

End User Innovation Needs Roundtables

GOLD SPONSOR



SILVER SPONSORS

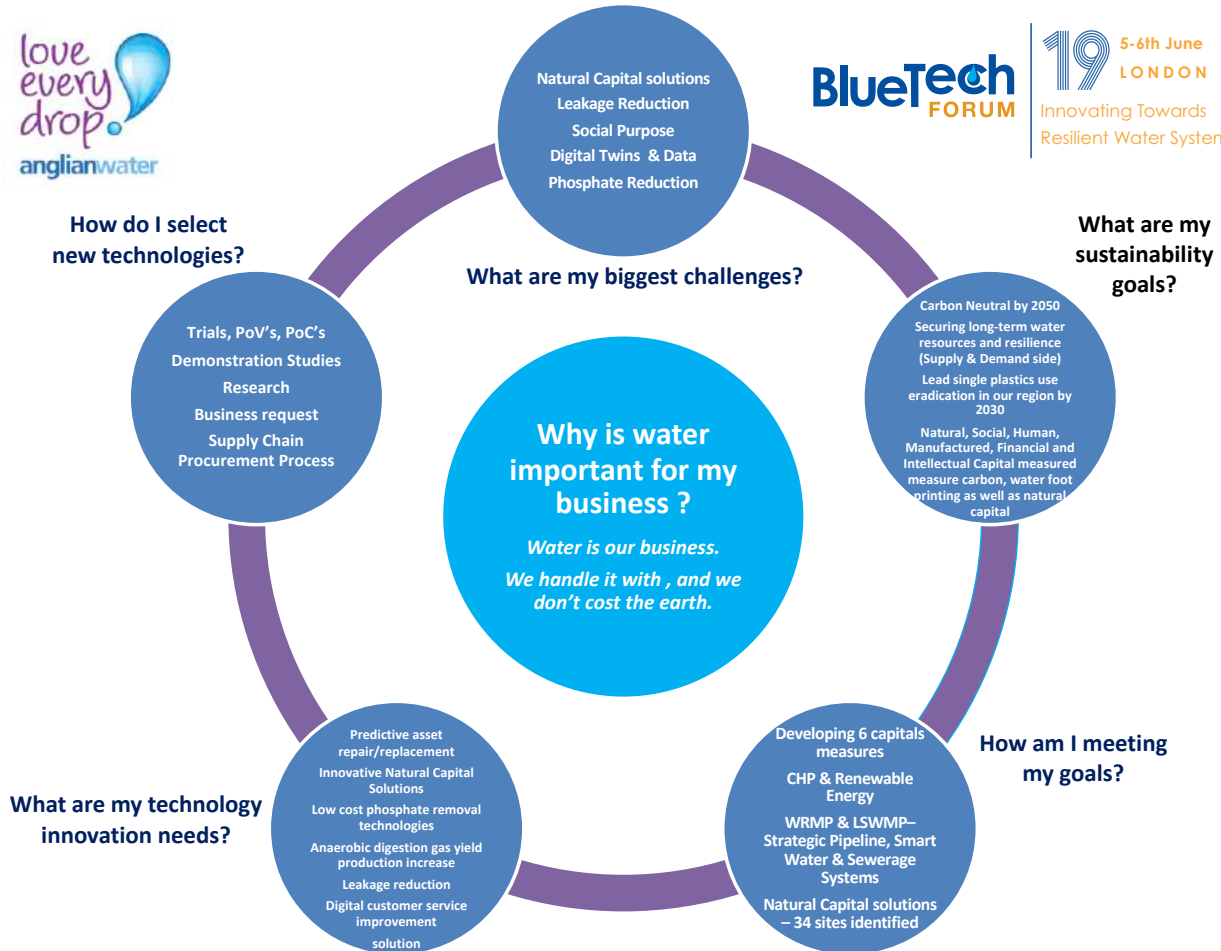


BRONZE SPONSORS



ARUP







How do I select new technologies?

- Cost effective
- Proven to work in the field, including reliability
- Minimum emission profile (waste, air quality, GHG)
- Ability to be installed with minimum of disruption to operation.

What are my biggest challenges?

- Analytical techniques lagging tightening of regulations & treatment of trace chemicals.
- Developing cost effective recycling opportunities.
- Increasing throughflow of aging treatment infrastructure.

What are my sustainability goals?

- Managing our water impacts and risks, particularly in water scarce areas.
- Maintaining a high quality for all environmental discharges throughout our portfolio.

Why is water important for BP

Water is one of the planet's most precious resources, which is why we actively manage its use.

Globally and throughout our operations we require water to enable production and manage wastewaters before disposal and discharge.

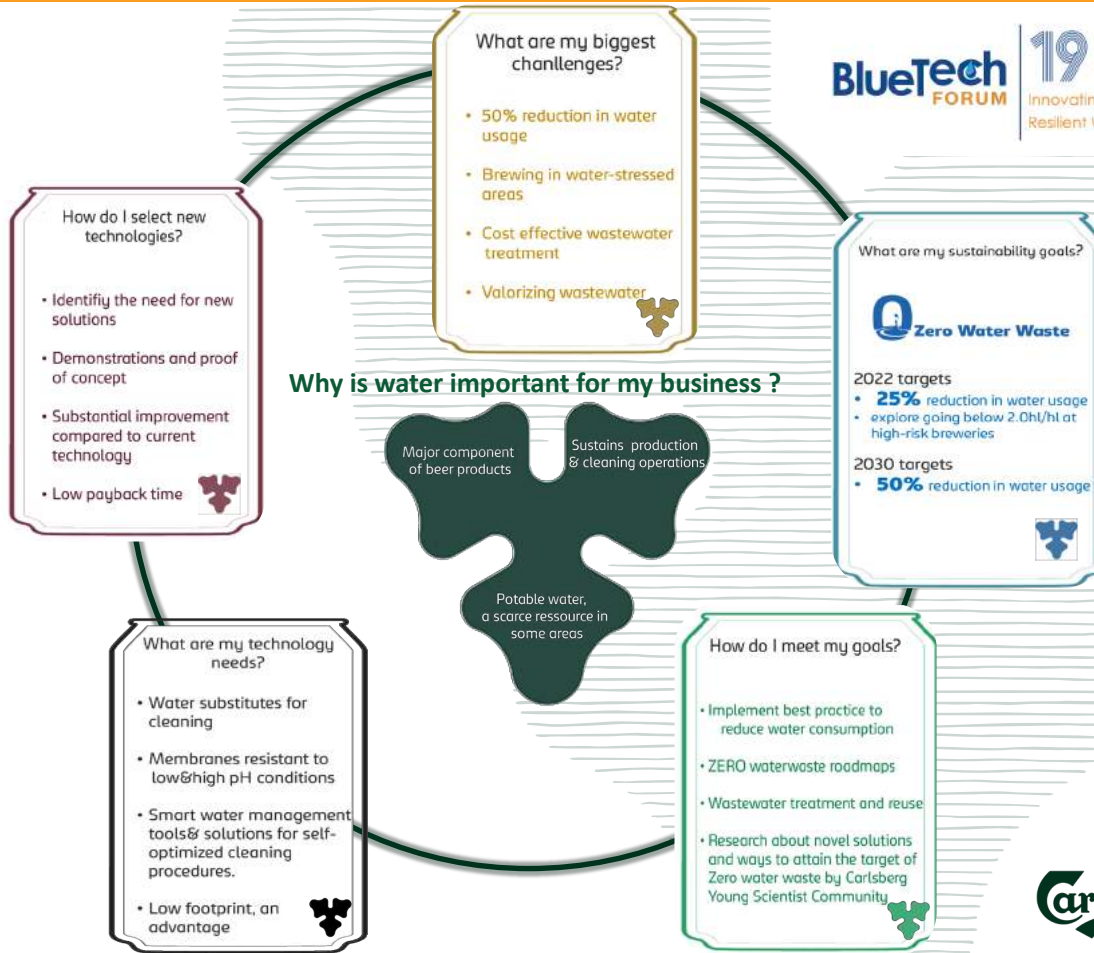
What are my technology innovation needs?

- Low energy intensity treatment and recycling technologies.
- Recovery of niche chemicals at low concentrations (e.g. cobalt, PFAS).
- Sensors and data analytics to improve performance.

Examples of how am I meeting my goals?

- Develop water management strategies in areas of water scarcity
- Using alternatives to freshwater
- Upgrading wastewater treatment systems
- New projects reviewing water reuse and recycling schemes





How do I select new technologies?

- Needs to proven at a large scale to safely work in the field
- Cost effectiveness/Maximize return on investment
- Must minimize environmental risks/impacts

What are my biggest challenges?

- Legal and Social challenges
- Climate Variability
- Aging Infrastructure
- Regional Impacts (perceived and real)

What are my sustainability goals?

- Reduce reliance on non-sustainable water supplies by increasing reliance on alternative sources (effluent, desalination, poor quality water)
- Increased recycling
- Zero discharge

Why is water important for my business ?

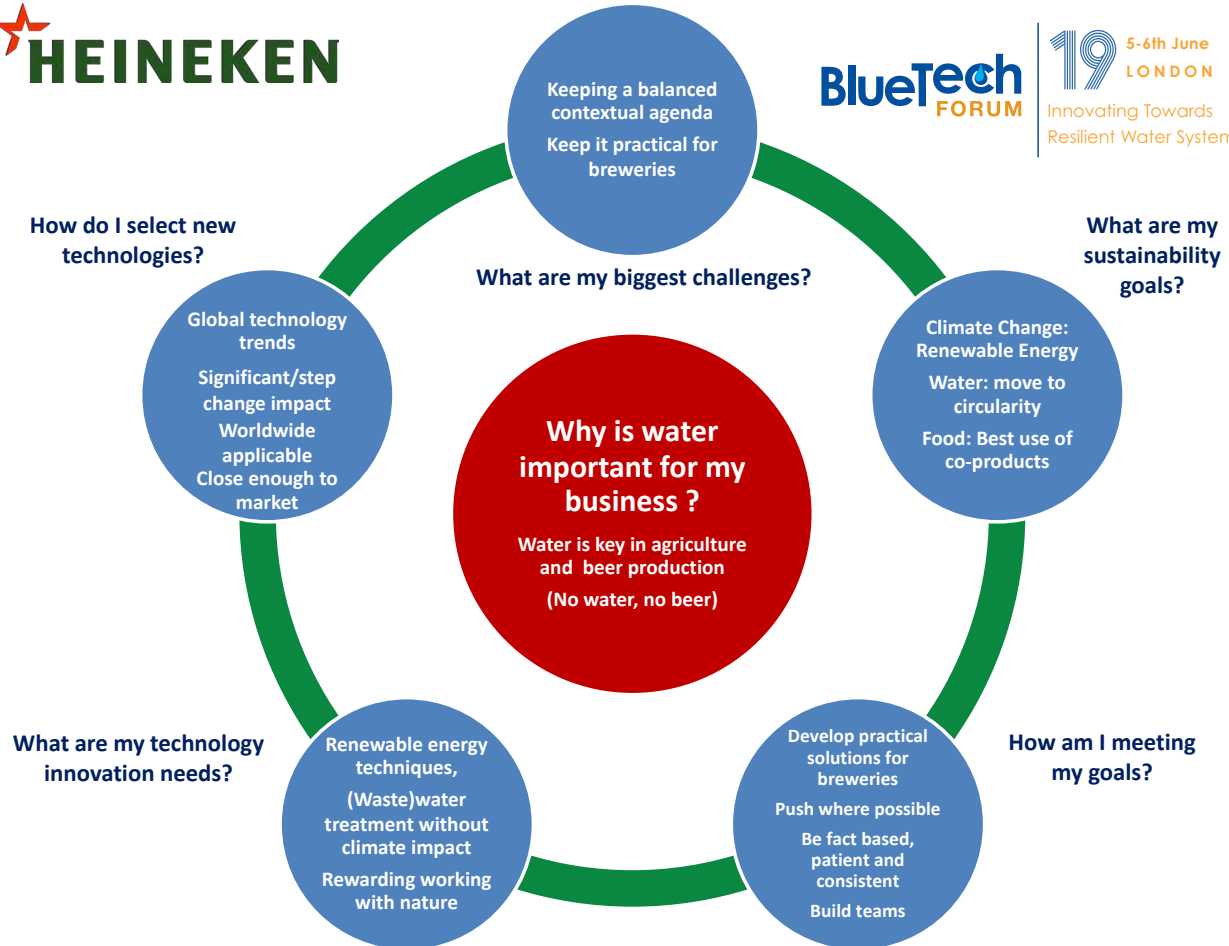
Need for reliable and consistent water supplies are essential for ore processes; industrial workings; environmental compliance; remedial activities; and regional/community water supply sustainability.

What are my technology innovation needs?

- Technologies that will move us closer to zero discharge
- Increase recycled water within the site
- Improve real-time data collection and monitoring

How am I meeting my goals?

- Increase recycling collectively to 83%, with individual sites reaching as high as 90% recycling
- Have reduced the use of non-sustainable water supplies by 64%
- Large-scale regional water supply projects are being developed



What are my biggest challenges?

Water
THM reduction, Crypto, Lead services/Ortho P dosing, Supply-demand balance, Leakage, Residual treatment & disposal, Pesticide/Pharmaceutical detection (bio-accumulating sensors).

Wastewater
Upgrading WWTPs to provide capacity & achieve compliance in a capex constrained environment, Operating high number of very small WWTPs, Meeting stringent discharge standards at very small WWTPs, Sewer rehabilitation, Sludge management at small rural sites, Alternative sludge reuse/disposal routes (currently 100% to land).

How do I select new technologies?

Depending on stage of development – Demonstrate performance capacity, reliability, track record if available, cost, operational support available
Cost efficiency (capex & opex)
Technology must meet or exceed water quality targets
Technology developer funded trials
UKWIR outputs

What are my sustainability goals?

Sustainable Development: Climate Change mitigation & adaptation, Energy efficiency, Waste Management, Resource Recovery/Circular Economy.

Why is water important for my business?

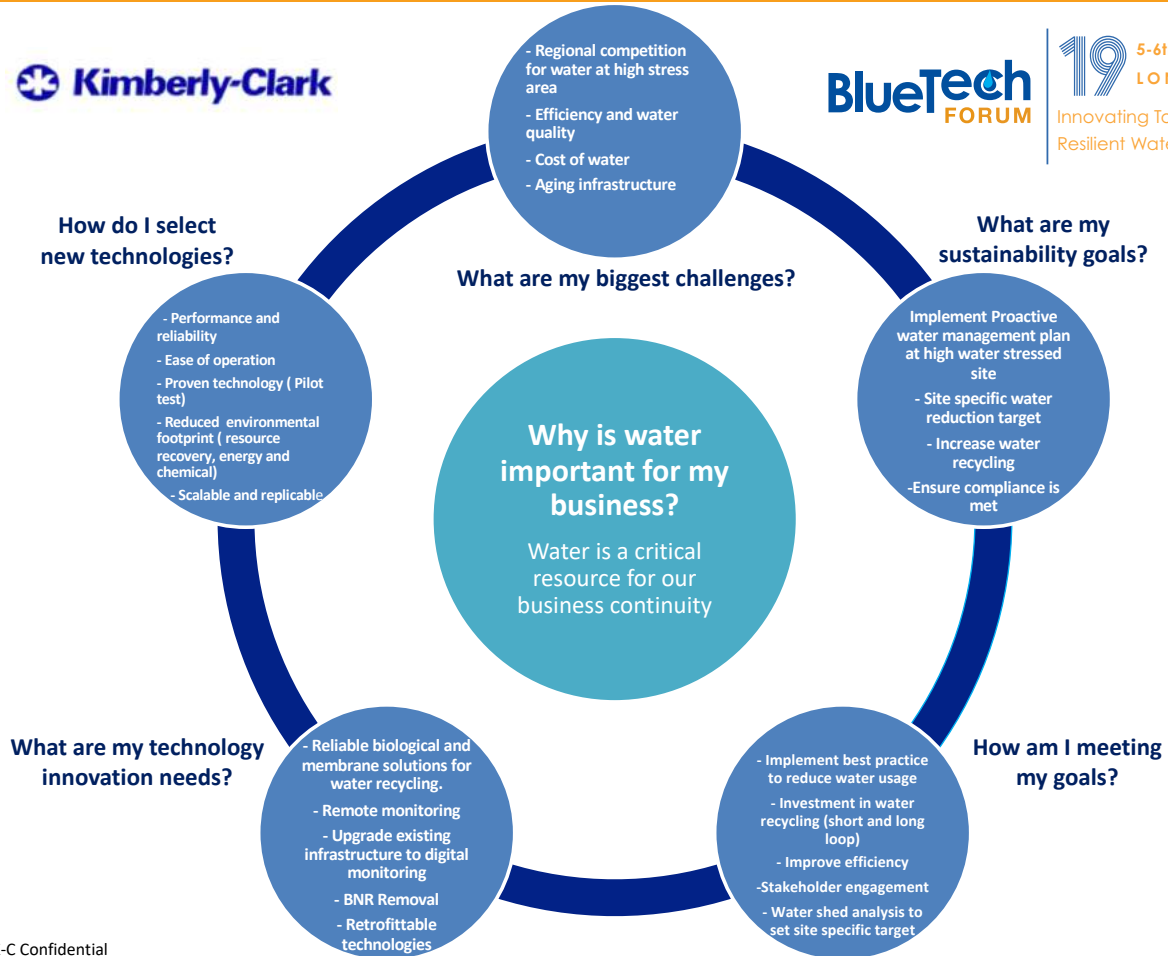
National provider of water & wastewater services in Ireland

What are my technology innovation needs?

Leakage control strategies
Control systems for raw water quality
Data driven decision making for water & wastewater
Low cost ammonia removal at small WWTPs
P recovery at smaller sites
Overflow volume quantification from wastewater networks
Alternative sludge reuse/disposal routes (currently 100% to land)

How am I meeting my goals?

Developing and implementing policies & strategies for Sustainable Development & sustainability goals



How do I select new technologies?

1. Eco-efficient and reliable technologies, minimum environmental impact in terms of additive use, energy demand and waste generation.
2. Flexible in operation.
4. Innovative / piloting

What are my biggest challenges?

Why is water important for my business?

Water is essential for the use and the production of our products, for the utilities and as raw material.
In some regions, where we are producing, water becomes more and more rare.

What are my sustainability goals?

Targets in Operations 2020 (2005 baseline):
-60%: CO2 emissions, water consumption, waste generation.

What are my technology innovation needs?

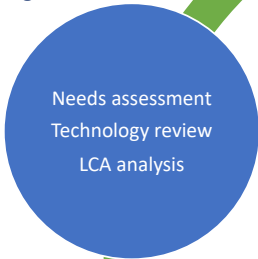
1. Alternatives to DAF. Less chemicals, less sludge.
2. How to avoid of membrane clogging when placed downstream to biological treatment. (No activated carbon use)
3. "New " biological systems (combined with algae?)
4. Nature inspired treatment processes
5. Sludge volume reduction/ transformation/ valorization

Improved water efficiency/ Water Reuse/ Water Recycling after treatment for utilities.
DRY factory concept

How am I meeting my goals?



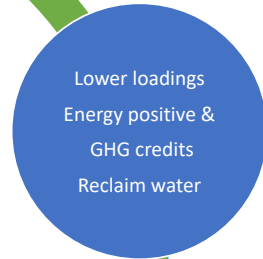
How do I select new technologies?



What are my biggest challenges?



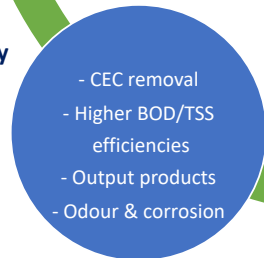
What are my sustainability goals?



Why is water important for my business?



What are my technology innovation needs?



How am I meeting my goals?



LWS = Liquid Waste Services
MV = Metro Vancouver
CEC = emerging contaminants



Nestlé

Good Food, Good Life

BlueTech
FORUM

19 5-6th June
LONDON

Innovating Towards
Resilient Water Systems

How do I select new technologies?

- Global technology trends
- Lowest Total Cost of Ownership

What are my technology innovation needs?

Need cost effective solution to treat high COD & color streams from CIP (poorly biodegradable COD)

What are my biggest challenges?

- Compliance with discharge limits for COD & color
- High cost of wastewater treatment

Why is water important for my business ?

What are my sustainability goals?

- Continuous reduction in water use (m³/t)
- Reduction in energy usage (GJ/t)
- Lowest possible chemical usage

How am I meeting my goals?

- Reduction of losses
- Reduce, Reuse, Recycle of water
- Recovering resources (energy, chemicals)



How do I select new technologies?

- 1) Provides a step change in performance vs. current technology and can explain why
- 2) Lifecycle cost and reliability
- 3) Low/No impact to other footprints, e.g. GHG.
- 4) Suppliers with proven technology and global capability

- 1) Identification of technologies to meet water needs while minimizing cost and complexity.
- 2) Operating existing facilities in areas of increasing water stress.

What are my biggest challenges?

Why is water important for my business ?

Water is essential for the production (formulation and utilities) and consumer use of our products.

What are my supply chain water sustainability goals?

2020: 20% reduction per unit of production (vs. 2010) with conservation focused on water-stressed regions. Goal achieved in 2015.

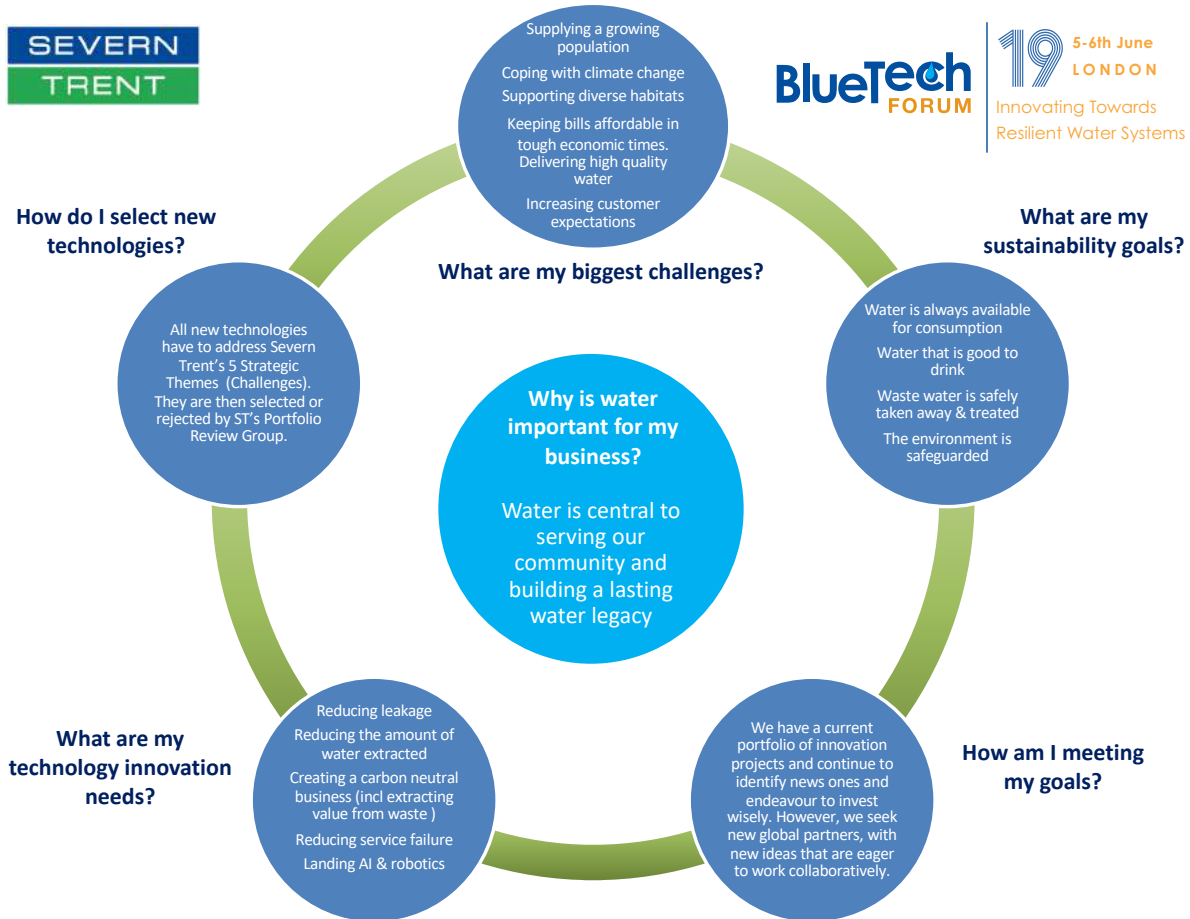
2030: 35% reduction per unit of production (vs. 2010). Source at least 5 billion liters annually from circular sources.

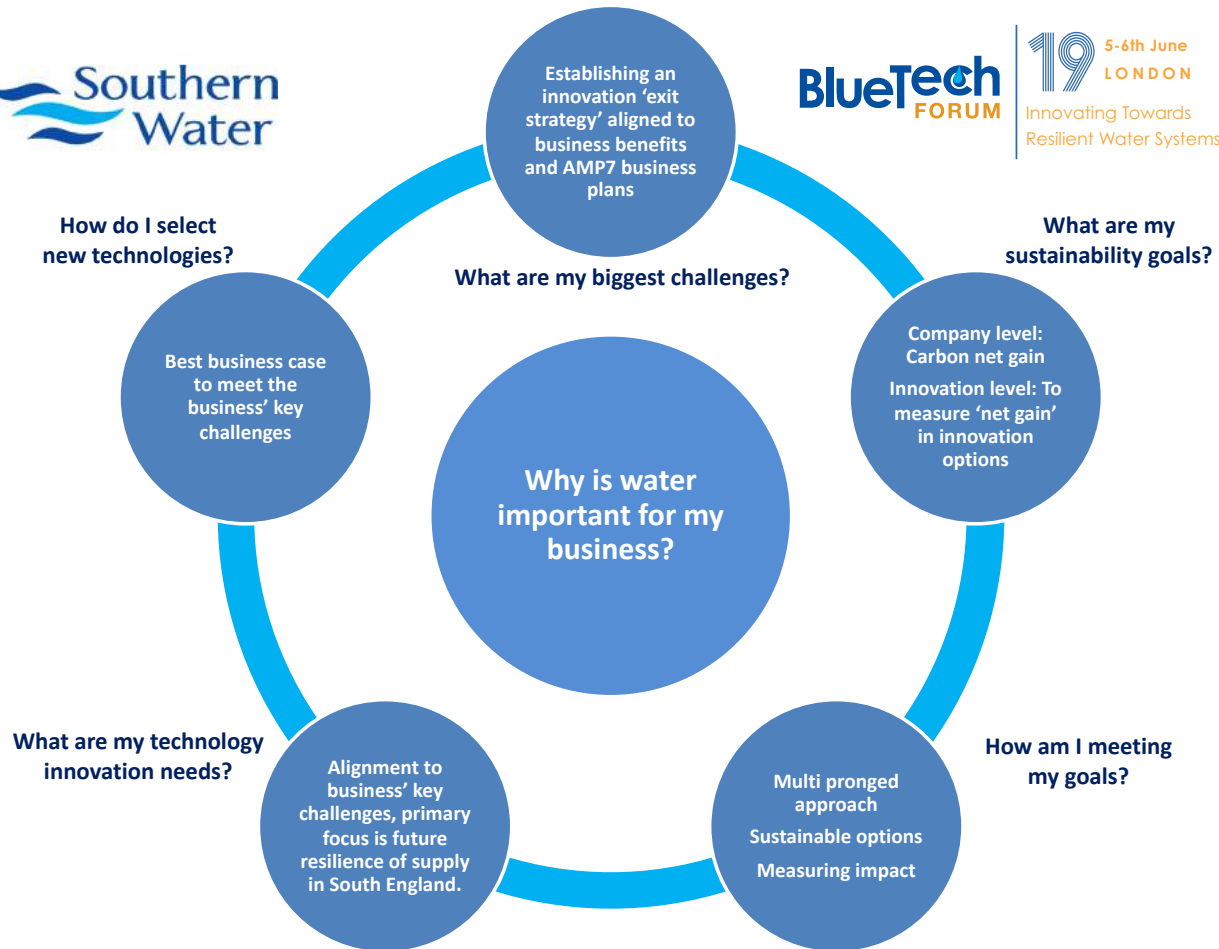
What are my technology innovation needs?

- 1) Affordable recycling technology options
- 2) Simple, reliable, and cost effective solutions for end-to-end water treatment.
- 3) Breakthrough technologies to solve intractable water treatment challenges.

- 1) Improved efficiency via process, utilities, and cleaning optimization.
- 2) Water reuse
- 3) Formulation changes

How am I meeting my goals?





Our goals

By 2020 water abstraction by our global factory network will be at or below 2008 levels despite significantly higher volumes
-40% reduction in water abstraction per tonne of production since 2008

Selection of technologies

1. Lifecycle cost
2. Overall environmental benefits (will it significantly increase energy consumption?)
3. Innovative financing models

Water is our largest raw material by volume. It poses physical risks to our operations when supply is restricted and reputational risks in cases of non-compliance.

How we've achieved them

1. Measurement and Insights
2. Water Capital Fund
3. Innovative Approaches
4. Proven Cost Savings

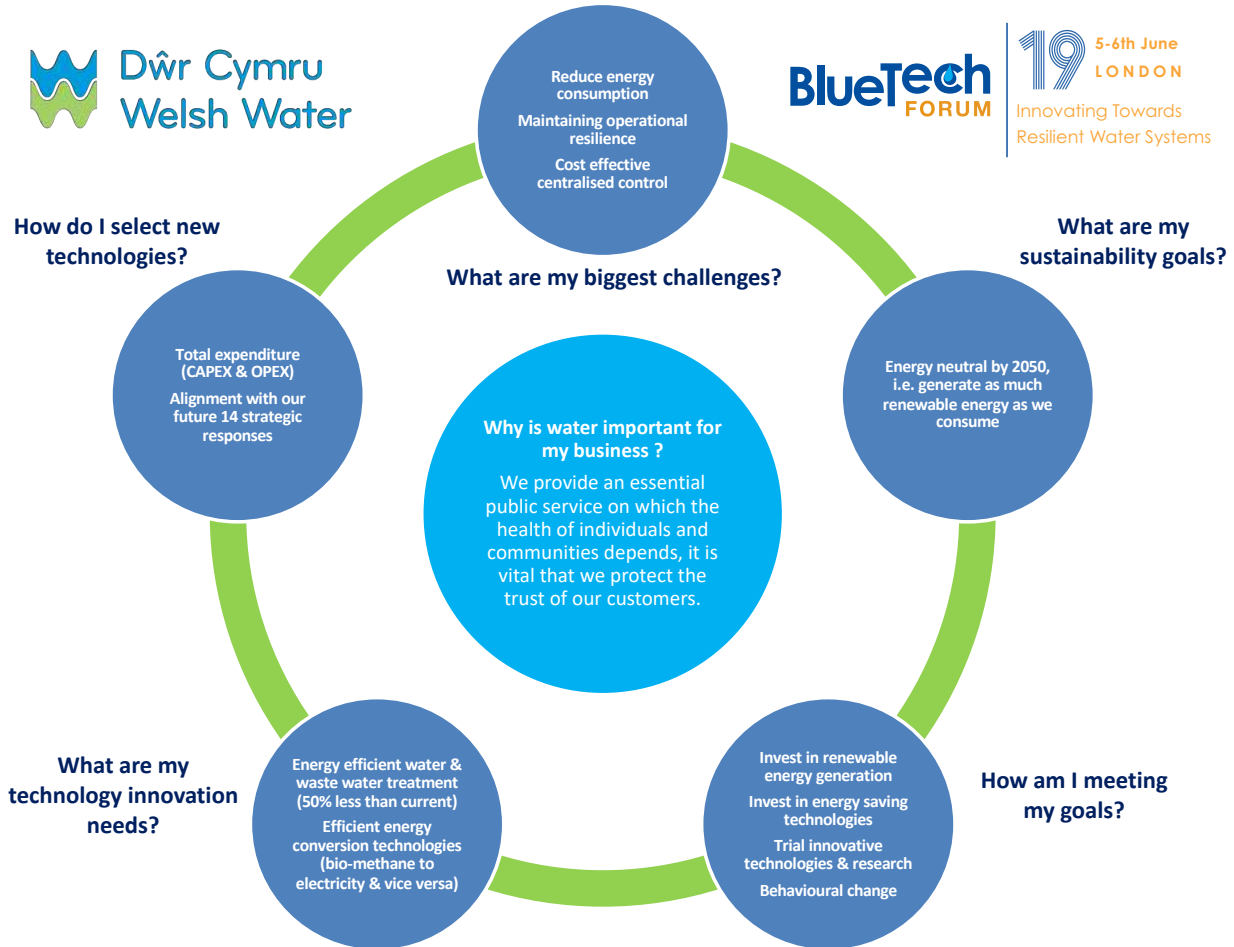
Technology needs

1. Reuse of water in Personal Care/Cosmetics applications (high quality requirements)
2. Zero Liquid Discharge technologies
3. Highly efficient & low cost desalination (incl. routes for desal reject)
4. Sludge treatment with minimum energy requirements
5. Chemical free dewatering and wastewater treatment
6. COD load reduction ahead of wastewater treatment plant
7. No water or very low water cleaning
8. Evaporative free cooling or no water cooling

Current challenges

1. Easy wins have already been identified
2. The business is changing (more changeovers, preservatives are changing)
3. Increasing number of water-related externalities (e.g.: floods and droughts)
4. Rising energy prices
5. Social pressures
6. Corporate responsibility







JUNE 3rd - 4th
VANCOUVER
CONVENTION CENTER

Join Us Next Year for BlueTech Forum

Thank You To Our Sponsors

GOLD SPONSOR



SILVER SPONSORS



BRONZE SPONSORS

