

# NATIONAL LABORATORY FOR RENEWABLE ENERGY

## SCIENCE AND TECHNOLOGY FOR A SUSTAINABLE FUTURE

In order for Hungary to become the winner of the rise of the "Green Economy", it is necessary to create the knowledge base and set of competences that enable domestic economic actors to be competitive in the field of various decarbonization technologies. To this end, we are building the scientific and technological, legal, economic and industrial law protection base for small-footprint energy technologies, especially H<sub>2</sub> production/transport/storage/use and CO<sub>2</sub> utilization (CCU). The two technology groups can play a significant role in sectoral integration in parallel, supporting each other, in strengthening energy security of supply and achieving decarbonization goals.



### MAIN RESEARCH AREAS

- R&D of the electroactive and structural components of fuel cells (TCs) and new generation Li-ion batteries, the related electrochemical and electrical engineering, manufacturing technology, and recycling aspects
- Comparing different H<sub>2</sub> and CCU technologies and their life expectancy, by the development of test stations
- Scaled-up H<sub>2</sub>-generating and CO<sub>2</sub>-converting electrolyzers and catalytic technologies
- Design a demonstration plant that can produce e-synthesis gas and then e-kerosene/e-wax from it
- Disruptive H<sub>2</sub> production / storage and CCU processes
- Economic and legal analysis of H<sub>2</sub> and CCU and technologies
- Supporting corporate competence creation, sectoral integration and educational activities

### CONSORTIUM LEADER

University of Pécs

### CONSORTIUM PARTNERS

Budapest University of Technology and Economics

Centre for Energy Research

John von Neumann University

Research Centre for Natural Sciences

Széchenyi István University

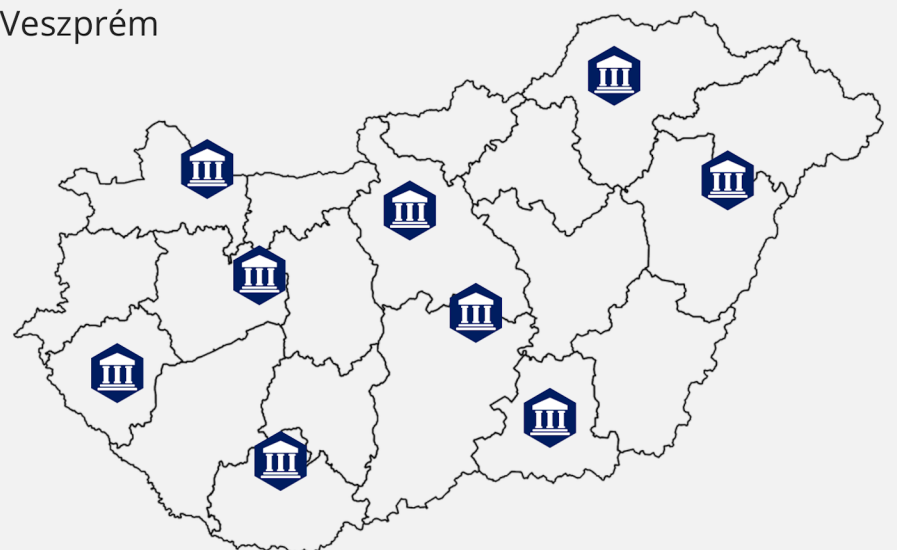
University of Debrecen

University of Miskolc

University of Pannonia

University of Szeged

**PLACES OF IMPLEMENTATION:** Budapest, Debrecen, Győr, Kecskemét, Miskolc, Nagykanizsa, Pécs, Szeged, Veszprém



## BENEFITS TO BE EXPECTED FROM LABORATORY RESEARCH

- Concrete and measurable results:
- Outstanding publications
- New researchers and new academic degrees
- New R+D+I projects
- New international projects
- In the various science/technology fields desired results:
- Carbon dioxide technologies
- Components of fuel cells and Li-ion cells - establishment of industrial development goals
- Renewable energy system - establishment of economic development goals
- Applied research in the field of H<sub>2</sub> production and storage
- Education training

## THE PROFESSIONAL TEAM

The National Laboratory deals with two main thematic areas, each of which has a separate co-professional leader: Dr. András Tompos focuses on hydrogen technologies, and Dr. Csaba Janáky leads the program focusing on carbon dioxide utilization. In the case of both topic areas, the research goals are realized in the close cooperation of the research groups of the consortium members. The research groups are coordinated by the research group leaders. The research groups are obliged to report to the professional managers on a monthly basis about the completed professional tasks. In total, nearly 30 research groups were involved.

## TARGET GROUP

- International scientific community, domestic and international industry community, policy makers, general public.

## POSSIBLE PARTNERSHIPS

The National Laboratory for Renewable Energy aims to create a broad partnership between members of the scientific community and industrial actors. Our articulated goal is to create new development projects and to have the built-up R+D+I knowledge base support domestic economic actors.

## PROFESSIONAL CONTACT

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