

BASIC PROJECT DATA			
Full project title:	Green and efficient Danube fleet		
Short project title: (acronym)	GRENDEL	Project logo:	
Project website:	http://www.interreg-danube.eu/grendel	Project ID:	PA1A150
Need and added value for Danube Region Strategy:	<p>Studies carried out to quantify environmental costs ultimately show the same result: Inland waterway transport (IWT) is the most environmentally friendly mode of transport in terms of GHG emissions per tonne-kilometre. Shipping more goods on water reduces GHG, traffic congestion and accidents. Inland vessels offer an enormous carrying capacity per transport unit and inland waterways dispose of ample unused infrastructure capacity. However, there is still significant potential for reducing energy use (up to 10-20%) and pollutant emissions (up to 80%), in particular with regard to existing vessels as well as a large potential for modal shift by improved services. To respond to the challenges of climate change low carbon and renewable fuels and alternative propulsion options need to be implemented on a wide scale.</p> <p>Based on a variety of reasons, market take-up of innovations in IWT proceeds only slowly. A number of barriers slow down or prevent deployment of low-carbon and renewable fuels as well as alternative propulsion solutions in the IWT sector, among them:</p> <ul style="list-style-type: none"> • High development costs for compliant propulsion systems and other equipment for a small IWT market • Higher investment costs for IWT sector implementing new / greener technologies compared to the traditional solutions • Higher price of renewable fuels • Limited investment capacity of IWT sector & high economic lifetime of fleet investments • Lack of incentives and /or state aid supporting fleet modernisation due to lack of adequate political attention • Lack of general awareness on available innovations • Reliable (stable) regulatory framework lagging behind technological development imposing barriers and increasing costs (procedures related to the type approval or sailing permits) <p>Several EU-funded waterborne projects addressed the best available greening technologies and concepts. Through these projects the awareness for the greening technologies in the sector increased, however mainly in the Western Europe countries.</p> <p>GRENDEL combines the outcomes of previous project and builds upon their experience and know-how, such as H2020 “Prominent”, TEN-T “LNG Masterplan for Rhine-Main-Danube”, CEF “Breakthrough” and LIFE project “CLINSH” as well as the outcomes of projects carried out in the Danube region like Innovative Danube Vessel, or currently running DTP project “Green Danube”.</p> <p>Speciality of the GRENDEL project in comparison to previous projects is that it focuses on the needs and directly involves mainly the Danube IWT vessel owners and operators and the public authorities responsible for the development inland water transport towards the green, modern as well as cost and energy efficient transport mode.</p>		

<p>Objective(s) of project:</p>	<p>The overall objective of the project is to <u>support Danube fleet operators as well as public bodies</u> (like ministries & relevant authorities) which are relevant for regulatory and policy actions in their efforts to set up a <u>comprehensive strategy and concrete actions for launching a targeted long-term Danube fleet modernisation process</u> on a transnationally harmonised basis.</p> <p>GRENDEL will address the following fleet modernisation aspects: [i] use of low carbon & alternative fuels, [ii] reduction of air pollutant emissions (CO₂, NO_x, PM) and [iii] reduction of overall energy consumption. Besides this, [iv] transport & logistics management processes will be addressed to ensure better integration of the Danube IWT into logistics chains through new services (including RIS), digital data provision as well as dedicated tools to improve efficiency of fleet operations.</p> <p>This overall objective will be achieved through 3 specific objectives:</p> <ol style="list-style-type: none"> 1) Know-how transfer for Danube fleet modernisation strategy and actions – The existing knowledge gap, the shortfall of activities and lack of instruments shall be overcome with the help of intensive transnational collaboration between private & public stakeholders and targeted know-how transfer activities. These activities are designed to bridge the gaps between Western Europe and the Danube region and will support harmonised strategies & tools to stimulate investments into advanced Danube fleet. 2) Innovative technical vessel concepts & improved logistic management - GRENDEL targets to strengthen the competitive position of inland navigation, to exploit its market potential & make its use more attractive. To achieve this, good practices for wide-scale implementation will be offered in the form of innovative technical vessel concepts elaborated by leading fleet operators. A concept for improved transport management processes of fleet operators, taking into account RIS, other services and existing tools, will also be elaborated and validated by the participating industry members. 3) Favourable regulatory framework & well-designed public support measures - Limited investment capacity of the IWT sector, high investment costs for innovative technologies and lack of public support measures hamper innovation uptake in the sector. Joint cooperation will introduce Model State Aid Scheme & innovative financial instruments to design national public support measures which will clearly address the needs of the sector (considering priorities for greening technologies, potential investment volumes and estimated timeline).
<p>Planned project activities:</p>	<p>The project is divided into 5 work packages:</p> <p>WP1 “Project Management” deals with the project management tasks required on a daily basis in line with the conditions imposed by the funding programme. The preparation of project documents (work plan, progress reports) and the formation of a Steering Committee authorised to take decisions at consortium level are foreseen tasks within this work-package. The financial and quality management of the overall project is also included in this section and it is performed in line with the programme rules.</p> <p>WP2 “Communication Activities” is designed to inform the general public and IWT public & private stakeholders about the progress made at project level and disseminate details about the deliverables and results achieved by the consortium. All tasks foreseen here will be carried out in line with the publicity guidelines established by the funding programme. Communication aspects are analysed internally, between the consortium members, and externally, promoting the project outputs and results to relevant stakeholders all across the Danube Region. The official start-up and closure of the project are marked by special events reuniting external and internal project stakeholders.</p>

	<p>WPs 3-5 constitute the central pillars for the Danube IWT fleet modernisation activities: identification of investment needs on national and regional levels including financial volumes, technical priorities and timeline (WP3), preparatory actions for the fleet modernisation (WP4) and fostering favourable regulatory framework, well-designed public support measures together with the elaboration of a strategy for the Danube IWT fleet modernisation (WP5).</p> <p>WP3 “Fleet Investment Planning” capitalises results of EU-funded projects and consolidates them into the inventory of greening technologies, decision support tools, solutions supporting efficient fleet & cargo management which will be basis for identification of investment volumes and priorities on national levels. Through know-how transfer events and learning interactions, the Danube IWT industry will receive up-to-date knowledge about technologies and solutions to modernise the IWT fleet and related processes as well as concerning new regulations (NRMM & ES-TRIN) and their impact on fleet operation.</p> <p>WP4 “Fleet Modernisation Preparatory Actions” triggers preparatory actions necessary for the IWT fleet modernisation. The selected Danube fleet operators will prepare pioneering green vessels’ concepts in view of the most promising greening technologies for certain vessel types. Moreover, internal fleet and cargo management processes and requirements of involved fleet operators will be analysed and proposals for improvements will be drafted. Best practice examples from vessel operators from Western Europe will be considered as input for improvement of transport & logistics operations of Danube IWT operators. As part of the preparatory actions, assistance as regards financing options will be provided.</p> <p>WP5 “Regulation & Strategy” will tackle regulatory framework through the public consultations pursuing the interests of the Danube IWT sector for Danube Commission and its members to prepare conditions for Danube fleet modernisation. Based on the consolidated investment needs (Act 3.3) a model State Aid scheme and innovative financial instruments will be developed and used by Member States to develop & implement public support measures for the Danube IWT fleet modernisation. Whole work will be consolidated into the comprehensive Danube IWT Fleet Modernisation Strategy.</p>
<p>Transboundary impact:</p>	<p>Private and public entities from eight (8) ERDF/IPA countries (Germany, Austria, Slovakia [<i>current change request</i>], Hungary, Croatia, Serbia, Bulgaria and Romania) which border the Danube are represented in the GRENDEL consortium enabling a truly transnational work approach, fostering exchange of experiences and preparing the basis of the fleet modernisation activities and development of widely aligned solutions. The selected partners are key stakeholders for the future modernisation of the inland shipping on the Danube and are capable to tackle main problems related to the modernisation of inland vessels fleets and its inclusion into the logistics chains, such as:</p> <ul style="list-style-type: none"> • awareness of inland shipping industry concerning new NRMM & ES-TRIN addressing the consequences of these new regulations, as well as related know-how transfer covering technical, financial and human resources/education & training topics • investment needs (technologies & finances) in Danube region as a basis for the state aid measures & innovative financial instruments • concepts supporting integration of IWT into logistics chains (e.g. use of RIS in fleet & cargo management systems) • state aid measures & innovative financial instruments for IWT fleet modernisation coordinated along the Danube riparian countries, aligned with Western Europe and EC services initiatives <p>Public bodies like ministries which provide the regulatory framework for the Danube shipping joined forces with private fleet operators, their associations, specialised consultancy firms, logistics companies and training institutes. This close public - private cooperation not only ensures a wide range of expertise from different angles but also guarantees well-balanced solutions in the interest of states and industry. The partnership structure also ensures quick transferability of the elaborated strategies, pilot actions, guidelines and recommendations and full take up into the</p>

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	public and private sector. The cooperation of key stakeholders from peer organisations of the entire Danube region provides a sound basis for a permanent working platform of Danube, using the Danube Commission umbrella to ensure durability of the output of GRENDEL as well as the further development of the Danube inland vessels fleet beyond the project.		
Project beneficiaries / target groups:	Main target groups: <ul style="list-style-type: none"> • Danube IWT fleet owners & operators • (Danube) IWT industry affected by the IWT fleet modernisation & consequences of new EU policies & regulations (incl. shipyards, vessel maintenance companies, technology providers), • National & regional governments • Danube Commission • Education & training institutes 		
STATUS AND TIME FRAME			
Current project phase: (please tick a box)	<input type="checkbox"/> Definition (e.g. project idea, abstract) <input type="checkbox"/> Preparation (e.g. project proposal, feasibility study) <input type="checkbox"/> Implementation <input checked="" type="checkbox"/> Completion		
Start date:	01.06.2018	End date:	30.11.2020
Notes:	The project is already concluded.		
PROJECT TEAM			
Project leader:	Pro Danube International		
Project partner(s):	<p>Funded partners (ERDF):</p> <ul style="list-style-type: none"> • DST – Development Centre for Ship Technology and Transport Systems (DE) • National Association of Radio Distress-Signalling and Infocommunications (HU) • Danube Commission (International Org.) • Bulgarian-Romanian Chamber of Commerce and Industry (BG) • Pro Danube Romania (RO) • Romanian Maritime Training Centre – CERONAV (RO) • SDG – Ship Design Group S.R.L. Galati (RO) • Romanian Naval Authority (RO) • River Navigation Company NAVROM SA (RO) • Fluvius Shipping and Transport. Company (HU) • Danubia Kreuzfahrten GmbH (AT) <p>Funded Partner (IPA):</p> <ul style="list-style-type: none"> • Pro-Danube Serbia (RS) <p>Associated Strategic partners (not funded):</p> <ul style="list-style-type: none"> • Federal Ministry for Transport, Innovation and Technology (AT) • Ministry of Innovation and Technology (HU) • Executive Agency Maritime Administration (BG) • CFND (RS) • Donau Tankschiffahrts-Gesellschaft m.b.H (AT) • Bulgarian River Shipping (BG) • Romanian River Ship Owners and Port Operators Association (RO) • BAVARIA Schifffahrts- und Speditions-AG (DE) 		

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	<ul style="list-style-type: none"> Ministry of the Sea, Transport and Infrastructure (HR) Ministry of Transport (RO) Ministry of Transport and Construction of the Slovak Republic (SK) <i>[current change request]</i> 	
Contact person:	Name:	-
	Organisation:	Pro Danube International
	Address:	Handelskai 265; 1020 Vienna / Austria
	Phone:	-
	E-Mail:	-
	Website:	www.prodanube.eu
FINANCING		
Available: (please tick a box)	<input checked="" type="checkbox"/> Yes <input type="checkbox"/> Partly <input type="checkbox"/> No	
Total budget:	1,824,999.20 EUR	
Source(s) and amount (potential sources for project ideas): (please tick a box and provide further info)	<input checked="" type="checkbox"/> National/regional funds:	Danube transnational programme: up to 15% per ERDF/IPA beneficiary depending on the ERDF countries' rules
	<input checked="" type="checkbox"/> EU funds:	1,481,137.05 EUR (European Regional Development Fund) 70,112.25 EUR (Instrument for Pre-Accession Assistance) funded by Danube Transnational Programme (DTP) 2014-2020
	<input type="checkbox"/> IFI loans:	-
	<input checked="" type="checkbox"/> Private funds:	up to 15% per ERDF/IPA beneficiary depending on the rules for provision of national contributions to ERDF beneficiaries in the DTP countries (for those partners where countries do not provide national funds)
	<input type="checkbox"/> Other:	-
PROJECT ENVIRONMENT		
Project cross-reference:	<ul style="list-style-type: none"> Innovative Danube Vessel (PA1A010) MoVeIT (FP7, 2011-2014) (PA1A062) LNG Masterplan for Rhine-Main Danube (TEN-T, 2013-2015) (PA1A023) Prominent - Promoting Innovation in the Inland Waterways Transport Sector (H2020, 2015-2018) (PA1A112) <p><i>The project goes along with other approved 1st call DTP projects</i></p> <ul style="list-style-type: none"> <i>GREEN DANUBE - Integrated transnational policies and practical solutions for an environmentally-friendly Inland Water Transport system in the Danube region (PA1A130)</i> 	

	<ul style="list-style-type: none"> • DANTE - Improving Administrative Procedures and Processes for Danube IWT (PA1A125) • DAPhNE - Danube Ports Network (PA1A133) • Danube SKILLS - Increased institutional capacity in Danube navigation by boosting joint transnational competences and skills in education and public development services (PA1A124) • Danube STREAM - Smart, Integrated and Harmonized Waterway Management (PA1A126)
<p>Cross-reference ID(s):</p>	<p>see above</p>
<p>Strategic reference:</p>	<p>Policy papers & strategies:</p> <ul style="list-style-type: none"> • European Commission's 2011 Transport White Paper on a Roadmap to a Single European Transport Area (COM(2011) 144 final) • European Strategy for Low-Emission Mobility (COM(2016) 501 final) • European Union Strategy for the Danube Region with its Action Plan <p>National strategies/policies (some of the national strategies and policies are dedicated to the transport development in general with IWT transport mentioned as part of these strategies):</p> <ul style="list-style-type: none"> • Austria: "Aktionsprogramm Donau des bmvit bis 2022" (Action Programme for the Danube till 2022) - The Action Programme for the Danube will run until 2022 and for the first time combines the objectives of shipping, ecology and flood protection, thus reflecting the multifunctional character and requirements of the Danube • Slovakia: Strategic plan of the transport infrastructure development in the Slovak republic till 2020 covering among others following specific objectives: [SV3] need for further development and use of the RIS, [SV4] decrease of the ecological impacts of the inland water transport with focus on emission reduction (vessel retrofitting, creation of conditions for the alternative fuels, emission monitoring), [SV5] creation of conditions for inland water transport education • Hungary: National Transport Infrastructure Development Strategy" (Ministry of National Development, August 2014) highlights the potentials of the Danube river transport that shall be used to a sufficient level in order to arrive to the proper modal split. The document emphasises the need for the proper fairway conditions and well-established ports, whereas highlights the lack of state-of-the-art inland vessels as well and sets as a goal the modernisation of IWT fleet in parallel with the development of ports on the TEN-T corridor network • Serbia: Strategy on development of water transport in Republic of Serbia for period 2015-2025 - part of the Strategy is related to the improvement of "national" fleet with an overview of current situation and plans for next period followed by "vision, mission and strategic aims" for fleets. • Bulgaria: Strategy for the development of the transport system of the Republic of Bulgaria until 2020 - long-term strategic document, which aims to outline the most important aspects for the development of the transport system • Romania: <ul style="list-style-type: none"> ○ Strategy for sustainable transport for 2017-2013 and 2020, 2030 approved by Ministry of Transport Order no. 508/2008 ○ National strategy on climate change and low-carbon economic growth and national action plan for 2016-2020 on climate changes, approved by Government Decision no. 739/2016 - main objective of the strategy is to mobilize and enable private and public actors to reduce greenhouse gas emissions from their economic activities in line with EU targets and to adapt to the impacts of climate change. The strategy adopts quantifiable targets in line with the EU 2030 commitments

Relevant legislation:	<p>Legislation & standards:</p> <ul style="list-style-type: none"> • Alternative Fuels Directive (2014/94/EU) • Non-Road Mobile Machine Regulation (EU)2016/1628 (“NRMM”) • Renewable Energy Directive 2009/28/EC (“RED”) • European Standard laying down Technical Requirements for Inland Navigation vessels (“ES-TRIN”)
Other:	<p>“GRENDEL - GReen and EfficieNt DanubE fLeet” is the 3rd project that addresses the objectives defined in the “Green Deal for Danube River Transport”, the policy & business framework to improve efficiency & environmental performance of Danube waterway transport system elaborated by Pro Danube. The other two projects funded by the Danube Transnational Programme are:</p> <ul style="list-style-type: none"> • DANTE - Improving administrative procedures and processes for Danube IWT: aims at identifying and eliminating administrative barriers for inland waterway transport • DAPhNE - Danube Ports Network: aims to facilitate a balanced development of Danube Ports as eco-friendly, well accessible multimodal hubs for the transport system of the region and to turn them into buzzing economic centres functioning as catalysts for economic growth and creation of high value jobs
EUSDR EMBEDDING	
Relation to other Priority Areas of the Danube Region Strategy: (please tick a box)	<ul style="list-style-type: none"> <input type="checkbox"/> PA1b: To improve mobility and multimodality – Road, rail and air links <input type="checkbox"/> PA02: To encourage more sustainable energy <input type="checkbox"/> PA03: To promote culture and tourism, people and people contacts <input type="checkbox"/> PA04: To restore and maintain the quality of waters <input type="checkbox"/> PA05: To manage environmental risks <input type="checkbox"/> PA06: To preserve biodiversity, landscapes and the quality of air and soils <input type="checkbox"/> PA07: To develop the knowledge society through research, education and information technologies <input type="checkbox"/> PA08: To support the competitiveness of enterprises, including cluster development <input checked="" type="checkbox"/> PA09: To invest in people and skills <input checked="" type="checkbox"/> PA10: To step up institutional capacity and cooperation <input type="checkbox"/> PA11: To work together to promote security and tackle organised and serious crime
EUSDR COMPLIANCE	
Compliance with targets of the Danube Region Strategy: (please tick a box)	<ul style="list-style-type: none"> <input checked="" type="checkbox"/> Increase the cargo transport on the river by 20% by 2020 compared to 2010. <input type="checkbox"/> Solve obstacles to navigability, taking into account the specific characteristics of each section of the Danube and its navigable tributaries and establish effective waterway infrastructure management by 2020. <input type="checkbox"/> Develop efficient multimodal terminals at river ports along the Danube and its navigable tributaries to connect inland waterways with rail and road transport by 2020.

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	<input checked="" type="checkbox"/> Implement harmonised River Information Services (RIS) on the Danube and its navigable tributaries and ensure the international exchange of RIS data preferably by 2020. <input checked="" type="checkbox"/> Solve the shortage of qualified personnel and harmonize education standards in inland navigation in the Danube region by 2020, taking duly into account the social dimension of the respective measures.
Compliance with actions of the Danube Region Strategy: (please tick a box)	<input type="checkbox"/> To complete the implementation of TEN-T Priority Project 18 on time and in an environmentally sustainable way. <input type="checkbox"/> To invest in waterway infrastructure of Danube and its tributaries and develop the interconnections. <input checked="" type="checkbox"/> To modernise the Danube fleet in order to improve environmental and economic performance. <input checked="" type="checkbox"/> To coordinate national transport policies in the field of navigation in the Danube basin. <input type="checkbox"/> To support Danube Commission in finalising the process of reviewing the Belgrade Convention. <input type="checkbox"/> To develop ports in the Danube river basin into multimodal logistics centres. <input type="checkbox"/> To improve comprehensive waterway management of the Danube and its tributaries. <input checked="" type="checkbox"/> To promote sustainable freight transport in the Danube Region. <input checked="" type="checkbox"/> To implement harmonised River Information Services (RIS). <input checked="" type="checkbox"/> To invest in education and jobs in the Danube navigation sector.
Affiliation to thematic working group of Priority Area 1a of the EUSDR: (please tick a box)	<input type="checkbox"/> Waterway infrastructure and management <input type="checkbox"/> Ports and sustainable freight transport <input checked="" type="checkbox"/> Danube fleet <input checked="" type="checkbox"/> River Information Services <input checked="" type="checkbox"/> Education and jobs
OTHER RELEVANT ISSUES	
Project requirements:	-
Follow-up project:	-
Any other issues:	-