













# The role of water companies in Hydrogen

**Mark Macaulay**

Innovation, Standards & Specifications Senior Manager



# We are Uisce Éireann, Ireland's national regulated water utility

Customers		Treatment Plants		Pumping Stations	
 Domestic 1.65 m	 Non-Domestic 174,571	 Water 702 (-4)	 Wastewater 1,066 (+6)	 Water 1,776	 Wastewater 2,286
Water Source		Litres of Treated Water per Day		Length of Network	
 Abstractions 1,051	 Reservoirs 1,352	 Water 1.7 bn	 Wastewater 1.26 bn	 Water 64,988 km	 Sewer 26,000 km

## Where do we fit in the Hydrogen market?

- Do we get involved?
- Do we continue as a potable water supplier?

Or

- Do we accelerate new circular opportunities?

**Rising population**  
in Ireland  
**5.12 million**  
and set to rise with  
increased urbanisation

(CSO Census, 2022)



# Balancing our priorities



## Supporting Ireland's social and economic growth



### Our Vision

A sustainable Ireland where water is respected and protected, for the planet and all the lives it supports.



### Our Purpose

To rise to the challenge of delivering transformative water services that enable communities to thrive.

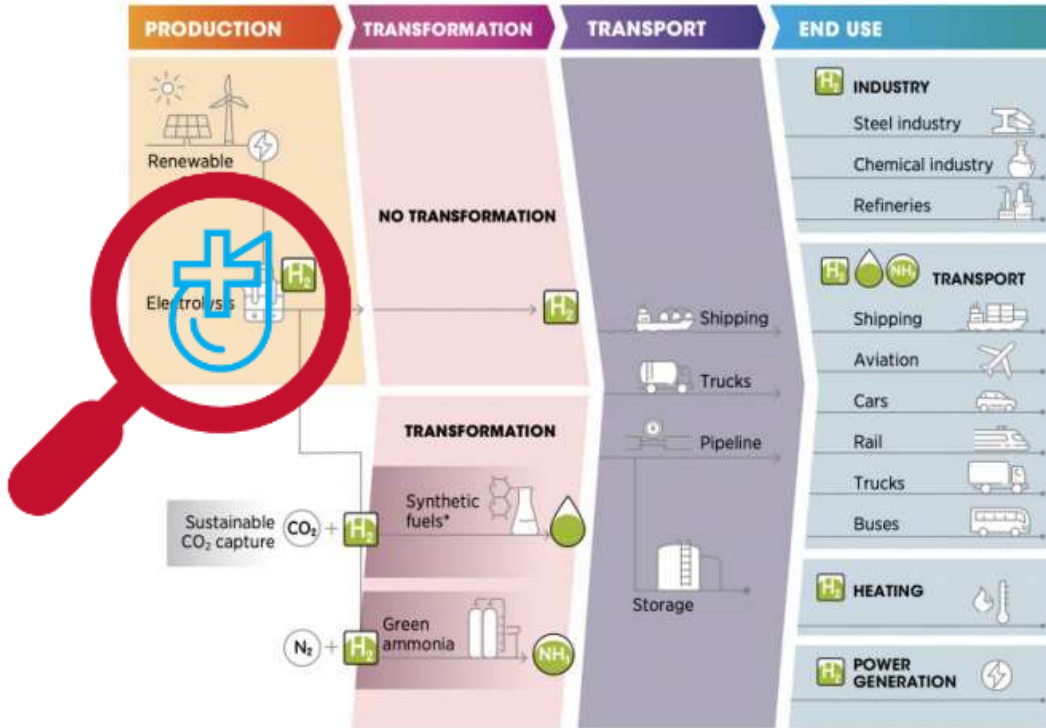


Riailas na hÉireann  
Government of Ireland

## National Hydrogen Strategy

- Decarbonising our economy
- Enhancing our energy security
- Creating industrial and export market opportunities

# UÉ and the Hydrogen Economy



The Renewable Hydrogen Value Chain (IRENA)

- Water has been a glaring omission in the value chain
- Opportunity to have a voice by being an active stakeholder
- Positive multi sector engagement
- Move from Push to Pull
- Support for the National Strategy

# Water - The missing part of the equation

“electrolysis also requires large quantities of water as an input”

“water can also be sourced from local sources, such as rainwater, aquifers/streams.... Post treatment wastewater from water treatment plants may also offer a solution.”

**National Hydrogen Strategy**

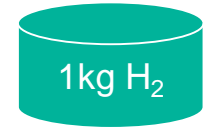
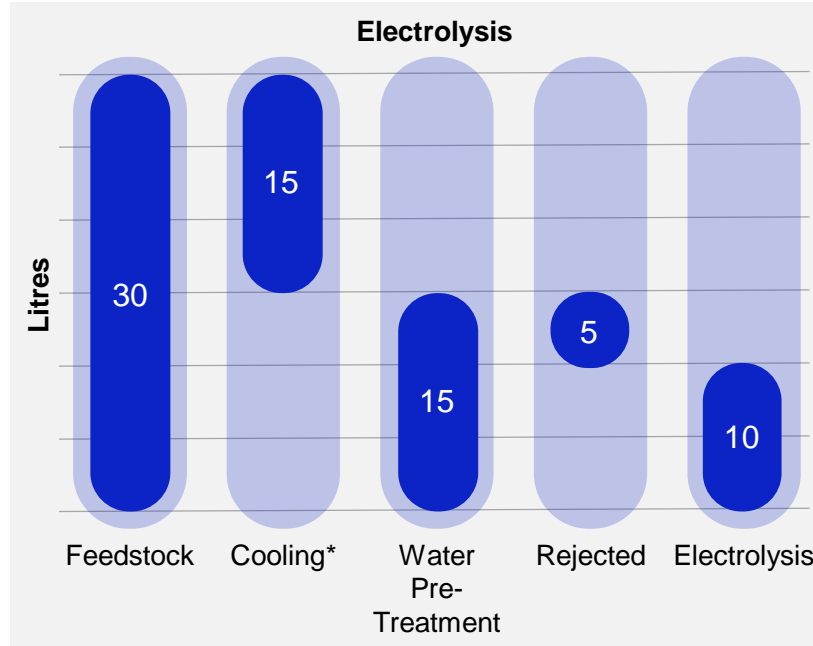


# Hydrogen Production: Demands a lot of water



Water Treatment Plant

Potable Water



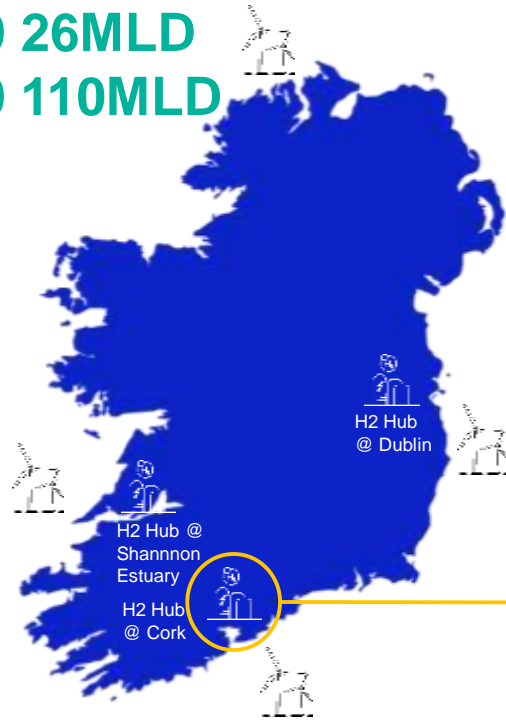
1kg H<sub>2</sub>

- Do energy companies want to enter the water sector?
- Do water companies want to enter the energy sector?
- How do we collaborate toward joint success?

Source:

# Location, Location, Location: The water supply challenge

2040 26MLD  
2050 110MLD



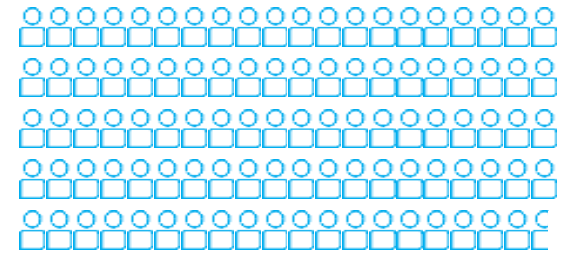
## Cork Cluster 2GW H<sub>2</sub>

Demands up to  
26 MLD water



=

195,000 population  
equivalent



### Result

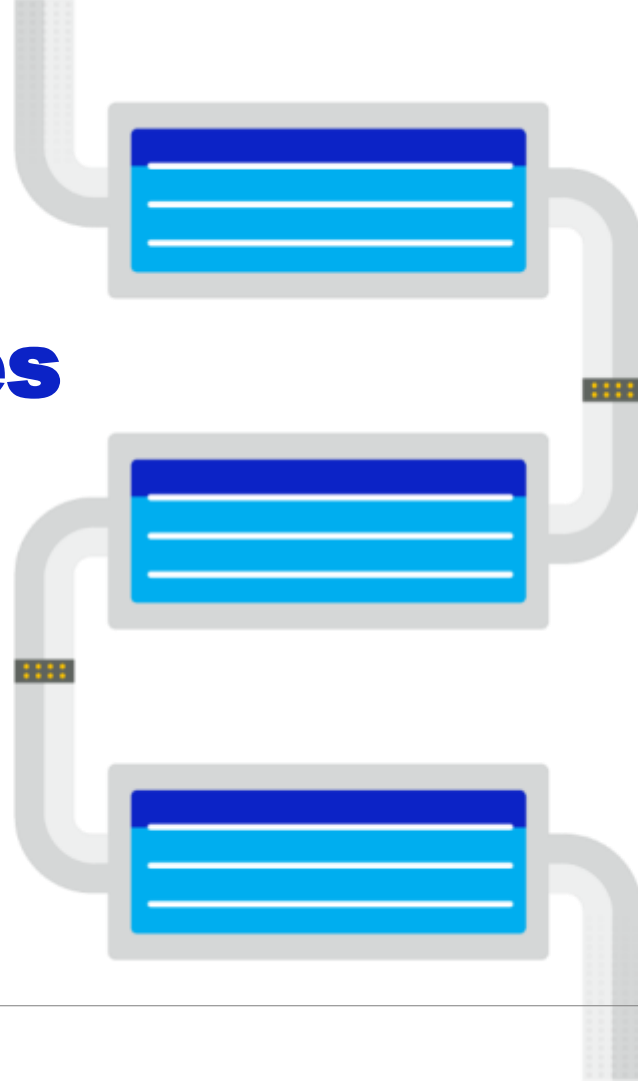
- Constrained freshwater resources in proposed hydrogen cluster locations.
- Alternative water sources must be explored.

### KEY

- = 20,000 people
- = 1 MLD



**1.26 billion litres**  
of wastewater  
are treated  
every day



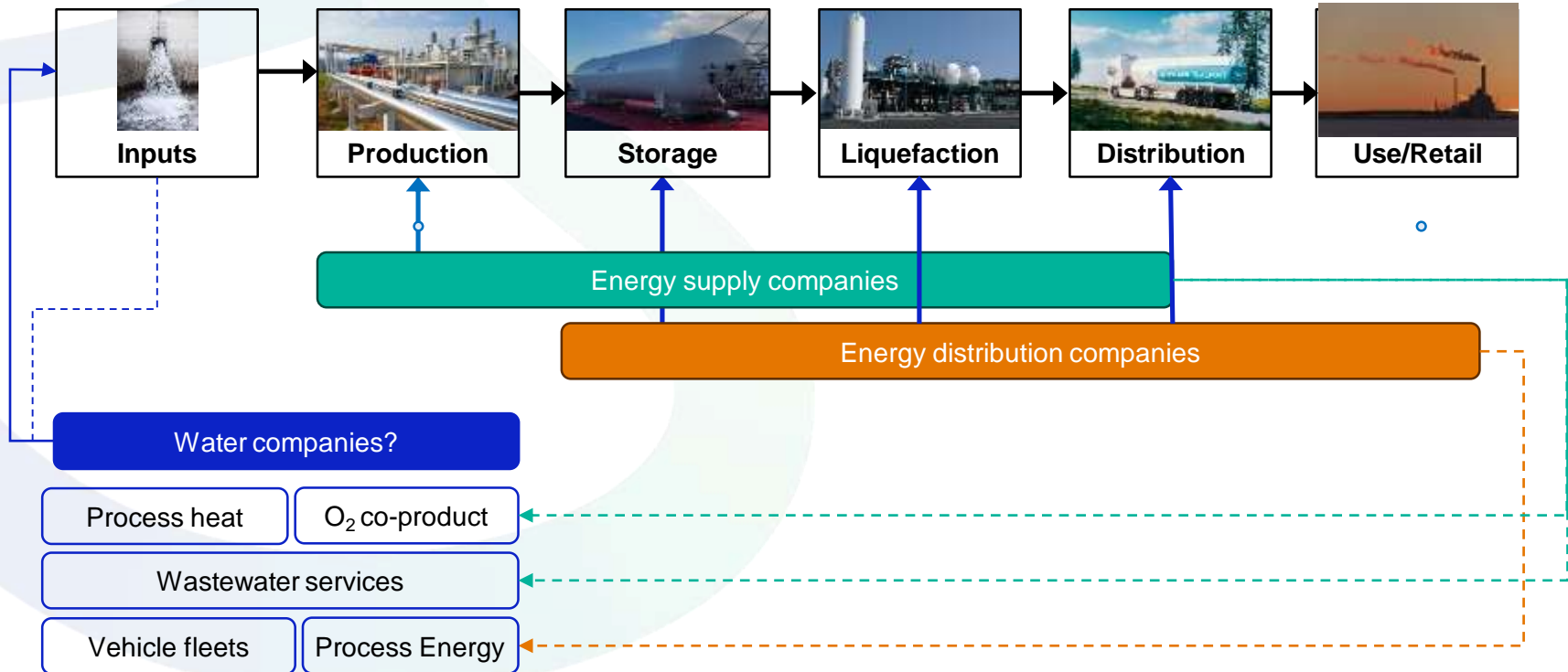
# Water | Hydrogen economics

- Electricity is the most significant cost in hydrogen production
- 10x increase in the cost of water may have a 0.2x impact on the cost of hydrogen
- The cost of wastewater treatment should not be a barrier
- Water companies have the treatment and environmental expertise, and experience needed by the hydrogen economy









Levelized Cost of Hydrogen Calculator

# What is our role in the value chain?



# Supply/Demand forecasting challenge

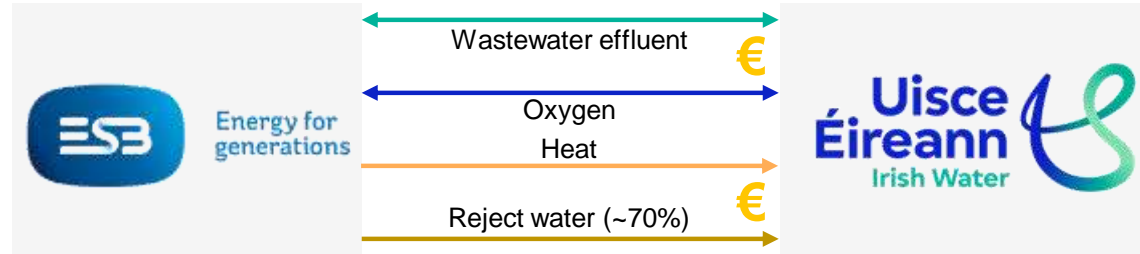
## Predicting the timing and location first movers

- Electricity network 
- Gas distribution 
- Water supply 
- Renewables 
- Industrial demand 
- Demand profile 



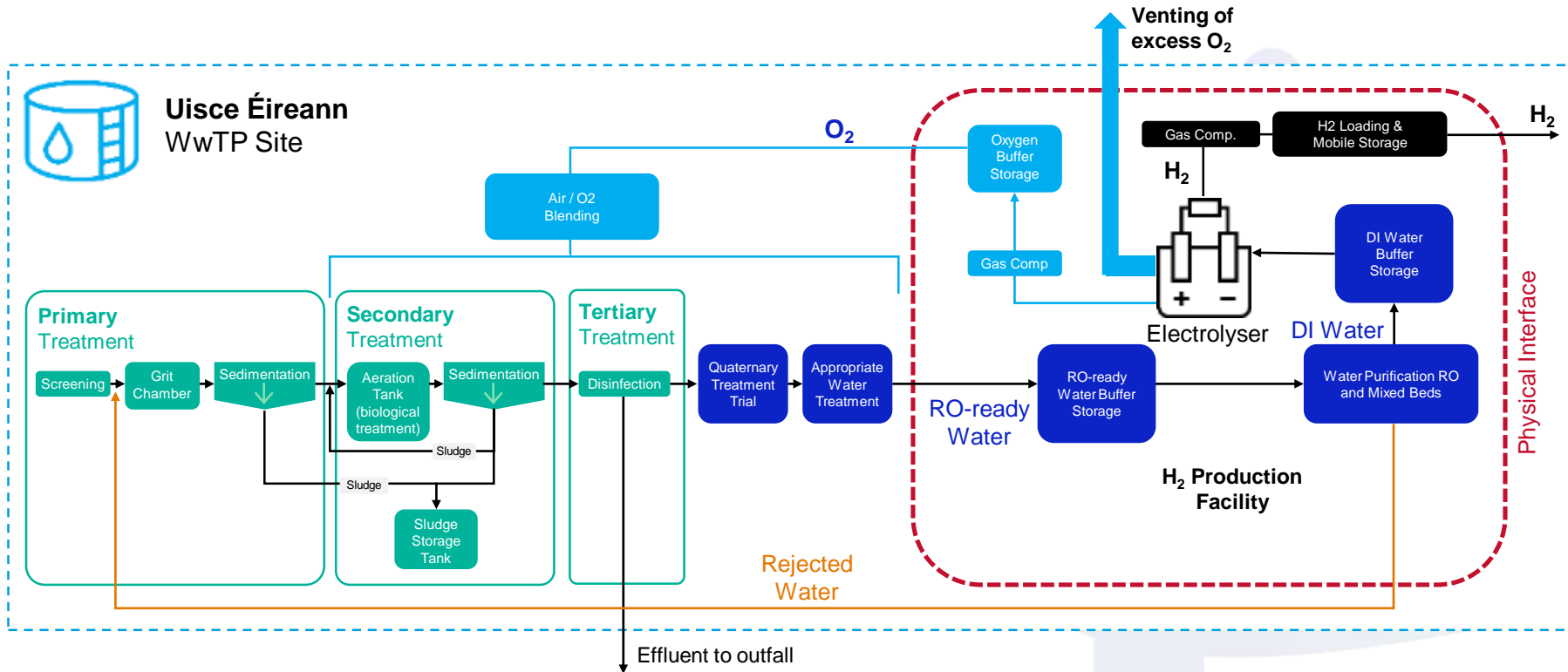
# The opportunity for Uisce Éireann

- Provide a sustainable water supply.
- Enable the National Hydrogen Strategy.
- Facilitate circular economy growth.
- Create an additional revenue stream.
- Pilot emerging wastewater technology
- Explore synergies with UWWTD compliance.



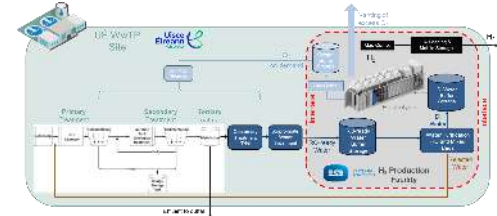
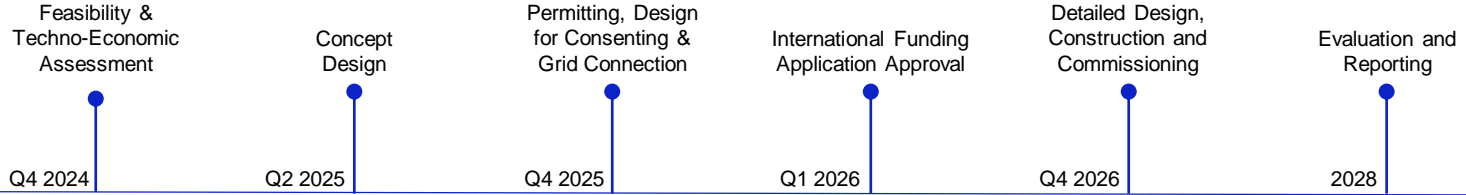
Collaboration and a balance of energy and water company risk will require new contract, regulatory and commercial models

# How can we begin to investigate?



# Determining our role in the Hydrogen Economy

HyWater



- Availability of supply
- Quality of supply
- Scalability of solution
- Circular economy benefit

- Stakeholder engagement
- Technology selection

Funding available

- Evaluate options
- Determine UÉ role in hydrogen

# Thank you.

For further information or to get in contact  
[mmacaulay@water.ie](mailto:mmacaulay@water.ie) or [drew.brown@water.ie](mailto:drew.brown@water.ie)