

*Challenges and concepts in
modernizing and greening the
Danube fleet*

Robert Rafael
General Secretary
Pro Danube International





Challenges and concepts in modernising and greening the Danube fleet



Greening Challenges and Stage V – Perfect match or not?



IWT Platform online event
28 June 2021



Robert RAFAEL
General Secretary
Pro Danube International





IWT – Industry demand

Segment: Cargo

Industry expectations

Influencing factors @operators

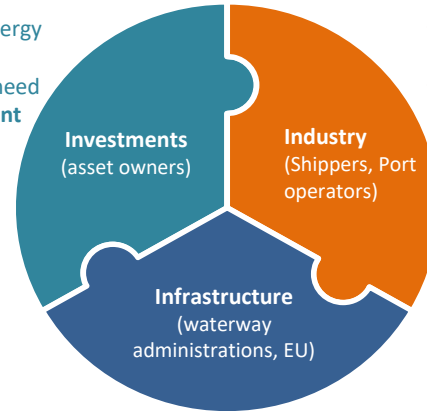
Calculable competitive cost	1	A	Asset, staffing & energy cost; Fairway conditions - loading draught
Limited or none low water surcharges	2	B	Fairway conditions - loading draught
Reliability for loading, transport and discharge	3	C	Port services on demand, weather independency, stable fairway conditions
Solutions for decreasing order sizes. Multi-user-multi-modality?	4	D	Only profitability enables investment into new assets

Pro Danube International

Actors engagement



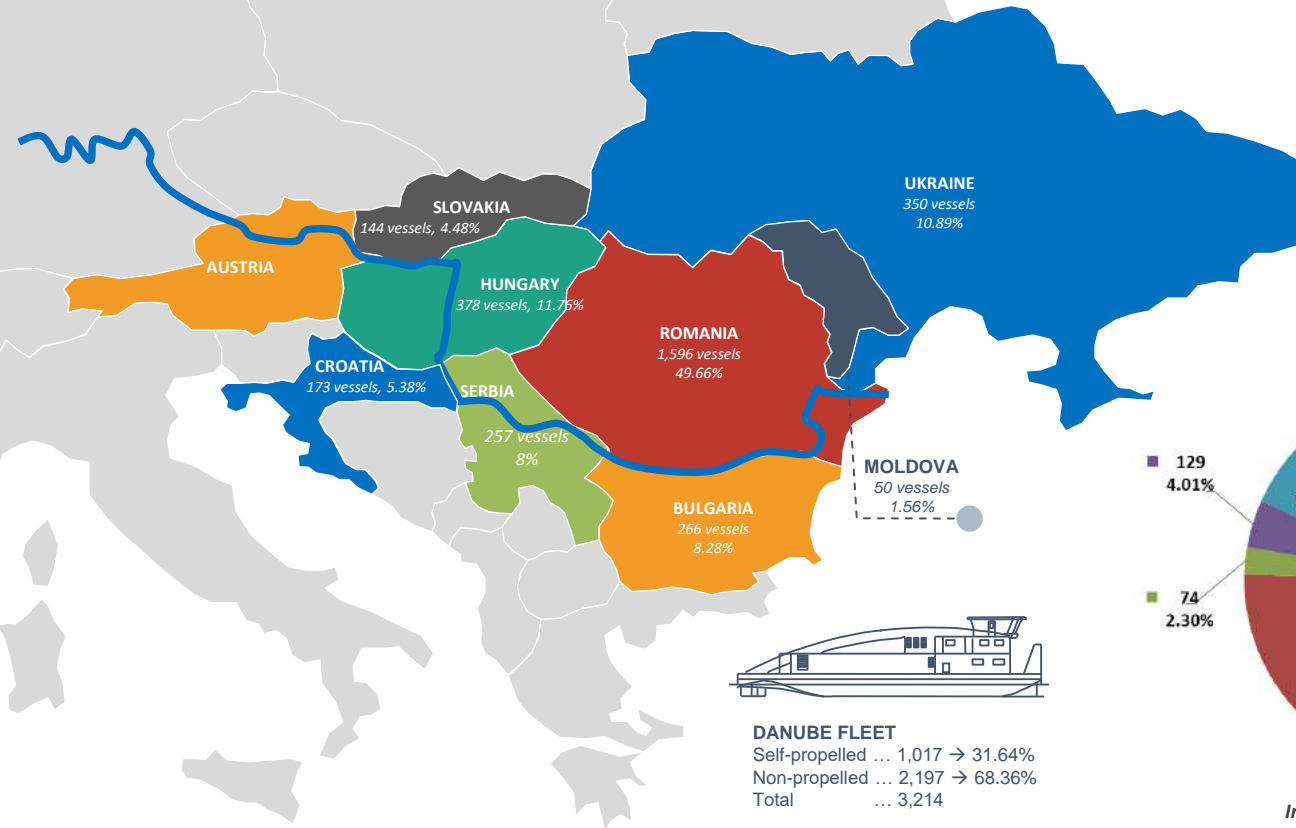
- ① **Technological** jump – greening, energy efficiency & competitiveness
- ② Agri products drive profitability – need **multi-modality solution or constant cargo supply**
- ③ Job attractiveness



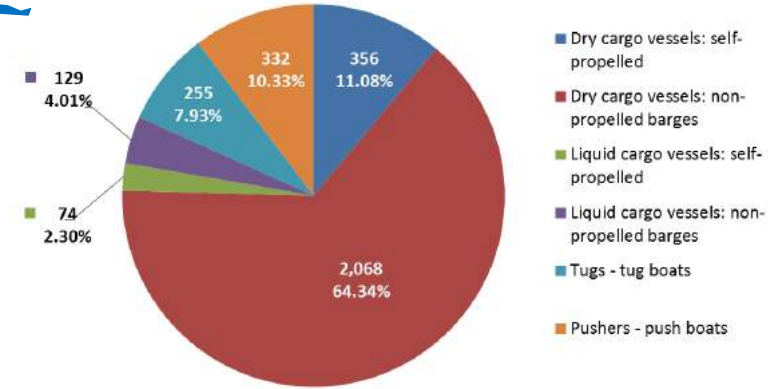
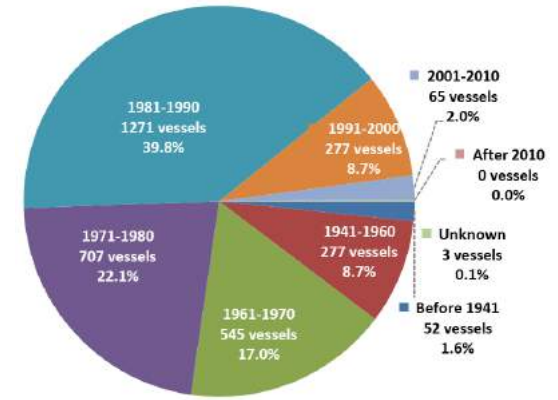
- ① Provide framework for **Port Services on Demand**
- ② **Weather independency**

- ① Stable minimum **fairway** conditions
- ② **Secured depth** of entrance to Ports and Port basin
- ③ **Equal treatment** of modes of transport

DANUBE CARGO VESSELS



DANUBE FLEET
 Self-propelled ... 1,017 → 31.64%
 Non-propelled ... 2,197 → 68.36%
 Total ... 3,214



Inland vessels per country, per age and per type. Figures are for 2016.
 [Source: Danube Commission. Charts: Pro Danube]

CHALLENGES DANUBE CARGO VESSELS



WATERWAY MAINTENANCE

Insufficient waterway maintenance led to little operating profits, thus to almost no fleet investment and rather to repair activities



ADDRESSING ENERGY TRANSITION

- to be competitive (environmentally) to road & rail
- to be compliant with Stage V of NRMM
- to be politically supported and socially accepted



ADAPTATIONS TO NEW MARKETS

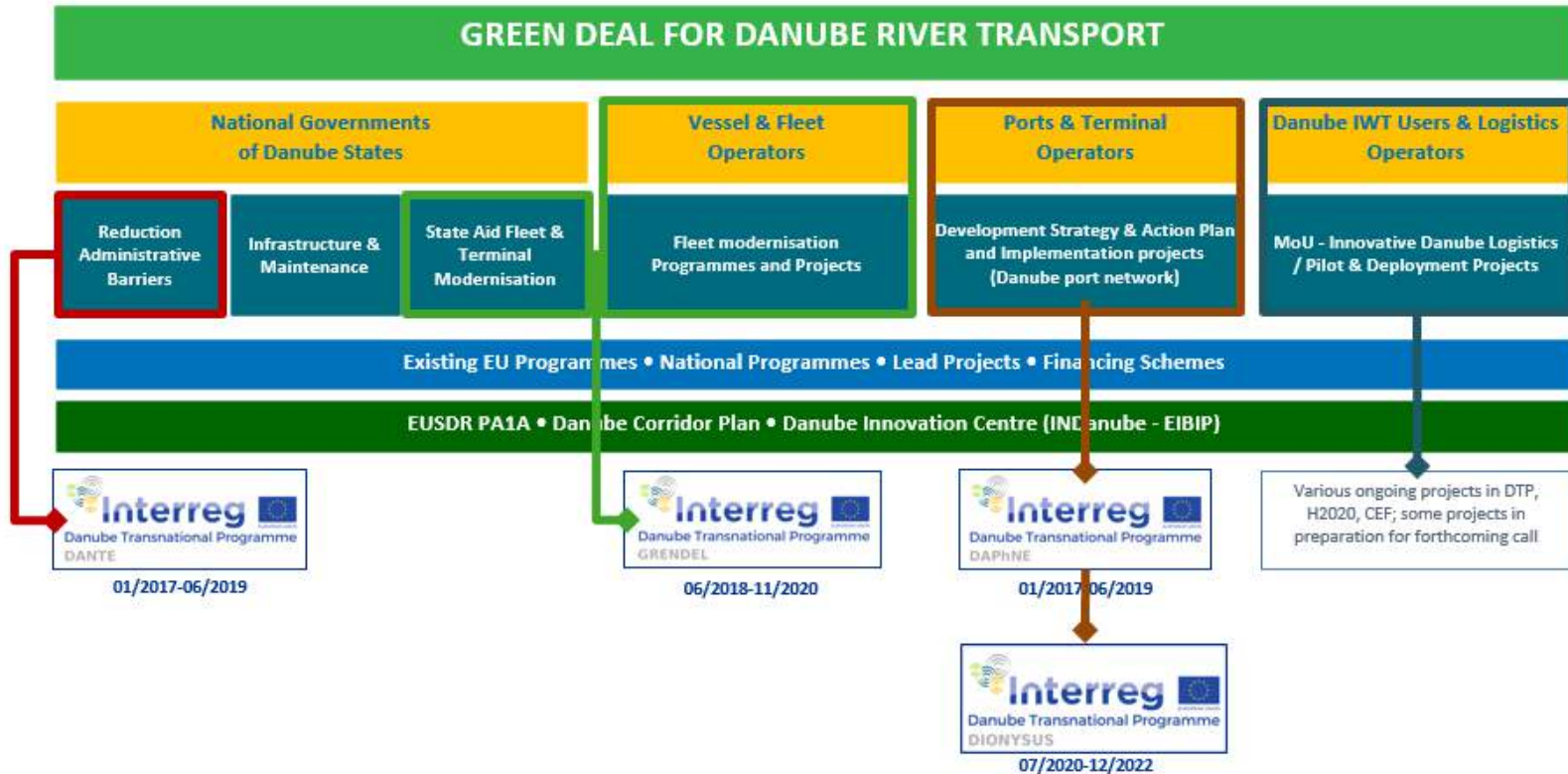
- RORO, container, biomass, biofuels, LNG & other gases, chemicals, fertilizers, high & heavy
- quality requirements beyond current equipment & service levels



GREENING & MODERNISATION OF INLAND VESSELS

- Enables the **transition towards zero-emission** and **climate neutral** economy
- Contributes to **improvement of air quality** in urban areas along waterway and to **reduction of global warming**
- Strengthens sector **competitiveness**, the industry can be boosted, and both jobs in Europe and export opportunity for greening technologies worldwide can be created.

POLICY INITIATIVE



DANUBE IWT MODERNISATION

USE OF ALTERNATIVE FUELS

LNG/CNG • Bio-fuels • Methanol
• Ethanol • Hydrogen • GTL



AIR POLLUTANT EMISSIONS REDUCTION

Alternative technologies • After-treatment • New engine concepts and optimisation



ENERGY CONSUMPTION REDUCTION

Energy-efficient navigation •
Energy efficient ship design •
Hybrid/diesel-electric propulsion •
Electric propulsion



NEW LOGISTICS CONCEPTS

Synchromodality • DINA •
Advanced RIS • Digital market
places for cargo flows



NEW CARGO FLOWS

Find your (water)way • New market
segments: (containerised) LNG as
cargo | steel & cars | continental
cargo flows



NEW VESSEL CONCEPTS

Optimal cargo load • Automation of
navigation / vessel-trains



GRENDL PROJECT KEY FACTS



PARTNERS

FUNDED PARTNERS

- Fleet owners & operators
- Innovation & technology organisations
- IWT development agencies
- Education institutes
- Ship design experts
- River commission (Danube Commission)



ASP

ASSOCIATED STRATEGIC PARTNERS

- Ministries & their implementing bodies
- Other fleet owners & operators



BUDGET

1.8 MEUR

- Project co-funded by European Union Funds (ERDF, IPA)
- ERDF contribution: 85%
- IPA contribution: 85%
- State contribution: up to 15%
- Own contribution: up to 15%



TIME

6.2018 - 11.2020

- 30 months of working & cooperation together



ACTORS

NON-FUNDED STAKEHOLDERS

- Fleet owners & operators
- Logistics service providers
- Technology providers
- Cargo owners

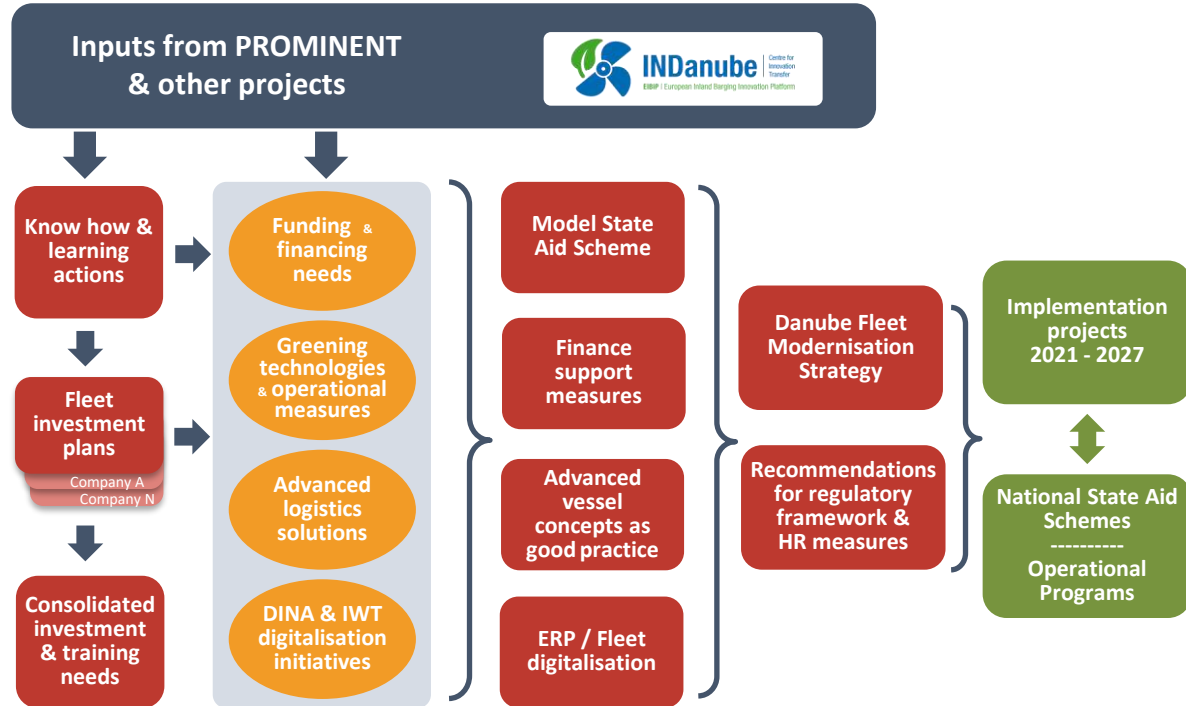
GRENDel Work approach

Green and Efficient Danube Fleet

“

GRENDel addresses various fleet modernisation aspects: [i] use of low carbon & alternative fuels, [ii] reduction of air pollutant emissions (CO₂, NO_x, PM) and [iii] overall energy consumption. Besides this, [iv] transport & logistics management processes are addressed to ensure better integration of the Danube IWT into logistics chains...”

Jun 2018 – Nov 2020
Funding: Interreg / DTP










GRENDL *Know-how transfer to sector*

Technological factsheets & know-how transfer events



CONTENT

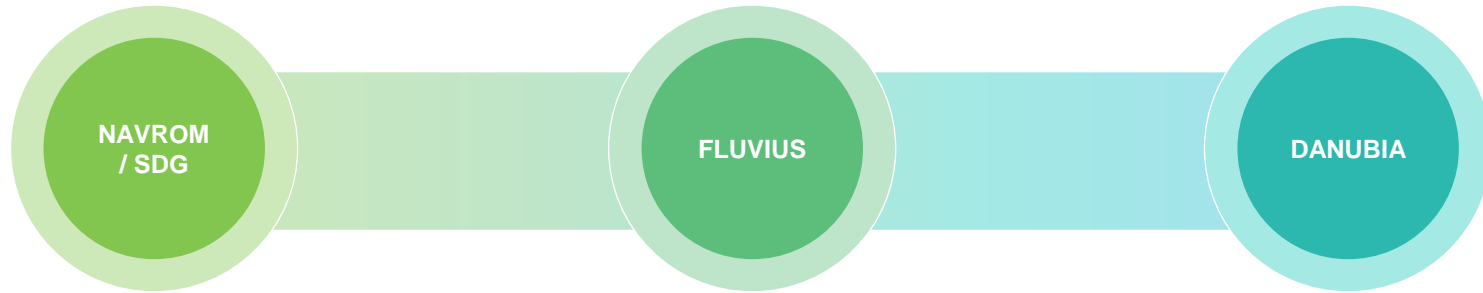
-  Regulations & solutions in development
-  Technical concept
-  Economics: investment & operational costs
-  Environmental sustainability
-  Benefits
-  Consideration for deployment
-  Deployment examples



Organisation of Know-how transfer events

Presentations available on the GRENDL website

GRENDL *Vessel concepts*



- Conceptual design of retrofitting of 4 pusher types
- Conceptual design of a new LNG propelled pusher

- Concept for electricity produced from renewable sources
- Advanced concept of diesel-electric or hybrid propulsion
- Concept for changing main engine
- Elaboration of conceptual design for improving the hydrodynamics of the vessel hull design

- Concept for sewage plant upgrade
- Concept hydrodynamics and noise emissions

GREDEL *Public Consultations*

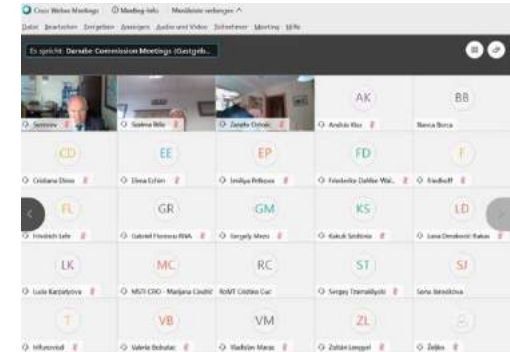
First edition, 26.03.2019



Second edition, 22.01.2020



Third edition, 30.09.2020



Reuniting Danube fleet operators with the relevant state authorities, ensuring that vital interests of Danube fleet operators are collected

Core objective to discuss and analyse the ongoing drafting process of the **Model State Aid Scheme**.

Core objective to discuss on the impact of the **COVID-19 pandemic** on Danube IWT with public and private stakeholders and relevant services of EC and to consider possible recovery actions

GRENDL *State Aid scheme model*

Priorities

Environmental Performance



Reducing emissions of gaseous and particulate pollutants from internal combustion engines and auxiliary motors installed on vessels and by implementing other measures with direct environmental benefits.

Integration into logistics chains



Increasing the involvement of inland waterway transport in multimodal transport chains by making the vessels more competitive, operationally flexible and secure in the context of multimodal transport chain.

Increasing safety of IWT



Focusing at safety equipment, safety at work, adaptations to wheelhouse, steering system and manoeuvrability of a vessel, all to support a skipper in navigational and operational aspects / decisions → increase safety.

Renewal of actors in the sector



Encourage the acquisition of the first boat for new river transport companies and new entrants.

Innovative solutions



Development and experimentation with innovative solutions:

- ▶ experimentation w. existing or new technology, unproven for IWT
- ▶ R&D: design of new technologies to respond to specific needs of IWT
- ▶ feasibility studies

GRENDEL *Danube IWT fleet modernisation strategy*

Recommendations

- Adapt financing opportunities to the strict requirements of the Legislator
- Secure a smooth integration of European legislative provisions at nat. level
- Adopt a widely harmonised State Aid Scheme for Fleet Modernisation using the GRENDEL proposal as a basis
- **etc.**

Environmental topics



Logistics aspects

- Continuous cooperation of the Danube riparian countries involved in RIS
- Continuous cooperation between relevant national authorities and logistics providers
- Promotion of national best practices promoted on the transnational level
- **etc.**

GRENDEL *Dissemination of the project results*

Reaching the stakeholders





Robert Rafael

General Secretary

Pro Danube International
Grünbergstraße 15, Stiege 1, 5th floor, 1120 Vienna/Austria
T +43 699 161 39614
E rafael@prodanube.eu W www.prodanube.eu



Charlotte Siot

Project Manager

Pro Danube International
Grünbergstraße 15, Stiege 1, 5th floor, 1120 Vienna/Austria
T +43 664 601 69 726
E siot@prodanube.eu W www.prodanube.eu

Photo: © NAVROM

GRENDEL “Green and efficient Danube fleet”

Towards modernisation & greening of Danube inland waterborne sector and strengthening its competitiveness

www.interreg-danube.eu/grendel

Project co-funded by European Union Funds (ERDF, IPA)

MERCUR
CONSTANTA - RO