



Water Resilience in the Semiconductor Industry

Geoff Townsend, Industry Fellow

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What is Water Resilience?

Resilience

[rɪˈzɪliəns]

(noun)

An ability to **recover from or adjust easily** to misfortune or change

*Source: Merriam-Webster
Dictionary*



Water Resilience

Being able to quickly adjust and recover from water-related stresses and shocks:

- ✧ Water resilience depends on **healthy soils, rivers, lakes, aquifers, and wetlands**, which must withstand natural stresses like climate change and societal pressures such as pollution
- ✧ When these stresses exceed a **threshold**, freshwater systems **can shift to a new, unstable state that is hard to restore**

What is the EU's Water Resilience Strategy?

The Strategy positions water resilience as essential to sustainable competitiveness, digital transformation and climate adaptation.

Digitalisation & data



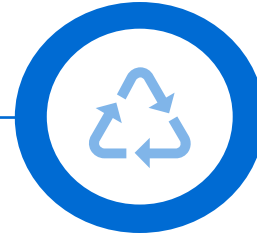
- **Upcoming digitalisation action plan**
- **Smart water metering** across all economic sectors
- Environmental **data visualisation** to guide investment decision-making

Water efficiency & reuse



- **Water-efficiency first principle** – prioritising demand reduction, efficiency by design, and reuse
- **10% aspirational goal** by 2030
- Possible expansion of **water reuse** requirements

Smart water planning

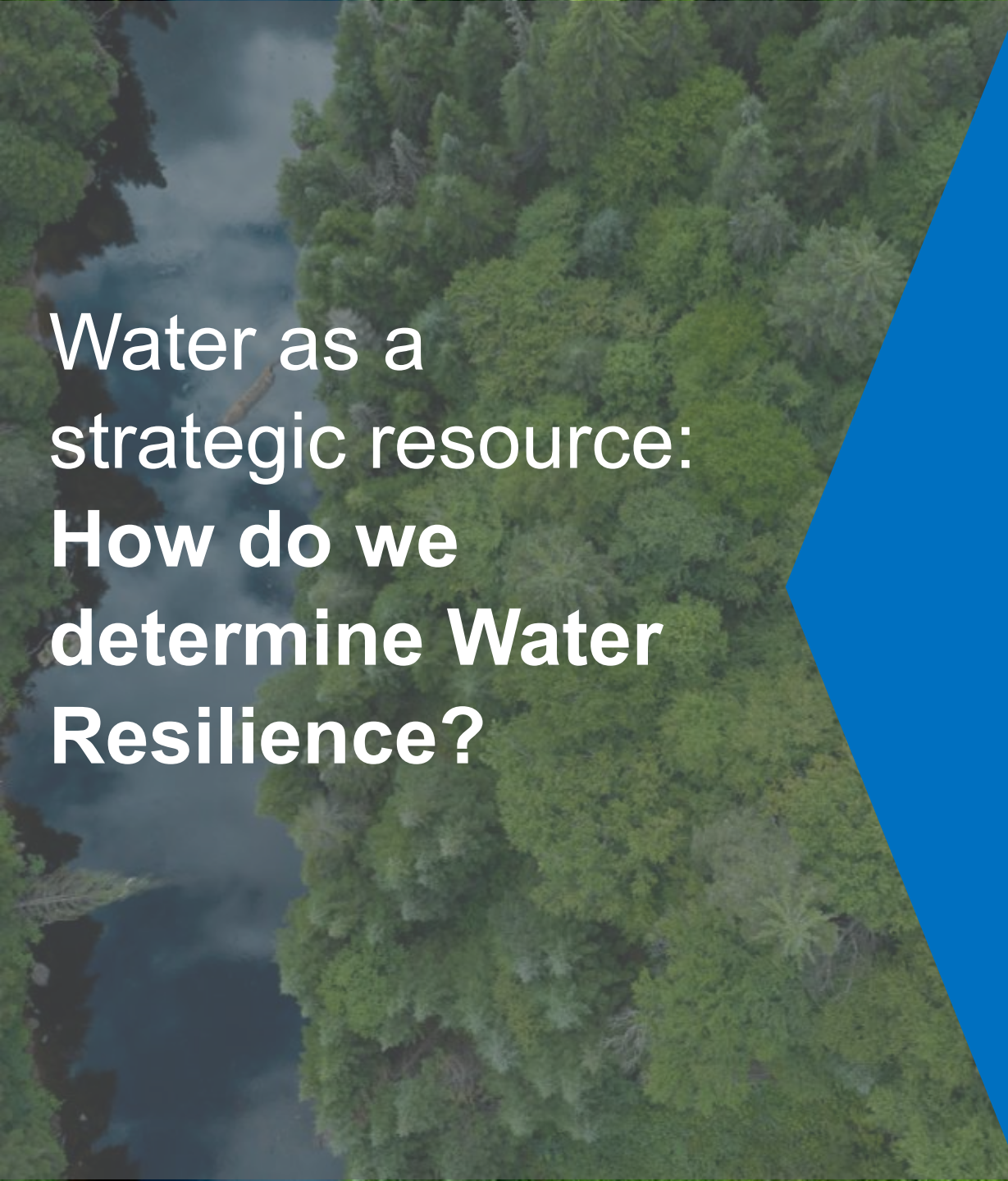


- Assessing and reducing water needs for the **clean industrial and digital transformations**
- Focus on **data centers** – rating of **energy efficiency** and proposing **minimum performance standards**, incl. for water consumption

Financing & market instrument



- Up to **€15B in EIB funding** for water projects (2025–2027)
- New **Water Resilience Investment Accelerator**: 20 pilot projects
- Leveraging **public procurement** to scale water-smart solutions



Water as a strategic resource: How do we determine **Water Resilience?**

Water is **local**,
finite and
shared: a
complex
resource

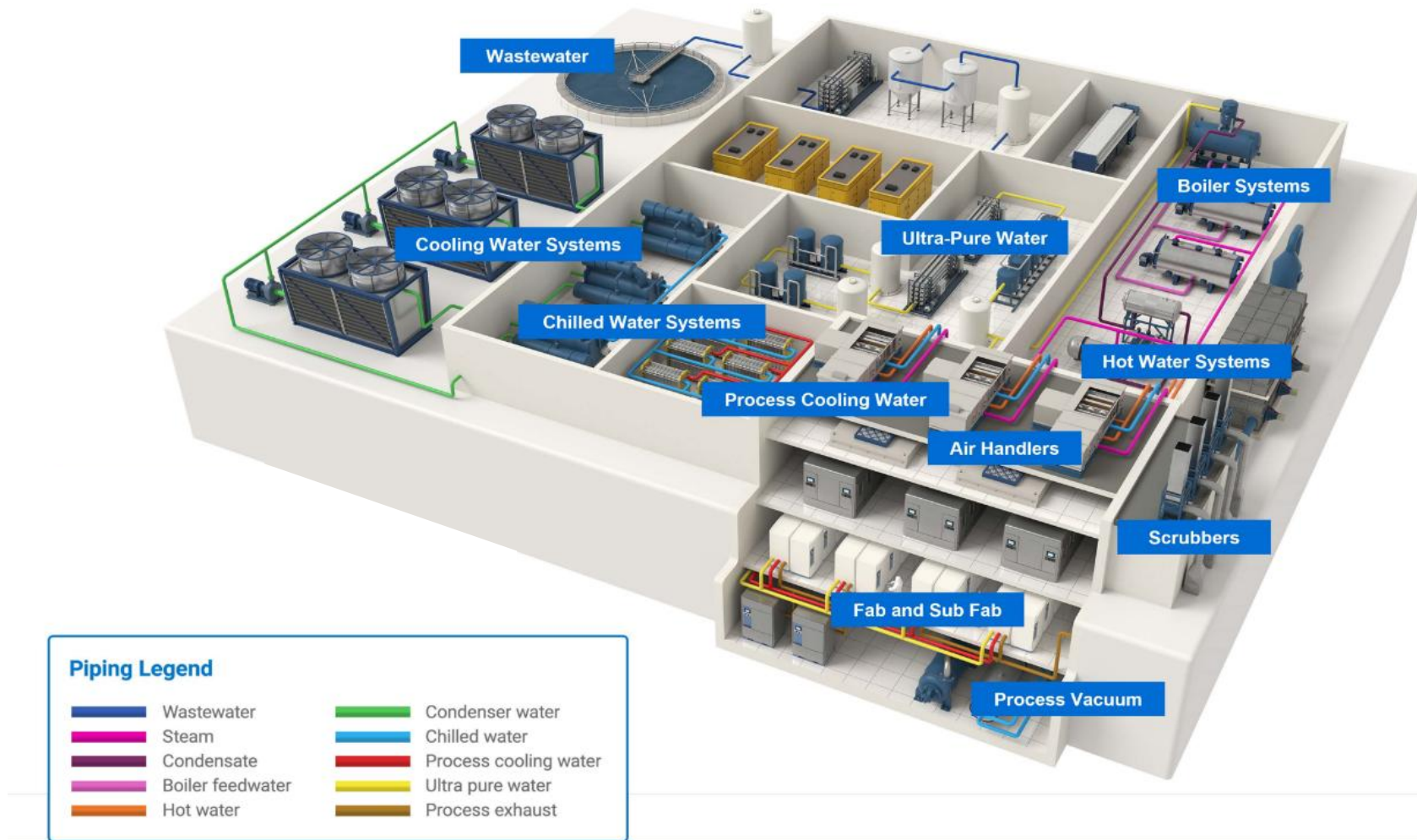
Strategic data
is critical

Water is
valued
differently by
every
stakeholder

Water policies
are slowly
becoming
more **holistic**

Our current inability to determine
sustainable water use is one of the
greatest obstacles to ensuring long term
sustainable growth and competitiveness

Water matters to FABs



Water Resilience matters to FABs

1

Water Stress

Globally, an estimated **40% of existing semiconductor manufacturing facilities** are located in watersheds projected to face severe water stress by 2030

2

Water Demand

Semiconductor manufacturing requires vast amounts of **ultra-pure water for production with an enormous financial impact of sub-optimal water quality**

3

Supply Chain Vulnerability

Water quality fluctuations or a lack of reliable water supply can **disrupt the complex semiconductor supply chain**, which is a key concern for industry and policymakers

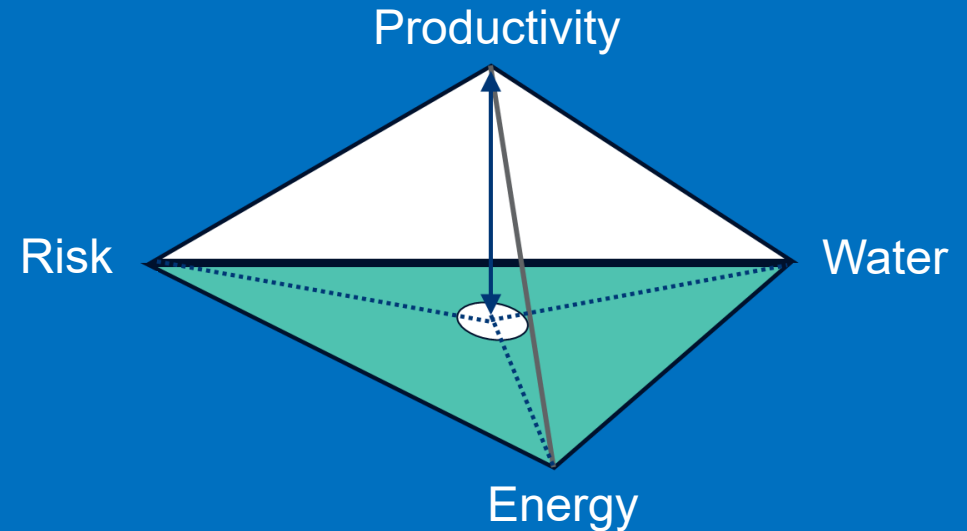
Achieving 'more with less': The Water- Energy- Productivity Nexus

Manufacturing Ambition

Profitability
▪ Productivity
▪ TCO reduction
Reliability
Operational resilience
Brand protection

Resource Management

Water
Energy
Emissions
Waste
Asset integrity
Risk reduction



Opportunities: Innovation and Optimisation

1

Innovation in water management

Increasing efficiency and developing of new purification techniques

2

Process Optimisation

E.g. reducing rinse times in wet cleaning processes

3

Diversification of Water Sources

E.g. rainwater harvesting and high-quality reclaimed municipal wastewater

4

Leveraging Industrial Waste Heat

Chip production generates waste heat that can be used to power industrial processes

5

Policy and Strategy

The European Chips Act and the EU's WRS are designed to address these challenges

Solutions: Advanced Water Recycling

*Technologies like closed-loop systems and advanced purification can drastically cut freshwater intake by using reclaimed water in ultra-pure water production, **potentially increasing efficiency by up to 85%***

Water Europe and the European Institute for Asian Studies

Segregating wastewater for bespoke treatment rather than treating one combined stream

Comprehensive **wastewater monitoring** and digital **analytics solutions** that can target specific components

Policy measures should prioritize incentives and support mechanisms for companies

Additional drivers for resilience

There are several compelling reasons to focus on water:

- ✕ **Cost Reduction**

Efficient water use often leads to lower costs, primarily due to savings on energy rather than just the water itself.

- ✕ **CO2 Emission Reduction**

Improving water efficiency supports net-zero targets by reducing emissions associated with water use.

- ✕ **Business Resilience**

Managing water more effectively strengthens our ability to withstand future uncertainties—even if the exact requirements for resilience are still evolving.

- ✕ **Brand Reputation & Risk Management**

Demonstrating responsible water use protects our brand and helps mitigate operational risks.

- ✕ **Environmental Responsibility**

Our efforts align with the United Nations Sustainable Development Goals, reinforcing our commitment to global sustainability.

Looking over the fence: Tackling Key Obstacles to Progress

The scarcer water becomes:



Achieving meaningful risk reduction cannot be ***directly* controlled**: It's only as strong as the **collective resolve** to achieve it.

Vital to build strong, **cross-sectoral** collaboration at the **local** level leading to effective governance based on **solid data** – ‘one source of truth’

Foundational to assessing risk and investment performance

It's up to us to act now!

This panel is about the FAB of the Future:
but the water resilient FAB can already exist **today!**

