# Report on Good Navigation Status

Status 2022




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# Abbreviations

| | |
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| **HNWL** | Highest Navigable Water Level |
| **LNWL** | Low Navigable Water Level |
| **GNS** | Good Navigation Status |
| **FRMMP** | Fairway Rehabilitation and Maintenance Master Plan for the Danube and its navigable tributaries |
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# 1. Executive summary

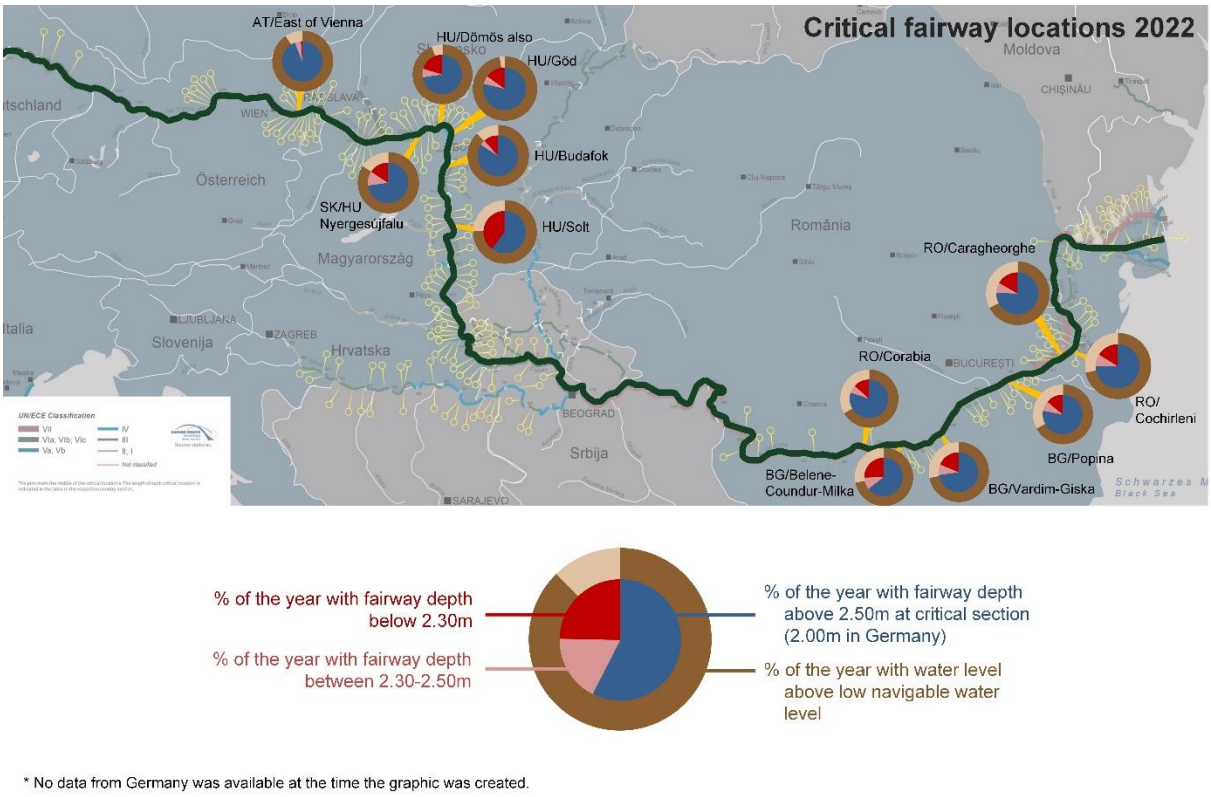
These Reports on Good Navigation Status (GNS) illustrate the status of the GNS "hard" and "soft" components in the Danube riparian countries, thus monitoring the implementation status of the TEN-T Regulation (EU) 1315/2013 as well as the Fairway Rehabilitation and Maintenance Master Plan for the Danube and its navigable tributaries as it was endorsed by a large majority of the Danube Transport Ministers in December 2014. Yearly updates are foreseen to provide the necessary information. This report provides an overview of the status of the selected GNS components in 2022.

Status of GNS "hard" components

The year 2022 was characterised by unfavourable hydrological conditions in particular during the second half of the year. Already in spring, the defined low navigable water level was not reached on large parts of the Danube for several days, but water levels dropped significantly as of July on all parts of the Danube. On the Lower Danube, historically low water levels were recorded at several gauges for multiple days, especially in August and September. The hydrological conditions only improved in December 2022.

With a few exceptions on the Upper Danube, fairway conditions along the entire Danube were therefore significantly worse than in the previous year. Especially on the Hungarian and the Lower Danube, the required 2.50 m fairway depth were only reached on about 60-75% of the year. The worst nautical bottlenecks in 2022 were on the Hungarian stretch of the Danube (bottlenecks Nyergesújfalu and Solt), the Croatian-Serbian border stretch (Mohovo) and on the Romanian-Bulgarian stretch of the Danube (bottlenecks Belene and Vardim). In the period July-August, navigation in the Svishtov area (BG) was de facto suspended for more than a month.

Fairway availability at critical locations along the Danube 2022




* No data from Germany was available at the time the graphic was created.

The chart provides a status overview of the most important critical locations on the Danube in 2022. For each critical location, the figure illustrates the situation regarding fairway availability (inner circle) in relation to reference water levels (outer circle). The maintenance target is to provide fairway depths equal to or exceeding 2.5 m on at least as many days per year as the statistical Low Navigable Water Level (LNWL). This situation corresponds to the inner blue circle reaching the level of the outer dark brown circle. In 2022, this maintenance target was not achieved in several critical locations along the Danube.

It is also important to include depths of just under 2.5 m when interpreting the status of critical locations. These allow for a slightly reduced level of navigability although not reaching a depth of 2.5 m. On some

sections of the fairway depths of 2.4 m or 2.3 m (light-red colour in the inner circle) were available on some of the days.

Status of GNS "soft" components

Since 2015 considerable investments in rehabilitation and maintenance equipment have been initiated by almost all Danube riparian countries with the support of EU co-financing in order to improve the technical capacities of the respective waterway administrations. Especially from 2018 to 2022 all waterway administrations along the Danube procured gauging stations, surveying and/or marking vessels and/or dredging equipment. At the same time, some countries continue to fail in securing sufficient national yearly budgets for the waterway authorities for the necessary operative maintenance and rehabilitation measures to provide reliable fairway conditions.

In 2022, the worst navigational bottlenecks were situated on the Hungarian and the Lower Danube (RO/BG stretch). Hungary has not carried out maintenance dredging for many years, there is no framework contract for dredging and the waterway authorities have no dredging equipment at their disposal. In Romania, maintenance dredging was carried out in good time using in-house equipment and by an external contractor. In Bulgaria, no operational budget was available to the waterway authority IAPPD to commission a new framework contract for maintenance dredging. It was not until August 2022 that the Bulgarian Ministry of Transport approved an emergency budget for dredging works for the waterway administration. At this point, it was only possible to limit the effects of the low water period, also with the support of the Romanian waterway administration AFDJ with their in-house equipment.

The year 2022 has again demonstrated that the reliable allocation of sufficient operational budgets remains one of the biggest issues for the waterway administrations.

# 2. Introduction

When the "Fairway Rehabilitation and Maintenance Master Plan for the Danube and its navigable tributaries" (FRMMP) was adopted in 2014 it was agreed among the Danube riparian states that its implementation status should be monitored by so-called "National Action Plans". Between 2015 and 2021 such National Action Plans were elaborated at least once a year. The present "Report on Good Navigation Status" is a further development of these National Action Plans and monitors not only the implementation of the FRMMP, but also the riparian states' compliance with the Good Navigation Status required by the TEN-T Regulation.

## 2.1. Definition of Good Navigation Status

The TEN-T Regulation (EU) 1315/2013 requires that a „Good Navigation Status" (GNS) has to be achieved (and thereafter preserved) by 31 December 2030 according to article 38 of the Regulation, while respecting the applicable environmental law. A definition of the GNS was not provided by the Regulation. The following definition of the GNS concept was therefore developed as part of the „Study on support measures for the implementation of the TEN-T Core Network related to sea ports, inland ports and inland waterway transport, LOT 3 – Good Navigation Status", which was commissioned by the European Commission, DG MOVE, nd resulted in 2018 in "Guidelines towards achieving a Good Navigation Status", among other things:

**"Good Navigation Status (GNS) means the state of the inland navigation transport network, which enables efficient, reliable and safe navigation for users by ensuring minimum waterway parameter values and levels of service".**

Apart from the physical waterway infrastructure, GNS has to be considered in the wider socio-economic scope of waterway management. Thus, to achieve and maintain GNS, both "hard" and "soft" components must be taken into account as illustrated by the following scheme:

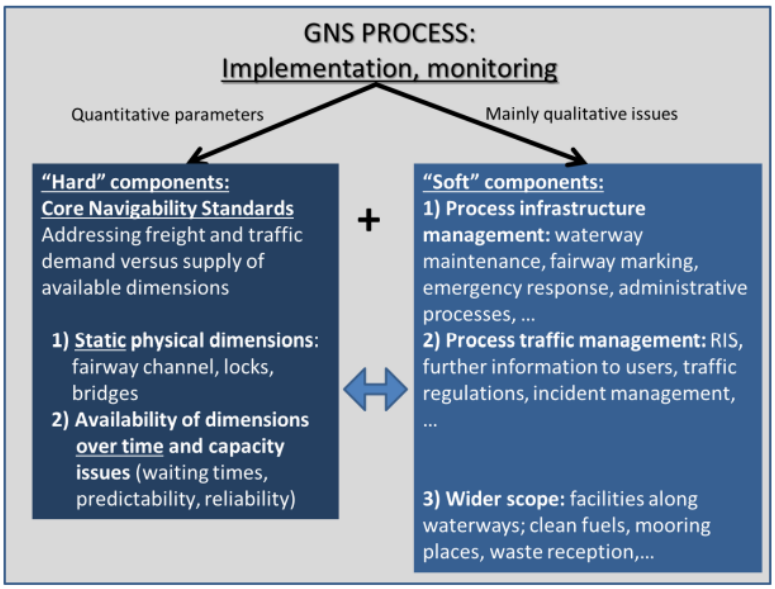



*Figure 1: Scheme of the GNS Process (source: Guidelines towards achieving a Good Navigation Status, 2018, Directorate-General for Mobility and Transport Directorate D Waterborne)*

The GNS "hard" components relate to the physical waterway infrastructure as a direct output of waterway management. Indicators for the "hard" components are measurable parameters which describe the physical dimensions of the navigation channel in rivers, canals and lakes (e.g. depth) and of locks, ship lifts and bridges, as well as their availability over time (e.g. closures).

The GNS "soft" components relate to management aspects of both infrastructure (e.g. fairway maintenance) and traffic (e.g. RIS), as well as the availability of wider facilities along waterways and in ports (e.g. mooring places, waste disposal facilities) which contribute to the Level of Service on and along the waterways. The "Fairway Rehabilitation and Maintenance Master Plan" contains an overview of existing critical waterway sections or locations to be monitored and defines – for each riparian state – the key issues and

remaining needs for action in waterway management, i.e. essentially the needs in relation to the "soft" components of the GNS that concern waterway management. The implementation of the FRMMP is consequently a step towards the realisation of Good Navigation Status.

## 2.2. Recommended minimum Levels of Service

The Key Performance Indicators (KPIs) for Good Navigation Status include the infrastructure-related minimum requirements according to the TEN-T Regulation which prescribes a minimum CEMT class IV for all waterways, a minimum of 2.50 metre draught for the vessel and a minimum of 5.25 metre height under bridges for navigation. With the still ongoing revision of the TEN-T Regulation and the adoption of related implementing acts these TEN-T minimum standards on draught and bridge clearance will be refined as regards the targets for free-flowing river sections.
The "Guidelines towards achieving a Good Navigation Status" propose to relate any target values for vertical dimensions to reference water levels in the respective river sections, in particular high and low water levels (HNWL and LNWL). This is necessary in order to realistically reflect the natural and statistical fluctuations in water discharge over the course of the year, which mean that the 365-day availability of the target values cannot be guaranteed by reasonable means.

The "Fairway Rehabilitation and Maintenance Master Plan" (FRMMP) adopts the target developed in the NEWADA duo project[1] by the waterway management experts of the Danube region, who defined the recommended minimum Level of Service related to fairway depth (not draught) for the Danube and its navigable tributaries as 2.50m[2] at Low Navigable Water Level[3] (LNWL or ENR / Étia-ge navigable et de regularisation), i.e. on 94% (343 days) of the year, calculated on the basis of the discharge observed over a period of 30 years with the exception of ice periods. This means that 2.50m fairway depth must be guaranteed at least on the days of the year on which the actual water level is equal to or above the statistical Low Navigable Water Level (LNWL). Information on the status of critical locations is only valid in relation to the hydrological conditions in the same period.
In some river sections however, e.g. in Germany, Slovakia and Hungary, this target is not valid, as it is not achievable by stream regulation and maintenance measures due to physical preconditions. This aspect remains valid throughout this document.

The recommended fairway widths for the minimum depth (both based on NEWADA duo) were defined in order to represent a "deep fairway channel" and comprise a range of values for different bend radii for a reference (i.e. the most common) vessel or convoy going downstream in one-way traffic. Higher fairway widths are needed in sharper bends of the waterway, as the drift angle of the respective vessel must be accounted for. The respective widths for which the 2.50m fairway depth target applies are listed in the respective national chapters.

The following target values for vertical dimensions of the waterway are assumed in connection with this report:

- Navigation channel: the target value of 2.50m fairway depth at LNWL according to the FRMMP is monitored until further notice, as this target value takes into account the hydrological conditions of the respective year. The newly refined target values for target values for vertical dimensions for the Rhine-Danube Corridor in accordance with the revised TEN-T Regulation are awaited.
- Bridge clearance: the target value of 5.25m minimum height under bridges in relation to the highest navigable water level is monitored.

## 2.3. Purpose and scope of the Reports on Good Navigation Status

The present Report on Good Navigation Status shall monitor for each Danube riparian state the status of selected GNS "hard" and GNS "soft" components. Therefore, each country chapter is divided into two sections of the same name – GNS "hard" and GNS "soft" components.

[1] NEWADA duo, implemented between 2012 and 2014, was co-funded by the South-East Europe Transnational Cooperation Programme and dealt with integrated waterway management. NEWADA duo assessed current and future maintenance activities as well as the needs to fulfil a common minimum level of service.
[2] Or the respective target value relevant for the special section (e.g. 2.0 m in Straubing-Vilshofen on the German Danube).
[3] LNWL = the water level reached or exceeded at a Danube water gauge on an average of 94% of days in a year (i.e. on 343 days) over a reference period of several decades.

Selected GNS "hard" components to be monitored:

- **TEN-T minimum requirement availability of the navigation channel**:
  The monitoring focusses on the most critical navigational bottlenecks, as continuously identified by the waterway administrations and users, as the weakest critical location determines the capacity of the entire country stretch.
  The target is to provide a fairway depth exceeding 2.50 m at least on as many days per year as show actual water levels equal to or above the statistical Low Navigable Water Level (LNWL). Therefore, information on the status of critical locations is only valid in relation to the hydrological conditions in the same period. This would correspond to an equal height of the blue columns (availability of 2.50m fairway depth) and the white columns framed in blue (water level equal to or above Low Navigable Water Level) in the fairway availability statistics in the national chapters. It is also important to take the depth classes close to 2.50m into account when interpreting the status of critical locations, as these provide a certain range of navigability although not meeting the 2.50m threshold. Therefore, the number of days with 2.40 or 2.30m fairway depth is displayed additionally.
- **TEN-T minimum requirement availability of minimum height under bridges** (as of 2024)

Selected GNS "soft" components to be monitored:

- **Status of and outlook on needed actions according to the updated FRMMP**
- **Review of monitoring, rehabilitation and maintenance activities** (as of 2024):
  The reports will also contain information about the ecological compatibility of maintenance measures, where applicable.
- **Status of operational budgets and investments** (as of 2024):
  Any tables on costs and budgets allow only limited comparison between the riparian states, as the national accounting practices vary (e.g. some countries summarize more activities under "maintenance and rehabilitation" than others). The main purpose is to illustrate the cost and budget development over the years per country and to indicate financing needs.

The Reports on Good Navigation Status are designed as living documents, in a sense that their contents are constantly under review and will be elaborated in order to provide the highest level of transparency and the greatest benefit for the waterway administrations. The selected components to be monitored might thus be amended over time.

The reports shall be updated regularly in order to serve as a proper monitoring and documentation tool as regards the planning of future budgets and activities. Contents for these updates will be provided in the framework of the CEF-financed FAIRway Danube II project for the countries that are project partners (Austria, Slovakia, Hungary, Croatia, Romania, Bulgaria). The remaining Danube riparian countries are integrated via PA1a – Inland Waterways of the European Strategy for the Danube Region and will be asked to contribute data as of 2024. An annual update is planned at the beginning of the year, in which the status of the previous year is described.
The aim is to standardise and simplify the data gathering process as much as possible; the use of electronic support tools, namely the transnational waterway monitoring system WAMOS, is under preparation.

## 2.4. Environmental compatibility of rehabilitation and maintenance measures

The rehabilitation and maintenance measures and activities monitored within the context of this report (surveying, fairway relocation, dredging and better information) have the character of reversible interventions. Nevertheless, also in the context of waterway maintenance and rehabilitation, official notifications/consultation, mutual agreement or permits from the competent national authorities are required in relation to water law, nature conservation law and (in some countries) national park law.
The authorities responsible for issuing these environmental permits comply with the goals of the legal instruments of the European Union, such as the Water Framework Directive 2000/60/EC (WFD) or the Environmental Impact Assessment Directive (85/337/EEC) and the Habitats Directive (92/43/EEC) in connection with the Birds Directive (2009/147/EC) which form the NATURA 2000 network. Further relevant Directives may be the Strategic Environmental Impact Assessment Directive (2001/42/EC), the Flood Risk Management Directive (2007/60/EC) and the Public Participation Directive (2003/35/EC).
Information on (expected) environmental impacts and mitigation measures will be provided, where applicable.

## 2.5. Adoption of Reports on Good Navigation Status

The reports are prepared within the FAIRway Danube II project. The FAIRway Danube II Steering Committee approved the reports for the countries participating in the project (Austria, Slovakia, Hungary, Croatia, Romania and Bulgaria) from a technical point of view. The Steering Group of PA1a is the body responsible for the adoption of chapters of the remaining Danube riparian countries.

# 3. Austria

## 3.1. AT | Monitoring of GNS "hard" components

### 3.1.1. AT | Status of TEN-T minimum requirement: availability of the navigation channel

**Number of days with fairway depths ≥ 2.50m at main critical locations 2014-2022**
*for a fairway width according to Level of Service 1 (40 - 80m, CEMT class VIb-VIc)*

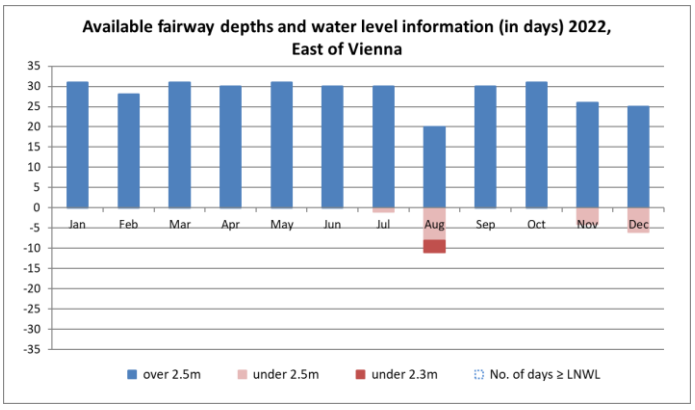
| Critical location | 2014 | 2015 | 2016 | 2017 | 2018 | 2019 | 2020 | 2021 | 2022 |
|---|---|---|---|---|---|---|---|---|---|
| Wachau | 352 | 323 | 359 | 342 | 294 | 352 | 355 | 333 | 363 |
| East of Vienna | 222 | 224 | 326 | 317 | 258 | 326 | 337 | 315 | 343 |

**Number of days with water level ≥ LNWL at main critical locations 2014-2022**

| Critical location | Reference gauges | 2014 | 2015 | 2016 | 2017 | 2018 | 2019 | 2020 | 2021 | 2022 |
|---|---|---|---|---|---|---|---|---|---|---|
| Wachau | Kienstock + Dürnstein | 365 | 330 | 355 | 341 | 309 | 361 | 362 | 343 | 361 |
| East of Vienna | Wildungsmauer + Thebenerstraßl | 355 | 310 | 343 | 328 | 274 | 335 | 334 | 317 | 328 |

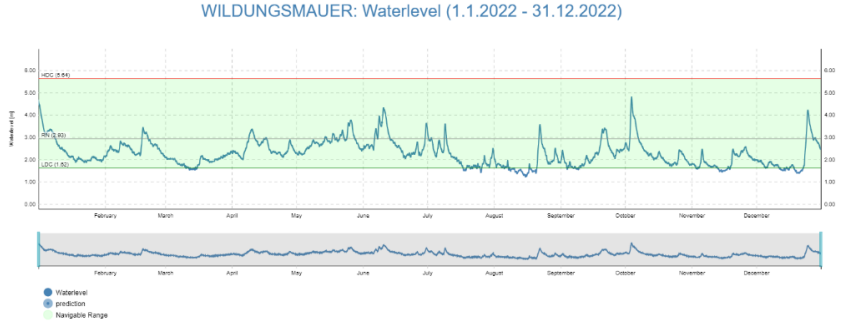
**Note from hydrological department: Data is operational data and can be subject to change.*

The water discharge in the two free-flowing stretches of the Danube was below average in 2022: In six months of the year, individual days were characterised by low water. The water discharge was below mean water on about 85 % of the days of the year. In 2022, the water level at the Wildungsmauer gauge (LNWL at 162 cm) in the free-flowing section east of Vienna fell below the defined low navigable water level on 35 days. At the Kienstock gauge in the free-flowing section of Wachau, the defined low navigable water level (at 164 cm) was not reached on 5 days.




The critical section East of Vienna is currently the most problematic section on the Austrian Danube stretch.

In the free-flowing section Wachau, one ford in particular ("Weißenkirchen") determines the availability of the navigation channel.



#### 3.1.2. AT | Status of TEN-T minimum requirement: availability of minimum height under bridges

Important remark: minimum height under bridges will be delivered as of Report on Good Navigation Status concerning the year 2023.

## 3.2. AT | Monitoring of GNS "soft" components

#### 3.2.1. AT | Status of and outlook on needed actions according to the updated FRMMP

| | | |
|---|---|---|
| **AT 01: Support the improvement of the system for remote monitoring of the buoy position, and integration of the position data into Inland ECDIS as user information** | | |
| Status and next steps (incl. timing): | The system for remote monitoring of the buoy position is implemented but has repeated failures with individual buoys, which must be repaired by the manufacturer. As soon as this problem has been resolved, the information will be distributed via the ECDIS. | |
| **AT 02: Support the further development of the national waterway asset management system (WAMS)** | | |
| Status and next steps (incl. timing): | Currently, no major changes are envisaged. | |
| **AT 03: Support acquisition of modern pusher for efficient marking operations** | | |
| Status and next steps (incl. timing): | The new pusher "Bad Deutsch-Altenburg" was delivered in summer 2023. | |
| **AT 04: Set-up and test new, flexible and adaptive infrastructure elements under real life conditions in order to ensure and improve navigability at extreme low water levels** | | |
| Planned activities: | FAIRway Danube II project: Pilot operation to test flexible infrastructure elements in the area east of Vienna; barges will be placed at critical locations to improve navigability during low water periods | |
| Environmental relevance of planned activities: | What are the main expected environmental impacts? | No permanent environmental impacts are expected.<br>No Natura 2000 permit is required; the national park exception permit was received; the permit under water law is still pendig, as a precondition the safe anchoring of the barges must be ensured, further calculations were necessary. |
| | Which measures are taken to mitigate these impacts? | No mitigation measures are required. |
| | Is water status expected to deteriorate? | No, as the measure is completely reversible. |
| (Possible) funding: | Connecting Europe Facility 2 (CEF 2) | |
| Status and next steps (incl. timing): | The calculations for safe anchorage are finalised, barges might be placed in the next low water period. | |
| **AT 05: Support improvement of water level forecast** | | |
| Planned activities: | FAIRway Danube II project: upgrade of the Austrian water level forecast | |
| Environmental relevance of planned activities: | What are the main expected environmental impacts? | none |
| (Possible) funding: | Connecting Europe Facility 2 (CEF 2) | |
| Status and next steps (incl. timing): | The tender is planned to be published in spring 2024. | |

| **AT 06: Support customer-friendly processing and dissemination of information, in particular integration of information in ECDIS** | |
|---|---|
| Status and next steps (incl. timing): | viadonau publishes updated information on water depth in the form of bathymetric Inland ENCs. For critical locations IENCs are updated monthly. No major adaptations are foreseen at the moment. |

# 4. Slovakia

## 4.1. SK | Monitoring of GNS "hard" components

### 4.1.1. SK | Status of TEN-T minimum requirement: availability of the navigation channel

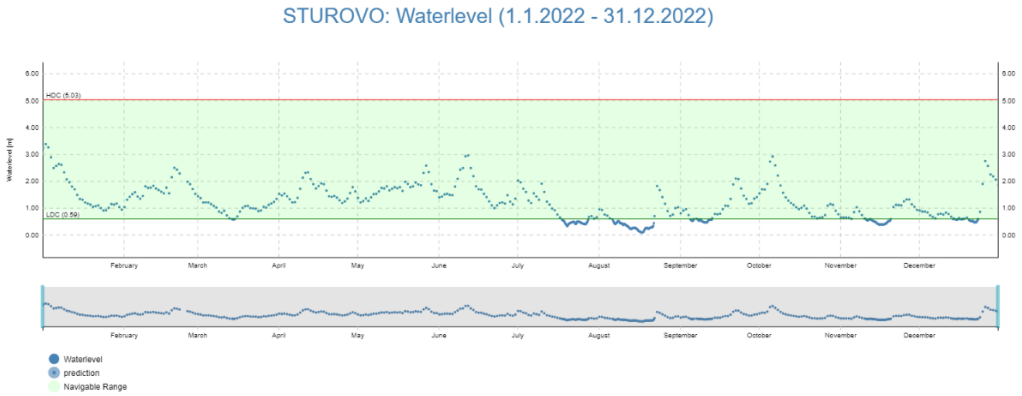
**Number of days with fairway depths ≥ 2.50m at main critical locations 2014-2022**
*for a fairway width according to Level of Service 1 (targeted minimum fairway widths are 60 to 100 m in Slovakia and on the Slovak-Hungarian border section and 40 to 80 m on the Slovak-Austrian section, CEMT class VIb – VIc)*

| Critical location | 2014 | 2015 | 2016 | 2017 | 2018 | 2019 | 2020 | 2021 | 2022 |
|---|---|---|---|---|---|---|---|---|---|
| part I. (rkm 1880 – 1863) | 365 | 287 | 310 | 304 | 254 | 331 | 337 | 316 | 311 |
| part II. (rkm 1810 – 1785) | 359 | 307 | 338 | 324 | 236 | 302 | 341 | 283 | 266 |
| part III. (rkm 1765 – 1710) including Čenkov | 300 | 223 | 319 | 303 | 224 | 281 | 286 | 282 | 228 |

**Number of days with water level ≥ LNWL at main critical locations 2014-2022**

| Critical location | Reference gauge | 2014 | 2015 | 2016 | 2017 | 2018 | 2019 | 2020 | 2021 | 2022 |
|---|---|---|---|---|---|---|---|---|---|---|
| part I. (rkm 1880 – 1863) | Devin | 349 | 294 | 345 | 340 | 324 | 357 | 363 | 350 | 346 |
| part II. (rkm 1810 – 1785) | Medvedov / Gonyu | 348 | 259 | 325 | 326 | 252 | 311 | 319 | 297 | 281 |
| part III. (rkm 1765 – 1710) including Čenkov | Sturovo / Komarom | 292 | 288 | 353 | 332 | 259 | 333 | 362 | 338 | 314 |

In Slovakia the common Danube stretch with Hungary contains the most critical bottlenecks. In 2022, the most critical bottleneck for navigation was again the location Čenkov (1735,50 – 1733,70; "Nyerges gázló" in HU), where the target fairway depth of ≥ 2.50m was achieved on only 228 days. As the riverbed in this area consists not of gravel but rocky bottom, maintenance activities soon reach their limits and only physical intervention could solve the problem.
For the fairway availability statistics for the location Čenkov, please refer to the Hungarian chapter where the corresponding statistics can be found.




#### 4.1.2. SK | Status of TEN-T minimum requirement: availability of minimum height under bridges

Important remark: minimum height under bridges will likely be delivered as of Report on Good Navigation Status concerning the year 2023.

## 4.2. SK | Monitoring of GNS "soft" components

#### 4.2.1. SK | Status of and outlook on needed actions according to the updated FRMMP

| | | |
|---|---|---|
| **SK 01: Secure education and provision of welltrained staff in the short, medium and long term** | | |
| Status and next steps (incl. timing): | Currently no specific trainings planned. Because of the low interest in working in this field, hiring new employees is difficult.<br>One surveying vessel will be upgraded. | |
| **SK 02: Support further development of the existing waterway management tool (WAMS)** | | |
| Planned activities: | Upgrade of WAMS planned within FAIRway Danube II | |
| Environmental relevance of planned activities: | What are the main expected environmental impacts? | none |
| (Possible) funding: | Connecting Europe Facility 2 (CEF2) | |
| Status and next steps (incl. timing): | The procurement procedure for the upgrade of the SK WAMS System has to be launched by end of November 2024. | |
| **SK 03: Support cross-border harmonisation of monitoring standards, as well as exchange and synchronisation of data** | | |
| Status and next steps (incl. timing): | Currently there are no special activities ongoing in the Transboundary Water Commissions. | |
| **SK 04: Support acquisition of up-to-date marking vessel(s) (incl. small speed boat for fast reactions) with suitable equipment** | | |
| Status and next steps (incl. timing): | Currently no procurements of marking equipment is foreseen. | |
| **SK 05: Support acquisition of intelligent marking system, including AIS AtoNs and virtual buoys**<br>**Support the establishment of an automated monitoring system, including the dissemination of current marking information** | | |
| Status and next steps (incl. timing): | Currently no procurements of marking equipment is foreseen. | |

<table>
<tr><th colspan="3">SK 06: Support acquisition of up-to-date dredging equipment</th></tr>
<tr><td>Planned activities:</td><td colspan="2">ongoing DaReM Project: Delivery of the following equipment:<ul><li>Floating platforms with a hydraulic excavator on a crawler chassis (3x+3x)</li><li>Self-discharging non-self-propelled push boats (2x)</li><li>Tugboat reconstruction (1x)</li><li>Suction dredging kit (1x)</li><li>Dump trucks with tandem trailers (3x)</li></ul></td></tr>
<tr><td rowspan="3">Environmental relevance of planned activities:</td><td>What are the main expected environmental impacts?</td><td rowspan="2">If dredging occurs in or near protected areas such as Natura 2000 sites and if the dredged material is stored on the banks of the Danube and these sites are located in protected areas, additional permits from the competent organisations are required. Usually, the only actual permit that is needed for dredging activities is issued by the Transport Authority, who publishes NtS for the time period of any dredging works.</td></tr>
<tr><td>Which measures are taken to mitigate these impacts?</td></tr>
<tr><td>Is water status expected to deteriorate?</td><td>no</td></tr>
<tr><td>(Possible) funding:</td><td colspan="2">Operational Programme Integrated Infrastructure 2014-2020</td></tr>
<tr><td>Status and next steps (incl. timing):</td><td colspan="2">The equipment should be delivered by end of the year 2023, the three dump trucks are expected by February 2024.</td></tr>
<tr><th colspan="3">SK 07: Secure education and provision of welltrained staff in the short, medium and long term</th></tr>
<tr><td>Status and next steps (incl. timing):</td><td colspan="2">Pilot operation and training period for floating platforms with excavators until the end of 2023.</td></tr>
<tr><th colspan="3">SK 08: Support implementation of semiautomated marking plans based on a common Fairway Management System</th></tr>
<tr><td>Status and next steps (incl. timing):</td><td colspan="2">Currently no activities ongoing/planned.</td></tr>
<tr><th colspan="3">SK 09: Support customer-friendly processing and dissemination of information<br>Support the upgrade of IENCs with bathymetric information</th></tr>
<tr><td>Status and next steps (incl. timing):</td><td colspan="2">Currently no activities ongoing/planned.</td></tr>
<tr><th colspan="3">SK 10: Support acquisition of sensors to measure vertical bridge clearance</th></tr>
<tr><td>Status and next steps (incl. timing):</td><td colspan="2">For the 6 Slovak bridges (without bridge at Gabčíkovo) as well as the 5 bridges between Slovakia and Hungary real-time bridge clearance information is published on EuRIS portal.</td></tr>
</table>

# 5. Hungary

## 5.1. HU | Monitoring of GNS "hard" components

### 5.1.1. HU | Status of TEN-T minimum requirement: availability of the navigation channel

In 2022, the target fairway depth of ≥ 2.50m was not reached at several critical locationes along the entire Hungarian Danube, in some cases for more than 150 days. Three of the most critical locations were Nyergesújfalu, Dömös alsó and Solt with only 266, 208 and 223 days with fairway depths of ≥ 2.50m.

**Section rkm 1811 - 1708**

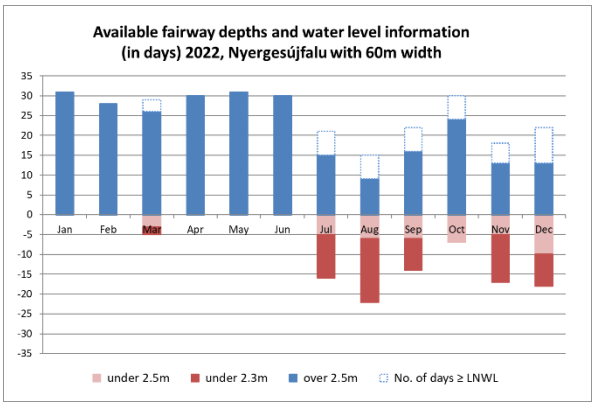
**Number of days with fairway depths ≥ 2.50m at main critical locations 2014-2022**

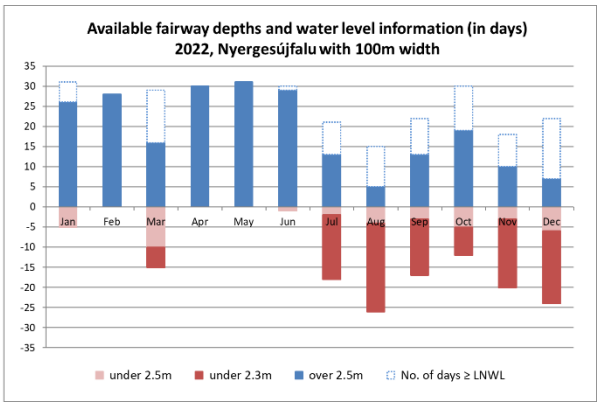
*Fairway width (range of values accounts for different curve radii): 60 to 100 m on the Slovak - Hungarian border section (Nyergesújfalu), CEMT class VIb – VIc*

| Critical location | 2014 | 2015 | 2016 | 2017 | 2018 | 2019 | 2020 | 2021 | 2022 |
|---|---|---|---|---|---|---|---|---|---|
| **Nyergesújfalu** critical location with **60 meters** wide fairway | 307 | 244 | 326 | 327 | 245 | 309 | 330 | 301 | 266 |
| **Nyergesújfalu** critical location with **100 meters** wide fairway | 256 | 213 | 293 | 304 | 215 | 282 | 286 | 278 | 227 |

**Number of days with water level ≥ LNWL at main critical locations 2014-2022**

| Critical location | Reference gauge | 2014 | 2015 | 2016 | 2017 | 2018 | 2019 | 2020 | 2021 | 2022 |
|---|---|---|---|---|---|---|---|---|---|---|
| Nyergesújfalu | Esztergom | 360 | 294 | 349 | 336 | 261 | 332 | 361 | 335 | 307 |




In the critical location Nyergesújfalu or Nyerges gázló (1735,50 – 1733,70; "Čenkov" in SK) the consists not of gravel but rocky bottom and maintenance activities soon reach their limits; only physical intervention could solve the problem. Whenever water levels drop this location becomes a major obstacle for navigation.

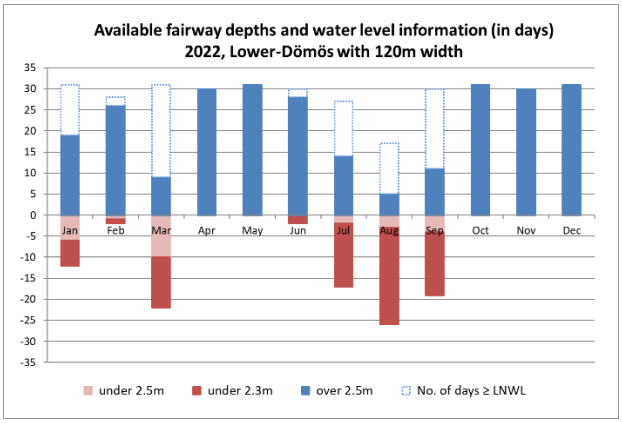
**Section rkm 1,708 - 1,560**

**Number of days with fairway depths ≥ 2.5m at main critical locations 2014-2022**
*Fairway width (range of values accounts for different curve radii): 80 to 120 m Hungary, CEMT class VIb – VIc*

| Critical location | 2014 | 2015 | 2016 | 2017 | 2018 | 2019 | 2020 | 2021 | 2022 |
|---|---|---|---|---|---|---|---|---|---|
| **Göd** critical location with **80 meters** wide fairway | 286 | 208 | 299 | 266 | 229 | 296 | 291 | 293 | 226 |
| **Dömös alsó** critical location with **120 meters** wide fairway | 264 | 205 | 279 | 290 | 221 | 277 | 281 | 284 | 208 |
| **Budafok** critical location with **60 meters** wide fairway | 319 | 229 | 310 | 257 | 244 | 296 | 322 | 356 | 245 |

**Number of days with water level ≥ LNWL at main critical locations 2014-2022**

| Critical location | Reference gauges | 2014 | 2015 | 2016 | 2017 | 2018 | 2019 | 2020 | 2021 | 2022 |
|---|---|---|---|---|---|---|---|---|---|---|
| Dömös-alsó | Nagymaros | 365 | 322 | 357 | 362 | 302 | 355 | 366 | 359 | 343 |
| Göd | Budapest | 357 | 320 | 357 | 352 | 304 | 362 | 366 | 359 | 355 |

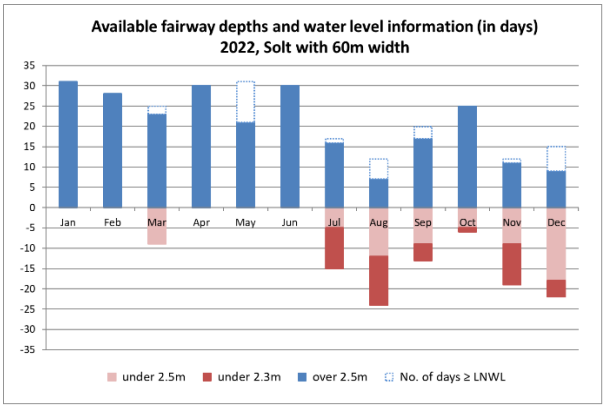


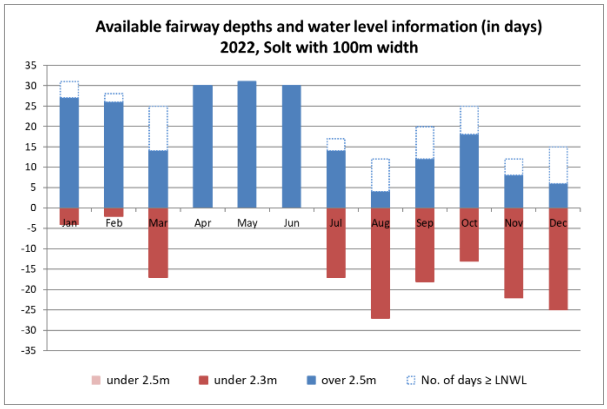

**<u>Section rkm 1,560 - 1,433</u>**
**Number of days with fairway depths ≥ 2.5m at main critical locations 2014-2022**
*Fairway width (range of values accounts for different curve radii): 80 to 120 m Hungary, CEMT class VIb – VIc*

| Critical location | 2014 | 2015 | 2016 | 2017 | 2018 | 2019 | 2020 | 2021 | 2022 |
|---|---|---|---|---|---|---|---|---|---|
| **Solt** critical location with **60 meters** wide fairway | 360 | 277 | 344 | 330 | 254 | 322 | 285 | 274 | 223 |
| **Solt** critical location with **100 meters** wide fairway | 232 | 210 | 277 | 284 | 208 | 263 | 235 | 236 | 178 |

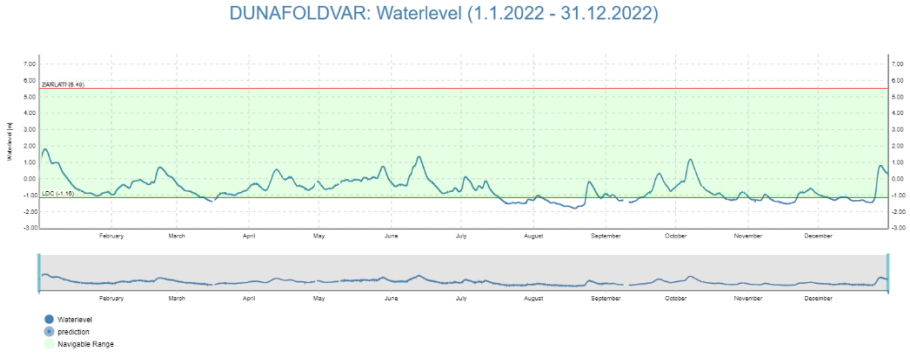
**Number of days with water level ≥ LNWL at main critical locations 2014-2022**

| Critical location | Reference gauges | 2014 | 2015 | 2016 | 2017 | 2018 | 2019 | 2020 | 2021 | 2022 |
|---|---|---|---|---|---|---|---|---|---|---|
| Solt | Dunaföldvár | 358 | 270 | 339 | 326 | 251 | 319 | 340 | 309 | 276 |




Even after fairway widths were reduced to 60m 2.50m fairway depth were only achieved for 223 days in the navigation channel.




### 5.1.2. HU | Status of TEN-T minimum requirement: availability of minimum height under bridges

Important remark: Hungary does not yet calculate and publish information on the minimum height under bridges. Within the FAIRway Danube II project this task will be developed; information on compliance with this TEN-T minimum requirement will be published as soon as possible.

## 5.2. HU | Monitoring of GNS "soft" components

### 5.2.1. HU | Status of and outlook on needed actions according to the updated FRMMP

| **HU 01: Support acquisition of up-to-date multi-beam sensor(s)** | | |
|---|---|---|
| Planned activities: | FAIRway Danube II: Procurements of 1 new surveying vessel, 1 upgraded surveying vessel, 1 aquatic drone | |
| Environmental relevance of planned activities: | What are the main expected environmental impacts? | none |
| (Possible) funding: | Connecting Europe Facility 2 (CEF 2) | |
| Status and next steps (incl. timing): | Procurements are to be launched by January 2025. | |
| **HU 02: Support the replacement of the existing signalisation with AIS AtoNs to remotely control the buoys' positioning** | | |

| | | |
|---|---|---|
| Status and next steps (incl. timing): | In the framework of the already concluded project " Improving the Hungarian marking system" (HUMARK) the following equipment was procured and is since in operation:<br>• 3 new marking vessels<br>• 3 high-speed patrol boats<br>• 115 intelligent light buoys<br>• 210 pcs new floating unlighted buoys<br>• 55 light bank markers<br>• 300 new bank marks and navigation control marks<br>• 400 new river km marks<br>No further activities are planned at the moment. | |
| **HU 03: Support further development of the existing waterway management tool (WAMS)** | | |
| Planned activities: | Further development of WAMS within FAIRway Danube II project | |
| Environmental relevance of planned activities: | What are the main expected environmental impacts? | none |
| (Possible) funding: | Connecting Europe Facility 2 (CEF2) | |
| Status and next steps (incl. timing): | Procurement is to be launched by January 2025. | |
| **HU 04: Support acquisition of modern, multi-functional ice breakers** | | |
| Status and next steps (incl. timing): | Currently it is not clear how the equipment could be financed. No ongoing activities. | |
| **HU 05: Supports the allocation of sufficient budget to allow for dredging interventions** | | |
| Status and next steps (incl. timing): | No specific activities planned at the moment. | |
| **HU 06: Support customer-friendly processing and dissemination of information, including IENCs** | | |
| Status and next steps (incl. timing): | No specific activities planned at the moment. | |
| **HU 07: Support the calculation of vertical bridge clearance (e.g. laser scanner and hydrologic modelling)** | | |
| Planned activities: | FAIRway Danube II: Procurement of 6 bridge clearance sensors; information should be published on EuRIS Portal. | |
| Environmental relevance of planned activities: | What are the main expected environmental impacts? | None |
| (Possible) funding: | Connecting Europe Facility 2 (CEF2) | |
| Status and next steps (incl. timing): | Procurement is to be launched by January 2025. | |

# 6. Croatia

## 6.1. HR | Monitoring of GNS "hard" components

### 6.1.1. HR | Status of TEN-T minimum requirement: availability of the navigation channel

**Danube**

**Number of days with fairway depths ≥ 2.50m at main critical locations 2014-2022**

*for a fairway width of 100m (CEMT class VIc)*

| Critical location | 2014 | 2015 | 2016 | 2017 | 2018 | 2019 | 2020 | 2021 | 2022 |
|---|---|---|---|---|---|---|---|---|---|
| Apatin | 365* | 365* | 366* | 363* | 365* | 365* | 366 | 365 | 365 |
| Mohovo | - | - | - | - | - | - | - | 306 | 237 |

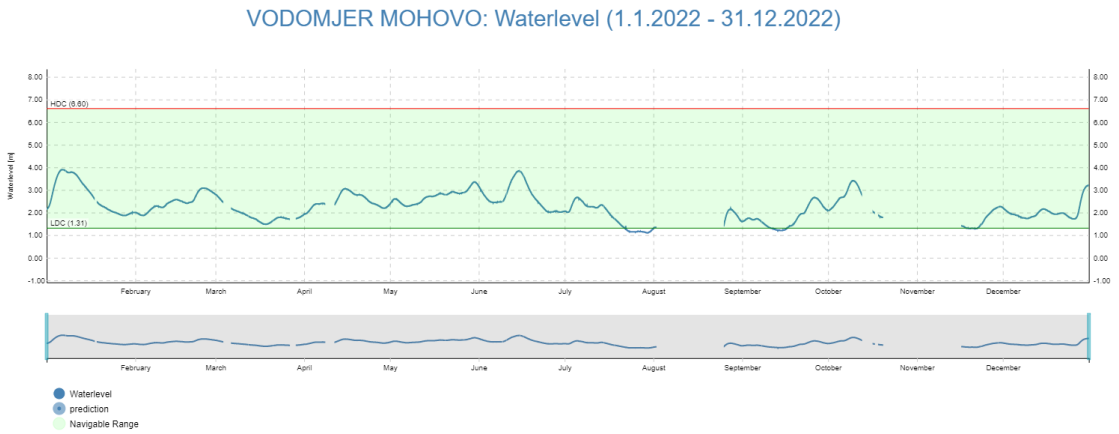
**Data provided by PLOVPUT*

The Danube stretch in Croatia is characterised by sufficient depths but, due to river morphology (large number of sandbars and islands), the achieved fairway width varies. Exception is the critical location of Mohovo with rocky river bottom which represents the major limiting bottleneck of the Croatian-Serbian Danube stretch. The maintenance measures consist solely of limiting the width of the fairway; only physical intervention could solve the problem.

**Number of days with water levels ≥ LNWL at main critical locations 2014-2022**

| Critical location | Reference gauges | 2014 | 2015 | 2016 | 2017 | 2018 | 2019 | 2020 | 2021 | 2022 |
|---|---|---|---|---|---|---|---|---|---|---|
| Apatin * | Apatin | 365* | 315* | 353* | 352* | 266* | 331* | 366 | 319 | 304 |

**Data provided by PLOVPUT*




### 6.1.2. HR | Status of TEN-T minimum requirement: availability of minimum height under bridges

Important remark: Croatia does not yet calculate and publish information on the minimum height under bridges. Serbia is calculating and publishing these values; information on compliance with this TEN-T minimum requirement will be published as soon as possible.

## 6.2. HR | Monitoring of GNS "soft" components

### 6.2.1. HR | Status of and outlook on needed actions according to the updated FRMMP

| | | |
|---|---|---|
| **HR 01: Support retrofit and acquisition of remotely controlled aquatic and river drones** | | |
| Planned activities: | FAIRway Danube II:<br>• Procurement of 1 aquatic drone with MB sensor<br>• Procurement of 1 aeronautical drone with lidar sensor<br>• Upgrade of the sensor of 1 surveying vessel | |
| Environmental relevance of planned activities: | What are the main expected environmental impacts? | none |
| (Possible) funding: | Connecting Europe Facility 2 (CEF2) | |
| Status and next steps (incl. timing): | The procurement procedures for the drones is to be launched by the end of September 2024. | |
| **HR 02: Secure education and provision of well-trained staff in the short, medium and long term** | | |
| Status and next steps (incl. timing): | Currently no specific trainings envisaged. | |
| **HR 03: Secure predictable and sufficient financial means for waterway maintenance** | | |
| Status and next steps (incl. timing): | Currently no specific activities envisaged. | |
| **HR 04: Support further development of the WAMOS/WAMS System**<br>**Support acquisition of adequate IT tools (hardware and software)** | | |
| Planned activities: | Further development of WAMS within FAIRway Danube II project | |
| Environmental relevance of planned activities: | What are the main expected environmental impacts? | none |
| (Possible) funding: | Connecting Europe Facility 2 (CEF2) | |
| Status and next steps (incl. timing): | The procurement procedure for the upgrade of the HR WAMS is to be launched by the end of September 2024. | |
| **HR 05: Implementation of monitoring activities that will provide sufficient data for the development of technical documentation in order to resolve navigational bottlenecks** | | |
| Planned activities: | Building a stable database for modelling different scenarios of resolving navigational bottlenecks and building a database (incl. GIS database) of ecological data | |
| Environmental relevance of planned activities: | What are the main expected environmental impacts? | none |
| (Possible) funding: | Connecting Europe Facility | |
| Status and next steps (incl. timing): | Within the ongoing Preparing FAIRway 2 project MMPI has contracted services to monitor the hydrological, hydraulic and morphological characteristics of the Danube (hydrographic measurements, measurement of velocities and sediment transport, etc.) and develop an inventory of biodiversity components of the Croatian-Serbian common section of the Danube (fish sampling, habitat monitoring, establishment of a GIS database). The activity will be continued in 2024, providing data for the future modelling. | |

| | | |
|---|---|---|
| **HR 06: Development of adequate technical solutions in order to improve fairway stability (capital dredging on critical locations in the upcoming period of 10 years)**<br>**Investigate "working with nature" approaches for the resolution of navigational bottlenecks** | | |
| Planned activities: | FAIRway Danube II pilot operation of flexible infrastructure elements as an approach for nature based solutions in waterway management: Placement of barges at the critical point "Drau estuary" to test the suitability of the approach | |
| Environmental relevance of planned activities: | What are the main expected environmental impacts? | No permanent environmental impacts are expected.<br>It is not yet entirely clear what kind of permits are needed for placing the barges. Ensuring safe anchorage of the barges and obtaining necessary permits will be part of the FAIRway Danube II project. |
| | Which measures are taken to mitigate these impacts? | No mitigation measures necessary. |
| | Is water status expected to deteriorate? | No, the measure is completely reversible. |
| (Possible) funding: | Connecting Europe Facility 2 (CEF2) | |
| Status and next steps (incl. timing): | Start of the tender procedure planned for early 2024. | |
| **HR 07: Support the further development of the water level forecast (geographical extension and continued quality improvements)** | | |
| Status and next steps (incl. timing): | Currently no activities planned. | |

#### 6.2.2. HR | Other waterway management activities that were not declared as needed actions in the FRMMP

**Upgrade of the marking system on Sava/Drava:**

- 2x multifunctional marking vessels to be operated on Sava and Drava (delivery planned in first half of 2024)
- 80 AtoNS already delivered, upgrade of AIS system completed

**Delivery of 20 buoys with fixed sensors in the framework of the FAIRway Danube II project.**
The procurment will start in autumn 2024.

# 7. Romania

## 7.1. RO | Monitoring of GNS "hard" components

### 7.1.1. RO | Status of TEN-T minimum requirement: availability of the navigation channel

The **Administration of the Lower Danube (AFDJ)** and the **Administration of the Navigable Canals (ACN)** are responsible for fairway maintenance, rehabilitation and upgrade. Since AFDJ is currently in the process of recalculating the Low Navigable Water Level at certain critical locations, the achievement of 2.50 m fairway depth in relation to the number of days above Low Navigable Water Level is not always correct.

**Danube**

**Number of days with fairway depths ≥ 2.50m at main critical locations 2014-2022**

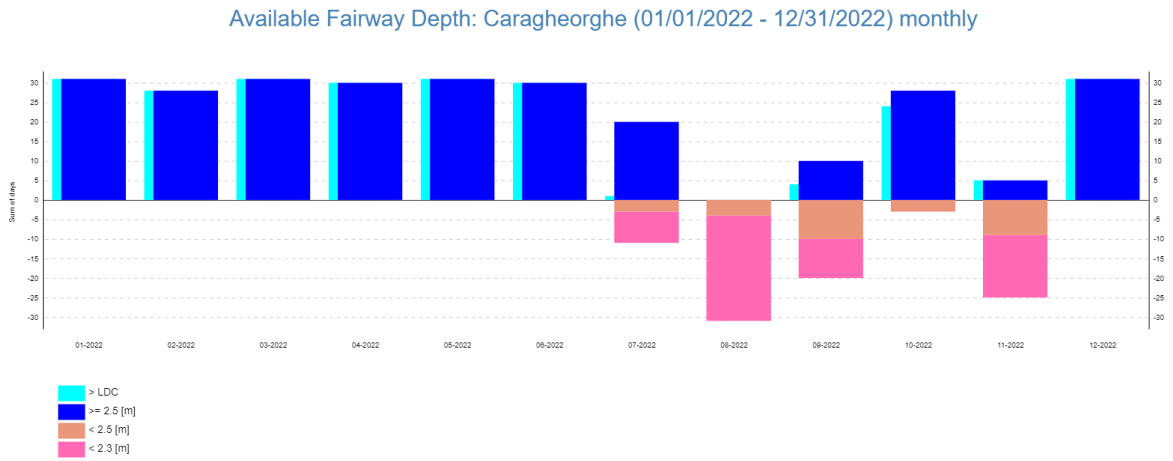
*for a fairway width of 80m to 100m (CEMT class VII)*

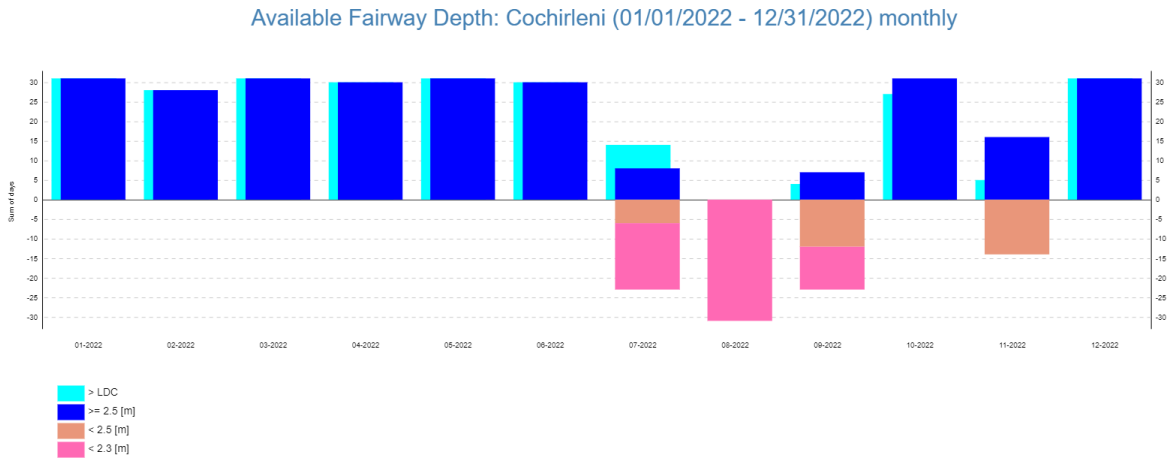
| Critical location | 2014 | 2015 | 2016 | 2017 | 2018 | 2019 | 2020 | 2021 | 2022 |
|---|---|---|---|---|---|---|---|---|---|
| Bechet (100m fairway width) | 365 | 285 | 351 | 357 | 317 | 342 | 366 | 336 | 323 |
| Corabia (100m fairway width) | 365 | 272 | 352 | 355 | 317 | 308 | 362 | 326 | 297 |
| Turcescu (100m fairway width) | 345 | 260 | 301 | 312 | 253 | 265 | 359 | 326 | 316 |
| Caragheorghe (100m fairway width) | - | - | - | - | - | - | - | 323 | 275 |
| Cochirleni (80m fairway width) | 319 | 236 | 257 | 200 | 201 | 225 | 302 | 316 | 270 |
| Prut (80m fairway width, depth > 7.32m) | 365 | 308 | 338 | 365 | 318 | 350 | 366 | 363 | 365 |
| Tulcea (100m fairway width, depth > 7.32m) | 365 | 321 | 359 | 365 | 329 | 365 | 366 | 365 | 365 |

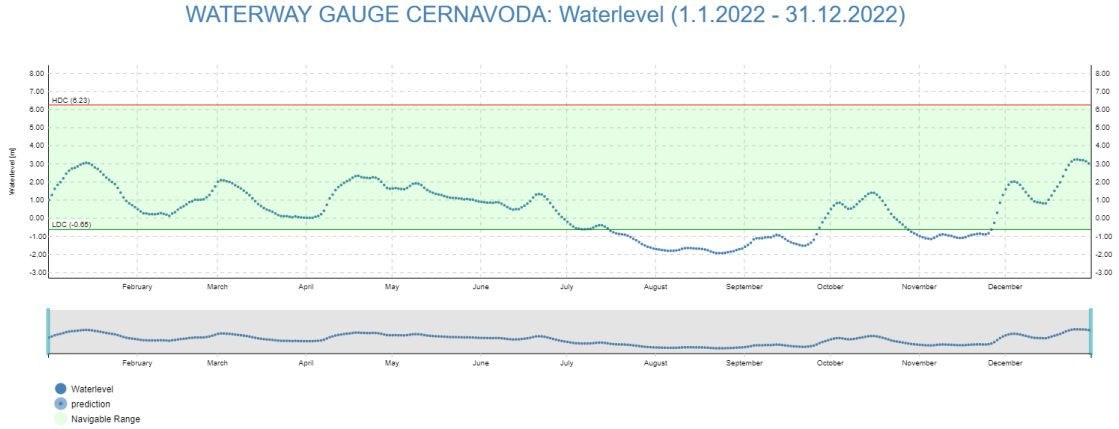
**Number of days with water levels ≥ LNWL at main critical locations 2014-2022**

| Critical location | Reference gauges | 2014 | 2015 | 2016 | 2017 | 2018 | 2019 | 2020 | 2021 | 2022 |
|---|---|---|---|---|---|---|---|---|---|---|
| Bechet | Bechet | 365 | 277 | 348 | 309 | 322 | 297 | 350 | 314 | 255 |
| Corabia | Corabia | 365 | 258 | 348 | 285 | 317 | 265 | 328 | 304 | 244 |
| Turcescu | Calarasi | 365 | 279 | 348 | 330 | 290 | 276 | 342 | 307 | 246 |
| Cochirleni | Cernavoda | 365 | 295 | 355 | 355 | 301 | 302 | 356 | 323 | 262 |
| Prut | Galati | 365 | 365 | 353 | 353 | 334 | 316 | 358 | 326 | 257 |
| Tulcea | Tulcea | 365 | 365 | 359 | 350 | 318 | 314 | 362 | 365 | 275 |

In the downstream sector of Calarasi (Caragheorghe and Cochirleni), depths below 2.50m have been encountered since July, amounting to 86 days in the most critical location Cochirleni. In the maritime sector of the Danube the year 2022 showed good navigation conditions. It is noteworthy that in this sector the minimum navigation depth is 7.32m (24 feet).




**<u>Danube-Black Sea Canal</u>**

The Danube Black Sea canals bottom is dredged 1 meter below the Danube River, so for the entire period 2012 – December 2022 fairway depths were over 2.5m on the Danube Black Sea Canal (DBSC) and the Poarta Albă-Midia Năvodari Canal (PAMNC). Between Cernavoda and Agigea locks minimum depths were 7m, which allows maritime ships to access the Basarabi and Medgidia ports.

In the period January –December 2022 there were no restrictions for navigation due to low navigable water levels.

Nevertheless, navigation on navigable canals was restricted or closed due to meteorological conditions as follows:

- Danube-Black Sea Canal: due to fog conditions (60 hours) and due to strong wind conditions (636 hours). In these conditions the measures taken by Romanian Naval Authority were to close the port of Constanta (for DBSC) and port of Midia (for PAMNC) and the measures taken by ACN were to restrict navigation on the canals.

#### 7.1.2. RO | Status of TEN-T minimum requirement: availability of minimum height under bridges

Important remark: Romania does not yet calculate and publish information on the minimum height under bridges. Within the FAIRway Danube II project this task will be developed; information on compliance with this TEN-T minimum requirement will be published as soon as possible.

## 7.2. RO | Monitoring of GNS "soft" components

#### 7.2.1. RO | Status of and outlook on needed actions according to the updated FRMMP

| **RO 01: Support acquisition of up-to-date sounding equipment, in particular sensors (incl. possibly drones), to raise the quality of surveying data** | | |
|---|---|---|
| Planned activities: | FAIRway Danube II:<br>• AFDJ: Procurement of two aquatic drones (one with MB sensor, one with ADCP)<br>• AFDJ: Procurement of one new surveying vessel with MB sensor<br>• AFDJ: Upgrade of 4 sensors of the surveying vessels<br>• ACN: Procurement of one new surveying vessel with MB sensor | |
| Environmental relevance of planned activities: | What are the main expected environmental impacts? | none |
| (Possible) funding: | Connecting Europe Facility 2 (CEF2) | |
| Status and next steps (incl. timing): | The procurement procedure for the drones and sensors/vessels needs to be launched by the end of 2024 (different dates for different equipment). | |
| **RO 02: Support acquisition of additional automatic gauging stations, especially for critical sections** | | |
| Planned activities: | ACN will upgrade two gauging stations on the DBSC within FAIRway Danube II | |
| Environmental relevance of planned activities: | What are the main expected environmental impacts? | none |
| (Possible) funding: | Connecting Europe Facility 2 (CEF2) | |
| Status and next steps (incl. timing): | The procurement procedure for upgrading the gauging stations needs to be launched by the end of March 2024. | |
| **RO 03: Support acquisition of up-to-date aerial monitoring device (drone)** | | |
| Planned activities: | FAIRway Danube II: procurement of aeronautical drone with Lidar sensors (AFDJ) | |
| Environmental relevance of planned activities: | What are the main expected environmental impacts? | none |
| (Possible) funding: | Connecting Europe Facility 2 (CEF2) | |
| Status and next steps (incl. timing): | The procurement procedure for the drone needs to be launched by the end of March 2024. | |

| | | |
|---|---|---|
| **RO 04: Support acquisition of sensors measuring turbidity, sedimentation and chemical components of the water** | | |
| Planned activities: | FAIRway Danube II:<br>• AFDJ: procurement of 160 buoys with fixed sensors<br>• ACN: procurement of 3 buoys with fixed sensors | |
| Environmental relevance of planned activities: | What are the main expected environmental impacts? | none |
| (Possible) funding: | Connecting Europe Facility 2 (CEF2) | |
| Status and next steps (incl. timing): | The procurement procedure for the drone needs to be launched by the end of September 2024 (AFDJ) and November 2024 (ACN). | |
| **RO 05: Support further development of the existing waterway management tool (WAMS)** | | |
| Planned activities: | Further development of Romanian WAMS within FAIRway Danube II | |
| Environmental relevance of planned activities: | What are the main expected environmental impacts? | none |
| (Possible) funding: | Connecting Europe Facility 2 (CEF2) | |
| Status and next steps (incl. timing): | The procurement procedure for the upgrade of WAMS needs to be launched by the end of March 2025. | |
| **RO 06: Support extension of the digital terrain model as a basis for planning and other services (e.g. wl forecast, calculation of LNWL)** | | |
| Planned activities: | Within FAST Danube the digital terrain model was developed based on bathymetric surveys, Lidar surveying and shore-side drillings. In the future, this terrain model should be extended and updated, based on new data within the FAST Danube 2 project. | |
| Environmental relevance of planned activities: | What are the main expected environmental impacts? | none |
| (Possible) funding: | Connecting Europe Facility 2 (CEF2) | |
| Status and next steps (incl. timing): | Deadline for submission of project application FAST Danube 2: end of January 2024. | |
| **RO 07: Improve methodology for the calculation of the LNWL and extension to other gauges** | | |
| Status and next steps (incl. timing): | The extension of the LNWL to other gauges is planned, but currently no activities. | |
| **RO 08: Support acquisition of (maritime) dredging equipment** | | |
| Status and next steps (incl. timing): | Currently no activities ongoing. | |
| **RO 09: Support the training of specialized personnel for dredging operations** | | |
| Status and next steps (incl. timing): | Two self-propelled (fluvial) dredgers will be delivered by the end of 2023. In the beginning of 2024 training of personnel will be done. In general, the personnel situation is not favourable. | |
| **RO 10: Support acquisition of state-of-the-art vessels equipped with advanced machines to perform marking operations** | | |
| Status and next steps (incl. timing): | See below action RO 11. | |
| **RO 11: Support acquisition of intelligent marking system, including AIS AtoNs**<br>**Support the establishment of an automated monitoring system, including the dissemination of current marking information** | | |
| Planned activities: | Romania is partner in the planned DISMAR project (Danube Integrated System for MARking) with which the marking system on the RO-BG border stretch will be modernised. Project volume: roughly 10 million EUR. Envisaged duration: 3 | |

| | | |
|---|---|---|
| | years. Procurement of signalisation and in case of Romania also a floating not self-propelled pontoon for the maintenance of on-shore signalisation. | |
| Environmental relevance of planned activities: | What are the main expected environmental impacts? | none |
| (Possible) funding: | INTERREG IV-A Romania- Bulgaria Programme 2021 – 2027 | |
| Status and next steps (incl. timing): | The project proposal is under evaluation. Deadline for submission of AF was 11.09.2023. | |
| **RO 12: Support geographical extension of the existing forecast to further gauges and continuous improvement of the forecast quality** | | |
| Planned activities: | Procurement of upgraded wl forecast within FAIRway Danube II | |
| Environmental relevance of planned activities: | What are the main expected environmental impacts? | none |
| (Possible) funding: | Connecting Europe Facility 2 (CEF2) | |
| Status and next steps (incl. timing): | The procurement procedure for the upgrade of the wl forecast needs to be launched by the end of March 2025. | |
| **RO 13: Support customer-friendly processing and dissemination of information**<br>**Support the upgrade of IENCs with bathymetric information** | | |
| Status and next steps (incl. timing): | In summer 2023 the bENC application was purchased, after a training period for the personnel the first 10 bathymetric ENC cells were created. | |
| **RO 14: Support improvement of meteorological information** | | |
| Status and next steps (incl. timing): | Currently no major activities planned. | |
| **RO 15: Support acquisition of sensors to measure vertical bridge clearance** | | |
| Planned activities: | Within FAIRway Danube II: Procurement of 5 bridge clearance sensors (AFDJ) | |
| Environmental relevance of planned activities: | What are the main expected environmental impacts? | none |
| (Possible) funding: | Connecting Europe Facility 2 (CEF2) | |
| Status and next steps (incl. timing): | The procurement is planned to start in summer 2024. | |

# 8. Bulgaria

## 8.1. BG | Monitoring of GNS "hard" components

### 8.1.1. BG | Status of TEN-T minimum requirement: availability of the navigation channel

**Number of days with fairway depths ≥ 2.50m at main critical locations 2014-2022**
*for a fairway width of 80m (CEMT class VII); very critical locations are marked grey*

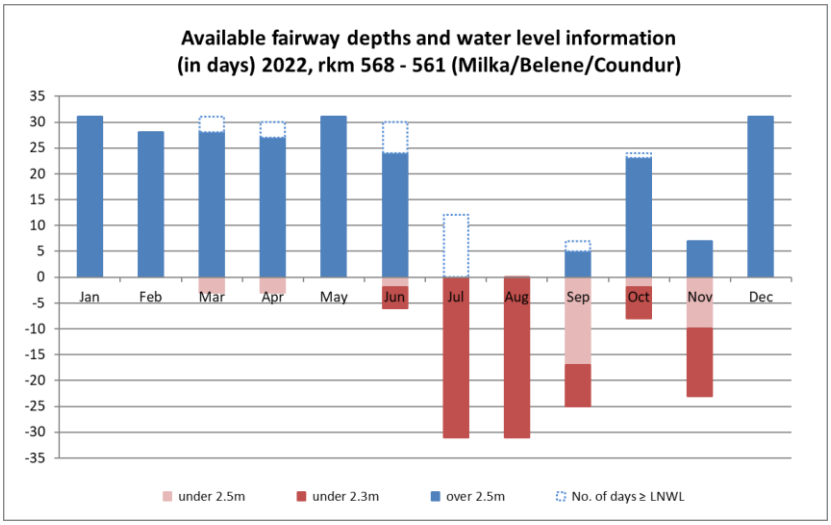
| Critical location rkm from-to | Critical location name | 2014 | 2015 | 2016 | 2017 | 2018 | 2019 | 2020 | 2021 | 2022 |
|---|---|---|---|---|---|---|---|---|---|---|
| km 569 - km 561 | Belene island Milka island Kondur island | 337 | 212 | 273 | 220 | 280 | 277 | 340 | 307 | 207 |
| km 548 - km 540 | Vardim island | 360 | 268 | 327 | 316 | 289 | 343 | 363 | 321 | 265 |
| km 539 - km 530 | Yantra River Giska Island | 360 | 253 | 306 | 337 | 330 | 343 | 359 | 321 | 290 |
| km 525 - km 520 | Batin island | 352 | 246 | 295 | 288 | 285 | 309 | 363 | 312 | 267 |
| km 458 - km 455 | Brashlian island | 365 | 365 | 313 | 263 | 297 | 329 | 351 | 316 | 270 |
| km 426 - km 420 | Kosui island Dunavets island | 365 | 322 | 366 | 365 | 342 | 318 | 347 | 320 | 295 |
| km 408 - km 399 | Popina island | 365 | 311 | 304 | 269 | 293 | 313 | 361 | 342 | 285 |

**Number of days with water levels ≥ LNWL at main critical locations 2014-2022**

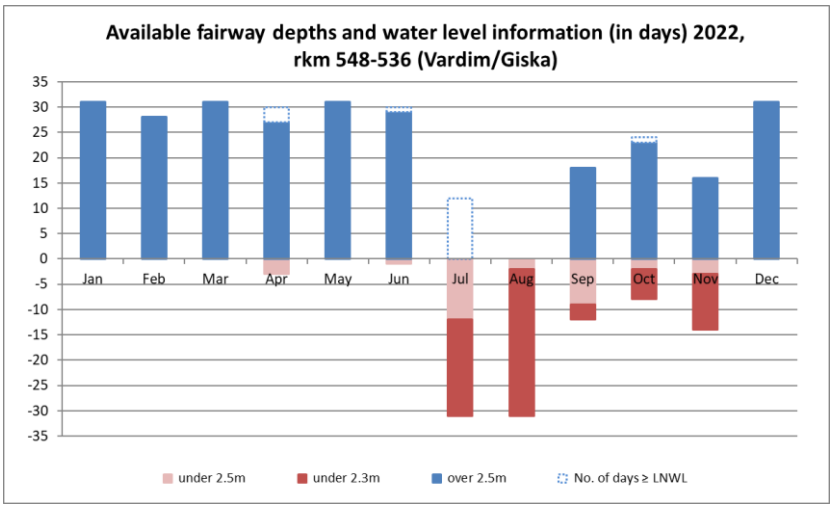
| Critical location | Reference gauges | 2014 | 2015 | 2016 | 2017 | 2018 | 2019 | 2020 | 2021 | 2022 |
|---|---|---|---|---|---|---|---|---|---|---|
| 567.00-566.70 – Belene island<br>562.00-561.50 – Coundur/ Milka island<br>541.60-541.00 – Vardim island<br>538.50-537 – Giska island | Svishtov km 54.300 | 365 | 285 | 348 | 334 | 293 | 298 | 350 | 317 | 262 |
| 523.80-523.20 – Batin island<br>475.70-475.30 – Gostin island | Ruse km 495.600 | 365 | 288 | 348 | 339 | 295 | 303 | 350 | 317 | 254 |
| 425.90-425.20-Kosui island | Silistra km 375.500 | 365 | 293 | 348 | 343 | 288 | 290 | 342 | 310 | 245 |

| | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|
| 391.60-391.10 – Vetren island<br>383.50-382.50 – Chajka island | | | | | | | | | | |

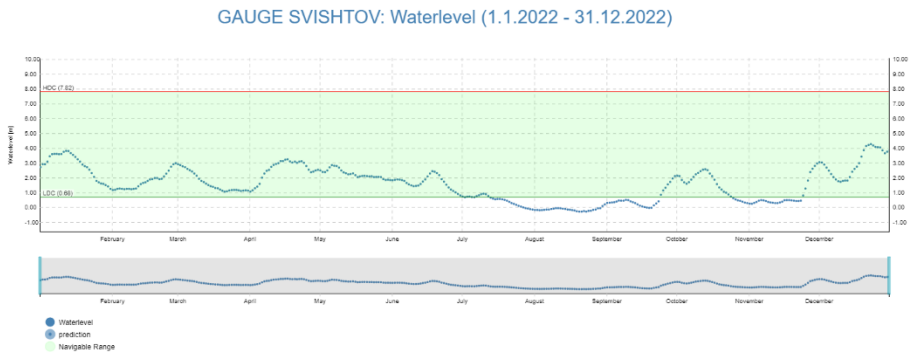
Number of days with recorded water levels under LNWL: 105 days (which is 31% of the year 2022).
Number of days with below normal water level/below the multiyear average for the day: 277 days (which is 76% of the year).




On 69 days historically low water levels were recorded for that specific day. The lowest water level for Ruse station (-) 72 cm was recorded on 22.08.2022 and 23.08.2022, which is only one centimeter for the absolute minimum measured in 2003. For the Svishtov gauging station, the lowest water level was (-) 29 cm, which was recorded on 20.08.2022, 21.08.2022 and 23.08.2022, bringing us closer to the absolute minimum of (-) 55 cm, measured in 2003.




In 2022, the target fairway depth of 2.50m was achieved only on 207 days for 80m fairway width and on 224 days for 60m fairway width. The most critical bottleneck for navigation was again the section in the Belene Island area (rkm 565.000 – rkm 563.000) with a depth of 19 to 14 dm and a fairway width of 60 m on 141 days.



#### 8.1.2. BG | Status of TEN-T minimum requirement: availability of minimum height under bridges

Important remark: Bulgaria does not yet calculate and publish information on the minimum height under bridges. Within the FAIRway Danube II project Romania will develop this task for the bridges between Bulgaria and Romania; information on compliance with this TEN-T minimum requirement will be published as soon as possible

## 8.2. BG | Monitoring of GNS "soft" components

#### 8.2.1. BG | Status of and outlook on needed actions according to the updated FRMMP

| | | |
|---|---|---|
| **BG 01: Support acquisition of up-to-date monitoring equipment, in particular sensors (incl. possibly ACDP, MB sensor)** | | |
| Planned activities: | New hydrographic equipment will be delivered under the project „Improvement of the navigation conditions on the Danube river through delivery of hydrographic equipment"<br>Within the project FAIRway Danube II: Upgrade of one existing surveying vessel with new sensor | |
| Environmental relevance of planned activities: | What are the main expected environmental impacts? | none |
| (Possible) funding: | Operational Programme "Transport and Transport Infrastructure 2014-2020"<br>Connecting Europe Facility 2 (CEF2) | |
| Status and next steps (incl. timing): | „Improvement of the navigation conditions on the Danube river through delivery of hydrographic equipment" is approved under the OP, procurements are pending.<br>Procurement of the new sensor for the surveying vessel is planned to start by the end of March 2024 | |
| **BG 02: Support acquisition of new or upgrade of existing gauging stations** | | |
| Planned activities: | Upgrade of 17 gauging stations planned within FAIRway Danube II | |
| Environmental relevance of planned activities: | What are the main expected environmental impacts? | none |
| (Possible) funding: | Connecting Europe Facility 2 (CEF2) | |
| Status and next steps (incl. timing): | The procurement procedure for upgrading the gauging stations needs to be launched by the end of March 2024. | |
| **BG 03: Secure education and provision of well-trained staff in the short, medium and long term** | | |
| Status and next steps (incl. timing): | No specific action is envisaged at the moment. | |
| **BG 04: Support further development of the existing waterway management tool (WAMS)** | | |
| Planned activities: | Further development of WAMS within FAIRway Danube II project | |
| Environmental relevance of planned activities: | What are the main expected environmental impacts? | none |
| (Possible) funding: | Connecting Europe Facility 2 (CEF2) | |
| Status and next steps (incl. timing): | The procurement procedure for upgrading the WAMS needs to be launched by the end of March 2024. | |
| **BG 05: Support acquisition of up-to-date self-propelled dredging equipment** | | |
| Planned activities: | Procurement of dredging equipment | |

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| Environmental relevance of planned activities: | What are the main expected environmental impacts? | none |
| (Possible) funding: | (National) Transport Connectivity Programme 2021-2027 | |
| Status and next steps (incl. timing): | Bulgarian transport ministry already approved the integration into the current Operational Programme; preparation of feasibility study and technical specification in 2024; start of tender procedure earliest 2025. | |
| **BG 06: Support implementation of capital dredging to reduce the number of needed interventions** | | |
| Status and next steps (incl. timing): | Apart from maintenance dredging (see below) no capital dredging is foreseen at the moment. | |
| **BG 07: Secure budget resources for maintenance dredging operations** | | |
| Planned activities: | Framework contract for a total volume of 900,000m3 to be used between 2022 and 2024 is in place (contract expires in 2024 or after the total volume is dredged – whichever comes first) | |
| Environmental relevance of planned activities: | What are the main expected environmental impacts? | No permanent impacts expected. The dredging plan is sent to the Ministry of Environment and Water for basic approval every year. During the year, before actual dredging is performed, EAEMDR notifies the Danube Basin Directorate (an entity inside the Ministry of Environment and Water) about the location of the dredging activities and the area where the sediment will be deposited again. Apart from the Srébarna Biosphere Reserve downstream of Silistra, EAEMDR can carry out dredging in the waterway. Consideration must be given to fish habitats and critical times (especially spawning times) when planning dredging operations. |
| | Which measures are taken to mitigate these impacts? | |
| | Is water status expected to deteriorate? | no |
| (Possible) funding: | State budget | |
| Status and next steps (incl. timing): | EAEMDR has its own dredging equipment; its use is more cost-effective; usage of own equipment envisaged | |
| **BG 08: Support acquisition of intelligent marking system, including AIS AtoNs**<br>**Support the establishment of an automated monitoring system, including the dissemination of current marking information** | | |
| Planned activities: | EAEMDR is a partner in the planned project DISMAR – Danube Integrated System for MARking in which the marking system on the RO-BG border stretch will be modernised. | |
| Environmental relevance of planned activities: | What are the main expected environmental impacts? | none |
| (Possible) funding: | INTERREG IV-A Romania- Bulgaria Programme 2021 – 2027 | |
| Status and next steps (incl. timing): | The project proposal is under evaluation. Deadline for submission of AF was 11.09.2023. | |
| **BG 09: Support acquisition of state-of-the-art vessel equipped with advanced machines to perform marking operations** | | |
| Status and next steps (incl. timing): | Currently no further activities planned. | |
| **BG 10: Secure education and provision of well-trained staff in the short, medium and long term** | | |

| | | |
|---|---|---|
| Status and next steps (incl. timing): | Currently no activities planned. | |
| **BG 11: Support customer-friendly processing and dissemination of information, incl. bathymetric IENCs** | | |
| Planned activities: | The upgrade of the BG water level forecast is planned within FAIRway Danube II | |
| Environmental relevance of planned activities: | What are the main expected environmental impacts? | none |
| (Possible) funding: | Connecting Europe Facility 2 (CEF2) | |
| Status and next steps (incl. timing): | Start of the procurement procedure is not yet defined. | |