REPUBLIC OF TURKEY
MINISTRY OF FORESTRY AND WATER AFFAIRS
GENERAL DIRECTORATE OF STATE HYDRAULIC WORKS

AN EXAMPLE OF THE MODERN IRRIGATION PROJECTS AND SYSTEMS IN TURKEY: THE YAYLAK PLAIN IRRIGATION PROJECT

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- Water amount for a plant growth period in DSI surface gravity irrigations is average 10,000 m³/ha.
- Farm water efficiency in traditional irrigation systems e.g., border or furrow irrigations is about 60%. If leakage, evaporation and operational losses are included, efficiency becomes 50%.

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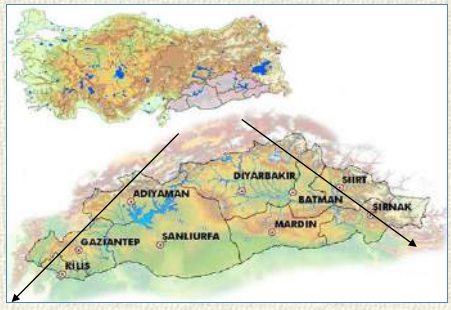
If we add the cost of the water itself to above mentioned factors, it may be easily understood that water economy is really important. Because it is not possible to reduce water amount in crop water requirements, water economy could only be applied in water conveyance, distribution, and in modernization of on-farm irrigation systems.

Theoretically, there are operational (conveyance) losses 5% in main canals and 5% in the schemes, adding up to 10%. These losses amount more than this figure in practice. In large irrigation schemes, decreasing of these losses have greater importance. Pressurized pipe systems in newly developed irrigation projects increase water economy therefore modern irrigation systems are to be encouraged.

A typical example is the Southeastern Anatolia Project where long tunnels, expensive conveyance canals, high elevated pumps to convey water to irrigation areas raised the cost of the water so much that water economy have become compulsory.



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- **To achieve maximum benefit from water sources, DSI has shifted its policy in 2003 from classical open channel distribution network to more water saving systems. Pipeline distribution network has been utilized extensively.**
- **Especially in inland areas where the water sources are scarcer this becomes a major issue. The proportion of pipeline distribution has soared to 71% in projects under the construction while it is 17% in the projects in operation. As of 2012, 39% of existing canals is classic canal, the 44% is canalettes (raised concrete parabolic flume) when they are classified as per service area.**

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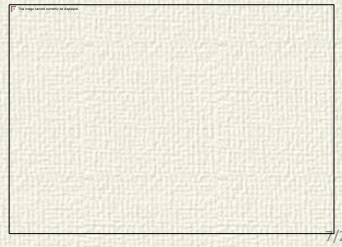
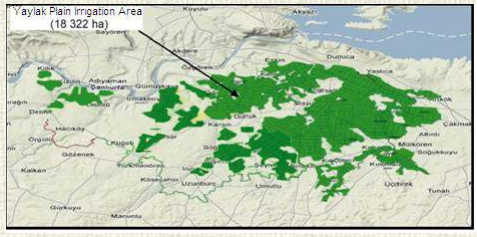
Southeastern Anatolian Project (GAP) is an integrated development project aiming socio- economic development of the region through predominantly irrigation and energy investments in the Tigris-Euphrates basin of Eastern Anatolia. The project constitutes one of the biggest investments of Republic of Turkey. DSI implements the major part of the Project containing 13 sub- projects; 7 of which took place in the Euphrates basin and 6 of which in the Tigris basin. Within the scope of these 13 sub-projects, it is foreseen the construction of 22 dams and 19 Hydroelectric Power Plants (HEPPs).



Yaylak Plain Irrigation Project is included within the scope of the Southeastern Anatolia Project (GAP) and covers the construction of irrigation facilities with modern controls for an area of 18.322 hectares in total, in 36 villages and two towns on the Yaylak Plain, which is located close to the Atatürk Dam in the Province of Şanlıurfa. The Yaylak Plain Irrigation Project is one of the major water and soil resources development projects being carried out in the world today.



The project are comprises 6% of the GAP area. The dimensions of the project cover an area of 60 km East to West and 25 km North to South.
Water is diverted from the Ataturk Dam reservoir through Yaslica tunnel (about 1.49 km length and 4.0 meter diameter) to the main pumping station. The main pumping station has 17 submersible pumps with a cumulative discharge of 21 m3 / sec and pumps water to the Yaylak Main Channel serving 9 pumping stations installed along the canal.

The Yaylak Main Channel is 83 km concrete lined channel having design discharge of 17.08 m³/sec and the bed slope as 0.0002. The scheme is designed to irrigate 18,322 ha benefitting 6000 farmers from 36 villages.

The main canal is equipped with the bivalent downstream irrigation canal gates which are controlled through a fully automated SCADA system.To prevent flooding in case of closure of the check structure, the side banks of the channel have been raised, appropriately. The system minimizes water losses during the operation. The water level in the canal can fluctuate between two limits defined by canal safety and by the depth needed for operation of the pumps.

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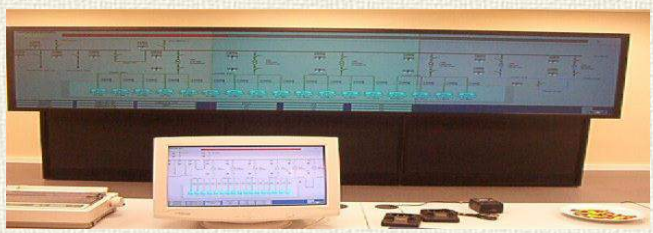
There are no field operators and the staff in the control room is on standby only.



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The irrigation water is distributed through 641 km long high pressure pipe network. Water is supplied on demand to farmers through the hydrants having 7 LPS flow rate to irrigate 4.665 hectares. The hydrants are equipped with a pressure gauge and a flow meter.

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As known when water is conveyed to the farm, on-farm water loses constitute the major proportion of the total water losses in irrigation. Therefore the most important factor is the increase of farm efficiency. Instead of traditional methods, if sprinkler and drip irrigation methods are utilized, sprinkler irrigation increases water efficiency from 60% to 80% and drip irrigation raises water efficiency up to 95%. It means 20% and 30% water economy.

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Modern irrigation applying was started in operation in 2006 in Yaylak plain. The farmers can irrigate their fields by connecting their sprinkler/ drip system to the hydrant. The major irrigation systems used by the farmers comprises the sprinkler (90%) and the drip (10%). On an average annually about 110 million cubic meter of water is used for irrigation purpose. As of 2012, irrigation ratio is 72 %.

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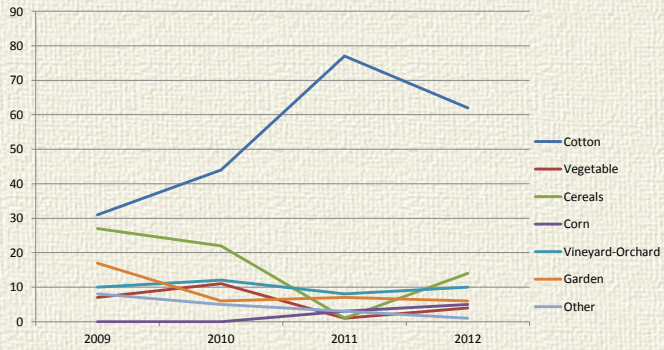
As of years, from 2009 to 2012, the areal rates of cultivated plants are shown in the slayt.



After passing to irrigation, cotton, corn and wheat agriculture were started intensively on Yaylak Plain.

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Water distribution is carried out by the Water Union Organization (WUO). There about 58 staff working under WUO. The DSI is responsible for managing the financial aspects of the WUOs. The water charging is based on the area irrigated. Significant saving in water use has been achieved due to the automation and involvement of WUOs in the system operation. Although, the Government is providing financial support to the farmers in procuring inputs like the fuel and fertilizers, the high energy price remains the main concern of farmers.

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The project has already started to bring benefits to people of the region by generating employment, raising income levels and expanding the service capacity of urban and rural centers. After passing to irrigation, transmission of obtained capital deposition to farming services causes financial supports of farmers so, government expenditure for farming services will decrease.

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It has been observed that farming services on land opened to irrigation have been developed by farmers, parallel to increased economic level of farmers.

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Thank You

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