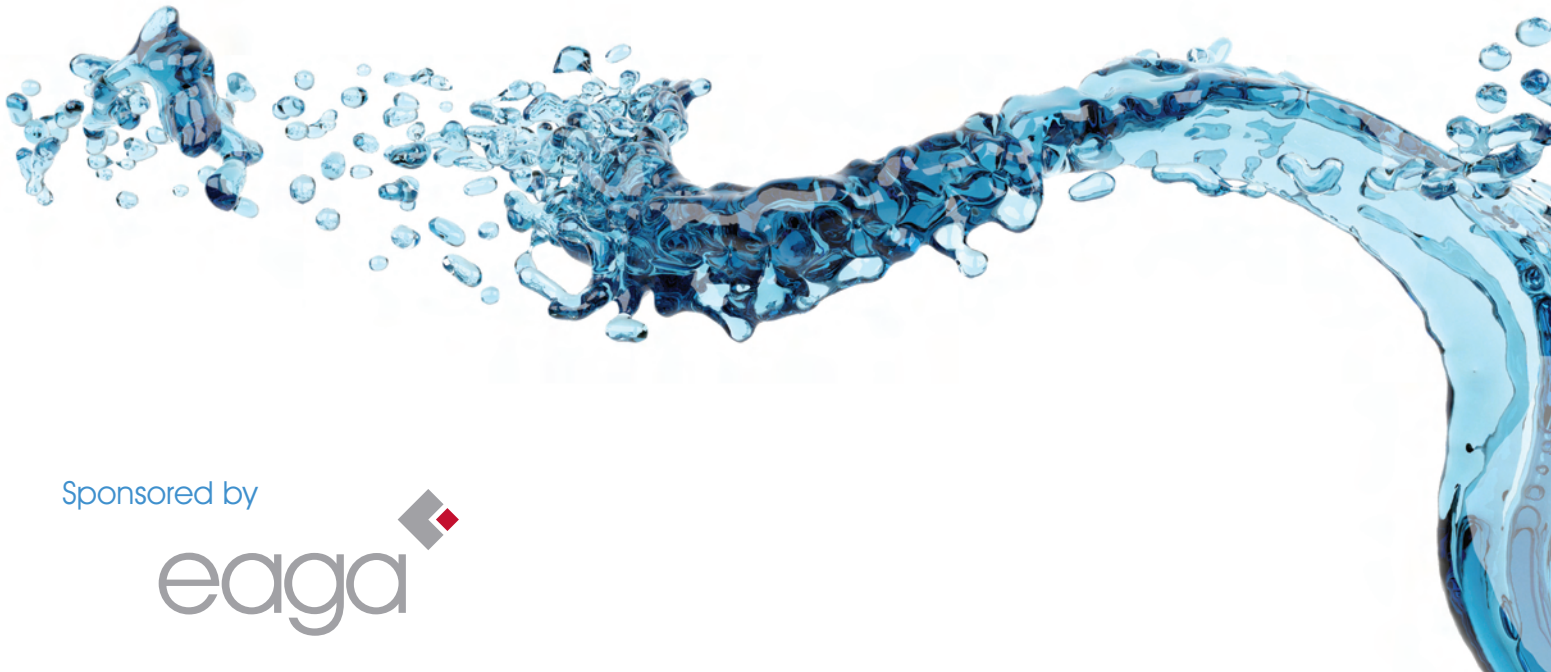
water, water everywhere?

Sustainable water use

John Hobson and Andrew Derry

Sustainability *first*



Sponsored by

eaga

Sustainability First

Sustainability First aims to mainstream sustainability into public policy by developing new ideas on major environmental issues, such as climate change, waste and transport. Sustainability First is a registered charity number 1078994

Sustainability First,
c/o CHPA
Grosvenor Gardens House
35-37 Grosvenor Gardens
London SW1W 0BS

www.sustainabilityfirst.org.uk

Copyright © Sustainability First, 2009

About the authors

John Hobson

John Hobson is a trustee of Sustainability First. He spent most of his career in the Civil Service including working with the water, energy and construction industries. He is now an independent policy analyst specialising in construction, sustainability and education/training.

Andrew Derry, BA (Hons)

Andrew has been with eaga since 2001; part of his remit has been within eaga Water Services and the implementation and successful delivery of domestic demand side management programmes, providing efficiency and affordability solutions within the Water Sector on behalf of Government and water companies alike.

Andrew is also a member of eaga's Social Responsibility Working Group, dedicated to delivering sustainable assistance to the communities in which eaga operates and beyond.

About eaga

eaga is a green support services company, the UK's leading provider of residential energy efficiency solutions and an established deliverer of a range of outsourced programmes, products and services that promote social and environmental justice.

eaga visits more than 3,000 homes across the UK every day, delivering improvements such as energy efficient heating, renewables, insulation, water efficiency advice and installation of products, along with integrated advice services – helping to tackle social and efficiency issues in a sustainable way.

www.eaga.com



Contents

Executive summary	Page 4
I. Introduction	Page 6
II. South West Pilot Scheme on Water Affordability	Page 7
III. Taking the Water Sector forward – the exploration of factors	Page 8
IV. Does the Consumer care?	Page 9
V. What might make the disengaged care?	Page 10
VI. Industrial and Commercial Water Consumers	Page 11
VII. Regulatory Issues	Page 12
VIII. Innovation	Page 14
IX. Government Involvement with Water Efficiency	Page 16
X. The Code for Sustainable Homes – does it go far enough?	Page 18
XI. Social Housing – an opportunity for a 'joined-up' approach?	Page 20
XII. The Impact of Metering	Page 21
XIII. Conclusions	Page 23
Appendix 1 : Code for Sustainable Homes – water standards	Page 24
Appendix 2 : Study Contributors	Page 25



Executive Summary

1. At the time of Water Industry privatisation in the late 1980's, climate change was a topic on the horizon for the world's eminent scientists. Jump ahead twenty years and it is a real and growing concern for every member of the world's population – and across all sectors of resource supply. Our energy and carbon consumption are of key importance to our future.

2. Growth in the world economy needs sustainable supply, as does the growing population. However resources – including water – are finite, so we need more efficient water use solutions. This study, based on conversations with key stakeholders, explores factors within the water industry affecting water efficiency, and the implications for other resource sectors such as energy - to suggest 'joined-up thinking' and a sensible, pragmatic approach.

3. We have been particularly concerned to examine the links between water and energy use. Through transport, treatment and heating, water is a heavy energy user. This aspect is perhaps as important as reducing water use itself.

4. This study has identified key discussion areas and some recommendations which we strongly believe need to be followed up. It is important to note that efficiency also relates to reducing wastage in end use so that consumers do not harm their living standards by reducing their water use.

5. Regulation – Ofwat's recent publication of proposed action on water efficiency is extremely encouraging as a mechanism to aid the collation and analysis of data and create an evidence base. However the 1 litre per day per billed property saving seems too generic for all water companies bearing in mind the differing situations faced by them. The target's progress should be monitored and increased wherever possible. Incentives for positive action, along with swift penalties for failure should also be put in place.

Recommendation 1 – This study broadly supports the Ofwat initial action in the area of efficiency, with the proviso of constant review and improvement – with strong incentives and penalties to be included.

6. Innovation – The scope of the Cave Review on innovation within the water industry should not be limited to technology but also incorporate innovative social programmes to help vulnerable customers. Innovative social programmes to tackle efficiency and/or affordability could include regional initiatives such as WaterCare (South West Water), and national initiatives such as the WaterSure scheme. In the case of WaterSure there is a need for wider promotion and re-evaluation, along with effective sharing of data, in order to promote this full assistance package.

Recommendation 2 – This study supports an innovation duty on Ofwat to help to achieve innovation in both technology and social programmes.

7. Government Action – An active role for Central Government in the promotion and implementation of water efficiency and affordability action is a key to success. Affordability could be addressed in part by benefit maximisation, which is an area for Government.

8. The wider application of the existing and effective Warm Front Scheme to include a 'water aspect' could provide increased installation of water efficient devices, to aid efficiency and the collection of robust data and promote the key linkage between water and carbon usage.

   The projected costs for this additional element to Warm Front would be around £8 million per year on a materials only basis – the rationale behind this is explored further on page 16.



9. Water efficiency and affordability could be promoted by encouraging water companies to adopt innovative social tariffs – for example rising block tariffs, coupled with the extension of WaterSure for the most vulnerable. Such tariffs would be more easily facilitated through the introduction of smart metering technology.

10. The Walker Review of Water and Sewerage Charges is welcome provided that effective and sustainable action occurs as a result and not just 'paralysis by analysis'.

Recommendation 3 – We would strongly recommend that the Warm Front Scheme is extended to include a water efficiency element, because of the affordability correlation between the fuel poor and those struggling with water charges.

11. The Code for Sustainable Homes – This should be extended to incorporate both the water and carbon usage of appliances such as showers, again allowing for synergies to be explored. Government action could be in the form of possible subsidies for appliances with lower water and carbon usage.

12. Social Housing – As Warm Front is a private sector scheme only and the Code for Sustainable Homes relates to new-build only, there is a potential gap within the existing stock of the social housing sector. A partnership of bodies including Government, Ofwat, Water Companies and the newly formed Housing and Communities Agency could combine to tackle water efficiency, affordability and sustainability in the social housing sector.

Recommendation 4 – We advocate the application of the Code for Sustainable Homes Level 3 to all housing and the use of social housing as a test bed. This would allow for a more complete package of measures to address cross-tenure issues and would add to a robust evidence base of research.

13. Metering – We conclude that on the whole metering is the fairest way of charging for water consumption and the most likely to encourage efficient water use, and we are encouraged by the progress made by water companies to extend metering programmes. However protection mechanisms must be put in place for low-income vulnerable customers.

14. Smart metering could facilitate a 'universal' meter to allow customers to consider their water, gas and electricity consumption as a package and help reduce overall energy and carbon use - as well as water use.

Recommendation 5 – We advocate the extension of metering and pilots for smart meters enabling testing of innovative tariff structures and encouragement of joint monitoring of energy, carbon and water use.



I. Introduction

1.1. Water is, throughout the world, a 'precious and increasingly scarce resource'. This is an issue faced by the Water Sector in the UK and therefore directly by its consumers.

1.2. On average, according to Waterwise, "each person in the UK currently uses about 150 litres of water every day. This has been rising by 1% a year since 1930. This consumption level is not sustainable in the long-term." [1]

1.3 Defra and Ofwat have launched their own consultations aimed at investigating the sustainability issue, including recently the Cave and Walker reviews.

1.4. Sustainability is not only affected by availability of water as a resource but also by the energy usage linked to the sector through abstraction, treatment and supply; and the energy used by the consumer (whether this is domestic or business) in the heating of water. This highlights the significance of water for climate change.

1.5. From Waterwise and industry estimates, the 150 litres per day used in the domestic sector cannot now be sustained given population increases and continued rises in consumption. Add population 'migration' from relatively non-water stressed areas such as the North-East of England to the South-East and this places a greater strain on resources.

1.6. As the recent All Party Parliamentary Water Group Inquiry on the Future of the Water Sector states:
"It is undoubtedly true that the water sector in the UK is currently facing a number of significant challenges and will continue to do so over the coming years, not least from the effects of climate change and reducing water resources but also from demographic change and an ageing infrastructure." [2]

1.7. The Pitt Review (2008) underlined this with its recommendation that water supplies should be resilient enough to deal with times of extreme water stress caused by flooding.

1.8. The industry also faces the issue of affordability and customers being in a position to be able to pay for water supplied. Again rises in water charges linked to continued rises in energy charges and food costs adds to a 'package of concern' for consumers. The 'credit crunch' and recession also add immediacy to issues of affordability.

1.9. This study brings together the different policy strands on the basis of structured discussions with stakeholders. It puts forward for discussion a set of recommendations for further activity on water efficiency allied with energy efficiency, to help tackle climate change and improve sustainability - a truly integrated approach.

1 Waterwise Website – www.waterwise.org.uk

2 All Party Parliamentary Water Group 'The Future of the UK Water Sector' (2008), All Party Parliamentary Water Group, Page 41



II. South West Pilot Scheme on Water Affordability [3]

2.1. Carried out in 2006, the South West Pilot Scheme on Water Affordability - undertaken by Defra and South West Water - aimed to improve water efficiency and affordability issues.

2.2. The scheme offered participants a range of services including: Benefit Entitlement Checks (BEC) to assist the household in claiming all benefits due to them; meter option checks for non-measured households to ascertain whether it was financially beneficial to switch and the subsequent arranging/installation of this; and a water audit of the household with the possible installation from a range of water efficient devices for measured customers or those who indicated their willingness to switch to a metered tariff.

2.3. From a targeted list of 4990 customers in the Devon and Cornwall areas, 520 agreed to participate equating to a conversion rate of 10.5%.

2.4. Some of the headline results of this Pilot include:

- 31% of customers who went through a BEC were found to be eligible for at least one additional benefit
- 63% of customers who went through a meter option check successfully switched to a metered tariff although 91% were willing to switch but did not - through factors such as inconvenience of appointments etc
- 69% of customers underwent a water audit from those deemed 'eligible' in that they were either on a meter or agreed to move to a meter
- Customers who switched from an unmeasured to measured tariff saw the greatest reduction in the percentage of disposable annual income spent on water charges, with an attributed water volume saving of 10m^3 per measured household in the year following pilot completion
- The overall cost benefit analysis indicated a level of 10.5, or that the benefit to the customer was on average over ten times any cost in supplying the assistance to the households. This was under the assumption that the individual customer circumstances did not alter significantly in the three years post-assistance.

2.5. Such pilot schemes as this provide valuable insight into the areas of efficiency and affordability within the water sector and the impacts on customers on gathering a robust evidence base.

2.6. For effective and sensible solutions, the results and lessons learned from these pilots should not be discounted or attributed to aspects such as geography or targeted customer base; but analysed, developed and improved upon wherever possible - and integrated into large-scale assistance programmes for consumers to improve our evidence base and increase efficiency savings.

3 WRc plc 'South West Pilot Scheme on Water Affordability' (2007), Queen's Printer and Controller of HMSO, Pages 131-135



III. Taking the Water Sector forward – the exploration of factors

3.1. Water is a precious resource, finite in nature thus requiring conservation and long-term sustainable use. With the increased evidence of accelerating climate change there is a real necessity for action to improve efficiencies in the water industry – either through supply factors, or in end consumption, or a combination of both.

3.2. This study aims to identify realistic solutions for Government, Regulator, Water Company and customer alike. The following are the key areas explored in this report:

- Regulatory Issues
- Innovation
- Government Involvement
- The Code for Sustainable Homes
- Social Housing Sector
- Metering Programmes/Initiatives

3.4. We have been impressed by a marked change in attitudes in recent years by Ofwat and water companies alike, in investigating and initiating efficiency programmes (albeit relatively small scale in comparison to the energy sector) which will in turn lead to an improved evidence base. Whether this attitude change is due to heightened interest in climate change and sustainability considerations, or operational practicalities such as cost saving and leakage control aligned with education of the end-user, is not clear.



IV. Does the Consumer care?

4.1. An important component to the efficiency debate is whether the consumer actually cares about their own efficient use of water.

4.2. Although participation levels in various efficiency trials range from project to project and also on a regional basis from poor to encouraging, evidence and industry thinking does indicate that consumer interest in efficient use is increasing from, say, ten years ago.

4.3. Again this has impacted more in areas where water scarcity is an issue and therefore restrained and efficient use is needed. However consumers rarely believe that they 'actively' waste water, while they may see water companies as wasteful due mainly to the impact of leakage images.

4.4. Definite differences are seen where customers are metered as opposed to those households remaining on the rateable value charge. The general view is that metering leads to a 10% reduction in household water consumption; although the South West Pilot shows that this may be a long term objective as no real difference in consumption was noted in customers in the 12 months 'post-switch'. However the customer may still benefit from this switch - as 96% of customers on the South West Pilot experienced a reduction in their charges.

4.5. Rising consumer interest is welcome but does not answer the immediate climate change and sustainability need to improve upon efficiencies within the supply of water. While consumers remain on rateable value based charging there is no incentive for them to limit their use other than personal environmental awareness.



V. What might make the disengaged care?

5.1. A real problem faced by any proposed mass action programme is that without the full involvement of the recipients (in this case domestic consumers), implementation will be bound to fail.

5.2. As water is a relatively cheap commodity in comparison to other resources such as gas and electricity – and there is no threat of being removed from the supply – customers with payment problems will inevitably place higher importance on the services which carry the threat of supply termination, a factor we understand is being actively encouraged by some advisory bodies.

5.3. Consumers need to be made aware of the link between water consumption and energy consumption.

5.4. How can this message best be relayed to customers? Education initiatives through billing by water companies or advertising campaigns are possible, although there is added cost particularly with the latter. The Government, as part of their commitment to address the wider implications of climate change, could also promulgate consistent national messages of this kind.

5.5. The recent All Party Parliamentary Water Group has made the following recommendation [4]:

"(The All Party Parliamentary Water Group) recommends that the Government should seriously review how good water management is communicated to consumers, and specify the role water companies can play in aiding this process."

4 All Party Parliamentary Water Group 'The Future of the UK Water Sector' (2008), All Party Parliamentary Water Group, page 41



VI. Industrial and Commercial Water Consumers

6.1. This report explores primarily the issues faced by domestic consumers in the areas of affordability and efficiency, in tandem with the greater principle of sustainability within the industry. However an equally important segment of consumers is that of industry.

6.2. The recent Ofwat Future Water Efficiency Targets split efficiency targets between domestic and non-domestic consumers. However existing water consumption in both sectors must be considered prior to target setting and on-going analysis of efficiency submissions.

6.3. Improving efficiency within large water consumers is likely to be a 'quick win'. However this activity, along with concerted effort for smaller industrial outlets in relation to domestic customers, provides a good test bed for tackling issues and helping to address long-term sustainability and climate change concerns. Many industrial organisations are working to improve their carbon footprint and the intrinsic link between water and energy consumption is crucial for this sector.

6.4. In highlighting the link between industrial and domestic consumption it is important to compare direct and 'virtual' water – i.e. the water used in the treatment and production of goods. As explored earlier the average person uses 150 litres per day through actions such as showering and drinking etc. However when the water used in the production of the clothes that the person wears and the food that they eat is calculated, this takes the 'virtual' water use to an average level of 4,645 litres per day [5], highlighting the importance in delivering efficiencies within industrial consumers.

5 WWF quoted in 'The Guardian' (20/08/08) accessed via www.guardian.co.uk/environment/2008/aug/20/water.food1



VII. Regulatory Issues

7.1 .A number of water efficiency issues could potentially be addressed by effective regulatory action.

Ofwat Future Water Efficiency Targets Consultation

7.2 .At the time of this study, Ofwat released their consultation on the proposed Water Efficiency Commitment – in partnership with the Water Saving Group, the Environment Agency and Water Companies. Such a combination of stakeholder involvement is very welcome.

7.3. The synopsis of the consultation is as follows[6]:

The consultation proposes effective action on assisting the reduction of household water consumption from the current level of 150 litres per household per day, towards the Government guidelines of 130 litres per day by 2030 [7]. Ofwat are proposing to set targets for each water company of an annual base line level of 1 litre per billed property per day saving through 'approved water efficiency activity' (Ofwat, page 3). Billed properties refer to both domestic and industrial consumers and Ofwat will monitor water company submissions through a 3-year review period to ensure that there is not an over-emphasis on either segment for quick wins, with no real long-term addressing of sustainability.

In setting the targets Ofwat have identified three key strands in the base service:

- propose for each company an equivalent target in megalitres per day relative to the number of properties served by the company;
- require each company to continue to provide information to consumers on how to be more water efficient; and
- require each company to contribute to improving the evidence base for water efficiency.

7.4. The rationale behind these strands is that they would be adequately stretching but achievable for water companies generically - equating to an overall 40% increase on the current average amount of water saved (Ofwat, page 6).

7.5. In addition to the base service Ofwat also proposes that water companies will 'pursue additional water efficiency activity where it formed part of a sustainable, economic approach to balancing supply and demand' (Ofwat, page 12). This is termed the 'selwe' (sustainable economic level of water efficiency).

7.6. Water companies will be responsible for identifying their 'selwe' activity and this will form part of their submissions to Ofwat – who will then decide on the allowance allocated to price limits for the proposals.

7.7. The aim of this, as defined by the Regulator, is to allow for water companies with any projected future deficits to identify innovative solutions to efficiency. Unlike the base service this will not be assessed over a 3-year period, but on a case-by-case basis forming part of companies' June returns.

6 Ofwat 'Future Water Efficiency Targets: A consultation' (2008)

7 Defra 'Future Water – The Government's water strategy for England' (2008), Crown Copyright



VII. Regulatory Issues

Response to the Consultation

7.8. Both the base service and selwe activities proposed within the Ofwat Consultation are extremely encouraging as a step in the right direction with reference to efficiency. A combination of the base and selwe promotes an increased level of efficiency work while adding to the evidence base for further measures.

7.9. Setting a generic level of the base service of 1 litre per day per billed property may be of limited value – bearing in mind some water companies are already achieving this; and some regions of the country are more water-stressed than others and therefore in real need of wider efficiency programmes. The selwe aspect, although an innovative concept, does not have inherent incentives as it is solely in addition to base service. Clear incentives and penalties are needed to make the message explicit.

7.10. The 1 litre target of the base service should be a starting point that is reviewed to assess whether phased increases can be put in place – in particular to help to address sustainability issues caused by population increases. Agreement on these phased increases should be reached with Defra/Water Saving Group and water companies.

7.11. There are important distinctions between Operational Expenditure (OPEX) and Capital Expenditure (CAPEX). Efficiency activity programmes are rated as OPEX due to UK accounting rules. However Ofwat could upgrade their returns formula positively to reflect effective efficiency programmes.

7.12. Since drafting the above, Ofwat have announced the outcome of their consultation. We are pleased that they have largely followed and mirrored our thinking on this area within the water sector. However what must be stressed is the important need for review of target achievements and water company performance.

7.13. **Recommendation 1. This study broadly supports the Ofwat initial action in the area of efficiency, with the proviso of constant review and improvement - with strong incentives and penalties included.**



VIII. Innovation

8.1. We have noted the setting up of the Cave Review by Defra. Innovation could promote efficiency and waste reduction, and we will be greatly interested in the results with particular reference to the following aspect of the review [8]:

"Our aim is to recommend changes that will, among others, deliver keener prices, more choice and better service for all consumers, including particularly vulnerable households, and encourage the better and more sustainable use of water." (Defra, page 3)

8.2. Regulation could have an important influence if Ofwat were given a formal statutory responsibility to encourage innovation – either through the base service and selwe components of the future water efficiency proposal, or by a separate mechanism. We recommend such a responsibility.

8.3 .Innovation not only relates to technological advances in devices, appliances or supply infrastructure, but also to innovative social programmes such as WaterCare in the South West of England or the Enhanced Metering Programme in East Anglia. Such schemes help to provide a stronger evidence base on both the relative success of installation and the effects of metering or tariff improvement. Central regulatory encouragement on such matters could lead to adoption of these across water companies. We would be disappointed if the Cave Review focused either solely or primarily on technical advances.

8.4. Another possible strand of innovation here is the re-evaluation of the WaterSure assistance programme for perceived vulnerable customers who have to use higher amounts of water as a direct result of their social or health circumstances. A definition of the programme is [9]:

"This scheme allows certain customers with a water meter to have their bills capped to make sure that they don't cut back on the amount of water they use because they are worried about how they will pay their bill.

If you qualify for this tariff, you will pay no more than the average household bill for your region, even if you use more than the average amount of water."

8.5. Although WaterSure does not in itself encourage water efficiency (as it caps water charges), it does address the affordability aspect of water charges to the most vulnerable. Estimation on uptake stands at 16,200 households out of around 400,000 thought to be eligible [10].

There are several possible reasons for this huge shortfall: that the industry is not proactive enough in offering assistance; that the qualifying criteria are too restrictive discouraging customer application; that customers who do qualify have higher concerns such as energy charges and food prices and therefore are 'distracted' in applying. Innovation here could be the industry taking the programme to their customer base, which would be encouraged by effective data sharing between agencies such as the Department of Work and Pensions; or that it is extended to those customers who have real payment problems ('can't pay') as part of a debt management interaction between the company and customer.

8 Defra 'Cave Review of competition and innovation in water markets: a call for evidence' (2008), Crown Copyright

9 Ofwat Website – www.ofwat.gov.uk

10 Minutes from Public Utilities Access Forum held on Thursday October 18th 2007 at Ofgem, 9 Millbank Road, London, SW1P 3GE



8.6. On the efficiency aspect, within the Ofwat Consultation there is the definition of water savings attributed to specific products which is an ideal starting point for calculating the cumulative amount of water saved per region/scheme/company. This could be improved upon to incorporate household size (for domestic customers) in the return results to Ofwat and even fuel type/water heating system to assess the energy savings. The end result would be a combined water and carbon savings report which could be of interest to Ofgem and the energy sector, aiding the ultimate goal of addressing climate change.

8.7. **Recommendation 2. This study supports an innovation duty on Ofwat to help to achieve innovation in technology and social programmes**



IX. Government Involvement with Water Efficiency

9.1. Government is seen by most stakeholders as the key to setting the context for major improvements. Innovative programmes such as WaterCare in the South West should be considered for possible adoption throughout England and Wales. These incorporate efficiency, affordability and debt management within the one programme – similar in concept to the Warm Front Scheme within the energy sector.

9.2. The application nationally of this scheme is a matter for Government, as benefit maximisation on a large scale can not be seen as the responsibility of water companies alone. However the results of the South West Pilot Scheme on Water Affordability, as highlighted earlier, did indicate that benefit 'offerings' are an attractive passport into such a scheme. A twin-track approach of addressing affordability through both benefit identification and efficiency-led installations could lead to a 'Warm Front for Water'.

9.3. In the short term it would be possible to incorporate the water efficiency side within the existing Warm Front Scheme for energy, as the customers who are fuel poor and assisted by Warm Front will inevitably face similar problems in paying their water charges. This is compounded because customers can be cut off from their energy supply for non-payment, something which is not possible in the water industry. Inevitably this leads to a hierarchy of importance given to the respective charges by the customer – those with payment difficulties will place higher importance on energy payments.

The estimated costs for adding a water efficiency element to the Warm Front Scheme are £30 per household (assuming shower, tap and cistern devices). In 2007-08, 268,90011 households[11] were assisted under Warm Front alone so this would imply a total cost of £8 million (materials only) to provide all Warm Front beneficiaries with water efficiency measures.

The estimate does not include labour costs as this information will differ regionally and is not in the public domain.

9.4. Indeed a 'water aspect' to Warm Front would add to the attraction of the scheme to the vulnerable customer. A consolidated process could also help to reduce the costs associated with running two separate schemes – and this would allow for an increased evidence base relating to water efficiency. Regional variances, the importance placed on water efficiency by water companies, and resource issues could also be overcome by a centrally-administered Government scheme.

9.5. Key to any affordability action is metering. For the financial implications of water charges (both positive and negative) to be an effective behavioural factor, customers have to be on a measured tariff. However, for low income customers participating in the Warm Front programme who switch from a rateable value charge, provisions must be put in place to protect them from increased charges. As well as installation of devices and exploration of benefit maximisation, water companies have the responsibility of identifying the most beneficial tariffs for the customer. Many are already doing so. One improvement could be a rising block tariff operating on the basis of 'the more you use, the higher the charge ' – although again evidence is needed. Different tariff approaches have different benefits and disbenefits.

11 Defra 'The Warm Front Scheme Annual Report 2007/08' (2008)



IX. Government Involvement with Water Efficiency

9.6. As mass benefit maximisation programme/s within the water industry will take some time to implement, water companies will need to implement tariff structures which allow for a baseline of affordable water use in all households, with the rising block tariff structure to be introduced dependent upon individual household water use. We look to the outcome of the Walker Review for a detailed financial and economic analysis of options in this area.

9.7. There should be safeguards to minimise impacts on vulnerable households – such as the possible extension and proactive offering of the WaterSure programme; and the development of smart metering technologies and 'easy-to-read' water bills to highlight in a simple, understandable format the level of water consumption so the consumer can understand the financial implications of higher water use. Both of these areas are intrinsically related to the theme of customer education as a fundamental building block to greater water efficiency, with an incentive for consumers to use less water over and above a recognised sustainable level in the home. This should be linked directly to the assumed occupancy in relation to the size of the property, in essence a more robust and fair version of the rateable value charge in relation to water use.

9.8. The underlying theme of energy and water consumption and the inherent linkage between the two would be addressed by such an approach, and could result in greater customer education on this matter. Of particular relevance here is the previous proposed combined water and carbon savings report associated with water efficient devices.

9.9. The fundamental issue of defining a national indicator on affordability remains undecided within the sector. Until this indicator is agreed and implemented, estimations of those experiencing difficulty in paying water charges and therefore eligible for help will be more complicated. The relative cost of water for the consumer compared to energy is obviously a factor here, but the likelihood is that consumers having difficulty paying for energy will have difficulty paying for water and vice versa.

9.10. **Recommendation 3. We would strongly recommend in the first instance that the Warm Front scheme is extended to include a water efficiency element, because of the affordability correlation between the perceived fuel poor and those struggling with water charges.**



X. The Code for Sustainable Homes – does it go far enough?

10.1. One question has been raised frequently during this research – is the Code for Sustainable Homes far reaching enough with regard to water efficiency?

10.2. On a positive note it is encouraging that the Code will be applied to all programmes of government-funded social housing[12] introducing a standard of water efficiency for this new-build sector. However for other housing sectors it is still a voluntary standard – therefore this should become compulsory across the board as a level starting point in order to achieve improved sustainability.

Analysing the Code

10.3. The Code is defined, with regards to water efficiency as [13]:

"The Code builds upon EcoHomes in a number of ways, for example:

- The Code introduces minimum standards for energy and water efficiency at every level of the Code, therefore requiring high levels of sustainability performance in these areas for achievement of a high Code rating" (Code for Sustainable Homes, page 5)

10.4. The actual rating of standards within the Code is given in Appendix 1.

10.5. The base level of water efficiency is linked to the Defra ideal of 120 litres per person per day by 2030 [12]. The rationale behind these figures is improving the overall stock and efficiency of housing, and bringing the UK into line with the currently better performing European neighbours with regard to efficiency and sustainability of resources.

10.6. The main flaws in the Code for Sustainable Homes are that it is mostly voluntary – it is only compulsory on English Partnerships land or new social housing as follows [12]:

"As of April 2007, all housing built on English Partnerships' land, and from April 2008 all social housing funded through the Housing Corporation has to be built to Code level 3, a performance standard of 105 l/p/d, representing current best practice in water efficiency without requiring water reuse or rainwater harvesting. Last year CLG consulted on whether all new homes should receive a mandatory rating and has since confirmed that the Government will introduce this measure." (Defra, page 26)

10.7. We welcome the Department of Communities and Local Government's introduction of water efficiency standards within Part G of the Building Regulations, and the stipulation that all new homes built from October 2009 will be built to specification of 125 l/p/d including an 'allowance' of 5 l/p/d for use outside of the home. These standards could provide a step change to greater efficiency within the home and progression towards the consumption advocated by Level 3 of the Code for Sustainable Homes, in tandem with initiatives such as effective and consistent educational messages to householders.

12 Defra 'Future Water – The Government's water strategy for England' (2008), Crown Copyright

13 Communities and Local Government 'Code for Sustainable Homes – A step-change in sustainable home building practice' (2006), Crown Copyright



X. The Code for Sustainable Homes – does it go far enough?

10.8. However there are no policies to stimulate greater water efficiency in the existing housing stock and private home owners do not have to adhere to the Code. Current financing difficulties arising from the 'credit crunch' could make progress much more problematic, as new building will slow down and householders may be even less inclined to invest in water saving measures.

10.9. One possibility could be a link between the water and energy ratings of appliances such as baths and showers – and to lesser extent toilets – in order to encourage the fitting of efficient versions. Government should provide incentives either through advertising/education or directly to increase the ratings of the more efficient appliances. More specifically, the Government could provide financial 'breaks' for the purchase of efficient appliances or a levy on the purchase of less efficient models.

10.10. There is a real opportunity for extensive water efficiency measure installation in Eco Towns - where these go ahead - and the subsequent opportunity to link the benefits of water efficiency with carbon usage. This should be included in legislation in order to provide greater incentives for home builders across all sectors and owners of the existing housing stock.



XI. Social Housing
– an opportunity for a 'joined-up' approach?

11.1. All new-build social housing homes, funded by the Housing and Communities Agency, have to meet the requirements of the Code for Sustainable Homes.

11.2 However, as with the private sector, this does not address the problems faced by existing social housing stock. The proposed 'Warm Front for Water' may not be able to address the social housing sector, as Warm Front is a private sector scheme for households claiming a 'passport' benefit.

11.3. It is time for concerted effort and joined up partnership with Government, Ofwat, Water Companies, the Housing and Communities Agency and its members to introduce relevant initiatives – much along the same lines as the Water Saving Group tackling issues within the industry as a whole. As Government involvement would allow a focus on affordability through the identification of benefits, the 'joined-up' approach would concentrate on the full spectrum of issues – affordability (through rents), efficiency (both carbon and water), sustainability in allowing for supply to more households and associated climate change factors.

11.4. Costs could be spread across the partnership members in order to facilitate and finance such programmes, directing action at a local level while tackling a national problem. Also there is scope for robust and large-scale evidence building to submit to Ofwat in order to analyse the effectiveness of action for the future and justify expanded schemes. There is potentially the opportunity to strengthen the provisions of the Code for Sustainable Homes so that all social housing funded through the Housing and Communities Agency should adhere to Level 3, with projected daily use of 105 litres per household, and there should be retrofit of devices in existing housing to achieve similar efficiencies.

11.5. **Recommendation 4. We advocate the application of the Code for Sustainable Homes Level 3 to all housing and the use of social housing as a test bed. This would allow for a more complete package of measures to address cross-tenure issues and would add to a robust evidence base of research.**



XII. The Impact of Metering

12.1. In principle metering is the fairest method for the charging of water use. However there are caveats to be noted here, mainly that as many water consumers are not on a measured tariff, a blanket metering installation programme would be to the detriment of some vulnerable customers.

12.2. We applaud the ambitious targets set by some water companies with regard to their further metering programmes as without the effective measurement of water consumption, the base level of efficiency cannot be ascertained and the customer cannot be actively incentivised to use less water via the associated financial benefits. Such metering programmes should be proactively carried out, along with help provided by iniatives such as WaterSure and innovative tariffs, in order to limit the possible negative impacts for the most vulnerable.

The following Fig.1 identifies estimated costs for a full scale compulsory programme to achieve universal metering.[14]

Total non-metered households	Average weighted cost of meter installation (through compulsory programme)	Total estimated costs
15,156,900	£181	£2,743,398,900

Fig.1 Estimated costs of full universal metering programme in England and Wales

These costs are attributed to 2007 figures and do not take into account inflation or cost efficiencies over time.

However such an aim of universal metering is needed to achieve greater efficiencies in supply and for customers to understand their water consumption further.

There will be greater associated costs in relation to a smart metering programme, through unit cost and also replacing previously installed 'dumb' meters but the long term positive effects, as outlined, will provide sustainable improvements to aid the water sector.

12.3. There is a strong case for compulsory metering in the short term for areas facing severe water shortages in order to ensure sustainability of supply for the whole customer base. This offers another potential avenue for linked retro-fit of efficiency devices.

12.4. Consideration should be given to the introduction of smart meters – measuring water, gas and electricity usage jointly. A combined central point of reference for the customer to gauge how much they are spending in total on these resources could allow for 'self-imposed' efficiencies to be made and effective planning on consumption. Although more technologically advanced than the current 'dumb' meters, there will be a financial implication here. The effects must be judged in the long term and not purely on economics, because there are intangible but important customer behaviour implications and sustainability benefits to be gained.

14 Godley, A., Ashton, V., Brown, J., Saddique, S. 'The costs and benefits of moving to full water metering' (2008) Environment Agency



XII. The Impact of Metering

12.5. We are encouraged by the aim of the Intelligent Metering Initiative quoted below and the link between metering and education with possible social tariff innovations[15]:

"Intelligent Metering is concerned with the rapid recovery, processing, and feedback on information on water and energy use from a large base of consumers. It will allow utilities to understand better the behaviour of their customer base to apply measures to alter patterns of use and to apply social tariffs where appropriate."

12.6. There is also a synergy with carbon as these meters allow for remote reading by water companies, thus eliminating the footprint associated with sending a 'man in a van' to read household meters.

12.7. As 'Future Water' states[16]:

"Smart meters will be more expensive for companies, and therefore customers, but the benefits could also be greater. Potential benefits include reducing companies' operating costs through remote reading and incentivising customers to save water by making information more easily available." (Defra, page 81)

12.8. **Recommendation 5. We recommend the extension of metering and pilots for smart meters enabling testing of innovative tariff structures and encouragement of joint monitoring of energy, carbon and water use.**

15 Intelligent Metering Initative accessed via www.imi-motoring.co.uk
16 Defra 'Future Water – The Government's water strategy for England' (2008), Crown Copyright



XIII. Conclusions

13.1. We are not proposing a simple solution to the wide range of issues facing the water sector regarding efficient use, sustainability of resources and environmental and ecological impacts.

13.2 However adoption of our five recommendations should provide concerted and effective action in addressing the issues faced by the water industry, but also will have positive knock-on effects on the energy sector through consumption synergies between the two. Central to our recommendations is the fundamental need for protection of the vulnerable consumer in maintaining their access to a precious resource without damaging quality of life. There is a real opportunity to improve upon this through the linkage with affordability, both with a 'twin-pronged' approach with energy, and also benefit maximisation and tariff protection – utilising key stakeholders in effective partnerships to minimise any potential risks.

13.3. The question remains though – does efficiency work in economic and sustainability terms for both the consumer and the environment? There is clearly the need for a more robust evidence base and full investigation of economic benefits to the consumer and industry. This is why pilots such as the South West Pilot on Water Affordability and the Enhanced Metering Programme in East Anglia are key to progress. We must however avoid the catch 22 of being unable to justify pilots designed to provide evidence because of lack of evidence! What the 'package of measures' advocated by this study will provide – in addition to the work already undertaken throughout the industry – is achievable, joined up and realistic methods to tackle the problems faced by the industry, and to link these to energy and carbon use in the vital context of climate change.



Appendix 1

Code for Sustainable Homes – water standards

Category 2 – Water		
Issue	**Measurement Criteria**	**Points Awarded**
Internal potable water consumption	Where predicted water consumption (calculated using the Code water calculator) accords with the following levels: < 120 l/p/d < 110 l/p/d < 105 l/p/d < 90 l/p/d < 80 l/p/d	One of the following point scores 1.5 3 4.5 6 7.5
External potable water consumption	For providing a system to collect rain water for use in external irrigation/ watering e.g. water butts	1.5

Communities and Local Government 'Code for Sustainable Homes - A Step-Change in Sustainable Home Building Practice' (2006) page 15



Appendix 2
Study Contributors

In completing this study Sustainability First would like to recognise and thank the following organisations and bodies for their valuable input and guidance and other help and support for this project:

eaga

Defra

Ofwat

Consumer Council for Water

Environment Agency

Unison

Manchester Business School

United Utilities

Anglian Water

South West Water

Waterwise

Water UK

Connect Public Affairs

Natural England

4388

Sustainability *first* eaga



Sustainability *first*

