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#EU GREEN WEEK

THE WATER-ENERGY-FOOD NEXUS: BUILDING RESILIENCE TO GLOBAL CHALLENGES

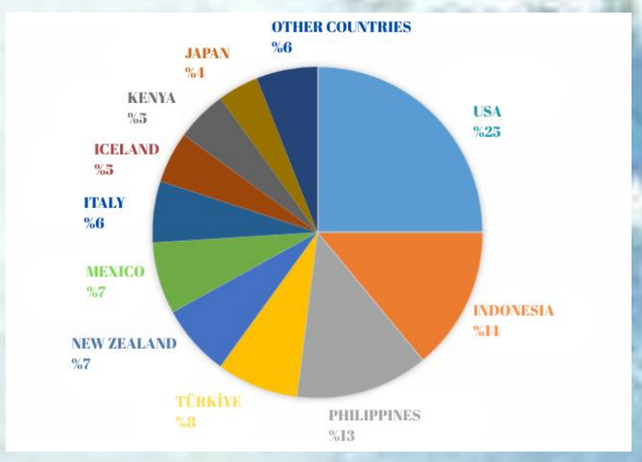
Partner Event

WEFE Nexus Implications of Geothermal Resources in the Konya Plain Project, Türkiye

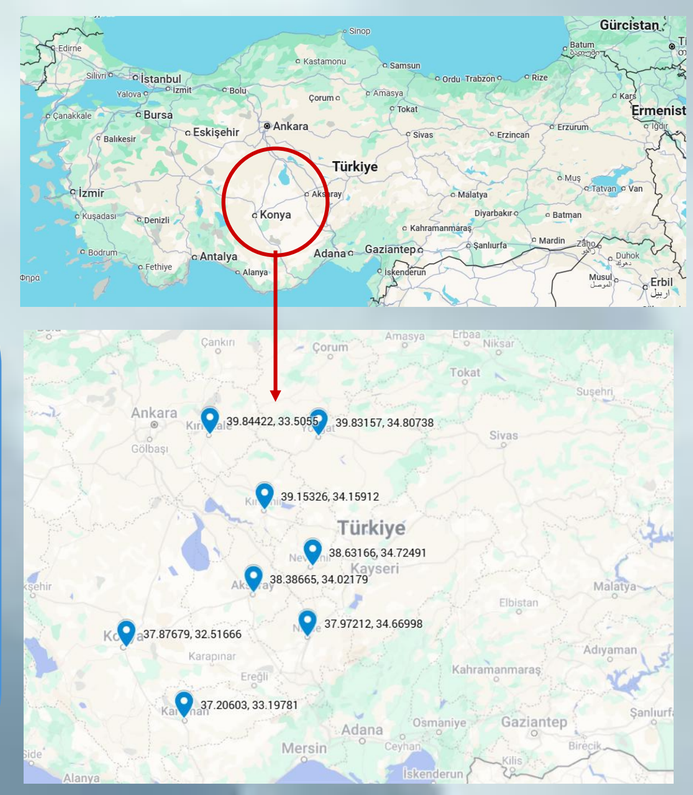
Rabia Çolak, Peri Bozkurt, Cevza Melek Kazezyılmaz-Alhan

Department of Civil Engineering, Istanbul University-Cerrahpaşa, Istanbul, Türkiye

E-mail: rabia.colak@ogr.iuc.edu.tr, peri.bozkurt@ogr.iuc.edu.tr, meleka@iuc.edu.tr



Türkiye ranks among the **top five countries worldwide** in terms of geothermal energy direct-use capacity, with approximately **9% of the 227 identified geothermal fields with the surface area of 65,014 km^2 located in the Konya Plain Project (KOP) region**. The aim of the KOP is to **enhance sustainability through the utilization of geothermal resources** and the project is supported by Konya Plain Project Regional Development Administration which is established and funded by the Ministry of Industry and Technology. This study **examines the direct-use potential of geothermal resources in the Konya region within the Water-Energy-Food-Ecosystem (WEFE) Nexus framework**.



The locations of geothermal resources in the KOP (Konya Plain Project)

Agricultural Use of Geothermal Energy in the KOP Region

Geothermal energy supports **food production** in KOP. Another benefit is that the cooled geothermal water, after being used for heating, serves as **a source for irrigation**, thus helping to **protect and save groundwater resources** that are normally relied upon for irrigation in the KOP region.

In line with KOP's sustainable development goals, it is aimed to reduce open earth canal irrigation systems, ensure leak-proof networks, and **reclaim approximately 670 million cubic meters of water** annually for agriculture, thereby preventing the decline in groundwater levels. Additionally, transitioning from dry farming to irrigated agriculture and implementing a crop pattern model that increases income are targeted to **enhance both economic and environmental benefits.**

It is observed that **geothermal resources act as a catalyst** in this region, which has significant agricultural production and irrigation potential in Türkiye. The integrated use of geothermal energy offers multifaceted **benefits in terms of water conservation**, **energy efficiency**, **food security**, and **the preservation of ecosystem balance**, thereby emerging as a strategic tool in building a **sustainable future**.

Tomato production is carried out in 10 greenhouse enterprises **over an area of 592 decares**, which corresponds to approximately **15% of the geothermal greenhouses in Türkiye.**

In the KOP Region, there is a heating capacity equivalent to 8,300 residences, with **5,000 residences currently being heated**.

Residential Heating in the KOP Region

Images of the Kırşehir City Residential Heating System

From a WEFE Nexus perspective, the geothermal potential of the KOP Region presents a strategic opportunity for integrated development, enhancing food security through greenhouse cultivation, improving water efficiency via closed irrigation systems, contributing to sustainable energy by reducing fossil fuel use, and alleviating pressure on ecosystems. When managed wisely and sustainably, this potential positions the KOP Region as a model for regional development and a key contributor to Türkiye's circular economy, climate and energy goals.

*KOP Region Development Administration, Prof. Dr. Ayşen DAVRAZ, Prof. Dr. Hasan Hüseyin ÖZTÜRK, Prof. Dr. Mahmut Tahir NALBANTÇILAR, Dr. Feza ŞEN, Halil Kozan, 2020

*KOP Action Plan, Konya Plain Project Regional Development Administration, 2014-2018