

# »» Project Information

## Adaptation – Jordan

### Hydrological monitoring for water management

Even though most climate models inherently contain uncertainties they agree on one thing: the extreme water scarcity that is already dominating Jordan will further intensify due to climate change. By developing a nationwide hydrological meteorological monitoring network, the government wants to reduce the vulnerability of its own population when faced with the effects of climate change and improve management of the scarce water resources. The monitoring network provides reliable data for future water management planning and the Jordanian weather service and scientists also stand to gain access, too. KfW has supported the measure since 2011.

### Context

Adjusting to climate change and its effects is an important national objective for Jordan – and an essential element of Jordan's "Water for Life" water strategy 2016–2025. Jordan is already considered to be one of the most arid countries on earth with no improvement in sight in the future, either. On the contrary: Jordan's water inventory deficit will continue to increase. On the one hand because climate change is expected to lead to less rain fall and extreme periods of drought and, due to increasing temperatures, the rate of evaporation will increase. On the other hand, Jordan's population – 9.5 million people – will continue to grow and its water requirements along with it.

Measuring how much water is available in different parts of the country is the task of the Jordanian Ministry of Water and Irrigation: Presently, it operates groundwater level measuring stations at springs and wells, measuring stations in wadis, rivers and dams for mea-

suring the level of surface water, as well as meteorological stations for measuring rain fall, among other things. However, the existing hydrometeorological monitoring system is not comprehensively intact and the data quality from numerous measuring stations is also flawed.

The majority of Ministry of Water and Irrigation measuring stations are currently still read manually. Errors and gaps in the data base arise during this process and while transmitting the data. Weather and groundwater data are often collected in a decentralised process by local supply companies and are centrally merged only to a limited extent. All in all, data collection is unsystematic and not subject to any kind of quality control.

<b>Project name</b>	Climate change adaptation: hydrological monitoring network
<b>Commissioned by</b>	German Ministry for Economic Cooperation and Development (BMZ)
<b>Country/Region</b>	Jordan
<b>Project partner</b>	Jordanian Ministry of Water and Irrigation (MWI)





**New meteorological measuring stations – like the one here in southern Jordan – provide reliable data for future water management planning.**  
Source: Yazan Al Tweqat

An efficient and effective nationally integrated monitoring system thus does not exist. For user groups outside the Ministry of Water and Irrigation, access to the collected data is currently very restricted.

### Project approach

KfW has supported the Jordanian Ministry of Water and Irrigation since 2011 in creating a solid data basis for future water management planning by means of a technically modernised hydrological-meteorological monitoring network. On behalf of the Federal Ministry for Economic Cooperation and Development (BMZ), KfW is providing a grant of EUR 6.4m for the measure. Its objective is to reduce the vulnerability of Jordan's population with regard to the effects of climate change by ensuring permanent availability of relevant and reliable hydrological and meteorological information and to improve management of the scarce water resources in the country.

The focus during this process is put on the existing monitoring network, which is being systematically restructured, rehabilitated and significantly expanded. Approximately 180 Ministry of Water and Irrigation measuring stations will also be modernised or newly installed across the country: this includes groundwater measuring stations, measuring stations at dams and wadis, and weather stations.

At the newly installed measuring stations, the data will no longer be read and transferred manually; instead it will be transmitted wirelessly and transferred into a central database. This shall prevent data from being collec-

ted twice or not at all. In addition, other user groups – primarily those working on policy and in science, industry and agriculture as well as the general public – will be able to have access to relevant data in a more need-based way.

Included in the project's budgeting are investments in IT hardware and software for the ministry. Development of the new telemetric monitoring network is expected to be completed by the middle of 2018. Its new systematic data basis will be beneficial not only to the Jordan Water Ministry but to other institutions as well such as Jordan's weather service or the Royal Geographic Center.

### Impact

The improved data situation not only provides a good foundation for future water management planning and decision-making processes. It also leads to improvements to Jordan's ability to plan further measures for adjusting to climate change in a more need-based manner. The national water inventory can provide more reliable information in the future about how much water is available at different locations and where it is still possible to extract water.

Overall by improving management of the scarce water resources the measure contributes to reducing the vulnerability of Jordan's population to the effects of climate change.



#### Contact

KfW Group  
KfW Development Bank  
Palmengartenstrasse 5-9  
60325, Frankfurt am Main, Germany

Competence Center for Climate and Energy  
Martin Lux  
[martin.lux@kfw.de](mailto:martin.lux@kfw.de)

Middle East infrastructure and reconstruction  
Jonas Rathfelder  
[jonas.rathfelder@kfw.de](mailto:jonas.rathfelder@kfw.de)