

## Project of Common Interest HU | SK

### General information

The Danube InGrid Project is a Project of Common Interest of the European Commission in smart grid category. The purpose of Danube InGrid Project is to strengthen interaction and integration between Slovak and Hungarian electricity markets. The Project will adopt smart grid technologies both internally and on cross border level for the evolvement of modern energy infrastructure. It will efficiently integrate the behavior and actions of all market users connected to the electricity network, mainly consumers, prosumers, generators with the goal of integration of large amounts of electricity from renewable and/or distributed energy sources.

For a better differentiation of project activities, the Danube InGrid project is divided into first and second wave due to territorial and temporal differences; while on the current 5<sup>th</sup> PCI list both waves are included under the single name Danube InGrid with the numerical designation 10.7. Currently, the implementation of the first wave of the project as an Action No. 10.7 – 0008-SKHU-W-M-20 is ongoing, for which the European Commission has allocated a grant for a smart grid project from the Connecting Europe Facility (CEF) created on the basis of Regulation of the European Parliament and the Council (EU) no. 1316/2013 of 11 December 2013 on the establishment of the Connecting Europe Facility in the amount of EUR 102 million. The Action promoters are Západoslovenská distribučná, a.s., Észak-dunántúli Áramhálózati Zrt. and Slovenská elektrizačná prenosová sústava, a.s. with the proceSSIONAL support of MAVIR Magyar Villamosenergia-ipari Átviteli Rendszerirányító Zrt. (Hungarian TSO).

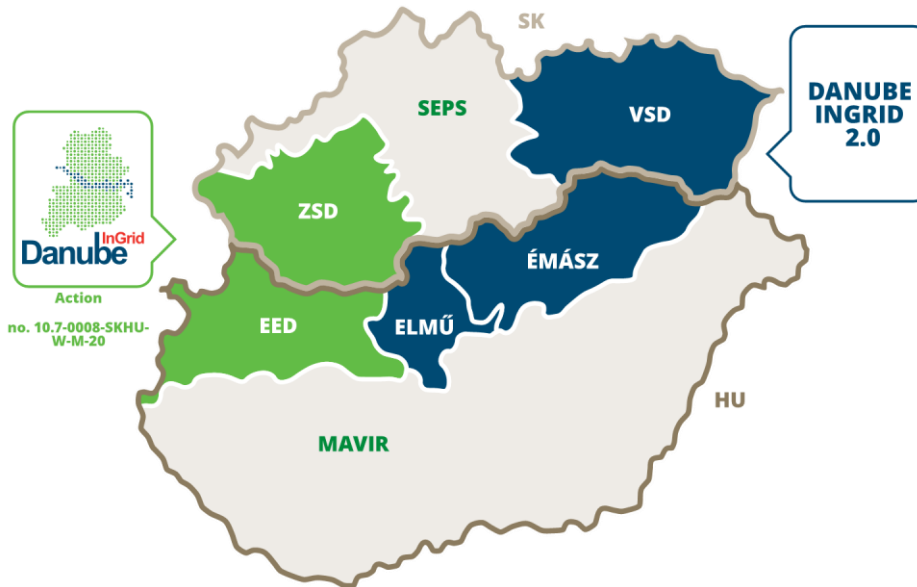
The subject of the second wave of the Danube InGrid project (Danube InGrid 2.0) is smart grid applications related to the design of smart substations, data exchanges, data flow and smart measurement and handling of interactions between TSO and DSO for the safe and efficient operation of future energy systems. The goal of the second wave of the Danube InGrid project is to improve cross-border cooperation at the level of TSO and DSO in coordination of the management of the electricity system with a focus on intelligent data collection and their exchange in order to enable the connection of a larger number of renewable energy producers to the electricity system with an emphasis on ensuring high quality and security of supply for energy consumers in the region of eastern Slovakia, northeastern and central Hungary. The promoters of the second wave of the project are Východoslovenská distribučná, a.s., Slovenská elektrizačná prenosová sústava, a.s., ELMŰ Hálózati Kft. and MVM ÉMÁSZ Áramhálózati Kft.

The main goal of the Project is to develop a smart grid in the CEE region in order to integrate more renewables generators to the distribution grid, while keeping high quality and security of supply for the energy consumers. The Project will create greater capacity for the development and connection of distributed electricity production and adequate space for possible connection of new distribution grid users in the region. The Project will improve connection of more new renewable energy generators, quality of electricity supply, security of supply, network connectivity for all users and reduce the negative environmental impact.



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### The Project consists of:

- Smart devices on High Voltage and Medium Voltage lines
- Construction and modernization of smart substations
- Optical fiber network on High Voltage and Medium Voltage
- IT management for the smart grids
- Battery energy storage system and meteorological data for supporting network operation
- Reactive power flow management in TSO/DSO interface
- Digitalization of grid process, cybersecurity, digital platform
- Project management, communication and dissemination

### DANUBE INGRID, ACTION 10.7-0008-SKHU-W-M-20

### DANUBE INGRID 2.0, the second wave



#### Project Value and Time of Realization

Estimated project value: 291 mil. EUR  
Estimated time of realization: 2020 - 2025



#### Promoters:

Západoslovenská distribučná, a.s.  
E.ON Észak-dunántúli Áramhálózati Zrt.  
Slovenská elektrizačná prenosová sústava, a.s.

#### Support member

MAVIR Magyar Villamosenergia-ipari Átviteli Rendszerirányító Zrt



#### Project Value and Time of Realization

Estimated project value: 243 mil. EUR  
Estimated time of realization: 2022 - 2029



#### Promoters:

Východoslovenská distribučná, a.s.  
Slovenská elektrizačná prenosová sústava, a.s.  
ELMŰ Hálózati Kft.  
MVM ÉMÁSZ Áramhálózati Kft.

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## Expected impacts of the Project

The aim of the cooperation between Západoslovenská distribučná, a.s. (ZSD, Slovak DSO), Východoslovenská distribučná, a.s. (VSD, Slovak DSO), Slovenská elektrizačná prenosová sústava, a. s (SEPS, Slovak TSO), Elmű Hálózati Kft. (Elmű, Hungarian DSO), MVM Émász Áramhálózati Kft. (Émász, Hungarian DSO), and E.ON Észak-dunántúli Áramhálózati Zrt. (EED, Hungarian DSO) with the support of Magyar Villamosenergia-ipari Átviteli Rendszerirányító Zrt. (MAVIR, Hungarian TSO) is to efficiently integrate smart grids across borders of two EU members states and to contribute to the upgrade of EU electricity networks and to connect them (physically / digitally); in particular to integrate and increase the penetration of renewable energy in the area in line with National energy and climate plans. The environmental improvement is an integral part of the project.

The main benefit is to provide better and more economically efficient delivery of services for the strategic industrial areas and final consumers of both countries. The Project will improve quality of electricity supply, security of supply, grid efficiency and flexibility, connection of new renewable energy sources, network connectivity for all users and reduction of negative environmental impact, smart grid functionalities on MV level, extend the optical communication infrastructure.

## Cross-border nature

The project aims to improve the cross-border cooperation on the TSO and DSO levels in the coordination of electricity grid. The Danube InGrid project aims to strengthen the interaction between the Slovak and Hungarian electricity markets and to promote cross-border cooperation between distribution and transmission system operators. Part of the project is also the cross – border connection between Slovak and Hungarian DSO's and mutual communication and data acquisition and sharing platform related to network control and operation.

The achievement of the project goals will contribute to better cross-border cooperation and future interconnection of the European energy networks and the increase of distributed generation share on the electricity consumption.

Cross-border cooperation will ensure the smooth management of the network thanks to strengthening the connections and integrating weather data into the network. That will help grid operators to improve the forecasting of the extreme weather conditions and so that to prepare for possible malfunctions caused by them. On that basis, the grid operators will be able to secure effective grid management. That will provide a secure and stable energy supply for all market segments and purchasers.

## Project streams

The Danube InGrid project contains several streams of smart grid applications that are essential for function of the project at the end, mainly smart applications related to safety issues, smartening of substations (sensors, information devices, applications), modernization



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of the grid caused by integration of RES, e-mobility etc., smart metering, communication devices such as optical fibers and IT support devices.

### Environmental benefits

- Reduction of CO2 emissions and reduction of fossil fuel usage due to reduction of transmission losses and possibility of integrating variable energy sources
- Reduction of air pollution (particular matters, NOx, SO2)
- Direct and indirect reduction of the share of conventional energy sources connected to the network
- Integration of renewable energy sources
- Protection of endangered species and animals (especially birds) that are important to the local environment
- Minimization the impact on natural areas for maintainable wildlife protection
- Increase of share of renewable energy in final energy consumption, and increase in energy efficiency
- Tighter cooperation and integration of both Member State's energy markets
- Improvement of energy security
- Efficient network operation
- Raising the employment rate

### Economic benefits

- Economically efficient electricity supply for the strategic industrial areas and final consumers
- Lower transmission losses
- Reduced operation and maintenance costs
- Great intensity of Hungarian-Slovak cooperation and knowledge sharing
- Strengthening of cloud based cross border interconnection between the electricity system operators of the Slovak Republic and Hungary (data exchange)
- Estimated reduction in electricity interruption costs
- Electricity cost savings for households, businesses, but most notably of energy-intensive industries
- Reduced cost of equipment breakdowns
- Deferred distribution capacity investments
- Enhanced international cooperation and involvement of more market participants

### Social/Consumer benefits

- Enable prevention of blackout
- Enable prevention of brownout
- Enable better energy network stability
- Security of supply
- Efficient smart grid leading to a reduction of operation and maintenance costs (smart technologies)
- Increased interconnectivity across the national and European infrastructure through improved security, availability, and flexibility



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- Via optical communication create the option for implementation of demand side management technology allowing electricity consumption analysis and optimization
- Positive impact on new possibilities of connecting end users and RES, including decentralized sources and increase in the quality of electricity supply
- Bigger employment trough suppliers of Smart Grid technology

### Preliminary timetable

Phase	Timeline for Action 10.7-0008-SKHU-W-M-20	Timeline for Danube InGrid 2.0
1	Preparation of the grant agreement	2018 – 2020
2	Permitting and procurement	2020 – 2025 2022 – 2027
3	Implementation	2020 – 2025 2022 – 2029
4	Financial settlement	2025 – 2026

### Potential risks and preventive/mitigating measures

Risk	Preventive/Mitigating measure(s)
Overrun of budget	Strict budget control and monitoring during the Action realization. Budget was prepared based on prior experience.
Delays in Action timetable	Set time reserves in the schedule of the Action. Through monitoring and management of construction and procurement processes.
Coronavirus will last for several months	If the coronavirus situation will last long, it will negatively affect realization of all activities, this is beyond our control, and we can only prepare to predictable scenarios.
Delay in realization of subprojects	Possibility that the legal and regulatory environment will change or that technical requirements are going to differ from what was expected. The contractor and the investor will do all actions necessary to manage the risk and keep it under control.
Lack of labour, contractors for the constructions, specific materials and technology on the market	Essential precautions will be taken to eliminate this risk, such as provision of long-term contracts, adjustment of technical standards of the company and regular communication with the suppliers in order to plan the manufacture ahead.
Inappropriate technology in Activities	Technology is selected according to the tendering process and also according to the



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	experience and references from similar projects in the EU.
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### Alternative routes considered

When constructing new communication and power routes as part of Danube InGrid project, project partners are always analyzing alternatives and create the final routing taking into account outcomes of the public consultation as well as the course of the permitting process.

### National network development plans

- [SK – Ten Year Network Development Plan 2020-2029](#)
- [HU – Ten Year Network Development Plan 2021](#)

### PCI licensing

- [Manual of procedures \(SK\)](#)
- [Manual of procedures \(HU\)](#)

### Other useful links

Detailed information regarding the project is published on the [Danube InGrid website](#)

Further information regarding projects of common interest is published on the European Commission's website, within the infrastructure section:

- [Transparency platform web address](#)
- [List of PCI projects](#)



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