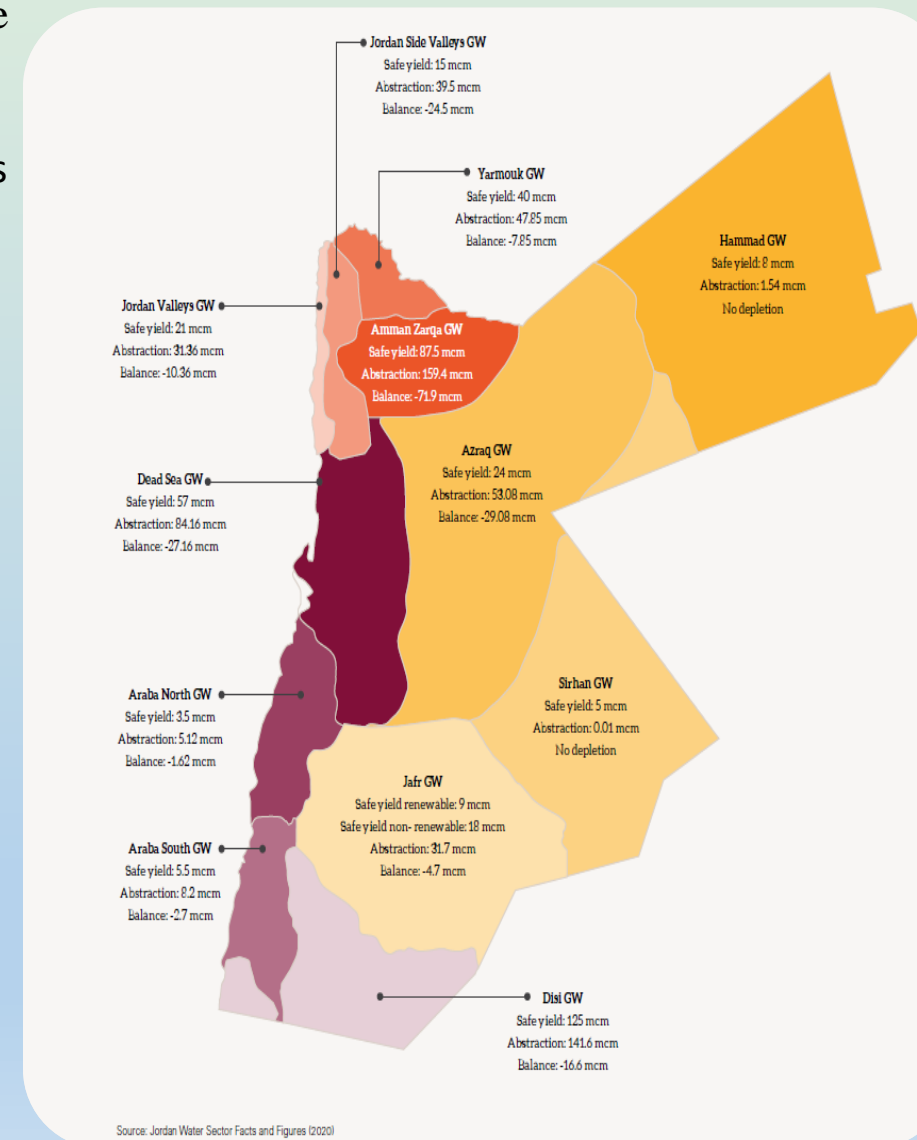


# Ground Water Governance

# Groundwater

- Jordan have 12 groundwater basins some are renewable groundwater basins and some are none-Renewable groundwater basins(Disi)
- some of basins are fully located within the Kingdom's borders and others extend to areas of land of neighbouring countries.
- These basins vary in terms of:
  - area
  - importance to sources of demand
  - storage capacity
  - groundwater productivity
  - amount of annual recharge of aquifers
  - quality of their water.
- The most important and most used of these basins are :
  - Amman\_Zarqa Basin, which extends from the south of Amman and extends north to part of Syria
  - Disi Basin, which produces non-renewable groundwater in the south.



# Facts about ground water in Jordan :

- Groundwater resources have been overexploited since the 1980s.
- more groundwater is being abstracted than is recharged to the aquifers.
- Climate change is causing a reduction in groundwater recharge. Water levels are rapidly declining, in some areas by up to 10 m per year and more.
- Exploitation costs are therefore increasing rapidly. Large areas where the aquifers were previously exploited will become dry by 2040.
- The over abstraction in many areas is also causing a change in groundwater flow. In the future, higher treatment costs will be required because brackish groundwater will increasingly move from the eastern part of the country towards the western part, which is currently the most exploited.
- Ground water considered as the largest share of Jordan's water supply by 57% half of which goes to agriculture in high land.

# Groundwater Use

- The consumption of groundwater production has been increased by 25 % during the last decade.
- In 2021, the total use of groundwater was estimated at 637 MCM. Domestic use of groundwater allocation is given priority. The municipal and agricultural sectors utilize more than 93% of abstracted groundwater.
- The groundwater share in 2021 increased to:
  - 61% for municipal (378 MCM).
  - 34% for agriculture (212 MCM) .
  - The remaining 5% is consumed by the industrial sector (26.7 MCM) and livestock

# Legislation

guideline of water resources protection for the year 2019.

By law Ground water monitoring No. 85 of 2002  
under taken by MWI

law of water authority and its Amendments No.  
18 of 1988

Law on the Development of the Jordan Valley and  
its Amendments No. 19 of 1988

Ministry of water and Irrigation Roles	Water Authority of Jordan Roles	Jordan Valley Authority Roles	Water Utilities Roles
<ul style="list-style-type: none"> <li>• Water Sector policies</li> <li>• Sector strategic planning and investment</li> <li>• Water resources planning, management, allocation and monitoring</li> <li>• Economic studies</li> <li>• International agreements &amp; follow up</li> <li>• Financing management</li> </ul>	<ul style="list-style-type: none"> <li>• Water resources development and allocation</li> <li>• Water and WW infrastructure planning and major project implementation</li> <li>• Water quality monitoring</li> <li>• Private wells (licensing, billing &amp; collection)</li> <li>• Central support (Workshops, drilling)</li> <li>• Regulating water use and demand management</li> <li>• Sector polices development</li> <li>• Sector legislations</li> <li>• Water tariff and fees recommendations</li> </ul>	<ul style="list-style-type: none"> <li>• JV water resources development</li> <li>• Regional water management</li> <li>• Dams and bulk resources O&amp;M</li> <li>• Irrigation project management</li> <li>• Irrigation system O&amp;M (Including KAC)</li> <li>• Regulating wells development</li> <li>• WUAs management</li> </ul>	<ul style="list-style-type: none"> <li>• Commercial affairs</li> <li>• Retail water &amp; WW O&amp;M</li> <li>• Retail O&amp;M capex management</li> <li>• Minor infrastructure capex management</li> </ul>

## **Ministry of water and Irrigation Activities:**

- 1. Groundwater Assessment**
- 2. Groundwater Protection**
- 3. Management of Groundwater**
- 4. Data Base and Data Collection**

## **Water Authority of Jordan Activities:**

- 1. Management of Groundwater**
- 2. Data Base and Data Collection**
- 3. Awareness**

# Ministry of water and Irrigation Activities:

## Groundwater Assessment:

- by 1995, comprehensive assessment of groundwater level monitoring was done within the framework of the BGR project Groundwater Resources Assessment of Northern Jordan.
- At that time there were 92 groundwater level monitoring station
- In the mid-2000s work started on converting manual stations and automatic recorders to pressure transducers with loggers and often telemetric data transfer.
- There are currently 147 groundwater level monitoring stations which 56 of them were recently installed and equipped with telemetry through the KfW HSSP project
- 22 groundwater wells were newly drilled for water level monitoring.



## Groundwater Protection :

- in 1999 ,Protection zones for groundwater wells and springs were introduced, first for the Tabaqat Fahel.
- In 2002, the Groundwater Resources Management (GWRM) project, guidelines were developed for groundwater later updated as ACSAD groundwater guideline no. 5.
- By2006,high number of protection zones were delineated.
- By 2010, 31% of all domestic water supply was protected through protection zones.
- The BGR project Water Aspects in Land use Planning (WALUP) continued to delineate protection zones for the( Azraq, Hidan) 2013, and Siwaqa wellfields as well as Tannour and Rassoun springs2015
- Through USAID projects, the Quairawan spring and Wadi As Sir spring protection zones were delineated.

## Management of Groundwater :

- MWI initiated the Groundwater Sustainability policy in 2015 to protect and release pressure on ground water aquifers which is being updated currently.
- Delineating and monitoring Protection zones for all groundwater recharge zones.
- Protecting Recharge areas for aquifers against pollution caused by solid , liquid ,waste disposal, mining, landfills, brine disposal, agricultural inputs.

## Data Base and Data Collection :

- Establishing national water data bank and supporting by a decision support unit and monitoring and collecting, entering , updating, processing and dissemination of information.
- Supporting monitoring system for groundwater resources . .
- Producing annual Water budget including (groundwater levels, abstraction, rainfall, evaporation, spring discharge, uses) for all ground and surface basins
- Adoption of modern technologies for data collection, validation, analysis, modelling, sharing, and expanding.(WEAP, Groundwater model....)

# Water Authority of Jordan Activities:

## Management of Groundwater

- Replacing fresher water resources by treated wastewater which quality meeting national standards with public health requirements for agricultural and industrial uses.
- Preparing and updating contingency plans for the purpose of allocating the water from privately operated wells for use in the municipal networks.
- Cooperation with concerned authorities and other governmental bodies to ensure that restrictions of protection zones are implemented
- Enforcing Legislations to groundwater management are equally on all well-owners.
- sustaining prohibition of well licensing for agricultural purposes.
- Enhancing recharge ground water both naturally or artificially.
- Cooperation with neighbouring countries for the optimal and sustainable use and management of the shared groundwater resources

## Data Base and Data Collection

- monitoring all water resources for water quality, and ensuring that water quality standards are consistently being met.
- Metering , and monitoring Abstraction from all groundwater wells made periodically to assure conformity with the provisions of the abstraction permits.
- Adoption of modern technologies for data collection, validation, analysis, modelling, sharing, and expanding.

# Awareness

- Spreading awareness of the importance of the water sources and water scarcity and the importance of conserving and protecting our limited water resources.
- Preparing messages at multiple levels and disseminated to audiences on groundwater abstraction.

# Governance-related Challenges

**1. Conflicts of interest and duplication of roles** between the sector different institutions in several aspects, including:

- a) Between the Water Authority and its water companies.
- b) The presence of some overlap and dispersion in the management, development and control of water resources between the Water Authority, Jordan Valley Authority and the Ministry.
- c) The current double responsibility of the Water Authority as a major user of groundwater and as regulator of private wells.

# Governance-related Challenges

- 2. The absence of an independent and impartial body to regulate and monitor the performance of water companies (Regulatory Body).**
- 3. The control and centralization of the Water Authority Law** on most aspects of management of the water sector and the poor legislative empowerment of the Ministry of Water to take its responsibilities.
- 4. The poor institutional coordination at the strategic and executive levels** between the entities operating in the sector on the one hand and the Ministry of Water on the other.
- 5. Lack of effective independence for water companies,** their poor governance, and the lack of accountability and mechanism concept.



# Governance-related Challenges

- 6. Absence of an effective accountability and transparency** role and lack of an effective mechanism to define objectives and expected results and linking them to performance evaluation and the resources required to achieve them.
- 7. Weak decision-making support and the evidence and information** – based strategic planning.
- 8. Poor penalties and mechanisms** for their strict and fair application to anyone involved in the illegal use of water.

**Thank you For Listening**