

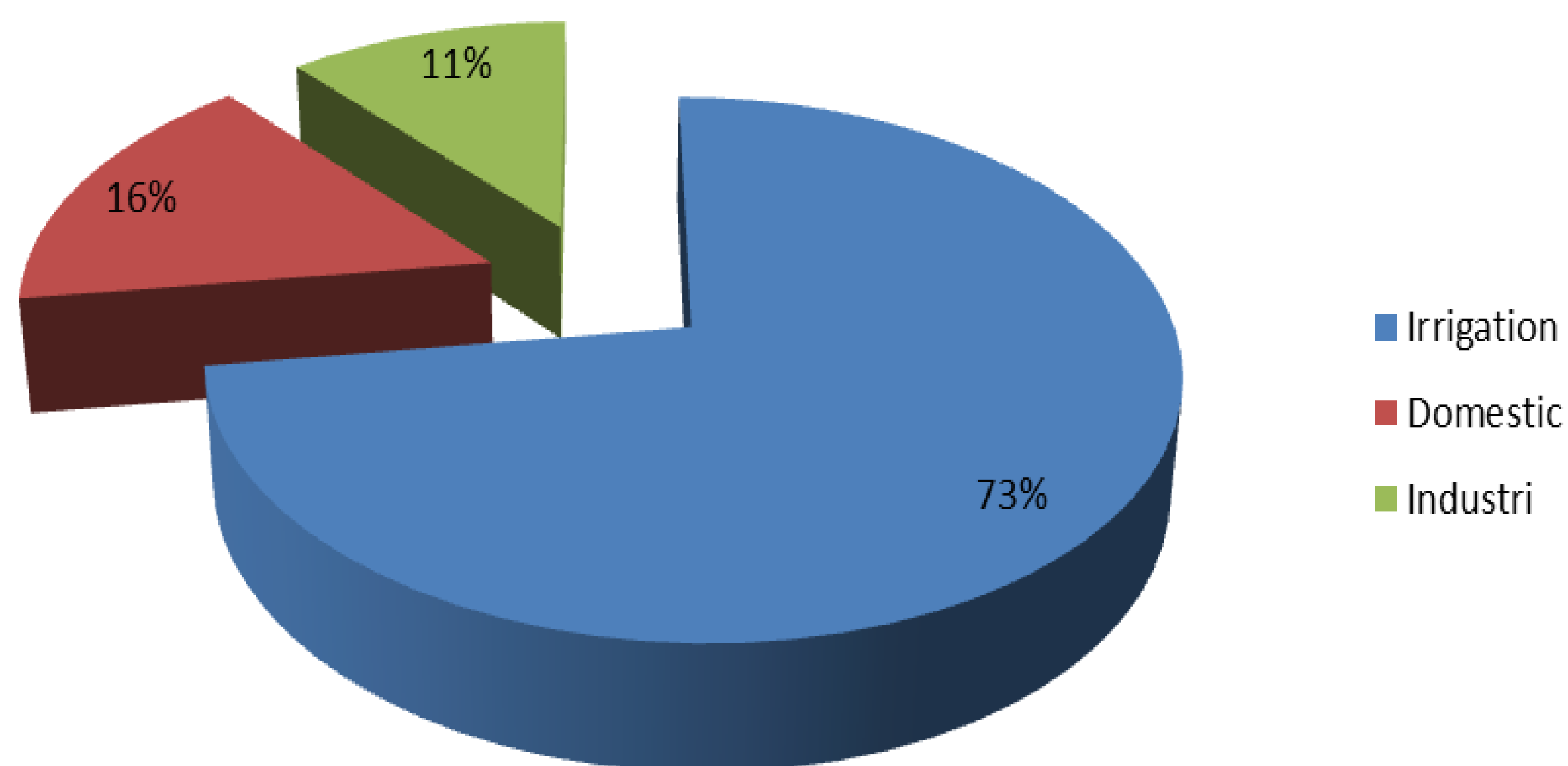
The Sectoral Distribution of Water Resources Consumption in TURKEY

Geographically, there is a large variation in annual precipitation, evaporation and surface run-off parameters, in Turkey. Precipitation is not evenly distributed in time and space throughout the country. The available water per capita in Turkey is less than the World average. According to the projections related to the global climatic models, Turkey will be under the effects of dry and hot weather condition by 2030. In the current situation approximately 73% of limited water resources of Turkey is allocated for agricultural purposes.

Under these circumstances, effective water utilization and water saving irrigation systems are the most critical issues to be considered. In other respects, improvements in irrigation performance and water management provide to ensure the availability of water both for food production and for competing human and environmental needs.

As of 2013, sectoral water consumption in Turkey

Sectoral Water Consumption



Irrigation Management in Turkey

There is an excessive water use problem in irrigation practices of Turkey. Main reason for this excessive water use in irrigation schemes is high water losses in networks. Then, water distribution networks minimizing the water delivery and distribution loss should be constructed. For this purpose, pressurized and piped systems should be selected instead of open canal and canalette systems during the construction of new irrigation systems.

The Experiment of Modern Irrigation Systems and Methods

DSI has shifted its policy from classical open channel distribution network to more water saving systems particularly last years. Pipeline distribution network has been utilized extensively. In irrigation facilities evaluated within the scope of this study, the area constructed piped system are 363 763 ha for the year of 2013 while it is 277 970 ha for the year of 2009. The proportion of the irrigated area used drip and sprinkler irrigation methods is 26 % whereas it is 17 % for 2009.

Sprinkler irrigation systems are used Middle Anatolian in particular in the Konya closed basin, Southeastern Anatolian and Marmara and Mediterranean Regions. There are scarce water resources problem due to overexploitation of groundwater in Konya closed basin. Urgent need for the most efficient use of existing water resources has enforced farmers to give top priority to water saving technologies. Using of drip irrigation system in this basin has provided an important contribution for water saving.

The most important project of the late 1980s and early 1990s is the Southeastern Anatolia Project (GAP). Yaylak Plain Irrigation Project is included within the scope of the GAP and covers the construction of irrigation facilities with modern controls for an area of 18.322 hectares in total. The Yaylak Plain Irrigation Project is one of the major water and soil resources development projects being carried out in the world today. 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. 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. 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 m³ of water is used for irrigation purpose. The irrigation efficiency has soared to 68 % in the Yaylak Plain irrigation area.

The images from Yaylak Irrigation Project



Result

According to the result of the evaluations, it can be said that the irrigation systems (namely sprinkle, drip and surface (gravity) systems), each of which necessitates different conditions for their favorable uses. An irrigation system can be successfully applied on a given crop and soil condition while another may not. There are many factor to be decided while selecting a favorable irrigation system. And the farmers have to know the specifications of different irrigation systems.

In Turkey, approximately 74 % of total area is irrigated by surface irrigation methods(furrow, border, etc.). The remaining part is irrigated with pressurized irrigation methods. Instead of surface irrigation methods, if sprinkler and drip irrigation methods are utilized, sprinkler irrigation increases water efficiency from 60% to 80% and drip irrigation increases water efficiency up to 95%.

Irrigation applications (surficial, sprinkling and drip) in Turkey



Spatial distribution of applied irrigation methods, %

