







Professor Paul Leinster CBE February 2016

Cranfield UNIVERSITY

Purpose of regulation

- Ensures organisations and individuals operate in a way that minimises adverse effects on people and the environment
- Establishes minimum requirements
 - use if all operators need to get to a certain standard quickly
- Promotes innovation
- Provides a level playing field
- Gives confidence to the public
- Provides intervention to correct market failure
 - where externalities are not fully reflected in the current economics eg carbon, pollution, use of resources

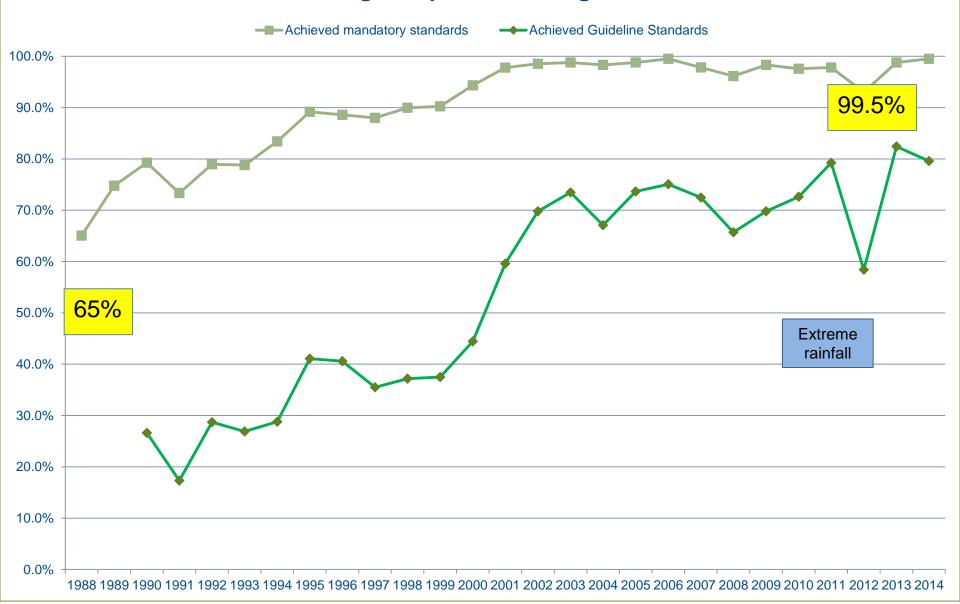
What has regulation ever done for us?

- Cleaner air
- Cleaner water
- Fewer pollution incidents
- Less waste
- More waste reused and recycled
- People's health protected and improved
- Habitats and species protected and improved
- More efficient resource use
- Reduced flood risk
- Helping ensure there is water for people, the environment, business and agriculture



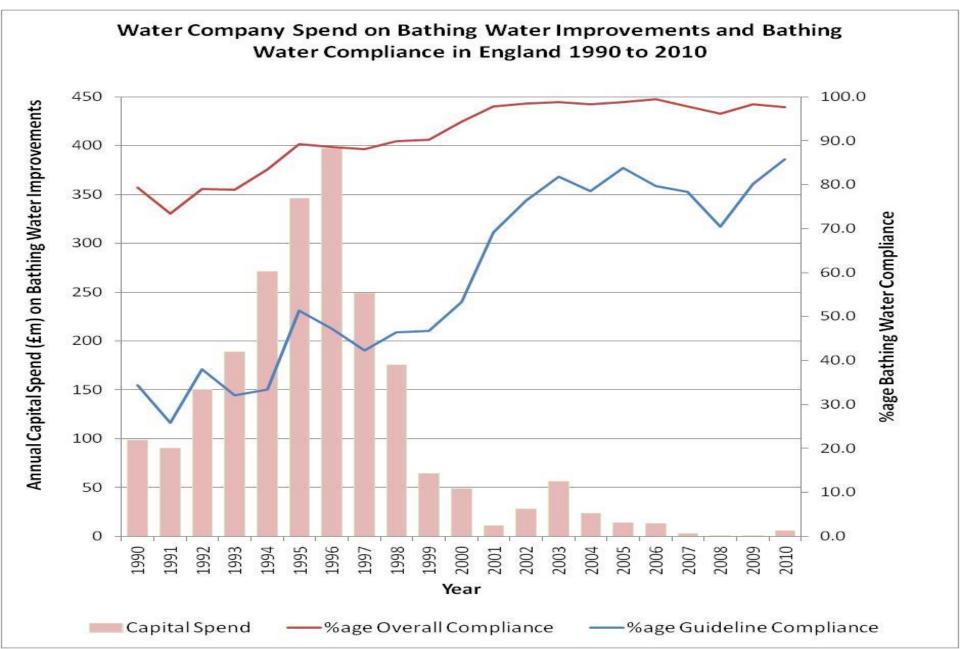


Bathing compliance in England 1988 to 2014





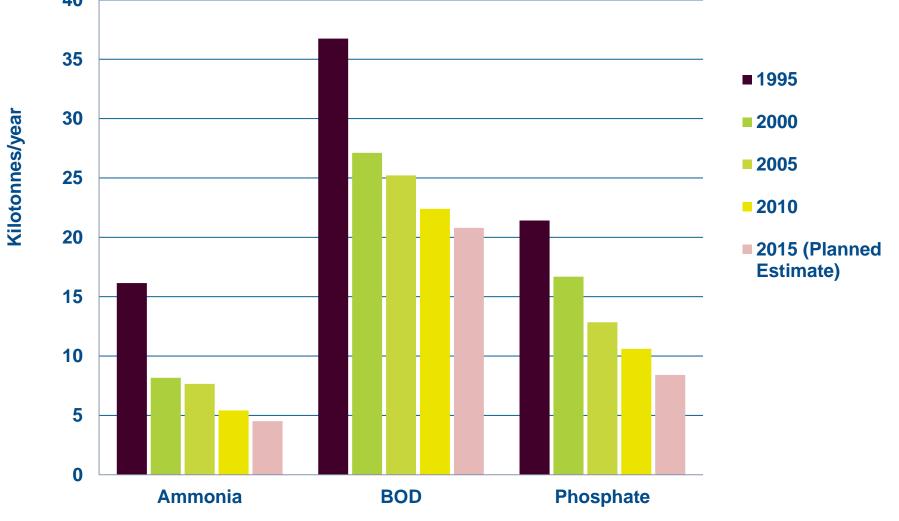








40-70% reductions in polluting load from water industry assets



BOD = Biochemical Oxygen Demand

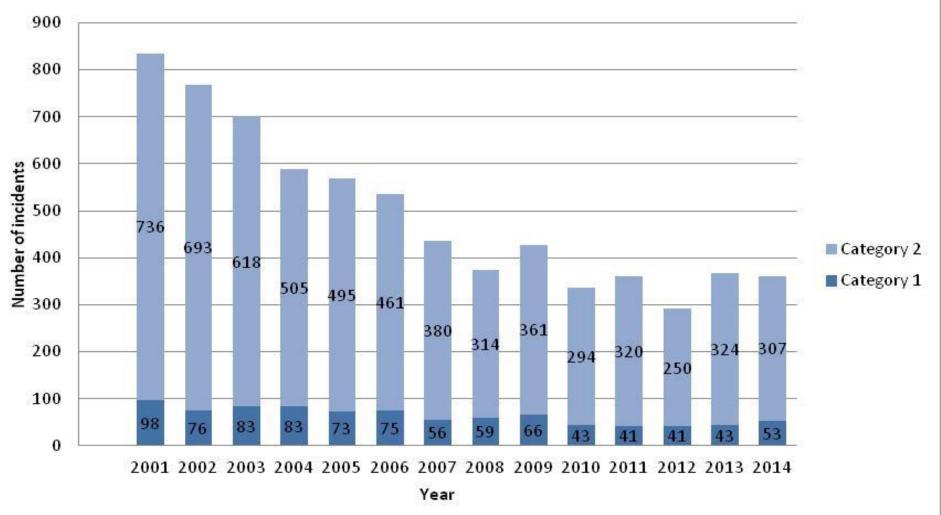




Pollution incidents to water are reducing

The number of serious incidents have nearly halved since 2001

Pollution Incidents to water



Polluted river stretches 2015 Indian Central Pollution Control Board

Ganga

- 48 polluted river stretches
- 118 towns and cities
- 7,301 mld sewage generated
- o 3,314 mld capacity to treat
- o 3,987 mld treatment gap

Other river basins

- 254 polluted river stretches
- 532 towns and cities
- 49,699 mld sewage generated
- 17,044 mld capacity to treat
- o 32,655 mld treatment gap

Cranfield UNIVERSITY

The regulatory process

- To implement the will of society expressed via the political process
- Politicians set the standards informed by the technical advice of others including regulators
 - o regulators can help understanding of what works in practice
 - o costs and benefits appraisal
- Factor in externalities not covered by existing economic considerations
- Politicians determine how much society is willing to invest in achieving outcomes
- Speaking to the right people
 - o government for policy
 - o implementation with the regulators

Cranfield UNIVERSI

The regulatory process

- Regulatory requirements defined in legislation
- Guidance produced to support implementation and compliance
- Operating requirements stipulated in site permit conditions
 - may include an improvement plan
- Regulators check compliance with permit conditions on periodic basis
- Inspections and audits
- Monitoring and reporting requirements
- Enforcement
- Prosecution
- Periodic permit review and update



Design and delivery criteria

- Targeted according to risk and impact
- Proportionate
- Consistent
- Focus on outcomes not processes
- Delivery to be professional, courteous, firm and fair

Compliance with regulations can be supported, but not replaced, by

Pollution prevention and reduction programmes

Cra

- Issue specific programmes
- Industry led initiatives
- Voluntary initiatives
- Better, not self, regulation earned recognition



Factors affecting effective compliance with regulatory requirements

- Good governance
 - with required intent
 - investment to deliver necessary standards
 - capacity and capability
- Independent, accountable regulators
- Safeguards against regulatory capture including pay throughout the regulatory process
- A high probability that non compliance will be detected and addressed appropriately
- Effective penalties including fines and enforcement undertakings
- Independent judiciary