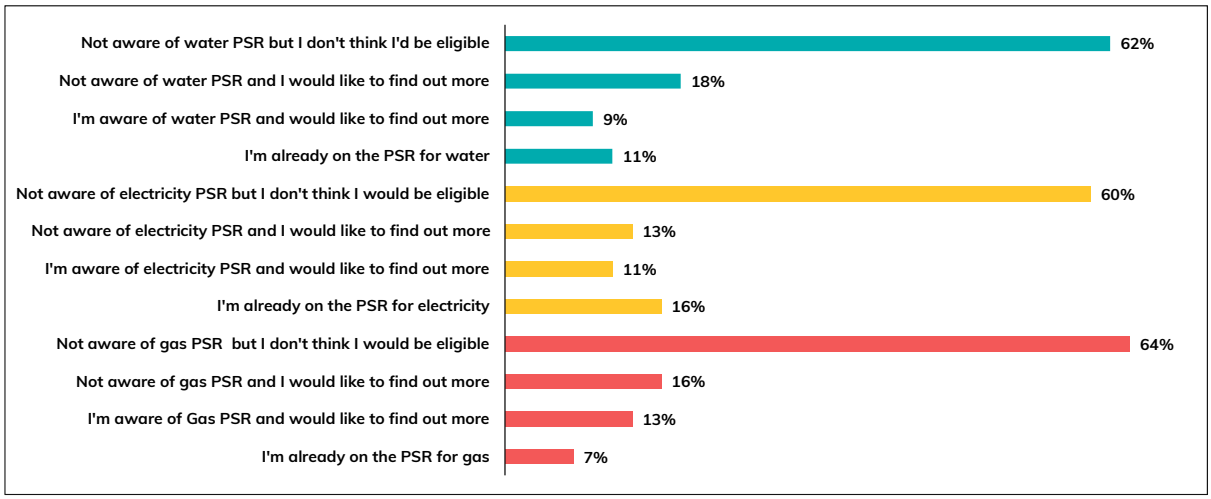


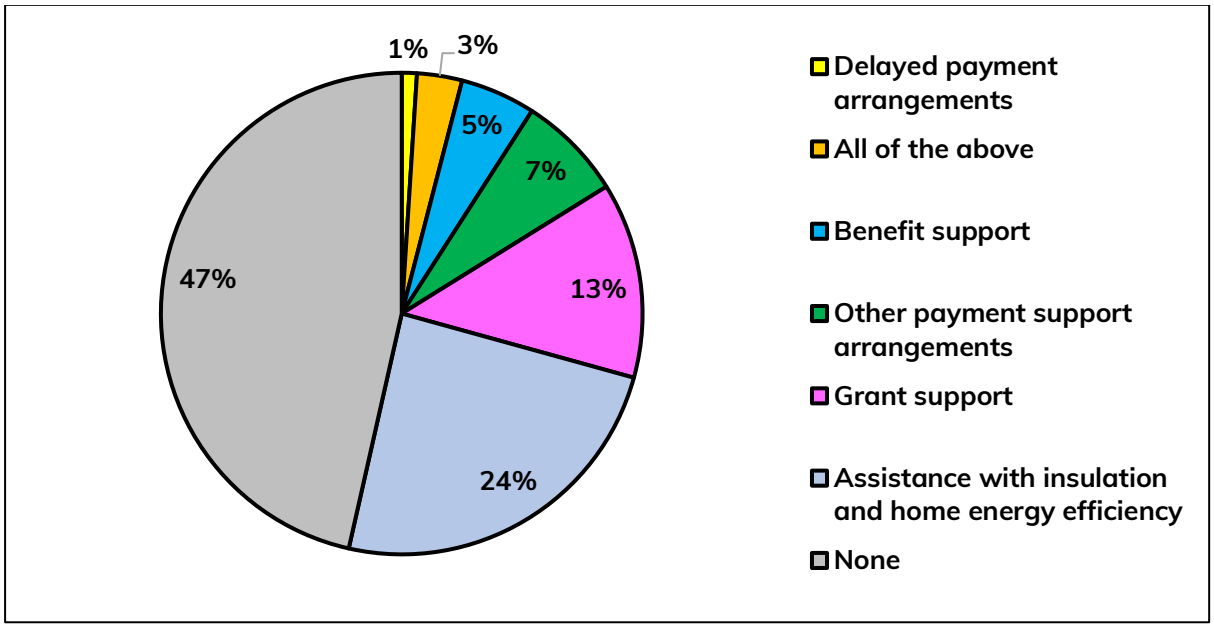
3.4.3 Water



There is an interesting difference between the motivations for reducing water consumption compared to energy. Environmental reasons apply in all cases. Financial savings are seen as much more important for energy compared to water where environmental considerations are the most important.

3.5 Need for other support

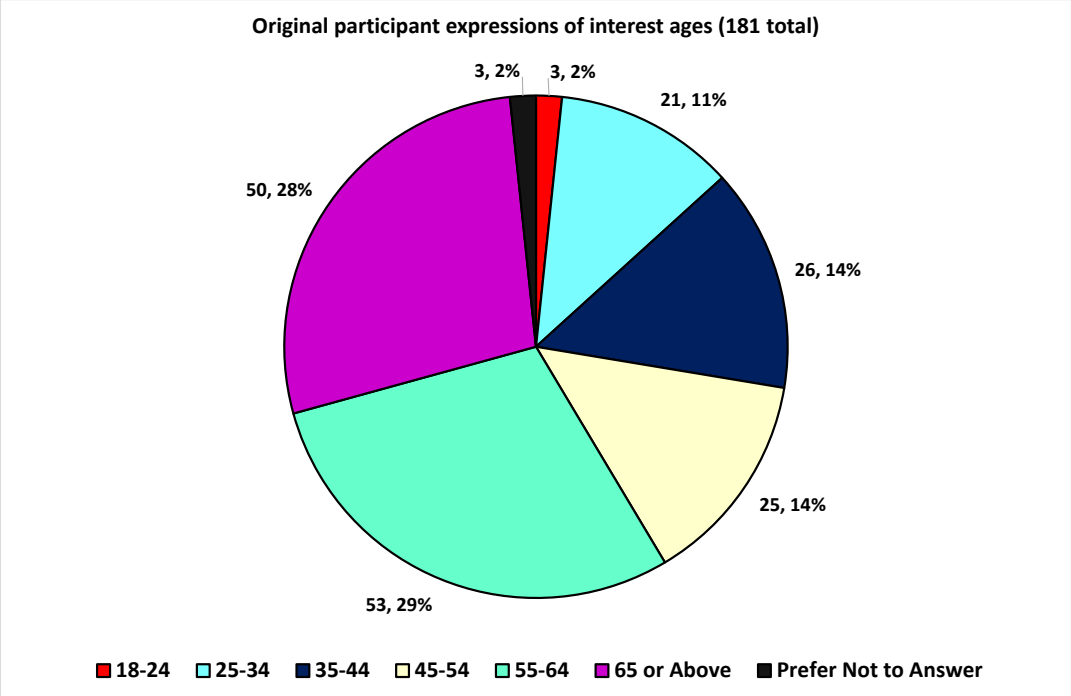


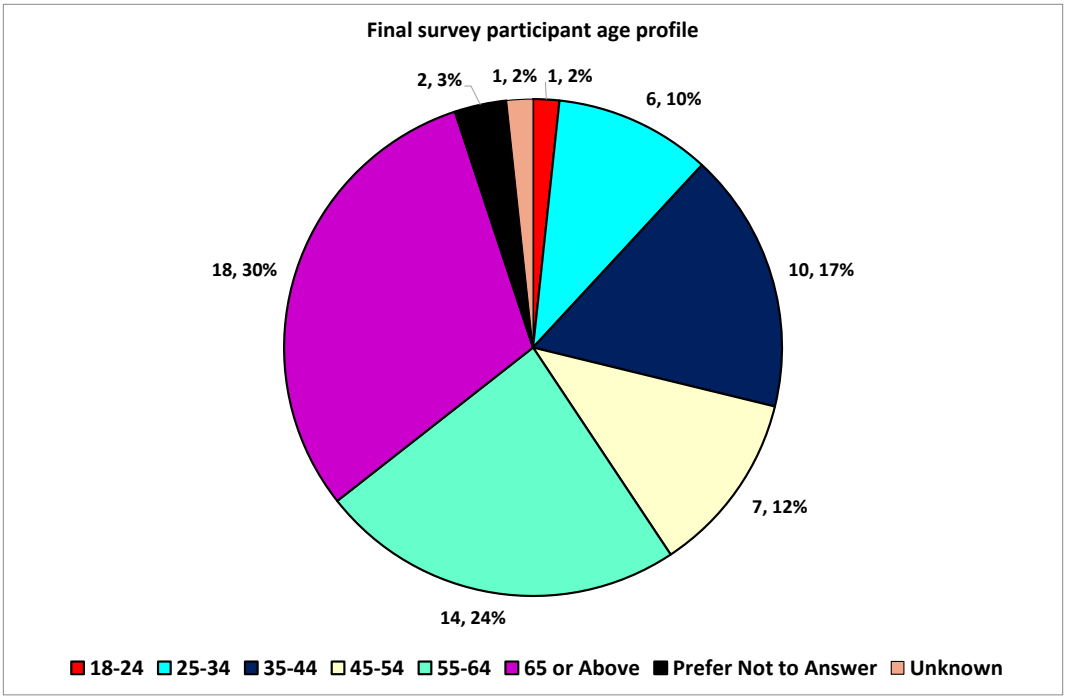


It was always envisaged that signposting to other sources of information and support would be a facility provided. There is an ongoing need for financial support for some energy efficiency measures. The feedback highlights the need to reach quite a number of people who may need PSR or other support but who are not currently receiving it.

3.6 Age demographics

There was a preponderance of older people expressing interest in the project. This proportion increased slightly as the pie charts overleaf indicate.

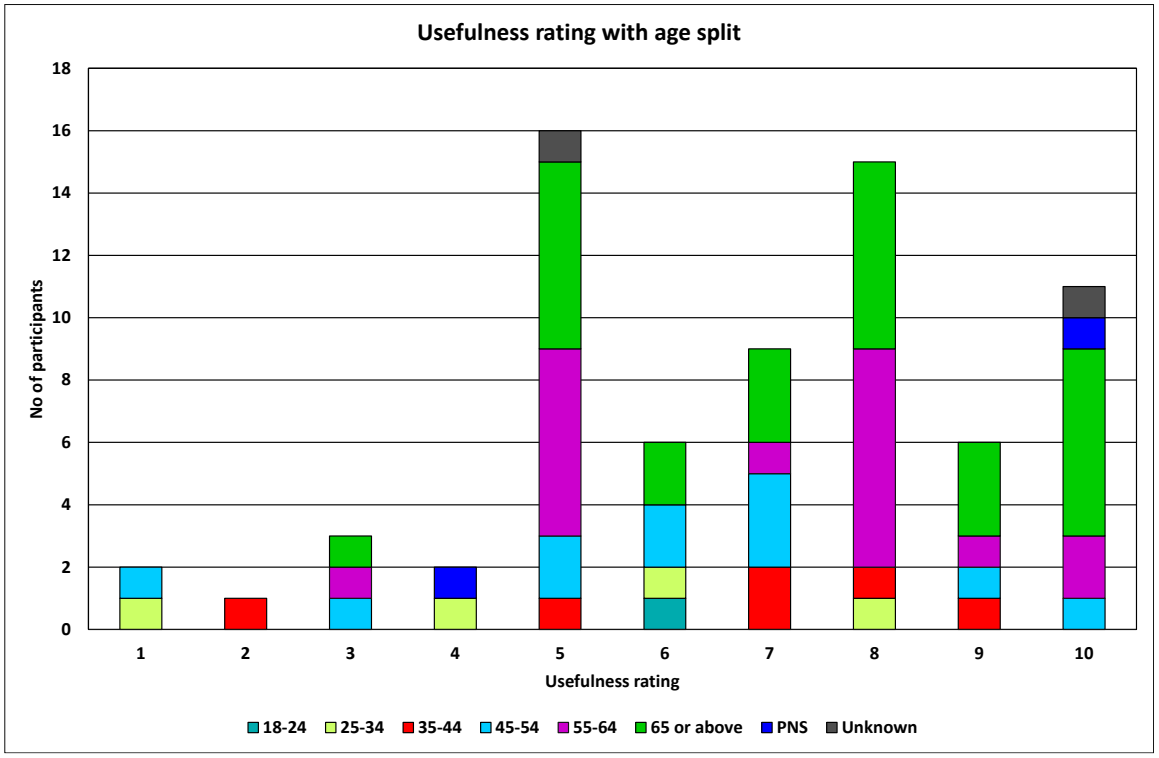




The generally higher proportion of older people who have been interested in the project probably also reflects their preference for a single source of advice from trusted organisations. They may have a lower preference for social media focussed information which may be perceived as less reliable or trustworthy compared to more traditional communication routes.

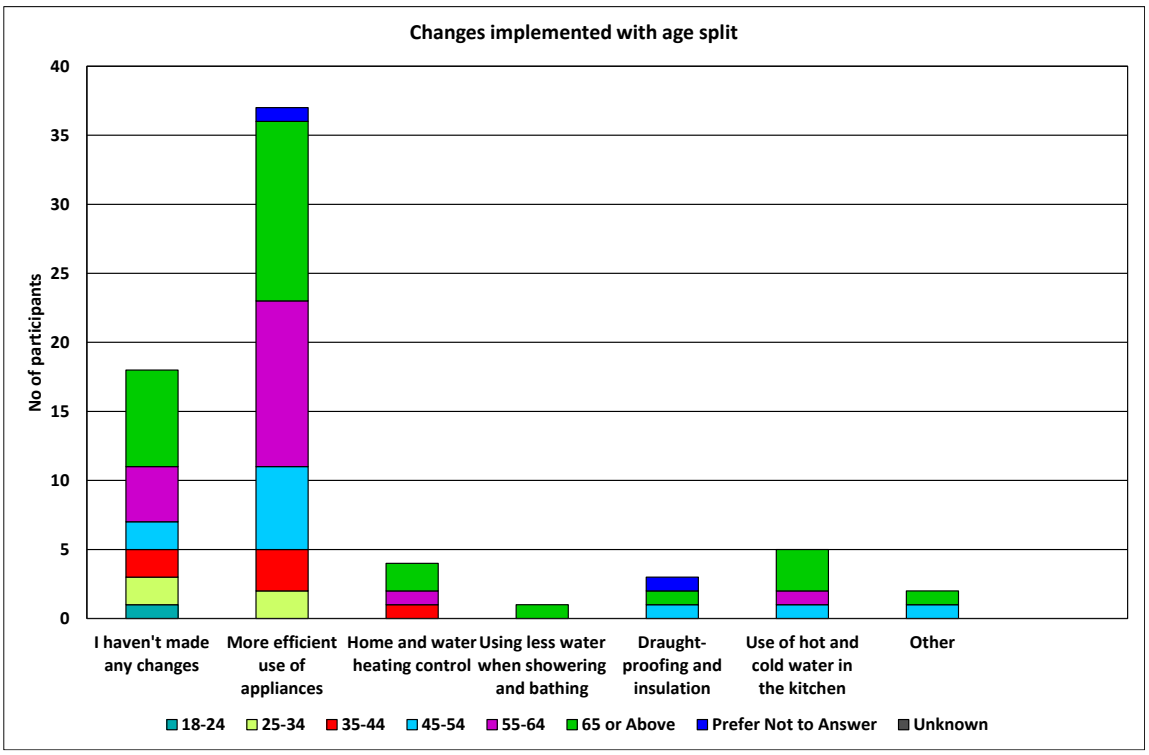
4 QUALITATIVE RESULTS

4.1 Perceived value of the project



The overall perceived value was 6.9 on the scale of 1 to 10. The split reflects the age demographic split. This can be considered a success and suggests the advice provided was valuable, relevant and useful.

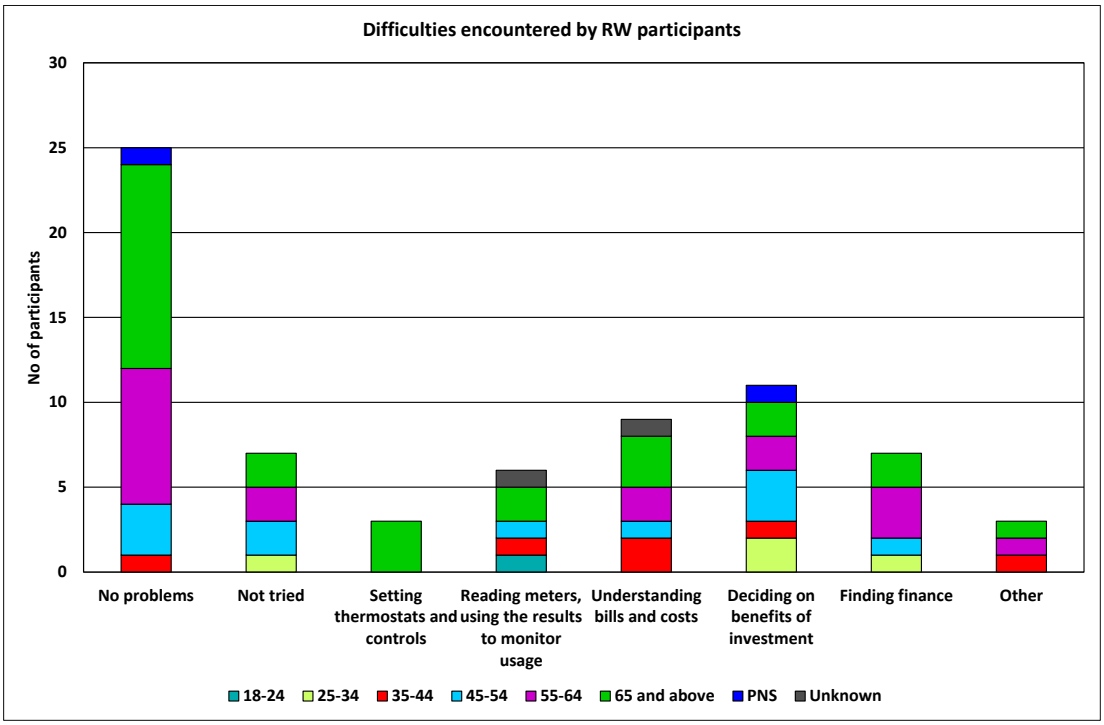
4.2 Changes implemented



The predominant change implemented, as recorded by over half the respondents, was from using appliances mor efficiently. This reflected the initial objectives set by participants. A quarter had not made any changes.

Later analysis in section 5 compares this feedback with the gains made. Water heating for various reasons features more prominently than space heating. It is possible that the considerable publicity around turning room temperatures down had already influenced behaviour and our advice encouraged other changes.

4.3 Difficulties encountered

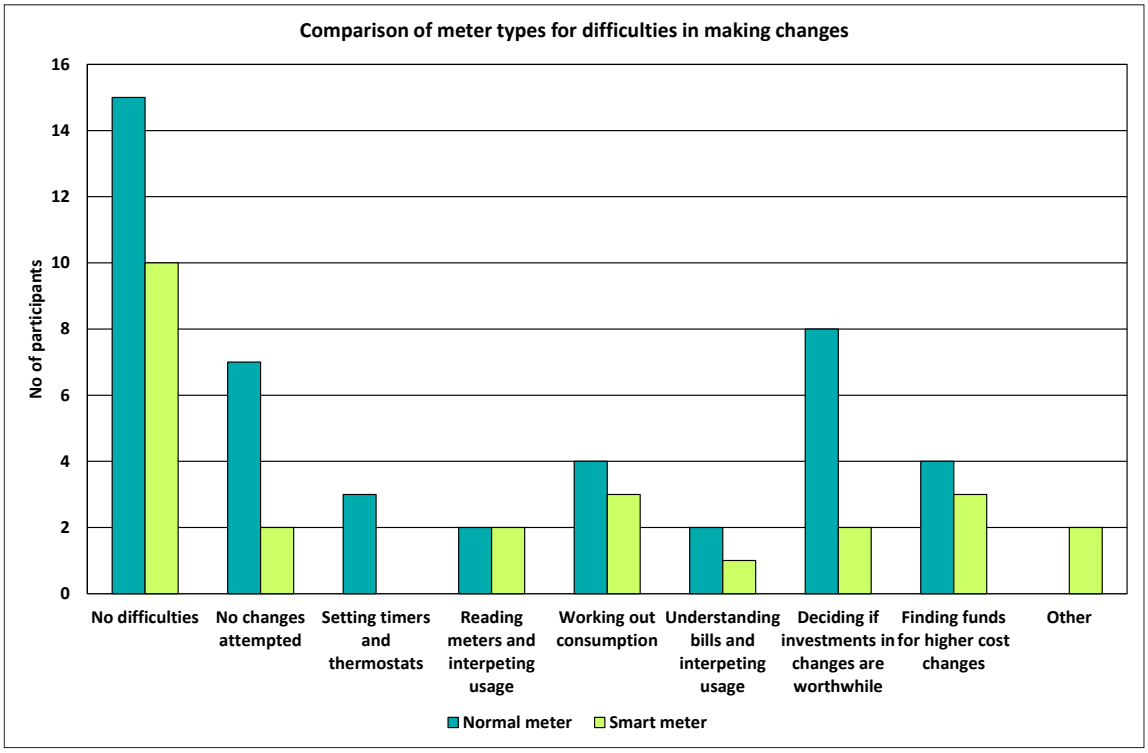


A high proportion, just over 1/3, did not find any problems with following the advice to implement the changes suggested.

A substantial group encountered problems reading meters, interpreting bills and then deciding whether it was worth spending money to make savings. This provides lessons for energy suppliers and potentially for water companies as smart meters are introduced in that sector too. Many participants offered permission to study water use more closely by looking at meter readings and this will be a further study.

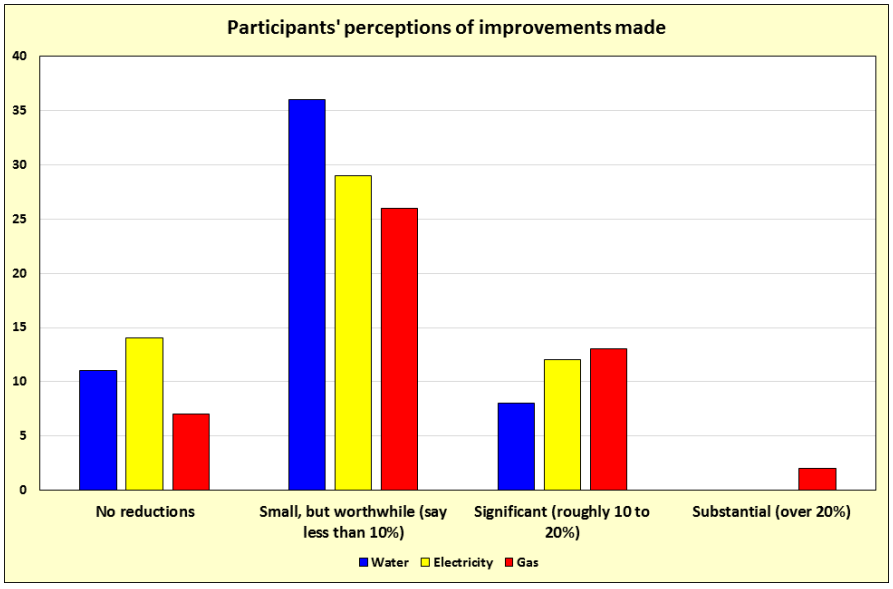
Finally, about 10% wanted more financial assistance.

All these findings spanned the age ranges.



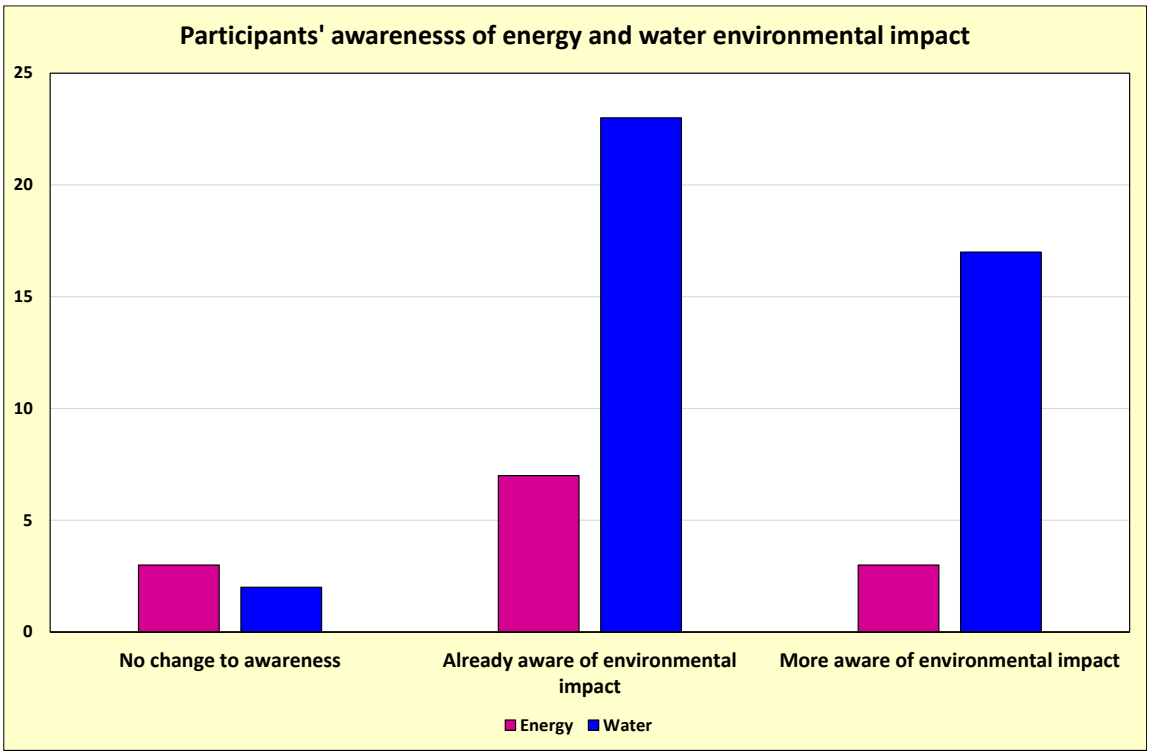
Allowing for the greater proportion of normal meters in the sample, there was no difference in the problems encountered by people whether they had a smart meter or not.

4.4 Perceived, but unmeasured, financial savings



The perceived savings are estimated at about 7 - 9% for energy and 7% for water. The overall numbers are optimistic for gas and pessimistic for electricity while being comparable for water when compared with the actual results. The individual perceptions vary much more from the achieved results where one to one comparisons are made.

4.5 Environmental perceptions



The Bristol Water customer panel from which participants were recruited is an environmentally aware group of people who recognise the need for and are proactive about environmental improvement. There is not much change in their perception as a result of the project as regards energy but, surprisingly, a greater sense of the importance of water. Memories of the very dry weather and restrictions arising during the summer of 2022 probably influenced this result.

If the project could be expanded, the approach taken is likely to have a similar impact on public perceptions and supplement any financial made from reducing consumption.

4.6 Summary of the qualitative analysis

The key findings are:

- The overall perceived value was 6.9 on the scale of 1 to 10. The split reflects the age demographic split to an extent. This can be considered a success.
- The predominant change implemented, by over half the respondents, was from making more efficient use of appliances. This reflected the initial objectives set by participants.
- Over 1/3 of participants did not find any problems with following the advice. A substantial group did encounter problems reading meters, interpreting bills and then deciding whether it was worth spending money to make savings. The problems were unaffected by the type of meter, smart or otherwise.
- The project did change environmental perceptions as regards energy but had a greater impact on the importance of water. This is likely to have arisen in part from the very dry weather and restrictions arising during the summer of 2022.

5 QUANTITATIVE RESULTS

5.1 Reductions in usage achieved

For the 20+ participants able to provide all necessary meter readings to compare winter 2021-22 with winter 2022-23, the results were:

5.1.1 Energy

Gas **4.4% reduction – average kWh/day/household from 33.09 to 31.65**
Average cost saving – £22 per household over the trial period

Electricity **14.6% reduction – average kWh/day/household from 7.65 to 6.53**
Average cost saving – £58 per household over the trial period

These results are compatible with expected benefits from the more efficient use of appliances which are predominantly electric and with less emphasis on space heating which is usually gas.

Since much of the saving was attributed by participants to more economic use of appliances, it is likely that the annualised electricity saving could be worth £146.

5.1.2 Water

For the 10 or so participants able to provide all necessary water meter readings to compare winter 2021-22 with winter 2022-23, the results were:

Per capita consumption (PCC) down 7.6% - litres/person/day from 105 to 97
Average cost saving – £8 per household over the trial period

The water consumption reductions are the most remarkable since the starting point for the active participants was a very low figure compared to the typical daily average of 147 l/p/d. A caveat should be noted in that these are winter readings. Summer peak usage brings the typical average consumption up by 10-20%.

The full year water efficiency benefit could be as high as £19 since outdoor use in the winter period would be minimal. These results show that 110 l/p/d, the government's ultimate target by 2050 is not impossible to achieve with a diligent approach to the use of water and the effective use of efficient devices.

The financial results demonstrate a clear benefit from combining messages for gas, electricity and water usage.

5.1.3 Gross value

Reduced water and energy use have delivered measurable gross financial and societal benefits for customers with fairly minimal investment to date. As discussed earlier, recorded reductions in customers' water and energy use led to estimated financial savings of £88 per household with higher annualised savings.

The project has delivered an estimated gross value of **£6,206** before costs comprising:

- **£5,076** gross financial benefits to customers (i.e. direct financial savings 'in their pocket'). This equates to an average estimated financial saving of **£88** per household over the 5-month trial period.
- **£1,130** gross societal benefits as a result of reduced carbon emissions

5.2 Summary of lessons from the quantitative analysis

- Combining energy and water saving advice in a single suite of advice from trusted organisation is effective in helping worthwhile reductions to be achieved – particularly when the very low cost of the trial is considered.
- The savings achieved often combined water and energy reductions together.
- This group of participants included a proportion of quite well-informed people. The wider population may be able to make greater savings. It will be important to widen the range of participants in any expansion to make the group more representative.
- It is difficult to rely on participant meter readings when a project is run over a long period of time. While most participants provided some readings, few were able to provide all the necessary readings to compare the winter performances fully.
- The data collection methodology needs to be streamlined if an increased scale of project is to be considered.

6 GENERAL CONCLUSIONS

The Resource West pilot consumption reduction project can be considered a success with worthwhile energy and water usage reductions being made.

Expanding the project to a much wider cross-section of the public will need careful consideration to make it a practical proposition but the content of the advice has worked well for many participants. This should apply to the public more widely.

The University of the West of England intends continuing with a more detailed survey of energy and water use to obtain a deeper understanding of the barriers to change and which approaches are most successful. Many participants have expressed an interest in continuing with this study.

The participants have helped co-create this project and have offered a wide range of suggestions about to improve various aspects of the project. The partnership of organisations worked extremely well and laid the foundations for further cooperation.

Ian Harrison

Ellie Patey