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FAIRway “family” projects in comparison...

Objectives and (expected) Results.

04.04.2023, Lucia Karpatyova

Preparing FAIRway2 works in the Rhine Danube Corridor (2019-EU-TM-0262-S and 2019-HR-TMC-0263-S)

TEN-T
Regulation
(EU) No
1315/2013
(guidelines for
development of
TEN-T network)

European Commission → Trans-European Transport Network (TEN-T) Corridor Forum

Fairway Rehabilitation and Maintenance Master Plan (Dec 2014)

... strategic framework for coordinated action to establish stable fairway conditions
... for each riparian state – the most important issues that need to be addressed to improve fairway rehabilitation and maintenance activities

Danube Ministerial Conclusions (2014 – 2016 – 2018 – 2020 – 2022)

... on effective waterway infrastructure rehabilitation and maintenance on Danube and navigable tributaries

FAIRway Danube

07.2015 – 12.2021

- First step in implementation of the Fairway Rehabilitation & Maintenance Plan
- Improved monitoring of fairway parameters through **equipment** (12 surveying / marking vessels) & **sensors** (gauging stations) → water level forecasts
- National Waterway Asset Management Systems (**WAMs**) & Transnational Waterway Monitoring System (**WAMOS**)
- Pre-feasibility study for the modernisation of the Gabčíkovo lock (SK)

Improvement of data quality, coordination of action along Danube corridor

FAIRway Danube II

04.2023-12.2027

- **Tools for monitoring of Good Navigation Status (GNS):** fixed & mobile sensors; upgrade of WAMOS & WAMs
- **Pilots of flexible infrastructure elements**
- **Upgrade of mooring infrastructure**
- Studies for upgrading mooring infrastructure

Preparing FAIRway 2

07.2020-04.2024

- Prepare interventions on the common HR-RS Danube section (monitoring & modelling accompanied by stakeholder forum)
- Further specification of **WAMOS 2.0** → new functions
- **Assessment of mooring infrastructure** in AT, HR, RS
- Stakeholder's Coordination

FAIRway Works!

03.2020-10.2023

- Upgrade of the Serbian "Iron Gate 2" navigational lock
- Upgrades of public **mooring places** in Austria
- **Equipment** to ensure year-round navigability (AT+RS)

FAIRways at a glance – content-wise

1

River engineering & infrastructure related measures

Infrastructure rehabilitation measures, optimisation of regulating structures, etc.



Preparation of potential interventions on the HR-RS common Danube section ← **Preparing FAIRway 2**



Source: gabcikovolocks.eu

Pre-feasibility **study** for upgrade of Gabčíkovo locks (Slovakia) ← **FAIRway Danube**



Source: ekapija

Rehabilitation of Djerdap II lock (Serbia) ← **FAIRway Works!**



Source: viadonau



Pilots for flexible infrastructure elements for enhancing the low water resilience (low water regulation) ← **FAIRway Danube II**

FAIRways at a glance – content-wise



Upgrade of public mooring infrastructure (example Linz in Austria) ← **FAIRway Works!**
(also in Wildungsmauer & Vienna – Brigittenau)

2 Upgrade and / or construction of mooring infrastructure in the Danube riparian countries



Planned mooring infrastructure upgrades (example Basarabi Port, Romania)
← **FAIRway Danube II** (upgrade works also in AT)



Mooring places identified for future upgrades (Austrian examples) ← **Preparing FAIRway 2** (studies also HR, RS)

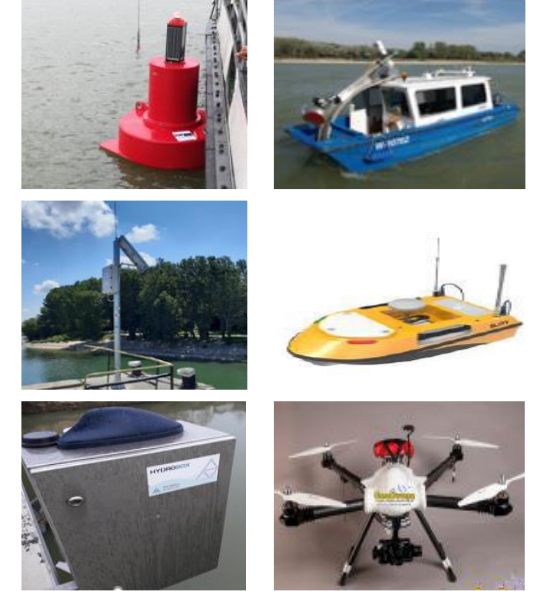
FAIRways at a glance – content-wise



12 surveying/marking vessels, 37 gauging stations, national waterway assets management systems, transnational waterway monitoring systems ← **FAIRway Danube**



Multifunctional marking equipment
(example Austria) ← **FAIRway Works!**
(also surveying & marking vessel, and
buoys with sensors in Serbia)

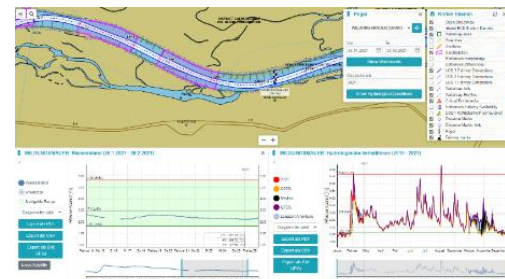


Fixed and mobile sensors ← **FAIRway Danube & FAIRway Danube II**

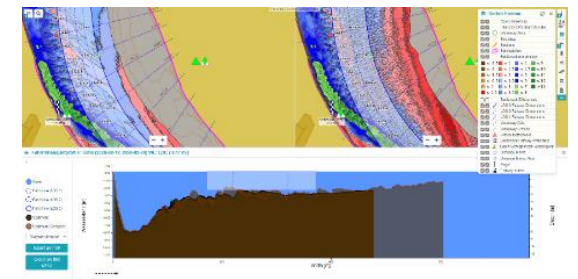
3

Equipment, sensors, improved models and digital tools

surveying and / or marking vessels, fixed and mobile sensors, and digital tools for waterway assets management (national) & waterway parameters monitoring (transnational)



Water level forecast ← **FAIRway Danube**
← Improved in **FAIRway Danube II**



Digital tools (WAMOS) ← **FAIRway Danube**

WAMOS 2.0 ← Specif. in **Preparing FAIRway 2**
← Implem. in **FAIRway Danube II**

FAIRways at a glance



 <p>FAIRway Danube</p> <p>2014-EU-TMC-0219-S 2014-EU-TMC-0231-S</p>	 <p>FAIRway Works! in the Rhine-Danube Corridor</p> <p>2019-EU-TM-0187-W</p>	 <p>Preparing FAIRway 2 in the Rhine-Danube Corridor</p> <p>2019-EU-TM-0262-S 2019-HR-TMC-0263-S</p>	<p>FAIRway Danube II</p> <p>Project proposal in the 2022 CEF Transport Call</p>
<p>Duration: 07.2015—12.2021 Budget: ~23,4 M€ studies & physical works</p>	<p>Duration: 03.2020—10.2023 Budget: ~42,6 M€ physical works</p>	<p>Duration: 07.2020—04.2024 Budget: ~3,29 M€ studies</p>	<p>Duration: 04.2023—12.2027 Budget: ~70,0 M€ studies & physical works</p>
<p>Danube, Sava, Danube Black Sea Canal AT, SK, HU, HR, BG, RO</p>	<p>Danube, Sava AT, RS</p>	<p>Danube, Sava AT, RS, HR</p>	<p>Danube, Sava, Danube Black Sea Canal AT, SK, HU, HR, BG, RO</p>
<p>Tools for monitoring of fairway parameters and Good Navigation Status (GNS)</p> <ul style="list-style-type: none"> › Investment in 12 marking and surveying vessels, 37 gauging stations, › Improved water-level forecast models › National Waterway Assets Management Systems (WAMS) and of transnational Waterway Monitoring System (WAMOS) 	<p>Upgrade of the Serbian "Iron Gate 2" navigational lock</p> <ul style="list-style-type: none"> › Modernisation of electro-hydraulic, hydro-mechanical, hydro-technical components and ancillary system + New operational concept 	<p>Prepare measure variants on HR-RS common Danube section, considering inputs of a stakeholder forum</p> <ul style="list-style-type: none"> › Monitoring of navigational & environmental characteristics of the common section › Modelling & multi-criteria analysis 	<p>Tools for monitoring of Good Navigation Status (GNS)</p> <ul style="list-style-type: none"> › Fixed & mobile sensors (163 buoys, 19 upgraded gauging stations, 11 bridge clearance sensors, 3 new & 8 upgraded surveying vessels, 4 aquatic and 2 aeronautical drones) › Improved water level models (up to 6 days) › Upgrade of national WAMSs & transnational WAMOS 2.0
<p>Model for improvement of fairway conditions and info services</p>	<p>Upgrades of public mooring places in Austria</p> <ul style="list-style-type: none"> › Improved river bank construction, shore-side electricity, new operational concepts • Linz (km 2129,22 – 2128,90) • Wildungsmauer (km 1894,60 – 1895,12) • Vienna (km 1931,56-1932,50) 	<p>Prepare physical improvements of mooring places in Austria, Croatia and Serbia</p> <ul style="list-style-type: none"> › AT: 2x Aschach, Krems, 2x Vienna › HR & RS: Study assessing the mooring infrastructure on Danube & Sava and planning of upgrades / construction of new mooring places 	<p>Pilots of flexible infrastructure elements for enhancing low water resilience</p> <ul style="list-style-type: none"> › Austria, Croatia, Romania, Bulgaria
<p>Pre-feasibility study for the upgrade of the Slovak "Gabcikovo" navigational lock</p> <ul style="list-style-type: none"> › Led to separate CEF project upgrading the navigational lock 	<p>Equipment to ensure year-round navigability</p> <ul style="list-style-type: none"> › Austria: multifunctional marking equipment (pusher & lighter) › Serbia: 1 marking vessel, 1 surveying vessel (multibeam + ADCP) and 100 modern buoys with AIS modules for Sava river (Aids to Navigation) 	<p>Develop an improved method for stakeholders' coordination</p> <ul style="list-style-type: none"> › Enhance the interaction between administrations and waterway users 	<p>Upgrade of infrastructure for mooring operations</p> <ul style="list-style-type: none"> › Austria: 2x Aschach, 1x Krems, 2x Vienna › Romania: port Basarabi, port Medgidia
		<p>Specify the further development of the transnational WAMOS 2.0</p> <ul style="list-style-type: none"> › New functionalities 	<p>Studies for upgrading infrastructure for mooring operations</p> <ul style="list-style-type: none"> › In Austria, Slovakia, Croatia

FAIRways at a glance



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<div data-bbox="180 682 672 743"> Tools for monitoring of fairway parameters and Good Navigation Status (GNS) </div> <div data-bbox="180 746 682 915"> <ul style="list-style-type: none"> › Investment in 12 marking and surveying vessels, 37 gauging stations, › Improved water-level forecast models › National Waterway Assets Management Systems (WAMS) and of transnational Waterway Monitoring System (WAMOS) </div> <div data-bbox="180 975 690 1036"> Model for improvement of fairway conditions and info services </div> <div data-bbox="180 1096 703 1219"> <div data-bbox="180 1096 657 1155"> Pre-feasibility study for the upgrade of the Slovak “Gabčíkovo” navigational lock </div> <div data-bbox="180 1158 657 1219"> <ul style="list-style-type: none"> › Led to separate CEF project upgrading the navigational lock </div> </div>	<div data-bbox="733 682 1243 743"> Upgrade of the Serbian “Iron Gate 2” navigational lock </div> <div data-bbox="733 746 1243 829"> <ul style="list-style-type: none"> › Modernisation of electro-hydraulic, hydro-mechanical, hydro-technical components and ancillary system + New operational concept </div> <div data-bbox="733 889 1230 918"> Upgrades of public mooring places in Austria </div> <div data-bbox="733 921 1230 1061"> <ul style="list-style-type: none"> › Improved river bank construction, shore-side electricity, new operational concepts <ul style="list-style-type: none"> • Linz (km 2129,22 – 2128,90) • Wildungsmauer (km 1894,60 – 1895,12) • Vienna (km 1931,56-1932,50) </div> <div data-bbox="733 1120 1230 1149"> Equipment to ensure year-round navigability </div> <div data-bbox="733 1152 1230 1292"> <ul style="list-style-type: none"> › Austria: multifunctional marking equipment (pusher & lighter) › Serbia: 1 marking vessel, 1 surveying vessel (multibeam + ADCP) and 100 modern buoys with AIS modules for Sava rive (Aids to Navigation) </div>	<div data-bbox="1286 682 1796 775"> Prepare measure variants on HR-RS common Danube section, considering inputs of a stakeholder forum </div> <div data-bbox="1286 778 1796 861"> <ul style="list-style-type: none"> › Monitoring of navigational & enviro characteristics of the common section › Modelling & multi-criteria analysis </div> <div data-bbox="1286 921 1773 979"> Prepare physical improvements of mooring places in Austria, Croatia and Serbia </div> <div data-bbox="1286 982 1796 1096"> <ul style="list-style-type: none"> › AT: 2x Aschach, Krems, 2x Vienna › HR & RS: Study assessing the mooring infrastructure on Danube & Sava and planning of upgrades / construction of new mooring places </div> <div data-bbox="1286 1128 1666 1186"> Develop an improved method for stakeholders’ coordination </div> <div data-bbox="1286 1189 1796 1243"> <ul style="list-style-type: none"> › Enhance the interaction between administrations and waterway users </div> <div data-bbox="1286 1275 1727 1333"> Specify the further development of the transnational WAMOS 2.0 </div> <div data-bbox="1286 1336 1500 1363"> <ul style="list-style-type: none"> › New functionalities </div>	<div data-bbox="1839 682 2349 743"> Tools for monitoring of Good Navigation Status (GNS) </div> <div data-bbox="1839 746 2361 943"> <ul style="list-style-type: none"> › Fixed & mobile sensors (163 buoys, 19 upgraded gauging stations, 11 bridge clearance sensors, 3 new & 8 upgraded surveying vessels, 4 aquatic and 2 aeronautical drones) › Improved water level models (up to 6 days) › Upgrade of national WAMOSs & transnational WAMOS 2.0 </div> <div data-bbox="1839 1003 2361 1062"> Pilots of flexible infrastructure elements for enhancing low water resilience </div> <div data-bbox="1839 1065 2361 1092"> <ul style="list-style-type: none"> › Austria, Croatia, Romania, Bulgaria </div> <div data-bbox="1839 1152 2272 1210"> Upgrade of infrastructure for mooring operations </div> <div data-bbox="1839 1213 2272 1268"> <ul style="list-style-type: none"> › Austria: 2x Aschach, 1x Krems, 2x Vienna › Romania: port Basarabi, port Medgidia </div> <div data-bbox="1839 1299 2288 1358"> Studies for upgrading infrastructure for mooring operations </div> <div data-bbox="1839 1360 2140 1388"> <ul style="list-style-type: none"> › In Austria, Slovakia, Croatia </div>

FAIRways at a glance



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