Water efficiency in industry

Challenge: Too little water **Adaptation response:** Water efficiency and demand management

Description

Increasing water efficiency in industry can reduce use and produce a number of environmental and socio-economic benefits. Behavioural, operational and technological changes can all contribute to improved water efficiency in industrial production. Significant improvements can be achieved with more effective leak detection and repair of water pipes and use of new and more efficient technologies (e.g. pipes, smart dosage systems, timers, higher efficiency cleaning systems, water monitoring systems).

Increasing awareness and changing behavioural patterns can also reduce water consumption amongst workers. On a regulatory level, industrial water efficiency can be encouraged by establishing tariffs as a water conservation incentive. Industrial reuse and recycling also increases efficiency as it creates a new water source that does not require extraction or transportation from elsewhere. This in turn reduces costs, energy use and pressures on freshwater sources.

Implementation

Reviewing and accounting for current costs and energy requirements associated with water use within the organization is an essential first step. Additionally, this includes accounting for the direct use and amount of wastewater released, pinpointing potential areas for conservation and increased efficiency. Developing a water efficiency plan should involve education and increasing awareness in all staff in regards to the benefits and goals of improving water efficiency - decreased consumption, reduced costs, reduced energy requirements, water recycling, etc. This may involve consulting stakeholders outside the organization, such as local decision makers and the research community. Collaboration and commitment of staff is key for maximum effectiveness. Following implementation (including staff training, repairing equipment, installation of new equipment and establishment of on-site water recycling facilities), proper monitoring, evaluation and accounting procedures should be put in place.

Environmental Benefits

- Reduces energy requirements for treatment, thus minimizing carbon footprint and costs.
- Reduces pressures on freshwater ecosystems.
- Reduces polluted wastewater discharge into local freshwater ecosystems, e.g. by on-site water recycling and reduced water use.

Socioeconomic Benefits

- Saves costs related to wastewater management and energy.
- Increases access to water (for industry) during drought periods.
- Improves health and safety conditions.
- Reduces maintenance requirements and promotes state of art production facilities through installation of new, water efficient technology.

Opportunities and Barriers

Opportunities:

- Climate change adaptation and mitigation benefits, increased resilience
- Extended environmental and economic benefits, including cost savings

- Populations that understand the importance of water resource (and environmental) conservation are more likely to change behaviour to improve efficiency in other uses
- Initial investments for efficiency programs/technologies are often supported financially by the state

Barriers:

- Lack of commitment and cooperation. Effective efficiency requires commitment and collaboration from all stakeholders
- Lack of knowledge and proper accounting of use - some industries and businesses do not know the extent of their water use and wastewater costs, and may not realize the potential benefits of implementing an efficiency plan
- Does not always reduce wastewater pollution and may instead increase its concentration
- When water costs are relatively low, the incentive for savings may be low

Implementation considerations*

Technological maturity:	2-4
Initial investment:	3-4
Operational costs:	1-3
Implementation timeframe:	3-4

* This adaptation technology brief includes a general assessment of four dimensions relating to implementation of the technology. It represents an indicative assessment scale of 1-5 as follows:
Technological maturity: 1 - in early stages of research and development, to 5 – fully mature and widely used
Initial investment: 1 – very low cost, to 5 – very high cost investment needed to implement technology
Operational costs: 1 – very low/no cost, to 5 – very high costs of operation and maintenance
Implementation timeframe: 1 – very quick to implement and reach desired capacity, to 5 – significant time investments needed to establish and/or reach full capacity
This assessment is to be used as an indication only and is to be seen as relative to the other technologies included in this guide. More specific costs and timelines are to be identified as relevant for the specific technology and geography.

Sources and further information

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