Water Efficiency in the Low Carbon Economy Summary

Oct. 30, 9:30 – 16:45

Overview

This conference brought together key players from the water industry and related organizations to present and discuss water conservation as it relates to the broader field of sustainability and curbing carbon emissions. Presentations ranged from background information on carbon foot printing, to the effects of climate change in agriculture, to implementation strategies for efficiency initiatives.

In a roundtable discussion, several barriers and suggestions for UK water efficiency were brought up. Large scale retrofits are needed on much of the existing housing stock to deliver water and energy efficiency. Also, a complete change in the UK regulatory framework is needed so that water companies are rewarded for saving water instead of selling it. Currently, carbon prices are too low to act as an economic driver for change, substantial increases are needed. Finally, an integrated catchment management approach is needed to properly implement a sustainable practice

Presentations

Andy Brown – Anglian Water – Overview of the East of England's water resources and the effects climate change will have on them.

- The East of England is the driest part of the country and climate change is projected to render its water resources even less stable.
- Currently water resources are under strain from population increases, demographic shifts, and climate change.

In the future water efficiency will have to play a key role in managing climate change while protecting the environment.

Chris West – UK Climate Impacts Programme – Examined climate change and its impact on water supplies and general challenges for future water use in the UK. He then discussed how UKCIP should be used.

- UKCIP Studies confirm that global climate change effects UK weather as evidenced in a rise in average mean temperature, drier summers, wetter winters, and more concentrated rainfalls.
- This presents a unique challenge for water as a growing population, smaller households, more irrigation, and environmental issues will put a strain on resources.
- UKCIP is based on past weather and detailed statistical projections should be used as a tool to combat future problems associated with climate change.

Awareness needs to be created about climate change and its effects weather and resources. UKCIP will play a central role in creating awareness about climate change.

Peter Jiggins – DEFRA – Further examined impacts of climate change, discussed DEFRA's Future Water report.

- Social, Demographic, and Environmental change has put significant pressure on water resources, a new plan for water use is needed.
- Future Water outlines government priorities with regard to the water sector and puts emphasis on efficiency, quality, supply / demand balance, and climate change mitigation and adaptation.
- Through consumer awareness, water efficient technology and near universal metering, DEFRA hope to cut per capita consumption from 150L / day to 130L / day by 2030.
- 6% of UK greenhouse gas emissions come from domestic hot water use. Efforts need to be made to reduce this figure, shower and washer regulators have been proposed.

A tough road lies ahead for the water industry in the face of population and environmental pressures. However, this situation can be combated through changes in attitudes about water and widespread efficiency initiatives.

Michael Bingham – Gov Office, East of England – Presented challenges faced by the east of England regarding population growth and water management.

- In general, projected growth in the east of England is going to further strain water resources. Furthermore, many areas of projected growth overlap with water stressed areas.
- This requires reductions in consumption along with advanced plans for demand and flood management.
- Plan to cut water consumption by 25% and mitigate flood risks, however there are significant economic and cultural barriers.

Changing attitudes and behaviour regarding water efficiency is crucial to having stable future water resources in the east of England.

Sarah Bowerman – East of England Regional Partnership – Talked about the challenges of supplying water to East England and the Regional Water Partnership that has been establish to combat this problem.

- The East of England is the driest region in the UK and is anticipating high levels of growth. This means reductions must be made in water consumption for new and existing housing stock.
- E of E Regional partnership is a private and public sector partnership geared towards promoting sustainable water consumption.
- Objectives include creating an evidence base, promote best practice, encouraging and assisting local planning authorities to conduct water cycle studies, and ensuring that water-thinking is embedded in Local Development frameworks.

Population growth and demographic shifts in the east of England mean that water needs to be fully addressed through the planning system.

Andrew Alston – Agricultural Water Management Co. Ltd. – Discussed impacts of climate change on agriculture and their implications.

- Thus far, climate change since 1970 has resulted in 20% fewer frost days per year, 6% increase in rainfall, and an extension of the growing season by one month.
- Implications: Larger variety of crops and crops with greater biomass are now being grown in central England, this increase is putting additional strain on water resources.
- To combat this, efforts are needed in creating effective systems for rain and winter water storage. i.e. more reservoirs.

In 2007 more than 42,000 ha of farmland was flooded. This is a monumental waste of water and more effort needs to be put into creating reservoirs and similar types of land management.

Gerry Freenan, Dr. Stephen Coupe – Hanson Formpave – Discussed the Code for Sustainable Homes focusing on the example of the Hanson Code Level 4 home at the BRE Innovation Park. Also addressed practical implications for 5&6 level buildings with respect to water use and devices can help achieve this level of efficiency.

- Level 5&6 building codes require a 53% reduction in per capita water use from 150 L / day to 80 L/day.
- Practically this means low flush toilets, restrictors on sinks and showers, reductions in washing machine and dishwasher use, and rainwater / greywater recycling.
- However, currently there is limited knowledge about and supplies of these products and certification is difficult to obtain.
- The Hanson EcoHouse has effectively used water efficient devices along with Hanson Formpave to reduce consumption and rainwater runoff. By combining a water recycling and sustainable draining and heating system, they have achieved points in three categories of the Code for Sustainable Homes.

Geothermal paving and water efficiency devices can make significant difference in reducing water consumption and helping buildings achieve high level sustainability codes while saving water, energy and money.

Gareth Walker – Waterwise – Discussed water consumption as it relates to energy use and carbon emissions with reference to specific appliances.

- Heating water requires comparatively large amounts of energy (over 10 times the amount of energy required by copper).
- Consequently, hot water use constitutes 25% of total energy consumption in the home and accounts for 89% of CO_2 emissions associated with water.
- Thus, hot water use is highly correlated with energy consumption and our carbon footprint. Reductions in shower duration and dishwasher and washing machine use are crucial to reducing the carbon footprint associated with water.

Quote of the day: “Waste is worse than loss. The time is coming when every person who lays claim to ability will keep the question of waste before him constantly. The scope of thrift is endless.” – Thomas A. Edison.

Stephen Kay – Cambridge Water Company – Discussed Cambridge Water’s vision for making new developments water efficient through grey water recycling and reduced consumption.

- There is a projected 40% increase in dwellings in Cambridge Water’s supply area by 2035. This means *if* homes built to level 3&4 an additional 9.2 ML/day of water will be consumed in this water stressed region.
- Greywater recycling *must* be implemented in new developments
- However, barrier such as unfavourable government regulations, attitudes of buyers and developers and lack of penetration of water efficient technology hinder these schemes.
- Currently, Cambridge Water is creating business plans that incorporate greywater recycling and presenting them to developers. However, adding these capabilities increases building costs by 5%.

The bottom line is with projected housing increases, we need to take a lesson from Australia and incorporate grey water recycling systems and water efficient devices into home construction before it is too late.

George Archibald – I & P Services Ltd. – Discussed the pros and cons of smart metering and barriers to their widespread use.

- Smart metering allows for demand control, leakage detection, tariff flexibility, consumer awareness and customer service. Currently 30% of all UK households have meters installed.
- However, metering thus far has not been proven to reduce water consumption. In addition, each individual meter costs £42.20 in total indicating high costs of a large scale metering schemes.
- Under the current plan, 50% of the UK will be metered by 2020 costing each household £7. However, an accelerated plan has been proposed that would result in 79% of houses metered by 2020 at a cost of £20 per household / year.

There are significant drivers such as fear of drought, climate change and leakage management pushing the accelerated scheme but high costs and little evidence of metering’s effectiveness in reducing consumption has hindered the accelerated plan.

Angela Needle – Anglian Water – Discussed carbon emissions for each stage in the water supply chain. Highlighted steps Anglian Water is taking to reduce or offset these emissions.

- Anglian Water has taken initiative to reduce their own carbon footprint through understanding emissions, using less energy and generating renewable energy.

- They have done extensive research into the amount of GHG emitted by the water industry (accounts for 1% of total UK emissions)
- Also have adopted energy conservation practices (example: replacing inefficient pumps) and saved £7.6 mil thus far.
- In addition they currently have 10% of their energy delivered from renewable sources and have promoted efficiency and carbon foot printing both internally and with their partners and suppliers.

Shows how initiatives geared towards sustainability have helped a company environmentally and monetarily.

Chris Spray – Britvic – Presented a case study on how Britvic Beverage Company had undertaken water and energy saving initiatives and saved a substantial amount of money.

- In efforts to cut down costs, Britvic implemented water recycling initiatives.
- They reused cooled product heating water in other processed such as bottle rinsing and final cooling.
- Effective barriers to prevent contamination from recycled water and accurate instruments to measure effectiveness of program were critical to success.
- These initiatives resulted in £41,000 saving in water costs in £187,000 saving in energy costs.

Shows that if done properly, water recycling initiatives can cut down on water consumption and save money.

Ian Bryan – NISP – Discussed initiatives to recycle water in industrial processes and highlighted how these programs reduce energy consumption and carbon footprints.

- Water is widely used in industry and commonly viewed as a onetime use resource.
- However, NISP finds ways that industry can either reuse water internally or share water resources with other buildings in close proximity.
- This ‘industrial symbiosis’ reduces primary water abstraction while saving both companies money.

Joint use programs like this are an effective method to reduce both industrial and domestic water consumption.