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BOĞAZIÇI UNIVERSITY INITIATES EUROPE'S FIRST CARBON-NEGATIVE BIOREFINERY AND KICKS-OFF INTEGRATED BIOREFINERY CONCEPT FOR BIOECONOMY DRIVEN DEVELOPMENT PROJECT (INDEPENDENT)

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Project INDEPENDENT was developed to promote the international competitiveness of SMEs and entrepreneurs in the field of algal biotechnology, and it was built on the axis of transferring the R&D competence of Boğaziçi University, which has been working in the field of algae biotechnologies for many years, and the international experience of Boğaziçi University Technopark Inc. to commercial-scale production.

Figures 1. INDEPENDENT project team

The implementation process of Project INDEPENDENT began on December 18, 2019, supported by the EU Instrument for Pre-accession Assistance Programme (IPA) as part of the Competitive Sectors Programme conducted by the Turkish Ministry of Industry and Technology, Directorate-General for EU and Foreign Affairs, EU Financial Programmes Department.

Designed to create a competent Center of Excellence (CoE) in its own field in Turkey and Europe, Project INDEPENDENT focuses on the development of innovative, high value-added and eco-friendly products and technologies from algal biomass, which stand out as being distinctive and important among sustainable resources, for locomotive industries.

Project INDEPENDENT aims to obtain products and technologies for energy and health sectors, the main current account deficit items of Turkey, with an integrated production system based on a bioeconomy-oriented growth model, from entirely algae-based natural resources without being dependent on fossil resources.

The project's target groups are innovative SMEs in relevant sectors, R&D companies, start-ups, and technology development zones.

Biofuels such as notable bio-jet fuel, dietary food supplements, pharmaceutical ingredients, animal feed practices, and organic biofertilizers are being developed from algae cultivated in 80 m^3 outdoor ponds and 30 m^3 indoor production reactors installed at an R&D area and a production site of 2,500 m^2. The fully wind-powered plant is the first carbon-negative integrated biorefinery in Turkey and Europe.

Approximately 1,200 tons of wet algae mass per year will be processed at the plant. And as part of the Competitive Sectors Programme, R&D consultancy, project development, know-how and technology transfer, equipment design, test and analysis services will be provided to the SMEs operating in various sectors, particularly in food, energy, environment, and health sectors, and industrial development will be ensured by creating jobs.

Figures 2. Integrated Biorefinery Concept for Bioeconomy Driven Development (INDEPENDENT)

In line with these goals, three sectoral seminars, three workshops, two technical visits abroad, and an international conference will be held.

The project site already supports the EU and Turkey's Green Deal goals with its bioenergy practices developed based on zero waste while working with 100% renewable wind energy. Algae-based and highly nutritious food products directly contribute to the "farm to fork" strategy without using fertile agricultural land and offer innovative and sustainable solutions.

Project INDEPENDENT creates a center of excellence in the international arena while increasing the national R&D capacity in the field of algal biotechnologies. It's leading the way in the development of algae products and technologies that can directly contribute to the EU's blue growth and circular economy programmes with its integrated biorefinery model, and directly contributes to nine of the United Nations Sustainable Development Goals committed to being achieved by 2030.