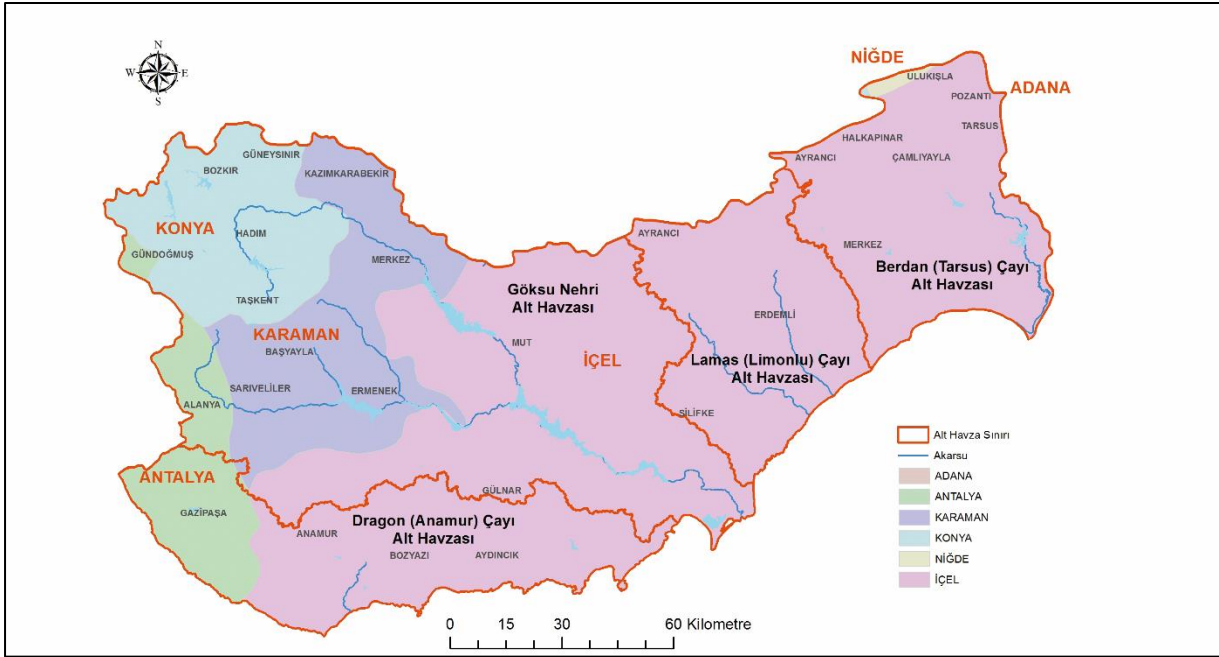


DOĐU AKDENİZ RIVER BASIN



DOĞU AKDENİZ RIVER BASIN

Doğu Akdeniz River Basin, located in the south of Türkiye, covers an area of 2,180,704 hectares (ha), between the Antalya, Seyhan and Konya Closed Basins, which discharges its waters into the Mediterranean Sea along with the Göksu River and other streams, and constitutes approximately 3% of Türkiye's surface area. The length of the Doğu Akdeniz River Basin is 129 km, with a total precipitation area of 21,807 km². Average annual precipitation height is 745 mm; The annual average flow is 11.07 km³/year.



The provinces of Antalya, Karaman, Konya and Mersin are located within the borders of the Doğu Akdeniz River Basin .

Provinces and their areas in the basin

<i>Provinces</i>	<i>Area of the Province (Ha)</i>	<i>Part of the Province in The Basin (Ha)</i>	<i>Ratio of the Part in The Basin to the Total Province Area (%)</i>	<i>Distribution of the Basin to the Provinces (%)</i>
Adana	1.725.300	2	0,0001	0,0001
Antalya	2.050.469	149.990	7,3	6,9
Mersin	1.601.600	1.478.179	92,3	68,4
Karaman	873.403	304.462	34,9	14,1
Konya	3.996.166	223.060	5,6	10,3
Niğde	1.429.400	6.031	0,4	0,3

RIVER BASIN PROTECTION ACTION PLANS

Türkiye prepared River Basin Protection Action Plans (RBPAP) for all 25 river basins in order to reduce pollution and protect and improve basins by defining short, medium and long-term measures with participation of all stakeholders in 2013. Main aim for these plans were determination of the pressure and effects caused by the urban, industrial, agricultural, economic, ...etc. activities and the amount, characteristics and pollution status of the existing surface, underground and coastal waters in basins; having a detailed basin scale examination of the amount and potential use of the existing water resources and pollution sources/loads; preparation of water quality maps; determination of environmental infrastructure status.

Meanwhile, Basin Management Committees were also formed and the implementation of the measures determined by the RBPAPs began to be followed since 2013.



Short, medium and long term measures for The Doğu Akdeniz River Basin can be grouped as below: The implementation of the following actions is monitored within the scope of the Basin Protection Action Plan.

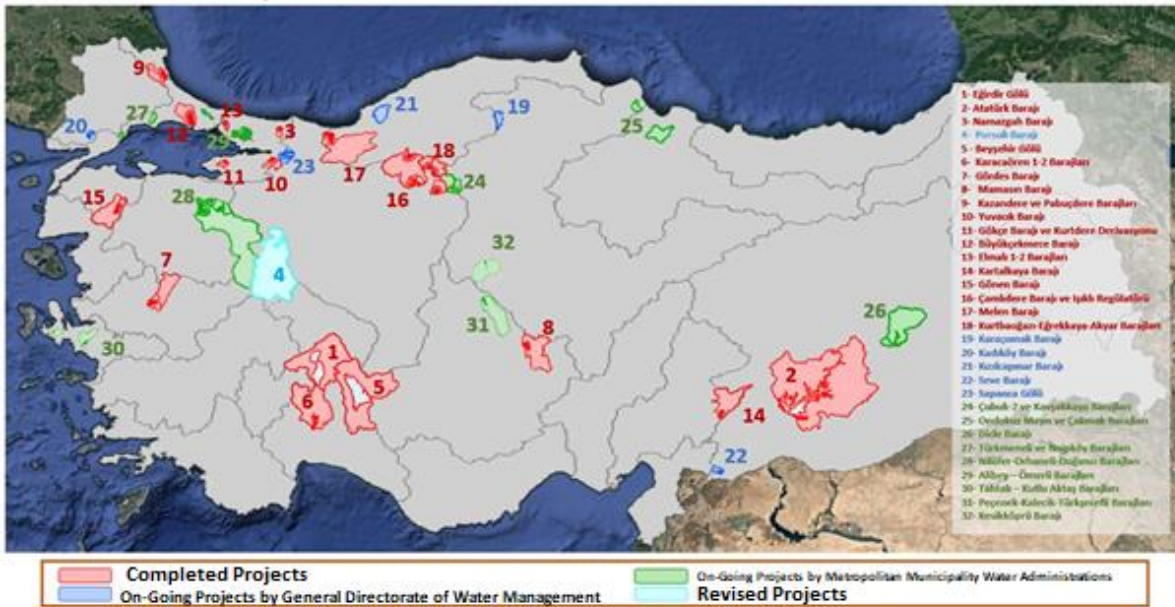
1. Urban Wastewater Management	9. Drought Management
2. Industrial Wastewater Management	10. Monitoring, Inventory and Water Information System Studies
3. Urban Waste Management	11. Water Investments
4. Non-Point Source Pollution Management	12. Water Re-use
5. Forestation, Erosion and Sedimentation Control	13. Impacts of Climate Change on Water Resources
6. Sewage Sludge Management	14. Sectoral Allocation Plans
7. Conservation Studies for Drinking Water Basins	15. Planning for Hotspots
8. Flood Management	

DRINKING WATER PROTECTION PLANS

The purpose of drinking water protection plans is to determine basin-specific protection areas and principles based on scientific data to improve and sustainably manage the quality and quantity of drinking water sources.

According to the Regulation on the Protection of Drinking-Water Basins:

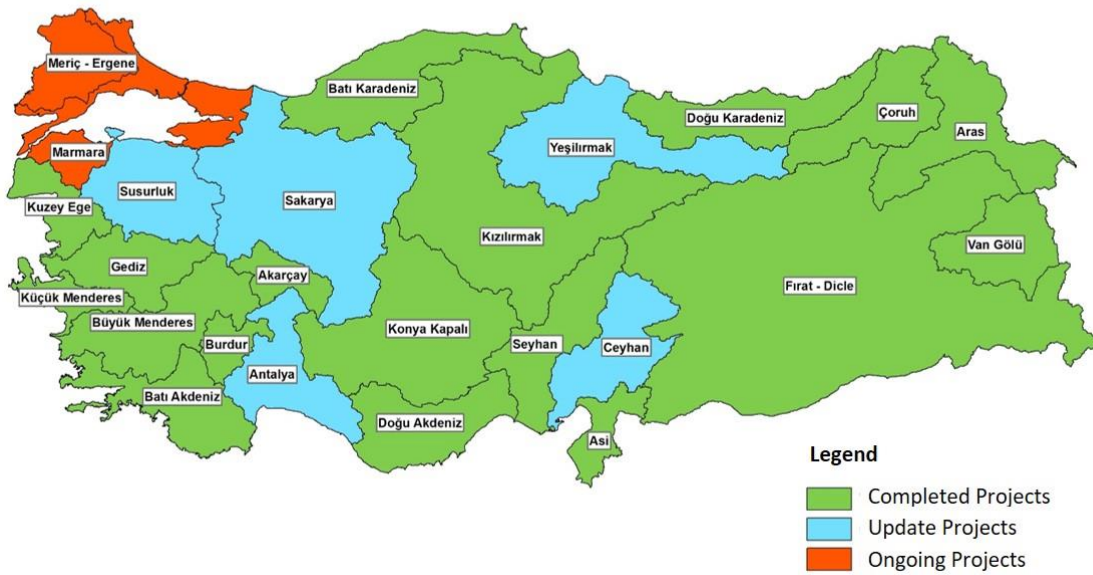
- Protection plans for surface water sources that provide drinking water to metropolitan municipalities are prepared by the general directorates of water and sewage administrations of metropolitan municipalities in coordination with Ministry;
- Protection plans for surface water sources that provide drinking water to settlements outside of metropolitan municipalities are prepared by Ministry.



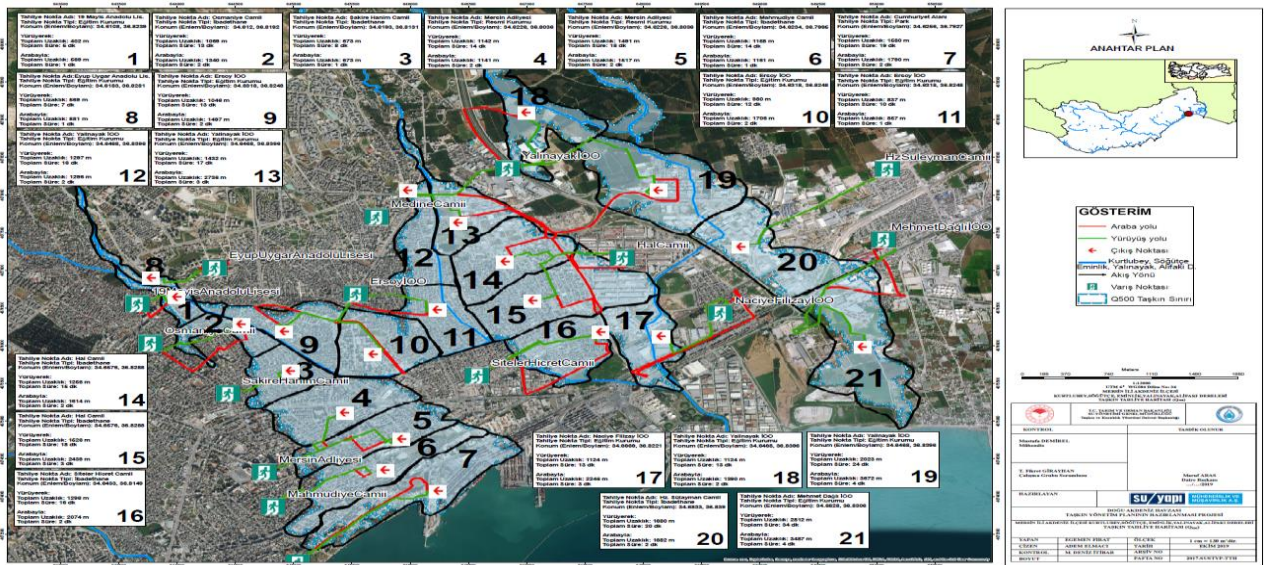
FLOOD MANAGEMENT PLANS

"Flood Management Plans," which include flood hazard maps and flood risk maps, are created by examining the flood, which has become a major problem in our country, taking into account not just a portion of a stream, but the entire stream and its tributaries.

Doğu Akdeniz River Basin Flood Management Plan (FMP) was completed in 2019. Mitigation measures determined within the scope of the plan are being tracked via the National Water Information System (USBS) in 2020.



Flood Hazard and Flood Risk maps are generated within the scope of Doğu Akdeniz River Basin Flood Management Plan. The necessary measures to be taken to prevent risks before, during, and after floods have been determined using these maps, as have the responsible institutions and the time of implementation of the measures.



To mitigate the effects of potential flood events in the Doğu Akdeniz River Basin, 254 measures have been identified under the following groups of mitigation measures within the scope of the Flood Management Plan.

- Stream-bed regulation
- Improvement of transition structures
- Cleaning of stream beds
- Stream bed regulation
- Improvement of monitoring capacity
- Build transition structures
- Improvement of walls
- Education/ Informing/ Raising Awareness

DROUGHT MANAGEMENT PLAN

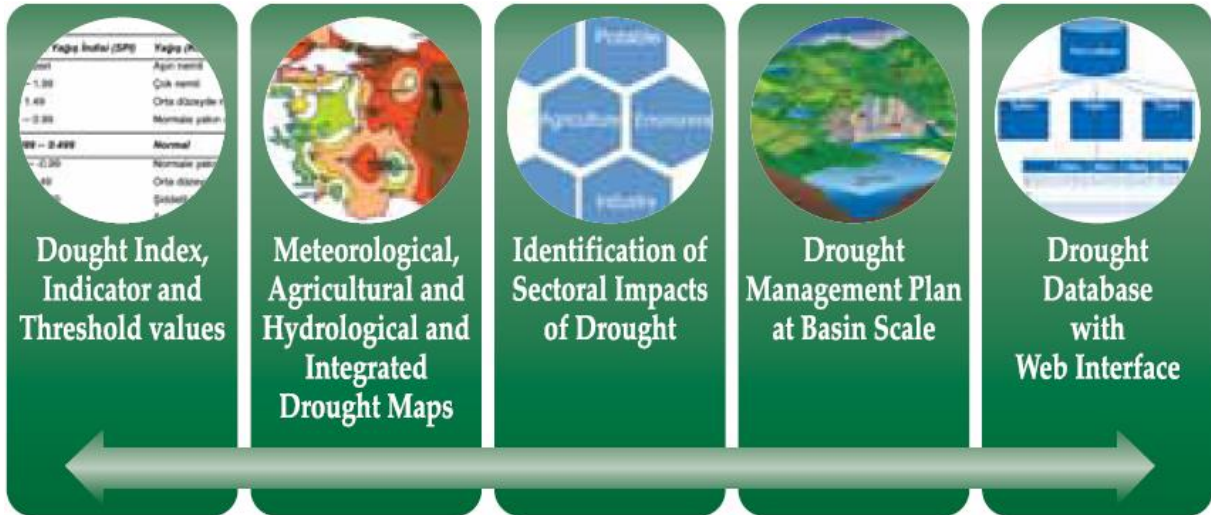
Drought Management Plans (DMPs) are being prepared at the basin level for all of the water user sectors, including agriculture, in order to minimize the negative effects of possible drought risks and be prepared for drought. The aim of DMPs is to mitigate and prevent the negative impacts of possible droughts by determining the measures to be taken during water scarcity and the measures to be taken before, during, and after the drought periods in order to solve the drought problem as quickly as possible. Drought analyses, climatic and hydrological studies, sectoral vulnerability analyses, and drought maps are used to plan and direct studies such as recovery and intervention.



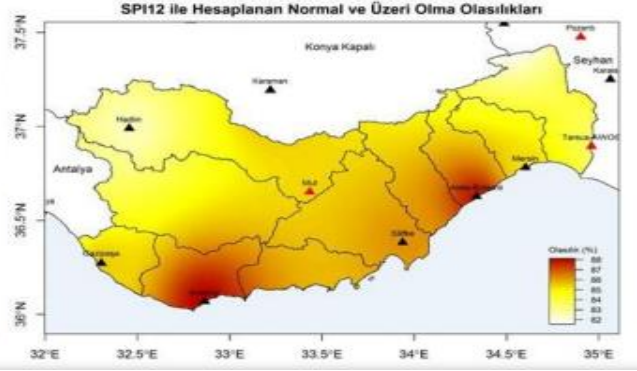
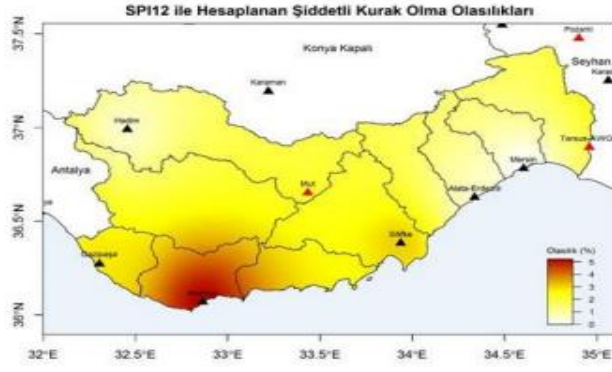
Doğu Akdeniz Basın DMP was completed at 2018.

Measures determined within the scope of the plan started to be followed via the Flood and Drought Plans Tracking Web Application as of 2019, and the National Water Information System (USBS) as of 2020.

Studies During the Preparation of Drought Management Plans:



In order to prevent damage caused by possible droughts in the Doğu Akdeniz Basın, 26 measures have been determined under the measure groups of reducing water use/loss and Improving the Monitoring and Measurement Network within the scope of the Drought Management Plan.

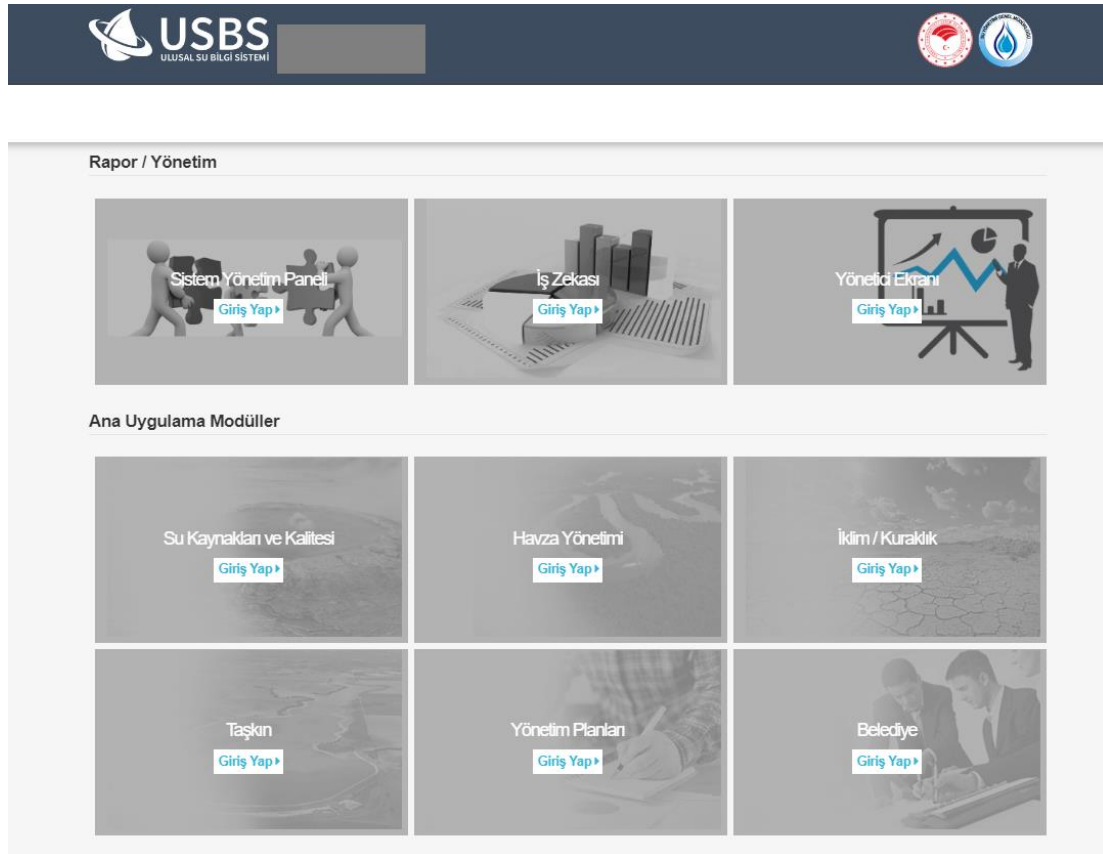


Drought Analysis

MONITORING, INVENTORY and WATER INFORMATION SYSTEM

Actions that are taken about water quality and quantity as follows:

- ❖ To acquire the data that has been produced for various purposes by different organizations,
- ❖ To enhance the quality of data,
- ❖ To prevent the production of data repeatedly,
- ❖ To enhance the accessibility of data,
- ❖ To determine and complete the missing/incomplete data,
- ❖ To set and apply a watershed-scale and sustainable monitoring system.



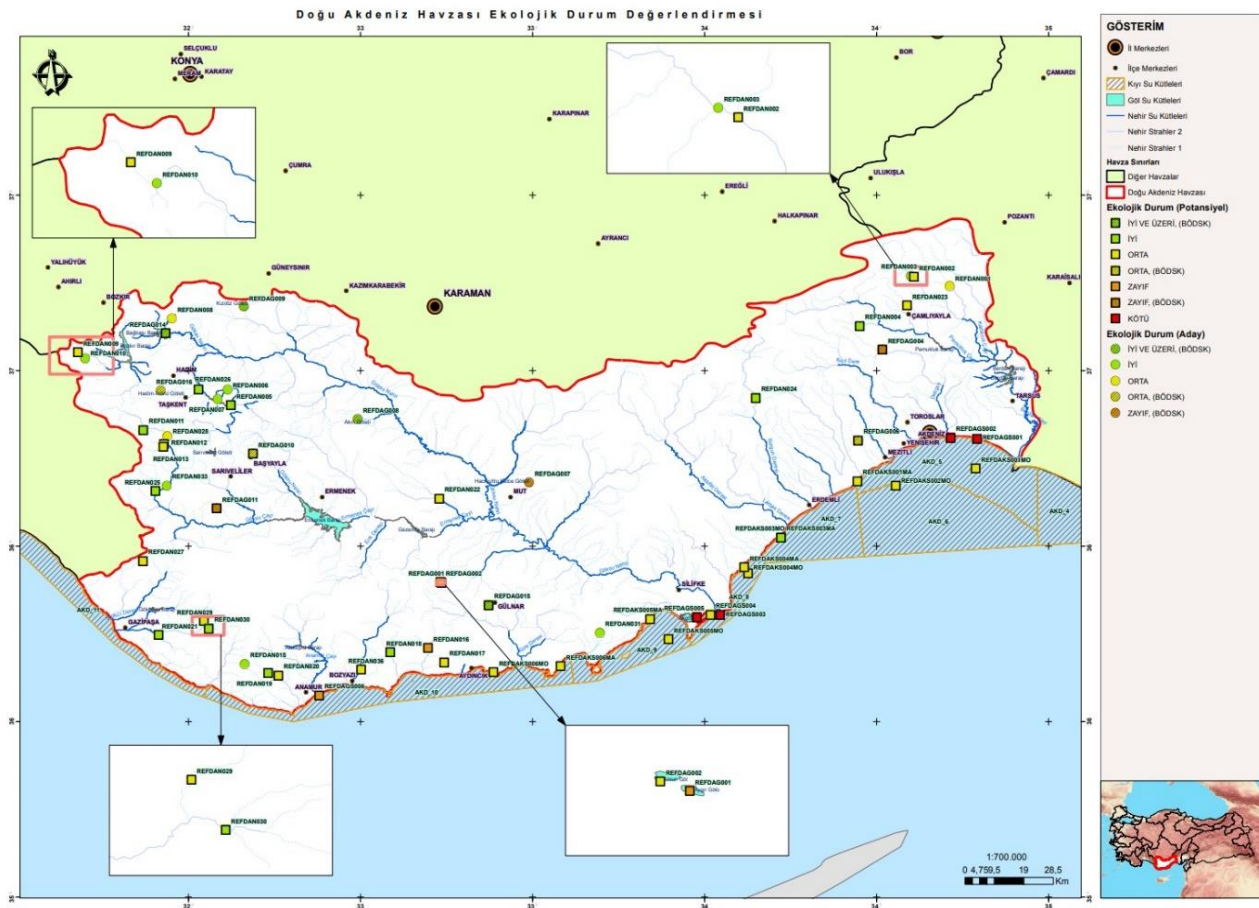
Graphical User Interface of National Water Information System (TRNWIS)

For the purpose of ecological-based assessment of water quality; biological, physicochemical, and hydromorphological monitoring studies were conducted in 25 basins across the country as part of the Project for the Establishment of a Reference Monitoring Network in Türkiye to identify natural and/or near-natural reference (unpolluted) sites that were not or minimally impacted by anthropogenic activities, and pristine water sources were identified.

Within the scope of the study, monitoring studies were carried out in a total of 61 locations in the East Mediterranean River Basin, including 32 rivers, 12 lakes (2 natural, 10 heavily modified), 6 transitional waters, and 11 coastal waters, and 51 reference (unpolluted) water sources were identified. In addition, the ecological status of the monitored water bodies in the East Mediterranean River Basin was determined as a result of the monitoring activities.

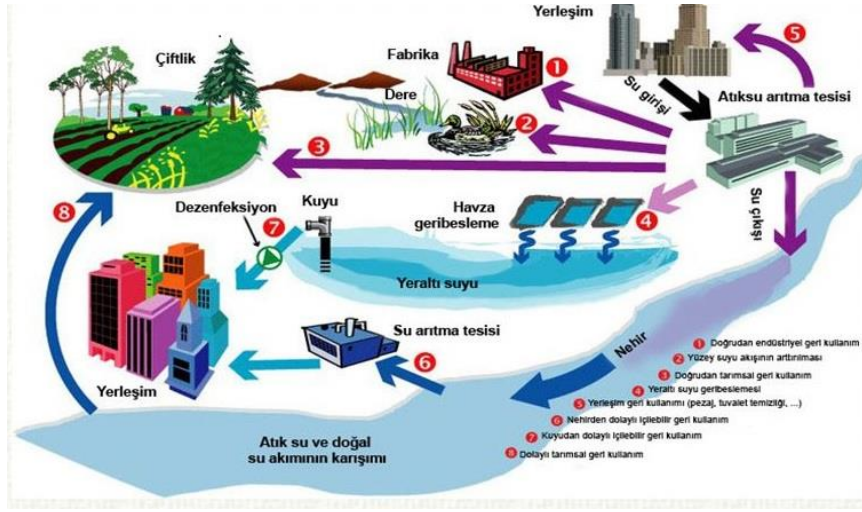
In the scope of monitoring activities, the smallest possible taxonomic level of all biological quality elements was identified and in this context 30 fish, 143 phytobenthos, 292 phytoplankton, 617 macroinvertebrate, 40 macroalgae/angiosperm and 80 macrophyte species were identified in the East Mediterranean River Basin.

Additionally, for each biological quality element, the Reference Monitoring Network and Reference Monitoring Programs have been established, which include the monitoring stations determined in the reference sites, the parameters to be monitored at these stations, and the monitoring frequencies. In line with these monitoring programs, monitoring activities will be carried out regularly.



Ecological Status Assessment Results in the East Mediterranean River Basin

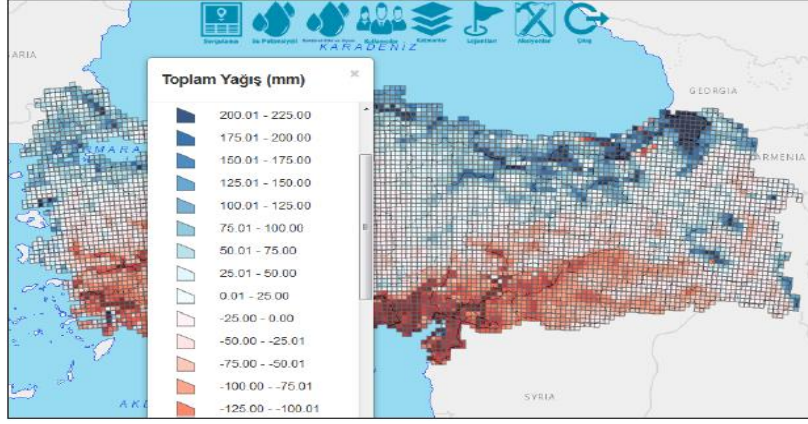
WATER REUSE



In the fight against possible water scarcity in our country in the future, it is necessary to develop practices related to the economical and planned use of existing water resources. One of these strategies, the option of reusing used water, is one of the most important methods of using water sparingly. With the recovery and use of used water, it is planned to reduce the need for existing water resources and to provide significant water savings. In the "Project for the Evaluation of Reuse Alternatives of Used Water", which was prepared specifically for 25 river basins in our country, both the reuse of wastewater treated in wastewater treatment plants and the water returned from agriculture were evaluated. With the evaluation, used water resources and reuse alternatives were determined. Used water resources was determined as waste water treated in wastewater treatment plants, drainage water returning from agriculture, cooling water and rain water. In the light of all this information, in the evaluation made specifically for Doğu Akdeniz basin, wastewater treated in wastewater treatment plants and water returned from agriculture were determined as used water resources.

IMPACTS OF CLIMATE CHANGE

The project on impacts of climate change on water resources was finalized in 2016.



According to the climate change projections made for 2015-2100 period:

It is expected that there will be a continuous increase in average temperatures. It is expected that the average temperature of the basin, which was 16°C according to 1971-2000 observations, will increase by at least 2°C, maximum 5.1°C in 2071-2100 period. It is expected that temperature increases for this period will predominate in the inner parts of the basin.

According to the observations of 1971-2000, the average annual precipitation amount of the reference period of the basin was determined to be 629,1 mm. According to the results of the projection carried out, there is a decrease tendency in the total precipitation compared to the reference period (1971-2000), and it is predicted that the basin will receive 26% less rainfall compared to the reference period in 2071-2100. It is expected that rainfall decreases for this period will predominate in the southwestern parts of the basin.

DSİ (Directorate General for State Hydraulic Works) data were used for hydrological model studies and the mean gross water potential of the basin for the reference period was determined to be 11.167 million m^3 /year. With the effect of climate change, it is predicted that in the period 2071-2100, the gross water potential of the basin could decrease up to 60%. However, in the same period, it is expected that the annual amount of water available will not meet the total water need, and the water deficit will be around 4.695 million m^3 /year.

As a result of the hydrogeological studies carried out, the hydrogeological reserve of groundwater of the basin was determined to be 10 km^3 . The technically and economically usable amount of this reserve, the possible reserve is calculated to be 6 km^3 . It is estimated that at the end of the century under the effects of the climate change, the hydrogeological reserve of the basin will decrease by 10% and possible reserve by 13%