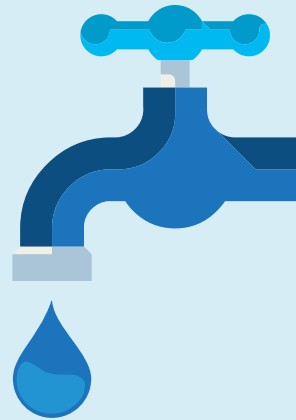




The Ministry of Water and Irrigation

National Water Strategy 2023 - 2040

Summary



Jordan - 2023



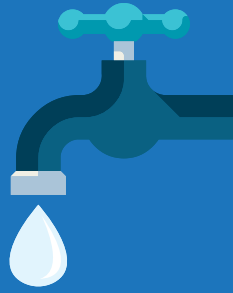




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I Vision



The National Water Strategy 2023-2040 provides the vision and pathway to work across government and in partnership with the people to achieve lasting water security for our health, prosperity, and growth. This updated strategy is developed in response to environmental and calling for devising a long-term strategy that addresses the challenges calling for devising a long term strategy that addresses the challenges facing Jordan.

This vision reflects the steps towards addressing our unprecedented water scarcity challenges. Demographic changes, rapid population growth, climate change impacts, chronic overuse of groundwater, and ongoing reliance on transboundary water are driving an urgent need to increase available water supplies and better manage current water resources. Jordan currently has 61 cubic meters of renewable fresh water available per capita per year, which is far less than the 500 cubic meters per capita annually that is internationally recognized as the absolute water scarcity line.

As our existing renewable water resources are declining, increasing supplies through non-conventional sources have become a critical necessity. The most important and vital supply will be secured through the new National Conveyance Project, along with significant expansion of treated wastewater for reuse in irrigation.

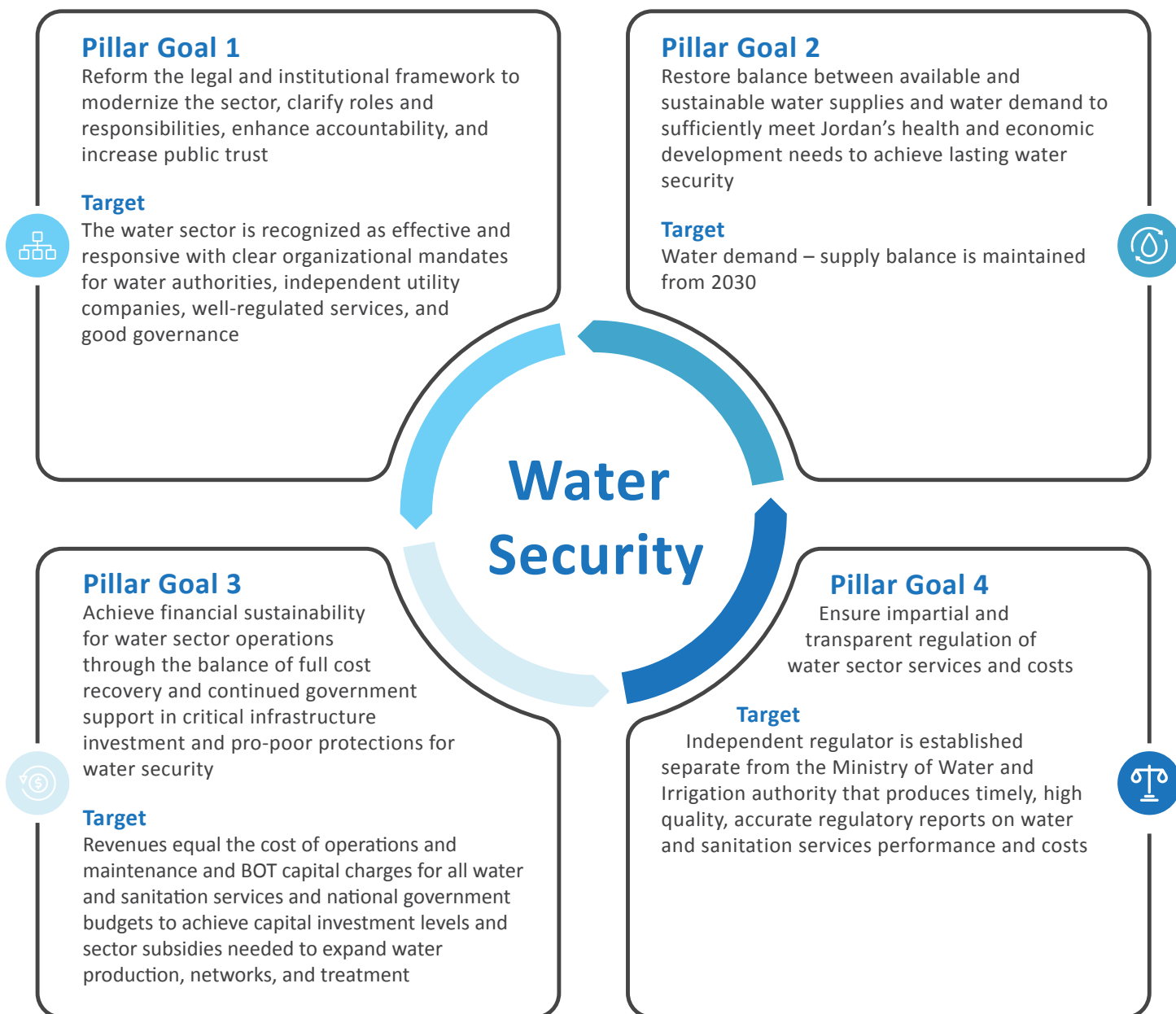
Increasing the supply alone does not ensure water security. We strongly commit to making the best possible use of every drop of water we have by reducing losses from leakage and illegal use—called non-revenue water—to 25 percent by 2040 while increasing efficiencies in water operations. Additionally, work with water consumers and partners will be continued, aiming at improving water use efficiency, and subsequently increasing economic value of each cubic meter of water used. These actions are accompanied by measures to strengthen the financial performance of the sector and improve cost recovery, especially as the cost of water development, treatment, and service delivery continue to rise significantly.

Central to our strategy is to ensure that a strong foundation for sector governance, management and operation is put in place. This strategy modernizes existing water sector institutions and restructures them in order to streamline operations, ring-fence costs, and better allocate institutional responsibilities. Greater corporate autonomy will be instituted for the water companies while simultaneously strengthening corporate oversight through an independent regulatory body that monitors and publicly reports on water and wastewater service levels.

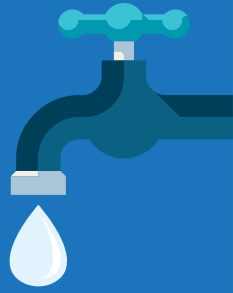
People are at the center of our management and operations strategy which includes strengthening career development and attracting youth and women to the sector as our next generation leaders. This strategy introduces measures and technologies needed to ensure that accurate and validated data is readily available, and information transparently disseminated, to decision makers and the public.

This strategy is anchored in integrated water resources management to protect and preserve our groundwater aquifers and surface water supplies. This will entail rigorous compliance and enforcement with all relevant laws and guidelines for water use and protection. There are also specific actions throughout the strategy to address critical cross-cutting issues for water sector management which include financial performance and sustainability, data-driven decision-making, innovation and technology, energy use, water use efficiency, and climate change.

Finally, this strategy is aligned with national governance reforms and development priorities along with much greater cooperation across governmental institutions and with academia and the private sector. It is produced in parallel with two other governmental initiatives: the Economic Modernization Vision 2022 - 2033 and the Public Sector Modernization Roadmap. Collectively, these efforts reflect the need for broader reform. The water sector is proud to be a part of these collective efforts to meet the long-term needs for Jordan's prosperity and ongoing development.



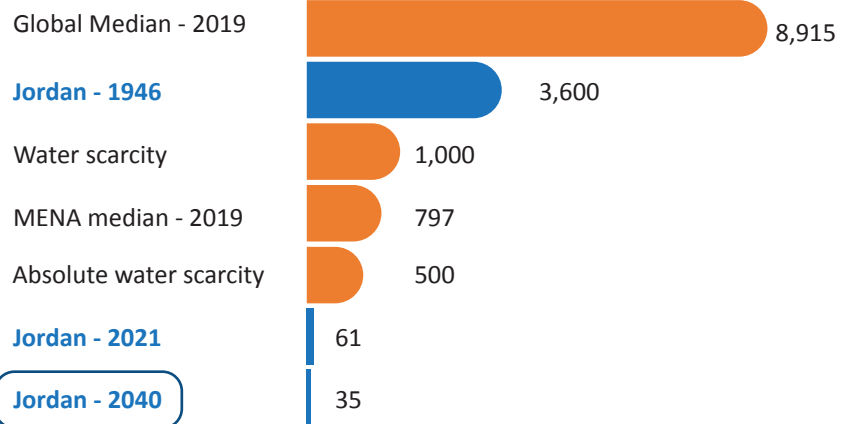
JORDAN'S WATER SUPPLY AND RISING DEMAND



Jordan is one of the most water-poor countries in the world for renewable freshwater with around 61 cubic meter per capita in 2021. Climate change and overuse of water resources have further reduced groundwater and surface water resources, while population has grown at a very high rate, placing Jordan among the world's top five countries in population growth historically. Jordan's health, prosperity, and food security require lasting water security.

Renewable Fresh Water Resources Per Capita

m³/capita/year



Jordan's population is expected to grow from 11 million in 2021 to 16.8 million by 2040.

Climate change will cause a further 15% decline in freshwater resources by 2040 according to the National Water Master Plan (Ministry of Water and Irrigation, 2021)

Jordan's Water Resources

Groundwater

- Groundwater is being pumped at double the safe yield of aquifers
- Aquifers are shrinking, groundwater levels are dropping, and water quality is deteriorating

Surface water

- Surface water quantities vary widely and are unreliable due to their dependency on changing rainfall patterns
- Jordan's 13 main dams provide 280 million cubic meters (MCM) of water storage that is shrinking due to sedimentation build-up, affecting its storage capacity

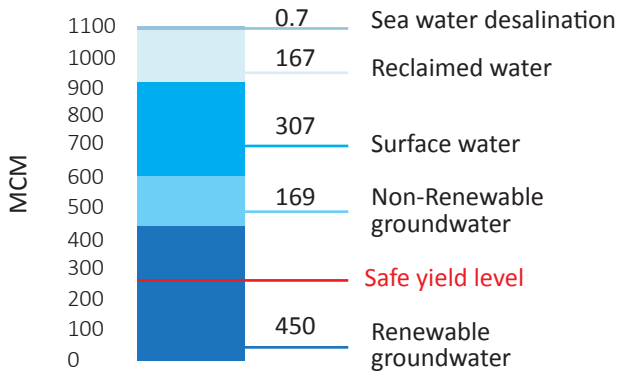
Reclaimed water

- Reclaimed water from advanced wastewater treatment technologies has increased the use of reclaimed water for irrigation by two-thirds since 2008
- More than 90% of Jordan's reclaimed water is being used, mostly for irrigation, creating valuable new water supplies

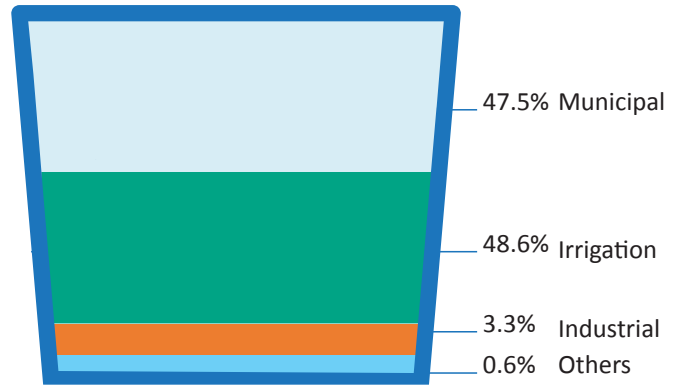
Around a quarter of Jordan's renewable freshwater from aquifers and rivers originate from neighborhood countries

Jordan uses 1,093 MCM (2021) of water per year at the cost of severe over-pumping of groundwater

Jordan's Water Supplies

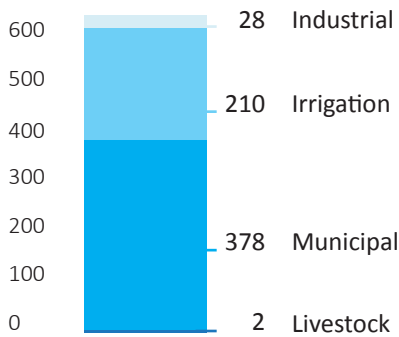


How water is used

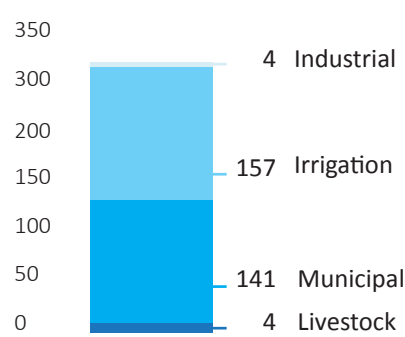


How Each Water Source is Used (in MCM)

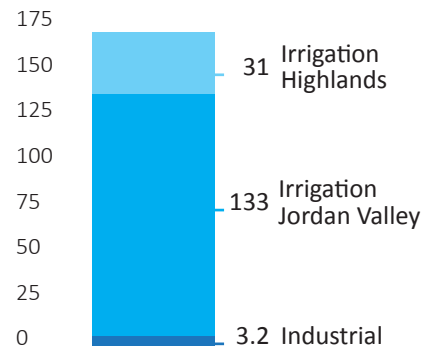
Groundwater



Surface water



Reclaimed water



All figures reflect 2021 data

Industrial sector is by far the water user with the highest economic return per cubic meter of water used, while agriculture is lowest particularly in the highlands.



Photo taken by Ministry of Water and Irrigation

Drinking groundwater well in Irbid Governorate

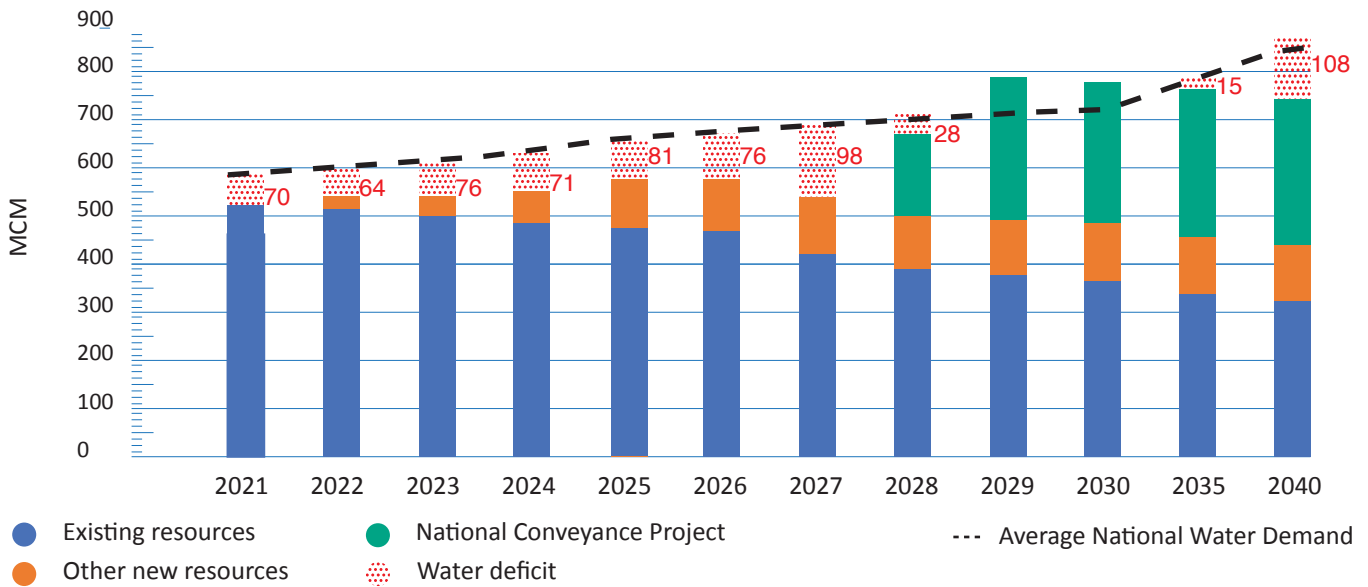
Water Demand

Water demand continues to rise to fuel economic growth, water crops, and provide drinking water. Jordan faces a tremendous challenge in bridging the growing gap between demand for water and the available supplies.

Continuously increasing demand is driven by rapid population growth, influx of refugees, economic development needs, and continuous pressure to expand agricultural areas.

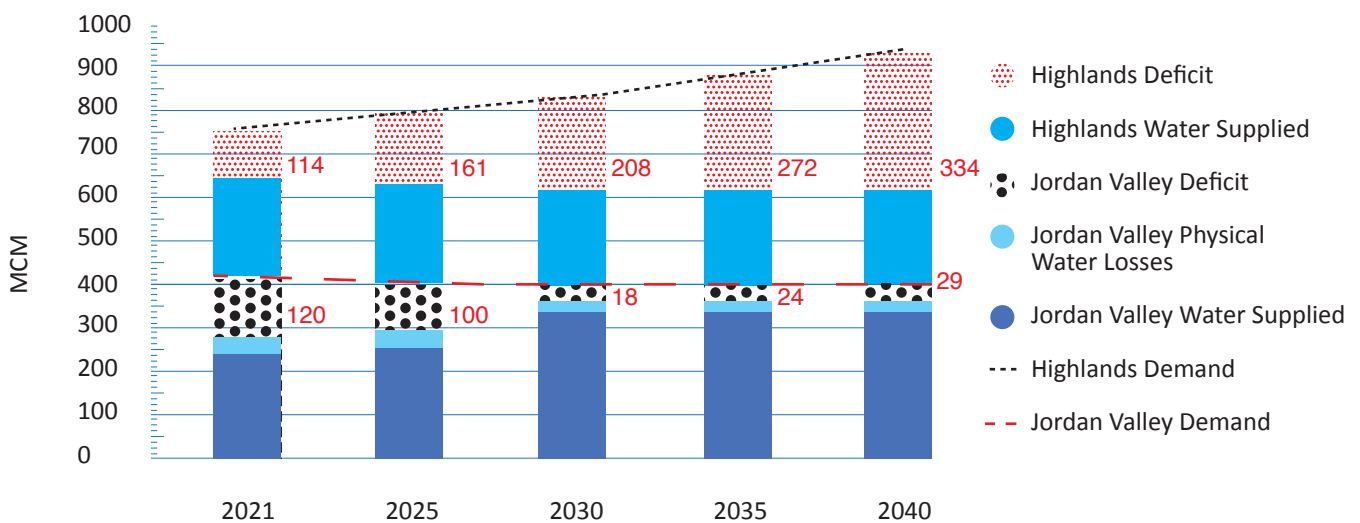
Our most important need is to provide safe drinking water to the people of Jordan.

Demand and Supply Projections for the Municipal Sector (Drinking Water)

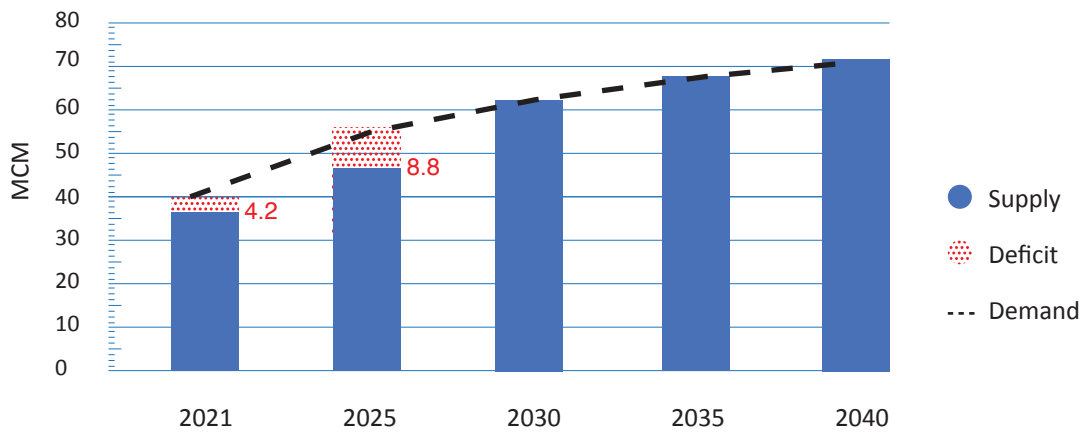


Food security depends on water security. Irrigation water needs must be met without overuse of groundwater that causes lasting harm and destroys aquifers for future generations.

Demand and Supply Projections for Irrigation



Demand and Supply for Industrial Sector



An aerial view of repairing a water pipe in Amman Governorate

| Achieving a Sustainable Balance between Water Supply and Demand

The current increasing deficit of supply and demand would lead to deterioration of national water supplies. Accordingly, there is an urgent need to rebalance the water supply. This will be achieved through large-scale desalination wherever possible.

The combination of the new supply resulting from desalination and the sustainable management of renewable freshwater will not only halt the deterioration, but also restore groundwater resources while still meeting demand projections, leading to sustainable water security. This trend is vital to continued economic growth.

The National Conveyance Project will bridge the demand-supply deficit until 2035 and allow groundwater to recover by reducing groundwater extraction or stopping some of it. This vital national infrastructure project will further enable utilities to deliver continuous water supply for different uses.

Goals, Objectives, and Strategic Approaches

Goal 1

Provide sufficient and sustainable municipal water supplies to meet water demand allocation policy equitably across all governorates

Target

Close the gap between water supply and demand in all governorates by 2030 and sustain it

Key Objectives and Approaches

- Reduce water losses from leakage and illegal use
- Secure new water resources, including large-scale desalination
- Improve national water systems to deliver water effectively and continuously
- Protect water resources from illegal use, overuse, and contamination

Goal 2

Reform irrigation practices by reducing the amount from freshwater resources used to irrigate crops, and replace it with non-conventional sources, while increasing total water allocations and value from non-conventional sources and more efficient irrigation

Target

Total volume of freshwater used in irrigation is steadily reduced

Key Objectives and Approaches

- Improve irrigation system efficiency and reduce water losses
- Continue to increase reclaimed water used for irrigation to reduce irrigation with freshwater while still increasing total amounts available for irrigation
- Control over-abstraction of groundwater used for irrigation

Goal 3

Increase non-conventional water resources supplies for industrial and other uses

Target

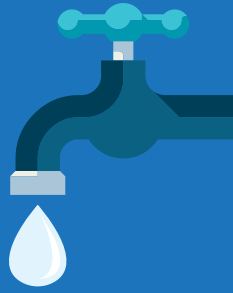
Increase total volume of non-conventional water supplies used for industrial and other needs, such as on-site wastewater treatment, reuse, and water harvesting

Key Objectives and Approaches

- Promote and incentivize local reuse and water harvesting
- Review and update current groundwater bylaw and relevant regulations

As-Samra Wastewater Treatment Plant

UTILITY MANAGEMENT AND SERVICES



Ensuring effective and efficient water and wastewater services is essential for citizen satisfaction, reducing unacceptably high-water losses throughout the water system, and achieving financial sustainability. This will require a sustained program of investment in NRW reduction, operations and maintenance (O&M), staff capacity development, management systems, institutional reform, and wastewater treatment and distribution capacity.

Jordan's three utility companies, Miyahuna, Yarmouk Water Company and Aqaba Water, are responsible for management and operation of water treatment, water services, wastewater collection and treatment, and distribution of treated wastewater for reuse. They supply nearly all of Jordan's municipal water to households, businesses, and public facilities. Jordan has very high access levels to water and wastewater services. The water network serves 94% of the population and the wastewater network serves 66% of the population.

Over half of Jordan's drinking water supplies are lost through a combination of illegal use and connections, vandalism, and leakage. Non-Revenue Water (NRW) is the single biggest operational challenge the sector faces.

Illegal connections and vandalism contribute to system losses and cause regular supply interruptions

Insufficient measurement and monitoring of utility operations is a roadblock to more comprehensive NRW reduction which limits the ability to improve management of NRW and prioritize improvement actions

Climate change and rainfall fluctuation have wide-ranging impacts on the water system capacity to deliver a stable water supply.

- There are 31 wastewater treatment plants across the country which produce 186 MCM of high-quality treated wastewater, with 90% being reused in irrigation and industry.
- Better sludge management is a growing need as wastewater treatment continues to expand. Currently, around 100,000 tons of dried sludge is produced annually.

Drinking water quality is monitored daily by state-of-the-art laboratories that are accredited locally and internationally. Jordan achieves 99% compliance against international water quality standards.



Goals, Objectives, and Strategic Approaches

Goal 1

Deliver effective, efficient, and responsive water and wastewater services to all

Target

National customer satisfaction levels sustained at international benchmark levels from 2035

Key Objectives and Approaches

- Achieve full coverage for utility water and wastewater services with continuous supply in cities and towns
- Build O&M capacities and upgrade distribution systems to achieve continuous supply with minimal water losses
- Regulate water companies and monitor their performance

Goal 2

Reduce Non-Revenue Water (NRW) in all water systems to increase the amount of water available for municipal supplies and to ensure that new water supplies from desalination are utilized to the greatest extent practicable

Target

NRW reduced from around 50% to 35% nationally when operating the national conveyance project, and to 25% nationally by 2040

Key Objectives and Approaches

- Switch to continuous supply operation to better manage NRW
- Improve business management practices to reduce commercial losses
- Strengthen operational management to reduce physical losses by preventing and rapidly repairing leakage
- Increase automation of water supply system operation and improve asset management practices
- Stimulate Private Sector Participation (PSP) and improve its regulatory environment

Goal 3

Safely manage and treat wastewater to protect the environment, health, and nature while maximizing treated wastewater supplies available for reuse

Target

Safe containment and treatment of wastewater

Key Objectives and Approaches

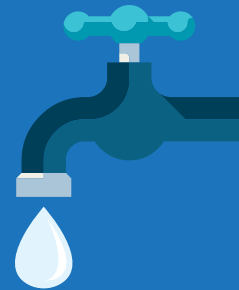
- Implement sustainable sludge management
- Revise current legal and regulatory framework and improve compliance and enforcement.
- Use communication and behavioral change campaigns to build public awareness and support.
- Expand coverage of wastewater network and the use of reclaimed water
- Expand PSP in the management and operation of wastewater treatment plants

Irrigation water storage pond



Photo taken by Ministry of Water and Irrigation

IRRIGATED AGRICULTURE



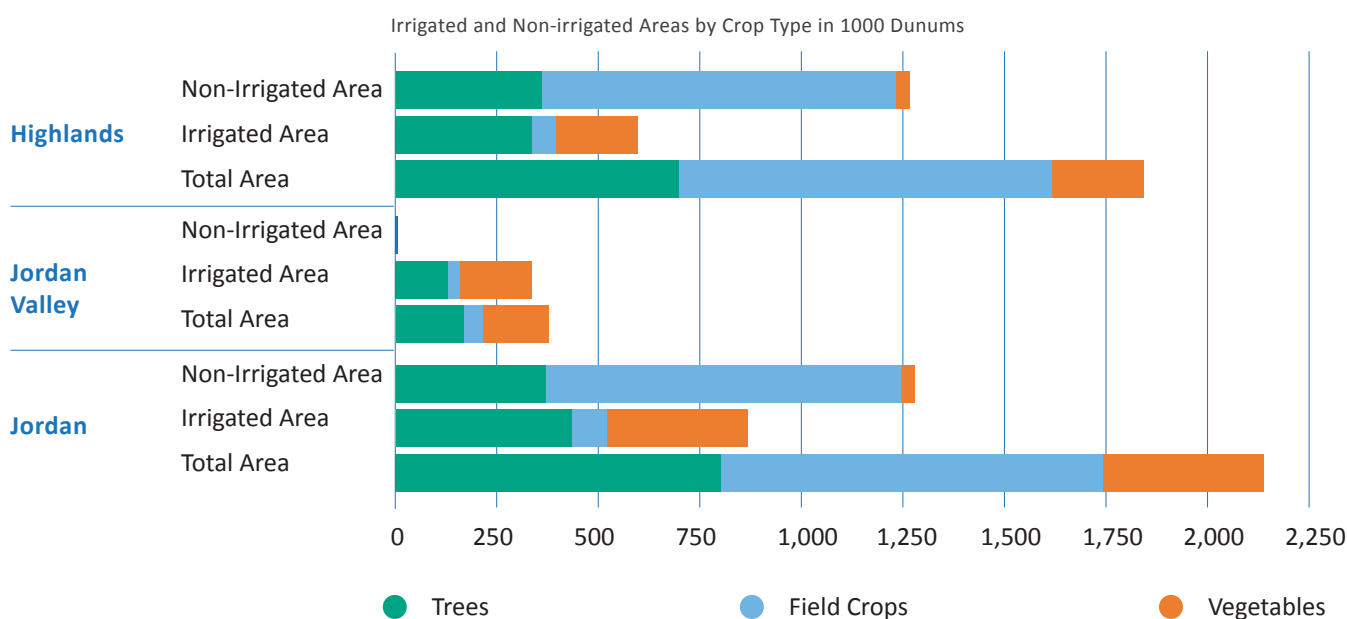
Water security and food security are interdependent national priorities. Irrigated agriculture relies on water supplies, which makes it imperative to ensure that these supplies are sustainable, effectively managed and protected. Collaboration and alignment of activities between water and agriculture sectors are essential, combined with a comprehensive governmental support, to enable both a vibrant agricultural sector and water security.

Irrigated agriculture will continue to be one of the largest water users which is why urgent reforms are needed in how crops are irrigated so that quantities of freshwater resources used in farming are reduced and replaced with reclaimed water. This makes national support of these efforts and close collaboration with the agricultural sector absolutely essential. In this regard, the use of irrigation water must be directed by maximizing the added value of water and reducing losses in irrigation networks.

Jordan's imperatives for both food security and water security are in conflict at times. Since there cannot be food security without water security, we need to ensure that irrigation water is used in a more productive way. In parallel, the water sector has an urgent responsibility to reduce water losses in its irrigation water infrastructure, increase the productivity of irrigation water, and expand the use of non-conventional water.

Current Situation and Challenges

Cultivated Land for Irrigated and non-Irrigated Crops

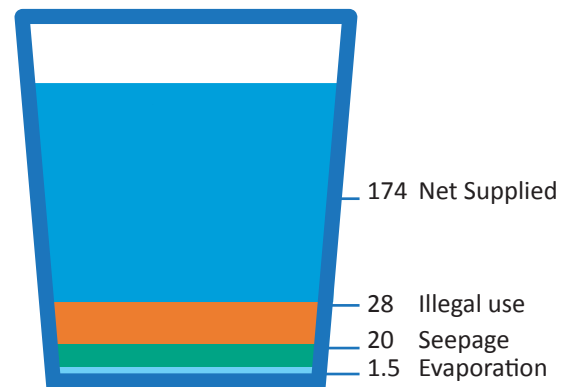


Irrigated agricultural has boomed, particularly in the highlands, with steady expansion year on year since the eighties. This growth is not sustainable without significant substitution of reclaimed water for freshwater in irrigation.

Economic value of irrigation water varies significantly based on the kinds of crops grown and irrigation practices used – Jordan Valley has 50% higher economic value for irrigation water than in the highlands.

On-farm water use efficiency is only around 60% leaving a huge room for improvement.

Water Quantities in King Abdullah Canal (in MCM)



Goals, Objectives, and Strategic Approaches

These goals for irrigated agriculture lay out the priorities for the water sector in managing, delivering, and protecting water supplies in order to ensure sustainable allocations to the agriculture sector for irrigation.

Goal 1

Holistically manage water for irrigation as a vital need for Jordan’s effective integrated water resources management, economic growth, and innovation in partnership across the Ministry of Water and Irrigation, Ministry of Agriculture, and Ministry of Environment

Target

Lower reliance on freshwater by increasing use of reclaimed water for irrigated agriculture, more efficient irrigation systems, and expanded rainfed agriculture and rainwater harvesting

Key Objectives and Approaches

- Apply market tools to stimulate increased productivity of irrigated agriculture through working closely with the Ministry of Agriculture
- Expand linkages with academia, research institutions, the private sector, and donor programs to drive innovation and technology adoption throughout the sector

Goal 3

Increase the amount of non-conventional water used for irrigation to reduce the burden on freshwater supplies needed for drinking water

Target

Increase and sustain non-conventional water for irrigation to 60% relative to freshwater by 2030

Key Objectives and Approaches

- Improve treated wastewater quality and substitute non-conventional water resources for groundwater

Goal 2

Reduce water losses throughout the irrigation water systems

Target

Reduce water losses from leakage, illegal use, and billing and metering inefficiency to less than 25 MCM/year

Key Objectives and Approaches

- Reduce water losses throughout the King Abdullah Canal (KAC) and the Jordan Valley’s irrigation system
- Build JVA’s NRW management capacities and strengthen regulation and enforcement on illegal use
- Expand linkages with academia, research institutions, the private sector, and donor programs to drive innovation and technology adoption throughout the sector

Goal 4

Increase the economic return for water used in irrigation to maximize the benefit of irrigation water allocations given Jordan’s water scarcity

Target

Economic return per cubic meter of water used for irrigation to steadily reach at least JD 1.1/m³

Key Objectives and Approaches

- Improved farm-level water use efficiency through innovative technologies and improved irrigation water management
- Increase cultivation of lower water requirement and higher value crops
- Regularly report the economic value of water per crop to inform agricultural policy and planning

INTEGRATED WATER RESOURCES MANAGEMENT (IWRM) AND ENVIRONMENTAL PROTECTION



Water is important for many different areas of Jordanian society and the economy. Effective management and protection of Jordan's water resources is a complex and critical function of the water sector which will continue to strengthen and develop holistic and integrated strategies to address the evolving needs for integrated water resources management.

The actual groundwater abstraction for irrigation is estimated to be higher by 40% than the recorded figures due to the illegal drilling of wells that has aggravated the deterioration of the groundwater aquifers.

All elements of society – from water entities to business leaders and households – need to work together to protect water supplies, use every drop of water efficiently, and take responsibility for managing the most vital resource we have.

The water sector needs the support of all of government to enable much stronger and consistent enforcement of existing water management and protection provisions, along with water companies and users.

Goals, Objectives, and Strategic Approaches

Goal 1

Sustainably manage groundwater resources to restore safe yield levels and protect Jordan's aquifers

Target

Annual abstraction reaches and sustains safe yield levels from 2035

Key Objectives and Approaches

- Strengthen enforcement measures to reduce over-abstraction with reliable analysis of safe yield levels
- Link wells licensing limits and the water budget to safe yield levels
- Shift to groundwater conservation and aquifer recharge when desalination supplies are available
- Minimize pollution risks to protect groundwater quality

Goal 2

Sustainably manage and protect surface water resources and infrastructure

Target

Increase volume of surface water stored

Key Objectives and Approaches

- Increase investment in maintenance and upgrade of surface water facilities and protect surface water infrastructure
- Improve monitoring and management programs for quantity, quality, and protection

Goal 3

Take leadership in regional cooperation for shared water resources to protect Jordan's water rights and improve water security

Target

River basins and aquifers are managed as a holistic resource, irrespective of national borders

Key Objectives and Approaches

- Address transboundary water management at both the political and technical levels for groundwater basin management and shared surface water in the Yarmouk, Disi and Jordan River basins
- Strengthen transboundary water mechanisms to improve cooperation and shared resources management

Goal 4

Increase water use efficiency in households, tourism, industry, and other key business sectors

Target

Increase water use efficiency and adoption of water-saving measures

Key Objectives and Approaches

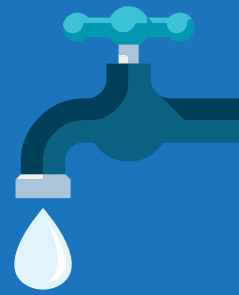
- Collaborate with relevant entities to enforce, regularly review, and update legislation and regulations for water use efficiency and water harvesting and grey water systems
- Promote consumer efficiency measures and provide guidance for improved water use practices
- Collaborate with business partners and industry

Kufranja Dam in Ajloun Governorate



Photo taken by Ministry of Water and Irrigation

I FINANCIAL SUSTAINABILITY



Jordan's water sector faces chronic financial deficit. The sector is heavily reliant on operational and capital subsidies because tariffs and other charges do not cover the cost of service and rarely even cover the cost of operation and maintenance. It is essential to improve the financial capacity of the sector to enable enhanced service standards and quality, efficiency, and good governance of the water sector.

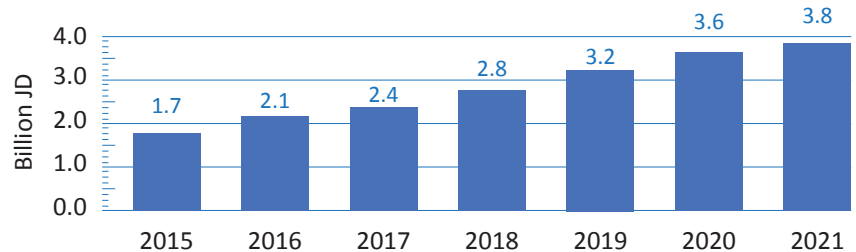
Investment in improving the financial capacity of the sector is just as important as addressing water resources, developing sustainable supplies and managing services. Limited financial resources, low revenue generation, and high operational cost traps the sector and water utilities in a vicious cycle of weak finances, underspending on essential maintenance, declining service quality and resistance to pay more against unsatisfactory service. The results are that water is not being sufficiently managed and conserved, physical infrastructure investment has not kept pace with current and future needs, sector management is suffering from brain drain, service quality is declining, assets are not sustainably maintained which reduces their lifespan, and financial deficits are growing.

Increase revenues to cover O&M while ensuring that tariff structures cushion the poorest customers

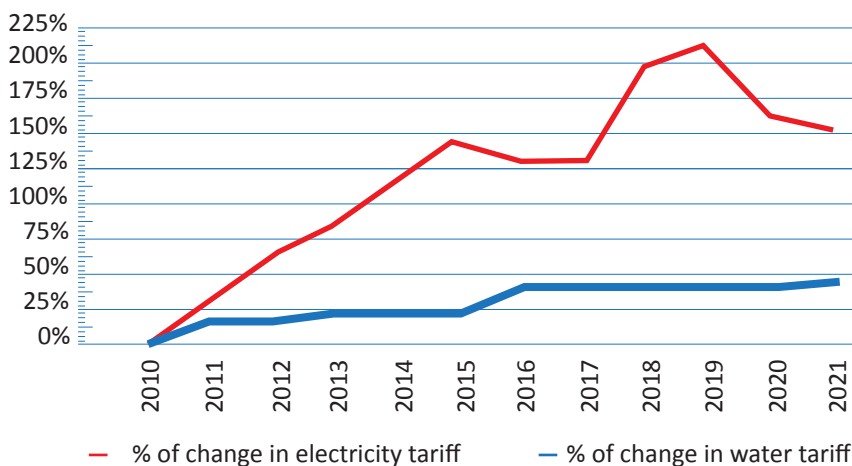
Current Situation and Challenges

- The water and wastewater services suffered from an annual financial deficit of 200-300 mJD over the last several years
- Increased financial debt and support by GoJ has more than doubled from 1,667 mJD in 2015 to 3,806 mJD in 2021

Total debt & financial support

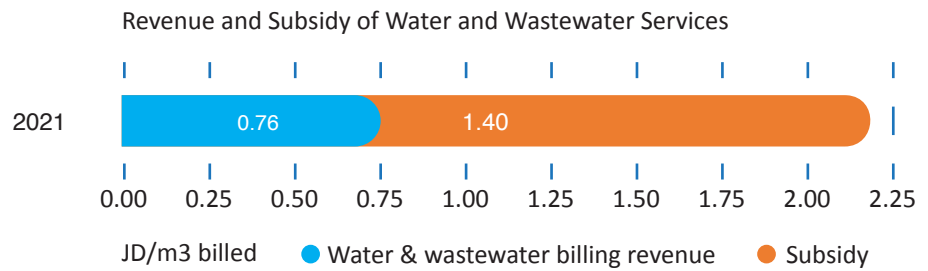


Change in average water and wastewater tariff versus electricity tariff of water sector



- Electricity cost is a big challenge where it makes up around half the operation and maintenance cost of water and wastewater services
- Since 2010, the average water and wastewater tariff has only increased by 40%, while the electricity tariff for water pumping increased by 150% through 2021

In 2021, customers paid only one-third the total cost of water and wastewater services with subsidy reaching 1.4 JD for each cubic meter of drinking water delivered.



Goals, Objectives, and Strategic Approaches

Achieving cost recovery commitments for WAJ, its water companies, and JVA will help all water sector entities be less dependent on financial transfers from the Ministry of Finance and/or external subsidies. Such independence is critically needed to improve and sustainably operate and maintain the systems.

Otherwise, financial support will continue to be needed, and the sector will continue to be captive to many factors such as fluctuations in electricity rates and restrictions imposed by the annual government budgetary cycle.

This independence will result in better service provision that will in turn lead to better willingness to pay by users, willingness to restructure fees by decision makers to match costs, and willingness to provide additional support by development partners. Thus, the worsening service and vicious cycle will be interrupted, reversed, and replaced with a healthy one.

Goal 1

Achieve full cost recovery of municipal water and wastewater services, operations and maintenance (O&M), and build-operate-transfer (BOT) costs

Target

Increase municipal services recovery of O&M costs (including O&M cost for BOT) project to 100% by 2030 and of O&M cost + BOT Capital charges to 100% by 2040

Key Objectives and Approaches

- Optimize O&M, reduce NRW, increase energy efficiency and allocate sufficient funds for maintenance
- Restructure revenues and regularly review tariffs and fee structures to ensure equity and cost-coverage

Goal 2

Improve efficiency to reduce cost for operation & maintenance of irrigation water systems

Target

Reduce irrigation water systems' cost continuously.

Key Objectives and Approaches

- Reduce water losses throughout the irrigation water systems
- Optimize electricity efficiency and expand using renewable energy

Goal 3

Improve cash management

Target

Reduce and sustain accounts receivable balances on all customers to less than a billing cycle and reach timely due payments by 2030

Key Objectives and Approaches

- Maximize cash position by reducing the balance of accounts receivables and eliminating additional interests, fines, and fees for payment delays (electricity, BOT payments, etc.)
- Work with the Ministry of Finance (MOF) to ensure timely transfers and apply central debt management procedures

ENERGY EFFICIENCY AND RENEWABLE ENERGY IN THE WATER SECTOR

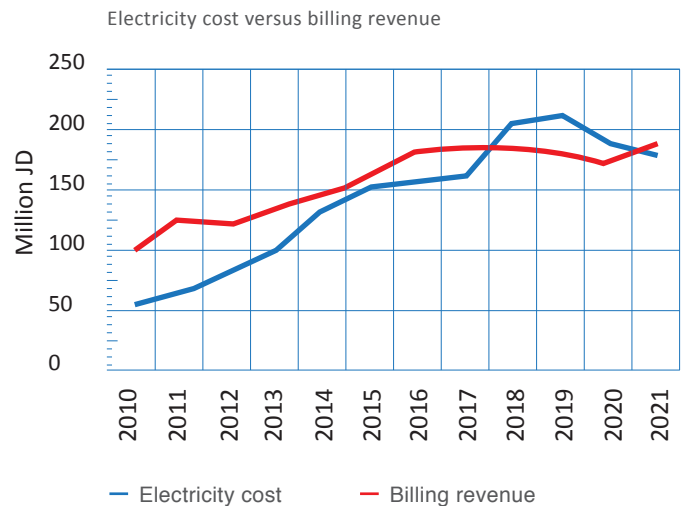


Energy plays a vital role in water security and financial sustainability. Energy accounts for around half the operational budget of the Water Authority of Jordan and energy consumption will continue to grow to power desalination and pump water from greater depths and across larger distances to where people live. It is imperative to maximize energy efficiency at every stage of operations. The water sector will develop and execute a combination of energy efficiency with renewable energy investments and operational solutions to lower costs, strengthen sustainability, and lead to better service provision.

Water sector uses 9% of Jordan's total electricity to produce, treat and deliver water and manage wastewater services

Current Situation and Challenges

- Renewable energy provides untapped potential for lower cost energy and climate change mitigation
- Jordan's topography is a major reason electricity is so high as groundwater needs to be pumped from different locations, such as the Disi aquifer to Amman, and up 1,400 meters from the Jordan Valley to Northern and Middle Governorates. Water and wastewater treatment plants and distribution of drinking water all constantly (24/7) use electricity
- Electricity costs have increased dramatically and now exceed total revenues generated from water bills across the country
- Electricity costs have increased dramatically and now exceed total revenues generated from water bills across the country
- Energy needs are expected to double with the execution of the National Conveyance Project and the expanded distribution networks to reach growing populations in various cities
- Energy efficiency improvements will continue to rise to maximize its use efficiency



Goals, Objectives, and Strategic Approaches

The water sector needs to reduce energy consumption through efficiency measures and expand renewable energy supplies. Although energy is not the water sector's core business, it is the most significant energy consumer and is an integral part of the overall national water strategy.

Goal 1

Improve energy efficiency in all operations through better energy management practices in order to lower costs and improve financial performance of the sector

Target

Energy used for each m³ of water produced, distributed and treated is steadily reduced

Key Objectives and Approaches

- Optimize operations in bulk water production, transmission and supply network operations of municipal water supply, treatment, and distribution; and, wastewater treatment and transmission of reclaimed water
- Implement energy management systems to gradually cover the entire water sector

Goal 2

Expand the use of renewable energy across water sector operations to lower costs and improve financial performance of the sector

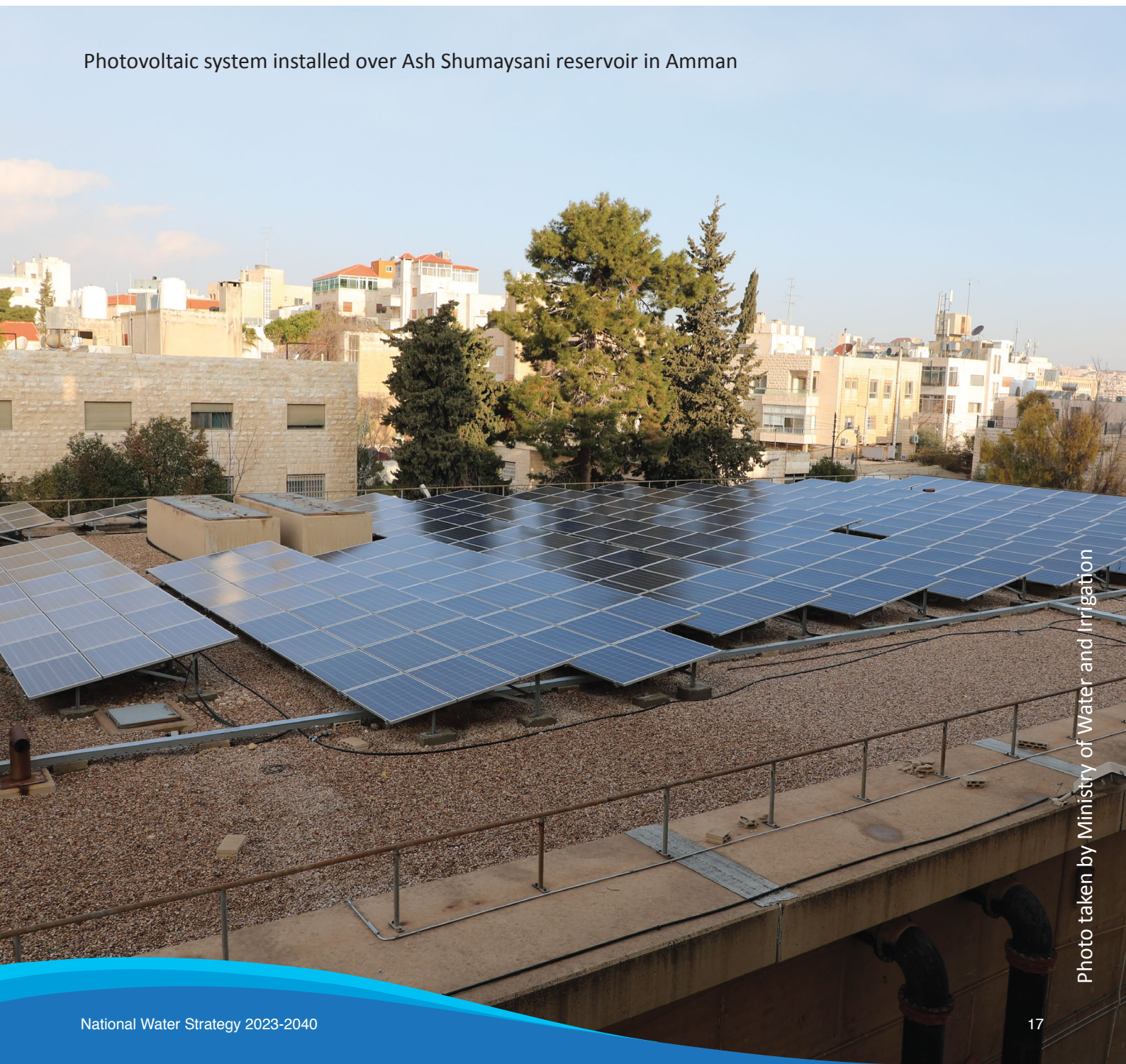
Target

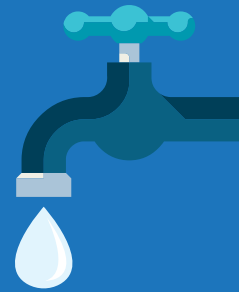
Energy supplied to water sector operations from renewable energy sources reaches 40% by 2040

Key Objectives and Approaches

- Cooperate closely with Ministry of Energy & Mineral Resources and relevant Ministries to strengthen the enabling environment for use of renewable energy
- Develop large (> 1 MW) and small scale (< 1 MW) renewable energy projects

Photovoltaic system installed over Ash Shumaysani reservoir in Amman





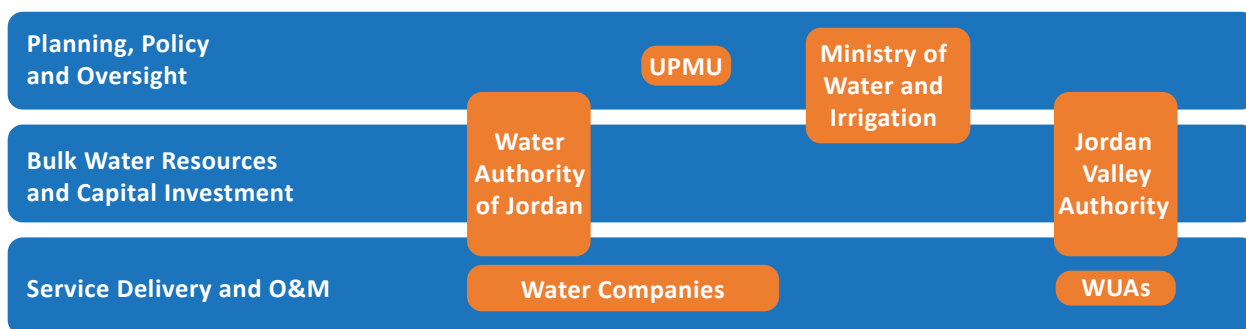
SECTOR GOVERNANCE AND INSTITUTIONAL DEVELOPMENT

Effective sector governance is fundamental to sustainability and lasting water security. This is reflected in the two pillar goals for the water sector to modernize through legal and institutional reform along with impartial and transparent regulation of water and wastewater services and costs. Water governance encompasses how the legal, policy, and institutional structures, roles, responsibilities, and incentives work to effectively manage water resources, deliver water and wastewater services by a responsive, accountable, and financially viable sector.

The needs of the sector are changing, which requires changing the organizational structures. The pandemic, climate change, evolving national priorities, and a financial crisis have resulted in significant structural changes to the operating environment, water supplies, operating costs, fiscal position, and water demand.

Subsequently, there is an urgent need to accelerate reforms and restructuring so that all water entities can better adapt, anticipate, and effectively manage with the speed, scope, and scale of these changes.

Overlaps and Conflicts of Interest in the Current Water Sector Structure



● Roles and responsibilities ● Legal mandate

UPMU: Utility Performance Monitoring Unit, WUA: Water Users Association

The sector will move forward with institutional and legal restructuring to clarify, separate, and distinguish key responsibilities: water resources management, water production, transmission, distribution, and regulation



More streamlined and integrated sector management with clear oversight and public reporting to increase transparency and accountability.

What Good Governance and Reform Mean

Utility companies with stronger service delivery and commercial mandates to improve customer service and financial performance and operate independently.

Restored public trust through better and more reliable services.

Investment in people through improved human resources, capacity development, and hiring to attract and retain early career professionals and steadily build next generation water leaders for the dynamic nature of today's and tomorrow's water sector.

Robust and reliable data integrated into management, planning and strategies through well-established systems and staff capacity.

Effective implementation - policies and strategies are developed, implemented, and integrated as part of the institutional culture.

GOVERNANCE



Goals, Objectives, and Strategic Approaches

Goal 1

Restructure water institutions to ensure that they have the legal mandates, staff capacity, resources, and incentives to modernize the sector in order to enhance accountability and increase public trust

Target

Water sector is perceived to be effective and responsive with clear organizational mandates for water sector entities, independent utility companies, well-regulated services, and good governance

Key Objectives and Approaches

- Update and harmonize existing laws, regulations, and policies to align with the overall strategic vision
- Strengthen data-driven, outcome-focused, and performance-based approaches
- Regular and reliable public reporting on sector performance and WASH service levels
- Expand public participation to build citizen partnership

Goal 2

Strengthen organizational capacity and management practices within water institutions to be responsive and resilient to dynamic sector management needs

Target

Sector staffing is aligned to functional needs with appropriate capacity, training, resources, and a clear path for career and professional development with advancement on the basis of performance

Key Objectives and Approaches

- Attract and retain the next generation of water sector professionals who are empowered and incentivized to perform at a high level
- Prioritize management and data for decision-making
- Strengthen corporate governance, leadership skills, internal communications, and sector-level coordination
- Improve human resources systems, including a focus on attracting youth and women, succession planning, and staff capacity development

Goal 3

Strengthen sector-level strategic planning, management, monitoring, evaluation, and reporting

Target

Sector strategies and plans are updated and implemented against clear milestones, targets and indicators

Key Objectives and Approaches

- Develop a unified and measurable water strategy roadmap
- Institutionalize monitoring and evaluation against annual plans and budgets
- Maintain updated capital investment planning
- Regular coordination across government, at all levels, to align with national strategic priorities in fiscal policy, agriculture, energy, environment, planning, and health sectors

Goal 4

Promote gender, inclusion, and youth empowerment throughout the water sector

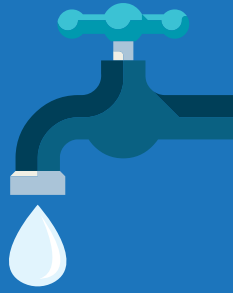
Target

Growing numbers of women in leadership roles, youth hires, and representation across all segments of Jordanian society in sector employment

Key Objectives and Approaches

- Increase women's participation at all levels of the water sector with specific representation in decision-making and leadership positions
- Strengthen gender mainstreaming in sector plans, strategies, programs, outreach, engagement, and activities
- Increase youth engagement and persons with disabilities employment in the sector to develop the next generation of water sector leaders and operators
- Continue with implementation of the current Gender Policy for the Water Sector, adopted in 2020

INNOVATION, TECHNOLOGY, AND PRIVATE SECTOR ENGAGEMENT



The scope and scale of the challenges to achieve sustainable and durable water security will require constant adaptation and capitalizing on new tools and approaches. The water sector must leverage innovation and technological advances wherever appropriate. The private sector needs to become a strong partner in driving innovation, service delivery improvements, water supply development, recycled water use, and improved efficiencies in all water uses, particularly in agriculture.

Digital transformation plays a role in raising efficiency and improving service delivery, enhancing transparency, reducing bureaucracy and corruption, expanding operations, and accessing a wider range of beneficiaries.

Private sector partnerships can catalyze innovative solutions, build technical knowledge and institutional capacity, and invest in promising new approaches and technologies.

Knowledge of water solutions and developments globally, accompanied by new and expanded collaboration with the private sector and academia, can further drive and scale innovation.

National Economic Modernization Vision 2022-2033

Water sector is charged to:

“Utilize technological solutions for water sustainability programs”

“Provide opportunities for private sector investments”

The Control Center at Aqaba Water



Photo taken by Aqaba Water

Goals, Objectives, and Strategic Approaches

Goal 1

Utilize technology across the sector to improve the accuracy and timeliness of data collection, strengthen data analysis, and streamline management systems

Target

Compatible systems deployed across utility companies and water authorities with full integration of technology into day-to-day sector operations and management

Key Objectives and Approaches

- Maximize digital transformation and business processes automation
- Maximize the use of technology to improve groundwater and surface water data
- Enhance, integrate, and standardize water sector data collection and management systems for high quality data as the basis for sector planning, policy-making, and regulatory reviews
- Complete the National Water Information System (NWIS)
- Enhance collaboration and partnerships with the private sector and academia
- Ensure cybersecurity and customer data protection

Goal 2

Innovative and efficient technologies are constantly adopted

Target

New technologies adopted that achieve efficiencies in water use or management

Key Objectives and Approaches

- Introduce or expand use of appropriate and effective water technologies, leveraging private sector investment wherever possible
- Collaborate closely with academia and research centers to identify and deploy effective modern technologies
- Institutionalize a National Innovation Center

Goal 3

Private sector participation increased to improve operational efficiency and sustainability, introduce innovation and technology, access higher flexibility in execution, improve risk management, and access alternative funding

Target

Partnering with the private sector is valued and well-regulated in delivering high quality water sector operations, water and wastewater services, and critical investments

Key Objectives and Approaches

- Strengthen the enabling environment for private sector participation, including capacity to effectively and efficiently manage procurement, contracts, and implementation of projects
- Promote private sector participation (PSP)

Supervisory Control and Data Acquisition Room, Amman

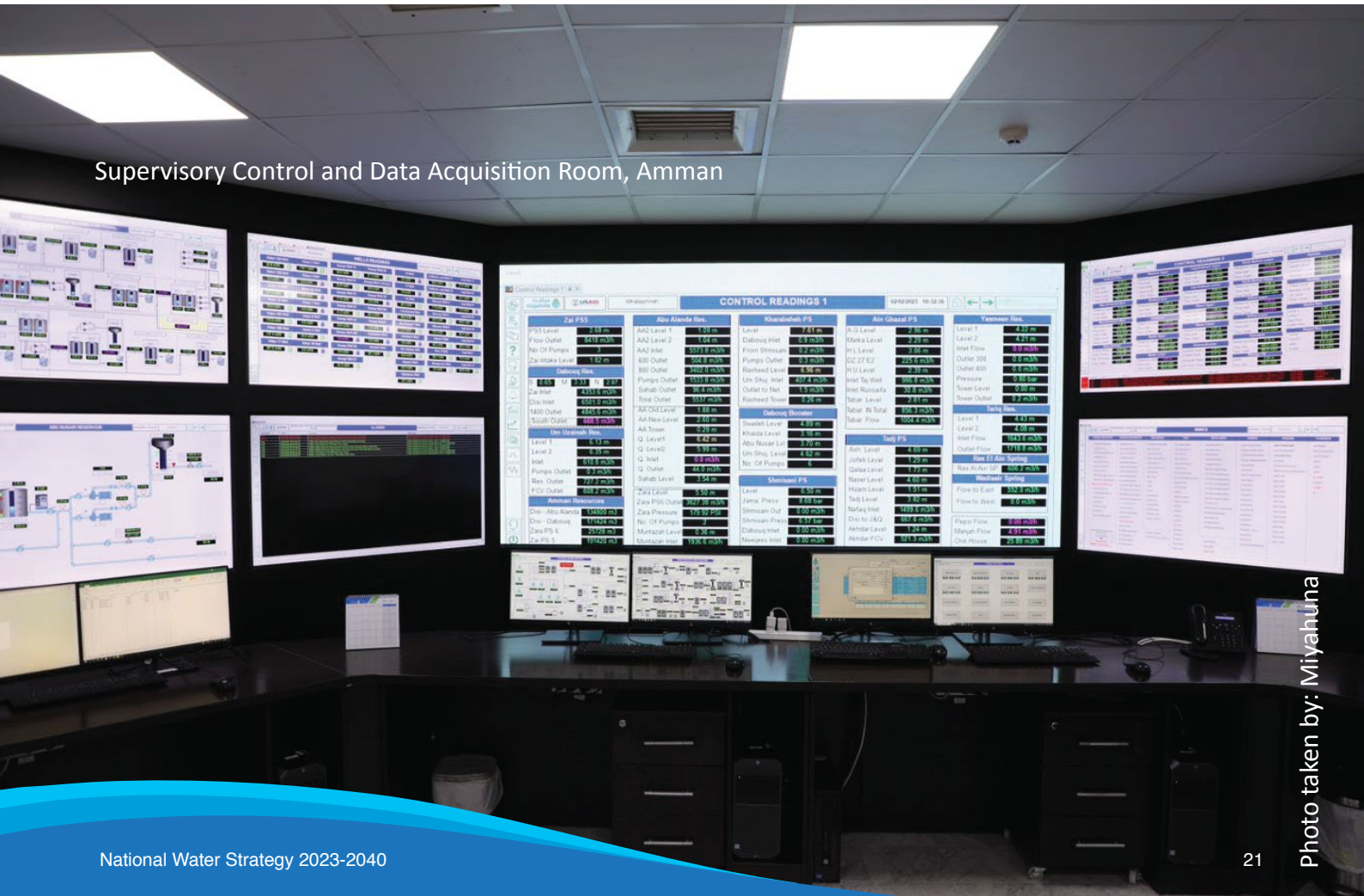
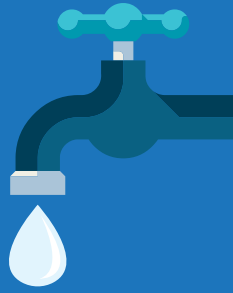


Photo taken by: Miyahuna

WATER-ENERGY-FOOD ENVIRONMENT (WEFE) NEXUS



Water, energy, food, and environment are all vital pillars for Jordan's sustainable development. Any insecurity in one of these sectors can have severe impacts on the other, let alone on the overall development of the country. A strong nexus will need support from the top management of these sectors. This transition will enhance the integrated and comprehensive planning approach and align the WEFE sector plans and actions.

Establishing a Nexus Council creates an important formal platform to manage these inter-connected sectors in greater alignment with shared and overlapping national priorities.

Benefits of a strong WEFE Nexus

- Shared knowledge and joint action on potential impacts between nexus sectors
- Holistic analysis and planning to promote more socially acceptable allocation of resources
- Less compartmentalization of policies and planning
- Developing solutions to alleviate nexus conflicts

Goals, Objectives, and Strategic Approaches

Goal 1

Institutionalize effective management of the Water-Energy-Food-Environment (WEFE) nexus to leverage investments, develop nexus projects, ensure coherent policies and regulations, and conduct complementary planning across these sectors

Target

WEFE Council is established and nexus coordination and management is sustained and utilized resulting in aligned policies and joint projects

Key Objectives and Approaches

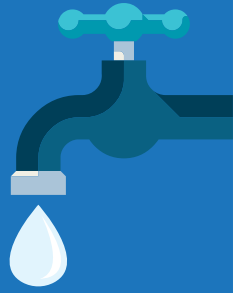
- Develop innovative WEFE projects that benefit water, energy, food, and environment sectors
- Integrate nexus plans into respective policies and plans
- Institutionalize WEFE Council with a strong charter and mandate to mainstream WEFE into water sector policy and management

Watering sheep near windmill farm



Photo taken by Shaun McNally

CLIMATE CHANGE RESILIENCE



Climate change affects every aspect of the water sector. Higher temperatures, less rainfall, and more extreme heat waves, flood and drought have broad implications for the water cycle. This calls for addressing the impact of climate change on social, economic, and environmental development in a proper manner.

Climate change poses a major risk, with potentially significant consequences, to people, the economy, and ecosystems; particularly for the water sector, which is considered the most vulnerable sector to climate change.

What Climate Change Means for Water

- Everlasting patterns of changing rainfall amounts, higher temperatures, and sometimes, more extreme floods
- 15% less water runoff from wadis by 2040
- 15% less groundwater recharge by 2040.
- Reduced water quality – the decrease in groundwater recharge due to the lack of precipitation, accompanied by high temperatures, leads to high salinity levels
- Damage to water and wastewater infrastructure from more frequent and severe floods and droughts
- Higher demand during hotter summers
- Less water for rainfed and irrigated agriculture

Wadi Mujib Dam is empty during 2022



Photo taken by Shaim McNally



King Abdullah Canal in the Jordan Valley

Photo taken by Ministry of Water and Irrigation

Goals, Objectives, and Strategic Approaches

Goal 1

Jordan's water sector is resilient to the changing quantity and quality of water resources and to the level of threat to sector infrastructure and operations from climate change

Target

Climate data along with adaptation and mitigation measures fully integrated into sector management, planning, investments, and policies

Key Objectives and Approaches

- Incorporate climate risks in policy and institutional reforms including institutionalizing climate data analytic capacity
- Research and development
- Leverage climate financing for adaptation and mitigation to ensure infrastructure is climate resilient
- Update and maintain drought and flood management systems
- Implement Water Sector Green Growth National Action Plan 2021-2025
- Leverage investments in circular economy – an economic system designed to be regenerative. It is based on the principles of using resources as efficiently as possible, minimizing waste, and maximizing the value of resources through reuse and recycling, so that resources are kept in use for as long as possible – for sustainable water management.

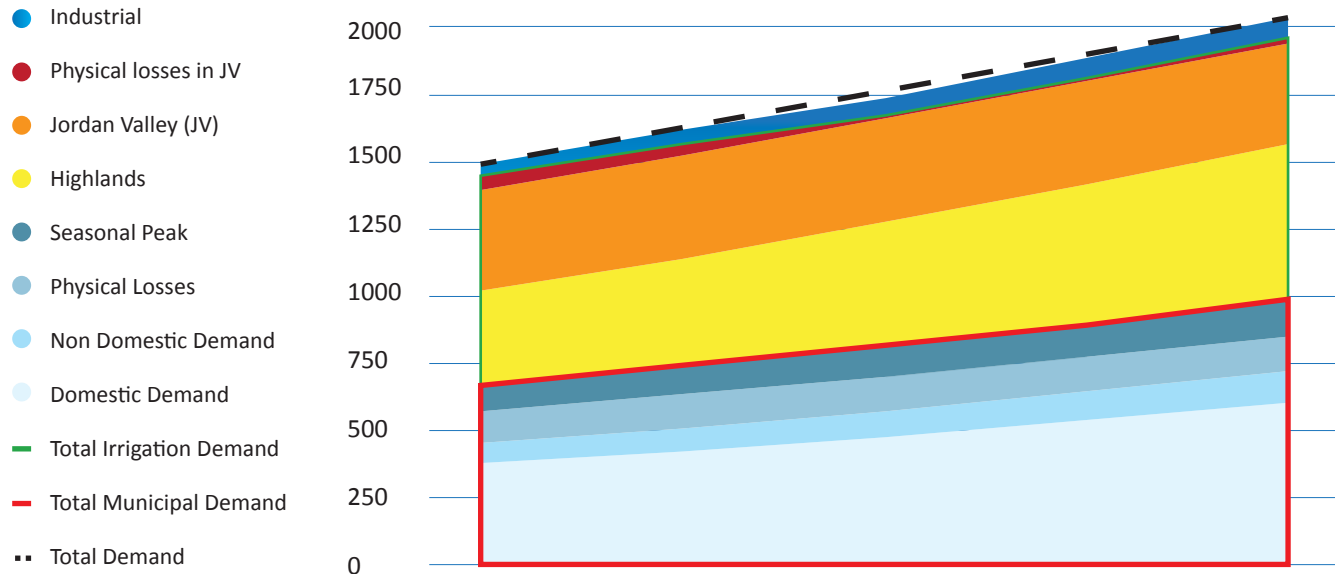
Goal 2

Jordan's water strategy fully reflects the need to adapt to and mitigate against the impacts of climate change

Target and Approach

Climate change and its impacts are an integral part of every area of the national water strategy (cross-linkages are detailed in National Water Strategy, Chapter 12: Climate Change Resilience)

Detailed Projected Water Demand (MCM)



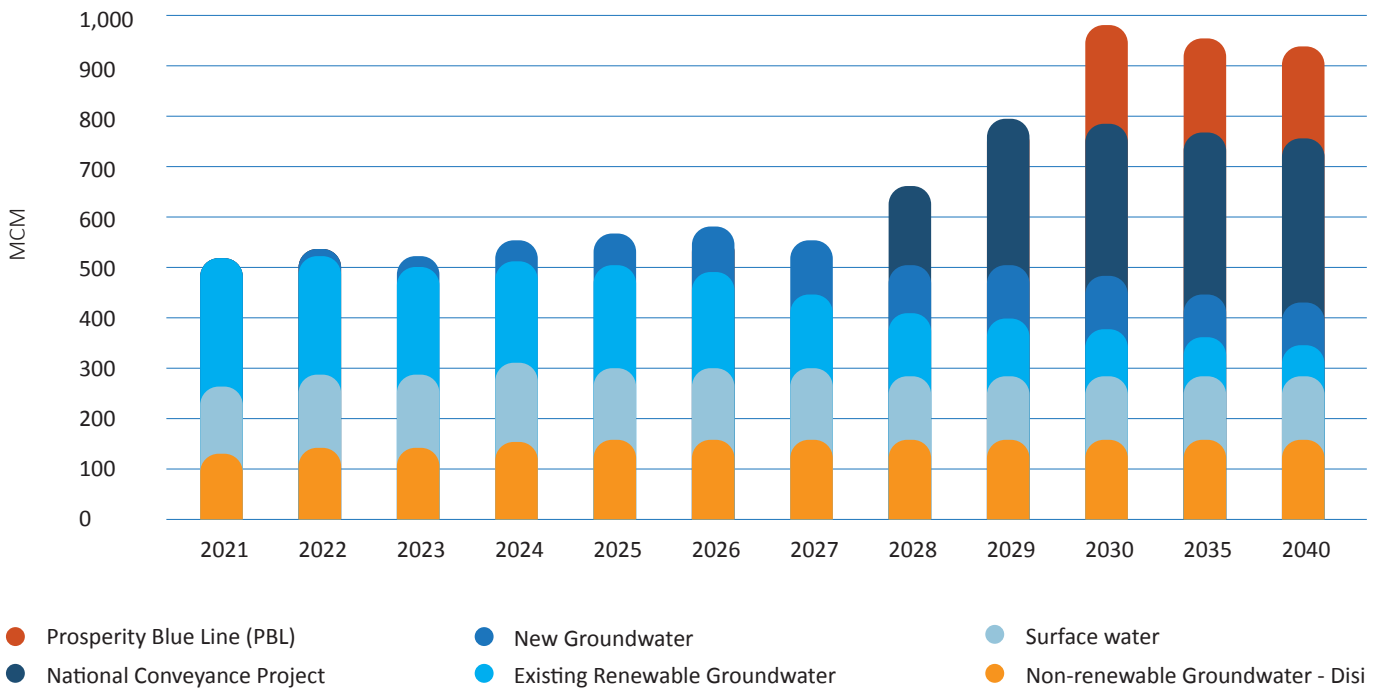
	2020	2025	2030	2035	2040
Domestic Demand	398	446	499	556	617
Non Domestic Demand	72	81	91	102	114
Physical Losses	120	121	123	123	125
Seasonal Peak*	92	101	112	123	135
Total Municipal Demand	682	750	825	905	991
Highlands	339	395	450	506	561
Jordan Valley (JV)	371	371	371	371	371
Physical losses in JV	55	37	19	18	18
Total irrigation Demand	765	803	840	895	950
Industrial Demand	40	56	62	67	72
Total Demand	1,486	1,609	1,727	1,867	2,013

*Seasonal peak demand is the additional water supply requirement and system capacity needed to meet the demand during the high period of the year mainly during May to August.

Future Water Supplies

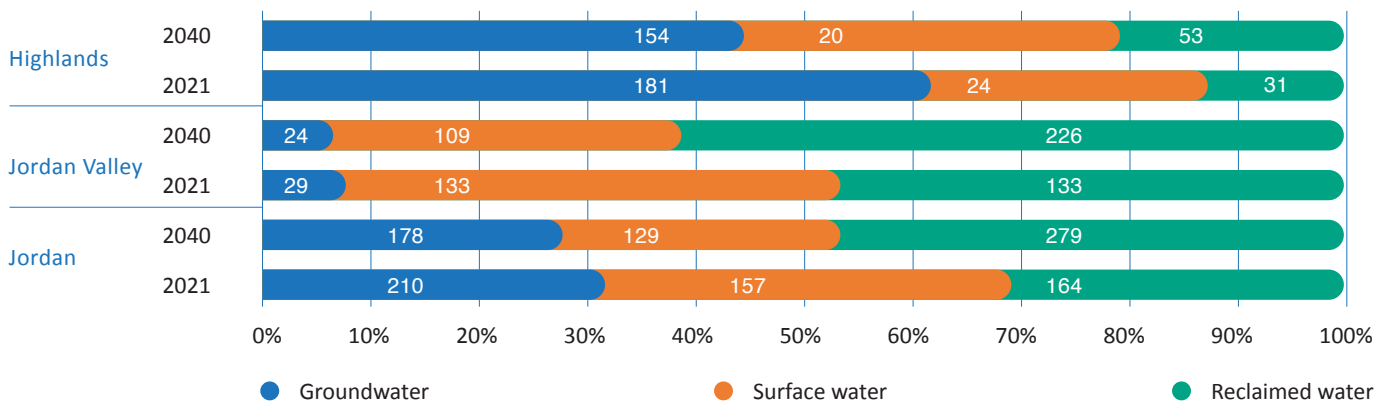
The future water supplies will mainly rely on the seawater desalination and reclaimed water of better quality.

Municipal sector



Irrigation sector

Current and Future Water Resources for Irrigation in MCM



Industrial sector

Current and Future Water Resources for Industrial Sector in MCM

