WATEF Conference 2015

Low water use fittings: Measurement, opinion and policy

Mindy Hadi
Head of Social Research: BRE Building Futures Group

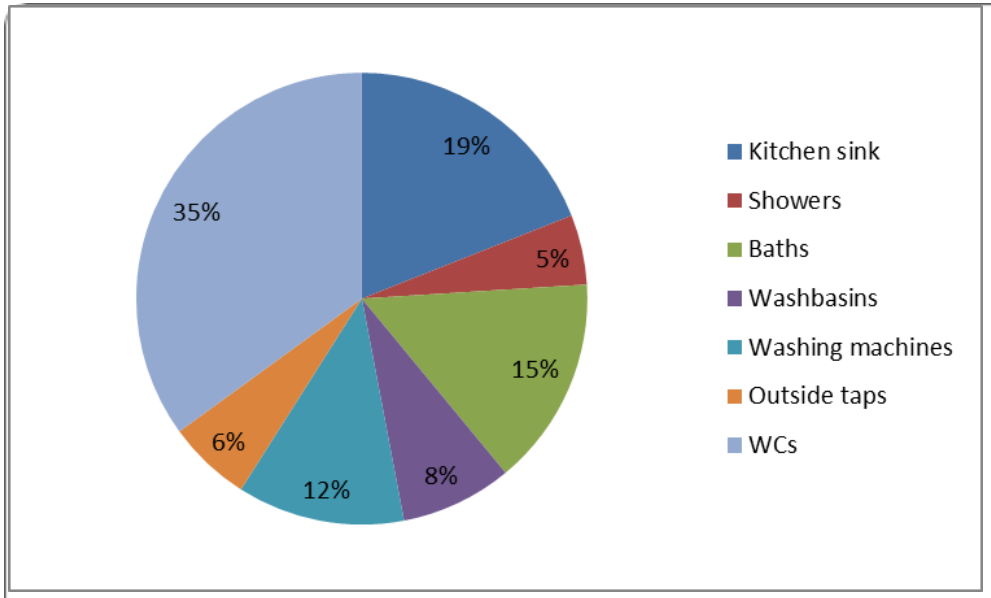
Part of the BRE Trust

Context

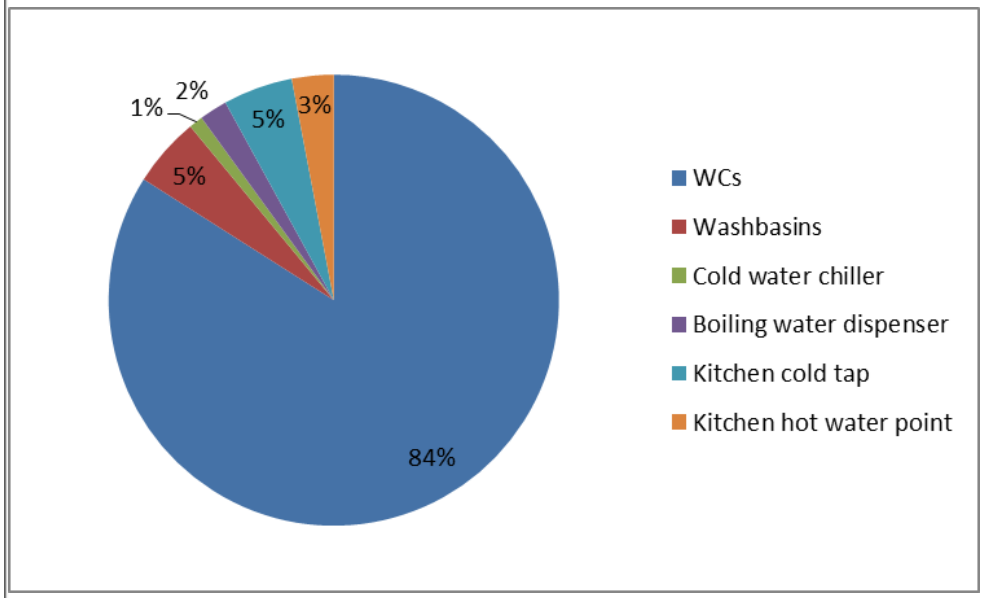
- Concerns about water supply and quality over the last 40 years.
- Demand increases: Population growth, demographics and competing uses (industrial, agricultural, domestic) increased strain on resources
- Droughts: 1976-2006 number of people affected increased by nearly 20%
- 60% of the water supplied in England and Wales used for domestic purposes
- Changing lifestyles and expectations

Government and policy position

- Evolving European and UK policy, legislation and regulation to reduce water consumption
- Early version of calculator for CSH pre-2010
- 2010 Building Regulations (ADG) introduced a 125 litres/ person/day limit for new domestic buildings
- Part G October 2015 amendments to water efficiency requirements
  - Optional requirement of 110 litres/ person/day if required by planning
  - Estimated water consumption calculated using the Water efficiency calculator inc: use factor
  - Alternative fittings based approach to demonstrate compliance

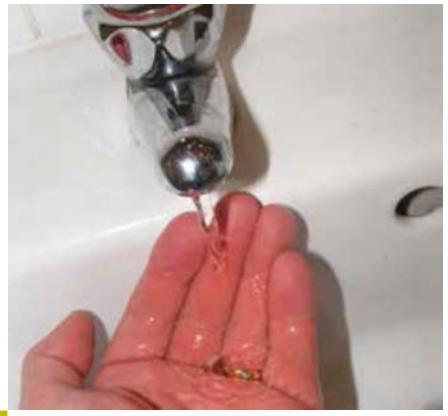


Typical domestic water use profile



Typical office water use profile

Water use from taps



- Taps account for a high proportion of water use
- Fittings approach ADC 2015

Water fitting	Max consumption
Basin taps	6 l/min
Sink taps	8 l/min

- Is this what people actually use?
- Usage factors?

Tap variables

- The amount of water used by a tap depends on a number of factors
  - Frequency of use
  - Flow rate
  - Duration of use
  - Activity
- Some activities require a volume of water delivered quickly ie filling vessels (sinks, buckets, kettles, pans)
- Others need a continuous flow of running water eg rinsing, hand washing, car washing, watering garden
- User control of water consumption from a tap (inc shower) compared to other water use fittings
- Water use is therefore not necessarily reduced by just lowering tap flow rates

Objectives of research

- Literature review identified
  - Drive to develop low flow taps/flow regulators
  - Gap in knowledge about acceptability to users
  - Lack of research into actual water usage ie how people use taps, how much water they use and what aspects of performance are important to them.

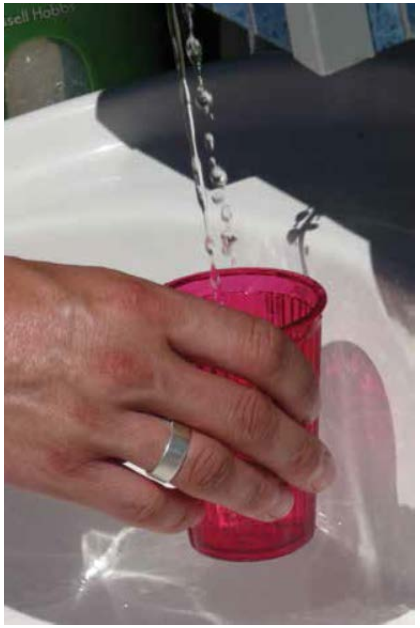
Objectives to ascertain the acceptability to users of
- a variety of tap flow rates
- different presentation methods

and

The impact of task on acceptability

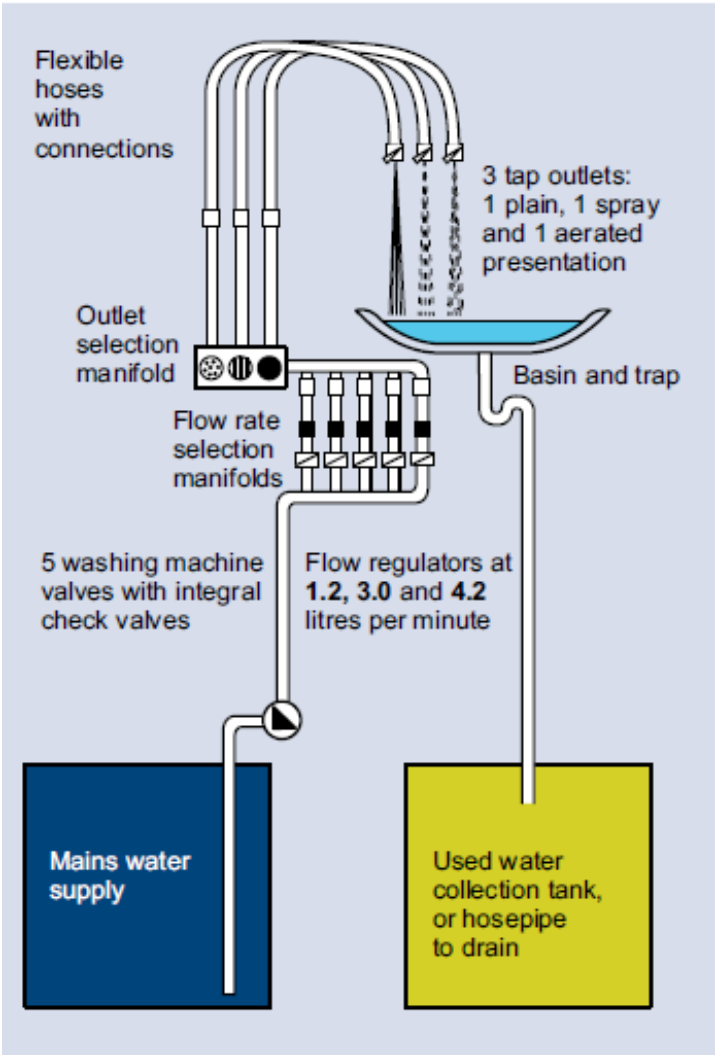
Research approach

- Literature review
- Interviews with tap manufactures
- Consumer focus group
- Experiment using a specially designed, low flow water fittings test rig
  - Three flow rates: 1.5, 3 and 4.2 litres/min.
  - Three presentations: plain, spray and aerated
  - Three tasks: hand washing, filling cup, filling kettle
  - Randomised design
  - 339 participants at BRE Insite exhibition

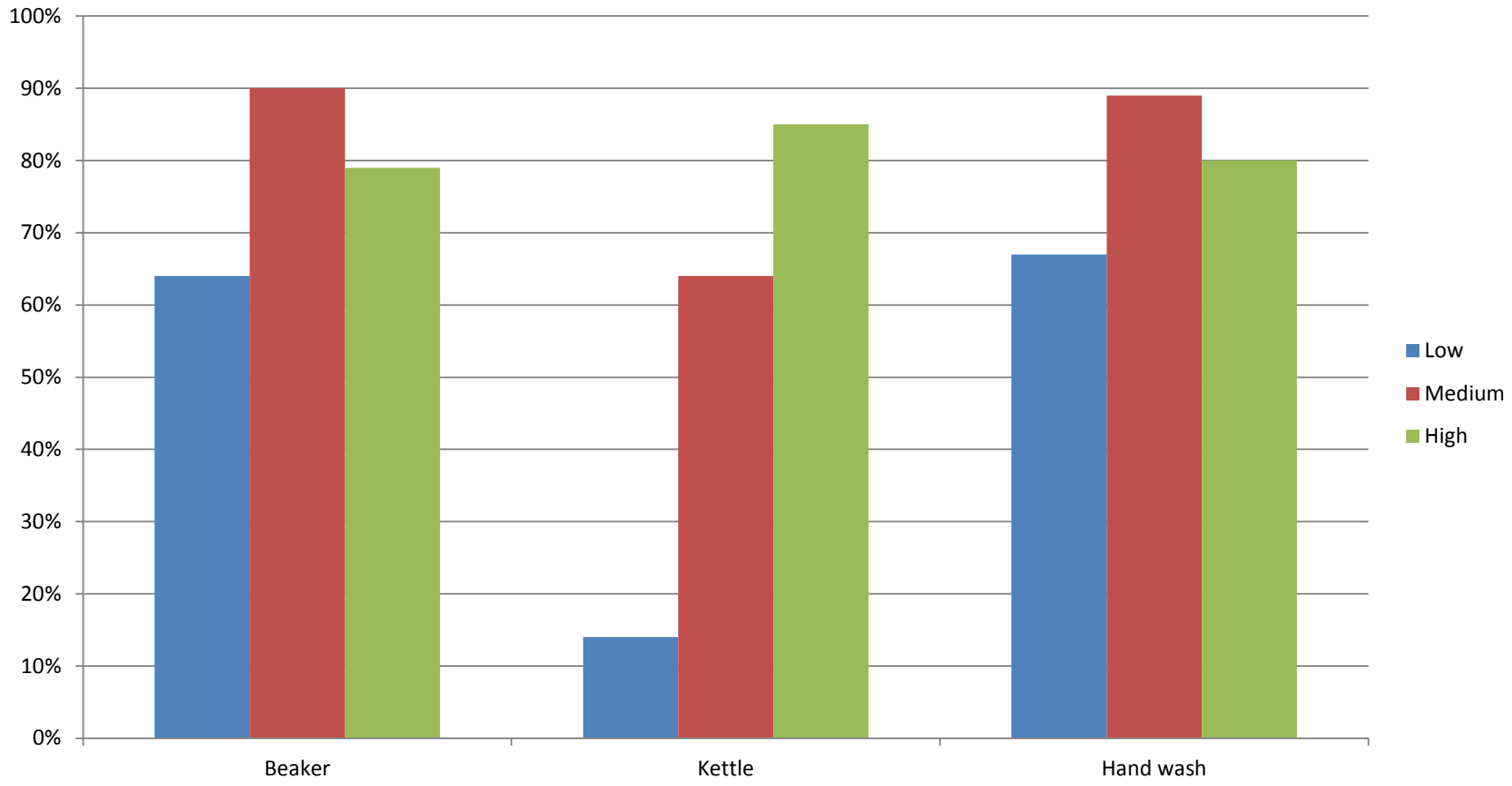


BRE test rig


bre
bre


Flexible hoses with connections
3 tap outlets: 1 plain, 1 spray and 1 aerated presentation
Outlet selection manifold
Basin and trap
Flow rate selection manifolds
5 washing machine valves with integral check valves
Flow regulators at 1.2, 3.0 and 4.2 litres per minute
Mains water supply
Used water collection tank, or hosepipe to drain

Acceptability of flow rate for tasks



Focus group

- Most participants were aware of need to save water and some had changed their behaviours eg shower vs baths, turning off taps to brush teeth
- No understanding of flow rates and what these mean or of different types of presentation ie aerated taps
- Preference for mixer taps
- Reported issues with low flow rates from home taps
- Tried out the test rig for tasks as before at the low flow rate
- Rate was acceptable for hand washing and filling cup but not for kettle or bowl

Discussion

- Main objection to very low flow rates was the long time required and the consequent inconvenience for tasks requiring a substantial amount of water eg filling a kettle, washing up bowl
- Low flow rates are also unacceptable for tasks requiring scouring action of water eg washing up, rinsing
- Lower flow rate is preferred for some tasks eg hand washing, filling a cup because of splashing at higher rates
- Later BRE research (Blofeld et al) confirms that where small amounts of water are used for a short time flow regulators have no impact on use as the chosen flow rate is low.
- Consumer concerns about performance of low flow fittings (DCLG 2010 and NHBC 2015)

Conclusions

- Understanding of what water flow rates people actually use is surprisingly poor
- Tap usage and choice of flow rates is a more complex issue than would be expected
- Consumers have no appreciation of flow rates outside the context of everyday tasks.
- The only way to be confident about water use is not to use assumptions based on computer models or questionnaires but to carry out real life research
- Tendency to put the onus on ‘educating’ the consumer to accept the unacceptable rather than meeting their needs.

Thank you

hadim@bre.co.uk