

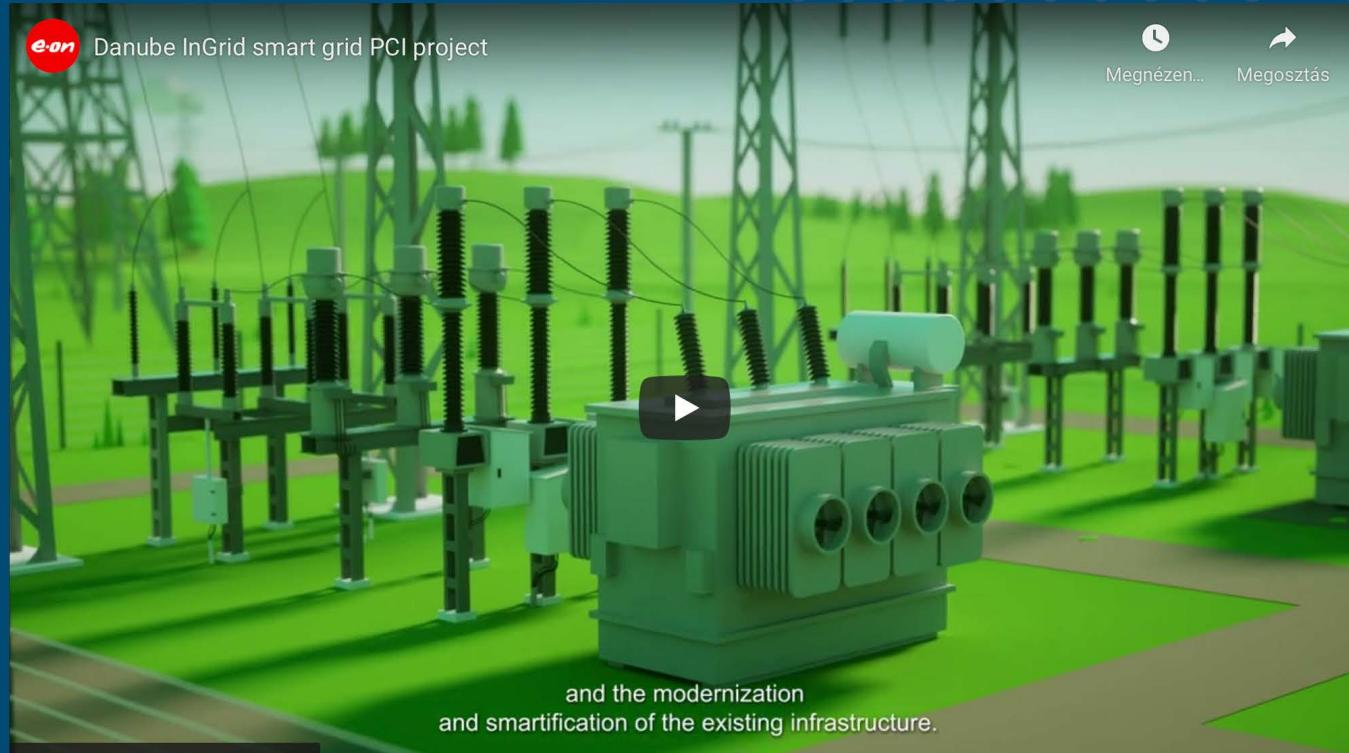


Danube InGrid

Smart Grid Project of Common Interest
of the European Union



OVERVIEW OF THE PURPOSE AND ACTION DESCRIPTION



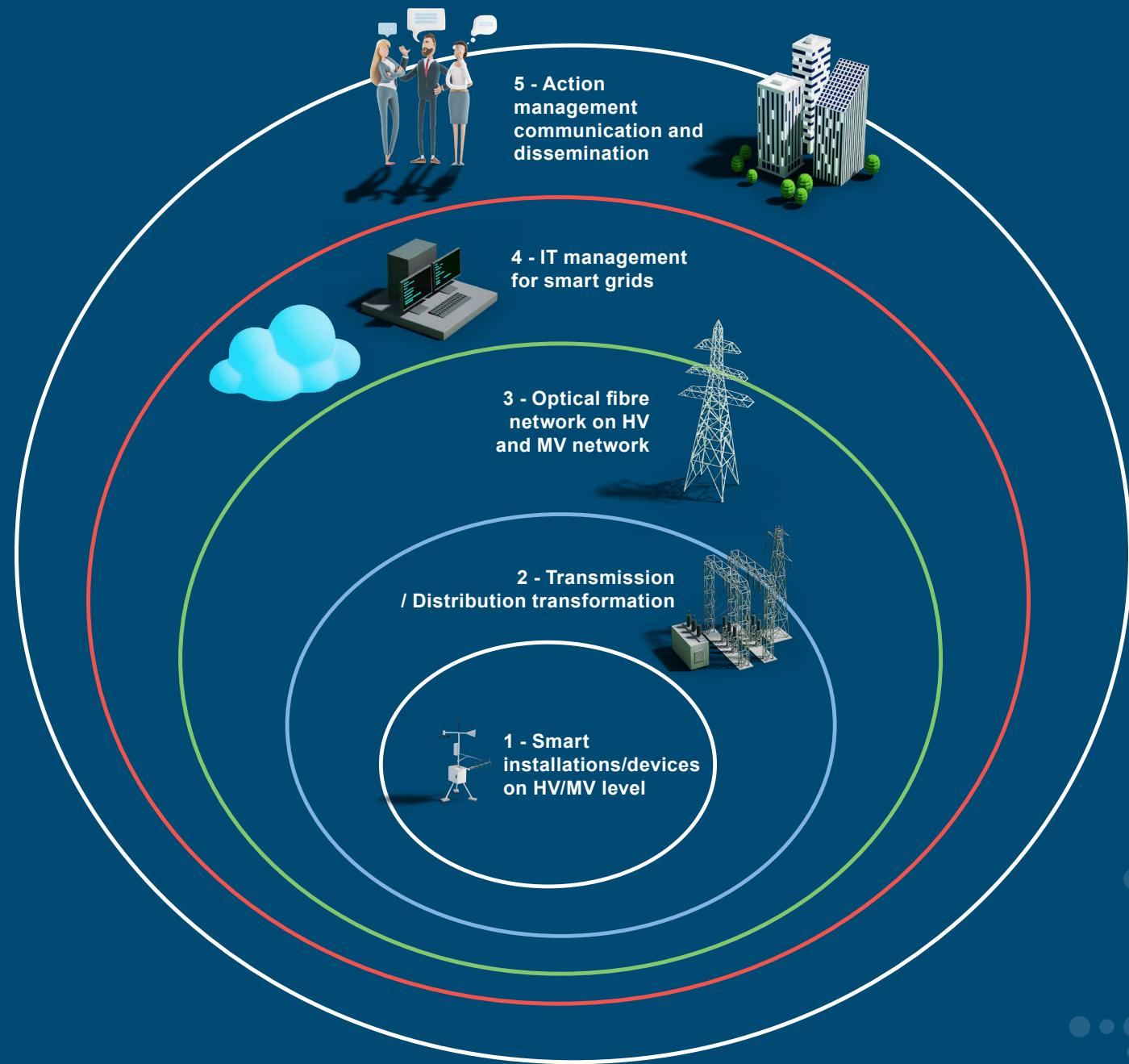
The Action is a part of the smart grid project of common interest Danube InGrid (Danube Intelligent Grid), which received co-financing from the Connecting Europe Facility of the European Union in 2020 in the amount of almost 102 mil. EUR. The aim of the Action is to integrate more renewables to the distribution grid by the application of smart technologies and manage them in a smarter way along with keeping the security and high quality of supply for the electricity consumers in the CEE region. The Action promoters are Západoslovenská distribučná, a.s. (ZSD, a Slovak DSO), Slovenská elektrizačná prenosová sústava, a.s. (SEPS, the Slovak TSO) and E.ON Észak-dunántúli Áramhálózati Zrt. (EED, a Hungarian DSO) with the professional support of MAVIR Magyar Villamosenergia-ipari Átviteli Rendszerirányító Zrt (MAVIR, the Hungarian TSO).

ACTION GOAL



The main goal of the Action 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 in the Western Slovakian and North Western Hungarian Region. The Action 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 Action will improve connection of more new renewable energy generators, quality of electricity supply, security of supply, network connectivity for all users and reduction of negative environmental impact.



ACTION ACTIVITIES

The Action consists of 5 major activities:

1. Smart installations/devices on High Voltage and Medium Voltage
2. Transmission/distribution transformation
3. Optical fiber network on High Voltage and Medium Voltage
4. IT management for the smart grids
5. Project management, communication and dissemination





TECHNICAL DIMENSION OF THE ACTION

The Action implementation consists of several sub-activities, that aim to implement smart elements into the current distribution grid, such as:

- The Action enhances cross-border coordination of electricity network management, with focus on smartening data collection and exchange. It contains smart grids applications related to security of supply, smartening of substations (sensors, information devices, applications), data exchange, data flow and smart metering.
- The distribution grid will be modernized through implementation of smart elements and new IT framework in order to create the smart grid within the Action impact area.
- Capacity increase and reliability of the 22 kV distribution grids will be ensured by the development of smart MV/LV station solution and the installation of network switching devices.
- Around 150 existing transformer stations at DSO level will be modernised, optical fibre network for MV grid management will be built, as well as installation of smart metering devices will be performed.

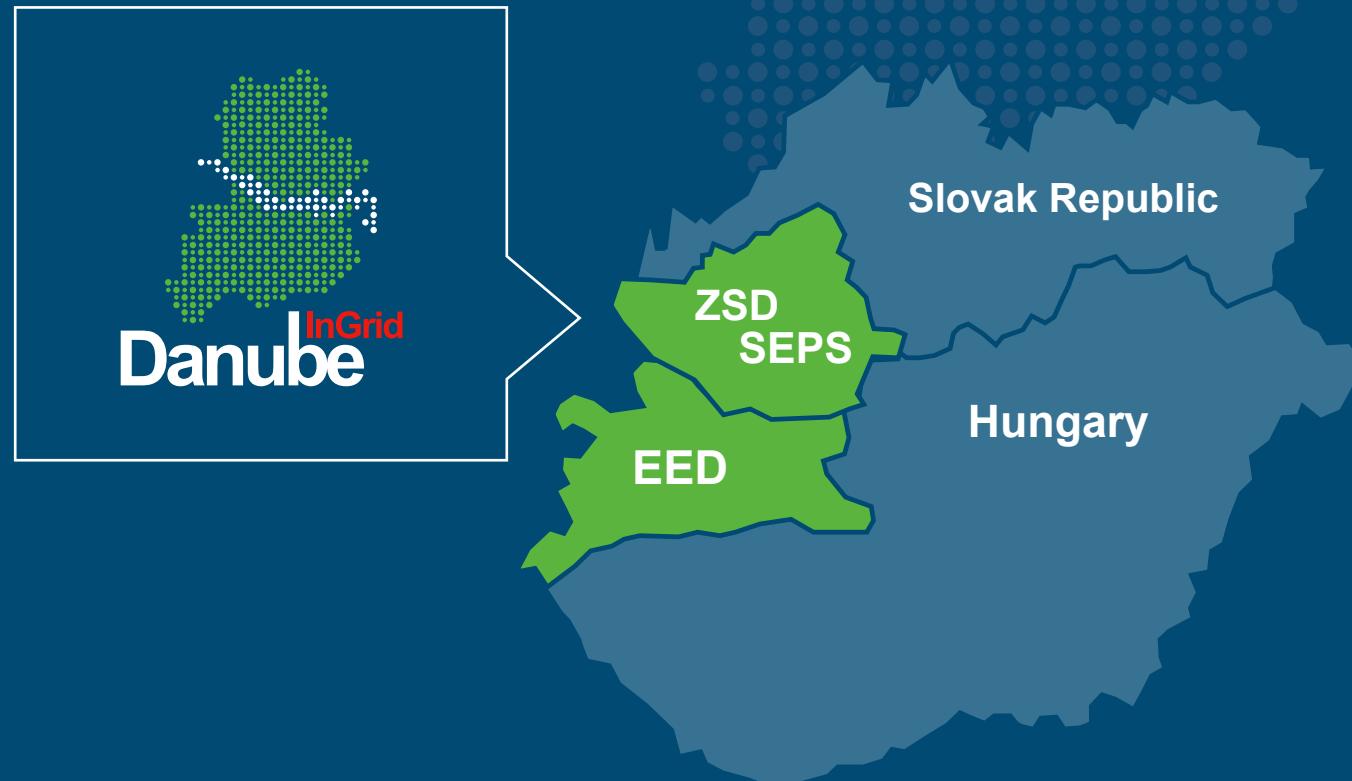


TECHNICAL DIMENSION OF THE ACTION

- A new smart 110/22 kV substation and corresponding lines will be built in Slovakia in Bratislava region on the DSO level which will improve the robustness and stability of the power grid in the area, as well as a new 110/22 kV substation near Šamorín (SK). Existing 400/110 kV substations of Stupava and Podunajské Biskupice (SK) will be extended and modernised on the TSO level. Besides that, a new smart 400/110 kV substation will be built in Vajnory (SK) and its correspondent 400 kV loop line which will improve the robustness and stability of the power grid in the area.
- Special attention is paid to the protection of the environment and the minimization of the effects of the electricity network. In order to protect the Great Bustard (protected bird species) the overhead lines passing through the bustard protection area of the Fertő-Hanság National Park will be changed to cables and the 22 kV connections of the established microstations will be equipped with bird protection devices.
- The Action creates conditions for a significant number of renewable energy generators to be connected at MV in medium term.

CROSS-BORDER NATURE - LOCATIONS

The geographical location of the Action is shown in the map below with green:



IMPACTS AND BENEFITS

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, NO_x, 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 of the impact on natural areas for maintainable wildlife protection
- Increase of share of renewable energy in final energy consumption, and increase in energy efficiency (parameters of the 20-20-20 target)
- Tighter cooperation and integration of both Member State's energy markets
- Improvement of energy security
- Efficient network operation
- Raising the employment rate

ECONOMIC BENEFITS

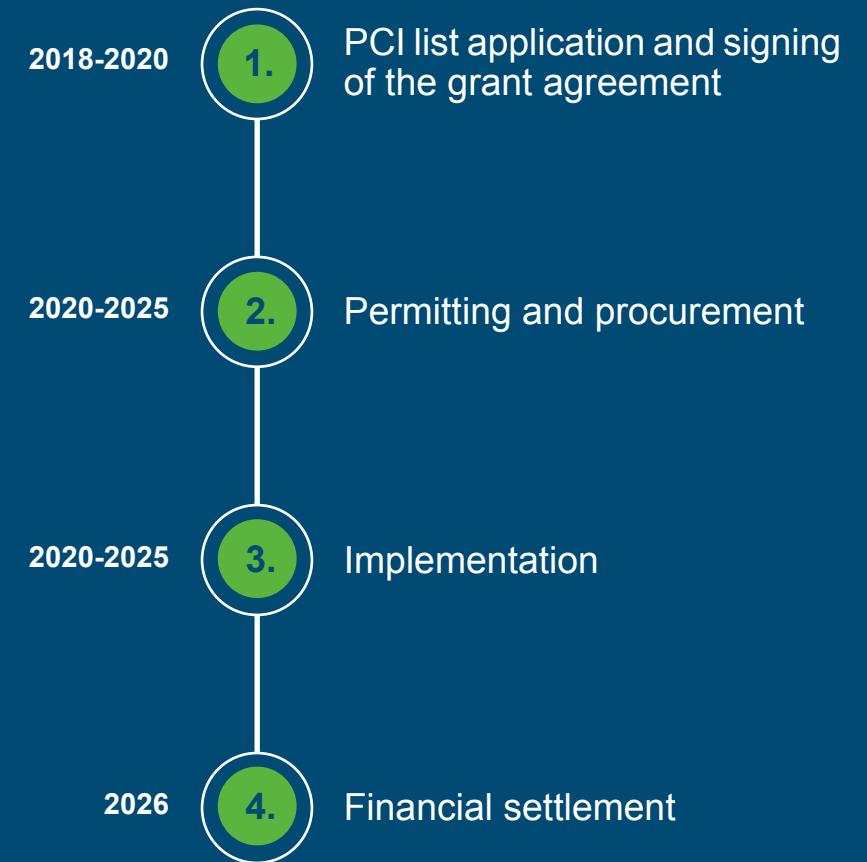
- Economically efficient electricity supply for the strategic industrial areas and final consumers
- Lower transmission losses
- Reduced operation and maintenance costs
- Great intensity of Hungarian-Slovak cooperation and knowledge share
- Strengthening of cloud based cross border interconnection between the electricity system operators of the Slovak Republic and Hungary (data exchange)
- 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
- Implementation of demand side management technology allowing electricity consumption analysis and optimisation
- 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 OF THE ACTION





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.
Significantly negative business feasibility of analysed solution	The business feasibility is expected to be positive from long term perspective, as all solutions analysed during realization of projects have to meet standards of all involved parties.
Inappropriate technology in Activities	Technology is selected according to the tendering process and also according to the experience and references from similar projects in the EU.



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](#)

PCI licensing

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

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

National Development Plan

- [SK – Ten Year Network Development Plan 2020-2029](#)
- [HU – Ten Year Network Development Plan 2019](#)

PROMOTERS

e-on | Hálózat

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SUPPORTING MEMBER


MAVIR



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