



The Ministry of Water and Irrigation

Water Reallocation Policy

2024



Ministry of Water & Irrigation
وزارة المياه والري

Water Reallocation Policy

2024

This document is an integral part of the National Water Strategy and related policies:

1. National Water Strategy 2023-2040.
2. Water Sector Capital Investment Program (2023-2040).
3. Water Demand Management Policy.
4. Energy Efficiency and Renewable Energy in the water sector Policy.
5. Water Reallocation Policy.
6. Surface Water Utilization Policy.
7. Groundwater Sustainability Policy.
8. Wastewater Management and Reuse Policy
9. Climate Change Policy for a Resilience Water Sector
10. Water Sector Policy for Drought Management
11. Action Plan to Reduce Water Sector Losses (Structural Benchmark).

CONTENTS

FOREWORD	3
1 INTRODUCTION.....	4
2 HISTORY AND CURRENT STATUS	5
3 CURRENT WATER USES	6
4 NON-REVENUE WATER.....	7
5 WATER USES	7
6 WATER RESOURCES UTILIZATION	8
7 FUTURE WATER NEEDS ASSUMPTIONS.....	9
8 RATIONALE BEHIND THE WATER SHARE DIFFERENCES	11
9 NON-REVENUE WATER REDUCTION	12
10 WATER FOR PEAK DEMAND.....	13
11 WATER FOR CONTINGENCIES	13
12 FUTURE WATER NEEDS AND USE	13
13 WATER REALLOCATION POLICY BASES	14
14 OBJECTIVES	14
15 WATER REALLOCATION POLICY THEMES ON USE PRIORITIES.....	15
15.1 ON RESOURCE UTILIZATION	15
15.2 ON DISTRIBUTION AND REALLOCATION PRIORITIES	16
15.3 ON PLANNING AND MANAGEMENT	16
15.4 ON TREATED WASTEWATER	17
15.5 ON TREATED WASTEWATER STANDARDS	17
15.6 ON IRRIGATION	17
15.7 ON LOCAL AND REGIONAL COOPERATION.....	17
15.8 ON THE ROLE OF SOCIETY	18
15.9 ON THE ROLE OF PRIVATE SECTOR.....	18
15.10 ON MONITORING	18
15.11 ON LEGISLATION	18
15.12 ON POLICY FOLLOW-UP.....	19

LIST OF TABLES

Table 1 - Municipal Per Capita Share, Non-Revenue Water And No Of Subscribers (2021).....	7
Table 2 - Water Uses In 2021 In Different Governorates And Regions (In Mcm).....	8
Table 3 - Water Resources Utilization In Jordan In Mcm- 2021	9
Table 4 - Additional Factor For Non-Domestic Water Requirement.....	10
Table 5 - Annual Targeted Reductions Of Nrww	13

LIST OF FIGURES

Figure 1 - Domestic Water Share in Liters per Person per Day in Selected Countries	12
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FOREWORD

Jordan is a nation burdened with extreme water scarcity that has always been one of the biggest barriers to our economic growth and development. This crisis situation has been aggravated by a population increase that has doubled in the last two decades alone because of refugees fleeing to Jordan from neighboring countries. We must then add to this the transboundary and climate change issues affecting Jordan's water supplies.

In the face of these challenges, and to achieve our goal of successful integration of Jordan's water resources management, the Ministry of Water and Irrigation has been active in putting forward new policies that set clearly defined rules to manage scarce water resources efficiently and sustainably. These new policies lay out the measures and actions required to achieve our national goals for long-term water security. These result-oriented policies are built upon and updated from previously adopted strategies, policies, and plans. Together, they are an integral and ongoing part of the overall management efforts that have already been achieved.

This policy is the result of the efforts of a working group to whom I am thankful. My team has been putting great efforts to enhance water governance that supports these policies at all levels, which include enforcement of a suitable legal framework and regulatory tools, enhancing efficient institutional capacities, and supporting dynamic management plans that adapt the concepts of participation and decentralizations all under the umbrella of Integrated Water Resource Management which I am sure will show results in the near future.

Eng. Raed Abu Soud
Minister of Water and Irrigation

1 INTRODUCTION

Efforts of (MWI) to improve water and sanitation services are faced by managerial, technical and financial determinants, and the limited amount of renewable freshwater resources. The high rate of population growth including hosting fluxes of refugees from neighboring countries due to political unrest resulted in stressing the water and wastewater infrastructure and depleting the groundwater resources to the limits that exceeded safe yields in the most of renewable groundwater basins.

To address these challenges, the Ministry is striving, through the adoption of a long-term plan, to improve services provided to citizens through restructuring and rehabilitation of networks, reducing the non-revenue water rates, providing new sources and maximizing the efficient use of available sources. At the same time, the Ministry continues its efforts to regulate water usage.

This reallocation policy is intended to serve as a vehicle to set action plans for redistributing the water flexibly between sectors and governorates. It intends to employ a conveyance system for water connecting the southern and northern regions and another conveyance system for treated wastewater in the Jordan Valley to maximize the use of treated wastewater for irrigation and free the expensive used fresh water to be used for domestic purposes.

2 HISTORY AND CURRENT STATUS

It was not until the year 1985, that all municipal water supplies in Jordan came solely from groundwater resources. This practice extended for a long period of time until most of the groundwater aquifers became over drafted beyond their safe yield. It was not until then and due to increased requirements, that WAJ started using surface water mainly for municipal and industrial purposes by treating around 50 million cubic meters per year of surface water from King Abdalla Canal. Later the capacity was increased to 90 MCM yet this capacity or close to it (above 80 MCM) is often not reached because of the reduced flow in the canal. The second step towards increasing the supply and preserving ground reservoirs was in 2006, where saline springs were desalinated to augment the existing supplies. 35 MCM of brackish water was desalinated and pumped from 400 m below sea level to an elevation of 1000m above sea level some 40 kilometers in length.

The over-abstraction of groundwater beyond the safe yield caused damages to many aquifers. Additionally, the use of surface water reduced the supplied water to agriculture in the Valley.

The excessive use of ground water and the reliance on the brittle flowing surface waters, forced MWI to extract 100 MCM per year of fossil water from Disi Aquifer and convey it more than 400 km to Amman area by constructing Disi water conveyance and put in operation in 2013.

The planned additional water resources that MWI relies on for closing the gap between needs and supply include the Disi desalination of brackish water like Hisban, surface water from Kufranjeh Dam, Wehdeh Dam and the capacity increase of both Wala and Mujib Dams, the increased capacity from Jordan Valley and Wadi Al-Arab conveyance to Irbid, in addition to the planned ones including exploration of deep aquifers and the desalination of 300 MCM per year of sea water through the National Conveyance Project. All the above will be associated with treated wastewater capacity increase of collection and treatment utilizing existing and planned wastewater treatment plants (WWTP) like Samra, West Zarqa, southern Amman and the northern governorates WWTP's.

When Disi project became fully operational at the beginning of 2014, the quantities made available to Greater Amman exceeded the needs in Miyahuna Service Area. Moreover, the Disi water made the needs-supply equation in the municipal side positive which allowed several measures to be taken such as reducing the pumping from the overexploited aquifers, especially Azraq and Amman Zarqa Basins, diverting existing supplies to other areas, and redirection of extra supplies to other water deficient areas. However, all these gains got lost gradually due to the higher increase in the municipal water demand than expected that resulted

from the rapid population growth and the refugee fluxes that have come to Jordan since 2011. The variation and differences in water resources cost also triggered the reallocation of water between the governorates trying to equalize the cost burden all over the utilities and insure equitable distribution in different locations.

3 CURRENT WATER USES

According to data collected for the year 2021, the total amount of water made available from all resources was 1093 MCM of which 531 MCM was allocated for agriculture, 520 MCM for municipal, and around 36 MCM for industrial activities not covered by the water network. Despite this limited availability, Jordan utilizes more than 100% of its renewable water resources. Its exploitation of the groundwater resources exceeds the recharge annual rates.

Domestic water consumption is a combination of the indoor consumption including water used for drinking, personal hygiene (i.e. washing face, hands, and bathing), kitchen activities and laundry; and outdoor consumption, which includes water used for garden vegetation, house and yard cleaning and livestock needs in villages and remote areas.

Non-domestic water consumption from municipal water network includes commercial, industrial, tourist, public and governmental uses.

Table 1 shows the Municipal water per capita share in different governorates, NRW ratio, calculated share and the number of water and wastewater subscribers.

According to Table 1, the amount of water for municipal purposes reported in 2021 indicates an average share per capita of 129 liters where the population reached about 11.06 million inhabitants. Considering the NRW, and assuming that the total NRW is totally lost, the average consumed/billed water for municipal uses becomes 60 liters per person per day.

In 2021, the percentage of Jordanians served through water networks reached about 94%. MWI is aiming at maintaining this ratio. On the sewage services side the ministry is aiming at increasing the service coverage from 66% to 80% by the year 2040. The average municipal (both domestic and non-domestic) per capita share of supplied water (pumped) in the Kingdom is 127 liters per capita per day (ranging between 80 in Irbid to 252 in Aqaba, however considering the water losses in different areas, the water share (as billed) ranges between 46 and 181 liters per capita per day in Zarqa and Aqaba respectively. Domestic use covers residential and household users while non-domestic use includes the other sectors from public, commercial, touristic, industries, etc, that are all served through the water network.

Table 1 - Municipal Per Capita Share, Non-Revenue Water and No of Subscribers (2021)

Region/ Company	Governorate	Water Per Capita (l/day)		NRW* as % of Net Water Supplied	No. of Subscribers		% of Sewage Coverage
		Net Water Supplied	Water Billed		Water	WW	
North/ YWC	Irbid	80.1	48.4	39.6%	368,890	156,943	43%
	Ajloun	91.9	54.0	41.2%			
	Jerash	100.4	51.8	48.5%			
	Al Mafraq	151.4	48.4	68.0%			
Middle/ Miyahuna	Amman	125.1	66.6	46.7%	767,864	616,821	80%
	Zarqa	107.3	45.9	57.2%	191,421	154,682	81%
	Balaqa	212.1	58.0	72.7%	96,780	52,177	54%
	Madaba	142.8	73.0	48.9%	37,604	18,850	50%
South/ AW	Karak	193.4	56.3	70.9%	53,069	12,719	24%
	Tafileh	200.0	61.5	69.3%	18,855	3,739	20%
	Ma'an	250.5	65.7	73.8%	26,254	8,814	34%
	Aqaba	252.2	180.8	28.3%	45,051	38,428	85%
JORDAN		126.9	60.2	52.6%	1,605,788	1,063,173	66%

* NRW is the ratio between water loss quantity and water system input volume (Net water supplied to the service area).

4 NON-REVENUE WATER

The Kingdom's NRW reported in 2021 was 52% varying between 28% to 73% in different governorates, this variation is attributed to 1) physical reasons such as the age of the pipes and their condition, pressure level, supplied water quantity, supply duration that effect on the physical losses, 2) administrative reasons such as metering errors, billing inefficiency, illegal connection and theft that effect on the administrative losses, were physical water loss is neither consumed nor registered, while the administrative losses are mostly consumed. Due to limited water system analysis, the administrative losses are estimated at 50% of the NRW which eventually is used by the customers but not metered.

5 WATER USES

The total amount of water made available for all uses is demonstrated in

Table 2. This includes water from groundwater, surface water, non-renewable groundwater, desalinated brackish water and treated municipal wastewater. These resources are indicated in Table 3.

Table 2 - Water Uses in 2021 in different Governorates and regions (in MCM)

Region/ Company	Governorate	Domestic	Non-domestic*	Total
North/ YWC	Irbid	54.2	5.8	59.9
	Ajloun	6.2	0.7	6.8
	Jerash	9.5	0.6	10.1
	Al Mafaq	31.5	3.7	35.2
Middle/ Miyahuna	Amman	183.5	28.4	211.9
	Zarqa	55.7	6.2	61.9
	Balaqa	36.1	8.0	44.1
	Madaba	10.4	1.0	11.4
South/ AW	Karak	24.8	1.1	25.9
	Tafila	7.8	0.3	8.1
	Ma'an	12.8	4.0	16.8
	Aqaba	5.8	14.3	20.1
JORDAN		438.2	74.0	512.2

Agriculture	Surface Water	Groundwater	Reclaimed Water	Total
Jordan Valley				
North Ghor	73.8	18.0	133.0	243.9
Middle Ghor	19.2			
South Ghor and Wadi Araba	40.2	42.9	0.0	83.1
Highlands	24.3	148.8	31.0	204.2
Total Agriculture	157.4	209.8	164.0	531.2
Industry	4.2	28.5	3.2	35.8

* Non-domestic includes commercial, small industries and tourisms

6 WATER RESOURCES UTILIZATION

The renewable water resources available in Jordan are around 780 MCM depending on the rainfall in different years. The long-term average for rainfall is 8.2 billion cubic meters. Because of the increased needs as a result of growth rates, continuous influx of refugees, and competition between all economic sectors, the ministry started utilizing nonrenewable resources, desalinating brackish water, and collecting and treating domestic wastewater mainly for agricultural purposes.

Table 3 below illustrates the water quantities from all sources including the non-renewable sources utilized in the year 2021 and by taking into account the recent studies' results that were carried out by the Ministry of Water and Irrigation using remote sensing techniques which revealed that there are additional 140 million cubic meters of groundwater used annually for agricultural purposes in the highland areas.

Table 3 - Water Resources Utilization in Jordan in MCM- 2021

Source	Municipal	Industrial	Irrigation	Livestock	Uses Total
Surface Water	141.2	4.2	157.3	4.2	307.1
Jordan Rift Valley	118.46	4.16	133	0	255.69
Springs	22.14	0.03	8.49	0	30.66
Base and flood	0.65	0	15.85	4.2	20.7
Reclaimed water	0.0	3.2	164.0	0.0	167.2
Groundwater	378.0	28.5	209.8	2.4	618.6
Renewable	252.09	22.35	168.5	2.44	449.84
Non-renewable	125.9	6.11	41.25	0	168.78
Seawater desalination	0.7	0.0	0.0	0.0	0.7
Total	519.8	35.8	531.1	6.6	1,093.4
Total including additional 140 MCM used for irrigation which were estimated using remote sensing techniques					1,233.4

Because of the population growth and other reasons, neither the renewable nor the currently utilized nonrenewable resources can together meet the needs for municipal purposes while maintaining the current agricultural activities at the same level. Even with an acceptable level of physical losses, the needs exceed the currently available water quantities. This fact necessitates the imposition of strict policies including the water re-allocation policy.

7 FUTURE WATER NEEDS ASSUMPTIONS

This policy document and the calculated future quantities of water are focused on "Needs" rather than "Demand". As need represent a lack of vital commodity that people can't live without while demand cannot be diagnosed nor quantified in Jordan due to the intermittent and limited water supply and high NRW particularly the administrative part in many areas. Policy and water needs are also based on "Adaptive Capacity" representing the conditions and resiliency that people can tolerate modest water quantities when they are faced with. This requires behavioral change and People won't change their behavior very much unless they come down to it which is the case in Jordan over many years imposed by lack of water and the current mode of supply.

In this policy the term "Demand" is cautiously and rarely used and mainly for irrigated agriculture especially in the Jordan Valley. This is much elaborated in other policies related to agriculture under the wastewater management and reuse policy.

The future water supply requirements for municipal water use should consider the seasonal variations of the water demand to ensure meeting the water needs during the peak period. Thus, the water system capacity should be designed according to water supply requirement.

The following are the key parameters and assumptions that shall be used to estimate the future water supply requirements:

1. Domestic water share per capita is assumed to be 1001 l/c/d for all cities, sub urban areas and villages;
2. Annual population growth rate is assumed on the high scenario growth rates that should be updated regularly as better information becomes available like conducting census, actual population figures from population clock reported by the Department of Statistics, and additional refugees in case of happening;
3. Refugees and other foreigners are considered permanent residents;
4. The water consumption of Refugee's and Non-Jordanian residents is assumed to be the same as Jordanians according to their place of residency except at camps;
5. All non-Jordanians residents and refugees are assumed to grow at the same rate as Jordanians.
6. The NRW is reduced according to the proposed reduction plan.
7. Non-domestic municipal water requirement is assumed to be as per the additional factors presented in Table 4 of the total domestic water requirement of each governorate based on 2020 years data. Yet, the same analysis must be conducted per each water system, distribution zoon and district meter area when estimating the future water demands;
8. A peak factor demand to cover the peak seasonal demand period is added which demonstrates the additional water needs during summer months over the average water requirement. This additional quantity can also be used as buffer capacity during winter. The peak factor for each governorate is as following:
 - Amman Governorate is 17%
 - Aqaba Governorate is 20%
 - The rest of the governorates is 14%
9. A 5% contingency volume of water could be added where such an increase in water needs shall be used as a pool that can be shifted from one area to another.
10. Irrigation water use in high lands is constant with reduction possibility in future. Irrigation water in the Jordan Valley shall be increased when new resources are made available such as the increased qualities of treated wastewater.

Table 4 - Additional Factor for Non-Domestic Water Requirement

Governorate	Amman	Zarqa	Balqa	Madaba	Irbid	Mafrq	Ajloun	Jerash	Karak	Tafila	Maan	Aqaba
Non-domestic ratio	13.4	10	8.2	9.0	9.6	10.5	9.9	5.8	4.2	4.1	23.8	71.1
Additional factor (%)	15.5	11.1	22.2	9.9	10.6	11.7	11.0	6.2	4.4	4.3	31.2	246

¹ This quantity is estimated based on the best and latest available information from using smart metering in continuous supply areas in Aqaba city and in Tajj and Jofeh water distribution zones in Amman. Yet, this figure will need to be updated once better information become available in areas that will have continuous supply mode and improved metering and billing.

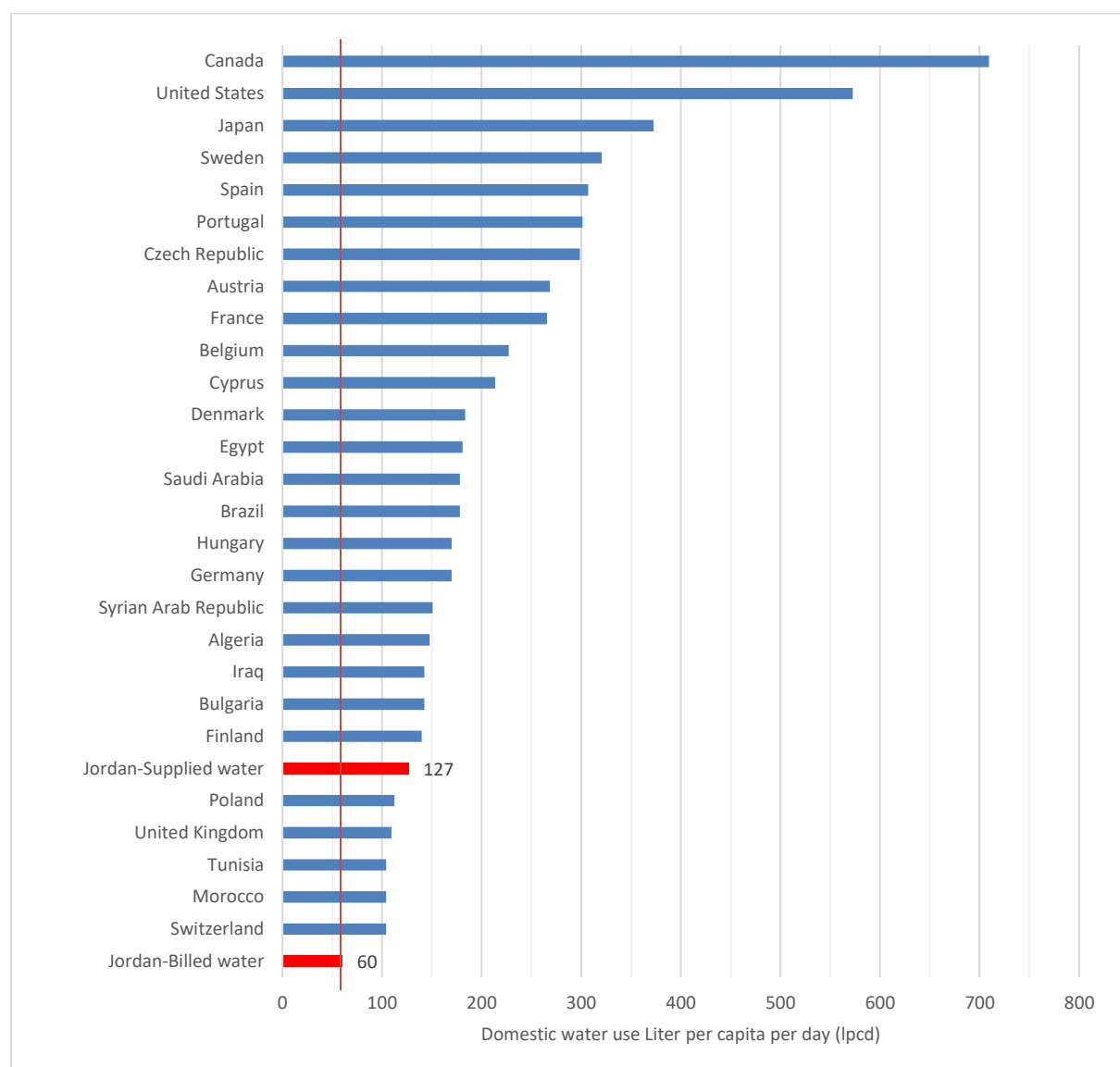
8 RATIONAL BEHIND THE WATER SHARE DIFFERENCES

In order to maintain proper health conditions and meet basic needs for people, international organizations including the World Health Organization (WHO) set a minimum share of 50 liters per person per day. This is strictly for domestic and precisely for maintaining hygienic conditions and avoiding water borne, water related and water-based diseases.

In civilized communities, the needs go beyond this quantity depending on many factors starting from water availability, cost, tariff, etc. Looking at the domestic water consumption in major cities and countries, the variation is too wide ranging between 35 liters per person per day in small villages in India and Africa to around 400 liters in the US. On the other hand, comparing the water share based on water quantities supplies in Jordan with some European countries, the share for every person in Jordan is almost similar to those in Europe where water availability does not raise any concern because of its abundance in these countries.

Figure 1 below compares the domestic water share per person per day in some countries and Jordan. From the illustration, it is evident that the per capita daily share in Jordan does not fall far from this in some European countries and elsewhere. But because of the high NRW percentage, the share is reduced to around 60 liters per capita per day. This emphasizes the need for reducing the NRW to acceptable levels as apriority action. This also gives buffer capacity if the shares assumed above are reduced considering lower shares. Even though, the shares will be still above the WHO minimum quantity.

Figure 1 - Domestic Water Share in Liters per Person per Day in Selected Countries²



9 NON-REVENUE WATER REDUCTION

The National NRW Strategy for 2022-2040 aims to reduce NRW to be below 25% by 2040. However, for the purpose of water infrastructure planning, the NRW reduction targets summarized in the following table is used to estimate the additional water supply quantities to compensate for the physical water losses (which is assumed to be at 50% of NRW). the following Table 5 suggests certain yearly reduction percentages of losses in different areas depending on the NRW percentages reported in 2020. The percentages suggested is a percentage related to the previous year and not to the base year. This will facilitate proper planning, future investment targets and scheduling, and the associated financial and social gains.

² Domestic Water Use by Country, ChartsBin.com, accessed Jan 14, 2023, <<http://chartsbin.com/view/44463>>

Table 5 - Annual Targeted Reductions of NRW

Current Level of NRW	Annual NRW reduction as % from previous year
>30	2%
30-20	1%
<20	0.5%

10 WATER FOR PEAK DEMAND

The calculated future water needs assume a peak factor as detailed previously. This is based on an increase in water demand in summer months compared to other times of the year, where additional water supply requirement is needed to cover the demand from tourism, returned Jordanians, firefighting, and others.

11 WATER FOR CONTINGENCIES

There is a need to create a pool of water resources that can be shifted from one area to another during contingency situations. This is assumed as a reserve ratio at 5% over water supply requirement.

12 FUTURE WATER NEEDS AND USE

Jordan's Water Strategy commits the water sector to securing water and wastewater services at affordable prices and acceptable standards and extending services to remote and less developed areas. For Jordan, the term 'Acceptable' can easily be attributed to the minimum consumption needs to secure excellent health and hygiene. However, the most important parameters for municipal service level include:

- Maintaining acceptable water quantities for different areas
- Maintaining an excellent water quality
- Frequency of water supply during summer and winter
- Collecting and treating wastewater for safe agricultural use.

However, the ultimate aim of the National Water Strategy is to provide a continuous supply of safe drinking water to all areas served by the municipal water network. The water use priorities have been set in the Water Strategy where municipal water use is the top priority among all sectors. Other sectors can be put in the order of priority as follows: energy sector, tourism, industrial and the agricultural sector. The irrigation water according to the Strategy will be kept constant and subjected to reducing fresh water in highlands and increase in the Jordan Valley where water supply will increase once treated wastewater is made available.

Thus, the water re-allocation policy and plans will concentrate on the municipal sector and will follow the same order of priority with due consideration to the assumptions. A dynamic model is developed that can be calibrated based on any changes in the assumptions. The model shows when the water is deficient or in excess in different years and the transfer of water from one area to another according to the needs and availability.

13 WATER REALLOCATION POLICY BASES

The main pillars for water reallocation are sustainability, health, efficiency, equity, economy, environment and nature. Priority is given to the domestic uses followed by the other economic sectors according to their importance.

The main criterion on which the policy is built is “Adaptive Capacity”. This means that the consumption shall be restricted to certain quantities of water. Priority is given to the domestic uses that meet the minimum amount needed to maintain safe and hygienic conditions. Then priorities are set for every economic sector according to its importance and contribution to the GDP.

The structure of the subscribers served from the network varies depending on the economic activities. Hotels and restaurants are big customers that exist mainly in Amman and other big cities including Aqaba and the East coast of the Dead Sea that contains big consumers (hotels and resorts). Other industrial and commercial consumers served from the network are spread mainly inside the cities, with the intensity of those big consumers being in Amman, Zarqa and Aqaba. Other cities contain smaller consumers while the other towns and villages host the smallest.

14 OBJECTIVES

The objectives of this policy document are:

- to create rules and present statements considered fundamental in managing the scarce water resources efficiently, protecting them, and proposes actions required for implementation,
- to establish sustainability, protect health, and ensure equity endurance,
- to protect environment and nature, and
- to maintain an internationally acceptable level of economic performance.

15 WATER REALLOCATION POLICY THEMES ON USE PRIORITIES

Domestic needs have the priority. Other priorities shall be given to other economic sectors tied to its economic returns and contribution to the GDP with careful attention to the social benefits, particularly in the Jordan Valley.

15.1 ON RESOURCE UTILIZATION

- Surface water should be utilized first as much as it is a reliable source, followed by the utilization of groundwater aquifers according to their safe capacity with strict consideration to environmental, social, and economic impacts. Groundwater over-abstraction should be avoided as much as possible to save the groundwater aquifers unless there is no other alternative for meeting the municipal water demand.
- Desalination of brackish groundwater shall have priority when and where feasible and where safe yields of fresh water are fully achieved.
- Desalination of sea water shall be considered as soon as possible. Desalinated quantities shall replace water from other resources in order to re-establish safe yields of depleted aquifers.
- Wastewater shall be treated and purified for full utilization for industrial, agricultural, cooling, and other uses except for drinking purposes.
- Deep Aquifer water shall be extracted and utilized with due consideration to their potential yield, water quality, feasibility of treatment and use, and being a sustainable resource.
- Priority utilization and use shall apply to impounded waters in reservoirs; such waters shall be treated for their intended use.
- Reclaimed water shall be used for industry and agriculture as much as possible in order to save fresh water for domestic uses.
- A sustainable integrated development and conservation program and management plan shall be established to increase surface water development and usage in the Jordan Valley.
- A dynamic and sustainable economic development plan coupled with an investment program shall be formulated and implemented for using surface waters efficiently.
- Resources developed through the Private Sector Participation mechanisms such as Build Operate Transfer (BOT) that require minimum purchase quantity or paying a fixed payment regardless of the water quantity purchased should be given a higher priority for utilization.

15.2 ON DISTRIBUTION AND REALLOCATION PRIORITIES

- Each governorate shall retain its available water for its sole needs, unless is otherwise necessary due to demand or quality constraints, then it will be transferred to the geographically nearest governorate and to the governorate of highest need, with due consideration to sustainability, long-term feasibility, availability of infrastructure and minimizing the cost of transferring water.
- Shared water resources shall be allocated to the governorate and the water system of the highest need and geographically closest, and which can technically receive the water regardless the water production cost.
- Supplied water shall be increased to achieve the target shares by reducing water losses in the water systems.
- Availability of water infrastructure shall be ensured during the reallocation process. Plans shall be made for infrastructures to meet the long-term needs and/or the structure lifetime.
- Water reallocation among Jordan's regions should consider achieving fairness and equity in water distribution and maximizing the economic value of water used.

15.3 ON PLANNING AND MANAGEMENT

- Planning guidance on sustainable design and construction shall be introduced to the Building Code to ensure that all new homes and apartments shall meet the 100 l/c/d standard.
- The peak factors covering the peak seasonal demand, mode of water supply (intermittent vs continuous), and peak hour demand periods shall be considered for designing water systems capacity as well as the required resources.
- Changing the mode of water supply from intermittent to continuous supply when the water distribution area is fully isolated and controlled and from pumping to gravity supply using command reservoirs and distribution areas as technically possible.
- Water appliances and water-saving devices shall be adopted in all housing designs.
- Storage of rainwater from roofs shall be enforced. Storage volumes shall be set in building codes depending on the roof area and average precipitation.
- Measures shall be adopted aiming at protecting surface water supplies from pollution and minimizing losses by surface evaporation and seepage.
- Water harvesting schemes in highlands shall be enhanced, especially the design and construction of desert dams.
- Water infrastructure including mains and laterals shall be rehabilitated depending on its efficiency to achieve improved services, reduce losses, and protect water from pollution.

- In extreme events, during drought periods, and when climate changes result in reduced water quantities, scenarios allowing reducing the impact shall be pursued and implemented with care.

15.4 ON TREATED WASTEWATER

- The quality of treated wastewater from all municipal and industrial wastewater treatment plants shall meet national standards, monitored regularly, and be reviewed periodically.

15.5 ON TREATED WASTEWATER STANDARDS

- Wastewater Standards shall be revised and amended to meet direct and indirect water reuse for the production of high-value crops. All concerned governmental ministries, agencies, and bodies dealing with environment and irrigation issues shall be consulted and be part of the decisions related to effluent quality.

15.6 ON IRRIGATION

- Fresh water allocated to irrigated agriculture in the highlands shall be capped and eventually reduced according to medium and long-term plans to be prepared and implemented after which the reallocation plan can be updated accordingly.
- Irrigation water in the Jordan Valley shall be increased when new or treated wastewater is increased.
- Fresh water shall be replaced by treated wastewater. Thus, irrigated agriculture can be expanded only where treated wastewater is available.

15.7 ON LOCAL AND REGIONAL COOPERATION

- Close cooperation via a joint committee between Ministries of Water and Irrigation, Environment, Agriculture, and other organizations whose activities directly or indirectly involve the performance in the water sector to develop short-, medium- and long-term plans to monitor and control the water quality, use, and impacts.
- Close cooperation shall be maintained with the other public entities. Planning for project implementation and thereafter for water allocation shall be based on these considerations.
- Exchange of information and experiences between Jordan and other countries shall be established. This can be achieved by twinning procedures, and other activities. The Water Strategy for Arab Countries can serve as a base for initiating regional cooperation.
- Jordan's rights in shared surface and groundwater resources shall be pursued and

- guaranteed through international agreements, thus Jordan should take leadership in regional cooperation for shared water resources to protect Jordan's water rights and improve water security.

15.8 ON THE ROLE OF SOCIETY

- Jordanians are aware of the country's water scarcity and all associated problems. They will also have to be made aware that water is shared by all those living in Jordan. Hence, awareness campaigns shall be launched addressing the importance of issues such as water harvesting, conserving, and protecting resources from contamination.
- Stakeholder's participation in planning, implementation, and monitoring of major projects, plans, and climate change effects shall be encouraged and effected.
- The public, through all communication means, shall be enlightened and educated on the value of water, their role in its sustainability and its relevance to their future.

15.9 ON THE ROLE OF PRIVATE SECTOR

- The role of the private sector shall be enhanced and expanded with regard to the treated wastewater reuse, and irrigated agriculture in the Jordan Valley with the aim of reducing the water usage and/or increasing the production per cubic meter used.

15.10 ON MONITORING

- A monitoring system for the reallocation plan shall be established based on collected, formatted, and retrievable data.
- Modern technologies for data collection, validation, analysis, modeling, sharing, and dissemination shall be employed and expanded.
- The National Water Master Plan shall include updated information on water use for all sectors and areas, groundwater levels, abstraction, rainfall, evaporation, spring discharge, etc. which shall be used for reallocation update every five years.

15.11 ON LEGISLATION

- Laws and regulations in effect shall be enforced and updated periodically when needed.
- On Institutional Considerations
- Different training and education programs shall be implemented in order to achieve high-level and efficient planning, operation, and management.

15.12 ON POLICY FOLLOW-UP

- The Policy shall be monitored and evaluated after the completion of every water resource project and updated every 3 years and whenever there is a change in inputs, especially during drought and wet seasons, changes in demographics, and economic developments in the other sectors.