



MINISTRY OF WATER & IRRIGATION

# JORDAN WATER SECTOR FACTS AND FIGURES



2022





MINISTRY OF WATER & IRRIGATION

# **JORDAN WATER SECTOR FACTS AND FIGURES 2022**

# Opening Statement



Jordan suffers from water scarcity, which poses a threat that would affect all sectors that depend on the availability of water for the sustainability of activities for their development and prosperity.

Water is an essential element for the uses of households, industry and agriculture, the growing water deficit from one year to another and increasing challenges in light of the increasing population and climate change, pose serious threat which leaves its impact on all sectors.

The availability of information is one of the most important determinants of dealing with the situation and the development of strategies, policies and plans. The information availability contributes to making the right decisions and helps all concerned sectors to understand and accept the decisions that will have an impact on the sectors development and growth. Consequently, the Ministry of Water and Irrigation is issuing this bulletin to provide information to stakeholders in the water sector including individuals, public and private sectors in addition to the funding and donors agencies of the water sector. We hope that the published information will be of value to all stakeholders and other parties that may have an interest in the water sector. MWI will continue to provide such information in the future and on periodic basis.

**H.E. Eng. Raed Abu Soud**  
**Minister of Water and Irrigation**

## Opening Statement



The Ministry of Water and Irrigation has the mandate to develop studies, strategies, policies and plans necessary for the water sector, in collaboration with the Water Authority of Jordan, the Jordan Valley Authority and the water companies operating throughout Jordan.

These studies and strategies are made available to the decision makers to be used in the most optimal manner for water resources management, directing them to demand areas, according to the priorities to ensure provision of water continuously to various users; domestic, industrial and agricultural.

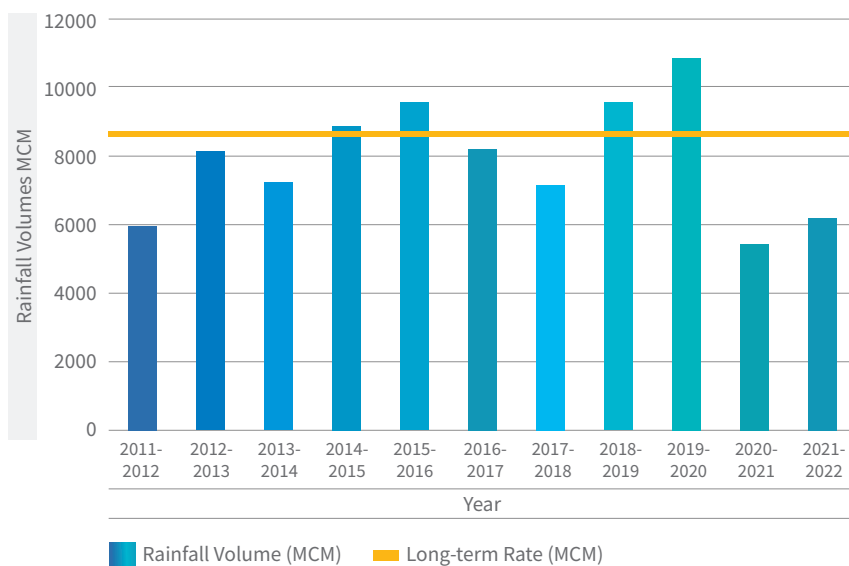
Within the interest of the water sector to implement the principle of transparency in providing the water sector facts and figures to the stakeholders and those interested in the water situation of Jordan, the ministry is publishing this information bulletin that aggregates and describes the water sector.

The information herewith is the result and outcome of the efforts of Ministry of Water and Irrigation staff who work to serve Jordan and its citizens. The ministry intends to publish this information and update it periodically. This publication is intended to facilitate access to information related to the water sector from its source periodically. Hence, we welcome any positive feedback to improve this bulletin in the future.

**Dr. Jihad Saleh AlMahamid**  
**Secretary General - Ministry of Water and Irrigation**

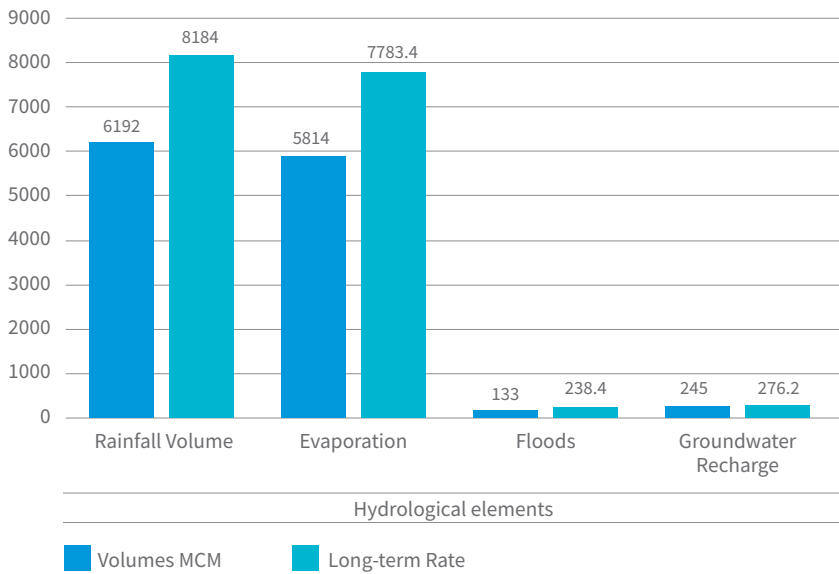
## Rainfall Volumes from (2011-2022) and the long term rate.

year	Rainfall Volume (MCM)	Long-term Rate (MCM)	Deviation from Long term Rate
2011 / 2012	5943	8195	-2252
2012 / 2013	8120	8194	-74
2013 / 2014	7228	8181	-953
2014 / 2015	8884	8191	693
2015 / 2016	9483	8207	1276
2016 / 2017	8165	8206	-41
2017 / 2018	7146	8165	-1019
2018 / 2019	9568	8210	1358
2019 / 2020	10836	8241	2595
2020 / 2021	5414	8208	-2794
2021 / 2022	6192	8184	-1992



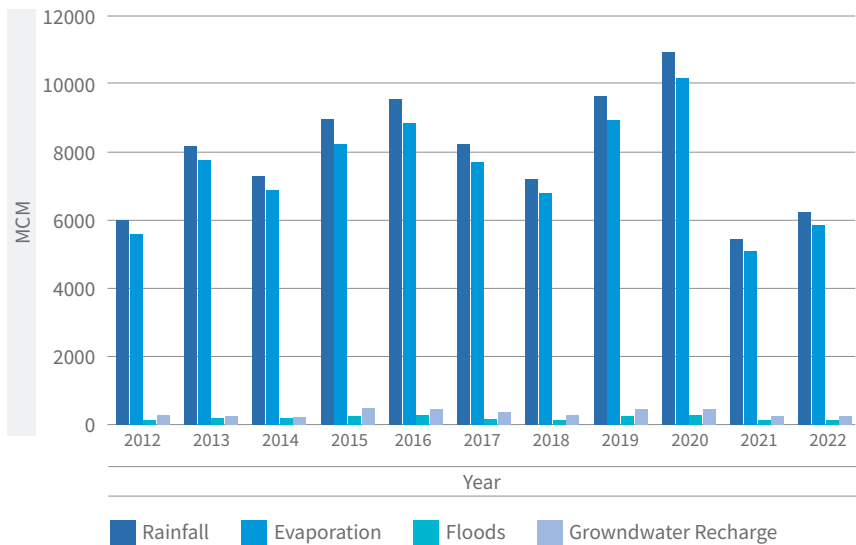
## Surface Water Budget 2022.

Hydrological elements	Volumes MCM	Percentage to Rainfall	Long-term Rate	Percentage to Long term Rate
Rainfall Volume	6192		8184	76%
Evaporation	5814	94%	7783	75%
Floods	133	2%	238	56%
Groundwater Recharge	245	4%	276	89%



## Surface Water Budget in Million Cubic Meter (2012-2022).

year	Rainfall	Evaporation	Floods	Groundwater Recharge
2012	5943	5535	139	269
2013	8120	7689	187	244
2014	7228	6817	180	231
2015	8884	8154	245	485
2016	9483	8772	266	445
2017	8165	7636	167	362
2018	7146	6748	128	269
2019	9568	8871	256.8	439.8
2020	10836	10098	273	465
2021	5414	5059	117	238
2022	6192	5814	133	245



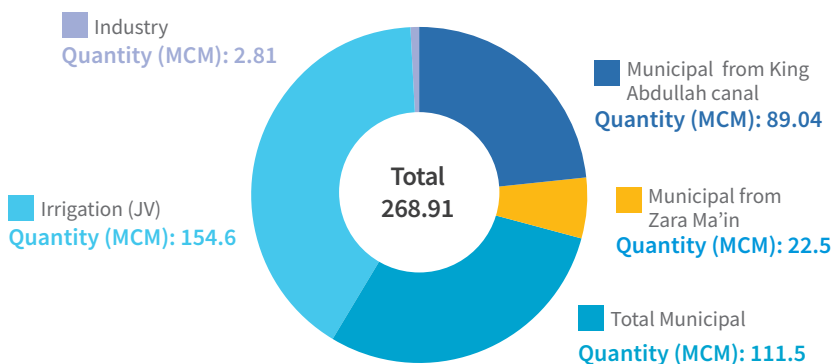


## Dams design capacity, storage, inflows, and outflows in 2022.

Dam	Design Capacity (MCM)	Total Inflows (MCM)	Total Outflows (MCM)	Storage End of (MCM)
Wehdeh	110	27.7	29.3	17.5
Wadi Arab	16.8	8.4	7.4	7.68
Zeqlab	4	1.7	1.6	1.79
Kufranjeh	7.8	3.9	4.2	3.43
King Talal	75	136.7	133.8	46.69
Karameh	55	1.9	2	24.38
wadi Shueib	1.7	12.3	12.6	1.25
Kafraïn	8.5	12.6	11.9	6.64
Zrqaa maeen	2	0.28	0.2	0.27
Allajon	1	0.12	0.1	0.11
Tanour	14.7	3.4	0.06	0.003
Wala	28.6	1.7	4.2	3.33
Mujeb	29.8	4.6	1.3	0.81
Karak	2	0.3	0.2	0.23
Total	356.8	215.6	208.86	114.113

Percentage of storage from design capacity 32%

## Water Uses for Different Purposes from Jordan Valley resources 2022.



### Water Users Associations in Jordan Valley irrigated areas.

Location	No. of WUA's	Coverage Percentage from the directorate %	Coverage Percentage from the vally %
Northern Ghours	6	67	21
Middle Ghours	3	25	8
South Shuna	6	84	17
Southern Ghours	3	37	6
<b>Average</b>	<b>18</b>		<b>52</b>

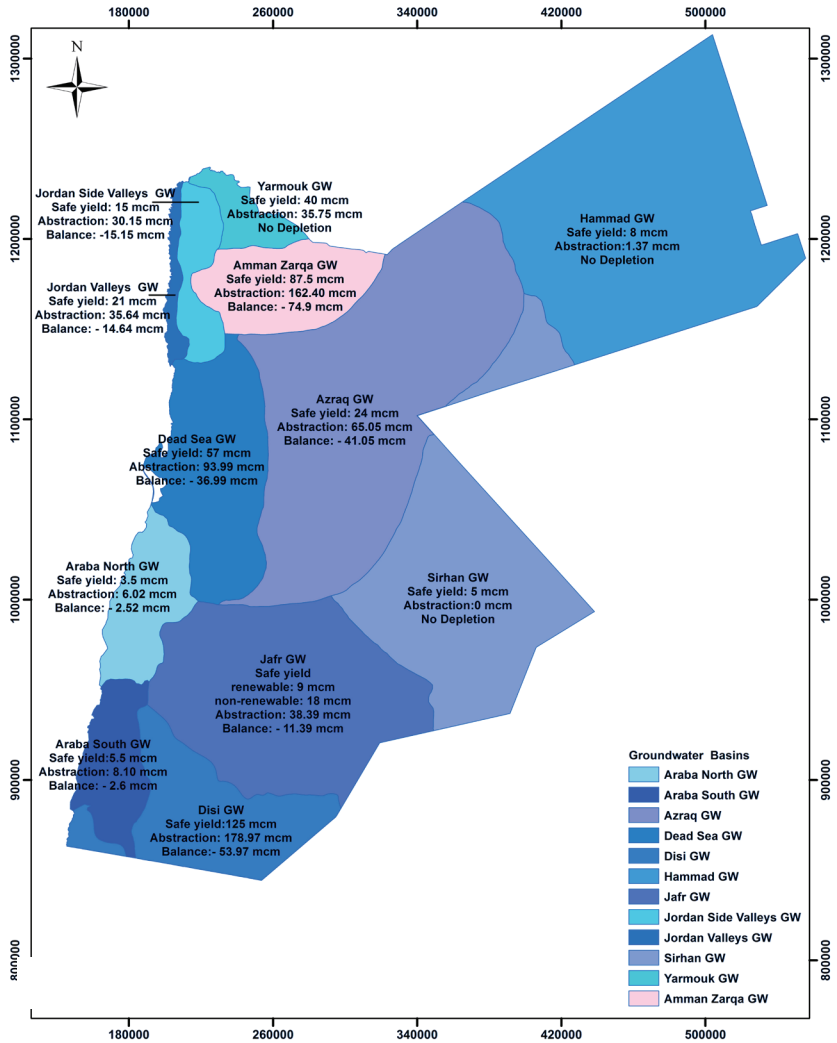
### Water Harvesting projects (Desert Dams. Earth Ponds and Concrete).

Water Harvesting type	Count	Design Capacity (MCM)
Desert Dams (Constructed)	68	97
Desert Dams (Under Construction)	1	0.01
Concrete Ponds	74	0.301
Earth Ponds (Constructed)	341	29.67
<b>Total</b>	<b>484</b>	<b>127</b>

### Ground Water basins, Safe Yields, Abstraction Volumes in 2022 and Deficits.

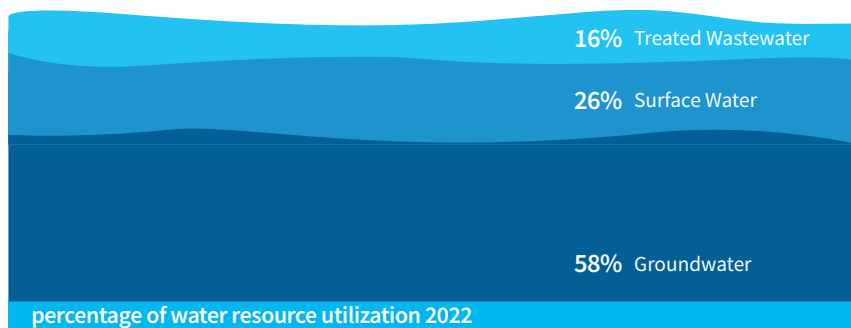
Groundwater Basin	Safe Yield (MCM)	Abstraction (MCM)	Deficit (MCM)
Disi & Mudawara	125	178.97	-53.97
Amman-Zarqa	87.5	162.4	-74.9
Yarmouk	40	35.75	4.25
Jordan Side Valley	15	30.15	-15.15
Azraq	24	65.05	-41.05
Jafer	27	38.39	-11.39
Jordan Valley	21	35.64	-14.64
Dead Sea	57	93.99	-36.99
Araba South	5.5	8.1	-2.6
Hammad	8	1.37	6.63
Sirhan	5	0	5
Araba North	3.5	6.02	-2.52

# Groundwater basin Map 2022.

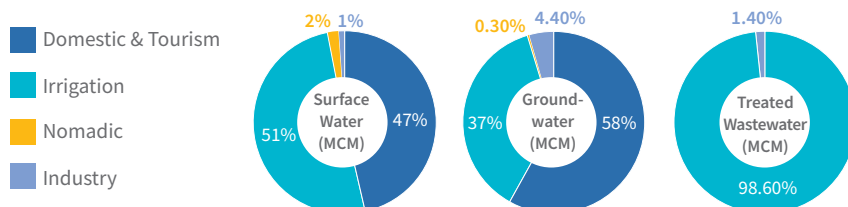


## Water uses and resources in 2022 (MCM).

Uses/Resources MCM	Groundwater (MCM)	Surface Water (MCM)	Treated Wastewater (MCM)	Total (MCM)
Domestic & Tourism	381.04	136.61	0	517.65
Irrigation	244.01	149.98	175	568.99
Nomadic	2.15	4.63	0	6.78
Industry	28.65	2.81	2.48	33.94
Total	655.85	294.03	177.48	1127.36
Percentage	58%	26%	16%	100%

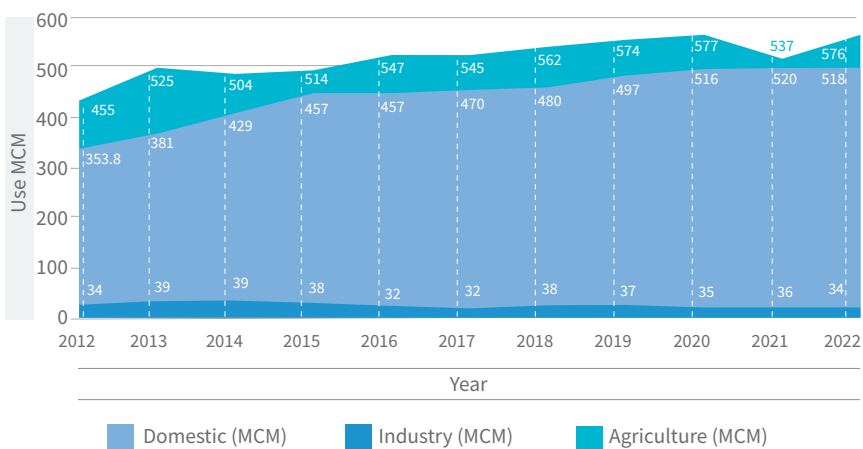


## Water resources and the percentage of their uses in 2022 (MCM).



## Water Uses (MCM) for Different Purposes 2012 -2022.

Year and Use	Domestic (MCM)	Industry (MCM)	Agriculture (MCM)	Total
2012	354	34	455	843
2013	381	39	525	945
2014	429	39	504	972
2015	457	38	514	1009
2016	457	32	547	1036
2017	470	32	545	1047
2018	480	38	562	1080
2019	497	37	574	1109
2020	516	35	577	1128
2021	520	36	537	1093
2022	518	34	576	1127



## Water Resources Monitoring Stations.



### Rainfall Stations

Telemetric: 99

Normal: 174

Total: 273



### Climate Stations

Telemetric: 50

Normal: 21

Total: 71



### Runoff Stations

Telemetric: 6

Normal: 23

Total: 29



### Groundwater Level

Telemetric: 92

Normal: 129

Total: 221



### Spring Discharge

Telemetric: 0

Normal: 425

Total: 425



### Dams

Telemetric: 8

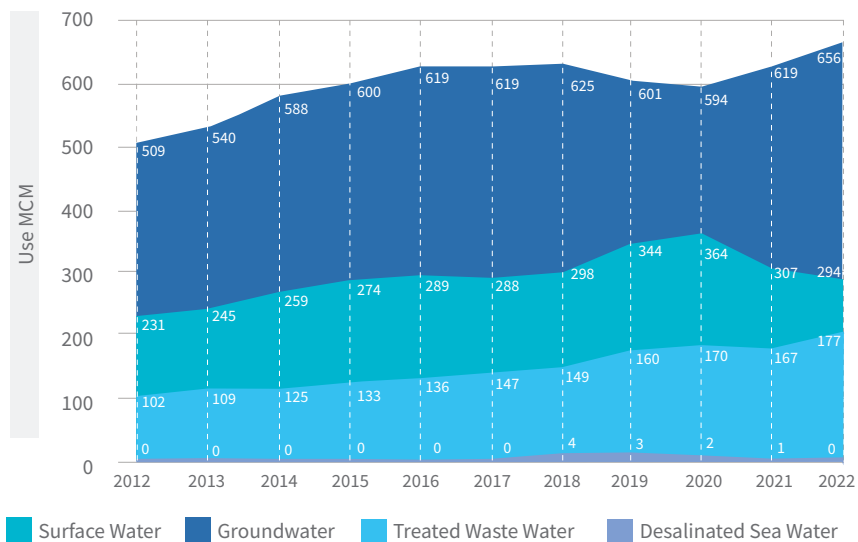
Normal: 0

Total: 8

## Development of water resources for all uses in MCM (2012-2022).

Year Sources	Surface Water (MCM)	Groundwater (MCM)	Treated Waste Water (MCM)	Desalinated Sea Water (MCM)	Total (MCM)
2012	231	509	102	0	842
2013	245	540	109	0	894
2014	259	588	125	0	972
2015	274	600	133	0	1007
2016	289	619	136	0	1044
2017	288	619	147	0	1054
2018	298	625	149	4	1076
2019	344	601	160	3	1109
2020	364	594	170	2	1130
2021	307	619	167	1	1093
2022	294	656	177	0	1127

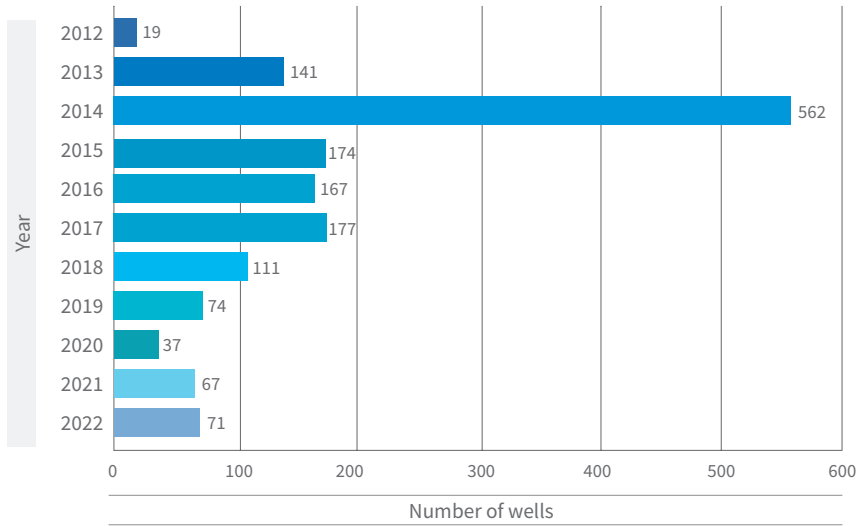
## Development of water resources for all uses in MCM (2012-2022).



## Number of Operational Wells According to Water Uses 2012-2022.

Year	Industrial	Agriculture	Drinking	Livestock	Total
2012	181	2254	588	20	3043
2013	206	2210	602	16	3034
2014	200	2000	781	50	3031
2015	201	2163	756	18	3138
2016	188	2170	761	26	3145
2017	203	2210	805	54	3272
2018	188	2262	824	47	3321
2019	180	2164	797	42	3183
2020	181	2189	796	42	3208
2021	178	2268	766	38	3250
2022	182	2332	813	58	3385

## Number of Backfilled Illegal Wells 2012-2022.

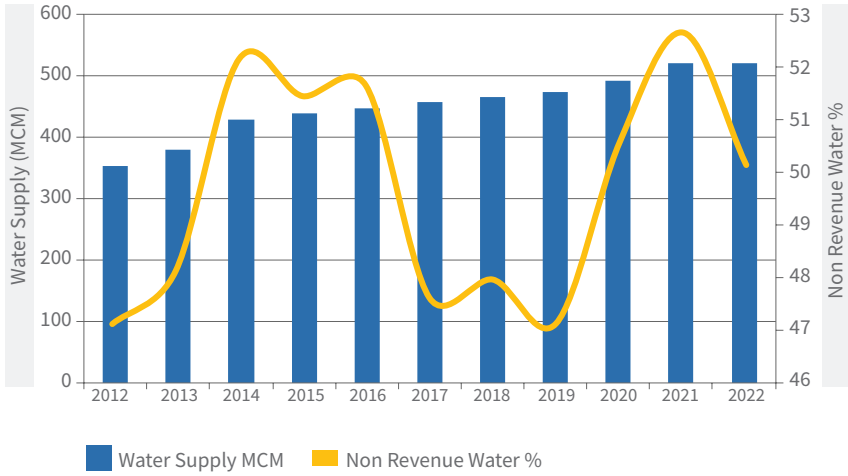


## Drinking Water Supply and Non-Revenue Water 2012-2022.

Year	Water Supply MCM	Non Revenue Water %
2012	354	47
2013	381	48
2014	429	52
2015	440	51
2016	447	52
2017	458	48
2018	466	48
2019	474	47
2020	493	50
2021	521	53
2022	520	50



## Drinking Water Supply and Non-Revenue Water 2012-2022.



## Samples of Drinking Water Conforming to Jordan Quality.

Year	Conforming Percentage
2014	99.6
2015	99.5
2016	99.62
2017	99.67
2018	99.70%
2019	99.60%
2020	99.40%
2021	99.50%
2022	99.70%

---

**Water Supply (l/c/d) 2012-2022.**

---

Year	Water Supply
2012	121
2013	123
2014	132
2015	128
2016	127
2017	125
2018	124
2019	123
2020	125
2021	138
2022	126

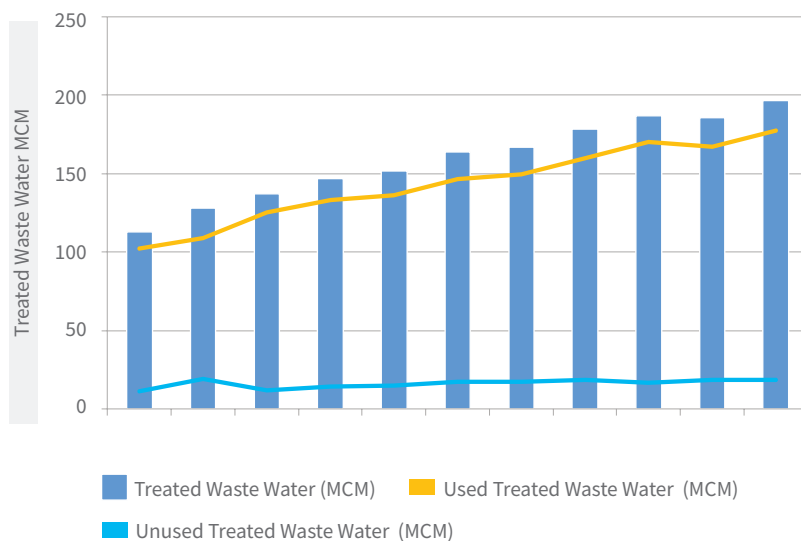
---

**Treated Wastewater Volumes (MCM) 2012-2022.**

---

Year	Treated Waste Water (MCM)	Used Treated Waste Water (MCM)	Unused Treated Waste Water (MCM)
2012	113	102	11
2013	128	109	19
2014	137	125	12
2015	147	133	14
2016	151	136	15
2017	164	147	17
2018	167	149	17
2019	178	160	18
2020	187	170	17
2021	186	167	19
2022	196	177	19

## Treated Wastewater Volumes (MCM) 2012-2022.



## Wastewater Treatment Plants in Jordan 2022.

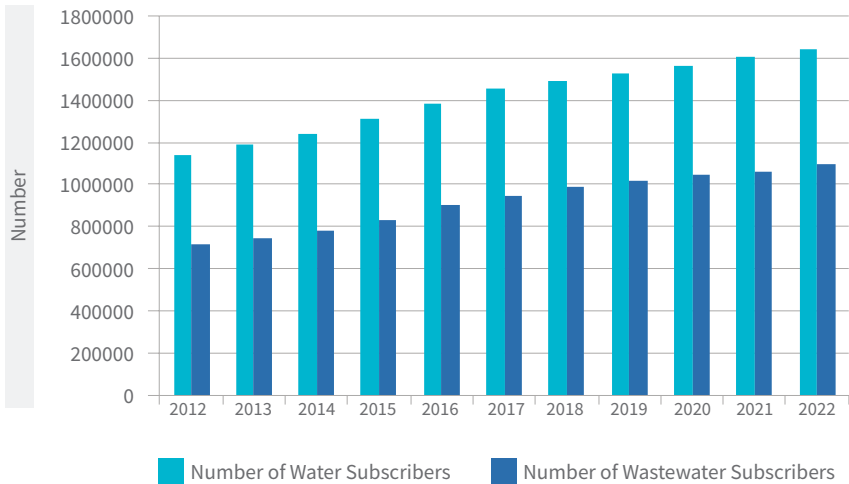
Name of WWTP	Stations developed and under development	Design capacity m <sup>3</sup> /day	Actual load flow / 2020 m <sup>3</sup> /day	Technology	Operation Year	BOD5 Design
Mechanical Aqaba		40000	22511	Under construction	2005	500
Albaqaa / Ain Albasha	Under study and designs for new plant	14900	18349	Biological filters	1987	800
Alfoheis and Mahis	Under study, expansion	2400	3754	Activated sludge	1997	600

Name of WWTP	Stations developed and under development	Design capacity m <sup>3</sup> /day	Actual load flow / 2020 m <sup>3</sup> /day	Technology	Operation Year	BOD5 Design
Irbid Central	converted into activated sludge	11000	9350	Activated sludge	1987	1095
Jarash (east)	under development	9500	4929	Activated sludge	1983	1100
Almeirad		10000	3205	Activated sludge	2011	600
Alkarak	under development	1000	1200	Activated sludge	1988	800
Kufr Najah	converted into activated sludge	9000	3717	Activated sludge	1989	600
Madaba	Under study, expansion	7600	7853	Activated sludge	1989	950
Almafraq Natural	converted into a mechanical	5500	5190	Aerated basins	2017	708
Maan	From natural to mechanical	3900	2892	Activated sludge	1989	600
Alramtha	under development	11000	5190	Activated sludge	1987	1000
Alsalt	under development	7700	9470	Activated sludge	1981	600
Altafeilih	Developed	5000	2103	Activated sludge	1988	1060
Wadi Alarab	under development	21000	15500	Activated sludge	1999	850
Wadi Hassan	Under study, expansion	1600	1600	Activated sludge	2001	800

Name of WWTP	Stations developed and under development	Design capacity m <sup>3</sup> /day	Actual load flow / 2020 m <sup>3</sup> /day	Technology	Operation Year	BOD5 Design
Wadi Musa		3400	3042	Activated sludge	2000	500
Wadi Alseir	Developed	17000	10158	Activated sludge	1997	670
Alakedar		4000	2060	Natural basins	2005	4000
Allajon	From normal to Airy basin	1200	853	Ventilated basins	2005	1500
Tal Almantah	under development to 800	400	518	Biological filters + Activated sludge	2005	4000
Alshobak		350	232	Natural basins	2010	1850
Alsamraa	From natural to mechanical	365000	367598	Activated sludge	1984 old 2008New	700
Almansorah		50	11	Drying basins	2010	1850
South Amman	Under study	52000	28818	Activated sludge	2015	750
Wadi Alshalaleh		13700	13385	Activated sludge	2014	762
Mutah Al-mazar and Aladnaneih		7000	2193	Activated sludge	2014	673
North Shoneh		1200	1374	Natural basins	2015	2200
Zaatari refugee camp		3500	2499	MBR+TF	2015	1130
Azraq refugee camp		1760	0	MBR+TF		1500

## Number of Water and Wasterwater Subscribers 2010-2022.

Year	Number of Water Subscribers	Number of Wastewater Subscribers	Household Served in Sewer Systems % 4
2010	1048207	646519	62%
2011	1095191	677961	62%
2012	1142457	716671	63%
2013	1190831	742763	62%
2014	1240360	780661	63%
2015	1308043	834093	64%
2016	1382628	906291	66%
2017	1455417	946917	65%
2018	1491326	989416	66%
2019	1524191	1016774	67%
2020	1563566	1044004	67%
2021	1604025	1062856	66%
2022	1641991	1098661	67%



## Cost Analysis for Water Authority and water companies in Millions JD.

Description	2017	2018	2019	2020	2021	2022
Running Costs (O&M) without interests	233	230	236	215	243	206
<b>Capital Costs divided into:</b>						
1. Self-Financed expenses	170	173	171	143	160	166
2. Expenses covered by International loans	29	41	43	19	29	21
3. Expenses covered by external grants	29	24	26	17	15	49
Payments of installments and benefits (external + internal)	147	68	57	35	36	29

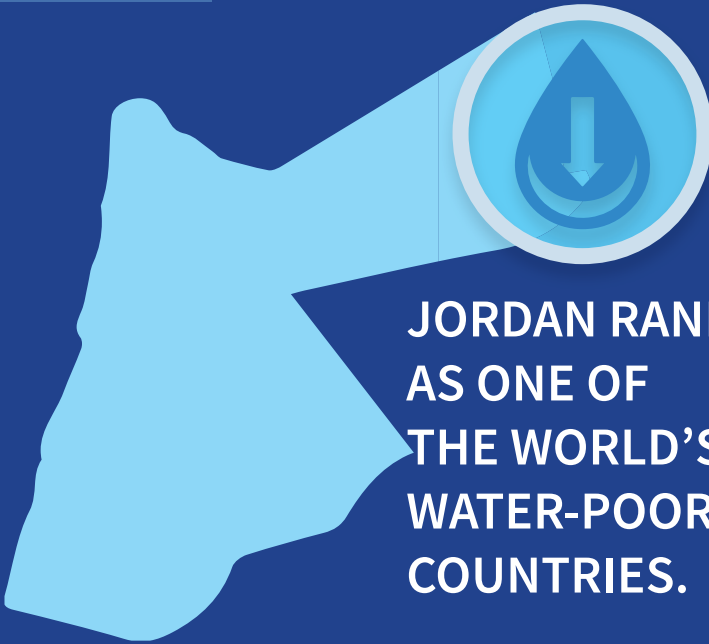
## Energy Consumption per Billed Water with Energy Consumption Rate.

<b>Water Authority of Jordan</b>			
Year	Electricity Consumption (GW.h)	Billed Water MCM	Electricity Consumption Rate (KW.h/CM)
2021	1726	248	6.96
2022	1689	260	6.5

<b>Jordan Valley Authority</b>			
Year	Electricity Consumption (GW.h)	Billed Water MCM	Electricity Consumption Rate (KW.h/CM)
2021	47.45	165	0.29
2022	43.65	159	0.27

<b>Water Sector</b>			
Year	Electricity Consumption (GW.h)	Billed Water MCM	Electricity Consumption Rate (KW.h/CM)
2021	1773.5	413	4.29
2022	1732.7	419	4.14

# FACTS



## JORDAN RANKS AS ONE OF THE WORLD'S WATER-POOR COUNTRIES.



Less than 100m<sup>3</sup> of annual renewable water resources is available per person (below global line for absolute water scarcity of 500m<sup>3</sup>).

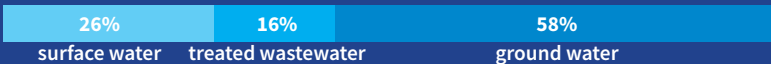


Of the 12 main aquifers underlying Jordan, 10 are being depleted beyond their recharge volumes.

Jordan is composed of 15 surface water basins and 12 groundwater basins.

The shared water with neighboring countries is around 26% of the total water resources.

### Sources of water for all uses are:







Quantity of renewable water resources available for different purposes is around 949.84 MCM annually.



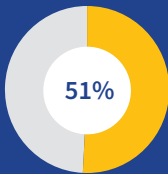
The number of working wells in Jordan exceeds 3402 wells.



The groundwater level in the main aquifers drops at a rate of 2 meters per year, but the decline in some depleted areas reaches 5 to 20 meters.

The safe yield abstraction quantity from renewable groundwater is 275 MCM, while the safe yield abstraction quantity from nonrenewable groundwater for 50 years is about 143 MCM.

Quantity of over pumping from groundwater is about 200 MCM.



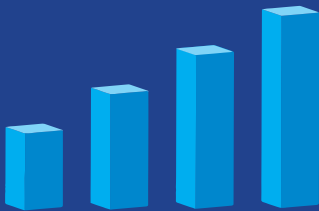
of surface water and 37% of groundwater are used for agriculture.

94.57% of water sources are described as “safely managed” (SDGs),



96.2% of population are connected to piped water supply in urban areas.

88.1% in rural areas.



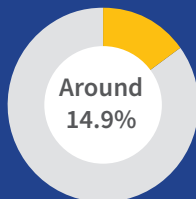
The increase in demand for Domestic water in the northern governorates has increased by 40% in the last few years as a result of hosting Syrians.

# FACTS

The percentage of the Jordanian population who has a water supply for 24 hours/week or less is estimated at 50.3%, while the water supply for 49.7% of Jordanians ranges from 24-48 hours/week.

The estimated water demand quantity for all sectors is 1127.35 MCM in 2022

90% of the drinking water supplied to the capital comes from sources distanced 125 to 325 km away and elevated up to about 1200m with 5 pumping stages, while 42 % of the drinking water supplied to northern governorates comes from sources distanced 20 to 76 km away and elevated up to about 1100m with 5 pumping stages in elevation (translated into higher cost for water supply).



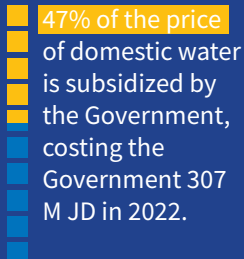
from electricity is consumed in water pumping and other water services.



The estimated non-revenue water is 50% in 2022 comparing to 43% in 2010; it is divided to more than 50% as an administrative losses and less than 50% physical losses from the networks.



67% of households have a sewer connection; only 3% have a sewer connection in rural areas. 88.5% of sanitation systems are described as safely managed.



Each Syrian refugee costs the water sector around 440JD/year, in financial, environmental, and economic costs.

**Imprint**

This publication is designed and printed through a generous fund from UNDP JO

**Authors - MWI****Water Documentation & Awareness Centre Team:**

(Geo. A'laa Atieh – Geo. Sagedah Bani Irshid)

**Assistant Authors - MWI****Water Documentation & Awareness Centre Team:**

Eng. Safa'a Al-Shraideh - Eng. Reema Abedmoussa

This Book is Geologist Thair Al-Momani's Idea - MWI

**Jordan Water Sector****Facts & Figures 2022****Ministry of Water and Irrigation**

P.O.Box:2412-5012 Amman 11181 Jordan

Tel: +962 6 5652267 /+962 6 5652265

Fax: +962 6 5652287

[www.mwi.gov.jo](http://www.mwi.gov.jo)

**MINISTRY OF WATER & IRRIGATION**