The Ministry of Water and Irrigation

Water Sector Policy

For Groundwater Sustainability

2023

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This document is an integral part of the National Water Strategy and related policies and action plans.

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).

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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.

Water resources in Jordan are generated from surface water capture and groundwater abstraction. The groundwater levels in Jordan's major aquifers continue to decline around 1 m/year. This is because we have had to rely heavily on groundwater abstraction in order to balance the available supply against rising demand.

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 four new policies that set clearly defined rules to manage the 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 working group to whom I am thankful. My team has been putting great efforts to enhance water governance that support 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

Groundwater in Jordan is the most important source of water supply for all uses, it contributes to about 56.5% of water supply for all uses, and it forms 73% of the municipal water supply in 2021.

There are three main hydrogeological units in Jordan which are: Shallow aquifer system (Alluvium, Basalt and B4/B5), Limestone aquifer system (A7/B2, _A1/A6) and the deep sandstone aquifer system (Kurnub, Zarqa, Khreim and Ram).

Groundwater resources in Jordan are classified into renewable resources which are recharged by rainwater and non-renewable resources (fossil groundwater) like Disi aquifer in the southern part of Jordan.

Renewable groundwater resources in Jordan suffer from depletion caused by over-pumping, particularly for irrigation uses in the High lands, the safe yield for groundwater pumping is estimated to be about 277 million cubic meters per year, while the quantities that were pumped in the year 2021 exceeded the safe yield by more than 172 million cubic meters. Recent studies carried out by the Ministry of Water and Irrigation using remote sensing techniques revealed that there are additional 100-120 million cubic meters of Groundwater is being used annually for agricultural purposes in the highland areas.

Taking into account the challenges faced by the water sector as a result of the ever-increasing water demand due to population growth, influx of refugees, and the economic growth in addition to groundwater depletion coupled with the negative impacts of climate change and drought, this situation requires that groundwater resources should be managed optimally and sustained for future generations. In this respect groundwater sustainability policy is highly needed.

2 MANAGEMENT OF GROUNDWATER ABSTRACTION

1. Sustainability of irrigated agriculture relying on groundwater is governed by socio-economic considerations that should be delineated into categories whereby a set of policy measures can be designed and applied to these various categories.
2. The agricultural sector's use of groundwater resources shall be capped in favor of other sectors that show a higher economic return per cubic meter consumed.
3. Treated wastewater of quality meeting national standards and complying with public health requirements shall be increasingly used where it is possible and feasible to replace fresher water resources.
4. Expropriation of use rights arising from legal use of groundwater, or of water rights established on springs from groundwater, reservoirs shall not be made without clear higher priority need.
5. Wells shall be closed against compensation for land value or water rights where their designation is zero or negative return.

6. Profitable properties for fund investments shall be designated where water efficiency and agricultural productivity would be used to achieve slower extraction over time.
7. Groundwater mathematical models (for specific regions or well fields) shall be developed or updated for all regional aquifers to predict their yield under various pumping scenarios. An evaluation scheme of groundwater extraction cost scenarios is applied.
8. Recharge areas for aquifers shall be protected against pollution caused by whatever means such as solid and liquid waste disposal, mining, landfills, brine disposal, agricultural inputs and the like.
9. Protection zones for all groundwater drinking sources shall be delineated and monitored.
10. Cooperation with concerned authorities and other governmental bodies shall be undertaken to ensure that restrictions of protection zones and water resources protection guideline legislations are implemented and enforced (Ministry of Local Administration (MoLA), Ministry of Environment, The Royal Department for Environment and Tourism Protection (RDEP)/Rangers, etc.)
11. sewage networks and Wastewater Treatment Plants should be expanded to protect groundwater aquifers with specific attention to the hot spot areas
12. Appropriate water tariffs and incentives for groundwater abstraction used in irrigation shall be introduced in order to promote water efficiency in irrigation and higher economic returns for irrigated agricultural products.
13. Legislations pertaining to groundwater management are enforced equally on all well-owners. Strict measures that deter future violations shall be designed and enforced.
14. A comprehensive groundwater management plan for each aquifer must be developed.
15. Regular groundwater quality monitoring should be implemented nationwide

3 AWARENESS

1. Jordanians are aware that water is a resource to be shared by all those living on Jordan's Land and that strategies related to the resource are national strategies rather than sector strategies, while engaging all spectrums of the society in the awareness raising activities, including women, men, youth, students and PWDs
2. Jordanians shall be well aware of water scarcity and the importance of conserving and protecting our limited water resources.
3. Jordanian should be aware of the groundwater availability and quality
4. Participation of stakeholders and legislating for their involvement wherever necessary shall be introduced.
5. Lessons learned from participatory groundwater management forums consisting largely of water users and local communities shall be considered.

6. Farmers and well-owners shall be educated through various means about the value of groundwater for them and the wellbeing of the country for the sustainability of life, and for economic and social development.
7. Messages at multiple levels shall be prepared and disseminated to audiences on groundwater abstraction.
8. Improving the acceptance of the groundwater users of the implementation of the legislations.
9. Special monitoring systems of industries and investments (e.g., olive mills, livestock, etc.) shall be improved, developed, and implemented for those with potential pollution to groundwater.

4 Data Base and Data Collection

1. A comprehensive national water data bank shall be established and kept at MWI and shall be supported by a decision support unit. It will be supported by a program of monitoring and a system of data collection, entry, validating, updating, processing and dissemination of information, and will be designed to become a terminal in a regional data bank setup. Consequently, the Water Information System shall be re-engineered.
2. The monitoring system for groundwater resources already in place shall be activated, effectively applied, and sustained.
3. The quality of groundwater shall be safeguarded by surveying and monitoring all water resources for water quality and ensuring that water quality standards are consistently being met.
4. Continuous monitoring and data gathering shall be made of socio-economic conditions as well as changes in behavioral patterns associated with the use of water by different sectors in society.
5. Abstraction from all groundwater wells shall be metered, and monitoring of abstraction shall be made periodically to assure conformity with the provisions of the abstraction permits.
6. Data collected in the monitoring process shall be formatted for storage in and retrieval from computer files. Hard copies and computer backup copies shall be maintained at all times.
7. A Water Yearbook shall be produced incorporating all gathered data (groundwater levels, abstraction, rainfall, evaporation, spring discharge, etc.); the yearbook describes the water situation for each aquifer and is updated on a yearly basis.
8. Adoption of modern technologies for data collection, validation, verification, analysis, modeling, sharing, and dissemination shall be expanded.
9. The water resources protection guideline should be updated to include the minimum requirement for measuring devices at wellheads, and to include the groundwater vulnerability map regarding contamination with aspects of land use projects. The guideline should be regularly updated based on needs.

5 LEGISLATION

1. Laws and regulations in effect shall be sustainably enforced.
2. legislation shall be updated whenever necessary to respond to emerging needs
3. A compliance mechanism for groundwater quality with National Standards shall be adopted.
4. Prohibition of well licensing for agricultural purposes shall be sustained and incorporated in pertinent legislation.
5. Licensing approval must be according to clear criteria and based on real studies for each aquifer
6. tariff structure shall be revised/restructured based on accurate costs of service provision, yet cushion the water bills of the poorest, using the social safety net to subsidize deserving cases .
7. . Resolve some overlapping or unclear mandates of laws, bylaws, regulations, and instructions in the groundwater management scheme; and introduce rules-based and performance-based regulation.
8. Remove any conflict of interest within the approval process of the licensing of groundwater wells.
9. Revising the legislation to amend the amount granted to be based on the safe yield for each aquifer for the area and connecting these amounts to availability of land that will be irrigated and crop needs, in addition to restricting the use of groundwater for only the specified usage stated in the license.

6 RESOURCE INVESTIGATION AND DEVELOPMENT

1. Groundwater use shall take place conjunctively with surface water in places where such joint use has the potential for increasing the available supply.
2. Withdrawal from groundwater aquifers shall be made carefully and after elaborating studies and investigations.
3. Compilation of drilling data as well as geophysical data shall be made to gain better understanding of the potential quantity and quality of all aquifers with special emphasis on the deep aquifers.
4. The potential of brackish groundwater development should be continuously assessed in light of other users of this resource. That and the salinity anticipated in the deep aquifers should lead to properly embracing desalination technologies and understanding the energy component of such schemes.
5. Considerations shall be given to the enhancement of recharge and maximizing its potential both naturally and artificially. This should be built on the rich experience gathered within the MWI.

6. Actions should be pursued to collect intense precipitation (resulting from climatic changes) within the delineated recharge zone and allowing it to seep into the subsurface. Injection zones may also need to be delineated and the effort piloted.
7. Implementation of groundwater exploration shall be conducted by MWI/WAJ personnel as a priority. This service can be outsourced when deemed necessary or required by any partnership with others, such as the private sector, in this activity.
8. A contingency plan shall be made and updated for the purpose of allocating the water from privately operated wells for use in the municipal networks.

7 INSTITUTIONAL ADVANCEMENT

1. Eliminate overlapping mandates, authorities, and responsibilities in groundwater management, introduce accountability mechanisms, and enhance focus on governance, planning and oversight.
2. Sector staffing shall be 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.
3. Enhance working conditions for field staff, introduce performance-based incentives, allow for field staff career advancement and train them on latest technology introduced by the sector.

8 REGIONAL COOPERATION

1. Cooperation with neighboring countries for the optimal and sustainable use and management of the shared groundwater resources shall be sought, preferably leading to a regional charter.
2. Shared aquifers shall be managed based on an integrated approach (IWRM) not ignoring the need for regional cooperation to develop contingencies for droughts and impacts of climate change.

9 POLICY FOLLOW-UP

Clauses of this policy document should be monitored on a yearly basis, and a relevant report should be prepared, a review is also warranted every three years, amendments proposed and acted upon.