Basin Stories:

Fundamentals to Enhance Büyük Menderes River Basin

About the IWA Basin Action Agenda

The IWA Basin Action Agenda aims to influence and activate utilities, cities and their industries to become water stewards working with basin and catchment organisations, as well as other water management stakeholders (e.g. agriculture and mining). The Action Agenda is a call to action to support the Principles for Water Wise Cities through the level of Basin Connected Cities, and the associated principles including: (1) Plan to secure water resources (2) Protect the quality of water resources, and (3) Prepare for extreme events. The Action Agenda has outlined pathways on how urban stakeholders can achieve these principles. For more information visit: http://www.iwa-network.org/projects/basin-action-agenda/

About the Basin Stories

The basin stories are documenting some of the best practices and approaches that demonstrate how stakeholders especially those in urban areas (e.g. city government, water and wastewater utilities, industries) are taking part or contributing to sustainable management of water resources. Greater basin-level collaboration from catchment to consumer is essential for sustainable water management in the face of growing demand on water resources and global change. The stories aim to inspire urban stakeholders to be aware and respond to what is happening in their watershed.

Establishment of water basin management committees for Büyük Menderes River Basin

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Büyük Menderes River Basin is one of the most important basins in Turkey mostly composed of agricultural and semi-natural areas. About 79% of water from the basin is widely used for agriculture purposes with the remaining for industrial and human consumption. This has made the basin vulnerable to both point source and diffuse pollution arising from agricultural and industrial usage. To overcome these challenges, measures have been put in place to mitigate the impacts on the quality of water as the ecological and chemical constituents. A water basin management committee was established to prepare river basin plans, flood and drought management plans as well as monitoring plans. This committee is a multi-stakeholder committee from different sectors such as water utilities, municipalities, representatives of ministry of environment and urbanization, universities, organised industrial zone management.

The government of Turkey also outlined plans to protect the Büyük Menderes river basin some of which includes increasing the efficiency and capacity of all WWTPs, ensuring proper implementation of water related regulations and penalties applied if needed to all who failed to obey the rules and regulations. Considering the sensitivity of the Büyük Menderes River Basin, an integrated approach is the ultimate solution as this would increase water use efficiency for all water consumers and minimize the diffuse and point source pollution in the country. This would in turn minimize excess abstraction of water which is one of major problems.

Problem:

- Point source pollution generated by the various industrial activities, wastewater discharge, and mining activities.
- Diffuse source pressures generated from agricultural activities, fisheries and urban runoff.
- Hydro-morphological challenges due to over abstraction of groundwater for various uses e.g., agriculture and human consumption.
- Climate change related impacts on water quantity and quality.

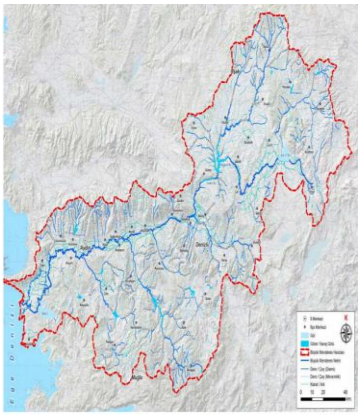
Solution: Establishment of basin management committees to develop short, medium and long terms action plans to assist in solving the challenges faced in the basin.

Geographic information

Country: Turkey

City population: ~ 3million

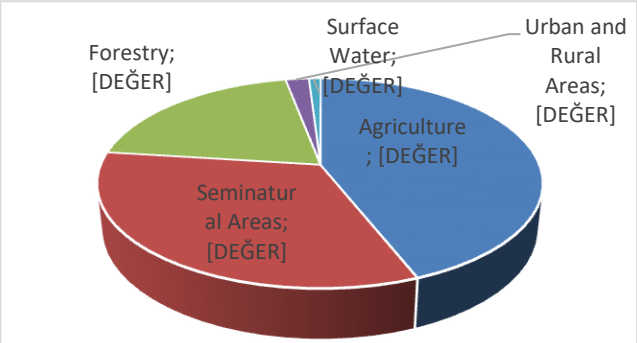
Coverage: more than 24,000 km^2 surface area



Problem

The Büyük Menderes River basin in Turkey occupies about 3.2 % of the country. It is surrounded mostly Aydın, Uşak, Denizli, Muğla, Afyon and partially Isparta, Burdur and İzmir cities. The Basin is influenced by the climate of the Mediterranean Sea as well as the continental climate which is expected to impact water quantity and quality. It is projected that a reduction in

annual precipitation by 10% in 2050 and increased evapotranspiration will reduce the flow rate in Büyük Menderes River by 20% in 2050.



Land use of Büyük Menderes River Basin

The Basin is faced with several river basin management issues. Land use within the basin varies widely with the most common ones being agricultural and semi-natural areas. The major economic activity in the basin is industry based on textile, cotton other food products. Also, since the basin is situated close to big cities, other activities such as animal husbandry for dairy, meat production and cultivating fodder crops with high productivity also exists. These activities make the basin highly vulnerable to both point and diffuse forms of pollution. There are hydro-morphological challenges due to over abstraction of groundwater for various uses e.g., agriculture and human consumption.

Solution: Water Basin Management Committee

Considering the sensitivity of the Büyük Menderes River Basin, it was appropriate to identify and implement measures to mitigate the impact on water quality and quantity as well restore the ecological potential of the basin. In view of this, a **water basin management committee** for Büyük Menderes river basin was established. An integrated approach to water management is believed to be the ultimate solution to the challenges faced in the basin. This committee is a multi-stakeholder committee from different sectors such as water utilities, municipalities, representatives of the Ministry of Environment and Urbanization, universities, and the organised industrial zone management. These diverse water stewards are close to actual problems and also aware of the status of polluters. Their core functions are to prepare river basin action plans, flood and drought management plans, monitor prepared plans and also prepare further plans and actions if needed. For sustainability purposes, the committee proposes short, medium and long term actions. This is expected to provide immediate and proper reaction to problems to solve and overcome by one central management.

A number of items are planned by the government as mid-term actions to protect the Büyük Menderes River Basin.

- Increase of inspections for industrial facilities, with the aim of preventing the discharge of illegal wastewater discharge and increased penalties for non-compliance
- Increasing the efficiency of wastewater treatment plants (WWTPs) in industrial organised zones
- Construction of WWTP where needed, and increasing the capacity of existing plants
- Regulating landfill operations, and increasing the landfill capacities if needed,
- Limitation of fertiliser application in agriculture,
- Promoting irrigation water efficiency in agricultural areas,
- Ensuring controlled groundwater abstraction.

Next steps

There needs to be proper implementation of regulations related to water management and monitoring. Representatives of ministries related to water should ensure information dissemination about discharge limits, regulations, and penalties to all responsible parties including industries, municipalities, farmers etc. For example, information on the process of monitoring excess use of chemical fertilisers or the consequences of illegal wastewater discharges from industries.

Finally, management improvements can help increase the efficiency and capacity of all WWTPs in the basin including in industrial organised zone WWTPs. This can be through installing water meters for all types of users, and registration of these water users.

Key words

o Water quality	o Planning	o Water quantity
o Governance from catchment to tap	o Water supply	

What are the Drivers for Action?

For more information on the Drivers for Action visit the Action Agenda for Basin-Connected Cities

Extreme Events	**Declining water quality**	**Water availability**
☒Public health hazards	☒ High operating costs	☒ Water supply disruption
☐ Damage to infrastructure	☐ Loss of credibility and trust	☐ Constraints to growth
☒ Economic activities and supply chain disruption	☒ Environmental, cultural and health impacts	☒ Declining quality of life

Pathways for Action

For more information on the Pathways for Action visit the Action Agenda for Basin-Connected Cities

Assessment	**Planning**	**Implementation**
☐Investment in data & information systems	☒ Risk-based approach to planning	☐ Integration of natural infrastructure
☐ Linking traditional water management with science	☒ Water allocation mechanisms	☐ Economic and financing mechanisms
☐ Invest in values to motivate water decision-making	☒ Stakeholder participation in planning and management	☒ Building partnerships from catchment to tap
	☒ Aligning urban development with basin management	☐ Digital Technologies

References & useful links

List of useful links providing additional information:
http://webdosya.csb.gov.tr/csb/dokumanlar/cygm0013.pdf
http://scd.cevre.gov.tr/default.aspx
http://scd.cevre.gov.tr/admin/dokuman/203c6c28-6c65-4bcc-be0e-5008296ddb83.pdf
http://www.eptisa.com/en/eptisa-worldwide/europe/turkey/

EPTISA Turkey

Eptisa takes part in infrastructure, water and environment and rural and socio-economic development projects applying technical capabilities and local knowledge. In the water sector Eptisa has prepared the pilot water management sector study for a Strategic Environmental Assessment in Turkey. Büyük Menderes River Basin was the pilot basin and a comprehensive study was performed including site visits, data collection, stakeholder meetings followed by a scoping and an SEA report.