SMART
WaterDomain

Organisational Decision-Making in Water Reuse for Smart Cities (SMART-WaterDomain)

GUIDE TO SMART WATER MANAGEMENT FOR PUBLIC ADMINISTRATION

2024

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ABOUT THE SMART WATER PROJECT

Water scarcity, exacerbated by the ongoing effects of climate change, poses ever-increasing and formidable challenges to not only the sustainability of global economies and societies but also to the very essence of life on our planet. The consequences of rising temperatures, altered precipitation patterns, and more frequent extreme weather events are becoming alarmingly evident, significantly impacting the availability and distribution of freshwater resources. Reusing wastewater (WW) in agricultural and industrial domains offers a promising strategy to alleviate water stresses and enhance sustainable water management. However, the widespread adoption of wastewater reuse faces complexities ranging from technical limitations to societal acceptance.

In particular, the industrial sector has been slow to adopt water reuse practices, despite the growing urgency to do so. Industries often lag in incorporating water reuse technologies into their value chains and embracing water reuse as an integral component of their smart water management approach. Thus, there is a pressing need to encourage and facilitate the adoption of fit-for-purpose water reuse within these sectors.

The SMART-WaterDomain project emerges as a pivotal bridge, facilitating the exchange of technology and know-how among the IT sector, industry, and the wider community. Its overarching aim is to address the existing gap between theoretical technical capabilities and the actual application of these solutions within socio-political and cultural contexts. By fostering synergy between stakeholders, the project seeks to overcome barriers to adoption, drive innovation, and promote sustainable practices.

At its core, SMART-WaterDomain not only focuses on technological advancement but also prioritizes the dissemination and integration of water reuse practices as part of a smart water management strategy. The project recognizes that successful adoption is not solely dependent on technological progress; it involves understanding and navigating the social, political, and cultural dimensions that influence decision-making processes.

The SMART-WaterDomain aims to address the growing challenges by bridging the gap between technological capabilities and their application in socio-political and cultural contexts. Through pilot studies across European countries (Germany, Poland, Slovakia) and Japan, critical stakeholders engage in the development of autility operational framework.

The project capitalizes on cutting-edge digital decision support and monitoring tools, which leverage real-time data and climate change projections. The advanced framework will serve as a demonstrative platform for implementing water reuse practices in diverse contexts. By integrating digital decision support and monitoring tools, stakeholders will gain access to data-driven insights, enabling them to make informed and precise decisions. The use of real-time data and projections will empowers industries and agricultural entities to optimize their water usage, effectively mitigating the impact of water scarcity and climate variability.

The project's key objective is to develop a systematic framework to facilitate the uptake of smart reuse of wastewater (WW) resources and serve as an assessment mechanism for companies to integrate these techniques into their value chains

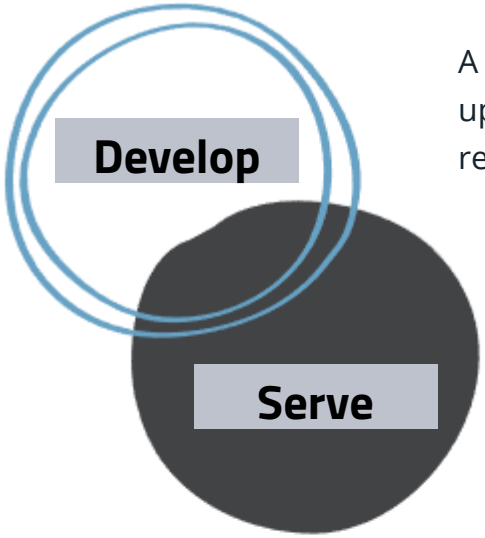
The SMART-WaterDomain puts a particular emphasis on elaborating how an increased uptake of reused wastewater in industrial/agricultural value chains can serve as a technique for reducing demands for freshwater, equalizing the distribution of water to reflect global demographic changes and increase environmental resilience.

With pilot studies carried out across Europe (Germany, Poland, Slovakia) and Japan, the project will develop a utility operational framework with critical stakeholders to produce digital decision support and monitoring tools that utilise real-time data and climate change projections.

The project's outcomes are expected to demonstrate how the systematic framework can be used in practice, drawing from expert evaluations and end-user experiences. The project aims to enhance the implementation of strategies that would increase the acceptance of water reuse practices for the local economy and society.

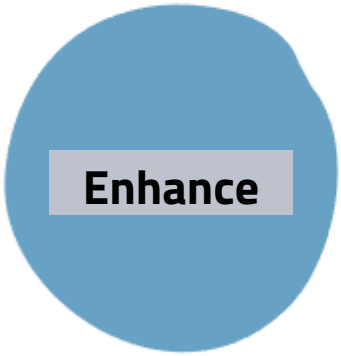
OUR GOAL

Our goal is to support the development of efficient and sustainable water management systems that optimize the quality and quantity of water at stages of its supply, discharge, reclamation and resource recovery.



A systematic framework to facilitate the uptake of smart reuse of wastewater (WW) resources

As an assessment mechanism for companies to integrate these techniques in their value chains



The adoption of fit-for-purpose reuse water in the industrial/agricultural sector

A framework for organisational decision-making processes for companies and utilities to facilitate the uptake of water reuse practices in their operations

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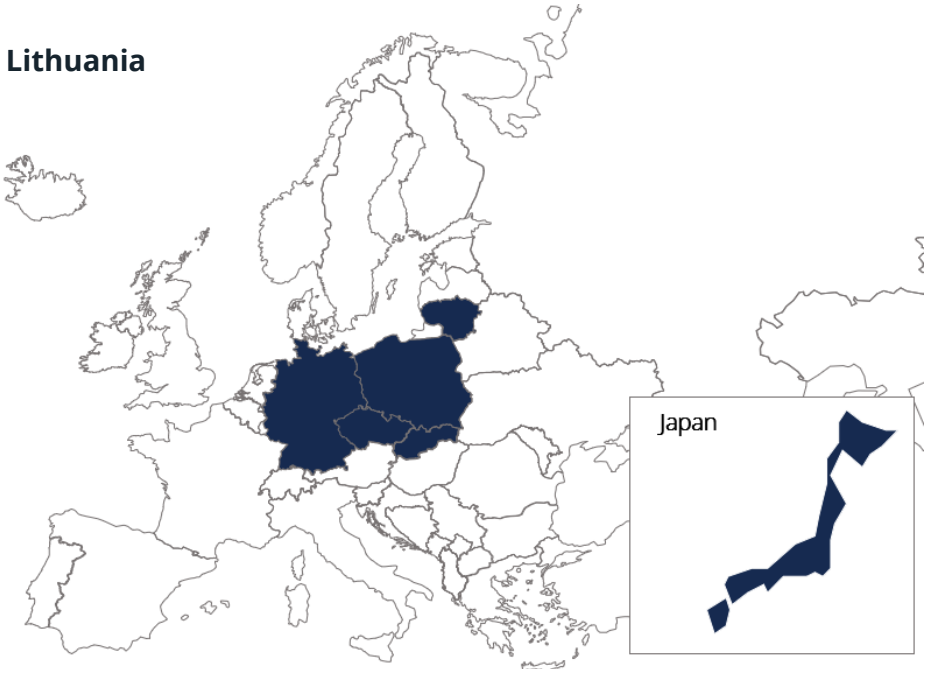

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EXECUTIVE SUMMARY

Climate change is prompting every organisation, regardless of its type, size or sector, to take various actions to limit its negative impact on the environment. Caring for the climate is currently a priority issue, but one should not forget that organisations depend on various environmental resources, including water. Water and climate are inextricably linked. Climate change might reduce water resources and increase water stress in areas affected by sudden, unusual weather events and their intensity. The water challenge may be in the quantity and quality of available resources. What does this mean for the organisation?

Reducing the amount of water available or degrading its parameters in municipal management and industrial processes will probably be one of the major challenges. Therefore, like the business sector, public institutions should analyse the availability of water resources in the short and long term and implement interventions aiming at adaptation and mitigation of resource shortages.

It requires evaluating how water resources flow, assessing the size of the water footprint and taking preventative action to protect resources effectively and efficiently. One approach to saving water resources is the ability to water reuse. Closing water cycles makes it possible to take less water directly from the environment and to use the same resources more than once. The consideration of water as a critical resource means that every organisation should conduct a detailed analysis and consider the scope of the actions that can be taken in the near future.

This guide is aimed at public administration institutions. It offers simple rules and ideas to prepare your institution for a more careful, conscious and organised management of water resources, in particular for closing water cycles and saving water in areas where water stress and climate change could become a critical economic, environmental and social challenge. The document helps to understand the process of preparing an organisation for closed-loop activities and complements the decision-making tool available **HERE**

THE IDEA OF A GUIDE FOR SMART WATER REUSE FOR PUBLIC ADMINISTRATION

Conserving water resources has become a top priority for public authorities in many countries. This is further reinforced by regional regulations, such as those in the EU. The pressure to address climate change and implement adaptation and prevention measures is increasing globally, both in the business and non-business sectors, including local communities that are vulnerable to climate risks. Public administration entities play a crucial role in transformation activities as regulators, action partners, and entities that demonstrate possible ways of dealing with environmental challenges.

It is important to consider water as a strategic resource within a specific economic, social, environmental, and geographical context. Organisations should analyse the environment, taking into account both internal and external factors, due to the diverse operating conditions of structures involved in water resource protection. Context analysis is particularly important for:

- assessment of water resources and water stress in various time horizons,
- carrying out an analysis of the significance and risk for water resources
- the amount of water used in various sectors and purposes,
- knowledge of water flows,
- functioning water purification technologies
- available methods of closing the water cycle
- predicted amount of water needed in the future,
- types of business activity in a given area,
- geographical circumstances and availability of water resources,
- condition of infrastructure and planned water and sewage investments,
- the presence of climate policy, strategy, and water-related goals enshrined in
- different documents.

Due to geographical diversity, public administration may be affected differently by resource depletion and pollution. Therefore, before making final decisions, including planning activities, it is worth analysing the organisation's environment. This analysis should consider the geographical location, the risk of water stress, the situation related to resource supply, and the quality of the water and sewage network. It is important to analyse past events that may impact current and future water supplies. The assessment should also consider neighbouring administrative structures to identify challenges and opportunities for joint water management. Collaborative adaptation projects should be explored to prevent further environmental degradation.

Additionally, it is crucial to define the specific challenges that each administrative unit is facing or will face. Identifying a problem allows for a more accurate assessment of opportunities and possibilities for implementing specific ideas, securing necessary resources, and designing solutions that are adequate to the needs and constraints resulting from, for example, the budget. It also involves finding the causes and assessing their sources. This approach ensures that actions eliminate the causes of the challenge, not just their effects. Working with different stakeholder groups can help generate ideas and gain insight into different perspectives, needs, and social expectations.

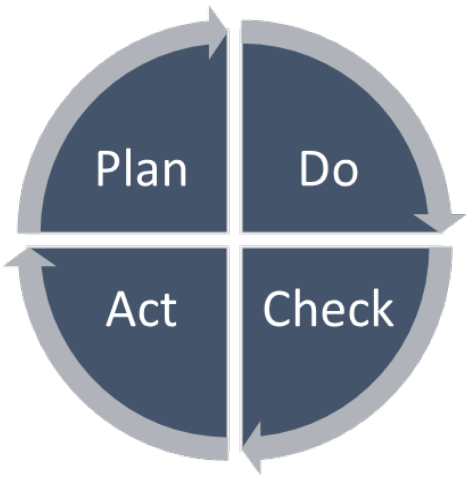
The implementation phase is crucial in evaluating the feasibility of plans and ideas. The aim of this guide is to assist public administrators in the identification of areas in need of intervention and in the planning of effective water management processes in the era of climate change.

PDCA APPROACH IN SMART WATER REUSE

The proposed guide for water resources management and closing the water cycle for public administration aims to assist and support public authorities in effectively planning tasks related to water resources management. It also explores the possibilities of closing the water cycle and building partnerships with stakeholders to better prepare for negative environmental scenarios. The guide is based on the PDCA (Plan, Do, Check, Act) methodology, which allows organisations to examine their processes and procedures in four stages:

- **planning** that focuses on the organisation of the processes and resources necessary for project implementation and progress,
- **implementation** that is a focal point of the planned activities, the moment of making the plans existing,
- **checking** that includes evaluation and monitoring based on the set of indicators and metrics
- **acting** that means learning from the mistakes and setting new ideas for the future.

The following sections present suggestions for identifying and managing circularity in public administration units, divided into these categories.



USEFUL DEFINITIONS

Blue-green infrastructure	is a strategically planned network of natural and semi-natural areas with other environmental features designed and managed to deliver a wide range of ecosystem services such as water purification, air quality, space for recreation and climate mitigation and adaptation. This network of green (land) and blue (water) spaces can improve environmental conditions and therefore citizens' health and quality of life. It also supports a green economy, creates job opportunities and enhances biodiversity.
Blue-green infrastructure	reusing water in a closed technological cycle. Water conservation in the implementation of the closed-loop economy is mainly achieved by saving water in production and service activities and by increasing available water resources and water retention.
Double materiality analysis	a process for examining the environmental and financial impact an organisation has on the environment.
Environmental aspect	a specific element or component of an organisation's activities, products, or services that has the potential to interact with or impact the environment. These aspects can be positive or negative and can include various interactions with the natural world.
Environmental impact	the effect that human activities, products, or services have on the natural environment. These impacts can be both positive and negative and can vary in scale, from local to global. Understanding and assessing environmental impacts is essential for making informed decisions about sustainable practices, resource management, and minimising harm to ecosystems and the planet as a whole.
Intersectoral cooperation	is a recognised relationship between organisations of different sectors.
Key Performance Indicators	a set of quantifiable measurements used to asses and monitor organisation's overall long-term performance.
Materiality analysis	a process/tool for examining the impact an organisation has on a resource (e.g. water). It is usually done on two levels: internally and externally.
Monitoring System	a system of metrics and observations which helps to collect current information about the processes and systems which need to be observed.

Product life cycle	a technique to assess the environmental aspects and potential environmental impacts associated with a product.
Public-private partnership	involving a private partner to carry out public tasks.
Risk	the likelihood that a specific event will occur and have an adverse impact on the operations of an organisation.
Stakeholder	a group or individual that can influence or is influenced by an organisation's activities. Stakeholders include such groups that enter into direct relationships with an entity, e.g. through contracts as in the case of suppliers, as well as indirect relationships, e.g. through interest in activities as in the case of NGOs or the media.
Supply chain	a network of organisations between which links have been established relating to the flow of material goods, services, capital and information at all stages of the flow, from initial suppliers to end-of-life waste generation.
Total water withdrawal	= Surface water (total) + groundwater (total) + seawater (total) + produced water (total) + third-party water (total).
Value chain	a concept used in business and economics to describe the sequence of activities that an organisation goes through to create, deliver, and capture value in the form of products or services. The value chain encompasses all the processes, functions, and activities that contribute to the production and distribution of goods or services from the initial raw materials to the final customer. It helps businesses identify areas where they can add value, enhance efficiency, and improve their competitive advantage.
Wastewater	wastewater is any type of water that has been affected by human use, making it unsuitable for immediate reuse without treatment. It typically includes substances such as human waste, food scraps, oils, soaps, and chemicals. Wastewater originates from a variety of sources, including homes, businesses, industries, and stormwater runoff. It generally requires treatment to remove harmful substances before it can be safely discharged back into the environment or reused.
Water footprint	the total volume of water required to produce a given product, covering the entire process of its creation from the primary raw materials through their processing to the final product. And the amount of water that would be needed to dilute the pollutants generated throughout this process to an acceptable level.
Water reuse	is the process of converting wastewater into water that can be reused for a variety of purposes.

PLAN

> ***By failing to prepare,***
> ***you are preparing to fail.***
>
> **“ Benjamin Franklin**

ATTRACT DIFFERENT GROUPS OF STAKEHOLDERS

Developing activities to close the water cycle requires the cooperation and involvement of various stakeholder groups. Public administration has a significant social impact, so it is vital to learn the needs and expectations of groups that function within given administrative structures. This applies to individuals and groups who may be affected by decisions or climate change and who may want to cooperate for change. Involving residents and educating them can lead to more efficient implementation of solutions and the development of joint initiatives that the local community can identify with. Public administration entities are regulators and partners in business sector activities. Additional capital for joint projects can be obtained by working with this group of stakeholders. Equally important are relationships with non-governmental organisations. These organisations have expertise in local conditions and recognise local needs, making them essential links in planned changes. Effective communication and broad information campaigns about environmental protection plans are crucial.

TO CONSIDER...

1. Which stakeholder groups are crucial for the planned activities?
2. How does the organisation plan to engage stakeholders?
3. What forms and channels of communication will the organisation use to reach its stakeholders?
4. How can stakeholders be engaged in water resources management and closing the loop?
5. Which stakeholder groups may be most dissatisfied with planned activities, and how does the organisation plan to address these challenges?

PLAN RESOURCES

Before planning activities related to managing water resources and closing water circuits, it is important to ensure that all necessary resources are available to achieve the desired goals. These resources include:

• human resources, such as a team of people with the necessary competencies to implement solutions, material and

• financial resources, and time

• resources, including a schedule for completing individual tasks.

Prior to the implementation of activities, it is important to organise and evaluate the available resources to identify potential bottlenecks and, if necessary, tasks can be redesigned to be more in line with the available resources and the planned activities.

TO CONSIDER...

1. What are the results of the risk and materiality analysis for the organisation and its structure?
2. What material, human, and financial resources does the organisation possess, and can it allocate them to activities related to water resources management and closing the loop?
3. In what time frame are the activities planned? Has the organisation ensured the provision of resources throughout the entire implementation project?

CHECK OPPORTUNIETIES

To check the possibilities, it is necessary to examine the existing technological, social, organisational, and environmental solutions that can be successfully implemented. It is also important to assess whether the organisation has the knowledge, skills and resources to implement the plans that have been drawn up. When considering technological solutions, it is essential to verify the extent to which a given proposal can be implemented in the conditions in which the organisation operates. Issues related to infrastructure and its adaptation to technological and organisational capabilities in water reuse may be significant. Assessing stakeholder involvement in joint projects is also crucial. Proper planning for water reuse requires awareness of potential risks and effective risk management to prevent failure.

TO CONSIDER...

1. What activities are carried out by other similar organisational structures?
2. What benefits do we see in closing the loop?
3. What competitive advantages does our organisation have that will allow for implementing the planned solutions effectively?
4. With which stakeholder groups do we cooperate, and is it worth using their potential for cooperation?

EVALUATE THE CURRENT STATE OF THE INFRASTRUCTURE

Conserving water resources may necessitate revising current operational methods, including evaluating and potentially modifying infrastructure to facilitate closed-loop systems. This entails auditing the current water and sewage network. Assessing infrastructure also involves gathering market data on available solutions, both public and private, to identify gaps in the existing infrastructure. Closing the water cycle also requires redefining how buildings are designed. Therefore, it is essential to include criteria for new investments, such as the possibility of closing loops in individual and collective housing projects. An assessment of the infrastructure is necessary to identify gaps and potential areas for improvement in order to effectively close the water cycle.

TO CONSIDER...

1. What activities are currently being used to close the water cycle in the administrative unit?
2. Does the current infrastructure support the closing of the loop?
3. What are the strengths of the water and sewage system? What are the system's weaknesses and how can they affect the ability to close the loop?
4. What infrastructure investments are planned, and do they take closing the loop into account?

ASSESS FINANCIAL POSSIBILITIES

Due to the non-profit nature of the public sector, it is crucial to conduct a comprehensive financial analysis before implementing any water resource protection projects. This analysis should include an evaluation of the economic value of the proposed projects, potential funding sources, and the feasibility of obtaining them. Financial opportunities may include EU funds or public-private partnerships. Effective fundraising and investment implementation aim to benefit the entire community and various sectors. Conducting financial analysis enables you to compare plans and visions with actual possibilities, allowing you to plan future activities by breaking them down into individual goals, time horizons, and funding requirements.

TO CONSIDER...

1. What are the costs of planned water resource management activities?
2. Where will the funds come from?
3. Has the organisation considered obtaining funds from the EU or through a public-private partnership?

PLAN SPACES FOR BLUE-GREEN FUTURE PUBLIC INFRASTRUCTURE

The public sector manages space and is responsible for greeneries. Blue-Green infrastructure is essential for water retention and restoring balance to hydrological cycles in areas at high risk of disturbances due to building occupation, which can disrupt the natural circulation of water. Blue-green infrastructure is crucial to achieving a natural closed-loop system. In addition, it is essential to consider all project potentials related to the restoration of rivers and watercourses, as well as the value of untapped water resources. This approach enhances resilience to climate change.

TO CONSIDER...

1. Which spaces are suitable for developing blue-green infrastructure?
2. Does the organisation recognise the potential of natural resources in its area?
3. What types of projects already exist and what is missing?

DO

DO

You don't learn to walk by following rules. You learn by doing, and by falling over.

“ Richard Branson

COOPERATE WITH DIFFERENT STAKEHOLDERS

Success in closing the loop depends on the ability to build relationships with stakeholders. These groups are familiar with local conditions and problems. Cooperation can lead to a synergy effect, achieved through joint planning, shared responsibility, and expected cost-sharing. Outsourcing certain tasks to social partners and involving local communities and residents can help them become part of the solution and take care of their surroundings. When it comes to business solutions, it is crucial to manage water-saving issues in industrial operations and find solutions for new investments, such as development and infrastructure projects. Identifying the needs and expectations of various stakeholder groups and actively involving them in decision-making processes and ongoing communication are critical elements for the success of environmental protection projects.

TO CONSIDER...

1. Which stakeholder groups should be directly involved in closing the water cycle projects and why?
2. Does the organisation have a policy or action plan for cooperating with individual stakeholder groups?
3. What guidelines can stakeholders follow to develop water conservation projects in their daily work?

EDUCATE PUBLIC OPINION

Climate change and the ecological crisis require everyone's commitment. It is essential to be aware that a passive attitude will lead to additional environmental problems and directly affect our daily lives. Therefore, public administration has a significant responsibility to educate the public on how to conserve water resources. This education should be implemented at every level of education and target various social groups. It is crucial to highlight the significance of safeguarding water resources both in households and businesses. For households, this entails implementing modern solutions for intelligent water management. For businesses, it involves promoting and educating about industrial-scale solutions. Public administration should take active measures to conduct campaigns, produce films and guides, and engage in ongoing communication aimed at individual stakeholder groups to promote the benefits of water conservation for everyone.

TO CONSIDER...

1. What does the country's environmental and climate education system look like? Does it address issues related to water resource management?

2. Does the organisation conduct any environmental or climate education activities in the area it manages?

3. What forms of communication does the organisation use to promote environmental awareness? Does the organisation evaluate the effectiveness of its actions?

4. Which stakeholder groups does the organisation cooperate with or should consider joint activities in the area of climate education?

ENGAGE LOCAL COMMUNITY IN WATER REUSE PROJECTS

Education can raise awareness about the issue and encourage responsible water usage in households. However, involving the local community in public projects is equally crucial. This includes collecting rainwater for everyday use and implementing initiatives like urban and vertical gardens to promote biodiversity and protect ecosystems. Encouraging residents to develop environmental projects and giving them space is vital for adapting to climate change. Every shared space can serve as a water reservoir, so it is important for the local community to be aware of and participate in tasks that benefit the environment. The implementation of such projects is possible through citizen budgets. To ensure the success of such initiatives, it is essential to provide opportunities for idea submission and cooperation during implementation.

TO CONSIDER...

1. Can the local community participate in decision-making regarding environmental activities undertaken by the organisation?
2. How are the needs of the local community in relation to space development assessed?
3. Does the organisation allocate special funds to projects that involve residents and address the issue of water resource protection?
4. What conclusions may be drawn from the previous organisation's implementation of environmental projects involving the local community that could be useful in designing solutions for the protection of water resources?

DEVELOP PUBLIC POLICIES ORIENTED ON SMART WATER MANAGEMENT

Legal provisions play a crucial role in achieving environmental goals. In addition to local public administration initiatives, it is important to consider the broader context by translating legal provisions into policies and strategies. This will enable the design of a coherent system of goals and tasks to be implemented by various sectors and entities within an organisational unit, such as a city, district, or region. Implementing a policy focused on smart water resource management prioritises these resources. Risk analysis or double materiality process can determine critical action directions and milestones for the public administration to implement independently or with partners within a specific time frame.

TO CONSIDER...

1. How are national and international laws on water resource protection and closing the loop implemented in regional and local public administration structures?

2. Does the organisation have a policy or strategy for protecting water resources, or any other document defining environmental protection principles?

3. How does the organisation establish and monitor goals for representatives of different sectors and its own tasks?

CO-CREATE INTERSECTORAL ENVIRONMENTAL FRIENDLY SOLUTIONS

Creating catalogues of good practices and benchmarks for action, and developing cooperation mechanisms and inter-sectoral partnerships to implement and develop technologies that allow closing the water cycle, are as important as policies. Making registers publicly accessible supports knowledge and experience. Cross-sectoral cooperation may involve industrial symbiosis within eco-industrial parks. Co-creation and partnership also apply to projects developed for specific industries and their transfer to subsequent sectors. Implementing activities within the framework of inter-sectoral cooperation, particularly in areas with high water stress and high water-consuming processes, can help achieve specific results related to reducing pressure on the environment.

TO CONSIDER...

1. Does the country maintain a register of best practices that individual sectors can use when planning their activities?

2. What legal, organisational, and spatial solutions does the organisation have for developing eco-industrial parks and other structures that close the water cycle as part of inter-sectoral cooperation?

3. How does the organisation communicate effective solutions?

DEVELOP BLUE-GREEN INFRASTRUCTURE AND REBUILD PUBLIC SPACES TO MAKE THEM MORE ENVIRONMENTAL FRIENDLY

Access to the city's green spaces and recreational parks is crucial for social life. It is important to ensure that these places are accessible to all residents and also contribute to the environment. This is the essence of blue-green infrastructure in the city, which involves restoring watercourses, organising green areas, planting trees, creating rain gardens, and incorporating green roofs, facades, and walls. Such solutions have environmental benefits, reducing anthropogenic pressure and restoring natural balance. Those responsible for designing recreational and green spaces, as well as construction investments, should also consider environmental issues, particularly those related to uninterrupted water circulation.

TO CONSIDER...

1. What is the current potential of blue-green infrastructure?
2. How are solutions implemented to ensure uninterrupted water circulation in a given spatial structure?
3. How does the organisation develop resources for future implementation projects? What is the biggest challenge and how does the organisation address it?

USE AVAILABLE TECHNOLOGIES

Modern technologies offer excellent opportunities to reduce the negative impact on the environment. Solutions are emerging on the market that enable more efficient use of resources. Closing loops in municipal and industrial processes reduces environmental pressure and increases organisational resilience to negative phenomena caused by climate change, such as unforeseen weather events that may affect water supplies and quality. Public administration representatives responsible for water supply and treatment, as well as individual households, can utilise technological solutions. The public financing system plays a crucial role in providing affordable credit, loans, and subsidies to ensure access to technology. This enables consumers to use water resources effectively and promotes environmental progress throughout the administrative structure.

TO CONSIDER...

1. What technologies does the organisation use to close the water cycle? What benefits do they offer? What constraints does the organisation face?

2. What does the financing system for water projects aimed at residents and the business sector entail? What technological requirements must applicants meet?

3. How and how often is the review of available technologies conducted? Lastly, what is the procedure for replacing currently existing solutions with new ones?

USE PUBLIC AND PRIVATE FUNDS FOR SMART WATER REUSE PROJECTS

Financial analysis and identifying financing opportunities may lead responsible individuals towards exploring public-private partnerships. This type of collaboration is a viable solution for several reasons. Businesses possess and develop technologies that can benefit not only a single organisation but also the entire local community if implemented on a larger scale. Furthermore, through collaboration with the private sector, the public administration can implement its solutions and ideas into specific projects and investments that are co-financed by a business partner. This can include the use of public space ecosystems, development projects, and construction investments.

TO CONSIDER...

1. What public-private partnership projects has the organisation implemented? What were the success factors for these partnerships?
2. How does the organisation acquire partners for joint projects?
3. How are priorities and objectives for water management communicated in terms of potential development projects?

CHECK

CHECK

Review is essential to evaluation, which is essential to progress.

“ Melissa Steginus

IMPLEMENT METRICS FOR WATER-REUSE

Every organisation should have information about the volume of resource consumption, its sources, and how they are used and consumed. To manage water resources effectively, organisations should propose a system of water meters during the planning and implementation stages of policies and projects. This will enable assessment of the current situation and facilitate future planning. Therefore, it is essential to pay attention to interdisciplinary connections. For example, what type of business will be developed in the future or how densely built buildings will be made? This will allow the organisation to prepare for increased demand for water, assess risks, and take appropriate interventions in the event of challenges. Additionally, the meter system facilitates setting water-saving goals.

TO CONSIDER...

1. What types of meters and indicators does the organisation use to monitor water resources, including the amount of acquired water, sewage, and closed-circuit water?
2. Does the organisation collect data for all sectors?
3. How does the organisation analyse the risk related to the depletion of resources, including water resources? What measures are used?

DEVELOP MONITORING SYSTEM

Environmental monitoring is a well-established tool used by public administration. However, the dynamic situation in the area of climate change and the increasing risk of resource depletion or potential lack, as well as the deteriorating quality of the environment, it is worth designing a monitoring system that can collect data from various entities and sectors on water resource management. Thanks to this, it will be possible to establish the measurement system mentioned earlier realistically. Defining goals and tasks using actual data reduces the risk of underestimating various values critical for the environment's quality and future resource availability through monitoring. However, the monitoring system will also facilitate anticipatory activities, such as designing scenarios to mitigate and adapt to climate change.

TO CONSIDER...

1. How does the environmental monitoring system operate in the organisation and country?
2. To what extent does the current monitoring system allow for assessing water resources, including quality, quantity, and the risk of water stress?
3. How does the organisation analyse the risk related to the depletion of resources, including water resources? What measures are used?
4. Does the environmental monitoring system support the setting of targets for the management and closure of water resources?
5. How can the current system be linked to the identified needs for climate change mitigation and adaptation in the area of water management?

COLLECT DATA

The challenge for many organisations is the need for more data, which makes the decision-making process difficult. This data includes both qualitative and quantitative dimensions. In the case of qualitative measurement, it is vital to know the context of the organisation's functioning. This includes factors such as geography, social and political conditions, and economic challenges that impact the organisation's water management. However, when dealing with quantitative data, it is crucial to examine the amount of water used, its consumption, loss, and acquisition, purification, and distribution. Data collection also includes information about future projects and investments that may affect water resources. Therefore, it is worth considering developing a data collection system that can gather information from all sectors, facilitate comparative analysis, and enable more effective systemic planning for the entire country.

TO CONSIDER...

1. Who is responsible for collecting the data?
2. What types of quantitative and qualitative data are collected within different organisational units?
3. Can the current data collection system monitor indicators related to water and sewage management effectively?

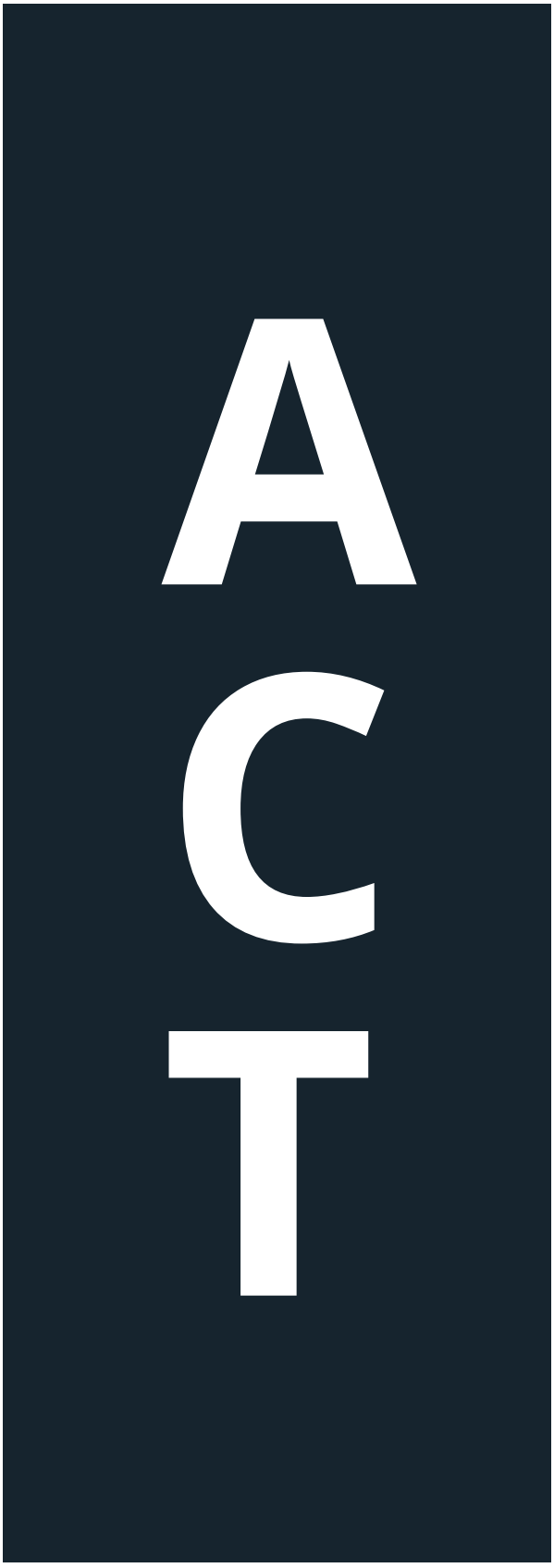
EVALUATE KPI'S

The measuring system assesses resource use, consumption, and water loss in a given area. Additionally, designing a system of key performance indicators can strategically and critically determine the organisation's success in closing water cycles and protecting natural resources. Key Performance Indicators (KPIs) help to measure and evaluate progress towards achieving goals. Various types of success indicators can be established at both the organisational and spatial levels, including cities, regions, individual projects, and sectors.

TO CONSIDER...

1. What are the actual water savings?
2. Who is responsible for achieving KPIs within the organisation?
3. What corrective and preventive actions are taken when the risk of not achieving a given KPI increases?

CHECK →



ACT

Sometimes you win, sometimes you learn.

“ JOHN MAXWELL

REDISTRIBUTE KNOWLEDGE AND BEST EXAMPLES

Improvement activities involve concluding completed work and planning subsequent projects. Improving activities also means sharing knowledge and good examples. This is possible both within and between sectors. Public administration has appropriate tools to disseminate project results by sharing best practices. Organisations are advised to review previous projects before implementing new ones. This helps to prevent mistakes and design a solution that avoids the challenges faced by previous organisations.

TO CONSIDER...

1. How does the organisation communicate activity results?
2. Does the organisation gather data on the sustainability of the project after it is completed?
3. How is this information monitored and disseminated?

DEVELOP AND IMPLEMENT NEW PROJECTS

Continuous improvement is a never-ending process. Therefore, our implementation should be one of many. Organisations need tools to manage the environmental dimension in the short and long term.

TO CONSIDER...

1. Which water resource management projects are successful in your organisation?
2. Which projects need to be added?
3. Does the organisation have a development plan for implementing water cycle closure?

BE READY FOR CHANGES

Preparing for changes involves assessing the current situation, concluding the analysis, and planning further steps to meet the needs and expectations of stakeholders. Public administration organisations must prepare for legal, social, and economic changes. On one hand, we are working to strengthen the legal system to promote the implementation of environmental projects. On the other hand, local communities are demanding specific actions from administration representatives. Readiness for change involves decision-making, awareness of challenges, and seeking solutions, including financial support, to achieve goals.

TO CONSIDER...

1. How does the organisation make environmental decisions?
2. How does the organisation use information from previous projects to plan subsequent activities?
3. Has the organisation developed scenarios for climate change across different timeframes? How is the management of water resources addressed?

LEARNING FROM MISTAKES

Access to knowledge and transparency in activities can help conclude projects that could have been more successful. Learning from mistakes is key, and presenting results in reality can help our organisation and others using these resources understand challenges and avoid them in their own projects.

TO CONSIDER...

1. Does the organisation have corrective mechanisms during project implementation?

2. How does the organisation use knowledge of failures to design subsequent solutions?

FOLLOW NEW TECHNOLOGIES

In a world of rapidly developing technologies, solutions are available to support environmental management and enable the reduction of negative impacts on the environment. Therefore, to enhance their activities, public administration representatives must consider the challenges ahead, identify gaps, and take necessary steps in the coming years. It is crucial to view technology as an ally in finding solutions. It is important to analyse trends and available solutions in the market to ensure that opportunities to implement effective methods and tools for reducing water consumption, improving water purification, and closing the water cycle are not missed.

TO CONSIDER...

1. Does the organisation monitor the market for technological solutions in water resource management and containment?

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