

Hashemite Kingdom of Jordan Ministry of Water and Irrigation



# National Water Conservation Roadmap 2024





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	5
WATER DEMAND MANAGEMENT	8
JUSTIFICATIONS AND OBJECTIVES OF THE ROADMAP	13
METHODOLOGY FOR BUILDING THE ROADMAP	14
NATIONAL WATER CONSERVATION ROADMAP 2024	21
AGRICULTURAL SECTOR	24
MUNICIPAL SECTOR	35
	42
	50
STRATEGIC MANAGEMENT OF THE NATIONAL ROADMAP	61

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![](_page_4_Picture_0.jpeg)

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The Hashemite Kingdom of Jordan stands as one of the world's most water-scarce nations. The foreseeable future signals potential increased scarcity, particularly in the near term. Successive alterations in the surrounding environment-spanning natural and demographic factors; urban and economic development; and geopolitical, social, and technological considerations-have intensified the strain on water resources. This heightened pressure has resulted in a decrease in the annual per capita share of renewable freshwater, plummeting to a mere 61 cubic meters per year. Notably, this figure falls significantly below the internationally recognized absolute water poverty line of 500 cubic meters per person per year.

Water demand management is crucial for addressing the water sector's challenges by effectively rationalizing consumption, guiding users toward approved, sustainable use, and preserving local resources, including energy, food, and the environment. Water demand management also has positive effects on various agricultural, industrial, commercial, domestic, and other sectors, leading to water security and achieving the sustainable development agenda. The vision for economic modernization in the Hashemite Kingdom of Jordan sheds light on numerous challenges confronting the water sector, primarily centered around water demand management. These challenges encompass behavioral aspects, notably the limited awareness regarding water management and water use efficiency. Additionally, institutional weaknesses hinder the interdependence and integration between the water sector and other developmental sectors. There is also a notable deficiency in cooperation and coordination among ministries and administrations across various sectors, which hinders the optimal utilization of water resources. Addressing issues

such as over-pumping of groundwater becomes imperative and requires a shift toward sustainable practices that consider the long-term viability and quality of these crucial resources.

On a technical front, data-related challenges persist, with limited access in many cases and restricted availability where data exists. Poor data management undermines its potential contribution to decision-making and strategic planning functions, particularly concerning institutional perspectives on challenges within the water sector. This includes the imperative to update governance frameworks and enhance water demand management at the national level. Addressing these challenges requires innovative solutions geared toward sustainability within a strategic framework that guarantees the institutionalization of planned actions and interventions. Stakeholders should focus on enhancing water use efficiency, promoting the adoption of responsible behaviors, and discouraging wasteful practices. Building the capacity of relevant institutions and individuals is crucial to aligning with the royal and the national aspirations and directives that emphasize the significance of water conservation.. these aspirations should be grounded in robust governance frameworks, ensuring that Jordan is recognized as regional and global model for effective water management.

The Ministry of Water and Irrigation (MWI) in Jordan holds the mandate for planning and overseeing all aspects related to the water sector. With a commitment to innovative approaches, MWI aims to implement integrated water resources management in line with the pillars and objectives outlined in the National Water Strategy (2023–2040.) MWI designed the strategy to guide specific actions within their plan, addressing crucial issues in water sector management.

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Key focus areas within the strategy include enhancing financial performance and sustainability, implementing data-driven decision-making mechanisms, fostering innovation and technology adoption, optimizing energy efficiency, improving water use efficiency, addressing the impacts of climate change, and promoting the adoption of rational behaviors in water consumption. Through these targeted measures, MWI strives to ensure a holistic and effective approach to water resource management in Jordan.

MWI seeks to meet the needs of the water sector, including to restructure groundwater extraction legislation and efficiency of use; develop and implement executive programs and initiatives to preserve surface and groundwater resources and improve the efficiency of its use; encourage the adoption of innovative technological solutions to address water conservation challenges; and use of incentive-based instruments to support national water conservation efforts in all sectors within best practices that influence behavior. To realize the vision of economic modernization in Jordan and fulfill the objectives of the National Water Strategy, MWI is actively engaged in identifying immediate, medium-, and long-term solutions to address needs. Adopting an institutional approach, MWI collaborates with various sectors and stakeholders to establish effective partnerships that can balance the growing demand for water with its available supply. A key emphasis lies in recognizing the significance of water conservation and demand management as an additional and crucial water source. Many programs predominantly concentrate on water supply management, focusing on increasing investments in new water resources, enhancing infrastructure, and minimizing non-revenue water. Unfortunately, stakeholders often

overlook the importance of demand management as a valuable source for achieving water security. MWI is committed to changing this paradigm, ensuring that demand management plays a central role in achieving a sustainable and secure water future for Jordan.

Given the context outlined above, the imperative for establishing a national roadmap for water conservation becomes evident. The strategic directions outlined in this plan translate into priority operational initiatives and programs undertaken by MWI. These initiatives leverage best practices in communication processes to instigate behavioral change within the community, employing diverse tools to fulfill the objectives outlined in the second pillar goal of the National Water Strategy. This goal centers on restoring balance between water supply and demand, with a specific focus on Sub-goal 4.2, which underscores the significance of promoting water use efficiency across all water use purposes and among all consumers.

The National Water Conservation Roadmap plays a pivotal role in optimizing water resources utilization and positions national water security as a shared responsibility across all sectors. The roadmap establishes clear indicators aimed at ensuring the sustainability of procedures and practices that enhance the efficiency of water use. The roadmap addresses a broad spectrum of stakeholders, including houses, public and private institutions, agriculture, and industry, fostering effective partnerships to implement initiatives through the application of best practices in communication for behavioral change. The roadmap delineates overarching strategic directions and frameworks for water demand management, providing a foundation for subsequent detailed work plans (operational) for each initiative, which will meticulously consider the specific implementation steps, required financial resources, and the necessary timeframes.

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National Water Conservation Roadmap 2024

## WATER DEMAND MANAGEMENT

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The notion of water demand is an economic principle used to explain how changes in factors like price, income, population, and other relevant variables impact the patterns of water demand. However, in Jordan, water demand estimates predominantly hinge on supplied water quantities as the current low water prices do not serve as a decisive factor in assessing the volume of water people are willing to use, particularly considering income levels.

Municipal demand for water is defined as the volumes of drinking water necessary for all municipal purposes, encompassing both domestic and commercial uses, all aimed at attaining water security. Consequently, addressing municipal demand stands as a paramount priority in the formulation of water allocation budgets. The average water consumption in Jordan slightly exceeds 90 liters per capita per day, which is anticipated to decrease to below 80 liters by 2025, only to rise again to 100 liters per capita per day with the integration of desalinated water from the National Carrier Project. However, water share per capita will likely decline with population increases afterward. Given recommendations of the World Health Organization, which stipulate an individual's daily water needs between 50 and 100 liters to ensure basic requirements and prevent health issues, Jordan's per capita usage is expected to remain within the recommended limits. Achieving this balance will require securing new water sources and enhancing water use efficiency in the country's water management strategies.

MWI establishes a per capita daily water quota as a foundational element in planning for water demand. This approach guides the development of new water sources and essential infrastructure for water supply and wastewater treatment. MWI has adjusted the designated per capita water quota several times in various plans and strategies spanning the period from 2008 to 2023. The National Water Strategy 2023–2040 has anchored the recalibration of municipal water demand on a per capita value of 100 liters per day. This calculation considers additional elements such as seasonal demand fluctuations and water loss considerations. The strategy accounts for the high population growth scenario, with the total population of Jordan anticipated to reach approximately 16.8 million by 2040 and 20.6 million by 2050.

The approach to estimating water demand for planning purposes differs from the actual demand for municipal water in Jordan, which depends heavily on the availability of water resources and the capacity of water supply systems in addition to other social and economic factors, so what is supplied and consumed differs significantly from the share of supply mentioned above.

Figures in the National Water Strategy 2023– 2040 indicate that the total demand for municipal water is estimated at 682 million cubic meters for the entire population in 2020 and is expected to rise to 991 million cubic meters by 2040, noting that the municipal water supply in 2020 reached 514 million cubic meters, which means a deficit of 168 million cubic meters in the same year. MWI projects deficits in water resources will rise due to reduced availability, population growth, and climate change effects. They expect the introduction of desalinated water from the National Carrier Project to temporarily cover the gap, which will expand again from 2035, primarily due to ongoing population growth.

There is an urgent need to understand more accurately the actual water demand for municipal uses in Jordan and to know this demand is affected by both water use inefficiency and waterwastage when assessing the direction Jordan is taking concerning water conservation and demand

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#### management efforts.

Actual consumption determines the demand for water in irrigation, which depends on the type of crops grown, cultivation patterns, agricultural seasons, and irrigation techniques. The Third National Water Master Plan utilized remote sensing techniques to assess Jordan's total irrigated areas and corresponding irrigation water usage. The master plan team analyzed historical trends in irrigated areas and water quantities to forecast irrigation water demand. In 2019, the total irrigated area was 981 thousand dunums, with 64 percent in highlands and the remainder being in the Jordan Valley. Primary crops were vegetables (55 percent) and fruit trees (40 percent). The master plan estimated actual irrigation consumptions at around 702 million cubic meters, with documented usage at 564 million cubic meters in the national water budget.. Projections suggest irrigated areas will surpass 1303 thousand dunums by 2040, with a water consumption rate of 932 million cubic meters based on existing cropping patterns and irrigation practices.

Discrepancies between estimated irrigation demand and documented water budget quantities stem from various factors. Key contributors include the unauthorized extraction of groundwater, the utilization of municipal water for irrigation, and the absence of accurate data on delineation of irrigated areas. Considering the low efficiency of irrigation practices in Jordan and the substantial proportion of irrigation water demand coupled with limited groundwater and surface water resources, the imperative to expand agriculture for future food security necessitates a parallel emphasis on enhancing irrigation efficiency and adopting water-efficient crop patterns.

This includes exploring non-conventional water sources to ensure sustainable and resource-efficient agricultural practices.

As for water demand in the industrial sector, Predicting how water demand will evolve for industry is difficult., although the potential for economic development depends on a reliable estimate of industrial water demand in the future. The industry in Jordan has developed over the past decade, contributing 28 percent of the gross domestic product (GDP) in 2018. The most important water-consuming industries are mining, cement production, oil refining, food, and fertilizer production. The latest data from MWI shows that water consumption for the industry increased only slightly, which is estimated at 37 million cubic meters per year. These industries depend mainly on groundwater.

The Third National Water Master Plan projected the industrial water demand to reach 40 million cubic meters per year in 2020, with an anticipated increase to 72 million cubic meters by 2040. MWI based this estimation on an analysis of historical consumption trends, assumptions regarding the growth rate of the industrial sector, and considerations for the expansion plans of major industries.

Despite the industrial sector consuming less water compared to other sectors, increasing industrial water use efficiency is critical due to the scarcity of water sources as well aswater resources availability and water quality suitability in areas where industry develop. efficiency is also imperative in the industrial water usage as it is critical factor in cost-control and enhancing the competitiveness of Jordanian industrial products.

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#### The Status of Water Demand Managment in Jordan

Water demand management aims to strategize and coordinate current and future practices to optimize the utilization of water resources, fostering a sustainable balance between water supply and demand. This involves minimizing water waste and enhancing efficiency through a repertoire of tools and strategies. Key components include the adoption of water-saving technologies; increasing awareness of the importance of efficient water use; and implementing policies and legislation like pricing mechanisms, standards, and penalties. Additionally, efforts are directed toward reducing non-efficient water uses, utilizing documented information, and employing incentives to encourage water conservation practices.

Water management in Jordan focuses more on water supply than on water demand management, although demand management is essential for the sustainability of water resources, economic efficiency, and social development.

MWI prepared the water demand management policy in 2008 and completed updates in 2016. They revisited the policy in 2023 to ensure it is an integral part of the National Water Strategy 2023–2040, an approved tool to change the methods and behaviors of water uses within the standards of sustainability, efficiency, and equity. Although the policy and strategy do not provide specific programs for water demand management, MWI supports the implementation of demand management efforts as an integral part of long-term solutions to Jordan's water problem.

The United States Agency for International Development (USAID) Instituting Water Demand Management in Jordan Project (IDARA), spanning from 2007 to 2012 and funded by USAID, stands out as one of the significant past initiatives in this domain. The primary objective of the project was to enhance institutional capacity for water demand management. This involved fortifying the institutional and legal framework to bolster water demand management while implementing various demonstration activities focused on improving water use efficiency practices.

Challenges and opportunities persist in Jordan's water conservation landscape despite various projects implemented over the past two decades, including the USAID Water Innovative Technologies project (WIT), which spanned from 2016 to 2021 and focused on promoting water-saving technologies, and the USAID Water Management Initiative (WMI) project (2016-2020), which aimed at enhancing water use efficiency. The WIT project specifically supported farmers, families, and communities in adopting water-saving technologies while also leveraging civil society institutions to manage renewable loans for water supply. The WMI project focused on developing a phased work plan for water efficiency programs, which included activities related to water efficiency and expanding treated wastewater reuse in the private sector. The project conducted a comprehensive review of previous and ongoing efforts in Jordan to explore potential opportunities and address challenges in structuring effective water efficiency programs in collaboration with stakeholders from all sectors.

Despite previous efforts and projects, the implementation of effective water conservation/ demand management still needs to be strengthened, & institutional legislative, community, and economic capacities need to be developed to reach sustainable initiatives that have an impact on raising the efficiency of water use nationally.

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### Best Practices in Water Demand Management

International best practices in water demand management involve adopting policies, techniques, and community engagement strategies to optimize water use and ensure sustainable resource management. Tools for enhancing water efficiency include integrated water resources management, pricing mechanisms, water auditing, awareness campaigns on water-saving technologies, rainwater harvesting, greywater reuse, and incentive development programs. Examples of legislative tools include the establishment of standards, specifications, and penalties, along with the implementation of water use management plans during drought periods.

Best practices in water demand management necessitate a comprehensive and collaborative approach that engages governments, communities, businesses, and water utilities. This approach ensures sustainable and equitable water use for current and future generations. Community and stakeholder participation in decision-making processes fosters a sense of ownership and responsibility for water resources, proving essential for the success of water demand management initiatives.

There are many international examples of best practices in water efficiency. In parts of Spain and Denmark, per capita water consumption has been reduced to 100 liters per day through water efficiency programs implemented without regard to large-scale greywater reuse and rainwater harvesting programs that were already implemented there.

In Denver, Colorado, government initiatives, awareness campaigns, and the promotion

of water-efficient products facilitate extensive community participation in water conservation. Singapore has adopted a similar comprehensive approach, integrating a closed-loop system to reuse all treated water from wastewater treatment plants. In Japan, legislation focused on rainwater harvesting has spurred large-scale implementation of such programs across the country.

An emerging example of water demand management is the work of a non-profit foundation in the United Kingdom (UK), which in 2017 launched the UK Water Efficiency Strategy in collaboration with various stakeholders, including governments, water companies, the business community, and the public, and aims to develop and implement several water efficiency programs.

In the Middle East, the Kingdom of Saudi Arabia initiated the Qatra program, targeting a significant reduction in water consumption. The program aims to decrease daily per capita consumption from 263 liters to 200 liters by 2020 and to 150 liters by 2030. This program aligns with the National Transformation Program 2020 and the Kingdom's Vision 2030; emphasizes the significance of water conservation; and proposes measures to reduce industrial, residential, and agricultural water consumption while educating individuals about the importance of altering water consumption practices for a sustainable future.

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### JUSTIFICATIONS FOR THE NATIONAL WATER CONSERVATION ROADMAP

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### JUSTIFICATIONS AND OBJECTIVES OF THE ROADMAP

The Water Conservation Roadmap stems from the National Water Strategy 2023–2040 and focuses on the importance of managing water demand and developing a comprehensive and simplified strategy to rationalize water consumption in all sectors: municipal (domestic, commercial, governmental, tourism), agricultural, and industrial.

The water sector have strategically focused efforts on managing water supplies and seeking alternative water sources despite the associated costs and long-term processes involved. The roadmap is poised to address the water critical challenges, particularly during a period where the political, economic, and societal demands for water are at their highest. A coordinated national response is imperative to bolster water security across all levels-national, institutional, and individual. With the stark decrease in dam water levels, limited water availability in the peak of summer, and the subsequent strain on water and food security, along with rising domestic water costs, stakeholders must promote a shift in water consumption behaviors among individuals to curtail expenditures and enhance quality of life.

Water demand management attempts to provide alternate water sources for customers in all sectors while also monitoring and improving the sustainability of existing water supplies.

MWI spearheaded this initiative, which provides guidance to various sectors. During the first three years, they emphasize revitalizing the enabling environment for sectors and improving coordination mechanisms in water demand management. These endeavors aim to rationalize water consumption and enhance management through active participation from both the water sector and users. There are several main justifications for developing and adopting this national water conservation roadmap. One key justification, as depicted in the following figure, is to ensure water availability for domestic uses and drinking purposes, which is crucial for the health and well-being of the population, and to support commercial and tourist activities. Additionally, the plan aims to meet the needs of the industrial sector, which requires significant water quantities for production and cooling processes. Providing water is essential for supporting the national economy. The agriculture sector depends heavily on water for irrigation, supporting agricultural production and ensuring irrigation water efficiency greatly contributes to food security.

The plan promotes environmental sustainability, conservation of the ecosystem, and biodiversity, which require sufficient water. The plan contributes to reducing the impacts of climate change, which may affect water availability in some places. Through its initiatives, the roadmap will also contribute to improving the quality and quantity of information available about water demand processes for all sectors. In general, the plan helps to manage supply and demand processes, aiming to achieve balance and promote sustainable use of water resources.

This roadmap functions as a crucial tool for MWI as it serves as the foundation for coordinating and communicating with all stakeholders and partners, fostering the creation of participatory operational programs for water conservation. MWI, in collaboration with partners across different sectors, will develop detailed work plans and joint work mechanisms. These collaborative efforts aim to fulfill the intended purpose outlined in the roadmap.

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### METHODOLOGY FOR BUILDING THE ROADMAP

In discussing the methodology for preparing national strategies and plans, it is crucial to reference the framework and steps taken systematically. This ensures alignment and responsiveness to national-level needs while also ensuring future implementation.

MWI aspires to implement a long-term vision through the national roadmap. This vision serves as an umbrella for executive programs focused on water conservation and enhancing its efficiency. The achievement of this vision involves providing strategic directions with clear, measurable, and inspiring goals. MWI formulated these goals through research, study, analysis of external opportunities and challenges, and evaluation of strengths and weaknesses in the enabling and regulatory environment for water conservation. The plan addresses water uses in agriculture, industry, and the municipal sector (domestic, commercial, governmental, tourism). This process led to the development of specific initiatives within all water use sectors.

The methodology also employed tools to enhance the process of achieving goals and initiatives. This involved defining the roles and responsibilities of entities involved in each initiative's implementation. The methodology focused on identifying the necessary resources and establishing foundations for monitoring and evaluation. Measurable performance indicators facilitated these actions.

MWI has taken a participatory approach in preparing this plan, which includes communicating with various concerned institutions to consult, gain support, and provide opportunities to contribute to construction of the roadmap. The goal is to ensure that the National Water Conservation Roadmap meets various needs and takes into consideration the actual situation in the concerned sectors. This approach promotes continuous learning, improvement, and utilization of previous experiences.

The process of preparing the National Water Conservation Roadmap began with an integrated and organized approach on a participatory basis involving all stakeholders and encompassed the following aspects:

#### Steps to Prepare the National Water Conservation Roadmap 2024–2026

The process of preparing the plan included several steps that considered the proportionality of national needs and goals to ensure success. In general, the preparation process included the following steps:

#### Analysis of the Current Situation of Water Demand Management

Studying current economic, social, and environmental conditions aimed to identify challenges and opportunities. This involves conducting participatory workshops with stakeholders in partner institutions.

Water conservation, rationalization of water consumption, or water demand management is a participatory process that extends beyond water supply utilities or users and includes service providers, water-saving technology providers, and technology. The process involves supporting services providers in areas such as research, water resources management studies, infrastructure development, quality control and management, awareness, and media. Institutions concerned with enacting and following up on legislative and regulatory frameworks in the formal and informal enabling environment play a crucial role. Therefore, the roadmap's development team needed to invite representatives of these national governmental and nongovernmental institutions and sought their participation in the context analysis planning and development of the roadmap.

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The context analysis encompassed various crucial steps and involved identifying the most important relevant governmental and nongovernmental institutions. Furthermore, the analysis delved into recognizing significant technical, operational, organizational, behavioral, and economic challenges. The analysis focused on identifying essential solutions to address these challenges, enhance institutional coordination, exchange knowledge efficiently, and identify incentives, whether available or necessary.

This was crucial to promoting the adoption of water conservation technology and practices in agriculture, industry, and the municipal sector. The following diagram illustrates the most important governmental and nongovernmental institutions involved in water conservation across agriculture, industry, households, commercial, and tourism sectors.

#### Agriculture Commercial Agricultural Engineering Union Water Users Association Ministry of Investment **Ministry Of Agriculture** Agricultural Equipment and Ministry of **Material Traders Unions** Environment National Agriculture Research Centers Ministry Of Water and Irrigation Water Authority Of Jordan Companies Jordan Valley Authority Agricultural Loan Ministry Of Planning And International Cooperation Business **Drip Irrigation** Universities And Research Centers Forum Jordan Standars And Metrology Association **Farmers Union** Ministry Jordan Engineers Association Royal Scientific Society Miyahuna Farmers Vocational Training Institute of Customs Department , Jordan Economic Development Company Education Aqaba Special Economic Zone

### Industry

Engineering Consulting Company Industrial Cities Institute Factories Jordan Chamber Of Industry

GOVERNMENTAL AND NONGOVERNMENTAL INSTITUTIONS CONCERNED WITH WATER CONSERVATION

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### Review Relevant Documents and Plans

The National Water Strategy 2023–2040 underwent a review by a multi-sectoral committee, including an examination of the policies and reports of the MWI. Special attention was given to the water demand management policy, considering the challenges in its implementation due to the absence of operational programs.

#### **Learning and Best Practices**

Reviewing numerous successful global experiences in water conservation/demand management involves identifying key methods and techniques utilized to enhance water demand management compared to water supply management, analyzing future trends and technologies that could impact water demand management, and reflecting on how new technologies and innovations can be integrated and employed in the roadmap.

#### **Stakeholder Consultation**

Communication with all stakeholders from various governmental, private, and civil sectors involved in water conservation is essential. Advising them and seeking their input is a crucial step in determining the current situation and constructing the components of the National Water Conservation Roadmap.

#### **Building the National Roadmap**

Defining national goals for water demand management involved describing strategic initiatives that achieve the objectives of the roadmap, developing indicators to measure the progress of the plan, and achieving the objectives and initiatives. These steps included the implementation of many participatory and research activities, as follows:

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Activities	Description and Deliverables
Research and Data	<ul> <li>Research activities included reviewing national and global documents and studies connected to the reality of water, with an emphasis on the areas of water demand management, the most important of which include:</li> <li>Global best practices in water demand management.</li> <li>Experiences and projects previously implemented by MWI for water demand management.</li> <li>National Water Strategy (2023–2040.)</li> <li>The policies of MWI, the most importantly the policy of water demand management.</li> </ul>
Senior Man- agement Orientations	Meeting with the appropriate leaders in MWI, the Jordan Valley Author- ity, and the Water Authority of Jordan is a crucial step. This includes ad- dressing the starting points of the National Water Conservation Roadm- ap and incorporating their instructions into the stages of building the plan and its initiatives.
Participatory Workshops (Sectors)	MWI held four participatory workshops were held, targeting the agri- cultural, industrial, municipal, and enabling environment sectors. The workshops sought to bring together key stakeholders from the water sector to involve them in development of the National Water Conser- vation Roadmap, ensuring that their perspectives and concerns are integrated into the plan. The objectives of these workshops were as follows:
	<ul> <li>Enhance understanding of water conservation and demand management in different sectors.</li> <li>Identify the bodies related to water conservation and water demand management in different sectors including their responsibilities and offects.</li> </ul>
	<ul> <li>Identify the most important challenges and factors that hinder water conservation.</li> </ul>
	Develop practical and realistic frameworks for a National Water Con- servation Roadmap, which involved addressing significant challenges in technology, reuse of treated wastewater, and market development within the water-saving sector. The focus was on adopting water-sav- ing technologies, practices, and behaviors related to water conserva- tion.

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Activities	Description and Deliverables		
Participatory Workshops (Sectors)	During these workshops, over 200 participants from various govern- mental and nongovernmental institutions contributed to analyzing challenges, impeding factors, opportunities, and incentives related to conserving water in agriculture, industry, and the municipal sectors in Jordan. The workshops focused on identifying root causes affecting the following areas:		
	<ul> <li>Adoption of technologies, information availability, sharing knowledge and innovation.</li> </ul>		
	<ul> <li>Recycling and reuse of treated water in the industrial and agricultural sectors.</li> <li>Water efficient practices and behaviors in the industrial, municipal, and agricultural sectors.</li> </ul>		
	<ul> <li>Market development, private sector participation, supporting services, and business development.</li> </ul>		
	Financial facilitations.		
	Policies, enabling mechanisms, and incentives that support water use efficiency in agriculture, industry, municipal uses, as well as reuse of treated wastewater.		
Preliminary Plan Design	MWI held a specialized workshop was held in which representatives from all parties participated. The goal was to showcase the outcomes of the prior events, clarify the foundations of the national roadmap, and solic- it feedback and suggestions from participants regarding the roadmap's objectives and initiatives. The overall objective of the workshop encom- passed initiation of the first design of the roadmap. This involved identify- ing strategic directions, goals, and objectives along with main initiatives. Participants also discussed possible interventions in each initiative, the most essential indicators of initiatives, implementation obstacles, and the requirements and responsibilities for execution. The workshop intended to reach an agreement on the next steps in the planning process.		
Sub-working Group Meet- ings	Four sub-working groups were formed, building on the outputs of the previous participatory public workshop and the initial conceptualization of the roadmap's objectives, initiatives, and indicators. These groups con- sisted of attendees from the prior workshop as well as representatives of all partners and stakeholders. The purpose was to review and adjust the outputs properly. The sub-groups' work resulted in recommendations for the specified objectives and initiatives. The roadmap's work team ex- amined these recommendations, ensuring alignment with the roadmap's objectives and agreed-upon goals.		

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Activities	Description and Deliverables		
Team Meet- ings	The work team responsible for developing the roadmap has consistently and collaboratively held periodic meetings since the project's initiation. These sessions involved discussing best practices, gathering information, preparing completion requirements, and coordinating to ensure active participation of all stakeholders during the process of the roadmap's de- velopment and drafting.		
Presenting, Reviewing Content, So- liciting Feed- back, and Approving the Roadmap	MWI held a workshop in collaboration with the work team to address the questions of stakeholders and decision-makers. The workshop's goal was to present the National Water Conservation Roadmap's activities, review their content, and underline their importance in meeting the goals that had been established. The purpose was to collect input to ensure efficacy and eventual adoption by MWI decision-makers.		
Review and Update	There will be a review of the progress of the roadmap's implementation by various stakeholders, sharing lessons learned as well as risk analysis to come up with appropriate updates as possible.		

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#### Principles for Preparing the National Water Conservation Roadmap (2024–2026)

All the prior processes were implemented within a systematic framework based on the importance of achieving several principles, the most important of which are:

#### Objectivity

The approach began with awareness of the current state of demand management in Jordan and considered drawing on the insights derived from national studies and adopted documents, such as the National Water Strategy 2023–2040 and the vision of economic modernization for Jordan.

#### Inclusion

The approach integrated the facts and viewpoints of all those concerned with water conservation in Jordan from various governmental, private, and civil sectors.

#### Participatory

The approach entitled implementing activities and events that involved all partners. MWI designed these activities to give participants equal opportunities to express their ideas and proposals, which were incorporated into the plan. There was a strong emphasis on involving the private sector in both the design of the roadmap and its subsequent implementation.

#### **Identification of Roles**

The roadmap comprises statements outlining the roles and responsibilities of all stakeholders. This aims to establish an effective and sustainable relationship between public sector institutions and the public and private sectors. The objective is to encourage investment in water conservation functions and technologies.

#### Measurement

The approach entails adopting clear and integrated objectives and initiatives built on quantifiable indicators to enable future applicability and reliable measurement of results.

#### Execution

Building objectives and initiatives in a coherent and streamlined manner as well as clearly identifying roles, responsibilities, and resources required ensuring that stakeholders can successfully implement the plan in the future.

#### Sustainability

The roadmap, developed by building initiatives that establish the enabling environment for water demand management, proposes the design of systems of incentives and activities to raise community awareness. The goal is to ensure that solutions, processes, and outcomes remain sustainable in the future.

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# NATIONAL WATER<br/>CONSERVATION ROADMAP 2024

![](_page_20_Figure_1.jpeg)

#### Vision, Objectives, and Initiatives

Building on the findings of research, discussions, and workshops, the National Water Conservation Roadmap's agreed-upon vision is "Ensuring Water Security through Enabling Water Use Efficiency." The following diagrams illustrate the matrix of strategic objectives and initiatives, categorized into legislative, economic, and social axes.

**INITIATIVES OF WATER CONSERVATION ROADMAP 2024 - 2026** 

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![](_page_20_Picture_5.jpeg)

#### **INITIATIVES OF WATER CONSERVATION ROADMAP 2024 - 2026**

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### Communication to Change Behavior and Society

The initiatives of the National Water Conservation Roadmap encompass crucial behavioral starting points, which will be emphasized through:

- Providing adequate focus on behavior changes in the roadmap.
- Ensuring availability of a behavioral treatment methodology that includes a comprehensive identification of challenges along with their various dimensions.
- Utilizing behavioral tools and frameworks where appropriate and behaviorally guided communication as important enablers for the management of the roadmap.
- Building the necessary capacities and competencies to carry out the required behavioral roles and interventions.
- Providing an integrated strategy for communicating and changing individual and community behavior.

The behavioral approach begins by distinguishing between behavioral challenges and structural challenges, recognizing that structural challenges can be obstacles or impediments. Addressing these challenges using suitable tools and frameworks is crucial. Once achieved, the appropriate communication process can further support them.

When a behavioral challenge is recognized, the investigation begins within the governing and analytical frameworks of behavior, such as the Capability Opportunity Motivation Behavior (COM-B) framework. This exploration delves into capabilities, opportunities, and incentives associated with the behavior. An appropriate communication and administrative plan addresses all these elements, with the segmentation of the impacted segments playing a role in the analysis process.

Following the identification of behavioral challenges, the design of behavioral intervention involves the use of various behavioral tools. This includes those related to behavioral economics, such as the Messenger, Incentives, Norms, Defaults, Salience, Priming, Affect, Commitments, and Ego (MINDSPACE) framework that addresses diverse communication Perspectives, or tools like the Social Identity Model of Pro-Environmental Action (SIMPEA) behavioral framework that focuses on community identity to consider environmentally appropriate behaviors at both individual and community levels.

It is necessary to conduct both behavioral analysis and intervention design processes by following the important principles in this plan, such as objectivity, participatory, and sustainability, to ensure that the desired goal of bridging the gap between intention and practice of behavior is achieved.

The best practice for ensuring the integrity of behavioral analysis and design is to adopt an initial testing plan. Practitioners apply this plan to an initial segment of society to facilitate measuring the initial impact. This approach enhances the chances of success when expanding the application. It's crucial to note that the behavioral process, in terms of analysis and design, shouldn't be considered as a separate entity from the national roadmap. Instead, it complements the roles of the same plan, whose interventions have been identified by MWI and will be detailed later. Importantly, the behavioral plan should not be perceived as a rigid or fixed process but rather one that requires continuous development due to natural and permanent changes in contexts.

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#### Introduction

Improving the efficiency of water use in irrigated agriculture stands out as a priority for agricultural development. It is also a crucial tool for managing water demand in the agricultural sector driven by the necessity to enhance agricultural productivity, improve competitiveness, and adapt to water scarcity conditions. This is especially noteworthy because the agriculture sector utilizes more than half of Jordan's renewable water resources. The agricultural sector initiatives attempt to lay the ground framework for institutionalizing the improvement of irrigation efficiency, which is especially important given the multiplicity of players in this sector, the overlap or lack of clarity in their area of activity, and the limited effectiveness in engaging farmers to prompt behavioral change and promote the widespread adoption of efficient irrigation technology.

The initiatives are developed within comprehensive legislative and administrative frameworks to provide systematic institutional instruments for improving technical and financial capacities for irrigation efficiency. Integral to these efforts is the commitment to uphold the quality and standards of irrigation technology, ensuring its broad market adoption. Concurrently, the initiatives address the development of legislative frameworks governing groundwater use, which remains a pivotal irrigation resource, and emphasize promoting water audits on the farm level as an important tool for evaluating and improving irrigation practices. Additionally, the initiatives may necessitate establishment of robust technical and institutional structures to facilitate wider reuse of treated wastewater. Furthermore, these efforts extend to influencing farmers' approaches to irrigation, with the goal of promoting a culture of efficiency and adherence to best practices within the agricultural community.

### Strategic Objective for Water Conservation in The Agricultural Sector

Improved water use efficiency in irrigated agriculture will be achieved through the following five initiatives:

- Establish and enforce standards and technical rules related to the irrigation systems technologies.
- Institutionalize on-farm water audit and capacity-building interventions related to the water audit as well as in the design and installation of efficient irrigation networks.
- Update procedures of the management and governance of groundwater use in irrigation to reduce agricultural consumption.
- Expand the use of non-conventional water resources in irrigation to reduce reliance on freshwater resources.
- Improve on-farm water management practices through behavior change and providing incentives.

The following is a detailed description of the initiatives:

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Agricultural Sector/Initiative 1			
Initiative Title	Establishing and enforcing standards and technical rules related to the irrigation systems technologies.		
Description of the Initiative	Developing and activating standards and/or technical rules will be de- veloped and activated by following the outlined steps:		
	<ul> <li>Conduct a gap analysis and regulatory impact assessment for proposed standards/technical rules.</li> <li>Establish a working group or coordination mechanism of stakeholders and specialists to set standards/technical rules.</li> <li>Specify the efficiency criteria in the standards/technical rules; Develop draft standards/technical rules.</li> </ul>		
	<ul> <li>Validate standards/technical rules by sharing, obtaining feedback, and subsequently obtaining approvals.</li> </ul>		
	<ul> <li>Build the necessary partnerships to effectively execute the standards/ technical rules.</li> </ul>		
Initiative Date	2024 - 2026		
Targeted Group	Farmers, traders, distributors of agricultural materials and irrigation sys- tems, local industries, importers, farmers' union, associations.		
Performance Indicators	<ul> <li>Quantify the number of standards and/or technical rules that have been identified to proceed.</li> <li>Quantify the percentage of completion for the standards or technical rules.</li> </ul>		
Resources	Human and financial resources.		
Ownership	Ministry of Agriculture, MWI. MWI. Ministry of Agriculture, MWI, Jordan Standards and Metrology Organi- zation.		
Partners	InternalNational Agricultural Research Centre, Water Authority of Jordan, Jordan Valley Authority.ExternalRoyal Scientific Society, Jordan Standards and Metrology Organization, Agricultural Materials Traders and Produc- ers Association, local industry owners, importers of irriga- tion technologies, chambers of commerce and industry, Ministry of Industry and Trade, universities.		

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Agricultural Sector/Initiative 1	
Key Outputs	Responsibility
Conducted a gap analysis and regulato- ry impact assessment for the standards/ technical rules.	MWI, Ministry of Agriculture, Jordan Standards and Metrology Organization.
Established a working group for develop- ing the standard or a coordination mech- anism for follow-up and support.	Jordan Standards and Metrology Organ- ization.
Developed draft standards/technical rules.	
Carried out awareness-raising activities to introduce the standards.	MWI, Ministry of Agriculture.
Established mechanism for enforcing and following up on the standards/technical rules.	Ministry of Agriculture.

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Adricultura	I Sector/Initiative 2

Initiative Title	Institutionalization of on-farm water audit and capacity building interven- tions related to the water audit as well as in the design and installation of efficient irrigation networks.		
Description of the Initiative	<ul> <li>The initiative involves conducting the following:</li> <li>Clearly define objectives, focal areas, and codify methods for performing farm-level water audit. This entails developing the Water Audit Manual as well as integrating these processes into the existing operational frameworks and administrative protocols of the pertinent government bodies.</li> <li>Improve stakeholder's ability to conduct water audits and design efficient irrigation systems; this encompasses targeted skill development of Ministry of Agriculture staff, agricultural extension workers, groundwater management personnel at the Water Authority of Jordan, Jordan Valley Authority irrigation managers, members of water user associations, private sector employees, and professionals in the irrigation and agricultural material sectors.</li> <li>Promote knowledge and practical skills among farmers regarding water audit techniques through hands-on training workshops.</li> <li>Appoint liaison officers from water users' associations, agricultural organizations, and governmental departments to execute water audits and contribute to the development of a better irrigation infrastructures.</li> </ul>		
Initiative Date	2024 - 2026		
Targeted Group	Farmers, traders, distributors of agricultural materials and irrigation sys- tems, local industries, importers, farmers' union, associations.		
Resources	Human and financial resources.		
Ownership	Ministry of Agriculture, MWI.		
Partners	InternalWater Authority of Jordan, Jordan Valley Authority.ExternalMinistry of Agriculture, International Water Management Institute, universities, agricultural engineers' association, National Center for Agricultural Research, private sector companies, farmers' and water users' associations.		

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#### **Key Outputs**

Developed a guideline for on-farm water audits.

Implemented comprehensive training programs covering both theoretical and practical aspects of water audits.

Conducted awareness workshops/meetings on the importance of water audits and the outcomes of implementing audit recommendations.

Developed water audit reports for 100 farms.

#### Responsibility

MWI, Ministry of Agriculture

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Initiative Title	Updating procedures of the management and governance of groundwa- ter use in irrigation to reduce agricultural consumption.			
Description of the Initiative	The initiative consists of the following areas of work: Conduct technical research on groundwater management, land use			
	planning, and water value to improve availability and quality of infor- mation for decision-makers.			
	Revise the groundwater monitoring bylaw to incentives farmers who prioritize efficient water management, including by linking free quan- tities of groundwater consumption to on-farm irrigation efficiency measures and implementing water audit recommendations.			
	Improve groundwater consumption estimation for irrigation updates, crop water requirements, and use of technical and administrative in- dicators for decision-making support, including through remote sens- ing tools and linking water consumption to electricity consumption and others.			
	Build the capacity of the Water Authority of Jordan and the Jordan Valley Authority in using technological and field water consumption estimation methods and institutionalizing these methods within the official work procedures of the two authorities.			
Initiative Date	2024 - 2026			
Targeted Group	Workers in groundwater management and governance at the MWI, Wa- ter Authority of Jordan, Jordan Valley Authority.			
Performance Indicators	Obtain approval of adjustments to the groundwater monitoring by- law and/or the pertaining procedures that are related to the man- agement and monitoring of groundwater use in irrigation, including descriptions of the stages of the amendments.			
	<ul> <li>Update crop water requirement information updated based to the crop and area.</li> <li>Enhance and establish support systems for decision-making and their dashboards and activate the systems for optimal integration into operational procedures.</li> </ul>			
Resources	Human and financial resources.			
Ownership	MWI, Water Authority of Jordan. Responsibil- ity Water Authority of Jordan, MWI.			

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Agricultural Sector/Initiative 3		
Partners	Internal Jordan Valley External Ministry of A Agricultural Institute, ele	Authority and farmers. Agriculture, universities, National Center for Research, International Water Management ctricity companies.
Key Outputs	;	Responsibility
Updated technic groundwater m planning, and w	cal studies related to anagement, land use water value.	MWI, Ministry of Agriculture, Water Au- thority of Jordan, and Jordan Valley Au- thority.
Completed guide for the safe reuse of treated wastewater in irrigation.		MWI, Water Authority of Jordan.
Established proc estimating groun ing technological	edures and methods for dwater consumption us- methods.	
Developed training programs on the use of technological methods in estimating water consumption and groundwater management.		MWI, Water Authority of Jordan.
Developed dash and managing ind uses in basins and related to the ad ing systems reco	aboard for monitoring dicators related to water d operational procedures loption of decision-mak- ommendations.	MWI, Water Authority of Jordan.

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Agricultural Sector/Initiative 4			
Initiative Title	Expanding the use of non-conventional water resources in irrigation to reduce reliance on freshwater resources.		
Description of the Initiative	<ul> <li>Areas of work include:</li> <li>Develop and revise standards/technical rules and technical studies for treated wastewater reuse from wastewater treatment plants for municipal and industrial water, promoting its wider usage.</li> <li>Develop a manual for the safe reuse of treated wastewater in irrigation and develop field programs to educate farmers on these practices.</li> <li>Enhance existing programs to ensure safe reuse among farmers, particularly for crops that are allowed to be irrigated with treated wastewater.</li> <li>Develop procedures, information, databases, and maps to promote reuse of treated wastewater near wastewater treatment plants, industrial areas, and potential groundwater recharge sites, use these resources to aid decision-making on expanding reuse.</li> <li>Develop public-private partnerships to increase utilization of treated wastewater</li> </ul>		
Targeted Group	Farmers, industrialists, Directorate of Environment and Reuse in the Wa- ter Authority of Jordan.		
Performance Indicators	<ul> <li>Finalize and approve revisions to the wastewater reuse standards, including a thorough description each stage.</li> <li>Develop guide/manual for the safe reuse of treated wastewater in irrigation.</li> <li>Quantify the number of field and training programs on the safe reuse of treated wastewater.</li> <li>Develop operational procedures, databases, and water reuse maps.</li> <li>Quantify the number of partnerships developed with the private sector to promote the expansion of reuse.</li> </ul>		
Resources	Human and financial resources		
Ownership	MWI. Responsibil- ity Water Authority of Jor- dan, MWI, Ministry of Agriculture		

![](_page_30_Picture_1.jpeg)

Agricultural Sector/Initiative 4		
PartnersInternalWater Authority of Jordan, Jordan Valley Authority.ExternalMinistry of Agriculture, Jordan Standards and Metrology Organization, Ministry of Environment, National Center for Agricultural Research, Jordan Chamber of Industry.		
Key Outputs		Responsibility
Updated treated wastewater reuse stand- ards and technical studies.		Jordan Standards and Metrology Organ- ization, MWI, Water Authority of Jordan, Ministry of Environment
Completed guide for the safe reuse of treated wastewater in irrigation.		MWI, Water Authority of Jordan
Developed operational procedures, data- bases, and maps developed to promote treated wastewater reuse.		MWI, Water Authority of Jordan
Established partnerships with the private sector to expand reuse.		MWI, Water Authority of Jordan
Developed training programs on the safe and efficient reuse guide/manual and da- tabases.		MWI, Water Authority of Jordan

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Initiative Title	Improve on-farm water management practices through behavior change and providing incentives.	
Description of the Initiative	<ul> <li>This initiative will be implemented by working on the following:</li> <li>Issue a Best Practices in Irrigation Guide/Manual.</li> <li>Develop and implement training and awareness programs for irrigation and economically viable crops using best practices guides/manuals.</li> <li>Design and approve incentives to improve irrigation efficiency and collaborate with the private sector to implement them.</li> </ul>	
Targeted Group	Farmers' and water users' associations, and agricultural cooperatives.	
Performance Indicators	<ul> <li>Make available and disseminate the Irrigation Best Practices Guide/ Manual.</li> <li>Quantify the number of farmers benefiting from the use of informa- tion and applications related to irrigation efficiency.</li> <li>Quantify the number of public and private extension services and ca- pacity building programs designed and implemented.</li> <li>Quantify the number of technical, economic, and legislative incen- tives that help in the application of irrigation best practices.</li> </ul>	
Resources	Human and financial resources.	
Ownership	MWI, Ministry of Agri- culture. Responsibility MWI, Ministry of Ag- riculture, National Center for Agricultural Research.	
Partners	InternalWater Authority of Jordan, Jordan Valley Authority.ExternalMinistry of Agriculture, Jordan Standards and Metrology Organiz Agricultural Engineers Association, National Center for Agricultural Research, universities, media institutions, Information Technology Sector, Agricultural Credit Corporation, National Center for Agricultural Research, agricultural cooperatives ation, Ministry of Environment, National Center for Agricultural Research, Jordan Chamber of Industry.	

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Key Outputs	Responsibility
Published and disseminated Irrigation Best Practices Manual/Guide.	MWI.
Implemented training and awareness programs based on the manual.	MWI, Ministry of Agriculture, Water Au- thority of Jordan, Jordan Valley Authority.
Developed incentives to increase irriga- tion efficiency, including the most effi- cient farmer award in irrigation and soft agricultural loans.	MWI, Agricultural Engineers Association.

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#### Introduction

Municipal water consumption, encompassing domestic, commercial, tourism, and governmental institutions, ranks as the second largest consumer of water resources. The growing population and development needs are projected to intensify the demand for municipal water, placing added strain on finite water supplies and the financial resources of government and water utilities. This necessitates a focused approach on water demand management within municipal sectors to reduce waste and enhance national water security. Key initiatives have been launched by MWI to encourage efficient water use among large water consumers. These include the standardization of water audits, integration of water-saving technologies, initiatives to shift social behavior toward conservation, and community engagement to elevate water use efficiency. The aim is to develop a sustainable culture regarding water conservation across communities. The MWI is committed to implementing strategies that involve forming alliances with civil society and the private sector and introducing incentives to foster efficient water use.

#### **Strategic Goal**

Increased water use efficiency in the municipal sector initiatives include:

- Improve water use efficiency in the municipal sector large consumers.
- Promote the adoption of water-saving technologies and practices by both large consumers and households.
- Institutionalize water auditing and boost cross-sector institutional participation to improve water use efficiency.

The following is a detailed description of the initiatives:

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Municipal Se	ctor/Initiative 1	
Initiative Title	Improve water use efficiency in the municipal sector large consumers.	
Description of the Initiative	<ul> <li>Identify and quantify large water consumers in the municipality, engage consumers to elevate their understanding of Jordan's water situation, and identify effective water conservation strategies by clarifying their role in enhancing water security and potential financial benefits.</li> <li>Create effective collaborations and coordination structures to implement water audits and its recommendations.</li> <li>Conduct water audits for large water users and document water consumption statistics before and after the implementation of audit recommendations.</li> <li>Provide specialized training on water audits for technicians and engineers at the designated establishments.</li> </ul>	
Targeted Group	Target groups of large water consumers	
Performance Indicators	<ul> <li>The volume of water conserved by large water consumers following the adoption of recommendations from water audits.</li> <li>The total count of water audit reports produced.</li> <li>The count of technicians and engineers who have participated in and benefited from water audit training programs.</li> </ul>	
Resources	Human and financial resources	
Ownership	MWI. Responsibility MWI, water utilities, Water Authority of Jor- dan.	
Partners	InternalWater Authority of Jordan, water utilitiesExternalLarge water consumers, donor projects, relevant nongovernmental organizations (NGOs)	

Municipal Sector/Initiative 1	
Key Outputs	Responsibility
Conducted inventory of large water con- sumers within the specified municipal sector, detailing their respective water usage.	Water utilities.
Identified liaison officers from partner in- stitutions.	MWI.
Developed water audit reports for target facilities.	MWI.
Completed the activities of presenting the results of the water audit and exe- cuting its recommendations intended to raise awareness of the anticipated bene- fits of water audits.	MWI, major consumers.
Developed list of facilities where water audit recommendations have been imple- mented and quantity of saved water.	MWI, water utilities.

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Municipal Sector/Initiative 2		
Initiative Title	Promote the adoption of water-saving technologies and practices by both large consumers and households.	
Description of the Initiative	<ul> <li>This initiative's scope of work encompasses:</li> <li>Revise and update best practice manuals dedicated to water management and conservation within the municipal sector.</li> <li>Raise awareness of the private sector, notably providers of water-saving technologies, regarding approved standards for water-saving equipment and tools.</li> <li>Create strategic partnerships to foster adoption of the standards and formulating enforcement mechanisms through cooperation with pertinent entities such as the General Customs Department, Jordan Standards and Metrology Organization, water-saving technology suppliers, and the Royal Scientific Society.</li> <li>Familiarize large water consumers with water-saving technologies and methodologies via meetings, workshops, and promotional campaigns.</li> <li>Craft technical and financial incentives to encourage adoption of water-saving technologies and practices.</li> <li>Document information and statistics pertaining to the uptake of water-saving technologies and practices.</li> </ul>	
Targeted Group	Large water consumers; private sector (water saving technology) provid- ers; promotion, information, and awareness services	
Performance Indicators	<ul> <li>Update best practice manuals for water management and conservation within the municipal sector.</li> <li>Quantify the number of accesses to best practice manuals and associated awareness initiatives.</li> <li>Quantify the partnerships concluded to adopt and apply standards for water-saving tools and equipment.</li> <li>Quantify the percentage of adoption of water-saving technologies and the improvement of efficiency in the targeted areas.</li> </ul>	
Resources	Human and financial resources.	
Ownership	MWI Responsibility MWI, private sector, water utilities, Water Authority of Jordan	
Partners	InternalWater Authority of Jordan, water utilities.ExternalLarge water consumers, service providers and water saving technology providers from the private sector, water utilities, donor projects, NGOs, relevant media institutions.	

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#### Municipal Sector/Initiative 2

Key Outputs	Responsibility
Updated manuals for best practice, water management, and conservation.	MWI.
Conducted workshops and meetings to educate the private sector about the wa- ter efficiency standards for equipment and tools.	MWI.
Organized workshops aimed at educating large water consumers on efficient water consumption technologies and practices.	MWI.
Developed technical and economic in- centives related to enhancing water use efficiency and water audits.	MWI, private sector.

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Municipal Sec	ector/Initiative 3		
Initiative Title	Institutionalization of water audit and enhancing the participation of in- stitutions from various sectors in raising the efficiency of water use.		
Description of the Initiative	<ul> <li>Institutionalize water audit and enhance participation in raising the efficiency of water use by working on the integration of water audits in the legislative framework that allow of the MWI to adopt it within its official work procedures.</li> <li>Identify key, target large water consumers in the municipal sector.</li> <li>Communicate with target entities to convey the importance and impact of water conservation in their facilities by sharing a success story from the same target group about the implementation of water audit recommendations, preparing and signing memoranda of understanding (MOUs) between the MWI and the targeted partner institutions to carry out water audits at these institutions and their affiliates.</li> </ul>		
Targeted Group	Large water consumers in the municipal sector and public sector institu- tions.		
Performance Indicators	<ul> <li>Obtain legislative approval and licensing for water audit providers, the enactment of legislation that outlines the criteria and requirements necessary for obtaining such a license.</li> <li>Form strategic partnerships with key national institutions, including the establishment of 20 strategic partnerships with prominent national institutions aiming to authorize and implement water audits in their respective buildings, facilities, and associated entities. These partnerships may include the Ministries of Education, Health, Youth, and Awqaf; the Jordanian Armed Forces; the Jordan Public Security Directorate; academic institutions; telecommunications entities; the Jordan Airports Company; Jordan Customs; financial institutions; and the Ministry of Tourism and Antiquities, thereby ensuring a wide-reaching impact on water use efficiency across the nation.</li> </ul>		
Resources	Human and financial resources.		
Ownership	MWI Responsibility MWI, water utilities.		
Partners	InternalWater utilities.ExternalWater utilities, large water consumers, public sector institutions, donor projects, relevant NGOs, national media institutions.		

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Municipal Sector/Initiative 2	
Key Outputs	Responsibility
Developed a detailed list of large water consumers alongside key public sector institutions.	MWI.
Conducted communication activities be- tween the MWI and the targeted national institutions.	MWI.
Executed MOUs between MWI and the identified large water consumers.	MWI.

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#### Introduction

Despite the industrial sector's relatively low water usage, its significant contribution to the GDP presents a valuable economic opportunity. Raising the efficiency of water consumption in this sector will have a favorable impact on production costs and the environmental image of Jordanian industrial products, aligning with the broader objectives of transitioning toward a green economy. This strategic move not only underscores Jordan's commitment to sustainable practices but also opens new doors for the export of Jordanian industrial products.

Historically, the dialogue between Jordan's industrial and water sectors has been limited, hindering opportunities for mutual growth. To bridge this gap, a comprehensive framework of initiatives has been developed by MWI to encourage collaboration, aiming to benefit all stakeholders involved. These efforts are geared toward improving water efficiency in industrial operations, a crucial step in addressing the escalating demand for water and fostering sustainable industrial development.

The initiatives outlined are multi-faceted, focusing on institutionalizing water efficiency benchmarks within the industrial sector, increasing private sector participation in wastewater management and reuse, and encouraging the use of alternative water sources. Additionally, they emphasize the dissemination of water-efficient practices through comprehensive capacity building and the provision of incentives aimed at altering behaviors. The goal of these initiatives is to boost the competitiveness of Jordanian industries on a global scale, contributing significantly to the nation's industrial advancement and water resource security.

#### Strategic Goal

Elevate water use efficiency in the industrial sector through three initiatives including:

- Develop a benchmark tool to support water use management and efficiency in industrial sector.
- Promote the use of non-conventional water resources in the industrial sector.
- Develop water efficiency excellence certification for the industrial facilities.

The following is a detailed description of the initiatives:

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Initiative title	Developing a benchmark tool to support water use management and efficiency in the industrial sector.
Description of the Initiative	<ul> <li>Establish standardized benchmarks for water consumption across industries:</li> <li>Conduct comprehensive water audits within factories to ascertain the current levels of water consumption across Jordanian industries.</li> <li>Research and assimilate global best practices and current trends in industrial water consumption to inform benchmarks development.</li> <li>Develop detailed specifications and a guideline document that defines optimal water consumption benchmarks for each industrial category.</li> <li>Integrate these benchmarks into the existing framework of licensing and evaluation processes or, where necessary, introduce new mechanisms to ensure their institutionalization and adoption.</li> <li>Launch targeted awareness campaigns designed to educate on the established benchmarks, focusing on promoting optimal water use across various industrial sectors.</li> </ul>
Targeted group	Jordanian Industries, investors, industrial zones.
Performance indicators	<ul> <li>Develop water audit reports in industries and actual water consumption data in industrial facilities, establishing and endorsing water consumption benchmarks and guidelines.</li> <li>Integrate mechanisms of these benchmarks successfully into licensing and operational frameworks.</li> <li>Measure the number of outreach and awareness activities about the benchmarks.</li> </ul>
Resources	Human and financial resources .
Ownership	MWI, Ministry of Indus- try and Trade. Responsibil- ity MWI, Ministry of Industry and Trade, Jordan Chamber of In- dustry.
Partners	InternalWater Authority of Jordan, water utilities.ExternalMinistry of Industry and Commerce, Jordan Chamber of Industry, Industrial Estates Corporation, universities, re- search centers, Royal Scientific Society and Ministry of En- vironment.

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Industria	Sector	Initiativo	
industria	I SECLOI/	initiative	

Key Outputs	Responsibility
Generated water audit reports for indus- tries.	MWI.
Compiled actual industrial water usage data.	Jordan Chamber of Industry, Water Au- thority of Jordan.
Evaluated and adapted global best prac- tice benchmarks for industrial water con- sumption.	MWI, Jordan Chamber of Industry.
Created bespoke benchmarks and guide- lines for the optimal water use in Jordani- an industries.	
Benchmarks and standards integrated into industrial licensing procedures.	Jordan Chamber of Industry, Ministry of Industry and Trade, Ministry of Environ- ment.
Developed awareness programs that fo- cus on optimal water consumption in in- dustries and benchmarks across various industrial sectors.	Jordan Chamber of Industry, Ministry of Industry and Trade, MWI.

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Initiative Title	Promote the use of non-conventional water resources in the industrial sector.
Description Of The Initia- tive	This initiative involves a series of activities aimed at broadening the utilization of recycled water and alternative water sources by imple- menting the following steps:
	Develop an investment manual and map that identifies and fosters investment in building decentralized wastewater treatment plants for industrial and municipal sectors in the private domain, prioritizing re- use.
	Work in collaboration with investors, the Ministry of Investment, the Ministry of Industry and Trade, and other relevant entities to scout for investment opportunities in the development of decentralized waste- water treatment plants, with an emphasis on the reuse potential of treated water.
	Seek and capitalize on opportunities to utilize unconventional water resources in industrial environments, such as utilizing treated waste-
	water and rainwater harvesting, and begin dialogues with appropri- ate authorities and the industrial sector in Jordan to facilitate and champion the uptake of these non-traditional water sources.
	Undertake studies to assess the practicality of applying research findings and prospects concerning the recycling of wastewater near treatment facilities; formulate and amalgamate operational strategies into the broader strategic plans of the Ministry of Investment, the Ministry of Industry and Trade, local municipalities, and other essen- tial participants.
Targeted Group	Industrial and agricultural sector and concerned ministries.
Performance Indicators	Develop an investment opportunities map for decentralized industri- al and domestic wastewater treatment plants and reuse and present the idea as a feasible option.
	Quantify the number of awareness activities targeting investors and decision-makers to bolster support for the establishment of decen- tralized wastewater plants by the private sector.
	Build a platform to share opportunities for utilizing unconventional water sources efficiently among industries.
Resources	Human and financial resources.

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Industrial Sector/Initiative 2				
Ownership	MWI, Jordan Chamber of Industry.			
Partners	Internal Water Authority of Jordan.			
	<b>External</b> Ministry of Investment, Ministry of Environment, Jordan Chamber of Industry, Ministry of Local Administration, Greater Amman Municipality, Municipalities, Aqaba Special Economic Zone Authority, Petra Development and Tourism Region Authority, Ministry of Industry and Trade.	Ministry of Investment, Ministry of Environment, Jordan Chamber of Industry, Ministry of Local Administration, Greater Amman Municipality, Municipalities, Aqaba Spe- cial Economic Zone Authority, Petra Development and Tourism Region Authority, Ministry of Industry and Trade.		

![](_page_45_Picture_1.jpeg)

#### **Key Outputs**

Generated an investment map identifying opportunities in developing wastewater treatment plants linked with locations of reuse for irrigation as well as existing wastewater treatment plants' locations to showcase reuse opportunities.

Developed awareness activities for the private sector to present the investment ideas.

Established formal procedures for presenting the idea as an investment opportunity established.

Created platform for sharing information and promoting opportunities related to the reuse of unconventional water sources in the industry.

#### Responsibility

MWI, Ministry of Investment.

MWI, Jordan Chamber of Industry.

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Initiative Title	Development of water efficiency excellency certification for the industrial facilities.		
Description Of The Initia- tive	<ul> <li>The initiative aims to enhance water use efficiency in the industry through the following:</li> <li>Foster collaborations and establish water efficiency certification standards across multiple industrial sectors, guided by the water consumption benchmarks, best practices manual, and outcomes from water audits.</li> <li>Announce and launch the certificate in its first pilot cycle.</li> <li>Build partnerships to support and fund future certification.</li> </ul>		
Targeted Group	Jordanian industries		
Performance Indicators	<ul> <li>Establish partnerships to develop certification.</li> <li>Establish the water efficiency requirements approved in the certificate. and design the certificate categories and procedures for its launch.</li> <li>Launch the certificate as a pilot.</li> <li>Quantify the number of partnerships to support and sponsor the certificate financially and administratively.</li> </ul>		
Resources	Human and financial resources.		
Ownership	MWI. Responsibil- ity MWI, Jordan Chamber of Industry, Ministry of Industry and Trade, Jor- dan Standards and Me- trology Organization.		
Partners	InternalWater Authority of Jordan, Water Utilities.ExternalJordan Chamber of Industry, supporting and donor organizations, Ministry of Industry and Trade, Jordan Standards and Metrology Organization.		

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Industrial Sector/Initiative 1	
Key Outputs	Responsibility
Defined competency standards for the certificate and formulate its distinct categories.	MWI, Jordan Chamber of Industry, Minis- try of Industry and Trade.
Developed Certificate Advertising and Promotion Campaign.	
Executed trial course for the certificate.	
Forged partnerships to strengthen the certification program and facilitate its broader implementation.	

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#### Introduction

The successful implementation of prior initiatives necessitates an enabling environment that supports their execution and sustainability. This entails adopting an approach that ensures the engagement of all stakeholders, including government institutions, local communities, industries, individuals, farmers, the private sector, and support service providers. It also requires the establishment of robust policies, tools, initiatives, and systems for effective demand management and enforcement.

These initiatives play a pivotal role in tackling crucial issues, including the enhancement of abundant and accurate information on water demand. They also aim to promote the availability and adoption of efficient water-saving technologies, practices, and measures. This involves identifying financing mechanisms and incentives for companies, individuals, farmers, and industrialists. Additionally, the initiatives focus on labeling products and tools with efficient water consumption, fostering community participation, behavior change, capacity building for institutions and individuals, and utilizing appropriate legislative tools to curtail water wastage.

This work requires effective public-private partnerships and an innovative environment capable of keeping pace with development and adapting to water scarcity conditions through efficiency, which has become the most important feature of economic progress.

#### Strategic Goal

Develop legislative, financial, technological, cognitive, and behavioral change instruments to empower the water demand management supportive frameworks (enabling environment) through the five initiatives listed below:

- Improve the availability, accuracy, accessibility and sharing of information related to water conservation/demand management at the national level.
- Promote positive societal behavior related to water use efficiency and conservation and build the capacity of relevant institutions.
- Develop or establish policy/regulatory or legal framework for water conservation incentives (legislative, economic, knowledge).
- Develop and launch a distinctive Jordanian eco-labeling scheme, signifying products designed for optimal water use efficiency.
- Develop a financing ecosystem for promoting innovation and expansion in water conservation programs.

The following is a detailed description of the initiatives:

![](_page_49_Picture_14.jpeg)

Initiative title	Improve the availability, accuracy, accessibility and sharing of information related to water demand management at the national level.			
Description of the Initiative	Enhance the availability and accuracy of information related to wat demand management by:	nhance the availability and accuracy of information related to water emand management by:		
	Forming a national team comprising key stakeholders tasked w reaching a consensus on identifying essential information related water demand management and define their status.	ith to		
	Creating a mechanism for collection, auditing, reviewing, and approving water demand information.	ov-		
	Facilitating national-level information sharing by either establishing dedicated platform or integrating it into an existing one.	ја		
Targeted group	Public and industrial sectors, citizens, decision-makers, supporting a donors' organizations.	nd		
Performance indicators	Develop a national team developed comprised of the key partners tasked with identifying the necessary information related to water demand management and identifying their status.			
	Establish a mechanism to audit, review, and approve water dema information.	nd		
	Create a dedicated platform or identify an existing one to host, d seminate, and share information related to water demand.	lis-		
Resources	Human and financial resources.			
Ownership	MWI, Jordan Chamber of Industry.	es, or- oer irt- in- no- try		
Partners	Internal Water Authority of Jordan, Jordan Valley Authority, wat utilities.	ter		
	<b>External</b> Jordan Chamber of Industry, Department of Statistics M istry of Digital Economy and Entrepreneurship, Ministry Industry and Trade, media institutions.	in- of		

![](_page_50_Picture_2.jpeg)

Enabling Environment/Initiative 1			
Key Outputs	Responsibility		
Formed national team representing key partners.	MWI, other partners from each sector.		
Developed approved mechanism for agreeing, reviewing, auditing, and ap- proving information.			
Built, formed, and published databases and information on the electronic plat- form.	MWI.		

![](_page_51_Picture_1.jpeg)

Initiative Title	Promote positive societal behavior related to water use efficiency and conservation and build the capacity of relevant institutions.		
Description Of The Initia-	Develop and execute a nationwide program to foster improved water efficiency practices through the following actions:		
tive	<ul> <li>Develop entities ommeno</li> </ul>	o collaborative initiatives betw to launch awareness campai dations, and create and apply	veen the MWI and private sector gns, implement water audit rec- y incentive schemes.
	Create a servatio	and roll out campaigns to ra on.	ise awareness about water con-
	Perform	water audit procedures and	act on the findings.
	Establis endeavo	h and promote distinctive b ors, integrating this visual ide	pranding for water conservation entity into awareness campaigns.
	Craft fin and gov	nancial incentives in collabora vernment.	tion with private sector partners
Targeted Group	Private sect	or and domestic and comme	rcial water users.
Performance Indicators	<ul> <li>Quantify the number of effective partnerships between the private sector and the MWI.</li> </ul>		
	Quantify mented	y the number of awareness .	campaigns designed and imple-
	• Quantify	y the number of water audits	recommendations executed.
	Issue an	d launch a visual identity for	water conservation.
Resources	Human and	financial resources.	
Ownership	MWI.	Responsibil ity	- MWI, water utilities, private sector com- panies with social and environmental respon- sibility
Partners	Internal	Water Authority of Jordar	n, water utilities.
	External	Private sector, relevant go stitutions.	overnment institutions, media in-

![](_page_52_Picture_2.jpeg)

Key Outputs	Responsibility
Conducted successful collaborations be- tween the MWI and the private sector.	MWI.
Developed and implemented national awareness campaigns for water conser- vation successfully.	MWI, private sector, Water Authority of Jordan .
Conducted water audits within various target groups.	MWI, water companies.
Designed and published national visual identity "brand" for water conservation initiatives.	MWI, media bodies.
Established economic incentives for wa- ter conservation with support from the private sector.	Private sector, MWI.

![](_page_53_Picture_2.jpeg)

Initiative Title	Development of a policy or legal framework for water conservation in- centives (legislative, economic, knowledge).		
Description of the Initiative	Establishing an approved system, legislation, or policy for incentives (legislative, economic, cognitive) related to water use efficiency and conservation that includes the following:		
	<ul> <li>Identify and approve the mechanism by which incentives will be de- veloped and related partnerships built through the appropriate legis- lative framework developed for this purpose.</li> </ul>		
	<ul> <li>Clarify the foundations for approving, managing, implementing, mon- itoring, and linking incentives to measurable performance indicators.</li> </ul>		
	Activate the legislation through developing incentives and educating those concerned about them.		
Targeted Group	All water consuming sectors		
Performance indicators	<ul> <li>Draft or amend legislation or operational procedures for endorsing water conservation incentives, with a clear implementation mechanism including a comprehensive delineation of preparatory stages.</li> <li>Activate the incentive framework for water conservation by designing tailored incentives.</li> </ul>		
Resources	Human and financial resources.		
Ownership	MWI Responsibil- ity MWI, government part- ners		
Partners	Internal Water Authority of Jordan, Jordan Valley Authority, water utilities.		
	<b>External</b> Government institutions relevant to incentives, Ministry of Finance, Jordan Customs, Income and Sales Tax Department, the private sector.		

![](_page_54_Figure_2.jpeg)

#### Key outputs

Assembled team for the development of the incentive system components.

Drafted incentive scheme.

Established procedures for the incentive system's approval.

Launched, disseminated, and implemented incentive system along with its activation.

#### Responsibility

MWI.

Initiative title	Development and launching a distinctive Jordanian eco-labeling scheme, signifying products designed for optimal water use efficiency.		
Description of the Initiative	The initiative is focused on establishing and rolling out a Jordanian eco-labeling system for products that are designed to improve water use efficiency or support the rational use of water resources. This will be achieved through the following actions:		
	Develop	technical standards aimed at en	hancing water efficiency.
	Form key partnerships critical for the successful implementation of the eco-labeling program.		
	<ul> <li>Officially recognize and inaugurate the eco-labeling scheme for its application on water-utilizing products.</li> </ul>		
	<ul> <li>Promote on how serve was</li> </ul>	e awareness about the eco-label to leverage eco-labeled water to ater and optimize usage efficien	ing and educate consumers echnology products to con- cy.
Targeted Group	All water u ter-saving	sers and private sector manufacter technologies.	cturer and importer of wa-
Performance IÍndicators	<ul> <li>Establish</li> <li>Form pa</li> <li>Design a</li> <li>Execute the public</li> </ul>	h technical standards for assessin artnerships and official protocols and introduce successfully the eco awareness campaigns and prom lic with the eco-labeling system.	g water use efficiency. for eco-label accreditation. o-labeling scheme. otional activities to educate
Resources	Human and	financial resources.	
Ownership	MWI.	Responsibil- ity	MWI, Jordan Standards and Metrology Organi- zation.
Partners	Internal	Water Authority of Jordan, wa	ter utilities.
	External	Jordan Standards and Metrolo entific Society, Ministry of Er search centers, water utilities, try, Jordan Chamber of Com and Trade.	ogy Organization, Royal Sci- nvironment, universities, re- , Jordan Chamber of Indus- merce, Ministry of Industry

![](_page_56_Picture_2.jpeg)

#### **Key Outputs**

Developed efficiency rules for water-appliances and fixtures to ensure compliance with eco-labeling standards.

Established partnerships with accredited organizations concerning the eco-labeling process.

Developed a nationally accredited eco-labeling system or adapted a licensed model from an accredited entity.

Officially launched the eco-label.

Conducted awareness campaigns to educate about the eco-label.

#### Responsibility

Ministry of Agriculture, MWI, Jordan Standards and Metrology Organization.

MWI.

![](_page_57_Picture_10.jpeg)

Initiative Title	Develop a financing ecosystem for promoting innovation and expansion in water conservation programs.		
Description of the Initiative	The initiative focuses on crafting a financial mechanism that supports water conservation efforts and stimulates innovation in water conservation technologies by:		
	<ul> <li>Incentivizing companies engaged in producing and distributing wa- ter-saving technologies to enhance the creation and delivery of novel and innovative water-saving products.</li> </ul>		
	Creating an ecosystem conducive to the formation of new enterprises dedicated to the development and distribution of water-saving technologies.		
	<ul> <li>Advancing the business operations of firms pioneering water-saving technological innovation.</li> </ul>		
	Generating a dedicated fund and pioneering alternative investment models through a collaborative public-private partnership, aimed at driving innovation in water-saving technology.		
Targeted Group	All water users, private sector manufacturer, importer and developer of water efficiency technologies.		
Performance Indicators	Enact legislation dedicated to funding water conservation programs and fostering innovation in the sector.		
	Form partnerships focused on creating innovative investment strat- egies collaboratively between public and private sectors to bolster innovation in efficient water use.		
Resources	Human and financial resources		
Ownership	MWI Responsibility MWI, relevant government agen- cies, the private sector		
Partners	Internal Water Authority of Jordan, water utilities, and Jordan Val- ley Authority.		
	<b>External</b> Ministry of Finance, Ministry of Planning and International Cooperation, local banks, supporting and donating entities, Ministry of Digital Economy and Entrepreneurship, Agricultural Credit Corporation, Ministry of Agriculture, Ministry of Industry and Trade.		

![](_page_58_Picture_2.jpeg)

Key Outputs	Responsibility	
Established a working group tasked with the development of legislation.	MWI	
Completed draft legislation.	MWI	
Defined legislative passage procedure.		
Forged partnerships to support the Fund.		
Formed a working group in partnership with the Ministry of Digital Economy, dedicated to fostering green entrepre- neurship with a targeted focus on en- hancing water conservation efforts within operational plans.	MWI, Ministry of Digital Economy and Entrepreneurship	
Business development and support steered toward startups to prioritize in- novation and advancement in water con- servation practices.		

![](_page_59_Picture_2.jpeg)

### STRATEGIC MANAGEMENT OF THE NATIONAL ROADMAP

The strategic administration of the National Water Conservation Roadmap necessitates a comprehensive array of supportive and facilitating factors. These factors are essential to meet the plan's goals and objectives effectively and sustainably, encompassing the elements delineated below:

#### **Resource Mobilization**

To ensure the achievement of the targets set in the National Conservation Roadmap for 2024–2026, the parties in charge of its management and execution must secure and arrange vital resources. These include financial, human, technological, material, and intellectual assets, requiring the implementation of the following measures:

#### Launching the Roadmap

Key partners must collaborate effectively to amplify the media exposure for the roadmap's launch. The design and execution of various activities and introductory events on a national scale are vital for acquainting all relevant parties with the roadmap, thus ensuring the successful realization of its objectives. Continuous engagement in these activities is critical throughout the life of the roadma

#### Manage the Roadmap

A central working group, steered by MWI and composed of diverse partner entities, will be responsible for managing the plan. Their duties include overseeing its execution, recording performance metrics, engaging with stakeholders, and conducting follow-ups on actions as per the operational plans developed in subsequent phases.

#### Coordination

Defining clear roles and responsibilities is essential for the effective implementation of the roadmap across its varied initiatives. This definition must cover each entity's involvement in the implementation process and foster a clear and transparent system for coordination and regular follow-ups. This system should facilitate the monitoring of progress, evaluation of performance, iteration of improvements, and provision of support where necessary.

#### **Financial Resources**

A strategic financial resource allocation is necessary to support the roadmap's initiatives and ensure the achievement of its projected goals. This entails a precise estimation of the implementation costs, with MWI playing an integral role in fiscal planning. Partnering with donors and collaborators across multiple sectors is fundamental for securing required funding.

#### Human Resources Management

The execution of the roadmap's vast array of initiatives requires a thorough reassessment of the human resource needs. Recognizing the shortfall in the current workforce within MWI's water demand management unit is crucial as it does not meet the plan's growing demands.

#### **Technological Resources**

Enhancing cooperation with the private sector, specifically with manufacturers and providers of water-efficient technology, is a key strategic goal. This partnership will involve a comprehensive array of both hardware and software technologies that are critical for enhancing the efficacy of projects. In addition, engaging with water utilities to define key performance metrics is essential for the roadmap's successful implementation.

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![](_page_61_Picture_0.jpeg)

#### **Knowledge Resources**

Establishing a robust national data and information system is paramount, offering precise and detailed insights into Jordan's water situation and demand management. This platform will be a cornerstone for informed planning and decision-making. The mobilization of this system as a distinct initiative will leverage existing knowledge and expertise to drive the roadmap toward achieving its highest potential.

#### **Capacity Building**

The successful execution of the National Water Conservation Roadmap necessitates enhancing the capacity of relevant institutions and human resources across various sectors. This involves developing or improving knowledge, skills, and competencies as well as fostering behavioral trends that align with effective water demand management practices. To achieve this, providing the essential tools and systems to enhance existing infrastructure and resources is crucial. This includes the following steps:

#### **Analysis and Assessment**

Collect and analyze data to assess existing capacities and identifying gaps in knowledge, practices, tools, and systems related to water demand management among targeted groups at both institutional and individual levels.

#### **Education and Training**

Utilize the findings from the analysis and evaluation in designing, organizing, and implementing training courses and workshops. These initiatives aim to enhance the understanding of targeted individuals, particularly those representing partner institutions involved in the implementation of the national roadmap, by providing foundational knowledge, skills, and techniques in water demand management.

#### Support and Technical Assistance

Provide technical support to institutions, stakeholders, and water users through mentoring, providing best practice manuals, and designing knowledge networks and specialized knowledge communities. One example is forming specialized task forces that include experienced professionals with the aim of transferring knowledge and learning.

#### **Technology Transfer**

Identify suitable technology and tools and offer support for the acquisition and transfer of technology along with effective practices in water demand management. Ensure the provision of necessary training to facilitate the implementation of these technologies and practices.

### Evaluating the Impact of Programs and Learning Activities

Conduct a periodic evaluation of the impact of the programs and activities included in the roadmap, which are designed to enhance institutional and individual learning among various partners, stakeholders, and water users. Evaluate other measures taken to achieve the objectives of water demand management.

![](_page_61_Picture_16.jpeg)

![](_page_62_Picture_0.jpeg)

### Stimulating Communication and Awareness

Launch and sustain systematic awareness campaigns to promote understanding and disseminate knowledge among individuals and institutions, motivating them to apply effective practices in water use.

#### Adopting a Framework for Continuous Learning

Establish a systematic framework that promotes continuous learning at the institutional and individual levels among various partners and stakeholders. This framework enables adaptation to evolving challenges, keeps pace with development, and enhances the performance of water demand management

#### **Fostering Innovation**

Identify opportunities and consistently research best practices to promote and support innovation in water demand management. This includes adopting new technologies and solutions.

#### **Achieving Sustainability**

Supply diverse technical tools and administrative procedures to support decision-making processes, measure and enhance performance, bolster governance, formulate policies, stimulate business development, and foster partnership building.

#### Quality Assurance, Monitoring, and Evaluation

Achieving quality assurance and monitoring and evaluating the performance of the water conservation roadmap is integral to the overall process, ensuring effective management and the attainment of sustainable development goals. Examples of steps and principles to achieve this include:

#### **Role Integration**

The successful implementation of the National Water Conservation roadmap hinges on numerous initiatives and targets at the national level. Without the integration of efforts from institutions across various sectors, achieving these goals may prove challenging. Therefore, it is crucial to establish clear definitions of roles and responsibilities, which ensures a steadfast commitment and maintains ongoing coordination among various stakeholders.

### Improved Resources Utilization Efficiency

Enhancing the efficiency of resources maximizes returns by directing resources effectively toward achieving objectives and targeted initiatives requires continuous planning, regular reviews, improvements, and closely monitoring progress to ensure optimal outcomes.

#### Continuous Measurement of Key Performance Indicators

Dependence on key indicators is essential for measuring and monitoring the performance of water demand management. These indicators may include water efficiency, waste reduction, water savings, per capita water usage, and adoption of water-saving solutions and technology. Establishing a periodic water consumption monitoring system is crucial for continuous monitoring to identify trends and changes in consumption patterns.

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#### Monitoring and Evaluating the Effectiveness of the Measures Included in the Plan

Continuous monitoring and periodic evaluation of the actual performance measures within the demand management framework are imperative. This ensures the realization of expected benefits through the analysis of data and reports using statistical techniques. MWI must synthesize reports to contribute to building data for decision-making and improvement measures, understanding trends, and conducting a comprehensive performance evaluation. MWI must update goals and initiatives continuously in response to developments and results while adhering to the foundational principles and objectives of the plan.

Guarantees of Stakeholder Engagement Establishing institutionalized and continuous communication channels to disseminate messages, report progress, and communicate results contributes to successful implementation. MWI must identify requirements and tasks for all partners and stakeholders, strengthen participatory decision-making mechanisms, and encourage community participation in monitoring performance and evaluating the plan.

Documentation of Experience and Learning Documenting experiences and lessons learned from the implementation of the National Water conservation roadmap and establishing enhanced channels for knowledge dissemination processes and success stories encourages users to adopt the solutions and initiatives included in the roadmap and improve future performanc

#### Sustainability

Achieving sustainability in the water conservation roadmap is vital to conserving water resources and ensuring that the community's water needs are effectively met. Sustainability can be achieved through the following practices:

#### **Demand Analysis and Water Audit**

Continuously understanding the current and future water needs of various sectors and conducting ongoing water audits are essential. These efforts ensure that the objectives and initiatives of the plan remain aligned with the actual water consumption reality, allowing for continuous development and improvement.

#### **Promoting Water Efficiency**

Promoting effective technologies and practices to enhance water consumption efficiency across various sectors involves providing access to these technologies. Additionally, guiding individuals and institutions in acquiring efficiency techniques and offering continuous support and guidance are crucial aspects of this endeavor.

#### **Promoting Green Technologies**

Supporting and encouraging the adoption of water supply and green technologies involves communicating with the providers of these technologies and actively involving them in the implementation of the roadmap.

![](_page_63_Picture_13.jpeg)

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### Continuity and Inclusiveness of Awareness and Education Activities

Ensuring the continuity of awareness-raising activities on the importance of water saving and improving individual and community practices supports ongoing implementation.

#### **Develop Incentive Policies**

Identifying policies and procedures that will lead to offering incentives to water users is crucial. Incentives play an important role in reducing financial costs for users and fostering efficient and sustainable water usage practices.

#### Strengthen Demand Management by Developing the Necessary Legislation and Policies

Develop and implement policies and legislation that promote effective water demand management.

#### Promoting Water Conservation Tools Used in Sustainable Agriculture

Providing solutions and technologies that support the application of effective irrigation techniques and sustainable agricultural practices reduces the quantities of water used for irrigation.

### Support the Expansion of the Use of Non-conventional Sources of Water

Investing in water reuse technologies and use other non-conventional water sources increases available water resources.

### Activating Participatory Efforts and Partnerships

Encouraging collaboration between the public, private sectors, and community improves water management.

#### Performance Monitoring and Evaluation

Establishing effective systems for monitoring and evaluating the performance of water demand management ensures the achievement of sustainable goals.

### Provision of Resources and Ongoing Support

Continuously working to provide the human, technical, financial, and organizational resources necessary for the successful implementation of the roadmap and institutionalizing capacity-building programs at both institutions and individual levels provides ongoing support.

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![](_page_65_Picture_0.jpeg)

### National Water Conservation Roadmap

### 2024

![](_page_65_Picture_3.jpeg)

![](_page_65_Picture_4.jpeg)