

## Annex 1: Results matrix of module

Title of the TC Module

**Climate-resilient water resources management in Iraq**

Country/region/global

**Iraq**

Project no.

**2024.2075.0**

Term

**04/2025 to 09/2027**

Results matrix drawn up on

**6 March 2025**

Objectives	Indicators	Sources and date of data collection	Assumptions
<p><b>Module objective</b></p> <p>The Ministry of Water Resources has been strengthened technically and institutionally for the climate-resilient management of water resources in the Hillah River</p>	<p><b>Module objective indicator 1</b></p> <p>Number of areas in which the Hillah River information system of the Ministry of Water Resources has provided high quality data sets for climate-resilient water resources management.</p> <p>Baseline value: 0 areas with high quality data sets for the Hillah River (according to the Ministry of Water Resources, the data sets in all areas are either unavailable, inaccurate, out of date, incomplete or not usable, 07/2024).</p> <p>Target value: 1 area with high quality data sets for the Hillah River (12/2026); 4 areas with high-quality data sets for the Hillah River (09/2027)</p>	<p>Project's own technical analysis of the Ministry of Water Resources' information system, based on a simulation, assessing the quality of the data sets for the Hillah River.</p> <p>The high quality of data sets refers to their availability, accuracy, recency, completeness and usability in water management for balances, modelling and distribution. The assessment of quality is based on a technical analysis using a scale of 1 to 5; with ratings of 1 or 2 being considered high quality, 3 satisfactory, 4 poor and 5 unsatisfactory. The areas are:</p> <p>(1) Water supply and distribution, with data sets e.g. on flow rates, water levels, georeferenced hydrological data</p> <p>(2) Water quality, with data records e.g. on the chemical, biological and physical state of the water</p> <p>(3) Water consumption, with data sets e.g. on water consumption in agriculture, drinking water abstraction, water consumption in industry</p> <p>(4) Climate change-related risk data, with data sets e.g. on the development of meteorological data, extreme</p>	<p>Not applicable as this is an individual measure</p>

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		<p>weather events, projections and climate change scenarios.</p> <p>Climate-resilient water resource management describes the participatory and transparent administration and management of water resources and the creation of an improved policy and legal framework responsive to the effects of climate change.</p> <p>Data collection: 12/2026 and 09/2027</p>	
	<p><b>Module objective indicator 2</b></p> <p>Number of recommendations implemented in different areas of a ten-point plan for developing climate-resilient water resource management of the Hillah River.</p> <p>Baseline value: 0 recommendations implemented (no recommendations for climate-resilient water resource management have yet been elaborated, 07/2024).</p> <p>Target value: 1 recommendation implemented (03/2027); 2 recommendations implemented in different areas (09/2027)</p>	<p>Project's own evaluation of the Ministry of Water Resources' monitoring report on the implementation of the ten-point plan for the development of climate-resilient water resources management.</p> <p>The content of the recommendations can focus on the more efficient and equitable use of water resources; approaches to involving stakeholders and vulnerable population groups; approaches to the illegal use of water resources; or the implementation of water management plans.</p> <p>Regarding the ten-point plan, two indicators will be defined for the fulfilment of each recommendation. A recommendation is considered as fulfilled if the two indicators set out in the ten-point plan have been 100% fulfilled.</p> <p>Data collection: 03/2027 and 09/2027</p>	

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	<p><b>Module objective indicator 3</b></p> <p>Number of water sector experts and managers, both nationally and at province level in the Hillah River basin, who have demonstrated, providing an example, that they have applied their competences for climate-resilient water resource management.</p> <p>Baseline value: 0 experts or managers have applied competences (No information has been collected regarding the competences of experts and managers for climate-resilient integrated water resource management, 07/2024).</p> <p>Target value: 20 of the 90 experts and managers, of whom 5 are women, have applied competences (06/2026); 70 of the 90 experts and managers, of whom 20 are women, have applied competences (09/2027)</p> <p>The baseline and target values for module objective indicators 1–3 are provisional. They will be assessed in the first implementation year and adjusted if necessary in the first report.</p>	<p>Project's own analysis of a survey of experts and managers regarding the claimed examples of competences applied, assessing their substantive orientation and areas of application, as well as their relevance for climate-resilient water resource management.</p> <p>Examples of the application of the competences might include, for example, the completion of a climate risk analysis for selected areas, or the description of the effectiveness of planned water management measures with regard to future climate scenarios.</p> <p>The experts and managers are employees of the Ministry of Water Resources at national and provincial levels who are directly involved in managing the Hillah River water resources.</p> <p>The provinces of the Hillah River catchment area are Babil, Qadisiyah and Muthanna.</p> <p>Data collection: 06/2026 and 09/2027</p>	
<p><b>Output 1</b></p> <p>The Ministry of Water Resources' information system for the climate-resilient management of water resources in the Hillah River basin has improved.</p>	<p><b>Output indicator 1.1</b></p> <p>The number of packages of technical measures implemented to improve the monitoring system in the Hillah River catchment area.</p> <p>Baseline value: 0 packages of technical measures implemented (the existing monitoring system is incomplete, poorly automated and in need of improvement, 07/2024)</p>	<p>Evaluation of the Ministry of Water Resources' report on the implementation of the packages of technical measures to improve the monitoring system in terms of its operational and technical functionality.</p> <p>Packages of technical measures encompass the expansion and installation of infrastructure in the following areas:</p>	<p>The security situation in the country and in the provinces allows the project's experts to work in the provinces.</p> <p>The Ministry of Water Resources continues to prioritise improvements to the monitoring system in the catchment area and supports this by deploying its own staff and contributing funds within the agreed time frame.</p>

Objectives	Indicators	Sources and date of data collection	Assumptions
	Target value: 4 packages of technical measures implemented (12/2026)	(1) Measuring water levels and discharge rates (2) Measuring water quality (3) Measuring water consumption (4) Measurements for climatological data.  Data collection: 12/2026	Stakeholders in the sector are open to integrated management and to exchanges and cooperation between relevant ministries and authorities.
	<b>Output indicator 1.2</b> The number of relevant institutions with binding agreements to collect, share and store data so as to continuously improve the information system underpinning climate-resilient water resource management in the Hillah River basin.  Baseline value: 0 relevant institutions with binding agreements (the data is stored in different places and is accessible only to a limited extent or not at all; 07/2024) Target value: 5 relevant institutions in various areas with binding agreements (12/2026)	Survey and evaluation of agreements with regard to the relevant institutions making this commitment, as well as the type and quality of the data. Binding agreements are documented agreements and rules between the Ministry of Water Resources and other relevant stakeholders covering the collection, transfer and storage of hydrological and meteorological data, geographical information, details about water quality and the uses of water, etc. as required for the modelling. Relevant institutions are ministries and authorities at national and provincial levels, such as the Ministries of Agriculture, Environment and Planning, or the meteorological service.  Data collection: 12/2026	
<b>Output 2</b> The methodological and technical capacities of the Ministry	<b>Output indicator 2.1</b> A calibrated water management model for the climate-resilient management of water resources in	Project's own survey to evaluate the water management model with regard to its suitability for drawing up water balances, for planning and executing	

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of Water Resources have been strengthened for the climate-resilient management of water resources in the Hillah River.	<p>the Hillah River basin is available to the Ministry of Water Resources.</p> <p>Baseline value: 0 calibrated models (the Ministry of Water Resources has a model for use on a small scale with limited options for simulating adaptation measures, 07/2024)</p> <p>Target value: 1 calibrated model (12/2026)</p>	<p>short and medium-term water distribution, and for modelling alternative management scenarios adapted to climate change.</p> <p>A water management model is a computer model that can depict hydrological and water management processes and depict digital scenarios based on data (e.g. surface runoff, infiltration, evapotranspiration, irrigation demand, surface water/groundwater interactions, water scarcity, extreme weather events).</p> <p>Calibrated means that, using simulations, the model provides a realistic depiction of the water management situation of the Hillah River catchment area.</p> <p>Data collection: 12/2026</p>	
	<p><b>Output indicator 2.2</b></p> <p>The number of measures implemented by the Ministry of Water Resources to increase its capacity for climate adaptation in the management of the Hillah River's water resources.</p> <p>Baseline value: 0 measures implemented (no targeted measures have yet been implemented to increase the capacity for adaptation of Hillah River water resources management, 07/2024)</p> <p>Target value: 4 measures implemented (12/2026)</p>	<p>Project's own evaluation of the measures implemented by the Ministry of Water Resources.</p> <p>Measures to increase climate adaptation capacity include, for example:</p> <ul style="list-style-type: none"> <li>(1) Climate risk analyses for the Hillah River catchment area</li> <li>(2) Processes to raise awareness of climate risks</li> <li>(3) Processes for stakeholder involvement and coordination</li> <li>(4) Concept for the equitable climate-adapted allocation of water</li> </ul>	

Objectives	Indicators	Sources and date of data collection	Assumptions
		<p>(5) Early warning mechanisms for droughts and floods (6) Use of remote sensing technologies and geographical information systems.</p> <p>Data collection: 12/2026</p>	
<p><b>Output 3</b> The training on climate-resilient water resources management provided by the Ministry of Water Resources, which places special emphasis on support for female experts and managers, has been institutionalised.</p>	<p><b>Output indicator 3.1</b> The number of training courses on climate-resilient water resources management provided by the Ministry of Water Resources that have been institutionalised.</p> <p>Baseline value: 2 institutionalised training courses (07/2024) Target value: 14 institutionalised training courses (02/2026)</p>	<p>Project's own evaluation of the training courses with regard to their institutionalisation.</p> <p>Institutionalisation means being mainstreamed in the Ministry of Water Resources' training centre, with a budget, personnel and infrastructure.</p> <p>A training course comprises several coordinated one or two-day modules with both theoretical content and practical exercises.</p> <p>Topics might include, for example, the modelling of water availability and water allocation, climate risk analyses and measures for adapting to climate change, and the use of artificial intelligence for water management.</p> <p>Experts and managers come from the Ministry of Water Resources and its subsidiary administrations in all the provinces (including the Iraq's Kurdistan region), and from other ministries and authorities with a connection to climate-resilient water resource management.</p> <p>Data collection:</p>	

Objectives	Indicators	Sources and date of data collection	Assumptions
		02/2026	
	<p><b>Output indicator 3.2</b> Number of institutionalised training courses for female experts and managers from the Ministry of Water Resources and subsidiary administrative levels.</p> <p>Baseline value: 2 training courses (12/2024) Target value: 4 institutionalised training courses for female experts and managers (02/2026)</p>	<p>Project's own evaluation of the training courses with regard to their institutionalisation.</p> <p>Institutionalisation means being mainstreamed in the Ministry of Water Resources' training centre, with a budget, personnel and infrastructure</p> <p>A training course comprises several coordinated one or two-day modules with both theoretical content and practical exercises.</p> <p>Topics might include leadership skills, career planning, negotiation skills, etc.</p> <p>The female experts and managers come from the Ministry of Water Resources and its subsidiary administrations in all the provinces (including Iraq's Kurdistan region).</p> <p>Data collection: 02/2026</p>	
<p><b>Output 4</b> The Ministry of Water Resources has at its disposal a number of feasible options for using drainage water as an additional water resource.</p>	<p><b>Output indicator 4.1</b> The number of options for using drainage water prioritised by experts and managers from the Ministry of Water Resources.</p> <p>Baseline value: 0 options prioritised (the use of drainage water has not yet been explored in detail in Iraq, 07/2024) Target value: 3 options prioritised (02/2026)</p>	<p>Evaluation of an internal paper by the Ministry of Water Resources listing prioritised options.</p> <p>Options for using drainage water might include: desalination plants, nature-based approaches, irrigation of salt-tolerant plants, etc.</p>	

Objectives	Indicators	Sources and date of data collection	Assumptions
		Data collection: 02/2026	
	<b>Output indicator 4.2</b> The number of technically feasible project proposals, each ready for financing, for a demonstration plant for the use of drainage water. Baseline value: 0 project proposals (there are no project proposals yet in Iraq for demonstration plants for the use of drainage water, 07/2024) Target value: 1 project proposal (09/2027)	Evaluation of the project proposal in terms of financial readiness and feasibility based on eligibility criteria for Iraqi and international financing instruments.  Data collection: 09/2027	

Outputs	Core activities for outputs	Inputs/planned instruments instruments	Assumptions
<b>Output 1</b>	<ul style="list-style-type: none"> <li>- Compilation of a comprehensive, geo-referenced baseline of the data and information that exists at the Ministry of Water Resources and in the provinces of the river basin.</li> <li>- Production of a catalogue of measures to improve or expand the information system in the catchment area in the medium term.</li> <li>- Development and coordination of an institutional framework for data exchange processes to underpin the continuous collection, transfer and storage of data and information.</li> <li>- Development and implementation of packages of measures for the technical expansion of the infrastructure for collecting and processing water management data (data collection systems, sensors for automated data collection at the measuring stations and remote transmission of the data).</li> </ul>	International long-term expert(s) (20 expert months) National long-term expert(s) (60 expert months) Short-term experts (60 expert months) Materials and equipment: EUR 882,200	A dialogue with the Ministry of Water Resources will help limit difficulties in public access or access by experts to existing or potentially sensitive data and information from the water sector. The ministry will complete the technical/structural measures needed to improve the information system quickly so that the data can be used early on for the modelling. The ministry will be open to the proposals for using drainage water, also for applications outside the its own area of responsibility. The ministry will be willing to involve relevant actors from civil society in the provinces.
<b>Output 2</b>	<ul style="list-style-type: none"> <li>- Development of a water management model for the completion of water balances and the distribution of water)</li> <li>- Calibration and testing of the model</li> <li>- Development of climate risk scenarios</li> </ul>	International long-term expert(s) (20 expert months) National long-term expert(s) (60 expert months)	The ministry will continue to make implementation of the project a priority. It will



	<ul style="list-style-type: none"> <li>- Integration of climate risks into national and subnational planning documents, e.g. national adaptation plan (NAP) and local adaptation plans (LAP)</li> <li>- Instigation and expansion of cooperation with scientific institutions (e.g. IHE Delft Institute for Water Education, the International Water Management Institute (IWMI), and national universities).</li> <li>- Planning and implementation of methodological improvements in the planning and execution of climate adaptation</li> </ul>	<p>Short-term expert(s) (240 expert months)</p> <p>Materials and equipment: EUR 232,200</p>	<p>free up experts and managers to carry out the tasks and training measures, and will send female experts and managers to take part in the training measures for women.</p> <p>The promised historical data sets (&gt;10 years) for modelling the water supply (precipitation data, runoff data) are available in sufficient quantity.</p>
<b>Output 3</b>	<ul style="list-style-type: none"> <li>- Design and implementation of a specific training course for climate-resilient water resources management (inclusion of IHE).</li> <li>- Provision of advice to the training centre regarding technical, educational, organisational and administrative questions (e.g. training of trainers)</li> <li>- Development of a training course to support female experts and managers from the ministry and subsidiary departments in the provinces</li> <li>- Organisation and implementation of exchange events involving national and international experts and organisations (e.g. from Egypt and Jordan), on topics such as the uses of drainage water, climate-resilient water resource management, digitalisation and artificial intelligence.</li> <li>- Participation in international conferences (e.g. Baghdad International Water Conference).</li> </ul>	<p>International long-term expert(s) (10 expert months)</p> <p>National long-term expert(s) (30 expert months)</p> <p>Short-term expert(s) (50 expert months)</p> <p>Materials and equipment: EUR 58,050</p>	
<b>Output 4</b>	<ul style="list-style-type: none"> <li>- Processing of international, regional and local lessons learned with respect to the use of drainage water</li> <li>- Analysis and evaluation of current irrigation practices that produce drainage water</li> <li>- Analysis and evaluation of approaches to using drainage water in one pilot area</li> <li>- Identification of different methods to reduce the salt content of drainage water</li> <li>- Investigation of alternative uses for drainage water in agriculture or industry, for the greening of parks or feeding into wetlands.</li> </ul>	<p>International long-term expert(s) (10 expert months)</p> <p>National long-term expert(s) (30 expert months)</p> <p>Short-term expert(s) (30 expert months)</p> <p>Material and equipment: EUR8.050</p>	

	<ul style="list-style-type: none"><li>- Provision of technical advice in the preparation of a project proposal for the financing of a demonstration plant that uses of drainage water as an additional source of water.</li></ul>		
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