

# GREEN DANUBE

**Integrated transnational policies and practical solutions  
for an environmentally-friendly Inland Water Transport system  
in the Danube region**



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*18 April 2018, Vienna*  
*Workshop on modernisation of Danube vessels fleet*  
*Austrian National Workshop on greening strategy*



**Danube Transnational Programme**  
**GREEN DANUBE**

# GENERAL INFORMATION

- **GREEN DANUBE DTP 1-043-3.1**
- **Priority Axis 3:** Better connected and energy responsible Danube region
- **Specific Objective 3.1:**  
Support environmentally-friendly and safe transport systems and balanced accessibility of urban and rural areas
- **Duration:** 30 months (January 2017 – June 2019)
- **Total Budget:** 1.586.244 EURO
- **ERDF Contribution:** 1.267.897,40 EURO
- **IPA Contribution:** 80.410 EURO



[www.interreg-danube.eu/green-danube](http://www.interreg-danube.eu/green-danube)

## Danube Transnational Programme



*Priority Area 3: Better connected and energy responsible Danube region*

**Project: GREEN DANUBE**  
**Total Budget: 1 586 244 EURO**  
**ERDF: 1 267 897,40 EURO**  
**IPA: 80 410 EURO**  
**ENI: 0 EURO**  
**Co-finance: 237 936,60 EURO**

*Start date*  
01-01-2017  
*End date*  
30-06-2019

*A stream of cooperation*

 **Interreg**   
Danube Transnational Programme  
GREEN DANUBE

Programme co-funded by the European Union

Integrated Transnational policies and practical solutions for an environmentally-friendly Inland Water Transport system in the Danube region

# CONSORTIUM: 10 PPs+6 ASPs of 7 countries



## Partners (PPs)

LP - CER – Romanian Maritime Training Centre, **RO**

1. Pro Danube Management GmbH – **AT**
2. Black Sea - Danube Association of Research and Development – **BG**
3. Inland Navigation Development Centre Ltd – **HR**
4. Development Centre for Ship Technology and Transport Systems – **DE**
5. National Association of Radio Distress-Signalling and Infocommunications – **HU**
6. The Regional Environmental Centre for Central and Eastern Europe – **HU**
7. Danube Delta National Institute – **RO**
8. Association of Cross Border Cooperation „Lower Danube” – **RO**
9. Danube Competence Centre – **RS**

## Associate Strategic Partners (ASPs)

1. Danube Delta Biosphere Reserve Authority – **RO**
2. General Directorate for Water – **HU**
3. Directorate for Inland Waterways – **RS**
4. Danube Commission – **HU**
5. Executive Agency Maritime Administration – **BG**
6. Ministry of Transport – **RO**



# CHALLENGES and APPROACHES



## Challenges:

**Air pollution** in the Danube Region

**Different emissions** due to different *technologies*, *fuels* and environmental policies

**Inadequate information** on environment protection

## Approaches:

Contribution to limit impact of IWT on the Danube ecosystem by measurements and impact analysis – **Air Quality measurement**

**Deploying research** and **inventories** focused on green **technologies**, alternative fuels and sailing behaviour by providing solutions and **Policy Agenda**

**Contribution to raise public awareness** on the impact of IWT on nature **by developing Environmental Information Centres**

# GREEN DANUBE – SPECIFIC OBJECTIVES



SO 1- Contribute  
to limit impacts of  
IWT on the  
Danube ecosystem

SO 2 - Contribute  
to emissions  
reduction in the  
Danube ecosystem

SO 3 - Raise public  
awareness

# WORK PACKAGE 3 - AIR EMISSIONS ASSESSMENT



*4 critical areas along the Danube were selected:*

- ✓ Danube Delta - Sulina Channel (RO) Mm 0 - 34
- ✓ Iron Gates I (RO-RS) Km 930 - 947
- ✓ Gemenc (HU) Km 1475 - 1480
- ✓ Engelhartszell - Confluence of the Danube and Inn river (DE-AT) Km 2200 - 2224

*Measurements are in progress within the selected areas :*

- ✓ First set of measurements took place in the autumn of 2017
- ✓ Second set (spring) is in progress as we speak
- ✓ Summer campaign is planned for July 2018

*Analysing, interpreting and reporting of the measurements results started at the beginning of 2018.*

# WORK PACKAGE 4 - GREEN TECHNOLOGIES



Green technologies have been inventoried and **partners concluded reports** on:

- characteristics and operating regimes of inland vessels
- inventories of innovative technologies
- best practices for emissions reduction
- existing facilities and future options to supply alternative fuels along the Danube

All results will be integrated into a **Strategy for emissions reduction** on the Danube by the use of innovative green technologies



# WORK PACKAGE 4 – GREENING STRATEGY



## Greening Strategy for emissions reduction based on possible green technologies for the Danube Region

- What is it?
- What is the measure suitable for?
- What can be expected?
- What is to be considered?

### Exhaust After Treatment / Catalyst (SCR)

**What is this?**  
The term selective catalytic reduction (SCR) refers to a technique for reducing nitrogen oxides in exhaust gases from internal combustion engines. The chemical reaction at the SCR catalyst is selective, i.e. the nitrogen oxides (NO, NO<sub>2</sub>) are preferentially reduced, while undesired side reactions such as the oxidation of Sulphur dioxide to Sulphur trioxide are largely suppressed. The reaction requires ammonia (NH<sub>3</sub>), which is added to the exhaust gas. The products of the reaction are water (H<sub>2</sub>O) and nitrogen (N<sub>2</sub>).

**What is the measure suitable for?**  
Suitable for most engines.

**What can be expected?**  
The SCR device is able to process the NO<sub>x</sub> so that the latest EU Emission Regulations can be met. It might even be possible to improve upon this degree of accuracy even more.

**What is to be considered?**

- Collection of operating data prior to design
- Temperature profile
- Thermal load in the engine room
- Often not applicable for very old engines.
- In some countries funding for Exhaust After Treatment devices

Source: [10]

### Alternative Fuels / Energy Sources

**What is this?**  
In recent years there has been an increase in projects for the use of alternative energy sources such as LNG, Hydrogen (fuel cell), batteries, CNG, LPG and Methanol for ship propulsion.

**What is the measure suitable for?**  
For new built ships and retrofits, as long as the investment in the new technology is reasonable.

**What can be expected?**  
The new concepts promise lower emissions and thus an advantage for the environment.

**What is to be considered?**  
Most of these concepts require a new infrastructure to be fully established.

Source: [4]

### Exhaust After Treatment / Diesel Particulate Filter

**What is this?**  
The Diesel particulate filter reduces the emissions of carbonaceous particulate matter (PM). This is especially regarding the new NEMM regulation, a very important aspect for the Greening of the whole European IWT fleet.

**What is the measure suitable for?**  
Suitable for most engines, but those must have a certain exhaust gas pressure. In addition, such systems require a large amount of space, which must be made available in the engine room.

**What can be expected?**  
Diesel particulate filters are able to reduce the amount of particulate matter so that the latest EU Emission Regulations can be met. It might even be possible to improve upon this degree of accuracy even more.

**What is to be considered?**

- Collection of operating data prior to design
- Temperature profile
- Thermal load in the engine room
- Often not applicable for very old engines.
- In some countries funding for Exhaust After Treatment devices

Source: [6]



# WORK PACKAGE 5 - EU POLICY SUPPORT



A report on the **analysis of policies and legislative framework** summarized the key findings of the scanning undertaken by partners in all project countries at

- ✓ National level
- ✓ Regional level
- ✓ European level



***It has been completed*** to support development of a Policy Agenda whose aim is to **integrate project conclusions via Policy Agenda** into the existing **policy and legislative framework**.

## WORK PACKAGE 6 - RAISING PUBLIC AWARENESS



Four **IWT Environmental Information Centres** will be developed to facilitate cooperation actions at transnational level among authorities, environmental agencies and the general public.

Their main purpose is to contribute to more effective information sharing to limit impact of IWT system on the Danube region environment.

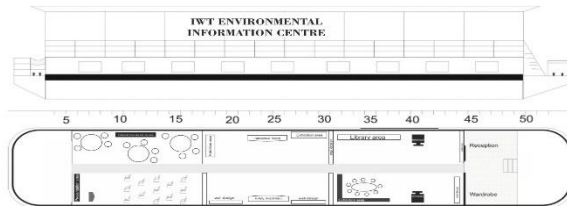
- ✓ *IWT EICs will be located in Romania, Croatia, Serbia*
- ✓ *Mobile centre in Hungary will cover also Austria, Germany and Bulgaria*

Transnational pilot actions and campaign to test the centres will be organised in each of the seven project countries in 2018.

# WORK PACKAGE 6 - RAISING PUBLIC AWARENESS



## *Environmental Information Centres*





## FURTHER INFORMATION:

<http://www.interreg-danube.eu/green-danube>  
<https://www.facebook.com/GreenDanube/>  
<https://www.facebook.com/InfoDanube>  
<http://www.infodanube.ro>  
<https://www.facebook.com/INDanube/>  
<https://www.linkedin.com> “Danube Knowledge Network”



# Thank you!



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