GREEN DANUBE

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

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GREEN DANUBE Project Manager

*"**SEArica** webinar"*
28 September 2021
http://www.interreg-danube.eu/green-danube

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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

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PARTNERSHIP (10 PPs +6 ASPs from 7 countries)

FINANCED PROJECT PARTNERS:

LP-CER: CERONAV–Romanian Maritime Training Centre, Lead Partner–RO
PP1-PDM: Pro Danube Management GmbH–AT
PP2-BDCA: Black Sea–Danube Association of Research and Development–BG
PP3-CRUP: Inland Navigation Development Centre Ltd–HR
PP4-DST: Development Centre for Ship Technology and Transport Systems–DE
PP5-RSOE: Association of Radio Distress Signalling and Infocommunication-HU
PP6-REC: Regional Environmental Centre for Central and Eastern Europe–HU
PP7-DDNI: Danube Delta National Institute–RO
PP8-ACTEDJ: Association of Cross Border Cooperation „Lower Danube"–RO
PP9-DCC: Danube Competence Centre–RS

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ASSOCIATED STRATEGIC PARTNERS:

ASP1-DDBRA: Danube Delta Biosphere Reserve Authority–RO
ASP2-OVF: General Directorate for Water–HU
ASP3-PLOVPUT: Directorate for Inland Waterways–RS
ASP4-DC: Danube Commission–HU
ASP5-BMA: Executive Agency Maritime Administration–BG
ASP6-MT: Ministry of Transport–RO

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PERSPECTIVES

- IWT is growing with about 80% until 2040 compared to 2010
- Nowadays the average emission level of air pollutants of inland navigation vessels could be in many cases higher than that of trucks
- It is imperative to control the negative impact of emissions

GREEN DANUBE addresses the issue of **Inland Waterways Transport (IWT)** pollutant emissions along the Danube

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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 of emissions level and impact analysis

Deploying research 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 the nature by developing Environmental Information Centres

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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**

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WORK PACKAGE 1 – PROJECT MANAGEMENT

WORK PACKAGE 2 – COMMUNICATION ACTIVITIES

- ✓ *Website* – http://www.interreg-danube.eu/green-danube
- ✓ *Newsletters +more than 75 news uploaded on DTP*
- ✓*Social media* – https://www.facebook.com/GreenDanube/ https://www.facebook.com/InfoDanube https://www.infodanube.ro https://www.linkedin.com Danube Knowledge Network https://www.researchgate.net/project/GREEN-DANUBE
- ✓ *Stakeholder Database and Report*
- ✓ *Scientific articles*

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WORK PACKAGE 3 - AIR EMISSIONS ASSESSMENT

- ✓ **Act. 3.1:** Set up assessment criteria for **selection of the critical environment areas** on the Danube (ended), *4 critical areas along the Danube were selected:*

- **Danube Delta -** Sulina Channel (RO) **nm 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**

  - ✓ *List of the assessment criteria for the selection of critical environmental areas on the Danube River*
  - ✓ *Working methodology for performing the measurements in the selected areas*

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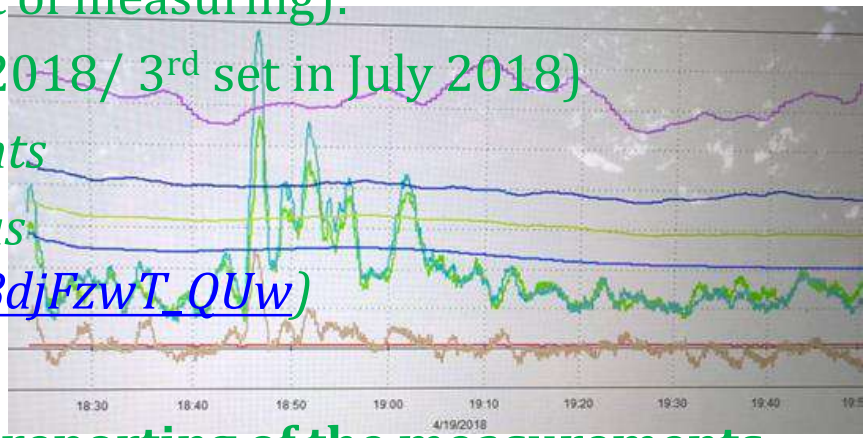
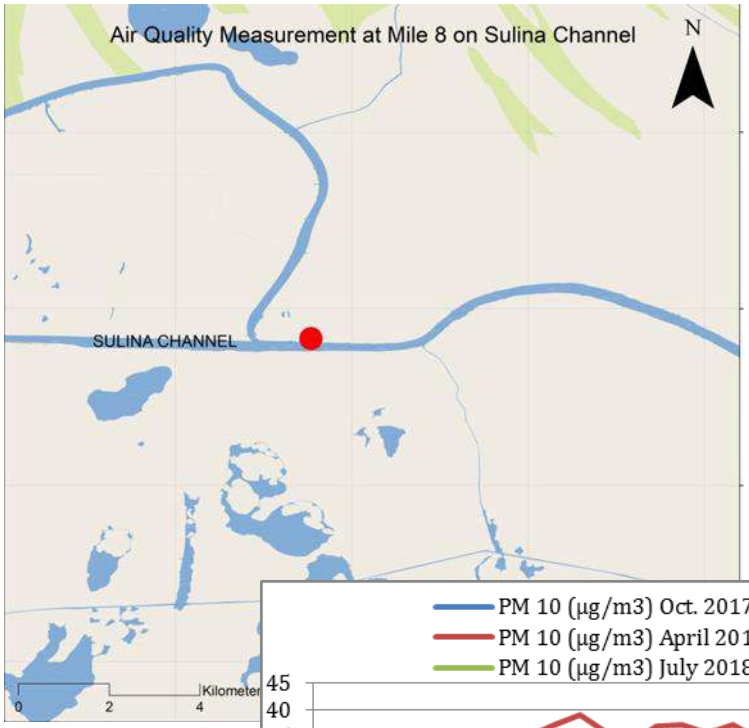
WORK PACKAGE 3 - AIR EMISSIONS ASSESSMENT

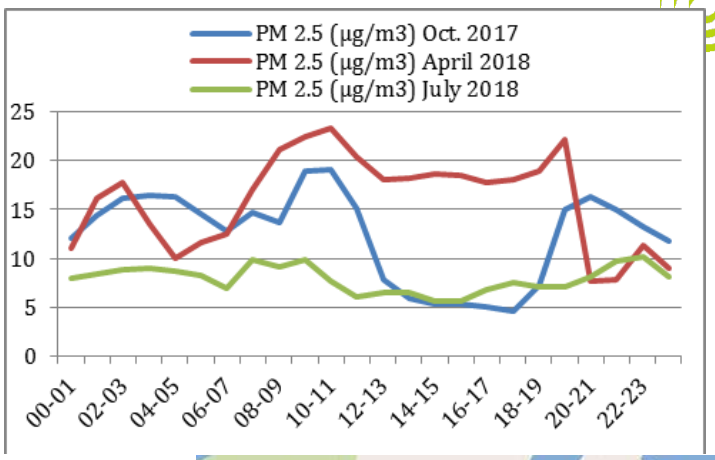
- ✓ **Act. 3.2:** Performance of **measurements** of air pollutant emissions in the selected areas (7 point of measuring):
  - ✓ 1st set in Nov 2017/ 2nd set in Apr 2018/ 3rd set in July 2018)
  - ✓ *Report on the results of measurements performed in the selected Danube areas (https://www.youtube.com/watch?v=8djFzwT_QUw)*

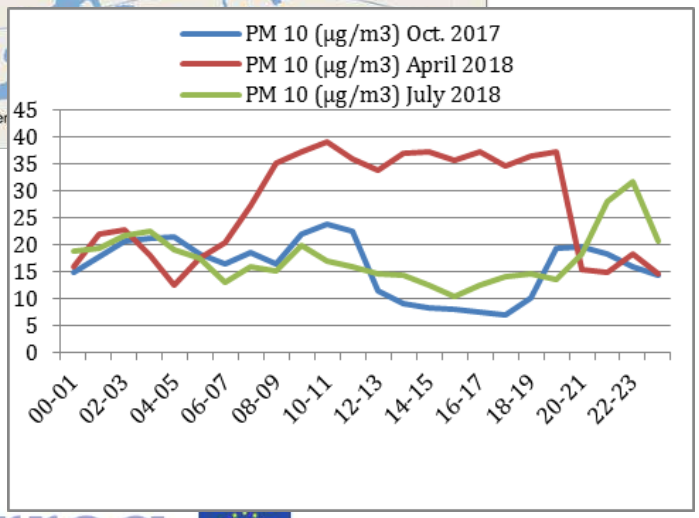


- ✓ **Act. 3.3: Analysing, interpreting and reporting of the measurements results**
  - ✓ *Consolidated Report summarizing the interpretation of the measurements and the information regarding the data on the pollution caused by vessels traffic*

WORK PACKAGE 3 - AIR EMISSIONS ASSESSMENT







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WORK PACKAGE 3 - AIR EMISSIONS ASSESSMENT

D3.3.1: Consolidated report on measurements/ Conclusion and recommendation

- **Monitored main pollutant : nitrogen oxides (NO_2,), carbon monoxide (CO), sulphur dioxide (SO_2) and particulate matter (PM10 and PM2.5) resulting from ship traffic**
- **The nitric gases concentration values are directly proportional to the power developed by the diesel engines. This type of engine is the main polluter for the atmospheric air**
- **The values of the pollutants had no influence when reported to the number of ships, but reporting to the amount of horsepower developed by the diesel engines**
- **An increase of inland naval traffic will evidently cause an increase of pollutants emissions**

WORK PACKAGE 3 - AIR EMISSIONS ASSESSMENT

Recommendations

- Having a **network of monitoring sites** along the Danube would represent a good option to gather more consistent and significant data to model the air pollution
- Introducing **green ship technologies** could have a favourable impact on reducing air pollution by
- Based on the pioneering approach demonstrated in the present study,, **further investigations** on methodological aspects and monitoring procedures are recommended, in particular for the evaluation of the exposure / immitance of pollutants to the concerned areas, local environment and human beings.

WORK PACKAGE 4 - GREEN TECHNOLOGIES

- ✓ **Act. 4.1:** Survey on **characteristics and operating regimes** of IWT vessels passing monitored critical areas
  - ✓ *Technical report on vessels inventory results*
- ✓ **Act. 4.2: Inventory of innovative technologies** and **best practices for emission reduction** on the Danube River
  - ✓ *Technical Report on "Existing green technologies and best practices for reduction of IWT air pollution on the Danube River"*
- ✓ **Act. 4.3:** Inventory of existing **facilities** and future option **for supply of alternative fuels** along the Danube
  - ✓ *Report on existing facilities for supply of alternative fuels along the Danube*
- ✓ **Act. 4.4:** Strategy for emissions reduction by using green technologies

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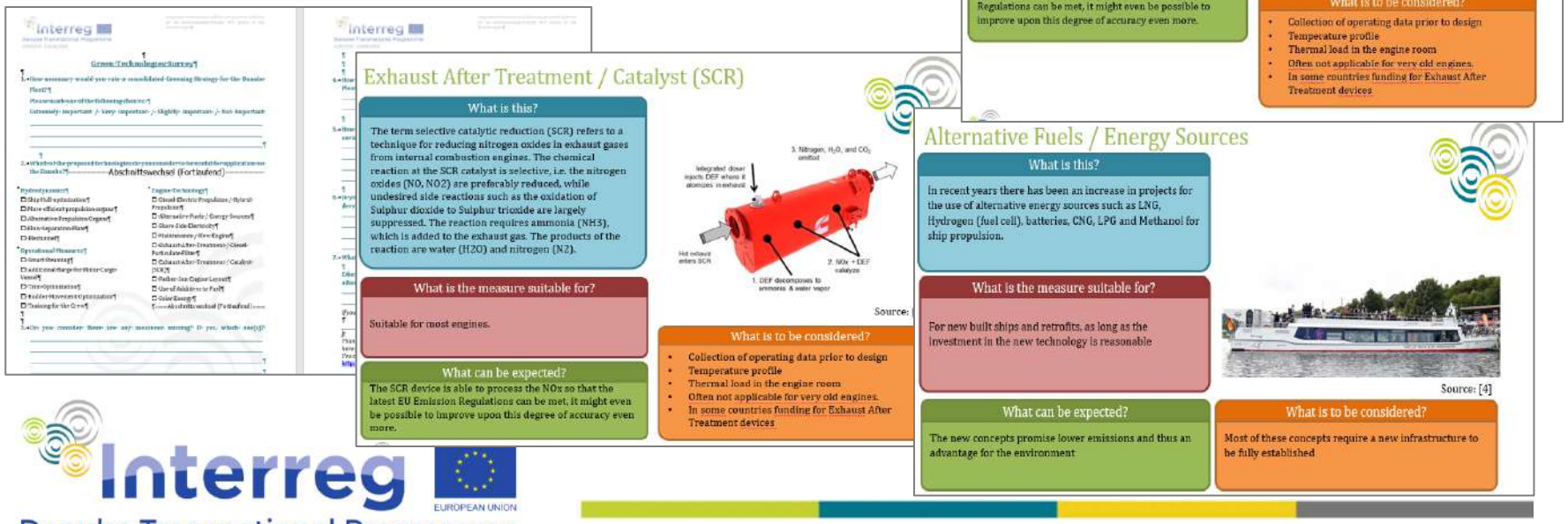
WORK PACKAGE 4 - GREEN TECHNOLOGIES

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?



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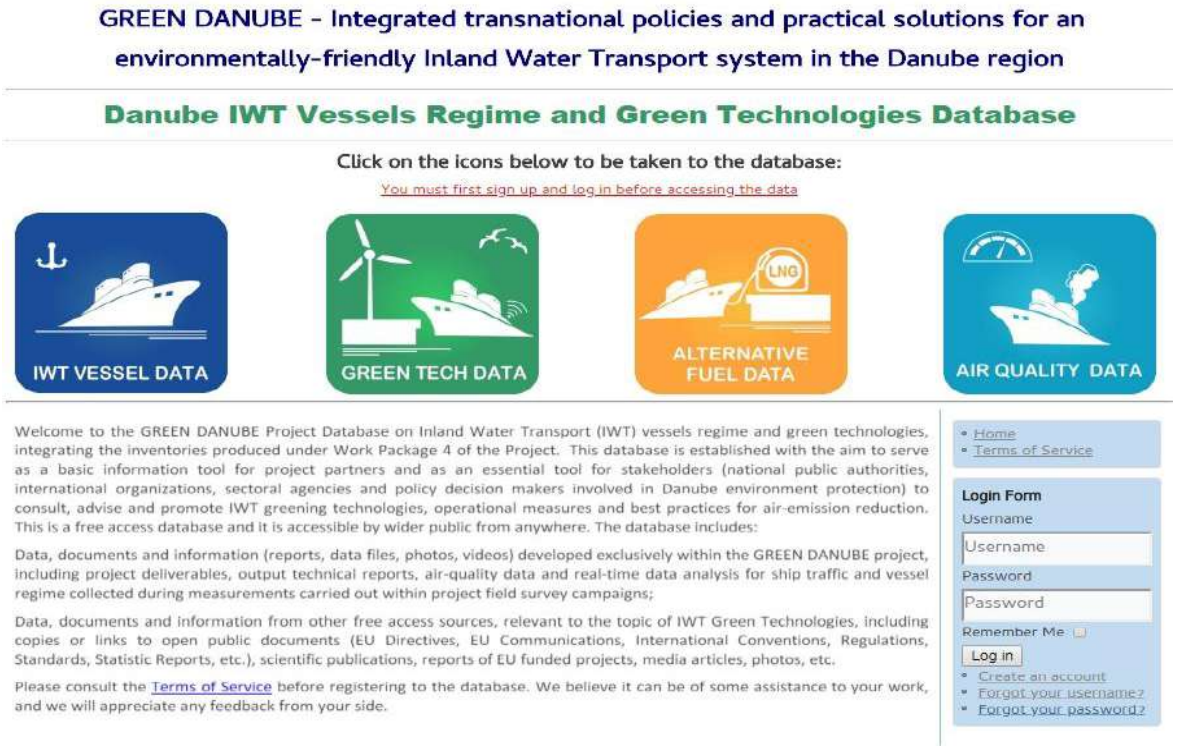
WORK PACKAGE 4 - GREEN TECHNOLOGIES

- ✓ **Output 4.1: IWT vessel regime and green technology database (result of Act 4.1, 4.2 & 4.3)** http://gddb.bdcabg.org
- ✓ **Output 4.2: National workshops for emission reduction strategy organised in 7 countries-**result of Act. 4.4 (RO, AT, DE, BG, HU, HR, RS)
- ✓ **Output 4.3: Strategy for greening the Danube IWT (2019, result of Act. 4.4)**



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WORK PACKAGE 4 - GREEN TECHNOLOGIES

Conclusion and recommendation

D 4.1.1 Report on vessels:

- ✓ **In general, vessels for inland navigation are older than maritime ships. Whereas in the last years shipping companies invested in the re-engineering of existing vessels, there was almost no investment in new vessels**
- ✓ **Two types of vessels should be taken into consideration for new vessel design: • Self-propelled multi-purpose vessel and • Convoys of pusher + barge(s)**
- ✓ **Without investment in waterway infrastructure (upgrade to 2.5m draught) any investment in new vessels is unfavourable for the shipping companies compared to the use of old and already depreciated equipment**
- ✓ **In conclusion, investment in new vessels will probably only happen if cost-efficiency of transport is assured by more stable navigation conditions**

WORK PACKAGE 4 - GREEN TECHNOLOGIES

Conclusion and recommendation

D 4.2.1 Technologies and best practices:

- ✓ **53 technologies, operational measures and best practices have been studied and analysed, 22 of them have been suggested for application in the Danube area , 10 best selected and TOP 5 voted**
- ✓ **The technological progress, in combination with the support of the EC Inland Water Transport policy, is the key factor for massive entry of innovative greening technologies and operational measures toward an environmentally-friendly**
- ✓ **The goal cannot be reached without the intensive support and interaction with relevant national and international stakeholders, the present study has found that there is acceptance of innovative greening technologies and relevant operational measures for reduction of IWT air-emission**
- ✓ **The timeline and speed of introduction of the new technologies in the Danubian countries will strongly depend on national "IWT Greening" supportive policies, and relevant legislative framework**

WORK PACKAGE 4 - GREEN TECHNOLOGIES

Conclusion and recommendation

O 4.3 Greening Strategy:

- ✓ **The research done and the feedback from the industries and stakeholders, showed that there is no explicit greening technology applicable for all types of inland vessels. Therefore, all vessel types have to be considered on an individual basis, based on their profile and technical & operational requirements of the owner**
- ✓ **The missing business case for the investments; high investment costs or / and high operational costs will not allow a ROI (Return on Investment) in most of the cases. In order to overcome this situation, the greening roadmap was designed within the GREEN DANUBE Greening Strategy, which is based on three main pillars: □ Regulatory actions □ Surcharge □ Creation of economic incentives**

WORK PACKAGE 4 - GREEN TECHNOLOGIES

Conclusion and recommendation

O 4.3 Greening Strategy:

It is foreseeable that the greening of the fleet, especially in the Danube region, is very much dependent on the politic decisions and financing support on international, national and regional levels in order to prepare the fairway for a green Danube.

WORK PACKAGE 5 -EU POLICY SUPPORT

- ✓ **Act. 5.1: Analysis of the existing policy and legislative framework**
  - ✓ *Report on the analysis of policies and legislative framework*
- ✓ **Act. 5.2: Development of policy agenda on integration project outputs into existing legislative framework**
  - ✓ *Draft Policy Agenda*
- ✓ **Act. 5.3: Policy Agenda transnational validation**
  - ✓ *Summary conclusions of the 7 National Policy Validation workshops (*AT, BG, HR, RO, HU, GE, RS*)*
  - ✓ *Summary conclusions of the International Policy Workshop (March 2019)*

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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.**

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WORK PACKAGE 5 -EU POLICY SUPPORT

- ✓ **Output 5.1: Policy Agenda in support of European legislation** (result of Act 5.2&5.3, 2019)
- ✓ **Output 5.2: National validation workshops for Policy support in 7 countries** (AT, BG, HR, RO, HU, GE, RS)- (result of Act. 5.2&5.3)
- ✓ **Output 5.3: International Policy workshop with decision makers** (result of Act. 5.3, **28 March 2019**)

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WORK PACKAGE 5 -EU POLICY SUPPORT

Conclusions and recommendation

Output 5.1: Policy Agenda in support of European legislation

Air quality measurements were performed along the Danube, a thorough assessment of innovative technologies and measures was implemented and information sharing by developing specific IWT Environmental Information Centres was piloted

Overall, the project aimed to contribute to better integrated and coordinated policies targeting at further development IWT while limiting negative impacts of the transport system on the Danube ecosystem

Four thematic action areas were identified: 1. Technologies and infrastructure; 2. Education and awareness; 3. Governance; 4. International exchange.

For all areas several potential measures were identified in the Agenda. Based on these and the barriers and drivers identified during the national workshops clear goals were created with prioritized actions for future implementation

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WORK PACKAGE 6-RAISING PUBLIC AWARENESS

- ✓ **Act. 6.1** Joint development of an IWT **Environmental Information Centre (EIC) concept**
  - ✓ *Existing ITCs – InfoDanube (RO) and DUNA PROMO (HU) developed in NELI and HINT projects have been reconsidered and equipped for environmental issues (www.neliproject.eu; www.hintproject.net), HR+RS new*

Funds (ERDF, IPA)

WORK PACKAGE 6-RAISING PUBLIC AWARENESS

- ✓ **Act. 6.2: Set up of IWT Environmental Information Centres within existing ITCs**
  - ✓ *procurement of equipment finalized*
  - ✓ *Design and execution*
  - ✓ *Common approach/ content collection/ target audience/ exchanges*

- ✓ **Act. 6.3: Transnational pilot actions and campaign with newly developed IWT EICs** (GE, BG, AT, HU, RO, HR, RS)
- ✓ **Act. 6.4: Strategy for set up of a IWT EICs platform**

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WORK PACKAGE 6-RAISING PUBLIC AWARENESS

Four **IWT Environmental Information Centres** were 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.

- ✓ *Three fixed IWT EICs located in Romania, Croatia, Serbia*
- ✓ *One Mobile centre in Hungary covers also Austria, Germany and Bulgaria*

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

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WORK PACKAGE 6-RAISING PUBLIC AWARENESS

- ✓ **Output 6.1: Concept and set up of IWT EICs (Inland Waterways Transport Environmental Information Centres)**
  (results of Act 6.1&6.2)
- ✓ **Output 6.2: Transnational pilot actions to test EICs**
  (results of Act 6.3: in RO, HR and RS and transnational campaign in HU, AT, DE, BG)
- ✓ **Output 6.3: Transnational Strategy for cooperation platform**
  (result of Act 6.4)

WORK PACKAGE 6-RAISING PUBLIC AWARENESS

O 6.3: Strategy for cooperation of EICs, Conclusions

GREEN DANUBE IWT Environmental Information Centers will be utilized as much as possible and that a cooperation platform for IWT organized by an international organization or the EU to create long lasting cooperation should be in place

The workshops on EICs validates the initiative of this platform whose concept could be transferred to any interested international organisation to support inland waterway transport

ROMÂNIA *History:* School pontoon before 2009

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History: 2012

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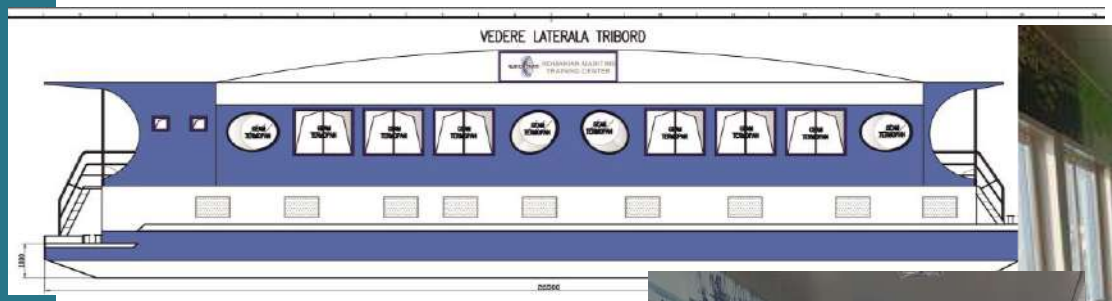
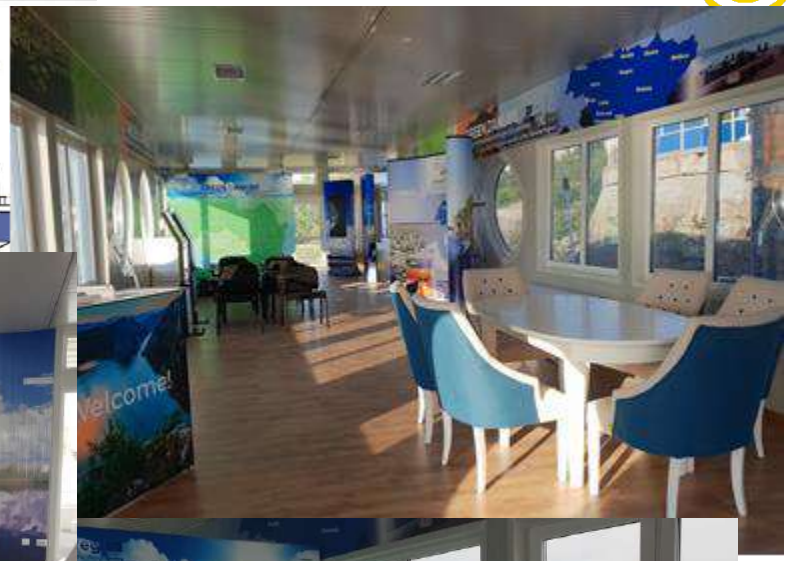
History: 2012

Harmonized Inland Navigation Transport
through education and information technology

2018-2019

environmental
Information Centre





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EICs content – request sent to PPs

Content of EICs with any materials produced by PP institution or any other entities for which PP have or can obtain a license and that you think might be useful, both in English and any other language spoken in the project countries.

In particular, digital content is required:

- ✓ environmental thematic studies / materials
- ✓ thematic movies - any informative materials you consider more or less relevant (will sort them together after collecting materials from all PPs)

Also, any printed promotional materials are welcome.

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WORK PACKAGE 6-RAISING PUBLIC AWARENESS

- ✓ **Environmental Information Center within GREEN DANUBE project visited by Prime Minister of Serbia, Ms. Ana Brnabić**

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FURTHER READING:

http://www.interreg-danube.eu/green-danube
https://www.facebook.com/GREEN-Danube-project
https://www.facebook.com/InfoDanube
http://www.infodanube.ro
https://www.linkedin.com Danube Knowledge Network
https://www.researchgate.net/project/GREEN-DANUBE

GREEN DANUBE project - air pollutant emissions measurements
(https://www.youtube.com/watch?v=8djFzwT_QUw)

GREEN DANUBE project – YouTube
(https://www.youtube.com/watch?v=aVBtKfkIya0)

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Thank you!

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