

Fairway Rehabilitation and Maintenance Master Plan for the Danube and its navigable tributaries:

NATIONAL ACTION PLANS

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1 Executive summary

These action plans illustrate the status and planned next steps for rehabilitation and maintenance activities in the Danube riparian countries. It is based on 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. By means of the action plans at hand, the **implementation status of the Master Plan shall be monitored**. Continuous updates are foreseen to provide the necessary information. This document provides the altogether third update of the Master Plan and comprises an overview of the fairway situation in 2015. Furthermore, taken and planned measures as well as the resulting budget needs and potential financing gaps 2016 are illustrated. In addition to the Action Plans provided up to now, this edition also includes information of the ecological status of the Danube and the relevant aspects, e.g. legal permits, related to maintenance and rehabilitation measures.

According to the Danube River Basin Management Plan 2015 by the International Commission for Protection of the Danube River (ICPDR), the **majority of the Danube is classified as heavily modified water body with moderate or worse ecological potential**. In order to achieve good ecological potential and status (natural water bodies) as required by the Water Framework Directive, **an integrated planning approach is applied in the Danube countries** as regards navigational maintenance and rehabilitation measures.

Fairway conditions were very difficult along the whole Danube in 2015. Water discharge was significantly below the multi-annual average on the Upper as well as on the Middle and Lower Danube. Combined with **insufficient maintenance works** in many Danube countries (and required capital interventions), this led to very unfavourable fairway conditions – like long waiting times, blockages of the fairway or vessel groundings in some areas. On **a large part of the main critical maintenance and rehabilitation sections** along the Danube, the **recommended fairway depth of 2.5m¹ at Low Navigable Water Level² was not achieved**. Especially on the **Lower Danube**, some summer months showed complete failure of the 2.5m target. However, in **some Danube sections**, fairway depths just slightly below the 2.5m threshold could be provided.

Considering these extraordinarily bad hydrological conditions in 2015, **more targeted maintenance and rehabilitation measures** including **sufficient national budgets** could have significantly contributed to the achievement of the recommended Levels of Service in some critical sections.

The operational expenditures for 2015 per country and required operational budgets for 2016 are at a comparable size in most of the countries besides Bulgaria, Hungary and Ukraine. **Major operational budget gaps for 2016** in order to reach the recommended minimum Levels of Service

¹ In some river sections however - 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. Specific target values apply, e.g. 2.0m in Germany between Straubing and Vilshofen.

² 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.

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appear in **Hungary (about 900.000 EUR), Romania (about 400.000 EUR), Bulgaria (about 1.3 mln EUR) and Ukraine (about 1.3 mln EUR).**

In order to achieve better fairway conditions and to avoid critical situations in the year 2016, **significant efforts have to be made as soon as possible**, including securing the necessary national operational budgets.

Investments in maintenance and rehabilitation have been taken 2015 and will be intensified in 2016, mainly within the framework of the recently started **CEF project FAIRway**. In this project, which runs until 2020, European funds contribute a major share of the necessary investment. In some countries, **major shares of the investment needs until 2020 as stated in the Master Plan are not secured yet**. The national contributions via (co-)financing are sometimes not sufficient.

2 Introduction

Purpose of action plans

In their conclusions of 3rd December 2014 regarding the Fairway Rehabilitation and Maintenance Master Plan for the Danube and its Navigable Tributaries, a large majority of the Danube Transport Ministers agreed to “take the necessary measures (...) to deal within the framework of fairway maintenance with the critical fairway sections identified in the Master Plan, to establish for this purpose national roadmaps which identify individual actions, responsibilities, funding resources and intermediate milestones for the implementation of these measures and to communicate these roadmaps by 30th June 2015 to the relevant coordinating bodies”. This is in line with Regulation (EU) No 1315/2013 of the European Parliament and of the Council of 11 December 2013 on Union guidelines for the development of the trans-European transport network, obliging EU Member States to preserve a good navigation status, while respecting the applicable environmental law. In the Danube Region the “Joint Statement on Guiding Principles for the Development of Inland Navigation and Environmental Protection in the Danube Basin”, endorsed in 2007 by the ICPDR (International Commission for the Protection of the Danube River), Danube Commission and the International Sava River Basin Commission (ISRBC), thereby is a key tool providing guidance for the planning and implementation of waterway projects.

In general, the national action plans at hand **create a high level of transparency** which was not available in the years before. Detailed information on operational rehabilitation and maintenance activities are presented. The Master Plan and the corresponding FAIRway action plans have therefore opened the black box of previously nationally oriented waterway management approaches for all involved stakeholders. **Transparent illustration of planned and implemented measures** allows coordinated action on national as well as corridor level. **Cost and budget information** allows evaluating efficiency and improving the capability to act on the long run.

The basic maintenance philosophy applied throughout the Master Plan is an important step towards **implementing the most effective, environmentally sound and cost-efficient measures possible**. Improved monitoring/surveying activities create the needed high quality data basis to identify the best measures including **exploiting the potential of fairway realignment** to the maximum extend where possible and reduce dredging interventions as much as possible and purposeful.

Scope of action plans

Based on the ministerial conclusions of December 2014, Priority Areas 1a of the EU Strategy for the Danube Region initiated the elaboration of national action plans in spring 2015. They follow a harmonized structure in order to provide an improved overview of actions taken and planned along the Danube.

The action plans shall be updated continuously in order to serve as a proper monitoring and documentation tool as regards planning of budget and activities. Contents for these updates will be provided in the framework of the CEF-financed FAIRway project which requires a biannual update (October and May) for additional steering purposes for the countries that are project partners (Austria, Slovakia, Hungary, Croatia, Romania, Bulgaria). The remaining Danube riparian

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countries are integrated via PA1a – Inland Waterways of the European Strategy for the Danube Region and will be asked to contribute data once a year (May). In the **October update**, building on the status report as regards critical locations, hydrological conditions and rehabilitation and maintenance activities undertaken in the course of the year, the focus is laid on the **resulting budget needs** and – if already available – information on **the allocated budget for the coming calendar year**. This shall support effective planning of activities and financing.

The **May update** shall provide a possibility to finetune the budget and activity planning for the ongoing year. Furthermore, data on the **status of critical locations, hydrological conditions and implemented measures for the full preceeding year** will be provided.

The **summarising tables on cost and budget** in this report 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, to indicate financing needs and to outline the shares of national and European funding**.

The Master Plan and the action plans are designed as living documents. This means that their structure and content will be elaborated in order to provide the most benefit for the maintenance and rehabilitation process of the Danube and its navigable tributaries. The aim is to standardize and simplify the data gathering process as much as possible, the use of electronic support tools is envisaged.

Scope of current report

This document updates the second National Action Plan of October 2015 for the Fairway Rehabilitation and Maintenance Master Plan for the Danube and its Navigable Tributaries. It is the second action plan to be elaborated within the FAIRway project.

It focuses on the most critical sections as identified by a sample of 24 important shipping organisations and waterway administrations in December 2014. From the user perspective, the locations and stretches marked yellow in the map and listed in the table below cause the biggest navigational problems and should consequently be treated with the highest priority. For reporting purposes, some of the locations have been grouped in the country chapters.

In some country chapters, a number of critical sections have been added to the ones selected by the shipping organisations. This was the case if the responsible waterway administrations considered it necessary to report on the status of these locations in addition due to their critical state.

As a general remark, it has to be stated that the exact situation of the critical sections varies over the years due to the intense dynamics of the river.

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location and length (km)			right bank / left bank	name of sector or location
river-km (from - to)		length		
2,321.70	2,312.00	9,50	DE / DE	Straubing (lock)–Straubing-Sand (port)
2,312.00	2,282.50	29,70	DE / DE	Straubing-Sand (port)–Deggendorf
2,282.50	2,249,90	32,50	DE / DE	Deggendorf – Vilshofen (backwater Kachlet)
2,014.00	2,013.50	0,50	AT / AT	Weißkirchen
2,010.20	2,008.90	1,30	AT / AT	Dürnstein
1,888.40	1,887.60	0,80	AT / AT	Treuschütt
1,884.70	1,883.50	1,20	AT / AT	Hainburg
1,735.50	1,733.70	1,80	HU / SK	Nyergesújfalu
1,698.00	1,697.00	1,00	HU / HU	Dömös
1,638.40	1,637.40	1,00	HU / HU	Budafok
1,559.80	1,559.70	0,10	HU / HU	Dunaföldvár
1,558.50	1,557.50	1,00	HU / HU	Solt
1,408.20	1,400.00	8,20	HR / RS	Apatin
309,00	308,00	1,00	RO / RO	Cochirleni
568,20	567,80	0,40	BG / RO	Milka Island
567,00	566,70	0,30	BG / RO	Belene Island
562,00	561,50	0,50	BG / RO	Coundur Island
541,60	541,00	0,60	BG / RO	Vardim Island
538,50	537,00	1,50	BG / RO	Giska Island
425,90	425,20	0,70	BG / RO	Kosui Island

Recommended Levels of Service

Notwithstanding the provisions of the TEN-T Regulation (1315/2013), the "European Agreement on Main Inland Waterways of International Importance" (AGN) and the "Recommendations on Minimum Requirements for Standard Fairway Parameters, Hydrotechnical and Other Improvements on the Danube" published by the Danube Commission, the waterway management experts represented in the project NEWADA duo³ recommended different minimum Levels of Service for the different phases in the waterway maintenance cycle. The recommended minimum Level of Service related to fairway depth for the Danube and its navigable tributaries was thereby defined as **2.50 m at Low Navigable Water Level** (LNWL or ENR / Étiage 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. In some river sections however, e.g. in Germany⁴, 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.

This "deep fairway channel" should be available already prior to low - water periods to prevent obstacles to navigation already in advance. Once a fairway depth of 2.5m at LNWL (ENR) for this minimum fairway width (minimum LoS) has been established by dredging or realigning the course of the fairway, the recommended fairway widths shall be maintained in their entirety according to the 2013 Danube Commission Recommendations (Section 7.2.2. of the "Recommendations on Minimum Requirements for Standard Fairway Parameters, Hydrotechnical and Other Improvements on the Danube").

The targeted minimum widths of the fairway (NEWADA duo Level of Service 1) are provided below.

- 40 – 80 m in Austria (CEMT class VIb-VIc)
- 60 to 100 m in Slovakia and on the Slovakian – Hungarian border section (CEMT class VIb – VIc)
- 80 to 120 m in Hungary (CEMT class VIb – VIc)
- 80m in Croatia, Serbia, Romania and Bulgaria (including border sections, excluding the maritime Danube). No range for bend radii is defined, as there is usually no passing of vessels and convoys in bends in these sections. Reference vessels for Croatia: (3x2 or 2x3 barges; CEMT class VI C.) Reference vessels for Serbia (CEMT class VIc-VII); reference vessels for Romania and Bulgaria (CEMT class VII)

³ <http://www.newada-duo.eu/>

⁴ In addition, Germany was not a project partner in NEWADA duo and thus did not agree to the NEWADA duo Levels of Service. For the section Straubing-Vilshofen, 2.0m are set as target value by the German waterway administration

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The overall aim is to implement the recommended Levels of Service on the fairway with reduced physical interventions, which lowers cost as well as environmental impacts. The key precondition to achieve this aim is to establish an improved information basis on the actual status of the critical waterway locations. In order to be able to monitor the development of the “deep fairway channel” (minimum LoS), to decide on the optimum measures under the given circumstances and to provide the users of the waterway with the needed information on a regular basis, monitoring of fairway depths at critical locations has to take place at high frequency (at least once a month). Only such a high quality decision basis allows designing more effective and efficient measures. With the few exceptions mentioned above, this recommended Level of Service should normally be achievable with conventional maintenance measures (ranging from surveying, fairway marking/relocation to dredging), that is, without structural interventions on the infrastructure. Thus, the Master Plan lists measures and cost not only related to dredging, but also for related processes such as surveying or data analysis. Capital dredging – main structural interventions - is not addressed in general.

Multifunctional use of rivers

Apart from the impact of navigation laws on rehabilitation and maintenance activities, further legislation related to aspects like forest, fishery, flood risk and environment need to be taken into account. These Action Plans shall elaborate particularly on the environmental aspects of the measures taken.

Official notifications or permits are needed from the competent national authorities related to water law, nature protection law, and (in some countries) national park law in the context of waterway maintenance measures. 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).

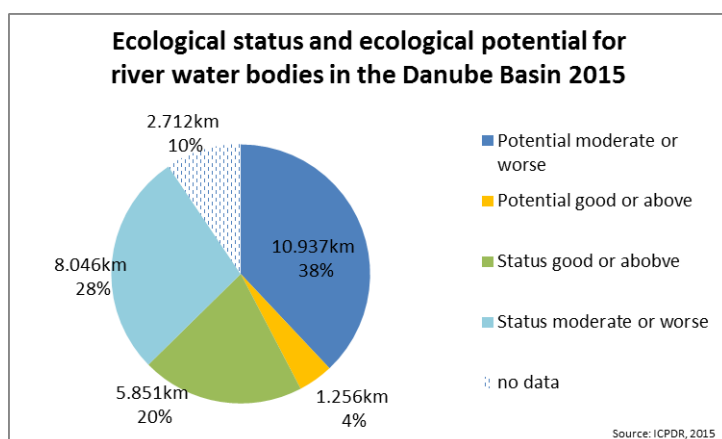
Implications of the Water Framework Directive

The **Water Framework Directive** requires Member States in Article 4.1(a) (i) to “implement the necessary measures to prevent deterioration of the status of all bodies of surface water”. Another goal is to protect, enhance, (and restore) these water bodies in order to reach or keep the good chemical and ecological status (or potential, if the water body is classified as heavily modified or artificial) until 2015. An assessment of the situation and measures towards the achievement of these goals must be laid down in River Basin Management Plans. As achieving these goals by 2015 is not realistic for all water bodies, updates of the plans were/are foreseen in 2015 and 2021.

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The International Commission for the Protection of the Danube River has currently updated the Danube River Basin Management (DRBM) Plan by end 2015⁵. The plan addresses the key issues requiring joint actions on the basin-wide level (Level A) and is accompanied by more detailed plans on the national level (Level B).

According to the Danube River Basin Management Plan 2015-2021, about 20% of the Danube river basin surface waters have a status good or above (which is the ultimate aim within the WFD), about 4% show a good or above potential. About 49% of the River Water Bodies are at risk or possibly at risk to achieve good ecological status by 2021, about 40% of that share is due to future or ongoing alterations.



The plan also states that “hydropower generation, navigation and flood protection are the key water uses that cause hydromorphological alterations. (...) The alteration of natural hydromorphological conditions can have negative effects on aquatic populations, which might result in failing the EU WFD environmental objectives.”

According to a decision of the European Court of Justice in 2015⁶ as regards a dredging project on the river Weser, the following two main conclusions as regards application of the WFD in practice can be derived and may also serve as guidelines for practical implementation of maintenance and rehabilitation measures on the Danube and its navigable tributaries⁷:

1. Article 4.1(a) (i) to (iii) of the Water Framework Directive must be interpreted as meaning that the Member States are required – unless derogation is granted – to refuse authorization for a specific project if it may lead to a deterioration of the status of a body of surface water, or where it jeopardises the attainment of good surface water status, or of good ecological potential and good surface water chemical status by the date laid down by the Directive.
2. The term "deterioration of the status" of a body of surface water, as described in Article 4.1(a) (i), must be interpreted as meaning that a deterioration exists as soon as the status of at least

⁵ <http://www.icpdr.org/main/activities-projects/river-basin-management>

⁶ A ECJ process between the Federal Republic of Germany and the German Federation for the Environment and Nature Conservation (Bund für Umwelt und Naturschutz Deutschland e.V.); (Case C-461/13)

⁷ For more information, see the Weser press release: <http://curia.europa.eu/jcms/upload/docs/application/pdf/2015-07/cp150074en.pdf>

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one quality element, according to Annex V of the Directive, deteriorates by one class –even if this deterioration does not lead to a deterioration in the classification of the respective body of surface water altogether. If a quality element according to Annex V is however already in the lowest class, any deterioration of that respective element constitutes a "deterioration of the status" of the body of surface water.

Based on practical experience of waterway administrations, maintenance activities do not have significant negative influence on the status of a waterway in the majority of cases⁸. However, in cases where maintenance activities are liable to cause deterioration of the water status or put at risk the achievement of environmental objectives, they may only be authorised when all conditions under the exemption of article 4(7) WFD are met:

- (a) all practicable steps are taken to mitigate the adverse impact on the status of the body of water;
- (b) the reasons for those modifications or alterations are specifically set out and explained in the river basin management plan required under Article 13 and the objectives are reviewed every six years;
- (c) the reasons for those modifications or alterations are of overriding public interest and/or the benefits to the environment and to society of achieving the objectives set out in paragraph 1 are outweighed by the benefits of the new modifications or alterations to human health, to the maintenance of human safety or to sustainable development, and
- (d) the beneficial objectives served by those modifications or alterations of the water body cannot for reasons of technical feasibility or disproportionate cost be achieved by other means, which are a significantly better environmental option.

For small projects that do not fall within the scope of the EIA Directive (85/337/EEC), a generic approach can be used within this procedure in order to reduce the assessment burden⁹.

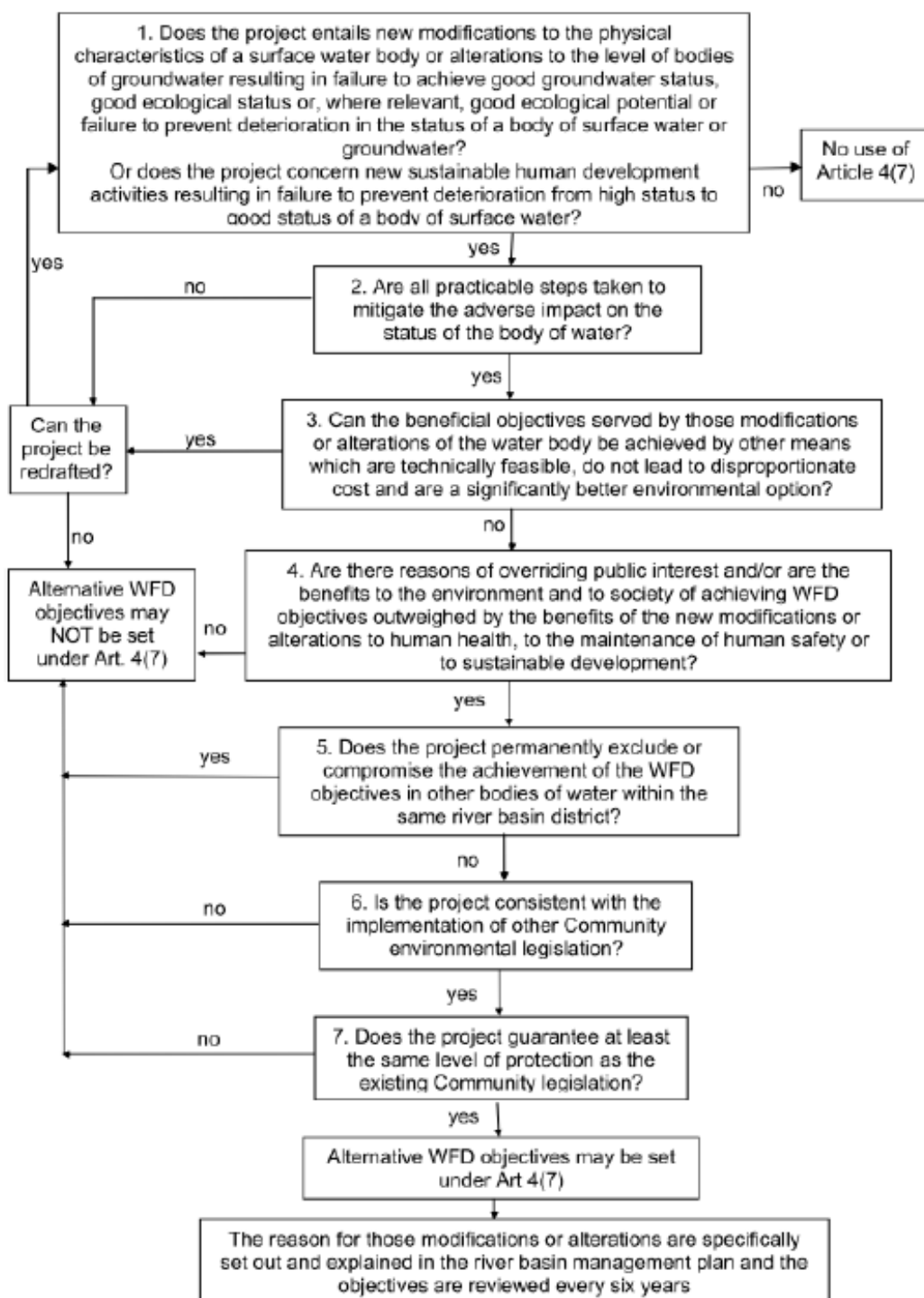
The DRBM Plan lists Key Future Infrastructure Projects (FIP) for navigation in its Annex and assesses it regarding their compliance with the WFD objectives and potential applicability of Art 4(7). The FIP comprise solely capital interventions.

The following figure¹⁰ provides an example for an iterative approach regarding application of Art 4(7):

⁸ See, e.g., „Leitfaden Umweltbelange bei der Unterhaltung von Bundeswasserstraßen“, Bundesminister für Verkehr und digitale Infrastruktur, Bundesanstalt für Gewässerkunde (Hrsg.), Bonn, 2015, p.12

⁹ Common Implementation Strategy for the Water Framework Directive (2000/60/EC), Guidance Document No 20 on exemptions to the environmental objectives, European Communities, Luxembourg, 2009 , p.25

¹⁰ Idem, p.26



NATURA 2000

Natura 2000 sites are not excluded from further infrastructural development. Planned projects need to be assessed regarding their impact on existing genetics, species and ecosystem diversity and, if necessary, rejected or accepted with conditions.

As it is the case within the Water Framework Directive, maintenance activities are usually not seen as “project” as defined by the Habitats Directive. Thus, a full impact assessment is only necessary in exceptional cases¹¹. However, if a maintenance measure might have a significant influence as regards the objectives of the Habitat Directive, an assessment has to be performed. In this case, basically the same (but strongly simplified) procedures apply as within a standard impact assessment. For further guidance on application of the Birds and Habitats Directives in navigation related activities, a reference is made to the Guidance Document on Inland Waterway Transport and Natura 2000¹², issued by the European Commission's Directorate-General for Environment in 2012.

Application of Joint Statement principles

In October 2007, a "Joint Statement on Inland Navigation and Environmental Sustainability in the Danube River Basin" was concluded by the ICPDR, the Danube Commission and the International Sava Commission. It is in essence aimed at finding the balance between good ecological status (as required by the WFD) and good navigation status (as required by article 15(3)b of the TEN-T guidelines).

The Joint Statement (...) “addresses, first of all, structural interventions and measures on rivers serving inland waterway transport; non-structural measures will also have to be undertaken to successfully upgrade and sustain inland waterway transport economically. (...) Full respect of the existing legal framework, including all relevant transport and environment legislation (national legislation, EU directives and international requirements), is a pre-condition for any activity in the Danube region.”

Some of the most important principles included in the Joint Statement refer to the early **involvement of key stakeholders** and the **creation of a transparent planning process based on comprehensive data**. The Master Plan as such and the continuous update of national action plans have been also created for this reason.

In the years after 2007, the responsible government authorities and interest groups met regularly to discuss the progress achieved so far and how to improve the application of the Joint Statement in waterway projects. Activities on the Fairway Rehabilitation and Maintenance Master Plan have also been presented in the framework of these regular meetings, as well as in the context of the interdisciplinary PA1a Steering Group meetings of the European Union Strategy for the Danube Region.

¹¹ Common Implementation Strategy for the Water Framework Directive (2000/60/EC), Guidance Document No 20 on exemptions to the environmental objectives, European Communities, Luxembourg, 2009 , p.25

¹² http://ec.europa.eu/environment/nature/natura2000/management/docs/IWT_BHD_Guidelines.pdf

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The rehabilitation and maintenance measures and activities monitored within the context of the Master Plan (surveying, fairway relocation, dredging and better information) have the character of reversible interventions, as recommended by the Joint Statement. **Effects of measures are monitored and – if relevant – adapted** in the context of the national permitting processes. The overall effects of measures shall be summarised in the action plans at hand.

Lastly, the transboundary FAIRway Danube project and the EUSDR support the **use of best practice measures** to improve navigation through the established cooperation mechanisms between waterway administrations.

The FAIRway project

The FAIRway project (07/2015 – 06/2020) is the main overarching initiative to implement the activities of the Danube Fairway Master Plan. Seven project partners represent six riparian states (viadonau (Austria), ARVD - Waterborne Transport Development Agency (Slovakia), OVF - Orszagos Vizugyi Foigazgatosag together with NDA - Nemetzeti Infrastruktura Fejlesztzo Zrt. (Hungary), AVP - Agencija za vodne putove (Croatia), EAEMDR - Executive Agency for Exploration and Maintenance of the Danube River (Bulgaria), AFDJ - Administration of the Lower Danube (Romania), ACN - Administration of the Navigable Canals (Romania)).

As a first step, FAIRway coordinates the updates of the national action plans of the countries participating in the project. The remaining countries (Germany, Bosnia and Hercegovina, Serbia, Moldova and Ukraine) were invited to provide their contributions via the EU Strategy for the Danube Region (Priority Area 1a on Inland Waterways). The related country chapters are attached to this report as an Annex. Further activities within FAIRway comprise:

- Outlining of pilot activities for hydrological services based on the national action plans
- Coordinated purchase of advanced equipment for hydrological services (gauging stations, surveying vessels etc.)
- Realization and Evaluation of pilot activities:
 - Basic data for all critical sections
 - Coherent monitoring scheme for the navigation status
 - Harmonised water level forecasts
 - Optimized relocation of the fairway
- Develop innovative approaches
- Prepare documentation for selected future implementation measures

The FAIRway budget amounts to 23.4 Mio €, including an EU co-financing (CEF) of 19.6 Mio €.

Adoption of action plans

The action plans are prepared within the FAIRway project. The FAIRway Steering Committee will be asked to approve the action plans for the countries participating in the project (Austria, Slovakia, Hungary, Croatia, Romania and Bulgaria) from a technical point of view. However, the Steering Group of PA1a remains the body responsible for final coordination and adoption of the action plans for all Danube riparian countries.

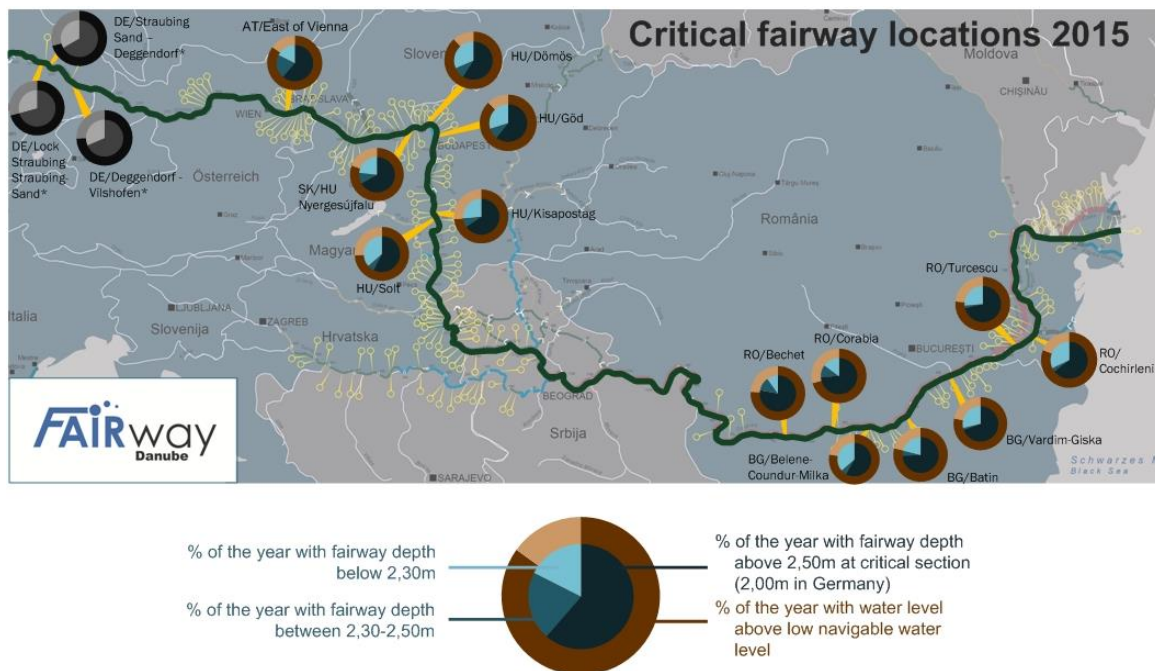
3 Synthesis and conclusions

3.1 Fairway conditions

Fairway conditions were extremely difficult along the whole Danube in 2015. On the Upper as well as the Middle and Lower Danube, **water discharge was significantly below the multi-annual average.** Combined with **insufficient maintenance works** in many Danube countries (and required structural interventions), this led to a very unfavourable situation. From June until December, long waiting times and blockages of the fairway occurred, even vessel groundings were reported in some areas during the summer months¹³.

The next figure provides a **status overview of the main critical locations on the Danube in 2015.** Locations are only displayed if they were mentioned in the Master Plan 2014 by the waterway administrations and showed a critical status in 2015. Data validation by the waterway users is currently ongoing. For each critical location, the figure illustrates the situation as regards **water levels (outer circle)** – i.e. the given hydrological framework conditions that can not be influenced by the waterway managers, **in combination with fairway availability (inner circle)** – i.e. the effectiveness of interventions by the waterway managers.

High water levels, measured at static gauging stations, do not automatically guarantee sufficient fairway depths over the fairway width which is required for navigation. Due to the intense dynamics in the free-flowing river sections, the morphology of the riverbed and thus fairway depth and/or width may change rapidly. Maintenance interventions are needed to provide the required fairway parameters under the given hydrological circumstances.



¹³ Data provided by waterway managers up until 7th May 2016

Synthesis and conclusions

The recommended **target** of the Fairway Rehabilitation and Maintenance Masterplan is to provide a **fairway depth exceeding 2.5 m¹⁴** on a number of days per year that is **equal or above the number of days showing an actual water level equal or above the statistical Low Navigable Water Level (LNWL)¹⁵**. *This situation would correspond to an equal share of the dark blue and the dark brown circle in the figure above.*

Key facts displayed in the “Critical fairway locations 2015” figure on the previous page:

The **recommended Level of Service of 2.5m fairway depth¹⁷** at Low Navigable Water Level could **not be reached on the majority of the main critical locations in 2015** (inner dark blue circle does not reach the level of the outer dark brown circle).

In **some sections, fairway depths just slightly below 2.5m could be provided for a substantial amount of time** (middle blue colour in the inner circle).

The critical sections on the **Lower Danube showed a comparably good performance over the year**, but an **extremely bad situation in the critical low water period over summer**. In a number of **summer months, no single day of a 2.5m fairway depth minimum** could be provided at the critical locations on the Lower Danube. Such complete failure to meet 2.5m for an entire month (or more) could not be observed on the Upper and Lower Danube.

Please note: **For detailed interpretation, the individual conditions of the critical sections illustrated in the country chapters of the Action Plans need to be taken into account**, as the causes, detailed locations and severity of the critical sections are strongly varying. For example, some sections continuously provide fairway depths just slightly below 2.5m. In addition, supporting measures like providing high quality information on the morphology of the critical section to skippers can improve navigability significantly.

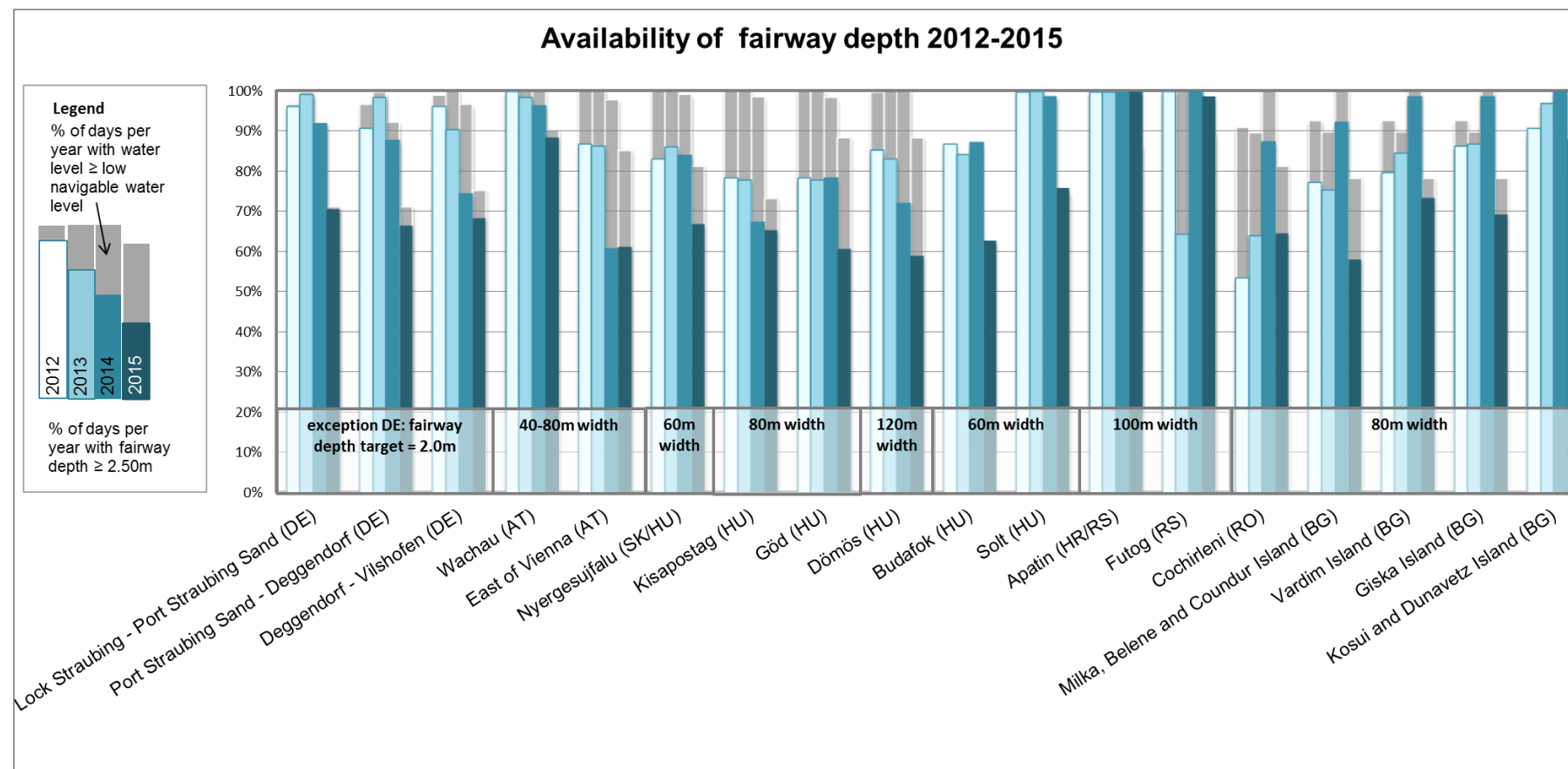
In the next figure, the **fairway availability of critical locations is compared with the previous years**. *Locations are displayed if they had been identified as critical by waterway users in 2014 and if data for 2012–2015 was available.*

Analogous to the first figure, the targeted availability of 2.5m fairway depth¹⁷ at Low Navigable Water Level would correspond to an *equal height of the blue (availability of 2.5m fairway depth) and the grey (water level above Low Navigable Water Level) columns in the figure below.*

The fairway widths in the figure are minimum widths for minimum Levels of Service which were defined based on the usual traffic volumes on the respective sections.

¹⁴ Or the respective target value relevant for the special section (e.g. 2.0 m in Straubing-Vilshofen on the German Danube)

¹⁵ 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



Key facts illustrated in the “Fairway availability 2012–2015” figure on the previous page:

Fairway availability varies quite intensely (predominantly dependent on hydrological conditions and implemented maintenance measures).

The figure clearly illustrates the (possible) gap between the available water levels and the actual fairway depths. **The sections for which the gap is the largest over the years, show the biggest need for maintenance and/or rehabilitation interventions.** Highly critical locations in terms of maintenance and rehabilitation can be identified: the section East of Vienna, the Hungarian Danube, the area around Milka/Belene/Coundur (BG) and Cochirleni (RO). In some Danube sections, measures that go beyond maintenance and rehabilitation would have been required in order to reach the recommended Level of Service.

As already mentioned, it is important to take the depth classes close to 2.5m into account when interpreting this graphic, as these provide a certain range of navigability although not meeting the 2.5m threshold: 2.4m and 2.3 m of fairway depth was provided on 77 days East of Vienna, on 36 days at Nyergesújfalu on 12 days in Cochirleni and on 20 days in the Belene/Milka/Coundur area.

3.2 Expenditures and budgets for maintenance and rehabilitation

Operational cost

Considering the extraordinarily bad hydrological conditions in 2015, **more targeted maintenance and rehabilitation measures and sufficient respective budget could have significantly contributed to the achievement of the recommended Levels of Service** in some critical sections.

The operational expenditures for 2015 and required operational budgets for 2016 are at a comparable size in most of the countries besides Bulgaria, Hungary and Ukraine. Bulgaria and Ukraine state budget needs of about four times the national expenditures for 2015, Hungary's need is about two times the expenditures for 2015.

In order to achieve better fairway conditions and to avoid critical situations in the year 2016, significant efforts have to be made as soon as possible, including securing the necessary national operational budgets. Major operational budget gaps in order to reach the recommended Levels of Service appear in **Hungary** (about 900.000 EUR), **Romania** (about 400.000 EUR), **Bulgaria** (about 1.3 mln EUR) and **Ukraine** (about 1.3 mln EUR). For the fields of work that show the budget gaps, please study the country sections.

Synthesis and conclusions

Need areas	Operational expenditures 2015	Required operational budget 2016	Secured operational budget 2016	Remaining financing gap 2016
Germany	1.908.200	150.000	150.000	0
Austria	8.074.684	7.629.278	7.629.278	0
Slovakia	3.177.491	2.870.000	2.870.000	0
Hungary	1.099.376	2.003.489	4.864.480	-881.678
Croatia	1.072.200	989.200	1.008.200	0
Bosnia&Herceg.	98.512	120.451	127.823	0
Romania	19.832.978	19.452.384	19.052.384	-400.000
Bulgaria	397.500	1.665.500	363.500	-1.302.000
Ukraine	395.987	1.755.012	463.612	-1.291.400

Maintenance expenditures and budgets in the table above comprise: riverbed surveying and maintenance dredging, marking of the fairway and availability of locks. Furthermore, water level gauges, information on water levels and forecast as well as on fairway depths and marking plans or meteorological conditions are included. Please note: In a number of cases, the expenditures and budget figures are not directly comparable between the countries due to different accounting practices¹⁶. For detailed analyses, the country sections of the Action Plans must be taken into account.

Investment cost

Investments in maintenance and rehabilitation have been taken 2015 and will be intensified in 2016, mainly within the framework of the recently started **CEF project FAIRway Danube**. In this project, which runs until 2020, European funds contribute a major share of the necessary investment. In most of the countries, **large parts of the investment needs until 2020 as stated in the Master Plan (which amount to ~86 Mio €) are not secured yet**. The national contributions via (co-) financing are still **not sufficient** for some countries.

3.3 Environmental impacts

According to the Danube River Basin Management Plan 2015 by the International Commission for Protection of the Danube River (ICPDR), the majority of the Danube is classified as heavily modified water body with moderate or worse ecological potential. In order to achieve good ecological potential and status (natural water bodies) as required by the Water Framework Directive, an **integrated planning approach is applied in the Danube countries** as regards navigational maintenance and rehabilitation measures. Information on environmental measures and legal permits related to dredging interventions is provided in the country chapters.

¹⁶ Serbia and Moldavia have not provided budget data. German data only comprises definable efforts, while actual operational costs are substantially larger due to intangible in-house expenses for these sovereign tasks. Data from Romania includes the Danube Fairway and the Danube Black Sea Canal and thus also illustrates expenditures for 2015 (11.103.425 €) and required and available budget for 2016 (10.841.032€) for lock maintenance in the latter. In Romania, the budget figures 2016 are still preliminary.

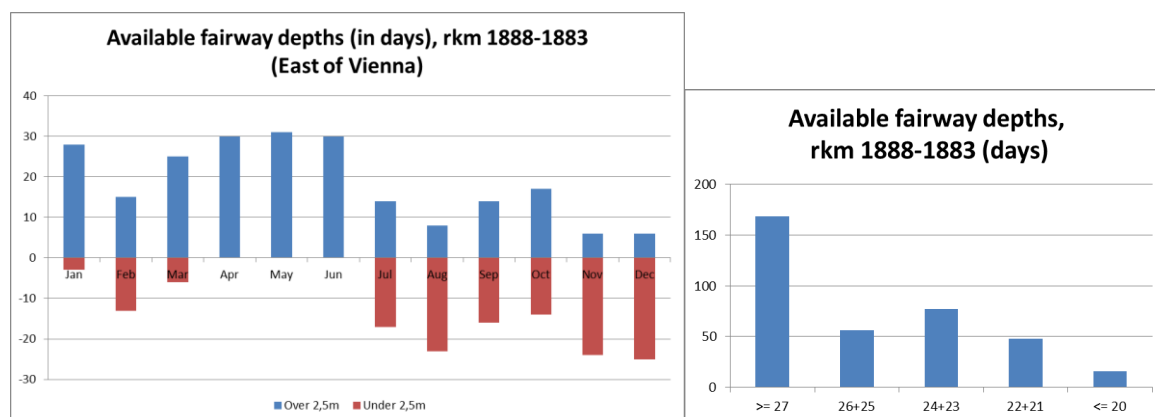
4 Austria

viadonau– Österreichische Wasserstraßen-Gesellschaft mbH (state owned) is responsible for fairway maintenance, rehabilitation and upgrade.

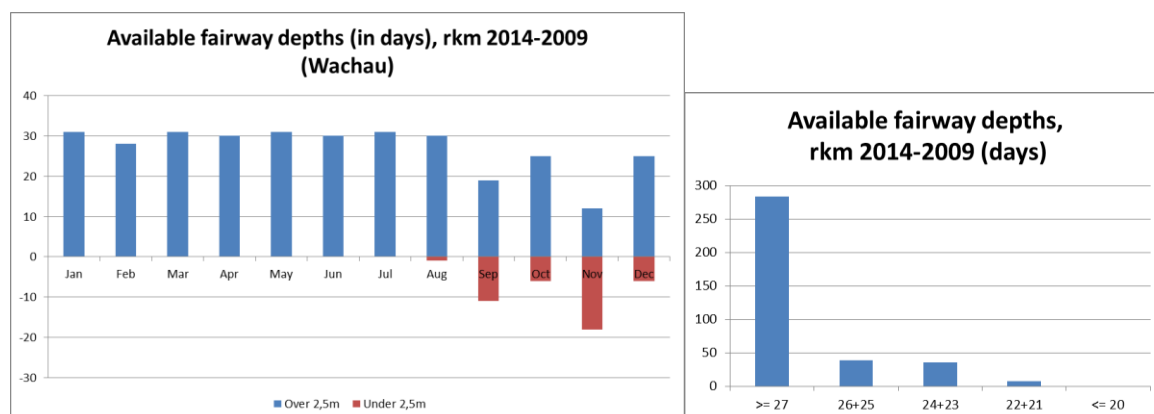
4.1 AT | Status report on main critical locations 2012 – 2015

Number of days with fairway depths >2,50m on main critical locations for a fairway width according to Level of Service 1 (40-80m)

Critical location	2012	2013	2014	2015
Wachau	366	359	352	323
East of Vienna	318	315	222	224



The year 2015 was characterised by difficult waterway conditions in the free flowing section of the Austrian Danube between Vienna and Bratislava: in the spring season (between January and March) 22 days (or 24%) with a fairway depth less than 2.50 metres were registered. In the second half of 2015 (July–December) even 119 days (or 65%) with a fairway depth lower than 2.50 metres were recorded, due to the low discharge levels (see next section). Altogether, the targeted depth of 2.5m was provided on 224 days in 2015. On 77 days, a fairway depth of 2.3 – 2.4 m was provided.



The second free-flowing section – in the Wachau valley – was faced with comparably good conditions: in the months January until July 2015 a fairway depth of over 2,50 metres could be provided on all days (100%). Available fairway depth dropped below 2,50 metres on 42 days in the months July-December 2015 (23%). The targeted depth of 2.5m was provided on 323 days. On 35 days, a fairway depth of 2.3 – 2.4 m was provided.

4.2 AT | Hydrological conditions on main critical locations 2012 - 2015

The following table contains information about the number of days with a flow discharge (m^3/s) above multiannual average flow discharge for the main critical locations Weißenkirchen and Dürnstein in the Wachau valley and Treuschütt and Hainburg in the section east of Vienna. The reference gauge station for critical locations in the Wachau valley is Kienstock (river-km 2015.21), for those in the section east of Vienna it is Wildungsmauer (river-km 1894.72).

Calculations for discharge values in days as given in the following table were performed on the following assumptions:

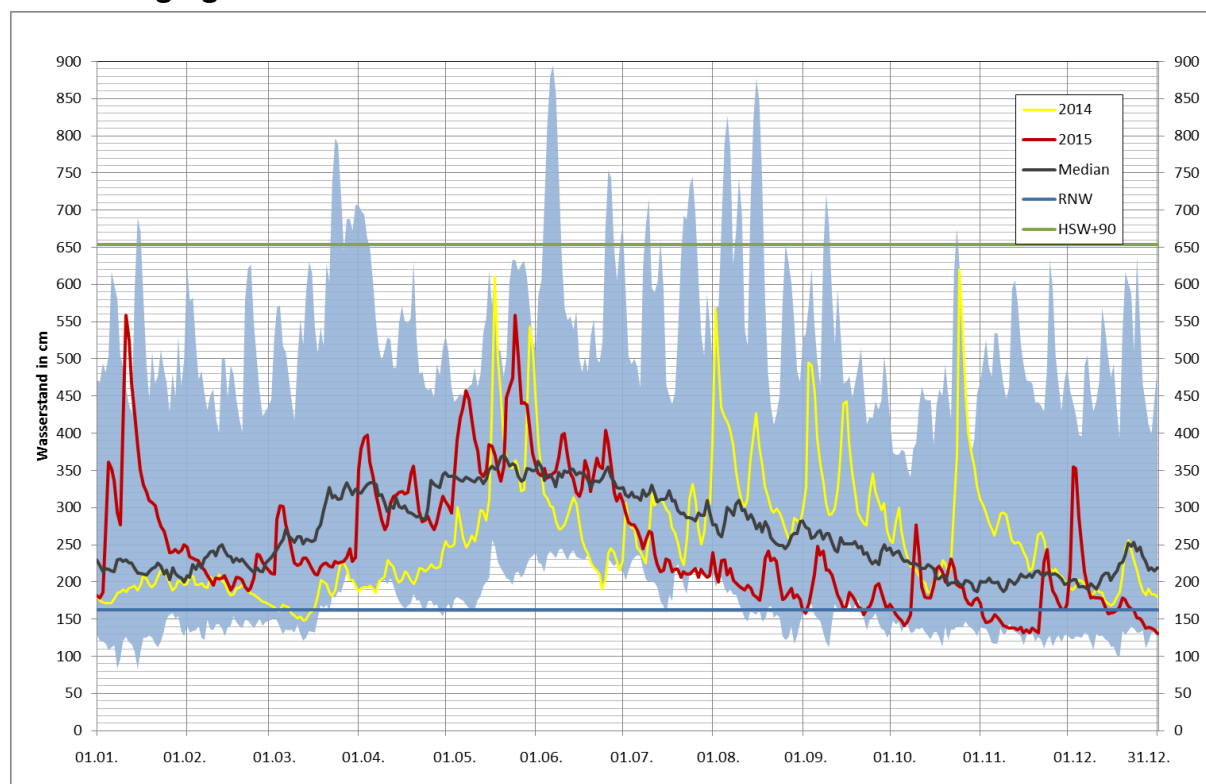
- 1) "Multiannual" refers to the years 1981–2010 which is the period on which the latest calculation of characteristic water levels for the Austrian section of the Danube (i.e. KWD 2010) was based.
- 2) "Average flow discharge" is the arithmetic mean of the mean annual discharge for the years 1981–2010.

Critical location	Reference gauges	No. of days \geq multiannual average flow discharge (m^3/s)			
		2012	2013	2014	2015
Wachau	Kienstock + Dürnstein	199	162	83	99
East of Vienna	Wildungsmauer + Thebenerstraßl	187	155	95	100

4.3 AT | Water level information on main critical locations 2012 - 2015

Critical location	Reference gauges	No. of days \geq LNWL			
		2012	2013	2014	2015
Wachau	Kienstock + Dürnstein	366	365	365	330
East of Vienna	Wildungsmauer + Thebenerstraßl	366	365	355	310

Water level gauge East of Vienna 1981-2015



In the year 2015 relatively bad conditions as regards the water levels were encountered in the free-flowing and critical locations east of Vienna. Water level gauges fell below the median value in a large part of the year. The statistically exceptional low water period of summer 2015 was followed by a continued low water season in autumn 2015. The severest water level conditions were observed in the months of November and December 2015, with water levels that approach the low values of one of the worst years in recent history, the year 2003.

4.4 AT | Key issues and related activities 2015

Related to the key issues illustrated in the Fairway Rehabilitation and Maintenance Master Plan (version: December 2014):

	Key issues	Need for action	Activities performed 2015
AT 01	Maintaining water level measurements during extreme weather events	Establishment of back-up energy supply systems at automatic gauging stations	<i>Equipping most important water gauging stations with high-capacity batteries in combination with solar panels to keep gauges running as stand-alone systems</i>
AT02	Maintaining technical equipment of gauging stations to avoid data errors and gaps	Staff for weekly or even daily on-site checks	<i>Inventory of existing gauging stations and classification regarding priority, identification of human and financial resources</i>
AT 03	Limited flexibility and limited dredging capacity on the market due to small number of dredging service providers	Support opening-up of limited market for dredging activities	<i>Set up of multi-annual framework contract for dredging services with contractors.</i>
AT04	Limited fairway depth in shallow sections to the East of Vienna	Optimisation of the shallow section at Petronell - Witzelsdorf	<i>Preparation and implementation of river engineering works: heightening of existing groynes and training wall (October 2015)</i>
AT05	Proper and up-to-date user information on available fairway depths in critical sectors	Display of recent surveying results of shallow sections in a differentiated manner	<i>Designation and display of "deep navigation channel" within the existing fairway and integration in the published maps</i>

4.5 AT | Review of rehabilitation and maintenance activities 2015

The following activities relate to all critical locations as identified in the Rehabilitation and Maintenance Master Plan (version December 2014):

Riverbed surveying activities 2015

During 2015, hydrographic surveys were carried out according to plan and partly intensified. Apart from surveying activities in port areas, bridges and non-navigable side arms, 123 surveys took place in areas with potentially critical navigation conditions (fords, potholes, sandbars areas with lateral sedimentation). Some 66% of the latter group of survey activities was carried out with multi-beam equipment. Most surveys took place in the free-flowing and critical areas east of Vienna (79 out of 123 measurements).

River-km (from-to)	Frequency of surveying	Type of survey (single-/multi-beam)
<i>Free-flowing sections:</i>		
1921.00 to 1872.70	February + March September + October	Single-beam + multi-beam Single-beam
1921.00 to 1872.70*	June	Single-beam + multi-beam
2038.00 to 1997.30	March + April October + November	Single-beam Single-beam
2038.00 to 1997.30*	June	Single-beam + multi-beam
<i>Shallow section monitoring on entire Austrian stretch:</i>		
2223.40 to 2096.02	Monthly	Single-beam
2094.21 to 1949.57	Monthly	Single-beam
1948.88 to 1872.70	Monthly	Single-beam
<i>Sections in reservoirs of river power plants:</i>		
2223.20 to 2203.40	January	Single-beam
2146.60 to 2119.70	January	Single-beam
2060.10 to 2038.50	May	Multi-beam
1998.00 to 1980.50	May	Single-beam
2162.60 to 2147.40	July	Multi-beam
1979.80 to 1949.40	July	Single-beam

* only critical locations according to catalogue of critical locations

Fairway relocation activities 2015

Due to the very limited cross-section of the Austrian section of the Danube, fairway relocation is usually no option for fairway maintenance at viadonau. From January to December 2015 no significant relocation activities took place on the Austrian stretch of the Danube.

Dredging activities 2015

Designation of assignment	Dredging site		Dumping or placement site		Beginning of service	End of service	Material	Utilisation	m ³	Referenced and relevant permits (see next table)
	from river-km	to river-km	from river-km	to river-km						
Petronell-Witzelsdorf	1.892,30	1.891,80	1.899,70	1.899,00	08.12.2014	30.01.2015	Gravel	Dumping	27.552,91	1
Treuschütt	1.888,40	1.888,70	1.906,80	1.906,20	10.03.2015	07.05.2015	Gravel	Dumping	31.625,68	1
Bad Deutsch-Altenburg	1.886,90	1.886,10	1.904,60	1.903,40	10.03.2015	05.05.2015	Gravel	Dumping	36.865,64	1
Petronell-Witzelsdorf	1.893,40	1.891,80	1.906,80	1.906,20 left	03.08.2015	28.08.2015	Gravel	Dumping	37.928,41	1
Bad Deutsch-Altenburg	1.887,60	1.886,10	1.891,10	1.890,50 left	17.08.2015	21.08.2015	Gravel	Dumping	16.036,00	1
Regelsbrunn	1.898,80	1.898,00	1.904,60	1.904,05 right	22.08.2015	02.09.2015	Gravel	Dumping	19.049,40	1
Rote Werd	1.896,50	1.895,50	1.904,60	1.903,40 right	31.08.2015	08.09.2015	Gravel	Dumping	13.700,06	1
Bad Deutsch-Altenburg	1.887,00	1.886,70	1.891,10	1.890,50 left	03.09.2015	05.09.2015	Gravel	Dumping	7.294,20	1
Käsmacher	1.875,70	1.875,10	1.884,00	1.883,50 left	05.09.2015	09.09.2015	Gravel	Dumping	14.815,50	1
Treuschütt	1.888,40	1.887,60	1.901,80	1.900,80 left	09.09.2015	18.09.2015	Gravel	Dumping	14.697,19	1
Weißkirchen	2.013,90	2.013,60	2.023,00 left	2.022,90 left	22.09.2015	06.10.2015	Gravel	River bank structuring	16.524,62	2
Rothenhof	2.005,90	2.005,40	2.004,20 right	2.004,00 right	07.10.2015	01.12.2015	Gravel	River bank structuring	5.955,10	2
Lobau	1.917,10	1.916,30	1.914,80 1.909,60	1.914,20 1.909,00	12.10.2015	22.10.2015	Gravel	Dumping	19.873,40	1
Schwalbeninsel	1.889,90	1.889,40	1.991,80	1.991,50	12.10.2015	15.10.2015	Gravel	Dumping	4.981,52	1
Regelsbrunn	1.898,70	1.898,00	1.906,70	1.906,20	15.10.2015	21.10.2015	Gravel	Dumping	9.188,51	1
Hainburg	1.884,80	1.883,40	1.884,10	1.883,50	02.12.2015	22.12.2015	Gravel	Dumping	19.207,83	1
Wendeplatz Theben	1.879,80	1.879,10	1.884,10	1.883,50	14.12.2015	21.12.2015	Gravel	Dumping	7.746,05	1
Röthelstein, left	1.883,50	1.882,40	1.884,10	1.883,50	15.12.2015	23.12.2015	Gravel	Dumping	3.016,11	1

In total, 306.058,13 m³ were dredged for commercial navigation in 2015.

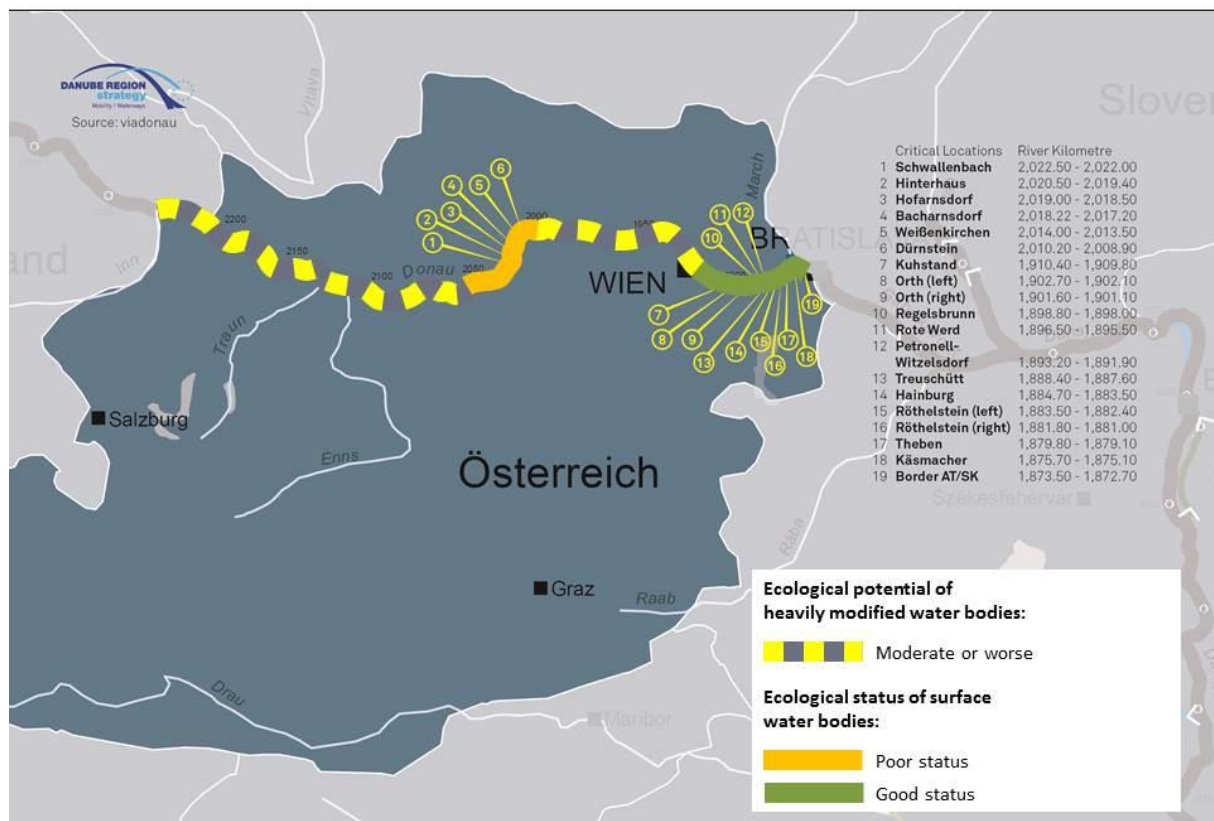
NOTE: The above table only includes maintenance dredging in the main course of the fairway, it does not include various maintenance dredging activities which were also performed in 2015 in port basins or at mooring sites.

Referenced and relevant permits	Title of permit (original language)	Permitting authority	Permit applicable		Valid until	Type of permit (e.g. environmental, water, navigation law)	Main conditions for permit
			from river-km	to river-km			
1	WSD – generelles Projekt "Regulierungsmaßnahmen zur Verbesserung der Schifffahrtsverhältnisse auf der Donau stromab des KW Freudenau"	Federal Ministry for Agriculture, Forestry, Environment and Water Management	1.910,00	1.872,70	21/03/2099	Water Law	<ul style="list-style-type: none"> • A maximum of 50 % of dredged gravel may be used for structuring measures (river banks, islands), the rest is to be dumped into the river • After high waters sediment in ford areas has to be removed as fast as possible at a width of 80/100 m • As far as possible, ecological aspects shall be accounted for when planning single measures • Dredging measures shall be kept to a minimum
2	LIFE Natur Projekt Wachau, Uferstrukturierung in der Wachau	Administrative District Authority Krems	2.033,35	2.003,85	31/12/2020	Water Law, Navigation Law, Nature Conservation Law	<ul style="list-style-type: none"> • Establishment of ecological construction supervision, drafting annual monitoring reports • Consideration of spawning seasons of fish in performance of measures • No impediment for navigation must be created by island structuring measures • No technical lining is allowed for newly created islands

4.6 AT | Summary of current ecological status and environmental impacts

The main stretch of the Austrian Danube is declared as “Heavily modified water bodies – Final Designation” according to the Water Framework Directive. The only two exceptions pertain to the free flowing sections in the Wachau and the stretch to the east of Vienna. These two stretches are designated as “Natural water bodies”.

The following map displays the ecological status and ecological potential of the Austrian Danube – according to the Danube River Basin Management Plan/Update 2015 – against the background of the critical navigation locations in Austria.



Ecological status and ecological potential of surface water bodies

(Source: DRBM Plan – Update 2015)

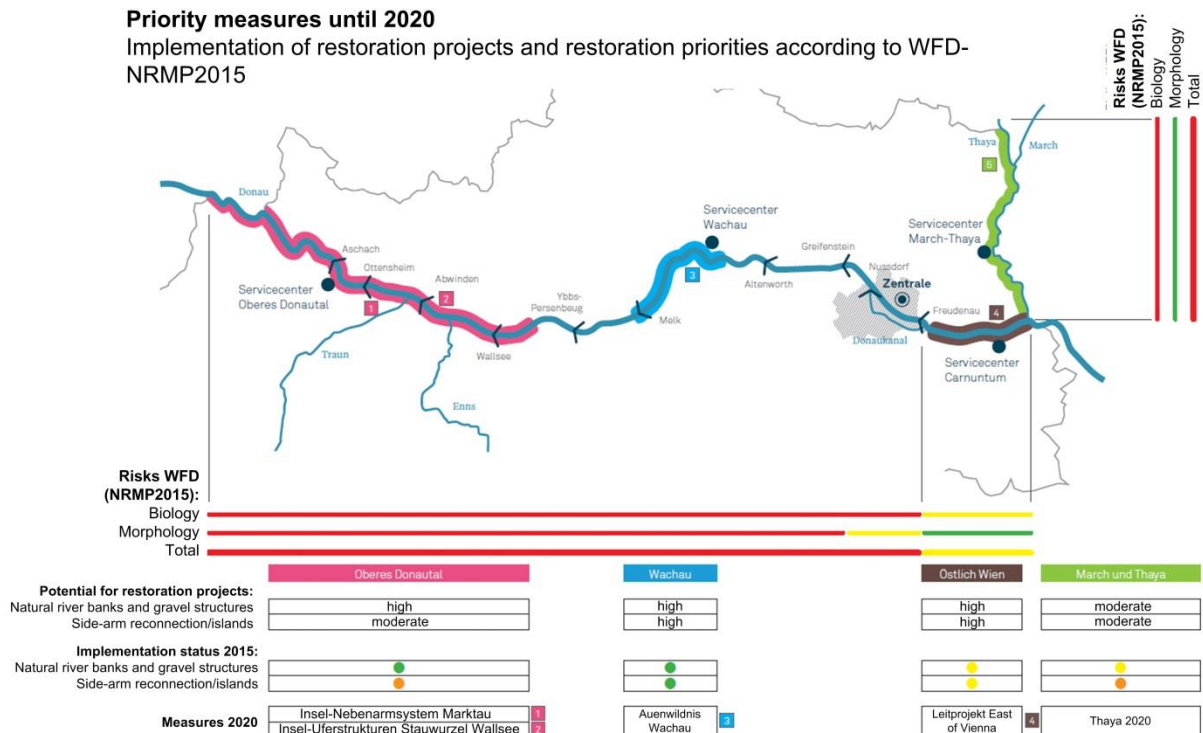
The designation as heavily modified water body of main parts of the Danube is mainly attributed to barrages for hydropower generation within the draft national water management plan for Austria (2015), whereas the attainment of good ecological status is considered to be achieved to the east of Vienna. Good ecological status is estimated to be achievable and as possible in the Wachau, whereas good status is already achieved East of Vienna. For the heavily modified water bodies measures are to be implemented for the achievement of the good ecological potential.

Measures to improve environmental conditions

A significant number of measures has already been taken between 2009 and 2015 to improve river continuity, reconnecting wetlands/floodplains and hydrological alterations like impoundments, ensuring ecological flows. Structural projects to improve the ecological status and ecological potential of the Danube in Austria and priorities are displayed on the map below.

Priority measures until 2020

Implementation of restoration projects and restoration priorities according to WFD-NRMP2015



As explained by the draft national water management plan for Austria (2015):

- “The Austrian Danube is characterised by a chain of hydropower plants affecting the sediment regime of the Danube. One of the two free flowing sections left is between Vienna (downstream of hydropower plant Freudenau) and the Austrian-Slovakian border where the character of a mountain river is still maintained. This river section shows an ongoing erosion of the riverbed at an average rate of 2.0 to 3.5 cm per year. The decreasing water tables of the Danube and of the associated groundwater seriously affect and endanger the ecology of the floodplains in the “Donau-Auen National Park”. In addition, inadequate and seasonally strongly fluctuating fairway depths in this section of the river substantially affect navigation.”
- “The Integrated River Engineering Project on the Danube to the East of Vienna was launched to improve the hydromorphology of the river and ecology of the floodplains (in line with equivalent levels of flood protection) as well as to improve the fairway conditions in this section of the Danube. The main measures are i) the granulometric improvement of the river bed to provide long-term stabilisation of the river bed and of groundwater conditions; ii) restoring lateral connectivity and removing parts of the river bank for long-term stabilisation of the ecological conditions in the National Park “Donau-Auen”; and iii) innovative low water regulation measures which improve fairway conditions for navigation. Further information on the project is provided on the project’s website: <http://www.donau.bmvit.gv.at/en/>”.

Navigation maintenance measures and environmental impacts

Maintenance works are executed in the framework of navigation law (Wasserstraßengesetz BGBl. I Nr.177/2004), water law (Grundsatzgenehmigungsbescheid “Regulierungsmaßnahmen zur Verbesserung der Schifffahrtsverhältnisse auf der Donau stromab des KW Freudenau“ of 14th August 2003) and the National Park Act (BGBl. I Nr. 17/1999).

By the end of 2015 a general permit was obtained for carrying out maintenance activities outside of the central fairway east of Vienna for a period of 5 years. The project study, which provided the basis for the permit “Erhaltungsmaßnahmen außerhalb der zentralen Fahrrinne östlich von Wien auf dem Gebiet des Nationalparks Donau-Auen – Strom-km 1915,00 bis 1880,00“ was developed in close cooperation with involved key stakeholders. The project study systematically analyses the impacts of maintenance activities on natural species, taking into account opinions drawn up by official experts on nature conservation and water ecology.

4.7 AT | Budget status 2015 – 2016

Operational expenditures 2015 and budget needs 2016

Need areas	Operational expenditures 2015	Required operational budget 2016	Secured operational budget 2016	Remaining financing gap 2016
Minimum fairway parameters (width/depth)	5.989.764	5.503.413	5.503.413	0
Surveying of the riverbed	979.035	1.001.185	1.001.185	0
Water level gauges	1.105.885	1.124.680	1.124.680	0
Marking of the fairway				
Availability of locks / lock chambers				
Information on water levels and forecasts				
Information on fairway depths				
Information on marking plans				
Meteorological information				
Other needs				
Sum	8.074.684	7.629.278	7.629.278	0

4.8 AT | Outlook: actions, milestones and funding sources

AT 01: Water level measurements during extreme weather events		
Planned activities:	Ensuring automatic water level measurements, validity checks and real-time data transfer throughout extreme weather events and providing these data to management systems	
Current shortcomings:	Currently, there are no shortcomings identified	
Environmental relevance of planned activities:	What are the main expected environmental impacts?	No environmental impacts
	Which measures are taken to mitigate these impacts?	Not applicable
	Is water status still expected to deteriorate?	Not applicable
Possible funding:	Budget availability 2015/2016: Sufficient funding is available through national/company budgets.	
Next steps:	Reach state of the art in real-time data transfer, integration of real-time data into management systems, automatic validity checks with cameras	until 31.12.2016
AT 02: Technical equipment of gauging stations		
Planned activities:	Increase the efficiency in the maintenance of the gauging network system, automatic validity checks with cameras	
Current shortcomings:	Lack of market analysis regarding suitable equipment and software	
Environmental relevance of planned activities:	What are the main expected environmental impacts?	No environmental impacts
	Which measures are taken to mitigate these impacts?	Not applicable
	Is water status still expected to deteriorate?	Not applicable
Possible funding:	Budget availability 2015/2016: Sufficient funding is available through national/company budgets.	
Next steps:	Installation of software for automatic checks	until 31.12.2016
AT 03: Limited dredging market		
Planned activities:	Europe-wide tendering or dredging contracts in order to attract additional tenderers, e.g. from Germany, the Netherlands or Slovakia etc. Feasibility of purchasing a dredging pontoon for in-house use in "emergency cases". In order to cut down on reaction times and procedures, a multi-annual framework contract was prepared and Europe-wide tendering took place in spring 2015	
Current shortcomings:	According to public procurement law, contract must be awarded to tenderer with lowest prices; problem in cases of parallel actions (several critical sectors	

	to be dredged at once) if in both cases the same tenderer is awarded (bottleneck = equipment)	
Environmental relevance of planned activities:	What are the main expected environmental impacts?	No environmental impacts
	Which measures are taken to mitigate these impacts?	Not applicable
	Is water status still expected to deteriorate?	Not applicable
Possible funding: x	Budget availability 2015/2016: Sufficient funding is available through national/company budgets.	
Next steps:	Award of multi-annual framework contract to tenderers for dredging measures in free-flowing sections	In force since August 2015
AT 04: Integration of monthly fairway depths data of critical sectors in the IENC		
Planned activities:	Increased update rate of depth data in Inland ECDIS charts; monthly updates of most important shallow section are planned. (further improvement of up to date and accurate information)	
Current shortcomings:	Update rate of depth data of critical sections in Inland ECDIS is currently too low to be of real value to waterway users (twice per year), given that shallow sections are highly dynamic. Topical depth information must nowadays be retrieved from separate information sources (e.g. FIS Portal, shallow section information). Topical data should be integrated in the wide-spread electronic navigational charts according to the Inland ECDIS standards.	
Environmental relevance of planned activities:	What are the main expected environmental impacts?	No negative impacts; positive impacts are that waterway users can exploit available depths better without physical interventions.
	Which measures are taken to mitigate these impacts?	Not applicable
	Is water status still expected to deteriorate?	No
Possible funding:	National funding	
Next steps:	Start of implementation	As of September 2016
AT 05: Optimisation of waterway engineering measures Bad-Deutsch-Altenburg		
Planned activities:	Optimisation and readjustment of shallow section Bad Deutsch-Altenburg (planning and implementation of respective river engineering measures).	
Current shortcomings:	Insufficient fairway parameters in shallow section Bad Deutsch-Altenburg during low water periods	
Environmental relevance of planned activities:	What are the main expected environmental impacts?	No environmental impacts
	Which measures are taken to mitigate these impacts?	Not applicable

Action Plan: Austria

	Is water status still expected to deteriorate?	No
Possible funding:	National funding	
Next steps:	Submission of project at the national authorities	30.06.2016
	Planned receipt of authorisation and permits	31.10.2016
	Implementation of construction measures	31.03.2017

5 Slovakia

SVP - Slovak Water Management Enterprise (state owned) is responsible for fairway maintenance, rehabilitation and upgrade.

5.1 SK | Status report on main critical locations 2012 – 2015

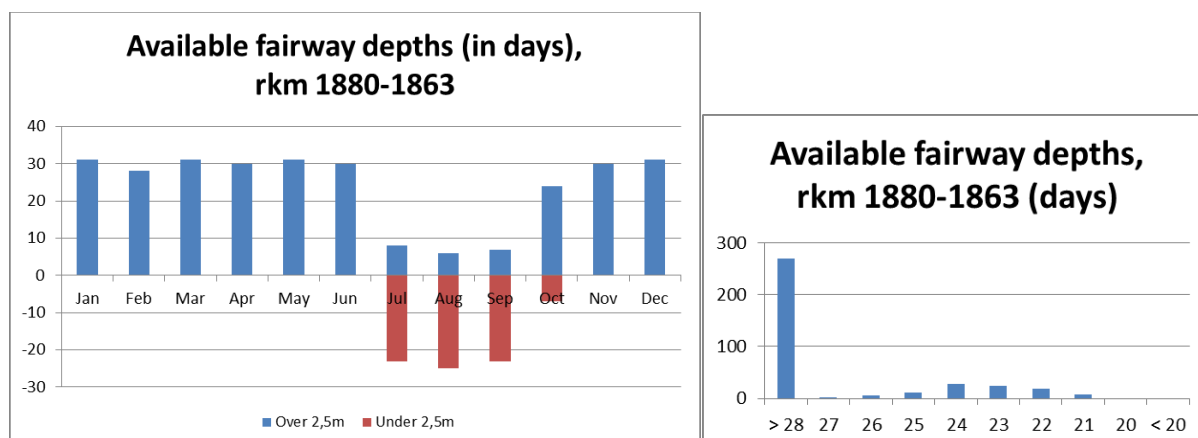
Number of days with fairway depths > 2.5m on main critical locations

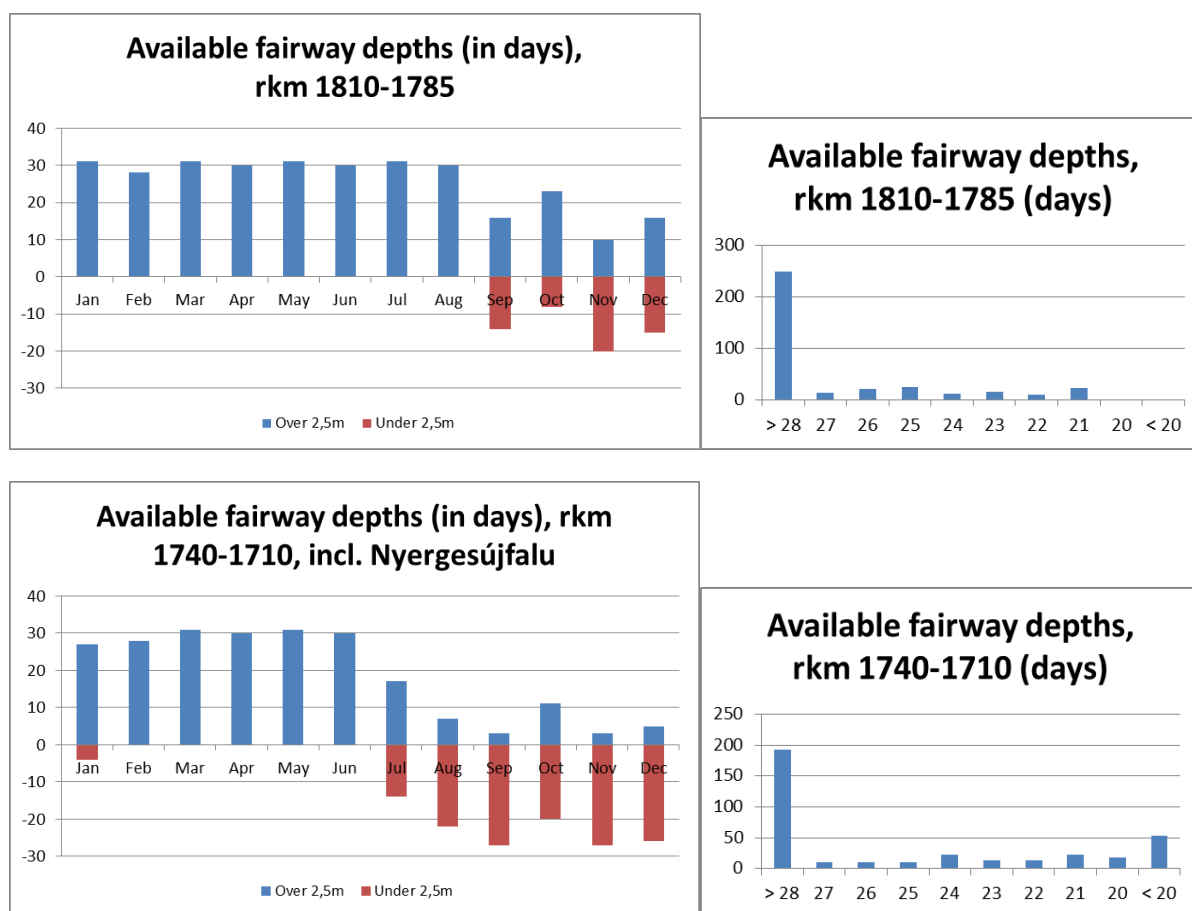
The targeted minimum fairway widths are 60 to 100 m in Slovakia and on the Slovakian-Hungarian border section, on the Slovakian-Austrian section, it is 40 to 80 m.

Critical location	2012	2013	2014	2015
part I. (rkm 1880 – 1863)	366	365	365	287
part II. (rkm 1810 – 1785)	360	341	359	307
part III. (rkm 1740 – 1710) including Nyergesújfalu	303	324	300	223

In 2015 for all three measured sections, Part I. (rkm 1880 – 1863) fairway depth of 2,5 m and more were realised on 287 (78,6%) days, for Part II. (rkm 1810 – 1785) on 307 (84,1%) days and for Part III. (rkm 1740 – 1710) on 223 (61,1%) days.

In the graphs below you can also see the availability of the depths in all three sections in days, which were above or below 2,5 m.





In Part III. (the most critical section rkm 1735,5 – 1733,7 – Cenkov (in HU language – Nyergesújfalu)) 53 days were below 2,0 m (4 days with 1,6 m of depth only).

The main reasons for not meeting the Level of Service and availability of 2,5 m depth is that on Part II. and Part III. the river bottom is from stone (stony riverbed or stony threshold – rocky bottom) which is actually not possible to remove via currently using technology for dredging (maybe detonation and removing of the stone after that). In Part I. the regular dredging intervention was done according to the plan.

In total, the navigation conditions in mentioned period, especially since beginning of July were worsened due to a low water period on Danube, which also corresponds with the information regarding the appearance of fords, shallows and narrows provided from dispatching of SVP, Branch Bratislava and Branch Danube.

5.2 SK | Hydrological conditions on main critical locations 2012 - 2015

The following table contains information about the number of days with a flow discharge (m³/s) above multiannual average flow discharge for the main critical locations as identified by the Slovak Water Management Enterprise during the surveys and maintenance works on Danube. For the Slovak section of the Danube (common AT-SK, national, common SK-HU), these main critical locations are stretches rkm 1880 - 1863 with reference gauge station in Devin, rkm 1810 – 1785 with reference gauge station Medvedov and rkm 1740 – 1710 with reference gauge

station in Sturovo. The most critical section on the entire Slovak stretch of Danube regarding the available width and depth is on rkm 1735,5 – 1733,7 (Cenkov = Nyergesújfalu) which is situated on common SK-HU stretch of Danube.

Calculations for discharge values in days as given in the following table were performed on the following assumptions, where the multiannual average flow discharge is below the average discharge for the individual year of interest.

Critical location	Reference gauges	No. of days \geq multiannual average flow discharge (m ³ /s)			
		2012	2013	2014	2015
part I. (rkm 1880 – 1863)	Devin	183	163	88	97
part II. (rkm 1810 – 1785)	Medved'ov	191	168	86	91
part III. (rkm 1740 – 1710) including Nyergesújfalu	Štúrovo	170	191	88	104

Review of hydrological year 2015:

Mean areal precipitation on the area of the Slovak republic were 708 mm which represent 93 % of long term average.

On the river Danube (in Bratislava) the multiannual average flow discharge reached 1777 m³.s⁻¹, which is 86 % of long term average. The maximal peak discharge 5242 m³.s⁻¹, noticed on 11. January, reached level of 1 - 2 - annual discharge. The minimal average daily discharge had a value of 355-364-daily discharge.

The data of the first 4 months of the year showed significantly more rain than the long term average. Statistical modelling shows that the hydrological year on the river Danube is likely to represent 108% of long term discharge.

5.3 SK | Water level information on main critical locations 2012 - 2015

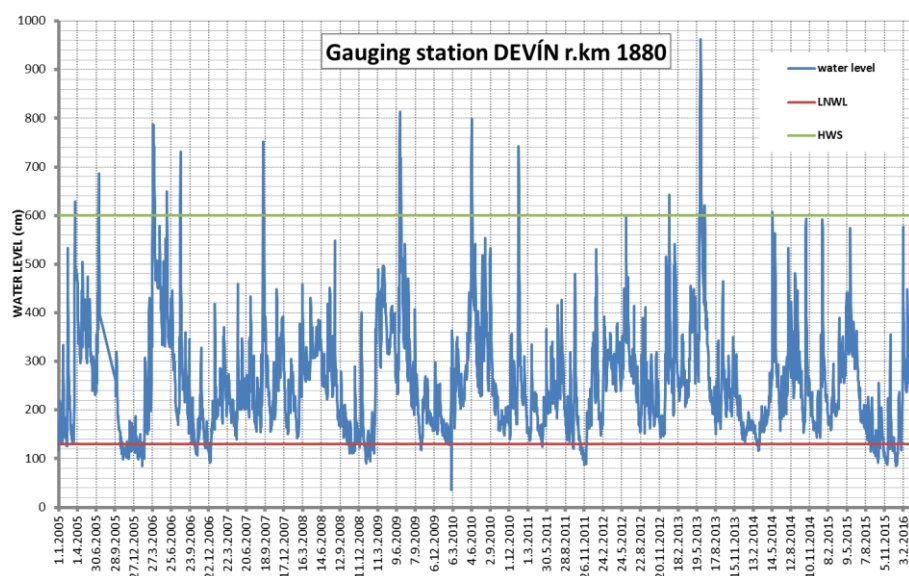
The following table contains information about the number of days with a water level (cm) above Low navigation Water Level for the main critical parts of the Slovak Danube.

Critical location	Reference gauge	No. of days \geq LNWL			
		2012	2013	2014	2015
part I. (rkm 1880 – 1863)	Devín	366	362	349	294
part II. (rkm 1810 – 1785)	Medvedov / Gonyu	366	362	348	259
part III. (rkm 1740 – 1710) including Nyergesújfalu	Sturovo / Komarom	319	334	292	288

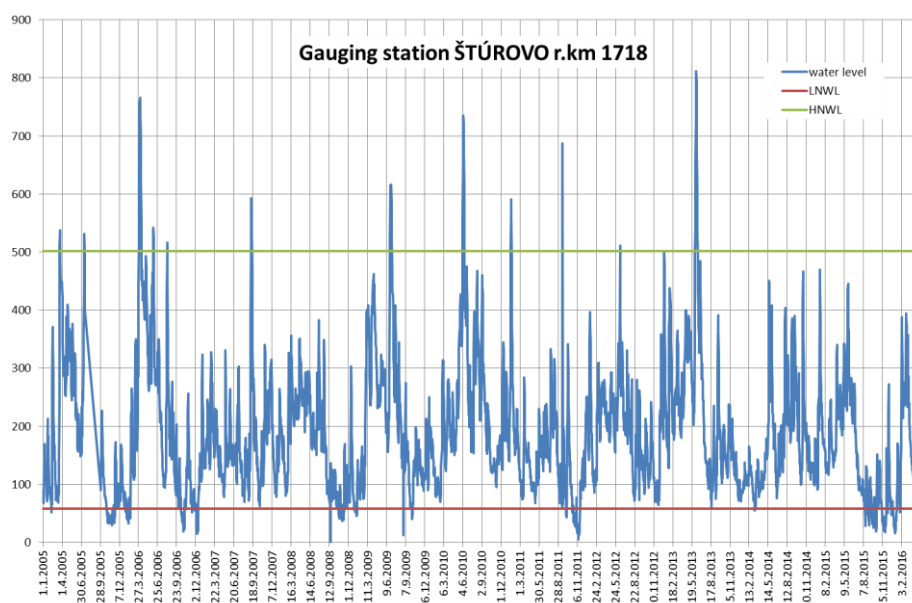
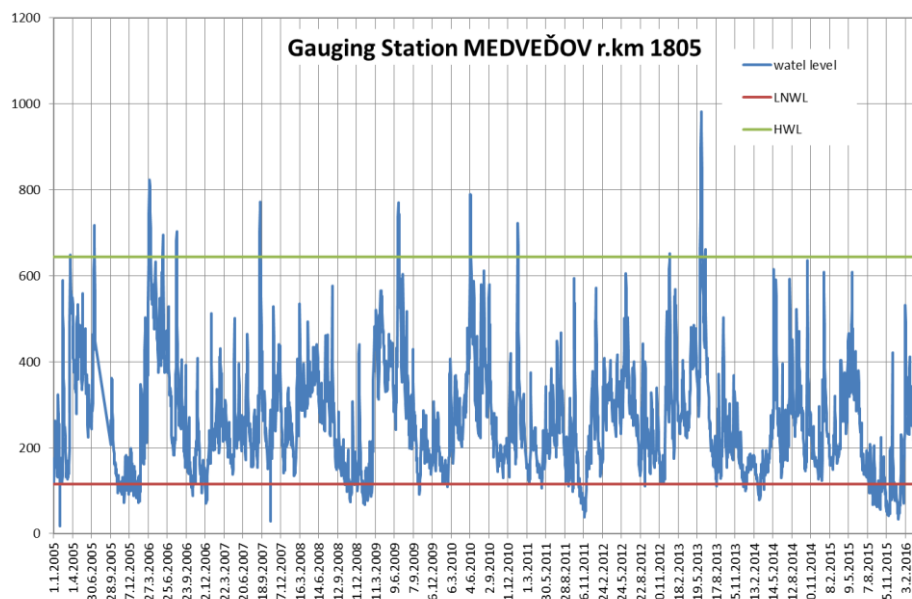
16 water gauge stations including 5 main ones (Devín, Bratislava, Medveďov, Komárno, Štúrovo) are located along on entire Slovak section of the Danube. Slovak Hydrometeorological Institute (SHMÚ) provides actual water stages in 15 –minutes time step for the last hour and in hourly time step for the last 24 hours.

These data are available at: http://www.shmu.sk/en/?page=1&id=hydro_vod_ba

The following graphs represent the course of water level in particular gauging stations. Values of LNWL and HNWL were provided by Danube Commission.



Action Plan: Slovakia



5.4 SK | Key issues and related activities 2015

Related to the key issues illustrated in the Fairway Rehabilitation and Maintenance Master Plan (version: December 2014):

	Key issues	Need for action	Activities performed 2015
SK 01	Level of detail of monitoring data is suboptimal for exact and cost-effective planning of dredging interventions	Support acquisition of up-to-date multi-beam sounding vessels, equipment and software	Market research, preparation of the technical specification
SK 05	Different coordinate systems used for measurements in border stretches as an impediment to efficient planning	Support cross-border harmonisation of monitoring standards	Harmonization via transboundary water commissions
SK 06	Old and dredging and marking fleet and equipment	Support acquisition of up-to-date dredging and marking vessels and equipment	Preparation of the specification for marking vessel

5.5 SK | Review of rehabilitation and maintenance activities 2015

The following activities relate to all critical locations as identified in the Rehabilitation and Maintenance Master Plan (version December 2014):

Riverbed surveying activities 2015

The following river bed surveying activities (listed below in table) took place according to the annual procedure. Critical locations are monitored within the entire measurement but since 2015 we are performing extra measurements of the critical sections besides the entire stretch measurement.

River-km (from-to)	Frequency of surveying	Type of survey (single/multibeam)
1880 – 1872	2x per year (done in 5 and 11/2015)	Single beam
1872 – 1853	1x per year (done in 6/2015)	Single beam
31 – 35 (reservoir)	1x per year (done in 4/2015)	Single beam
31 – 33 (reservoir – cunette)	1x per year (done in 4/2015)	Single beam
Outflow canal Gabčíkovo	1x per year (done in 7/2015)	Single beam
Inflow canal Gabčíkovo	1x per year (done in 8/2015)	Single beam
Reservoir Hrusov	1x per year (done in 9/2015)	Single beam
1811 – 1749	1x per year (done in 9-10/2015)	Single beam
Old Danube riverbed (4 artificial weir)	1x per year (done in 11/2015)	Single beam
Seepage canal Cilistov	1x per year (done in 11/2015)	Single beam
Critical sections on Danube (based on list)	1x per year (done in 5/2015)	Single beam

Fairway relocation activities 2015

The fairway monitoring and marking has been done on weekly basis in Slovakia based on the approved Project of the Marking of the fairway. The changes of the fairway have not been done on the regular basis. According to the navigation measure no. 157/2015 the relocation has been done on 29.9.2015 on the rkm 35,0 – 30,0 in reservoir Hrusov due to sedimentation and having better navigation condition.

Also temporary relocations of the fairway in the area of the Old Bridge in Bratislava have been done according to the NtS published from Transport Authority, temporary changes of the fairway trajectory on the stretch 168,5-1867,8 based on navigation measure no. 9/01/2015 and 9/00/2015, and new fairway trajectory based on navigation measure no. 182/00/2015. If any changes of the fairway are required, then they are done within the annual budget for monitoring and marking of the fairway.

Navigation conditions were during the year 2015 not good due to ongoing low water levels, which show the records from dispatching concerning the frequency of appearance of the fords, narrows and shallows (critical locations).

River-km (from-to)	Frequency of relocation interventions	Comments
Old Bridge in Bratislava rkm 1868,14 (stretch rkm 1868,5-1867,8)	4.3.2015 – 21.12.2015	Relocation of the fairway due to bridge reconstruction
Old Bridge in Bratislava rkm 1868,14 (stretch rkm 1868,5-1867,8)	Since 21.12.2015	New fairway trajectory
35,0 – 30,0	29.9.2015	Relocation due to sedimentation

Dredging activities 2015

We are doing the maintenance of the fairway based on the parameters of the fairway which have to be guaranteed, width of the fairway on rkm 1790 -1880 is 120m (depth 2,5m + 0,2m) and on rkm 1790 – 1709,8 is 150m (depth 2,8m + 0,2m)

Designation of assignment	Dredging site		Dumping or placement site		Beginning of service	End of service	Material	Utilisation	m3	Referenced and relevant permits (see next table)
	from river-km	to river-km	from river-km	to river-km						
Regulation dredging of Danube on national stretch	1865,20	1863,60	basin of gravel pit Gravelslovex		11.05.2015	14.12.2015	gravel-sand	Storage	100 327	xxx
regulation dredging	1786,60	1786,10	1779,5		23.06.2015	26.08.2015	gravel-sand	storage	25 372	xxx

Action Plan: Slovakia

regulation dredging	Cunette of the reservoir	33,40	32,50	July 2015	December 2015	Mud	Behind the Muchova training wall	123 035	xxx
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In total, 248.734 m3 were dredged for commercial navigation in 2015.

Referenced and relevant permits	Title of permit (original language)	Permitting authority	Permit applicable		Valid until	Type of permit (e.g. environmental, water, navigation law)	Main conditions for permit
			from river-km	to river-km			
1	tba	xxx	xxx	xxx	xxx	xxx	xxx

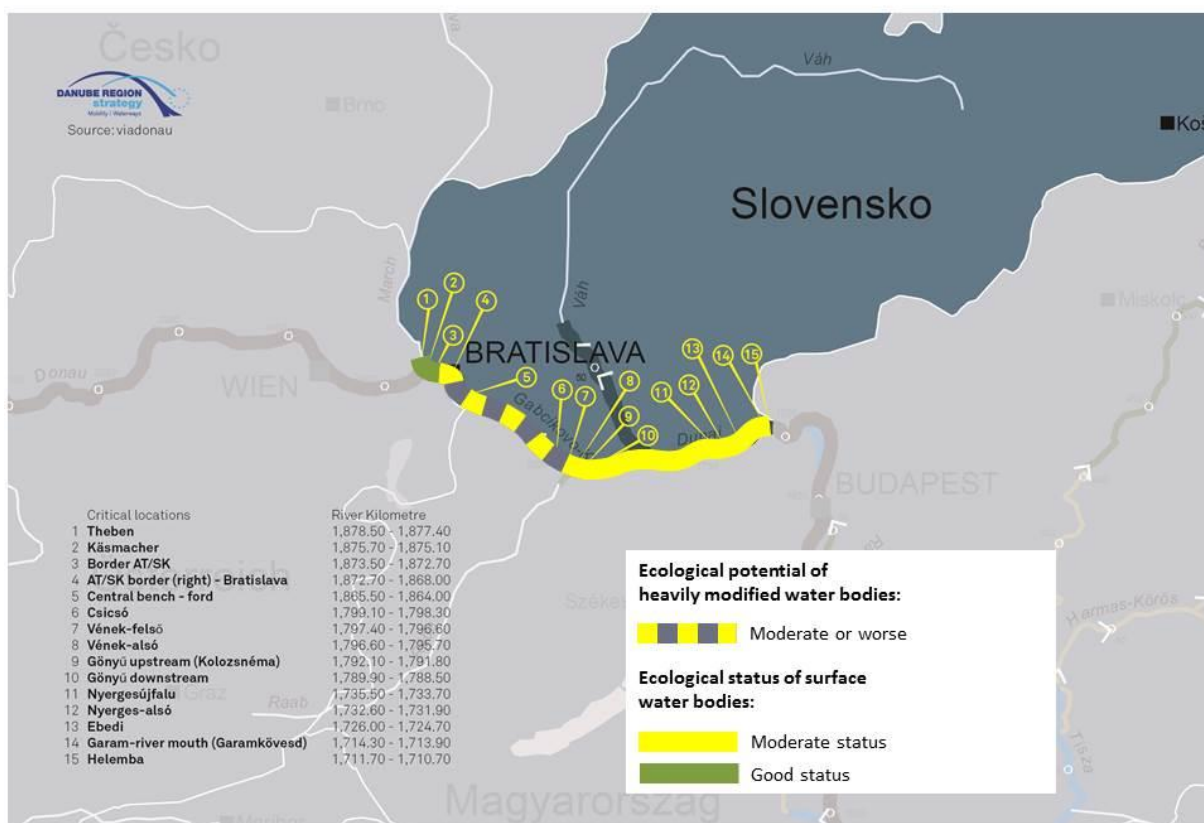
SVP is according to the Act No. 338/2000 Coll. On Inland Navigation the only enterprise which is authorized and responsible to perform fairway marking and works related to marking (dredging included). Thus, only a permission from the Transport Authority is needed, who publishes navigation notices for the time period which is needed for dredging works. These notices ensure navigation safety and are published on the website of the Transport Authority.

The Slovak Ministry of Environment approves the „ Plan of dredging works“ for one year. In case that the dredged material is stored on the banks near the Danube and the places are in a protected area, permissions from relevant organisations are needed in addition.

5.6 SK | Summary of current ecological status and environmental impacts

The Danube river stretch is in the Slovak Republic divided into four surface water bodies, two of them have been designated as heavily modified water bodies and two as natural water bodies and three of mentioned water bodies are transboundary.

The following map displays the ecological status and ecological potential of the Slovakian Danube – according to the Danube River Basin Management Plan/Update 2015 – against the background of the critical navigation locations in Slovakia.



Ecological status and ecological potential of surface water bodies

(Source: DRBM Plan – Update 2015)

According the DRBM Plan – Update 2015, one of the natural water bodies is in good ecological status and one is in moderate ecological status, designated with high confidence level. Both of heavily modified water bodies are in moderate ecological potential designated with medium confidence level. As environmental objectives for both natural water bodies a good ecological status is assigned and for both heavily modified water bodies good ecological potential is assigned. Hydromorphological conditions of heavily modified water bodies are affected by lateral connectivity interruptions and morphological alterations.

Measures to improve environmental conditions

On the three water bodies not reaching the environmental objectives yet, the positive impact of realised measures is expected until 2021, but still are in the risk of not reaching the targets. For example on the natural water body in moderate ecological status there is a risk of not reaching the targets due to change of biotopes. Measures to improve hydromorphological conditions were realized namely reconnection of wetlands/floodplains along the Slovakian part of the Danube River.

Navigation maintenance measures and environmental impacts

Maintenance works are executed in the framework of inland navigation law (Zákon o vnútrozemskej plavbe č. 338/2000 Z.z) and in the frame of water law (Zákon o vodách 364/2004 Z.z.) where is mentioned that SVP as the waterway administration is responsible for the maintenance of fairway and waterway in Slovakia.

Actually no project which focuses on the analyses of the impacts of the maintenance activities on environment on Slovak stretch of the Danube River.

5.7 SK | Budget status 2015 - 2016

Operational expenditures 2015 and budget needs 2016

Need areas	Operational expenditures 2015	Required operational budget 2016	Secured operational budget 2016	Remaining financial gap 2016
Minimum fairway parameters (depth / width)	2.664.400	2.300.000	2.300.000	-
Surveying of the riverbed	71.260	80.000	80.000	-
Water level gauges		0		-
Marking of the fairway	441.831	490.000	490.000	-
Availability of locks / lock chambers		0		-
Information on water levels and forecasts		0		-
Information on fairway depths		0		-
Information on marking plans		0		-
Meteorological information		0		-
Other needs		0		-
Sum	3.177.491	2.870.000	2.870.000	0

5.8 SK | Outlook: actions, milestones and funding sources

SK 01: Level of detail of monitoring data is suboptimal for exact and cost-effective planning of dredging interventions		
Planned activities:	Support acquisition of up-to-date multi-beam sounding vessels, equipment and software, managing of the purchasing	
Current shortcomings:	Missing of the multi-beam sounding vessel	
Environmental relevance of planned activities:	What are the main expected environmental impacts?	No environmental impacts
	Which measures are taken to mitigate these impacts?	Not applicable
	Is water status still expected to deteriorate?	Not applicable
Possible funding:	Budget availability 2015/2016: Funding through Project FAIRway (CEF)	
Next steps:	If project approved, then definition of the condition for the public procurement, competition itself, purchasing of the vessel with all requested devices, starting of the using (measurements)	Until 2017
SK 02: Out-of-date information technology, missing database for monitoring data		
Planned activities:	Support establishment of Fairway Management System, Establishment, development and installation of the management system is planned within the implementation of the FAIRway Slovakia project	

Current shortcomings:	Missing system actually	
Environmental relevance of planned activities:	What are the main expected environmental impacts?	No environmental impacts
	Which measures are taken to mitigate these impacts?	Not applicable
	Is water status still expected to deteriorate?	Not applicable
Possible funding:	Budget availability 2015/2016: Funding through Project FAIRway (CEF)	
Next steps:	Fairway Management System installation	Until 2017-2018
SK 03: Insufficient number of skilled staff to monitor of the fairway		
Planned activities:	Actually only experienced staff available (closely to retirement), securing of the well-trained staff after purchasing of the new marking vessel (from the project FAIRway Slovakia)	
Current shortcomings:	Lack of new experienced staff due to company budget limitation (budget depending on Ministry annual budget)	
Environmental relevance of planned activities:	What are the main expected environmental impacts?	No environmental impacts
	Which measures are taken to mitigate these impacts?	Not applicable
	Is water status still expected to deteriorate?	Not applicable
Possible funding:	Budget availability 2015/2016: Funding through Project FAIRway (CEF) and company budget	
Next steps:	New marking vessel, needs of having new trained staff	Until 2017-2018
SK 04: Different departments performing the monitoring as an impediment to efficient planning		
Planned activities:	Development and installation of the common database, monitoring done by hydromorphology department (single beam) & by Branch Danube (before and after dredging intervention)	
Current shortcomings:	Missing common database	
Environmental relevance of planned activities:	What are the main expected environmental impacts?	No environmental impacts
	Which measures are taken to mitigate these impacts?	Not applicable
	Is water status still expected to deteriorate?	Not applicable
Possible funding:	Budget availability 2015/2016: Funding through Project FAIRway (CEF)	
Next steps:	Definition of the structure and content of the database (based on NEWADA duo database task result)	until 2017-2018

SK 05: Different coordinate systems used for measurements in border stretches as an impediment to efficient planning		
Planned activities:	Actually exchanging of the data are based on UTM coordinate system and all cross-border partners exchange the data according to the agreements done on TWC level	
Current shortcomings:	A little bit complicated exchange process	
Environmental relevance of planned activities:	What are the main expected environmental impacts?	No environmental impacts
	Which measures are taken to mitigate these impacts?	Not applicable
	Is water status still expected to deteriorate?	Not applicable
Possible funding:	Budget availability 2015/2016: Funding through company budget, CBC funds	
Next steps:	Definition of the problems, possible solutions, proposals on TWC level	in progress
SK 06: Old and dredging and marking fleet and equipment		
Planned activities:	Acquisition of the new marking vessel, modernisation and purchasing of new dredgers later in next investment project	
Current shortcomings:	Old fleet of dredgers (high maintenance fee), old marking vessels, modernisation and acquisition requested	
Environmental relevance of planned activities:	What are the main expected environmental impacts?	No environmental impacts
	Which measures are taken to mitigate these impacts?	Not applicable
	Is water status still expected to deteriorate?	Not applicable
Possible funding:	Budget availability 2015/2016: Project FAIRway (CEF) for marking vessel (multioperational vessel), for dredgers – follow up investments funds	
Next steps:	Acquisition of marking vessel	until 2017
SK 07: Lack of staff and resulting missing flexibility in case of urgencies (related to dredging activities)		
Planned activities:	Ensuring of the well-trained and educated staff in parallel with purchasing of the new dredgers	
Current shortcomings:	Old fleet of dredgers (high maintenance fee)	
Environmental relevance of planned activities:	What are the main expected environmental impacts?	No environmental impacts
	Which measures are taken to mitigate these impacts?	Not applicable
	Is water status still expected to deteriorate?	Not applicable
Possible funding:	Budget availability 2015/2016: Investments funds	
Next steps:	Definition of the possible projects	until 2018-2019

SK 08: Frequent need to adjust fairway marking as substitution for dredging activities		
Planned activities:	Installation of the Fairway Management System (planning in following project NEWADA III), harmonisation with marking department (marking trips done on weekly basis)	
Current shortcomings:	Missing Management system or common database	
Environmental relevance of planned activities:	What are the main expected environmental impacts?	No environmental impacts
	Which measures are taken to mitigate these impacts?	Not applicable
	Is water status still expected to deteriorate?	Not applicable
Possible funding:	Budget availability 2015/2016: Funding through Danube Transnational Programme (NEWADA III project), FAIRway Project	
Next steps:	Definition of the structure of the database (possibility of using existing database structure developed within NEWADA duo – Marking plans task)	until 2018

6 Hungary

The **General Directorate of Water Management** is responsible for fairway maintenance. It has three subordinated regional organizations (Water Directorate, VIZIG) for waterway maintenance on the Danube:

1. North-Transdanubian Water Directorate (1,811-1,708 rkm)
2. Middle-Danube-Valley Water Directorate (1,708-1,560 rkm)
3. Lower-Danube-Valley Water Directorate (1,560-1,433 rkm)

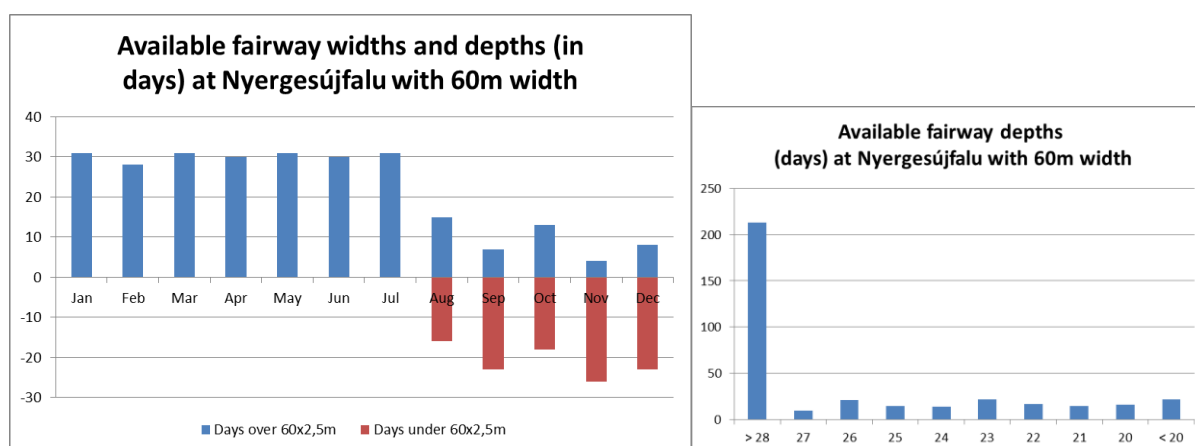
6.1 HU | Status report on main critical locations 2012 – 2015

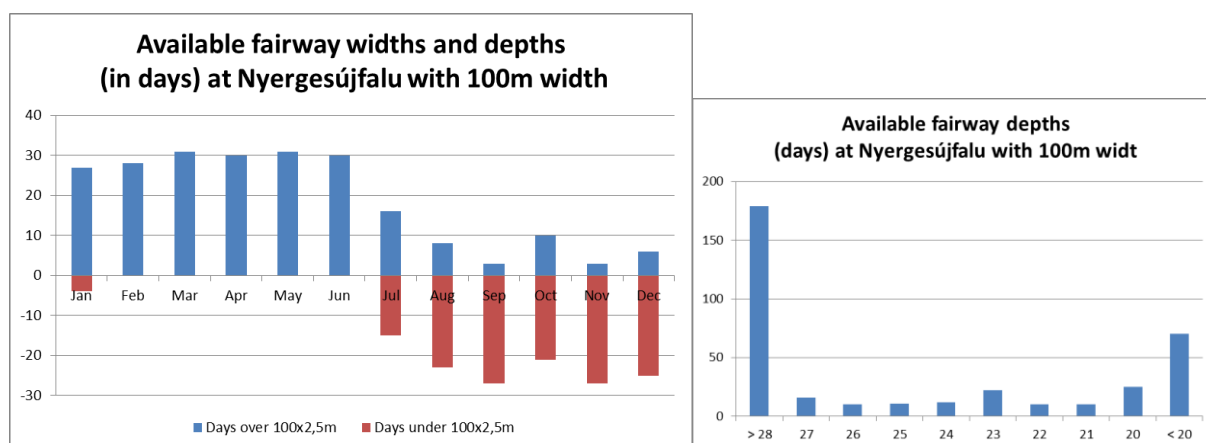
Number of days with fairway depths > 2.5m on main critical locations (as identified by the Danube waterway users in a survey by PA1a concluded in December 2014)

1,811 - 1,708 rkm

Critical location	2012	2013	2014	2015
Nyergesújfalu critical location with 60 meters wide fairway	304	314	307	244
Nyergesújfalu critical location with 100 meters wide fairway	286	304	256	213

Fairway width (range of values accounts for different curve radii): 60 to 100 m in Slovakia and Slovak - Hungarian border section (Nyergesújfalu) based on Fairway Rehabilitation and Maintenance Master Plan.





1,708 - 1,560 rkm

Number of days with fairway depths > 2.5m on main critical locations

Critical location	2012	2013	2014	2015
Kisapostag critical location with 80 meters wide fairway	287	284	246	224
Göd critical location with 80 meters wide fairway	287	284	286	208
Dömös alsó critical location with 120 meters wide fairway	312	304	264	205
Budafo critical location with 60 meters wide fairway	318	308	319	229

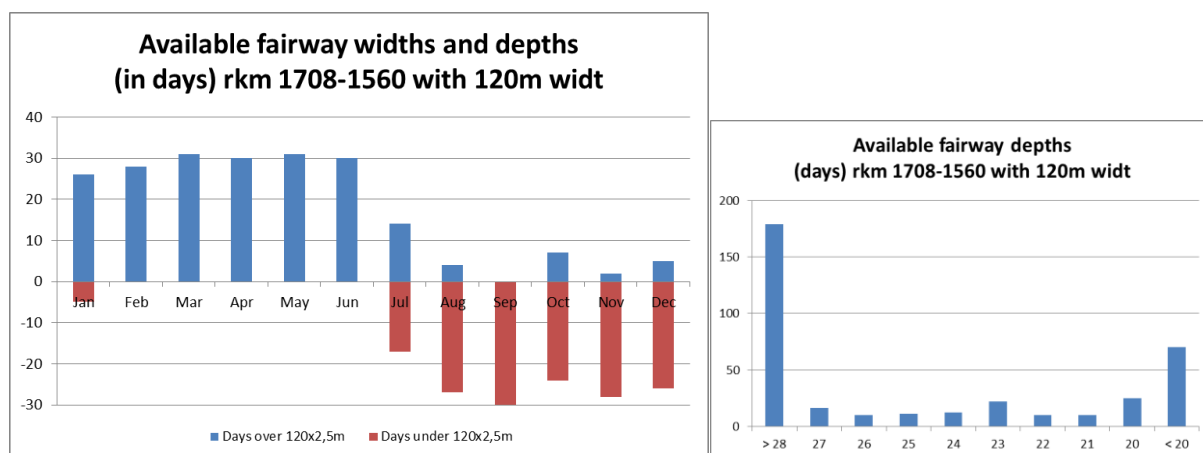
Fairway width (range of values accounts for different curve radii): 80 to 120 m in Hungarian Danube (rkm 1708-1433) section based on Fairway Rehabilitation and Maintenance Master Plan.

Due the annual changes of water discharge and riverbed the most critical section at KDVIZIG area is not a given ford and also shallow section parameters could change within a year according to our latest riverbed survey.

During the great flood in 2013, Kisapostag shallow section with sandy gravel material changed, deepened, so it has started to lose its most critical features. During the reporting time delivered last year the water regime showed a relatively small stable riverbed fullness, which confirmed the Göd section peak ford features.

In the middle of September last year, due to changes in the riverbed we changed Göd section depth parameters (it became better), so in respect of the full year of 2015 lower-Dömös - rocky bottomed ford become the most critical section of KDVIZIG.

The critical location Budafok, mentioned by the Danube users in 2014 to be one of the main critical sections, has never been the worst section in terms of depth, but is considered critical because of limited width, which is 60 meters. As it is probable that further critical locations arise (in addition to the ones mentioned in the table), these will be reported in the text.

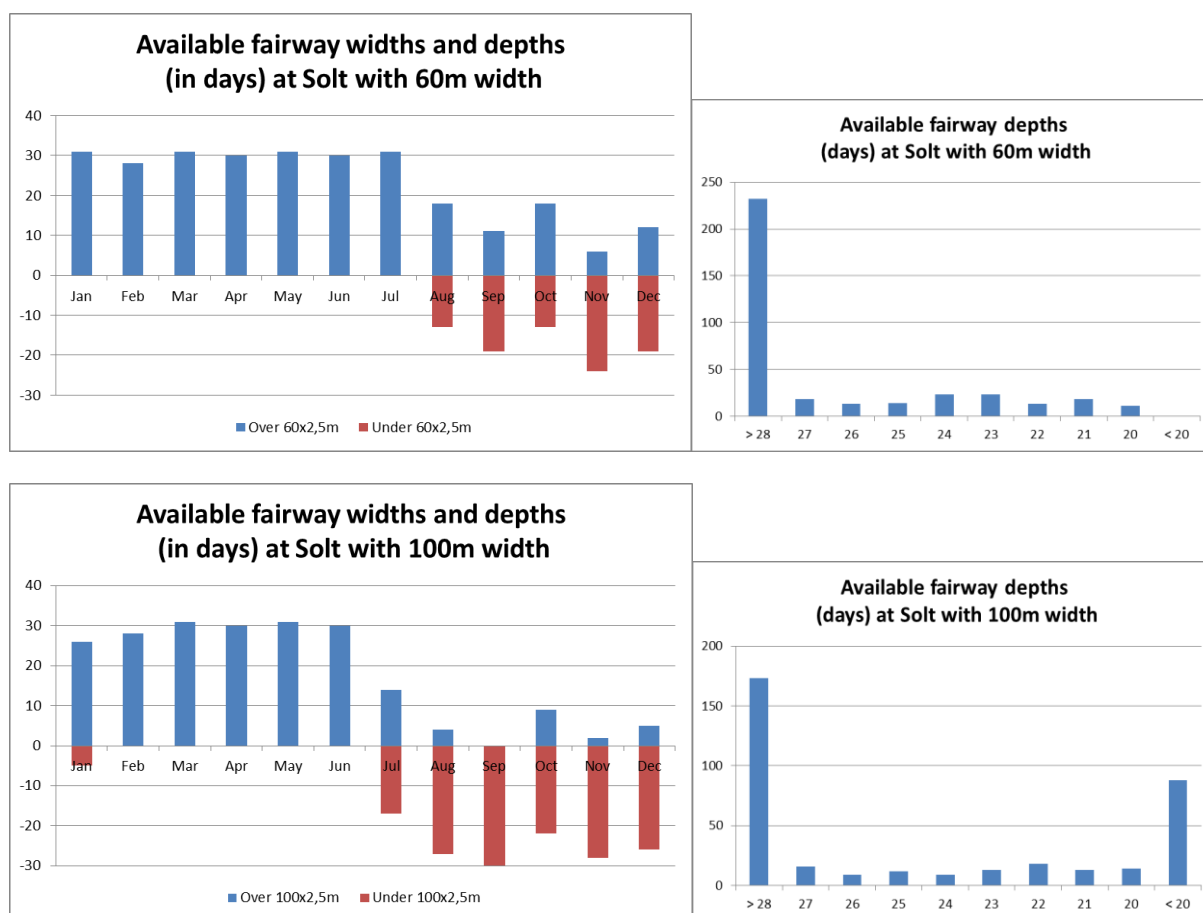


In 2015 a min. fairway depth of 2.5 m was available in Middle-Danube section for 205 days/365 days (~56%). However between January and June the water depths of at least 23 dm was available for the navigation, but after that period the water level had a drastic effect on the Hungarian Danube: In autumn's and winter's months the navigable depth of the fairway was only less than 18 dm on 45 days, and less than 17 dm on 36 days.

1,560 - 1,433 rkm

Number of days with fairway depths > 2.5m on main critical locations

Critical location	2012	2013	2014	2015
Solt critical location with 60 meters wide fairway	365	365	360	277
Solt critical location with 100 meters wide fairway	293	318	232	210



6.2 HU | Hydrological conditions on main critical locations 2012 - 2015

Number of days with flow discharge above multiannual average flow discharge for the main critical locations:

Critical location	Reference gauges	No. of days \geq multiannual average flow discharge (m^3/s)			
		2012	2013	2014	2015
Nyergesújfalu	Esztergom	20	82	26	86
Dömös-alsó	Nagymaros*	185	207	114	123
Göd	Budapest	171	194	107	111
Kisapostag	Dunaföldvár	179	194	107	188
Solt	Dunaföldvár	273	287	209	188

* before 01.11.2015 the reference location was Budapest

In hydrological terms, the years 2015 saw good fairway conditions from winter time to summer's end along the free-flowing sections of the Hungarian Danube, but in autumn the water level was very less.

6.3 HU | Water level information on main critical locations 2012 - 2015

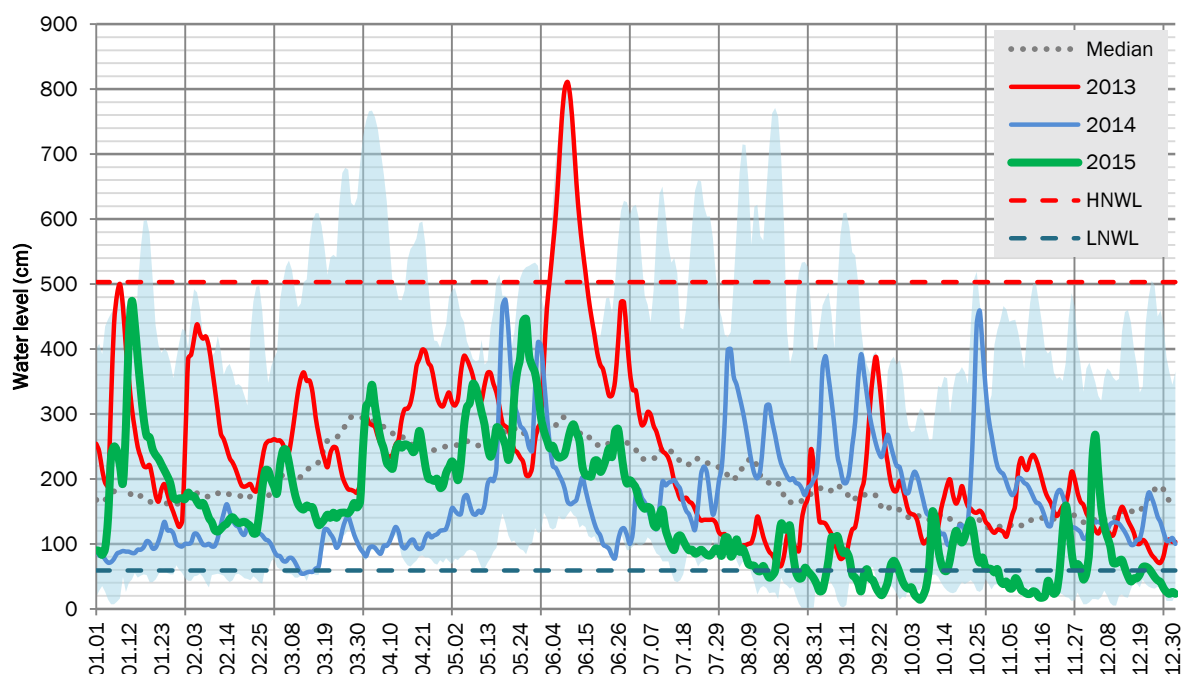
Critical location	Reference gauges	No of days \geq LNWL			
		2012	2013	2014	2015
Nyergesújfalu	Esztergom	366	365	360	294
Dömös-alsó	Nagymaros	363	365	365	322
Göd	Budapest	366	364	357	320
Kisapostag	Dunaföldvár	365	364	357	268
Solt	Dunaföldvár	366	364	358	270

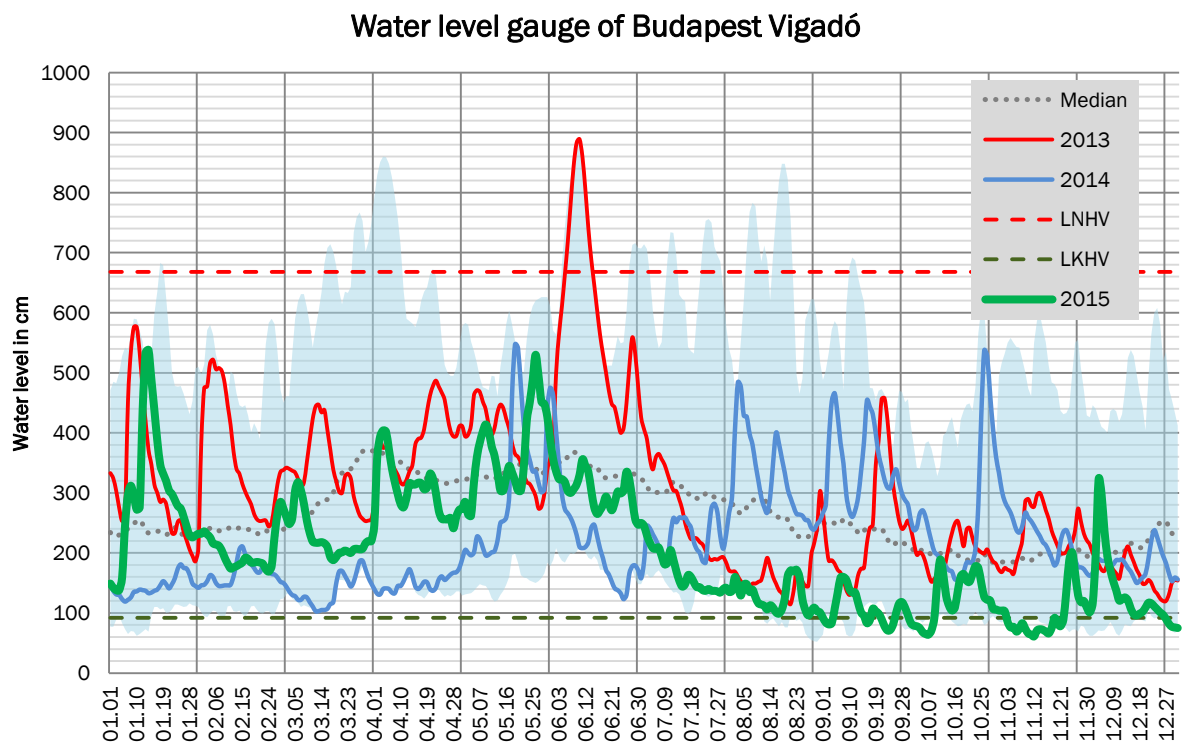
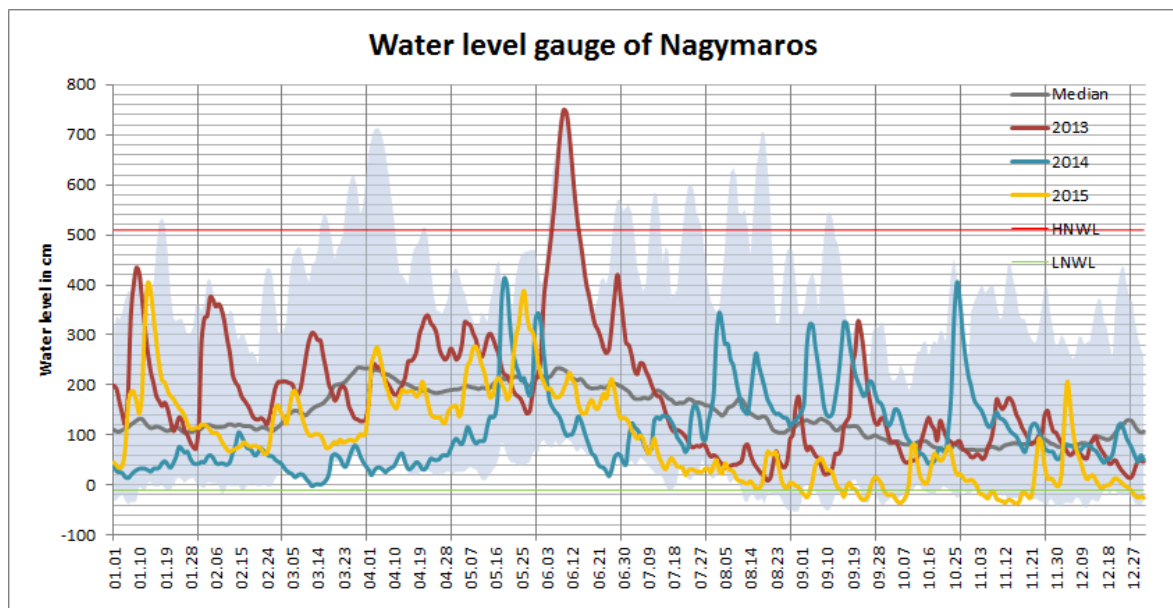
In hydrological terms, the years 2015 saw very good fairway conditions from winter time to summer's end along the free-flowing sections of the Hungarian Danube, but in autumn the flow discharge was very low.

Since the middle of July there is a low-water period, which became serious since August. The average water discharge dropped below 1000 m³/s, the minimum was 860 m³/s at Nagybajcs (the LNWL discharge is 1010 m³/s).

For example in 2015 at Esztergom water gauge we saw a total 71 days below ENR low water level while in 2014 through the whole year we had only 5 days.

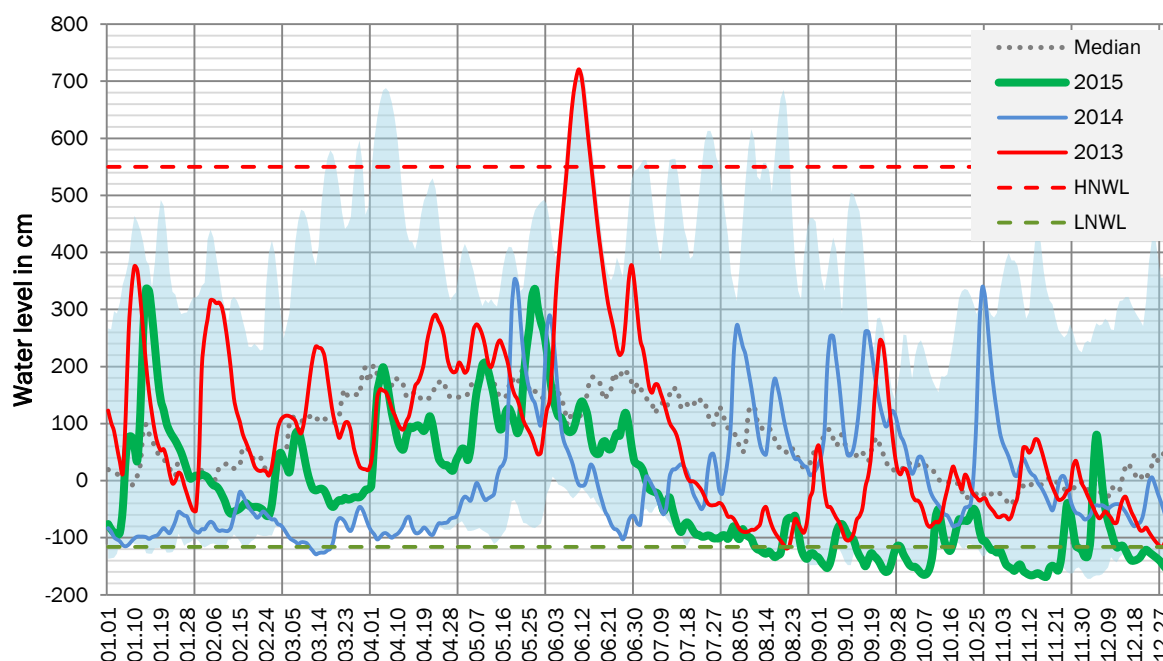
Water level gauge of Esztergom





The Nagymaros gauge refers to Dömös and the while Budapest gauge to Budafok. As there is usually no significant difference between them, only the Budapest gauge will be shown in the future.

Water level gauge of Dunaföldvár



6.4 HU | Key issues and related activities 2015

Related to the key issues illustrated in the Fairway Rehabilitation and Maintenance Master Plan (version: December 2014):

	Key issues	Need for action	Activities performed 2015
HU 01	Level of detail of monitoring data is suboptimal for exact planning	Support acquisition of up-to-date multi-beam sounding equipment and vessels	Market research, preparation of the technical specification of multi-beam sounding equipment and vessels within FAIRway CEF project.
HU 02	Old monitoring equipment and fleet (related to fairway marking)	Support acquisition of up-to-date vessels and maintenance-free buoys that make marking more cost-effective	Preparation of the technical specification of marking vessel multi-beam and patrol boats within HUMARK CEF project

6.5 HU | Review of rehabilitation and maintenance activities 2015

The following activities relate to all critical locations as identified in the Rehabilitation and Maintenance Master Plan (version December 2014):

Riverbed surveying activities 2015

River-km (from-to)	Frequency of surveying	Type of survey (single/multi beam)
--------------------	------------------------	------------------------------------

1751-1708	1	Single beam
1657 - 1637	1	Multi beam
1611 - 1560	1	Multi beam
1538 - 1512	1	Single beam
1488 - 1484	5	Single beam
1559.8 - 1559.7	1	Multi beam
1558.5 - 1557.5	1	Multi beam
1555.8 - 1554.6	1	Multi beam
1552.0 - 1551.0	1	Multi beam
1493.5 - 1492.5	1	Multi beam
1483.5 - 1482.5	1	Multi beam
1480.1 - 1479.1	1	Multi beam
1472.5 - 1471.5	1	Multi beam

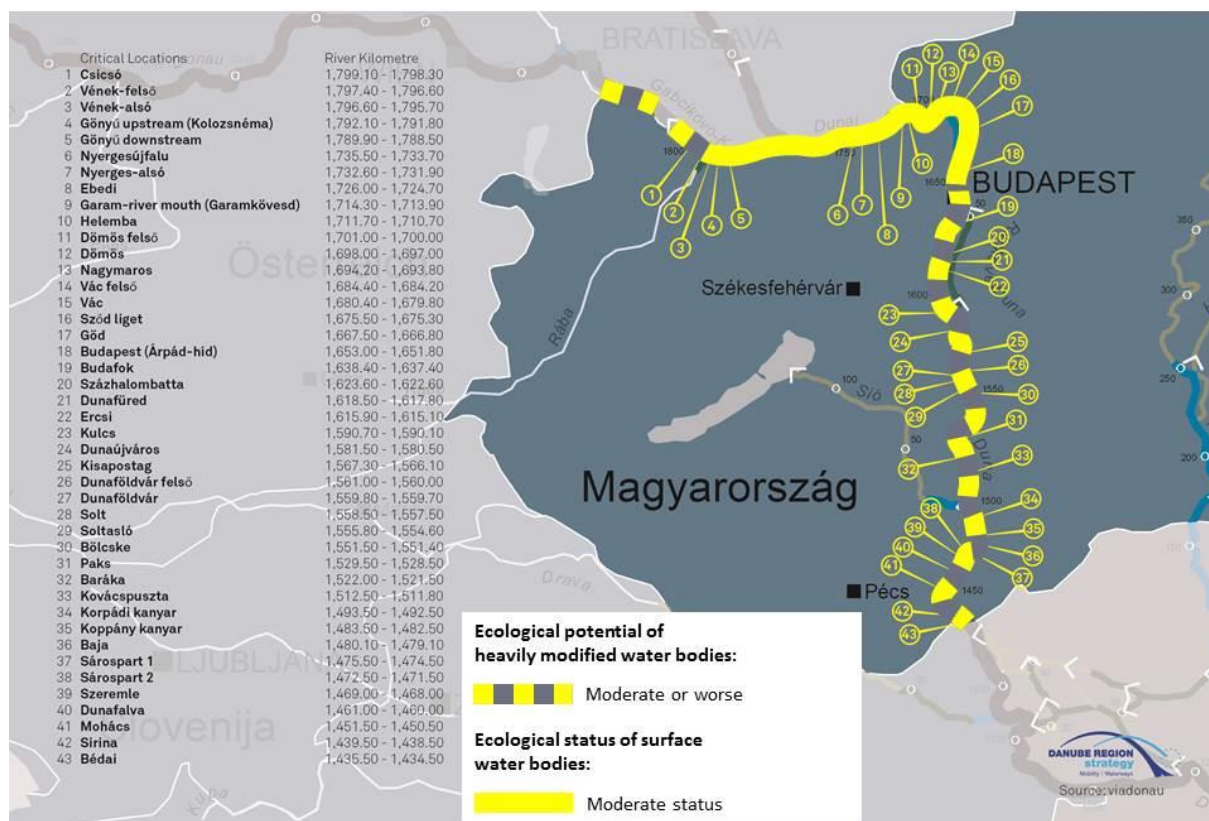
Dredging activities 2015

No dredging was done for for commercial navigation in 2015.

6.6 HU | Summary of current ecological status and environmental impacts

The Hungarian section of the Danube is divided in 7 sections. The main stretch of the Hungarian Danube is declared as “Heavily modified water bodies – Final Designation” according to the Water Framework Directive. The only two exceptions are above Budapest, these are designated as “Natural water bodies”.

The following map displays the ecological status and ecological potential of the Hungarian Danube – according to the Danube River Basin Management Plan/Update 2015 – against the background of the critical navigation locations in Hungary.



(Source: draft Hungarian NRBM Plan – Update 2015)

The ecological status of the two natural water bodies is moderate; the good ecological status is estimated to be achievable in 2027. The designation as heavily modified water body of main parts of the Danube is mainly attributed to bank revetment, which was supported by biological elements. The good ecological potential is estimated to be achieved as follows: in 2021 1 pc, in 2027 2 pc's and after 2027 2pc's. For the heavily modified water bodies measures are to be implemented in order to achieve good ecological potential

Measures to improve environmental conditions

Between 2009 and 2015 several measures have been taken to achieve the better ecological status/potential: improving drinking water quality, improving wastewater collection and treatment, reconnecting wetlands/floodplains.

As explained by the draft National Water Management Plan for Hungary (2015):

- The section named “Danube at Szigetköz” was regulated for flood protection and navigation. In 2015 several structures were built to provide connectivity between the main riverbed and the side branches. The erosion of the riverbed is significant, it exceeds 2 meters. The decreasing water levels of the Danube and of the associated groundwater seriously affect the groundwater-dependent ecosystems and the water supply of the side

branches, and endanger the bank-filtered water resources. Because the water level decrease makes the side branches to often dry up and separate, some unique and valuable habitat will be lost.

- Due to the flood protection measures (river regulation, flood control and the associated sediment mining) the danger of the icy floods is decreased, ensuring the required size fairway and the flood protection structures protect the flood free areas at the lower Hungarian Danube section named “Danube between Sió outfall and state border”.

Because of the riverbed morphology alterations and the fords the required fairway parameters cannot be guaranteed at the section named “Danube between Gönyű and Szob”. There are 10 fords and 7 narrow sections according to the 2013 river survey. The measures to improve the navigability have to be in line with the other river users’ interest and to keep or improve the good ecological status – as an objective of the integrated river management. For the Danube as protected ecological corridor and Natura 2000 area, treatment and maintenance plans are under development or are already finished. The development of the shipping and the maintenance of the fairway are typically measures, which may restrict the aims of the Water Framework Directive. According to the Water Framework Directive, the 4.7 exemption test is necessary.

Navigation maintenance measures and environmental impacts

On the Danube fairway setting of the waterway should be established based on local characteristics and dimensions of a typical convoy given by international treaties, laws and regulations.

Based on the Danube Commission recommendations (DK/TAG 77/11) for fairway depth it is necessary to ensure a safe journey with a min. 25 dm draft depth.

In the Vienna-Belgrade section (1921.05 to 1170.00 rkm) the fairway width should be at least 120-150 m, but in justified cases (e.g. in the case of sections which are in unfavourable situation because of the geomorphological conditions, those sections which were in the focus of the general assembly of the Danube Commission when issuing decision no. DK/TAG 69/18) the reduction of the minimum fairway width is allowed if the safety of navigation is ensured.

Maintenance works are executed in the framework of Act. No. XLII of 2000 on water transport and regulation No. 17/2002. of the minister for environment and water. According to the regulation, fairway maintenance activity shall be based on activity plan, which is prepared by the waterway maintainer each year by the end of March, and has to be approved by the competent regional water authority.

By the end of 2013 a permit was obtained for carrying out fairway marking activities of the Danube section 1811-1708 rkm.

6.7 HU | Budget status 2015 – 2016

Operational expenditures 2015 and budget needs 2016

Need areas	Operational expenditures 2015	Required operational budget 2016	Secured operational budget 2016	Remaining financing gap 2016
Minimum fairway parameters (width/depth)	0	1.000.000	150.000	850.000
Surveying of the riverbed	143.366	175.957	850.242	
Water level gauges	498.24	53.710	164.696	
Marking of the fairway	874.508	710.466	3.602.542	
Availability of locks / lock chambers	n/a	n/a	n/a	n/a
Information on water levels and forecasts	15.839	31.678	50.000	
Information on fairway depths	0	0	0	0
Information on marking plans	1.000	Included in marking of the fairway	47.000	
Meteorological information	15.839	31.678	0	31.678
Other needs	0	0	0	0
Sum	1.099.376	2.003.489	4.864.480	881.678

6.8 HU | Outlook: actions, milestones and funding sources

HU 01: Level of detail of monitoring data		
Planned activities:	Purchasing multi-beam sounding equipment and surveying vessel within FAIRway project	
Current shortcomings:	Currently, there are no shortcomings identified	
Environmental relevance of planned activities:	What are the main expected environmental impacts?	not relevant
	Which measures are taken to mitigate these impacts?	not relevant
	Is water status still expected to deteriorate?	not relevant
Possible funding:	CEF 85%, National budget 15% Action no. 2014-EU-TMC-0231-S	
Next steps:	- Signature of the Subsidy Contract between Hungarian Ministry of National development as CEF Beneficiary and NIF and OVF as Implementing Bodies, which provides the necessary financing to the implementation and regulates in detail the tasks, roles, duties, responsibilities, deadlines for the project implementation.	31.05.2016
	- Publication of the public procurement for multi-beam sounding equipment and surveying vessel	30.06.2016
	- Signed contract for multi-beam sounding equipment and surveying vessel (start of measurements)	31.12.2016
HU 02: Old monitoring equipment and fleet (related to fairway marking)		
Planned activities:	Purchasing equipment within national CEF project called <i>"Improving fairway marking on the Hungarian section of the Danube in the Rhine-Danube corridor"</i> <ul style="list-style-type: none"> Fairway marking vessels - 3 pcs High-speed patrol boats - 3 pcs Intelligent light buoys - 115 pcs New floating unlighted buoys - 210 pcs Light bank markers - 55 pcs New bank marks and navigation control marks - 300 pcs New river km marks - 400 pcs 	
Current shortcomings:	Currently, there are no shortcomings identified	
Environmental relevance of planned activities:	What are the main expected environmental impacts?	not relevant
	Which measures are taken to mitigate these impacts?	not relevant
	Is water status still expected to deteriorate?	not relevant
Possible funding:	CEF 85%, National budget 15% Action no. 2014-HU-TMC-0605-W	
Next steps:	- Signature of the Subsidy Contract between Hungarian Ministry of National development as CEF Beneficiary and NIF and OVF as Implementing Bodies, which provides the necessary financing to the implementation and regulates in detail the tasks, roles, duties, responsibilities, deadlines for the project implementation	31.05.2016
	- Publication of the public procurement for the marking vessels and patrol boat	30.06.2016
	- Signed contract for the marking vessels and patrol boat	31.12.2016

7 Croatia

AVP - Agency for Inland Waterways (within the Ministry of Maritime Affairs, Transport and Infrastructure) is responsible for fairway maintenance, rehabilitation and upgrade.

7.1 HR | Status report on main critical locations 2012 – 2015

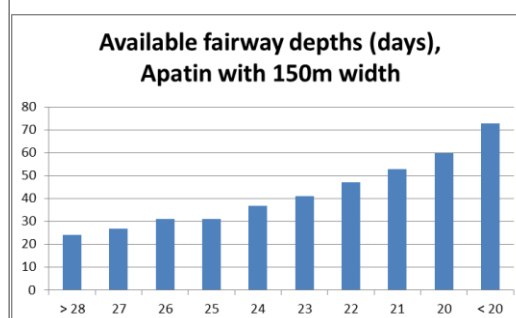
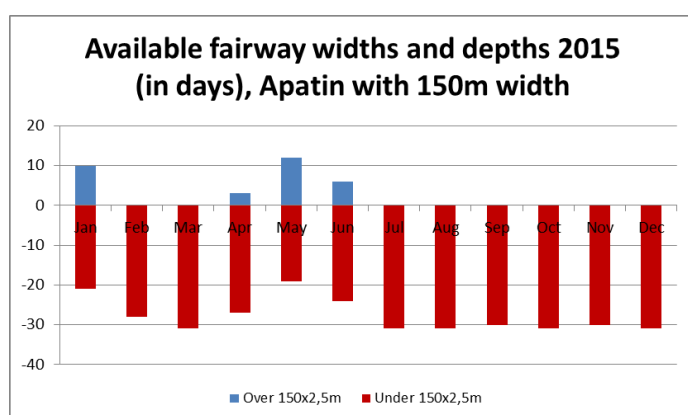
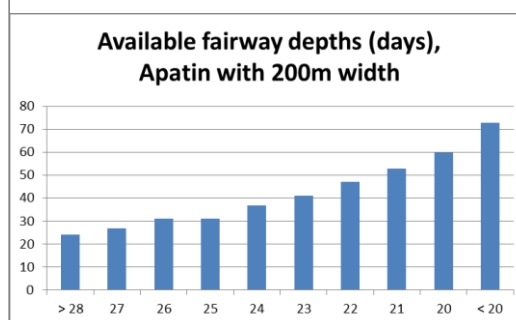
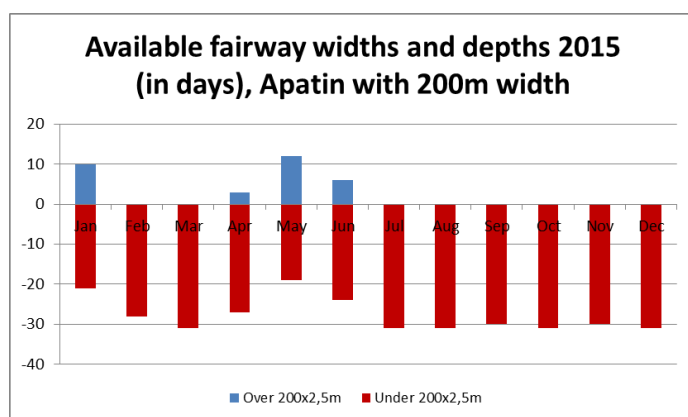
Number of days with fairway depths > 2.5m on main critical locations for a fairway width of 100m
Danube

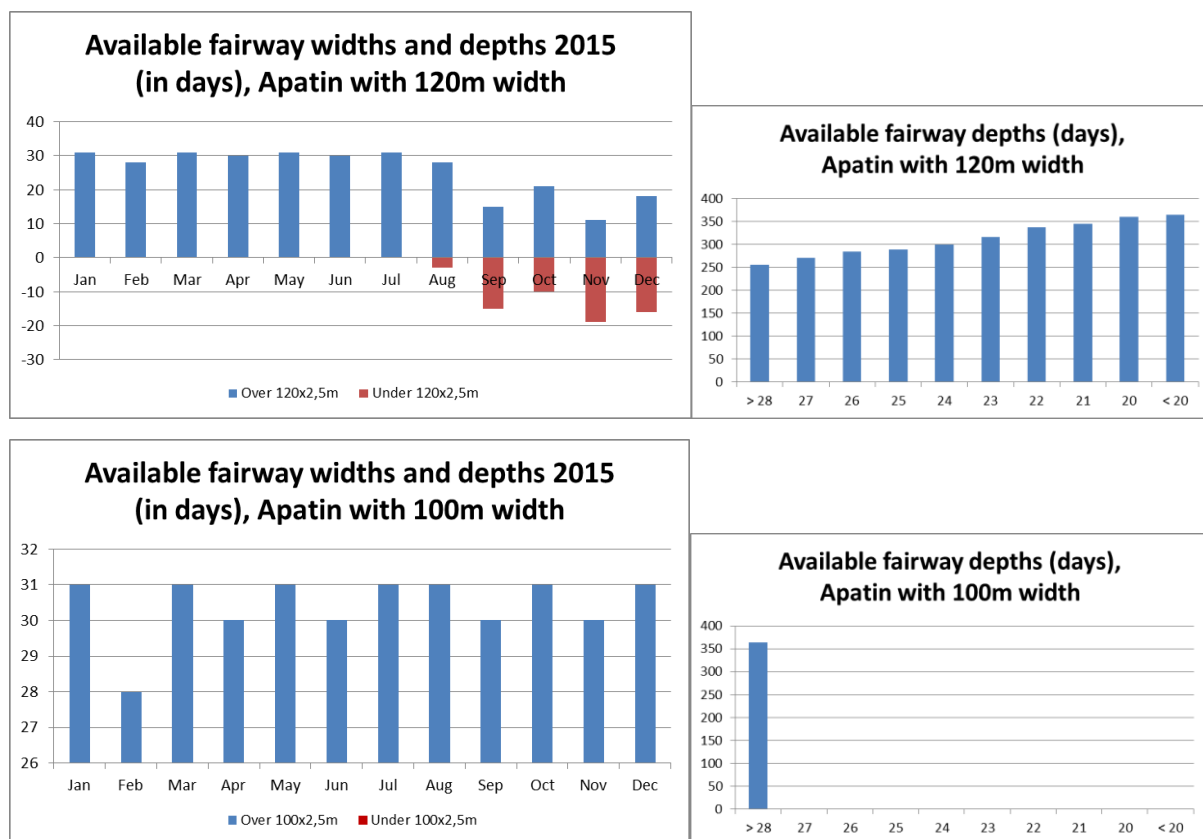
Critical location	2012	2013	2014	2015
Apatin sector	366	365	365	365

The Danube stretch in Croatia is characterized with sufficient depths therefore, but due to river morphology (large number of sandbars and islands), the achieved fairway width varies. The table below shows the number of days related to the achieved fairway width.

Number of days below 200/150/120m width (and depth over 2.5m)

Critical sector in 2015	200 x 2,5	150 x 2,5	120 x 2,5	100 x 2,5
Apatin	334	334	63	0





7.2 HR | Hydrological conditions on main critical locations 2012 - 2015

Number of days with flow discharge above multiannual average flow discharge for the main critical locations.

Danube

Critical location	Reference gauges	No. of days \geq multiannual average flow discharge (m ³ /s)			
		2012	2013	2014	2015
Apatin*	Apatin	151	217	134	205

* Data provided by PLOVPUT

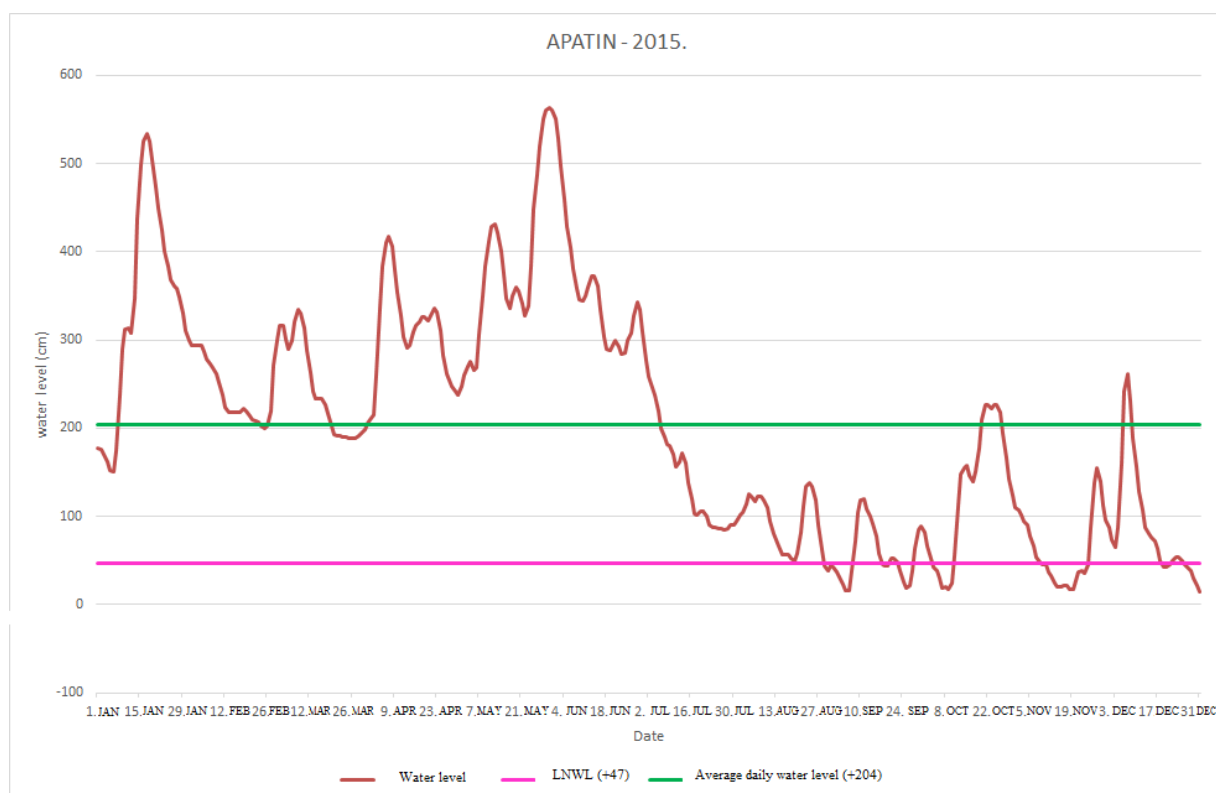
7.3 HR | Water level information on main critical locations 2012 - 2015

In the period 2015, with water levels below LNWL have been recorded*.

Danube

Critical location	Reference gauges	No. of days \geq LNWL			
		2012	2013	2014	2015
Apatin*	Apatin	366	365	365	315

*Data provided by PLOVPUT



In 2015 at the gauging station Apatin the water level under low navigable water level was present in August and in short period in September, November and December.

7.4 HR | Key issues and related activities 2015

Related to the key issues illustrated in the Fairway Rehabilitation and Maintenance Master Plan (version: December 2014):

	Key issues	Need for action	Activities performed 2015
HR 01	Old monitoring fleet and equipment	Support retrofit and acquisition of up-to-date single-beam sounding equipment, software and vessels	<i>Start of the FAIRway Danube project – purchase of one marking vessel and one surveying vessel with single and multi-beam equipment</i>
HR 03	The number and the accuracy of gauging stations should be raised	Support increasing the number and quality of gauging stations	<i>DHMZ performed regular maintaining of existed gauging stations. Start of FAIRway Danube project – purchase of 4 new gauging stations and modernisation of 5 existing ones on the Danube</i>
HR 07	Not enough vessels available with AVP to provide quick reaction on needed marking interventions; equipment and vessel malfunctions	Support acquisition of modern maintenance and marking vessels	<i>Start of the FAIRway Danube project – purchase of one marking vessel and one surveying vessel with single and multi-beam equipment</i>
HR 09	The low number and the accuracy of gauging stations; non-existence of water level forecasts	Support cooperation between actors involved in water level information and increase the number of additional gauging stations	<i>The hydrological forecasts modelling project started in year 2014, using MIKE 11 software tools, and in cooperation with Croatian Waters (Sava river). Established great communication between AVP and DHMZ – start of FAIRway Danube project where the installation of (4) new gauging stations is planned together with water level forecast until 2020 on the Danube river</i>

7.5 HR | Review of rehabilitation and maintenance activities 2015

The following activities relate to all critical locations as identified in the Rehabilitation and Maintenance Master Plan (version December 2014).

Riverbed surveying activities 2015

The river bed surveying is done according to annual surveying plan. This plan consists of annual surveying of whole Danube sector (single-beam) with main surveying of critical locations and waterway objects on which the maintenance works are planned. The plan also contains surveying of fairway locations for production of geodetic and morphological surfaces in order to update the technical documentation.

River-km (from-to)	Frequency of surveying	Type of survey (single/multibeam)
1.433,10-1295,50	Once per year together with detailed survey of Drava mouth (from 1381+500 to 1383+500 - 5x in 2015)	Single-beam
Sava, rkm 552-553	5 x in 2015	Single-beam
Drava, rkm 13-15	5x in 2015	Single-beam

Fairway relocation activities 2015

None – during 2015, the situation on whole Danube stretch was stable and there was no reallocation of the fairway as the most favourable depth was held throughout the year within the fairway limits of 100m.

Dredging activities 2015

The following fairway dredging measures for commercial navigation were implemented:

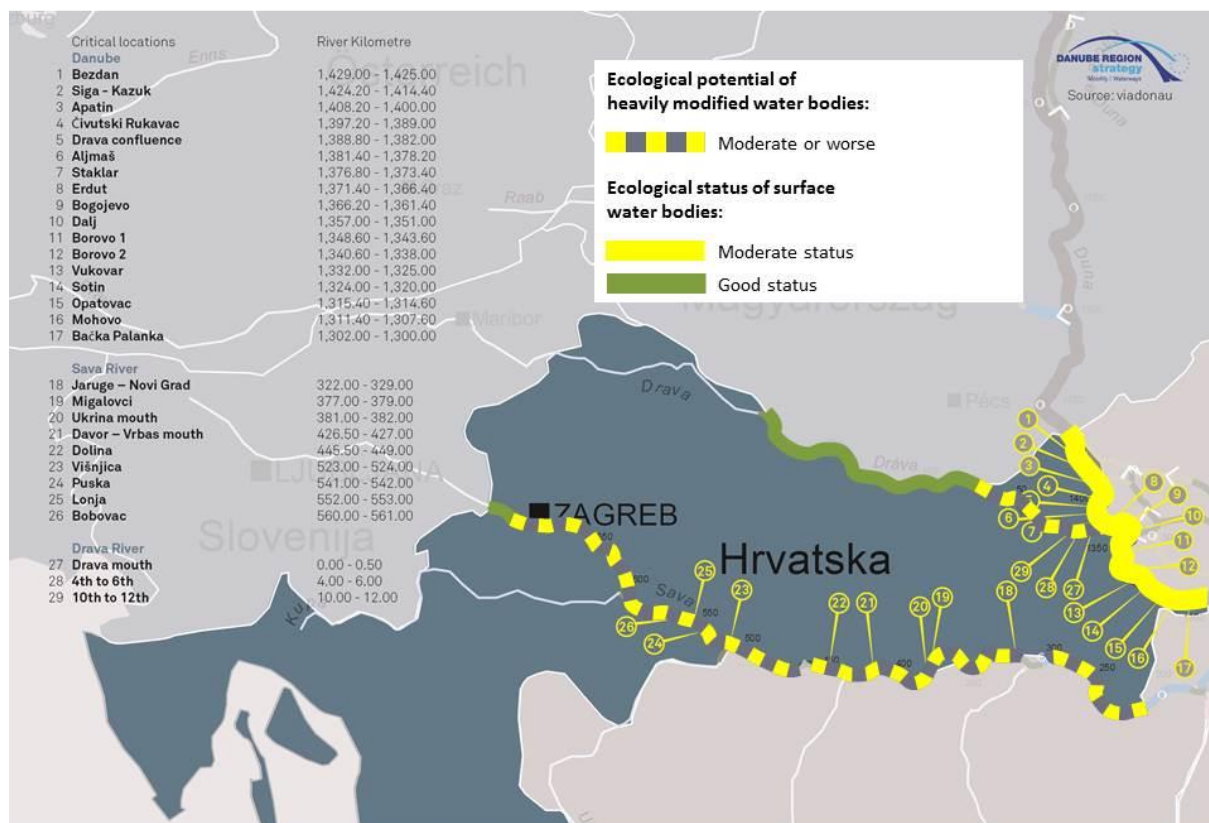
Designation of assignment	Dredging site		Dumping or placement site		Beginning of service	End of service	Material	Utilisation	m3	Referenced and relevant permits (see next table)
	from river-km	to river-km	from river-km	to river-km						
Danube river	1425 (right side)	1425+900 (right side)	Danube riverbed (stream line)		20.08.2015.	10.10.2015.	Fine sediment	Dumping	14.921,92	2
Drava river – Nemetin port	13+200	15+500	9+700	9+000	23.04.2015.	18.07.2015.	Fine sediment	Dumping	39.503,92	1
Drava river	-0+300	0+150	Danube riverbed near dredging location (rkm 1382 stream line)		7.10.2015.	20.10.2015.	Fine sediment	Dumping	10.254,52	-
Sava river	552	553	552	553	17.07.2015.	01.09.2015.	Fine sediment	Dumping	14.251,63	-

In total 78.931,99 m³ were dredged for commercial navigation in 2015

Referenced and relevant permits	Title of permit (original language)	Permitting authority	Permit applicable		Valid until	Type of permit (e.g. environmental, water, navigation law)	Main conditions for permit
			from river-km	to river-km			
1	Rješenje za izdavanje dopuštenja za uklanjanje viška riječnog nanosa u svrhu održavanja plovnosti u akvatoriju Luke Osijek	Department of Spatial Planning, Environment and Nature Protection in Osijek-Baranja County	Nemetin Port on Drava river 12+400	13+680	27.10.2016.	Environmental law	<ul style="list-style-type: none"> Dredging only between 1st of September – 28th of February It is not allowed to remove the vegetation on the banks of the Drava river In the case of running into a strictly protected species and their habitats it is needed to suspend works near site and inform the inspectors of nature protection Pre-and-post surveying of the stretch required with proper documentation
2	Rješenje za “Uklanjanje riječnog nanosa u svrhu održavanja plovnog puta rijeke Dunav na lokaciji Batina”	Department of Spatial Planning, Environment and Nature Protection in Osijek-Baranja County	1425	1425+900	13.07.2017.	Environmental law	<ul style="list-style-type: none"> Max amount of dredged material 30.000 m³ The works shall be carried out with the help of navigable machinery, without the presence of machinery on the coast, wherever it is technically feasible Dredging only between 1st of August – 28th of February To avoid dredging during the lowest (minimum) water level Pre-and-post surveying of the stretch required with proper documentation

7.6 HR | Summary of current ecological status and environmental impacts

The following map displays the ecological status and ecological potential of the Croatian Danube – according to the Danube River Basin Management Plan/Update 2015 – against the background of the critical navigation locations in Croatia.



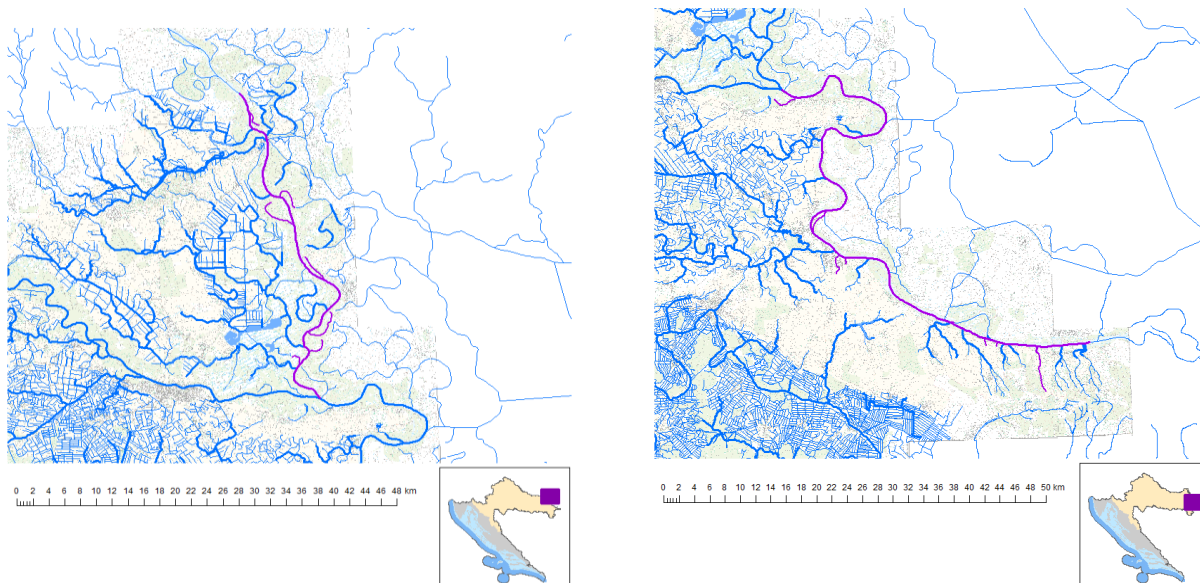
Ecological status and ecological potential of surface water bodies

(Source: DRBM Plan – Update 2015)

According to the River Basin Management Plan (RBMP) 2016-2021, water bodies on the Danube River in Croatia aren't designated as HMWBs and there are no hydropower plants built there.

In the RBMP 2016-2021, the status of water bodies on the Danube River is assessed according to the Regulation on water quality standard (official gazette 73/2013) and based on the impacts and pressures analysis.

According to the Regulation, the ecological status of the water body (from the Croatian-Hungarian border to the Drava-Danube confluence) is assessed as moderate, and its chemical status as good. Downstream of the Drava-Danube confluence to the Croatian-Serbian border, both the ecological and chemical statuses of the water body are assessed as good.



Water bodies on the Danube River in Croatia

Measures to improve environmental conditions

Instruments to control hydromorphological pressures to water bodies are provided in the Water Act and the Environmental Protection Act.

Hydromorphological modifications to the water bodies due to physical interventions (projects) that affect the water regime are controlled by issuing water rights acts or binding water rights opinions as part of integrated environmental protection requirements, which precedes the issuance of a location permit or some other form of project approval. Compliance with the specified requirements is controlled during project implementation.

Comprehensive control of the impacts of development plans, programmes and projects on environmental quality, including impacts on the aquatic environment, is regulated by the Environmental Protection Act.

The lack of appropriate hydromorphological and biological monitoring significantly restricts the possibility to prepare an elaborate programme of measures to control and reduce hydromorphological pressures to water bodies.

Due to very limited data, the programme of measures for the period 2016-2021 includes activities corresponding to a temporary character of designating artificial and heavily modified water bodies (no regret approach).

Navigation maintenance measures and environmental impacts

Maintenance works are executed in the framework of navigation law ("Zakon o plovidbi i lukama unutarnjih voda", official gazette nr. 109/2007, 132/2007, 51A/2013 and 152/2014), Regulation on technical maintenance of waterways ("Pravilnik o tehničkom održavanju vodnih putova", official gazette nr. 62/2009 and 136/2012) and in accordance with the applicable technical regulations in the field of construction, spatial planning and environmental protection,

and water management relating to maintenance works on constructions which are used for the improvement of navigation conditions.

The Annual Maintenance Program is prepared based on the maintenance studies, annual and detailed surveying data, information about the changes in the waterway and data about the execution of works from previous years. When the Program is adopted the Assessment Study of main impact for the ecological network (which is done by official experts on nature conservation and water ecology) must be done towards Ministry of Environment and Nature Protection. Assessment Study contains proposed measures to mitigate adverse impacts of planned activities and program for monitoring and reporting of planned activities. If the proposed mitigation measures/alternatives are eliminating negative effects, the competent authority (Ministry of Environment and Nature Protection or Department of Spatial Planning, Environment and Nature Protection in competent county) issues their conclusions and approval of the procedure. Based on given conclusions the Water conditions (in accordance with Water law) are issued by the Croatian Waters.

By the end of 2015 two Assessment studies are in process for the Sava and Drava rivers. Currently on the Danube there is no need for dredging activities. For the works in Batina section (rkm 1425- 1425+900) required environmental measures are provided by Department of Spatial Planning, Environment and Nature Protection in Osijek-Baranja County and they are in force until 13.7.2017.

7.7 HR | Budget status 2015 – 2016

Operational expenditures 2015 and budget needs 2016

Need areas	Operational expenditures 2015	Required operational budget 2016	Secured operational budget 2016	Remaining financing gap 2016
Minimum fairway parameters (width/depth)	400.000	340.000	340.000	-
Surveying of the riverbed	50.000	50.000	53.000	-
Water level gauges	10.000	10.000	10.000	-
Marking of the fairway	540.000	540.000	540.000	-
Availability of locks / lock chambers				
Information on water levels and forecasts	30.000	30.000	30.000	-
Information on fairway depths	23.000	-	16.000	-
Information on marking plans	-	-	-	-
Meteorological information	5.000	5.000	5.000	-
Other needs	14.200	14.200	14.200	-
Sum	1.072.200	989.200	1.008.200	-

7.8 HR | Outlook: actions, milestones and funding sources

HR 01: Old monitoring fleet and equipment		
Planned activities:	Preparation of projects for purchasing needed equipment and vessels (financed from EU funds)	
Current shortcomings:	Lack of qualified staff needed for project implementation, not enough budget	
Environmental relevance of planned activities:	What are the main expected environmental impacts?	No environmental impacts
	Which measures are taken to mitigate these impacts?	Not applicable
	Is water status still expected to deteriorate?	Not applicable
Possible funding:	Budget availability 2015/2016: EU funds/national budget	
Next steps:	Application for EU co-financing	Until 2020
HR 02: Insufficient number of skilled staff		
Planned activities:	We are planning to have additional education of our staff in future, but still do not know exact start time	
Current shortcomings:	National restrictions of hiring new staff due to a lack of national funds/budget for additional staff	
Environmental relevance of planned activities:	What are the main expected environmental impacts?	No environmental impacts
	Which measures are taken to mitigate these impacts?	Not applicable
	Is water status still expected to deteriorate?	Not applicable
Possible funding:	Budget availability 2015/2016: National fund	
Next steps:	We hope that the purchase of new equipment/vessels will open the possibility of hiring new workers and additional education	tbd
HR 03: The number and the accuracy of gauging stations should be raised		
Planned activities:	DHMZ plans the activities for the whole hydrological stations network on yearly basis. Within the FAIRway project it is planned installation of 4 new gauging stations and modernisation of existing 5 gauging stations	
Current shortcomings:	The uncertainty of funding	
Environmental relevance of planned activities:	What are the main expected environmental impacts?	No environmental impacts
	Which measures are taken to mitigate these impacts?	Not applicable
	Is water status still expected to deteriorate?	Not applicable
Possible funding:	Budget availability 2015/2016: EU funds/national budget	
Next steps:	To plan the achievable activities in year 2016, depending on available funding	Until 2017

HR 04: Insufficient and hardly predictable financial backings		
Planned activities:	Planning of projects that could help us provide additional funds for waterway maintenance	
Current shortcomings:	Insufficient communication between all relevant institutions	
Environmental relevance of planned activities:	What are the main expected environmental impacts?	No environmental impacts
	Which measures are taken to mitigate these impacts?	Not applicable
	Is water status still expected to deteriorate?	Not applicable
Possible funding:	Budget availability 2015/2016: EU funds/national budget	
Next steps:	Planning of projects that could help us provide additional funds for waterway maintenance	tbd
HR 05: Deterioration of equipment of dredging companies		
Planned activities:	No planned activities	
Current shortcomings:	Not enough funds/budget	
Environmental relevance of planned activities:	What are the main expected environmental impacts?	No environmental impacts
	Which measures are taken to mitigate these impacts?	Not applicable
	Is water status still expected to deteriorate?	Not applicable
Possible funding:	Budget availability 2015/2016: EU funds/privat budget	
Next steps:	N/A	tbd
HR 06: Cumbersome procurement procedures for dredging activities		
Planned activities:	Starting a concessions - waterway will be maintained more efficiently – no more time waste on a time consuming procedures	
Current shortcomings:	Time consuming procedures	
Environmental relevance of planned activities:	What are the main expected environmental impacts?	Not applicable
	Which measures are taken to mitigate these impacts?	Not applicable
	Is water status still expected to deteriorate?	Not applicable
Possible funding:	Budget availability 2015/2016: national budget	
Next steps:	Concession procedures for Sava, Drava and Danube	Concession for Drava – Port Nemetin expected in 2016
HR 07: Not enough vessels available with AVP to provide quick reaction on needed marking interventions; equipment and vessel malfunctions		
Planned activities:	Preparation of projects for purchasing needed equipment and vessels	

	(financed from EU funds)	
Current shortcomings:	Lack of staff needed to research the current needs, not enough budget	
Environmental relevance of planned activities:	What are the main expected environmental impacts?	No environmental impacts
	Which measures are taken to mitigate these impacts?	Not applicable
	Is water status still expected to deteriorate?	Not applicable
Possible funding:	Budget availability 2015/2016: EU funds/national budget	
Next steps:	Purchase of equipment within the FAIRway project	Until 2020
HR 08: Inefficient procedures, suboptimal link between surveying and marking department, insufficient data storage and analysis facilities		
Planned activities:	The part of needs will be resolved within the FAIRway project – IT tool that will be developed within the project- waterway asset management system	
Current shortcomings:	With enough funds for future operation we would be able to plan activities that would improve current status quo	
Environmental relevance of planned activities:	What are the main expected environmental impacts?	No environmental impacts
	Which measures are taken to mitigate these impacts?	Not applicable
	Is water status still expected to deteriorate?	Not applicable
Possible funding:	Budget availability 2015/2016: EU funds/national budget	
Next steps:	Improve link between surveying and marking department using IT tool developed within FAIRway project	Until 2020
HR 09: The low number and the accuracy of gauging stations; non-existence of water level forecasts		
Planned activities:	Hydrological forecasts modelling	
Current shortcomings:	The project started with modelling the Kupa river and a part of the Sava river from Slovenian border to Sisak. The model will be expanded to Danube river	
Environmental relevance of planned activities:	What are the main expected environmental impacts?	No environmental impacts
	Which measures are taken to mitigate these impacts?	Not applicable
	Is water status still expected to deteriorate?	Not applicable
Possible funding:	Budget availability 2015/2016: The funding of the project is national at the moment, but DHMZ is going to apply for EU funds	
Next steps:	To continue with the modelling. To increase the number of gauging stations where needed	Until 2020

8 Romania

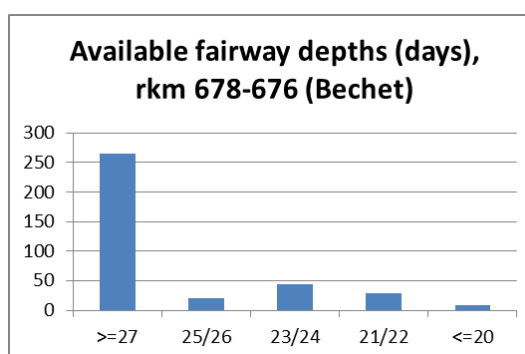
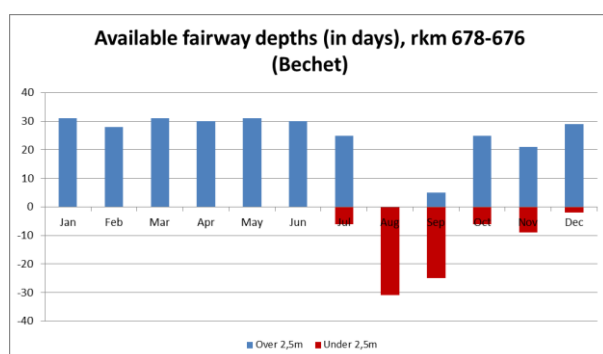
The **Administration of the Lower Danube (AFDJ)** and the **Administration of the Navigable Canals (ACN)** are responsible for fairway maintenance, rehabilitation and upgrade.

8.1 RO | Status report on main critical locations 2012 – 2015

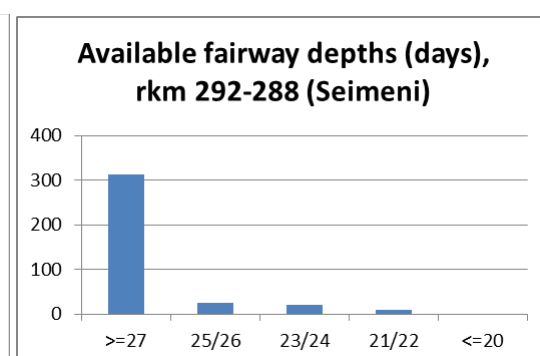
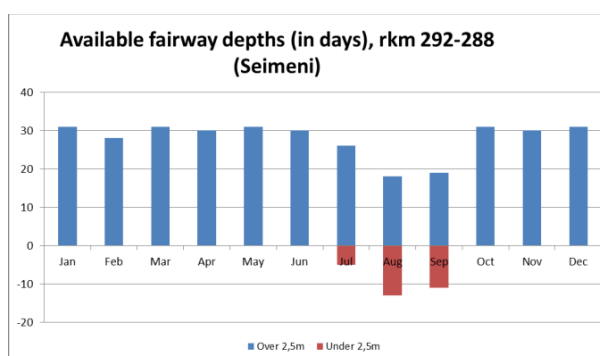
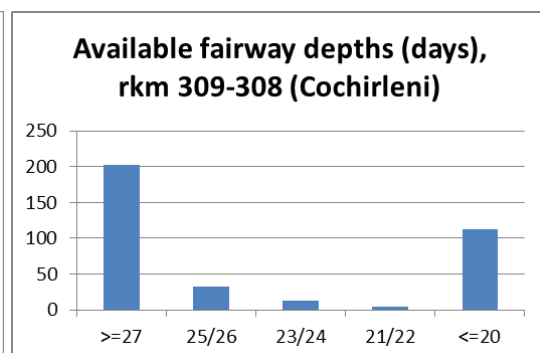
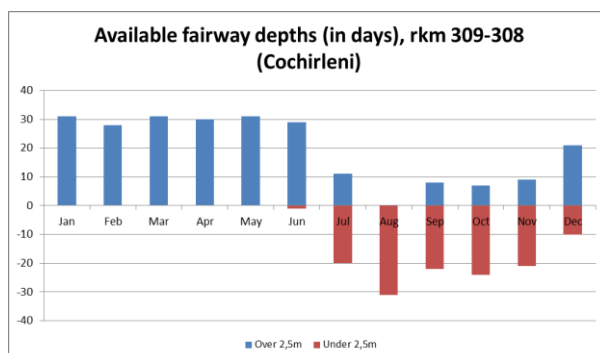
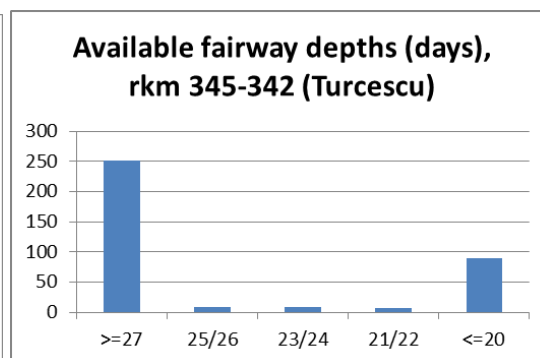
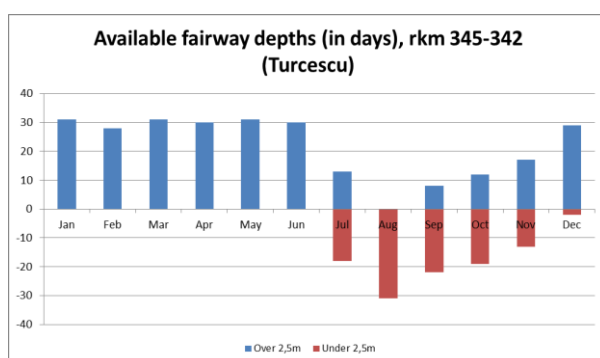
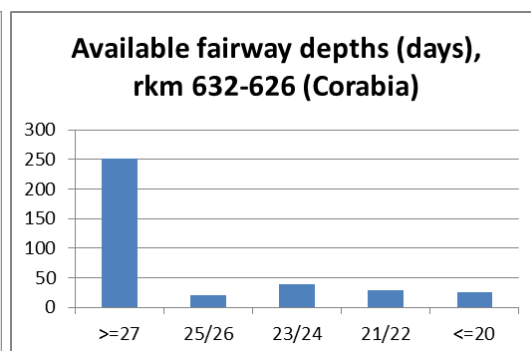
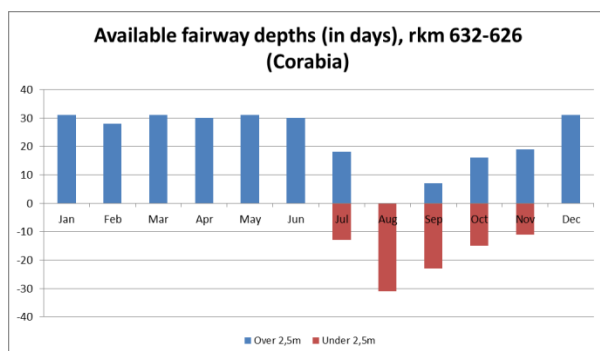
Number of days with fairway depths > 2.5m on main critical locations

Danube

Critical location	2012	2013	2014	2015
Bechet (80m fairway width)	355	327	365	285
Corabia(100m fairway width)	348	335	365	272
Turcescu(80m fairway width)	281	297	345	260
Cochirleni (80m fairway width)	196	234	319	236
Seimeni (80m fairway width)	323	329	365	336
Prut (80m fairway width, 7.5m fairway depth)	352	333	365	308
Tulcea(100m fairway width, 7.5m fairway depth)	351	318	365	321



Action Plan: Romania



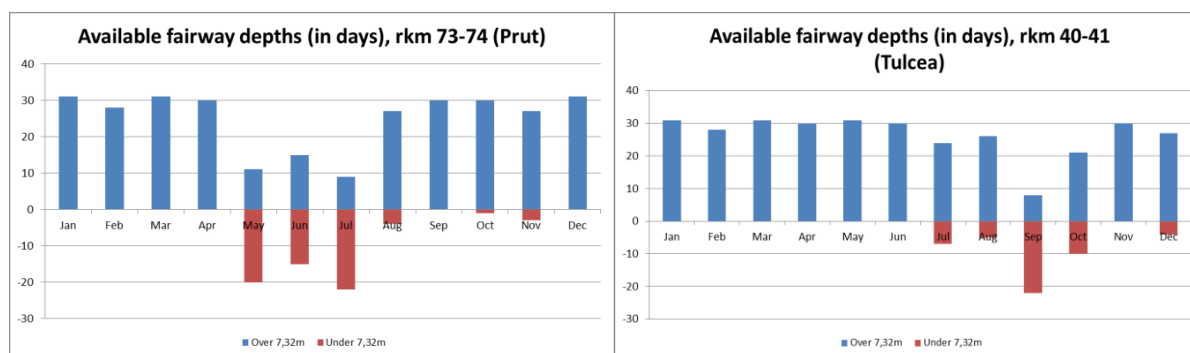
From the hydrological point of view, in 2015 there are two distinct periods. In first part of 2015, a minimum fairway depth of 2.5m was available on the entire sector of Romanian Danube, when the water levels were above LNW values. Thus, in January -July they was available the fairway depths over 2.5m, in all critical points, for 181 days, or 100% for the first half of the year.

Action Plan: Romania

Starting with middle month July, the water levels fall drastically, having negative effects on navigability. During this period were recorded levels below LNWL values which required intervention on the fairway dimensions. So, in July, in most of the critical points, the depths were less than 2.5m for 10-15 days, and in August (the most drastic situation), the depths were below 2.5m, even 2.1m, for 31 days. The most difficult period was during low waters, period (July - October) when were recorded depths below 2.5 m up to 60 days. During this period, which were unfavorable for navigation conditions, has been took a series of measures by increasing the number of surveys, supplementation floating signals, reducing the fairway widths so as to ensure navigation depths, and marking vessels remained in the field for the entire period in order to rapid interventions

Until end of November, in most of the critical points, the depths were less than 2.5m for 10-22 days per month. Because of this, to ensure the minimum depths, the dredging works were started, in October and November was a number of 20 days with depths below 2.5m, and from December was reduced. Overall, due to unfavorable hydrological conditions, poor in the second half of 2015 were, on average, was recorded a total of 110-120 days with depths below 2.5m in critical points.

For the maritime sector of Danube, were encountered problems related to navigation depth, in the main critical areas, on the section downstream Galati: Prut and Tulcea. To note, in this sector, the minimum navigation depth is 7.32m (24 feet) and has a maritime navigation regime. Special problems were only in the Prut, in the period May-July, when they recorded a total of 62 days. In general, here in most areas, they were ensured the navigation depths because of dredging works which were carried out in most areas. Referring to navigation conditions on the River on this sector they were meet on entire period, depths over 2.5m



Danube-Black Sea Canal

Danube Black Sea canals bottom is dredged 1 meter under the Danube river so in the years 2012-2015 fairway depths were over 2, 5 m on the Danube Black Sea canal for the entire year. Between Cernavoda and Agigea locks minimum depth is 7m which permit to maritime ships to access to Basarabi and Medgidia ports.

Critical location	2012	2013	2014	2015
confluence with the Danube river km 64-65 - DBSC	365	365	365	365
Port Medgidia km 37- DBSC	365	365	365	365
Downstream Navodari lock – CPAMN	365	365	365	365
Port Luminita – river branch Luminita	365	365	365	365

Starting with July 2015, ACN completed dredging works in critical location “Confluence DBSC with the Danube river km 300”. This location will not be reported in the next 2-3 years as critical point. The dredging activity will be resumed if alluvial deposits exceed the thickness of 2 m in this area.

8.2 RO | Hydrological conditions on main critical locations 2012 – 2015

Number of days with flow discharge above multi-annual average flow discharge for the main critical locations.

Critical location	Reference gauges	No. of days \geq multiannual average flow discharge (m ³ /s)			
		2012	2013	2014	2015
Bechet	Bechet	105	211	233	134
Corabia	Corabia	108	171	218	127
Turcescu	Calarasi	137	202	236	137
Cochirleni	Cernavoda	51	156	199	124
Seimeni	Cernavoda	51	156	199	124

Usually the low water period is in August-October, which represents 25% of the year.

From hydrological point of view, the period January-December 2015, is characterized by very low flow discharge and long periods with values below the multi-annual flow discharge, especially between July - December. Since late April, rates were below multi-annual values for about 230 days, causing problems in providing navigation conditions. The number of days with flow discharge above multi-annual average value, in the main critical points, was: Bechet 134 days, Corabia 127 days, Turcescu 137 days, Seimeni 124 days.

8.3 RO | Water level information on main critical locations 2012 – 2015

Critical location	Reference gauges	No. of days \geq LNWL			
		2012	2013	2014	2015
Bechet	Bechet	332	329	365	277
Corabia	Corabia	328	325	365	258
Turcescu	Calarasi	319	325	365	279
Cochirleni	Cernavoda	331	325	365	295
Seimeni	Cernavoda	331	325	365	295
Prut	Galati	366	365	365	365
Tulcea	Tulcea	366	365	365	365

In terms of water levels, in 2015, the period from January to middle of June, favourable conditions for navigation were encountered. In this period the levels had values above annual average, in April, registering the maximum. Starting with the second part of July, the levels fell steadily throughout August until end of November and in the last part of December. Thus, in all sections had been recorded levels with values below LNWL, which represented about 24%.

The number of days with values above LNWL, for the period January-December 2015, was: Bechet 277 days, Corabia 258 days, Calarasi 279 days, Cernavoda 295 days.

8.4 RO | Key issues and related activities 2015

Related to the key issues illustrated in the Fairway Rehabilitation and Maintenance Master Plan (version: December 2014):

Romanian Danube

	Key issues	Need for action	Activities performed 2015
RO 01	Insufficient number of sounding vessels	Support acquisition of up-to-date sounding equipment to raise the coverage of surveyed areas.	<i>Pilot action defined within the FAIRway Danube project</i>
RO 02	Insufficient number of automatic gauging stations.	Support acquisition of additional automatic gauging stations, especially for critical sections.	<i>Feasibility study for rehabilitating and extending the network of hydrometric stations on the Romanian sector of Danube implemented through SOPT 2007 – 2013 r pilot action defined within the FAIRway Danube project</i>
RO 03	Lack of dredging equipment, specialized personnel and deficiency of investments in river regulation	Support acquisition of dredging equipment performance to increase the efficiency of working problem areas and the	<i>Ensuring the enough budget for dredging works for 2015 Implement the project for feasibility study for technical vessels including dredger on SOPT 2007 -2013 Elaboration of the Romanian – Bulgarian</i>

Action Plan: Romania

		possibility of intervention at any time where it is needed	<i>Common Plan of measures necessary for 2016 including dredging activities</i>
RO 05	Lack of efficient vessels and special equipment for marking.	Support acquisition of vessels equipped with advanced machines to perform operations board assembly / disassembly floating signals.	<i>Implement the project for feasibility study for technical vessels including marking vessels on SOPT 2007 - 2013 Defining the pilot action within the FAIRway Danube project</i>
RO 07	Unavailable forecast for water levels.	Support establishment of a water level forecast	<i>Implement the project for feasibility study for rehabilitating and extending the network of hydrometric stations on the Romanian sector of Danube- HyQ Danube project on the SOPT 2007 - 2013 AFDJ developed a geodesic network of support within the project BORD, financed from SOPT 2007 - 2013 Defining the pilot action within the FAIRway Danube project</i>
RO 08	Information could be provided customer-friendly using established river information portals.	Support customer-friendly processing and dissemination of information.	<i>AFDJ forwarded the information to the FIS PORTAL AFDJ forwarded the information to the RoRIS PORTAL AFDJ provided fairway information on the official website:www.afdj.ro</i>
RO 10	Insufficient number and quality of weather stations.	Support improvement of meteorological information.	<i>Implement the project for feasibility study for rehabilitating and expanding the network of hydrometric stations on the Romanian sector of Danube – HyQ Danube project on SOPT 2007 - 2013</i>

Danube Black Sea Canal

	Key issues	Need for action	Activities performed 2015
RO 01	Insufficient number of sounding vessels	Support acquisition of up-to-date sounding equipment to raise the coverage of surveyed areas.	DBSC: Defining of the action within the proposed FAIRway Danube project
RO 02	Insufficient number of automatic gauging stations.	Support acquisition of additional automatic gauging stations, especially for critical sections.	DBSC: Defining of the action within the proposed FAIRway Danube project
RO 03	Lack of dredging equipment, specialized personnel and deficiency of investments in river regulation	Support acquisition of dredging equipment performance to increase the efficiency of working problem areas and the possibility of intervention at any time where it is needed	DBSC: ACN finalized dredging works in order to assure the optimum navigation conditions

RO 07	Unavailable forecast for water levels.	Support establishment of a water level forecast	DBSC: Defining of the action within the proposed FAIRway Danube project
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8.5 RO | Review of rehabilitation and maintenance activities 2015

The following activities relate to all critical locations as identified in the Rehabilitation and Maintenance Master Plan (version December 2014):

Riverbed surveying activities 2015

The following river bed surveying activities were performed in the mentioned period, in accordance with an annual plan and depending on the water levels and fairway dimensions. The shallow sections were monitored by detailed surveys and control surveys. During this period, especially the shallow sections, had been measured at least one time per month and during the low water period AFDJ performed surveys weekly. Also, there were carried out surveys for dredging works and surveys for relocation of the fairway. The table below shows the sections monitored.

Danube

River-km (from-to)	Frequency of surveying	Type of survey (single/multi-beam)
839,00-610,00	1 per month	SB+MB
345,00-308,00	1 per month	SB
300,00-0,00	1 per month	SB+MB

Danube-Black Sea Canal

River-km (from-to)	Frequency of surveying	Type of survey (single/multi-beam)
0-64,410 DBSC	1 per a year	SB
0 – 27 PAMNC	1 per a year	SB
64+530-64+450 DBSC	1 per month during dredging	SB
37-38 DBSC	1 per a year	SB
1-2 PAMNC	1 per a year	SB
0-1 PAMNC – Luminita Branch	1 per a year	SB

Fairway relocation activities 2015

Danube

River-km (from-to)	Frequency of relocation interventions	Comments
0,00-1075,00	1 per month	Monthly field inspections are performed with specialized vessels and depending on the situation, recourse to the fairway buoying works.

Action Plan: Romania

During the low water period (started on July) interventions on the field were performed weekly to check the fairway dimensions and the physical condition of the marking signals. When necessary, because of the low water levels, situated below LNWL, it was proceeded to narrow the fairway. During low water period, there were frequent fast interventions with marking vessels for signalling and narrowing the fairway width to ensure depths of 2.5 m. Due to changes in the riverbed and dredging works, in critical areas, the fairway trajectory was relocated to ensure the navigation depths.

Danube-Black Sea Canal

In 2015 no fairway relocation took place on the Danube-Black Sea Canal due to dredging activities.

Dredging activities 2015

Danube

The following fairway dredging measures for navigation conditions insurance were implemented on the Romanian Danube:

Designation of assignment	Dredging site		Dumping or placement site		Beginning of service	End of service	Material	Utilisation	m3	Reference and relevant permits (see next table)
	from river-km	to river-km	from river-km	to river-km						
Bechet	676.6	677.4	671.0	672.0	27.08.2015	05.11.2016	Fine sediment	Dumping	90.000	3
Corabia	627.4	627.8	624.0	624.5	08.09.2015	11.09.2015	Fine sediment	Dumping	5,593	3
Cochirleni	304.0	310.0	304.0	304.5	18.11.2015	25.11.2015	Fine sediment	Dumping	15,000	3
Seimeni	289.0	292.0	288.5	288.7	02.09.2015	31.12.2015	Fine sediment	Dumping	67,758	3
Albanesti	274.0	276.0	274.0	274.5	01.09.2015	30.09.2015	Fine sediment	Dumping	15,000	3
Capidava	279.0	283.0	278.3	278.7	18.09.2015	31.10.2015	Fine sediment	Dumping	10,000	3
Ghindaresti	264.0	265.0	264.5	264.8	01.09.2015	30.10.2015	Fine sediment	Dumping	15,000	3
3Harsova	249.0	251.0	248.3	248.8	01.10.2015	31.10.2015	Fine sediment	Dumping	15,000	3
Giurgeni	243.0	245.0	242.5	242.7	04.09.2015	31.10.2015	Fine sediment	Dumping	20,000	3
I. Lupu	194.0	197.5	9.5 Caleea	9.80 Caleea	11.08.2015	30.11.2015	Fine sediment	Dumping	55,000	3
Dunarea Veche	189.0	191.5	185.0	186.0	01.10.2015	31.12.2015	Fine sediment	Dumping	59,564	3
Pрут	133.0	137.0	138.0	138.6	25.06.2015	06.08.2015	Fine sediment	Dumping	291,845	2,3
Isaccea	103.0	107.0	109.0	110.0	06.08.2015	02.09.2015	Fine sediment	Dumping	83,735	2,3
Sulina Bar	0.50	0.80	Black Sea (to 2km)		03.04.2015	01.05.2015	Fine sediment	Dumping	63,520	2,3

On the river sector of the Danube 367.915 m³ were dredged with the third parties to ensure navigation conditions in the period January-December 2015. For the maritime Danube, a volume of 439.100m³ was dredged in the period April-September 2015 with AFDJ resources. For the period January - September 2015, a total volume of 807.015 m³ was dredged to ensure navigation conditions.

Action Plan: Romania

Referenced and relevant permits	Title of permit (original language)	Permitting authority	Permit applicable		Valid until	Type of permit (e.g. environmental, water, navigation law)	Main conditions for permit
			from river-km	to river-km			
1	Autorizația nr. 284 din 13.11.2013	Environmental Protection Agency Galati	150	175	12.11.2023	Environmental law Galati	To respect the Law no. 211/2011 regarding the regime of waste ; To respect Government Decision no. 235/2007 regarding the management of the used oil ; To respect the provisions of the International Convention for the Prevention of Pollution From Ships - MARPOL 73/78; It is forbidden the abandonment or storage in any way, in riverbed or on the banks of water surface of any kind of waste Monitoring the environment quality Monitoring the chemical composition of dredged material
2	Autorizația nr. 1154 din 25.02.2013	Administration of the Danube Delta Biosphere Reserve	0	150	25.02.2023	Environmental law Tulcea	The dredging works within the Danube Delta Biosphere Reserve in Bara Sulina Hm critical points at 77-90, Rostock Mm 31, Mm41 upstream Tulcea, Isaccea Mm + 800-Mm58 Storage of the dredged material on the dredger „Dunărea Maritimă” discharge of the dredged material in the discharge areas in Bara Sulina 2 km offshore, km 108-km 109 St. Gheorghe arm, left bank, upstream Tulcea - Mm45 + 500 right bank, 58-Mm58 Isaccea Mm + 1/2 right bank
3	Aviz nr. 5068 din 11.02.2016	National Administration Romanian Waters	0	1075	31.12.2016	Water law	To obtain the environmental permit from the responsible authorities; To taking into account the bottleneck areas and discharge area in the protected natural areas; To taking into account that the discharge of dredging materials do not lead to the closure of the canals and not adversely affect the natural habitats in the Danube meadow; To adopt an optimal dredging technology in terms of the environmental protection; To respect agreements with neighbouring countries in border areas; The discharge areas of dredged material will be marked in advance; For border areas the discharge of dredged material will be made as close as possible to the left bank (for the riverine Danube) and respectively as closer as possible to the right bank (for Maritime Danube);

Action Plan: Romania

							The dredging works will be announced to the Water Basin Administration with 10 days before starting
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Danube-Black Sea Canal

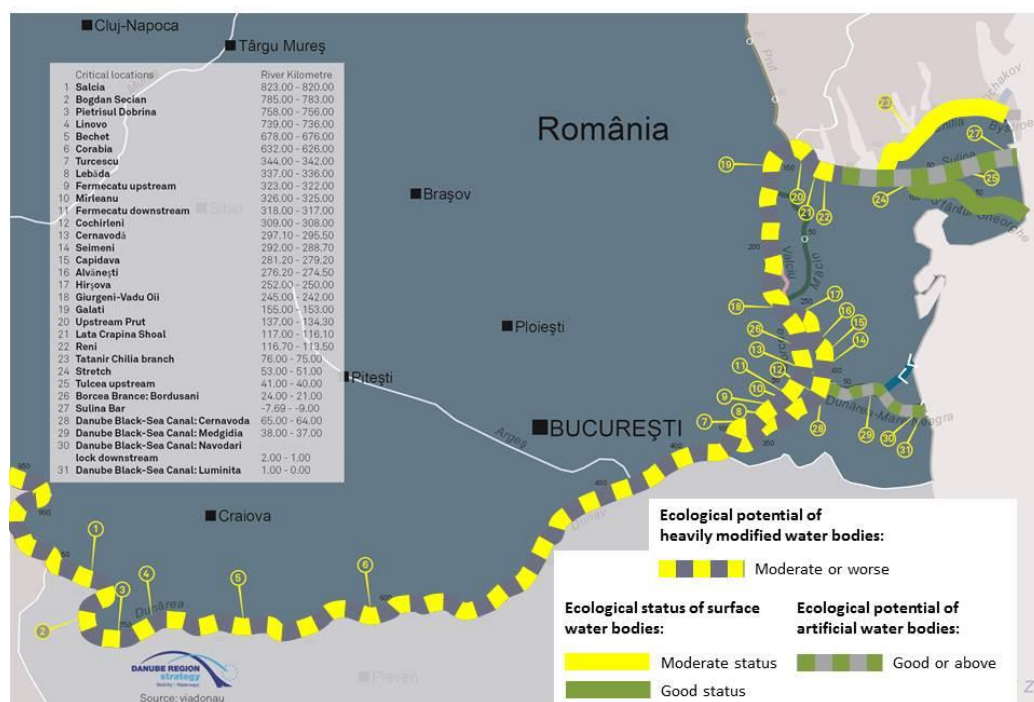
Designation of assignment	Dredging site		Dumping or placement site		Beginning of service	End of service	Material	Utilisation	m3	Referenced and relevant permits (see next table)
	from river-km	to river-km	from river-km	to river-km						
	64+550	63+550	284+500 (on Danube)		March 2015	August 2015	sand	dumping	249.555	1

In total, 249.555 m³ were dredged with the third parties for commercial navigation on the Danube-Black Sea Canal in 2015.

Referenced and relevant permits	Title of permit (original language)	Permitting authority	Permit applicable		Valid until	Type of permit (e.g. environmental, water, navigation law)	Main conditions for permit
			from river-km	to river-km			
1	Aviz favorabil no.19381/21.05.2015	The Administration of the Lower Danube(AFDJ)	284+500		N/A	water law	Up to 250.000 mc Signalized beacons area in advance

8.6 RO | Summary of current ecological status and environmental impacts

The following map displays the ecological status and ecological potential of the Romanian Danube – according to the Danube River Basin Management Plan/Update 2015 – against the background of the critical navigation locations in Romania.



Danube

Ecological status and ecological potential of surface water bodies

The Danube River is the main navigable route of Romania. On Romanian territory, the waterway is divided into riverine Danube, from entering the country to Braila and maritime Danube from Braila until it flows into the Black Sea. Also, the Danube - Black Sea Canal (CDMN) and Poarta Alba - Midia - Năvodari Canal (CPAMN) provides the connection with the Black Sea.

In terms of ecological status as defined in the Water Framework Directive, most water bodies are good and moderate ecological status or ecological potential moderate.

Apart from the impact of navigation laws on rehabilitation and maintenance activities, further legislation related to aspect like air pollution, water pollution and environment need to be taken into account. The official notifications or permits are needed from the competent authorities related to water law enforcement and nature protection law enforcement.

Measures to improve environmental conditions

In accordance with the environmental permit no. 1154/25.02.2013 issued by ARBDD was conducted "Study for Settlement of discharge, storage and recovery of dredged material" on the perimeter of the Danube Delta Biosphere Reserve. Thus, were revealed that the discharge of dredged material will be performed on the Danube in the areas with great depths determined after the measurements made by AFDJ RA Galati.

According to the Water Law no. 107/1996 which transposes the Water Framework Directive, AFDJ Galati get approval from Ministry of Administration and Interior, annually the opinion of National Authority of Romanian Waters for a common agreement over discharge areas of dredged material.

Through this permit the National Authority of Romanian Waters establishes the AFDJ Galati obligations in to obtain environmental authorization from the competent authorities to carry out dredging activity.

Action Plan: Romania

In order to respect the Environmental Impact Assessment Directive (85/337/EEC) Water Framework Directive 2000/60/EC, Habitats Directive (92/43/EEC) in connection with Birds Directive (2009/147/EC) which form the Natura 2000 network, AFDJ Galati obtained from the competent environmental authorities, permits applicable on the Maritime Danube sector.

Navigation maintenance measures and environmental impacts

The dredging activity performed by AFDJ Galati aims to ensure the good and safe navigation conditions.

In according with the environmental permits already obtained for maritime Danube, AFDJ Galati has the following responsibilities:

- To Inform the Administration of the Danube Delta Biosphere Reserve (ARBDD) on the work of dredging that will take place
- Submitting the annual dredging program in the ARBDD area
- To implement the self-monitoring system for compliance with waste Law no. 852/2002 on waste management records.
- Chemical analysing of the water within the critical point and of the dredged material in order to comply with the conditions imposed by the authorization.
- Monitoring quarterly or whenever is needed of the wastewater discharged quality from the vessels used for dredging.
- Chemical Analysis of the emissions evacuated into the atmosphere by the equipment's used in the dredging activity.

In order to mitigate the impact of the dredging material over the migratory species, AFDJ act in accordance with the document no. 329/DLB/09/06.2009 issued by the Ministry of Environment, the dredging activity in the critical areas on the maritime Danube is prohibited in each year during the period May - July for the fauna protection

In order to obtain the necessary permits for maintenance activities applicable in 2016 for riverine Danube, AFDJ Galati submitted the documents to the County Environmental Protection Agencies and also to the National Environmental Protection Agency.

Danube Black Sea canal

Ecological status and ecological potential of surface water bodies

ACN Constanta particularly monitors the water quality in the navigable canals, taking into consideration that the canals are a source of fresh water for the adjacent villages of the Romanian seashore.

According to Water Framework Directive, the global quality of the water on the Danube – Black Sea Canal and on the Poarta Alba – Midia Navodari Canal is integrated, chemically, in the second class of quality, appropriate for a good ecological state.

According with the Water Management Permit ACN Constanta has the following responsibilities: to operate and maintain the navigable canals according to the operating regulation; to provide to users the required waters quantity according with the normal level of insurance; to receive wastewater from users in regulated quality parameters; to maintain in good conditions the warning systems for cases of emergency, accidents and the informational system for water quality and quantity management ; in case of critical situations of pollution to take such measures so by lockage process or periodically discharges to ensure the renewal of the waters into the canals and bringing it in terms of required quality parameters

Measures to improve environmental conditions

According with the Environmental Permit ACN Constanta has the following responsibilities: to inform the public on a quarterly basis through its website or other media about the consequences of its activity (in accord with the art. 26, paragraph 1 of Government Decision no 878/2005); to administrate the canals so as to comply with rules imposed under current potable water legislation; compliance with Plans for intervention and combating accidental pollution; to enforce to any kind of ships the prohibition for discharges into the canals of the sewage and waste waters loaded with hydrocarbons , detergents or other hazardous substances

Navigation maintenance measures and environmental impacts

The maintenance of fairway supposed to maintain the wet section of the canals in limits of the designed parameters through periodic dredging of alluvial material deposits by water taken from the Danube and rising from hydrographic basin. Dredging periods will be established so that solid deposits on the bottom of canals does not exceed thickness of 1 m ... max 1.25 m for the Danube Black Sea Canal and 0,75 m ... max 1 m for Poarta Alba-Midia Navodari Canal. Dredging works are realised by keeping traffic open at least one way of navigation with corresponding signalization. The navigation dispatcher of ACN Constanta has the responsibility to notify the seafarers, by notification, all changes on sailing conditions.

8.7 RO | Budget status 2015 - 2016

Operational expenditures 2015 and budget needs 2016 (AFDJ and ACN)

Need areas	Operational expenditures 2015	Required operational budget 2016	Estimated* Secured operational budget 2016	Remaining financing gap 2016
Minimum fairway parameters (width/depth)	4.243.510	3.898.000	3.498.000	400.000
Surveying of the riverbed	894.312	905.100	905.100	-
Water level gauges				
Marking of the fairway	3.453.095	3.544.713	3.544.713	-
Availability of locks / lock chambers	11.103.425	10.841.032	10.841.032	-
Information on water levels and forecasts	-	-	-	-
Information on fairway depths	-	-	-	-
Information on marking plans	-	-	-	-
Meteorological information	-	-	-	-
Other needs	223.706	263.539	263.539	-
Sum	19.832.978	19.452.384	19.052.384	400.000

Operational expenditures 2015 and budget needs 2016 (AFDJ)

Need areas	Operational expenditures 2015	Required operational budget 2016	Estimated* Secured op. budget 2016	Remaining financing gap 2016
Minimum fairway parameters (width/depth)	3.224.459	3.700.000	3.300.000	400.000
Surveying of the riverbed	889.437	900.000	900.000	-
Water level gauges	-	-	-	-
Marking of the fairway	3.435.095	3.500.000	3.500.000	-
Availability of locks / lock chambers	-	-	-	-
Information on water levels and forecasts	-	-	-	-
Information on fairway depths	-	-	-	-
Information on marking plans	-	-	-	-
Meteorological information	-	-	-	-
Other needs	-	-	-	-
Sum	7.548.991	8.100.000	7.700.000	400.000

Operational expenditures 2015 and budget needs 2016 (ACN)

Need areas	Operational expenditures 2015	Required operational budget 2016	Estimated* Secured op. budget 2016	Remaining financing gap 2016
Minimum fairway parameters (width/depth)	1.019.051	198.000	198.000	-
Surveying of the riverbed	4.875	5.100	5.100	-
Water level gauges	-	-	-	-
Marking of the fairway	18.000	44.713	44.713	-
Availability of locks / lock chambers	11.103.425	10.841.032	10.841.032	-
Information on water levels and forecasts	-	-	-	-
Information on fairway depths	-	-	-	-
Information on marking plans	-	-	-	-
Meteorological information	-	-	-	-
Other needs	138.636	263.539	263.539	-
Sum	12.283.987	11.352.384	11.352.384	-

* The ACN Constanta and the AFDJ Galati budget was submitted to the Ministry of Transport with the amounts specified in the column, but until now the budget was not approved by the Government.

8.8 RO | Outlook: actions, milestones and funding sources

Danube and Danube-Black Sea Canal

RO 01: Insufficient number of sounding vessels		
Planned activities:	Support acquisition of up-to-date sounding equipment to raise the coverage of surveyed areas managing of the purchasing	
Current shortcomings:	Insufficient of the up-to-date sounding vessels and equipment, modernisation and acquisition requested	
Environmental relevance of planned activities:	What are the main expected environmental impacts?	No environmental impacts
	Which measures are taken to mitigate these impacts?	N/A
	Is water status still expected to deteriorate?	N/A
Possible funding:	Budget availability 2015/2016: Funding through CEF Programme – FAIRway Danube project Operational Programme Transport 2014-2020	
Next steps:	AFDJ: Acquisition of sounding vessels and equipment's	Until the end of 2017
	Danube Black Sea Canal: Acquisition of a portable single beam echosounder Finalization of feasibility study for design and built 2 multifunctional vessels Design and built 2 multifunctional vessels (depending the financial resources)	Until March 2017 Until September 2016 Until June 2019
RO 02: Insufficient number of automatic gauging stations.		
Planned activities:	Support acquisition of additional automatic gauging stations, especially for critical sections.	
Current shortcomings:	Insufficient number of automatic gauging stations , especially for critical sections	
Environmental relevance of planned activities:	What are the main expected environmental impacts?	No environmental impacts
	Which measures are taken to mitigate these impacts?	N/A
	Is water status still expected to deteriorate?	N/A
Possible funding:	Budget availability 2015/2016: Funding through SOP-T 2007-2013 – HyQ Danube Project/ CEF Programme – FAIRway Danube project next call of CEF Programme or next Operational Programme	
Next steps:	AFDJ Organising the tender for acquisition and installation the 10 automatic gauging station in a selected pilot areas	

	<p>within FAIRway Danube project</p> <p>Installation automatic gauging station in a selected pilot areas within FAIRway Danube project</p> <p>Submitting the project proposal for realisation the network of hydrometric stations</p> <p>Organising the tender and realisation the network of hydrometric stations</p> <p>Danube Black Sea Canal</p> <p>Technical expertise for existing gauging network system</p> <p>Acquisition procedure for modernization and extension of the existing gauging network system</p>	<p>Until 2018</p> <p>Until June 2016</p> <p>Until march 2017</p>
RO 03: Lack of dredging equipment, specialized personnel and deficiency of investments in river regulation		
Planned activities:	Support acquisition of dredging equipment performance to increase the efficiency of working problem areas and the possibility of intervention at any time where it is needed	
Current shortcomings:	<p>AFDJ:</p> <p>Missing dredging equipment for river sector problem areas and the possibility of intervention at any time where it is needed.</p> <p>Lack of new specialized personnel due to the restrictions of national legislation</p> <p>Low level waterway infrastructure</p> <p>Danube Black Sea Canal:</p> <p>One of the important issues to ACN is to ensure the stability of navigable canals banks, in area where the gap between service road level and natural ground level is up to 55 m (about 20 km on Danube Black Sea canal –each shore and about 7 km on Poarta Alba Midia Navodari canal –on each shore)</p>	
Environmental relevance of planned activities:	What are the main expected environmental impacts?	No environmental impacts
	Which measures are taken to mitigate these impacts?	N/A
	Is water status still expected to deteriorate?	N/A
Possible funding:	<p><i>Budget availability 2015/2016: Funding through State budget</i></p> <p><i>CEF Programme</i></p>	
Next steps:	<p>AFDJ</p> <p>Acquisition of dredging equipment</p> <p>New dredging equipment needs of having new specialized personnel – training will be made</p> <p>Danube Black Sea canal :</p> <p>Currently ACN is looking to identify the possible financial resources for execution of works .</p> <p>-If ACN identify the financial allocation for this project, the feasibility study (financed by ISPA funds) for protection and consolidation of banks will be revised and updated</p> <p>Design and execution of works (protection and consolidation of banks)</p>	<p><i>End of 2018</i></p> <p><i>Until 2017</i></p> <p><i>Until 2020</i></p>

RO 04: Inefficient procedures. The documentation to draw up a contract for dredging is time-consuming.		
Planned activities:	Support standardization and simplification of documentation procedures.	
Current shortcomings:	Inefficient procedures	
Environmental relevance of planned activities:	What are the main expected environmental impacts?	No environmental impacts
	Which measures are taken to mitigate these impacts?	N/A
	Is water status still expected to deteriorate?	N/A
Possible funding:	<i>Budget availability 2015/2016: Funding through AFDJ budget/state budget and CEF Programme</i>	
Next steps:	<i>Preparing specific documentation for the efficient procedures concerning with existing standards and national legislation</i>	<i>Until the end of 2016</i>
RO 05: Lack of efficient vessels and special equipment for marking.		
Planned activities:	<i>Support acquisition of vessels equipped with advanced machines to perform operations board assembly / disassembly floating signals.</i>	
Current shortcomings:	Missing the efficient vessels and special equipment for marking	
Environmental relevance of planned activities:	What are the main expected environmental impacts?	No environmental impacts
	Which measures are taken to mitigate these impacts?	N/A
	Is water status still expected to deteriorate?	N/A
Possible funding:	Budget availability 2015/2016: Funding through SOP-T 2007-2013 – Feasibility study for technical vessels CEF Programme – FAIRway Danube project	
Next steps:	Organising the tender and purchasing the vessels	Until 2017
RO 06: Insufficient number of buoys and position monitoring equipment. Unavailable automated system for the transmission of information on the buoys. The dissemination of information could be improved		
Planned activities:	<i>Support acquisition of buoys and monitoring equipment. Support establishment of an automated monitoring system and improve the provision of information on fairway marks.</i>	
Current shortcomings:	<i>Insufficient number of buoys and position monitoring equipment</i>	
Environmental relevance of planned activities:	What are the main expected environmental impacts?	No environmental impacts
	Which measures are taken to mitigate these impacts?	N/A
	Is water status still expected to deteriorate?	N/A
Possible funding:	Budget availability 2015/2016: Funding through: CEF Programme – FAIRway Danube project	

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	Operational Programme 2014 - 2020 AFDJ budget/state budget	
Next steps:	Preparing the technical specification for public acquisition Submitting a project proposal for improving and monitoring Romanian marking system	Until 2017 Until 2017
RO 07 Unavailable forecast for water levels		
Planned activities:	Support establishment of a water level forecast	
Current shortcomings:	Unavailable forecast for water levels	
Environmental relevance of planned activities:	What are the main expected environmental impacts?	No environmental impacts
	Which measures are taken to mitigate these impacts?	N/A
	Is water status still expected to deteriorate?	N/A
Possible funding:	Budget availability 2015/2016: Funding through SOP-T 2007-2013 – HyQ Danube Project CEF Programme – FAIRway Danube project next call of CEF Programme or next Investment Programme	
Next steps:	AFDJ Organising the tender for automatic gauging station for installation 10 automatic gauging station in a selected pilot areas within FAIRway Danube project	Until the end of 2016
	Installation automatic gauging station in a selected pilot areas within the FAIRway Danube project	March 2017 Until the end of 2017 Until 2017
	Realisation of hydrological database	Until 2018
	Set-up the mathematical model used for water level forecast Submitting the project proposal for realisation the network of hydrometric stations	Until 2018
	Organising the tender and realisation the network of hydrometric stations	Until 2018
	Danube Black Sea canal Organising the tender for automatic gauging station for installation automatic gauging station in a selected locations Implement a national forecast water level for 5 days with a high accuracy for the next 2-3 days (AFDJ+ACN)	Until March 2017 Until March 2019
RO 08: Information could be provided customer-friendly using established river information portals.		
Planned activities:	Support customer-friendly processing and dissemination of information.	
Current shortcomings:	Insufficient quality and frequency of transmitting information to users	
Environmental relevance of planned activities:	What are the main expected environmental impacts?	No environmental impacts
	Which measures are taken to mitigate these impacts?	N/A

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	Is water status still expected to deteriorate?	N/A
Possible funding:	Budget availability 2015/2016: Funding through AFDJ budget/state budget Danube Transnational Programme 2014-2020	
Next steps:	AFDJ Increasing technical capacity for processing and publishing fairway information Update of FIS Portal and D4D within Danube Stream Project Update the RoRIS Portal	Until the end of 2016
	ACN Update of FIS Portal and D4D within Danube Stream Project	Until the end of 2016
RO 09: Unavailable digital terrain models for shallow sections.		
Planned activities:	Support set-up of digital terrain models for shallow sections.	
Current shortcomings:	Unavailable digital terrain models for shallow sections	
Environmental relevance of planned activities:	What are the main expected environmental impacts?	No environmental impacts
	Which measures are taken to mitigate these impacts?	N/A
	Is water status still expected to deteriorate?	N/A
Possible funding:	Budget availability 2015/2016: Funding through AFDJ budget/ state budget CEF Programme	
Next steps:	AFDJ Acquisition of software for creating the DTM Realisation of data base for hydrographical data	Until 2018
RO 10: Insufficient number and quality of weather stations.		
Planned activities:	Support improvement of meteorological information.	
Current shortcomings:	Insufficient number and quality of weather stations.	
Environmental relevance of planned activities:	What are the main expected environmental impacts?	No environmental impacts
	Which measures are taken to mitigate these impacts?	N/A
	Is water status still expected to deteriorate?	N/A
Possible funding:	Budget availability 2015/2016: Funding through SOP-T 2007-2013 – HyQ Danube Project CEF Programme – FAIRway Danube project next call of CEF Programme or next Investment Programme	
Next steps:	Finalisation the feasibility study for rehabilitating and extending the network of hydrometric stations Organising the tender for automatic gauging station for installation of 10 automatic gauging station in a selected pilot areas within the FAIRway Danube project Installation automatic gauging station in a selected pilot areas Submitting the project proposal for realisation the	Until the end of 2017

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	network of hydrometric stations Organising the tender and realisation the network of hydrometric stations	
RO 11: Missing interconnection with databases of other waterway administrations to exchange data		
Planned activities:	<i>Support interconnection between databases of different waterway administrations.</i>	
Current shortcomings:	<i>Insufficient interconnection with databases of other waterway administrations to exchange data</i>	
Environmental relevance of planned activities:	What are the main expected environmental impacts?	No environmental impacts
	Which measures are taken to mitigate these impacts?	N/A
	Is water status still expected to deteriorate?	N/A
Possible funding:	Budget availability 2015/2016: Funding through SOP-T 2007-2013 – HyQ Danube Project CEF Programme – FAIRway Danube project and other project proposal AFDJ budget/state budget	
Next steps:	Acquisition of hardware and software for creating data base Creating data base with the same structure with other waterway administrations for improving the data exchange service	Until 2018

9 Bulgaria

EAEMDR – Executive Agency "Exploration and Maintenance of the Danube River" (a public authority within Ministry of Transport) is responsible for fairway maintenance, rehabilitation and upgrade.

9.1 BG | Status report on main critical locations 2012 – 2015

Number of days with fairway depths > 2.5m on critical locations

This table includes the main critical locations as identified by the Danube waterway users in the Master Plan in December 2014 (*marked grey*) and further very critical locations as additionally identified by EAEMDR. The fairway width is given related to LoS 1 (80m fairway width).

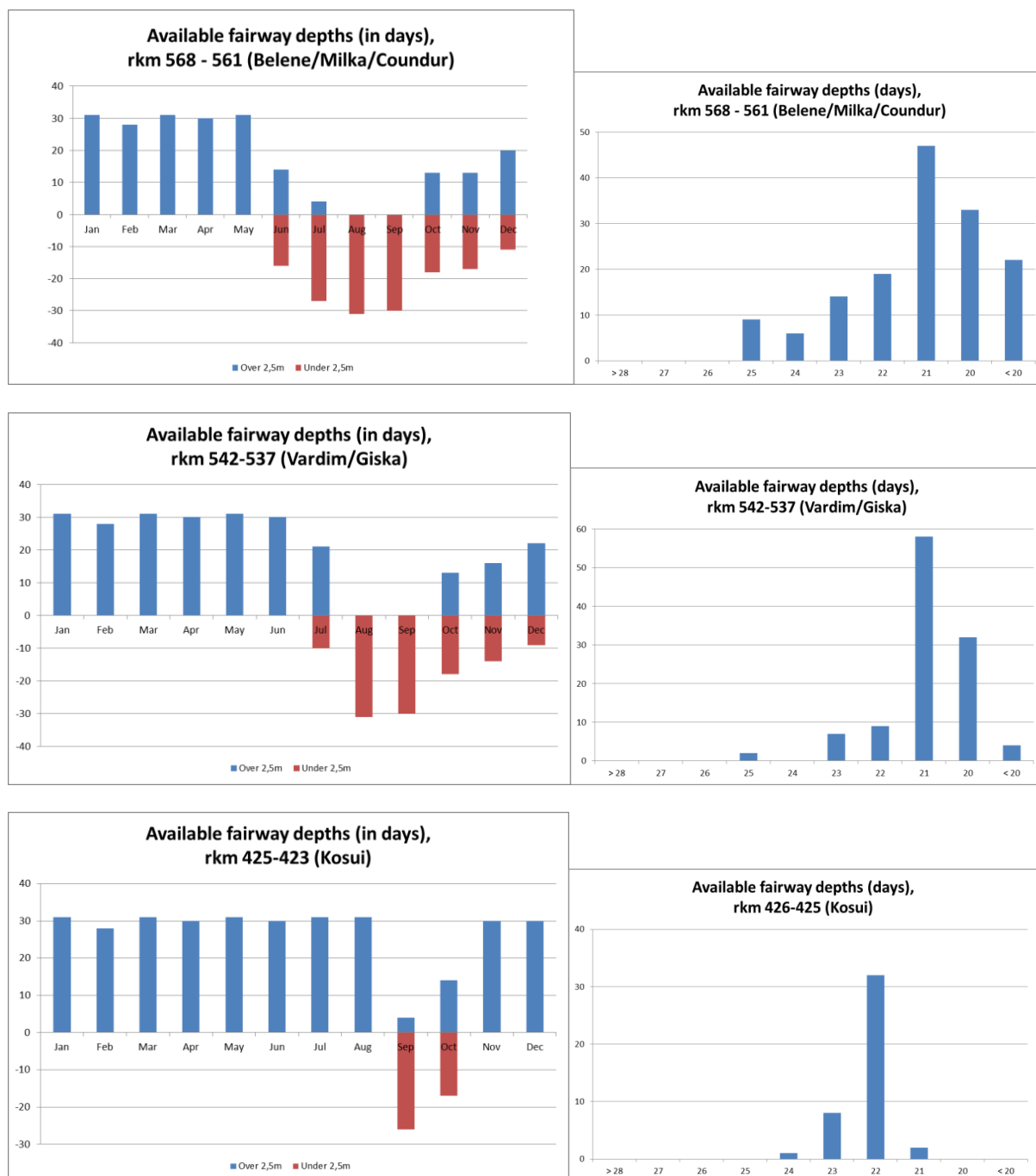
The extremely bad fairway situation in 2015 resulted in vessels having to wait and queue up to form convoys in order to pass some sections; even groundings of vessels occurred. The reasons lie in the very critical water level situation as well as insufficient fairway maintenance.

Critical location rkm from-to	Critical location name	2012	2013	2014	2015
km 610 - km 607	Somovit	318	327	365	313
km 591 - km 584	Sredniak island Palets island	345	346	365	316
km 569 - km 561	<i>Belene island Milka island Kondur island</i>	283	275	337	212
km 548 - km 540	<i>Vardim island</i>	292	309	360	268
km 540 - km 536	<i>Yantra River Giska Island</i>	316	317	360	253
km 525 - km 520	<i>Batin island</i>	339	314	352	246
km 476 - km 472	<i>Gostin island</i>	337	326	365	365
km 463 - km 460	<i>Mishka island</i>	366	365	365	365
km 458 - km 455	<i>Brashlian island</i>	341	365	365	365
km 441 - km 435	<i>Radetski island</i>	366	365	365	365
km 426 - km 420	<i>Kosui island Dunavets island</i>	332	354	365	322
km 414 - km 410	Malak Preslavets island	345	341	365	365
km 408 - km 399	Popina island	342	365	365	311
km 395 - km 390	Vetren island	345	365	365	365
km 386 - km 382	Chajka island	346	358	365	365

.Especially in June, July, August and September the situation on the Bulgarian section of the Danube River was drastic. For example: in June, the total amount of days in the Milka/Belene/Coundur area with an available fairway depth over 2.5 m accounted for only 14 .

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However, a water depth of 23 and 24 decimetres could still be used for navigation in this section. The situation became worse in July, August and September, when the fairway depth was less than 2.5 m on respectively 26, 31 and 30 days. The situation slightly improved compared to the summer months in the period from October to December. However, still 17, 16 and 10 days in those months were below 2.5m.



9.2 BG | Hydrological conditions on main critical locations 2012 – 2015

Number of days with flow discharge above multiannual average flow discharge for the main critical locations identified by the users.

The flow discharge in 2015 was significantly lower than in the two years before.

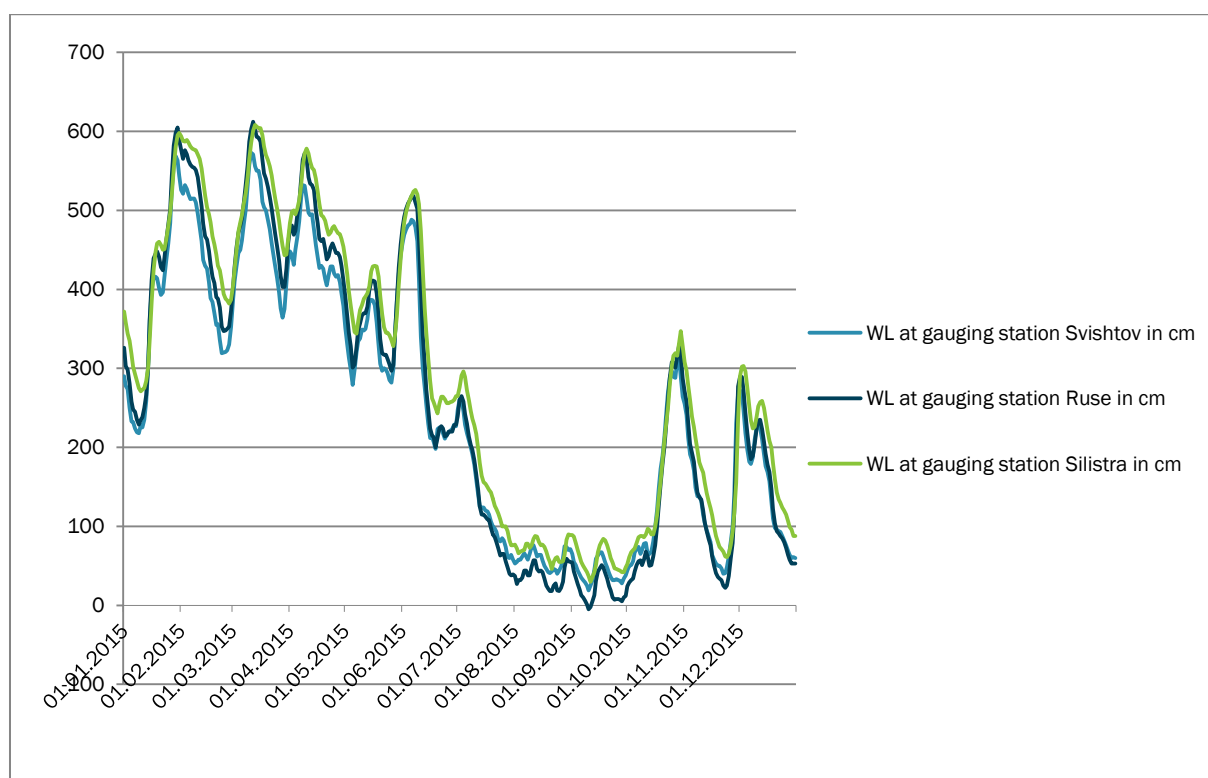
Critical location	Reference* gauges	No. of days \geq multiannual average flow discharge (m ³ /s)			
		2012	2013	2014	2015
567.00-566.70 – Belene island 562.00-561.50 – Coundur/Milka island 541.60-541.00 – Vardim island 538.50-537 – Giska island	Svishtov km 554.300	78	168	205	136
523.80-523.20 – Batin island 475.70-475.30 – Gostin island	Ruse km 495.600	84	176	211	141
425.90-425.20- Kosui island 391.60-391.10 – Vetren island 383.50-382.50 – Chajka island	Silistra km 375.500	75	165	210	150

*In the critical locations, flow discharge measurements are not performed with the necessary frequency. The data used as a base for the above table is collected in gauging stations near critical sections.

9.3 BG | Water level information on main critical locations 2012 – 2015

The water levels were outstandingly low in 2015, which created extremely difficult conditions for the waterway managing authority as regards providing the necessary fairway depth. In combination with the existing problematic issues (see next chapter), this resulted in the bad score on the fairway depth target as presented in chapter 9.1.

Critical location	Reference gauges	No. of days \geq LNWL			
		2012	2013	2014	2015
567.00-566.70 – Belene island 562.00-561.50 – Countur/Milka island 541.60-541.00 – Vardim island 538.50-537 – Giska island	Svishtov km 554.300	337	326	365	285
523.80-523.20 – Batin island 475.70-475.30 – Gostin island	Ruse km 495.600	341	329	365	288
425.90-425.20 – Kosui island 391.60-391.10 – Vetren island 383.50-382.50 – Chajka island	Silistra km 375.500	325	326	365	293



9.4 BG | Key issues and related activities 2015

Related to the key issues illustrated in the Fairway Rehabilitation and Maintenance Master Plan (version: December 2014), the need for action and the activities performed in 2015 are described below:

	Key issues	Need for action	Activities performed in 2015
BG 01	Old or insufficient measuring equipment	Support acquisition of up-to-date (renewed single-beam and additional multi-beam) sounding equipment	The FAIRway Danube project was approved by INEA and funded under CEF. Activity 3 includes the delivery of specialized monitoring equipment including multi-beam sounders. The Project "Improvement of the systems for navigation and topohydrographic measurements on the Danube – phase 2" applied for funding under OPTTI 2014-2020. The project foresees the delivery of a surveying vessel. The Application form was approved by the MA of OPTTI on 02.03.2016 and the Grant Agreement was signed on 30.03.2016. The request for advance payment from the MA was submitted on 08.04. 2016. The contract with the supplier, selected during an open public procurement procedure according to the Public Procurement Act was signed in March 2016. The delivery of the surveying vessel is expected by March 2017.
BG 03	To a large extend, interventions are planned on short term due to rapidly changing fairway conditions	Support improvement of monitoring procedures, data basics and methods for analysis and planning of interventions	The FAIRway Danube project was approved by INEA and funded under CEF. Activity 3 includes delivery of Waterway Management System.. The FAST Danube project t was approved by INEA and funded under CEF. Within the project a feasibility study for river engineering measures in the common Bulgarian-Romanian sector will be elaborated.
BG 04	Inefficient allocation of resources due to suboptimal information support system, lack of consistent database of riverbed surveys and cumbersome procedures	Support introduction of a Fairway Management System	The FAIRway Danube project was approved by INEA and funded under CEF. Activity 3 includes delivery of surveying vessels, gauging stations, water level forecast and WMS Preparation and submission of project "Improvement of the systems for navigation and topohydrographic measurements on the Danube – phase 2" to be financed under OPTTI 2014-2020. The project foresees delivery of surveying vessel to deliver data for the WMS.
BG 05	Only very little dredging works of the fairway have been performed for many years because of insufficient dredging	Support acquisition of up-to-date dredging equipment	Preparation of project "Modernization and optimization of the activities for rehabilitation of the fairway in the common Bulgarian-Romanian section of the Danube River" to be financed under OPTTI 2014-2020 The project foresees delivery of

	equipment and limited financial resources	<p>Increase available annual resources for dredging works</p> <p>Support implementation of structural river engineering measures</p>	<p>multifunctional dredger (cutter suction dredger). The Application form is under preparation and is expected to be submitted to the MA latest in May 2016. The evaluation period is 90 days. In parallel the technical specifications and tender dossier will be elaborated, respectively - a tender should be done.</p> <p>Indicative time schedule :in case of an approval of the Managing Authority, the tender is expected to be launched in September 2016, contract signature in April 2017, delivery in December 2017. The time schedule can be changed in case the Managing Authority decides earlier.</p> <p>Due to budget shortage, a pusher to move the dredger and a hopper barge are still needed.</p> <p>During the bilateral Bulgarian-Romanian joint commission on the Danube fairway maintenance and improvement meeting in November 2015 an action plan was adopted. Trilateral meeting on the issues of navigation in the common Bulgarian-Romanian section of the Danube river took place in the premises of EAEMDR – Ruse on 16.12.2015. Representatives of Bulgarian and Romanian Ministries of Transport and DG Move took part in the workshop. During the meeting the necessary fairway maintenance measures and respective budget for 2016 were discussed. In this respect preparation of public procurement procedure on maintenance dredging in the most critical sections of the Bulgarian stretch was started.</p> <p>FAST Danube project was approved by INEA and funded under CEF. Within the project a feasibility study for river engineering measures in the common Bulgarian-Romanian sector will be elaborated.</p>
	High traffic risks due to loss or incorrectness of navigation signs provoked by accidents with ships or insufficient maintenance	<p>Enable improved surveillance of navigation activities by electronic means</p> <p>Increase resources for maintenance of floating signs</p>	<p>The delivered floating and coastal navigational signs within project „Improvement of the systems for navigation and topohydrographic measurements along the Danube River” under OPT 2007-2013, were positioned. The system for control of location of floating signs and coastal light beacons in real time has been tested and was fully operable until the end of 2015.</p> <p>The necessary resources are secured and available.</p>

BG 07	Insufficient marking equipment	Support acquisition of monitoring and marking equipment	FAIRway Danube project was approved by INEA and funded under CEF. Activity 3 includes delivery of specialized monitoring equipment, including multi-beam and marking vessel. See "Improvement of the systems for navigation and topohydrographic measurements on the Danube – phase 2" (BG01)
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9.5 BG | Review of rehabilitation and maintenance activities 2015

The following activities relate to all critical locations as identified in the Rehabilitation and Maintenance Master Plan (version December 2014)

Riverbed surveying activities 2015

During the period 1 January – 31 December 2015, the following surveys were performed. The locations to be surveyed in 2015 were prioritized and the Hydro-graphic department. Kosui island and Batin island were not surveyed in 2015 due to lack of financial resources.

River-km (from-to)	Frequency of surveying	Type of survey (single/multi-beam)
568 – 560	twice per 2015 (in April and December 2015)	single-beam survey
544 – 534	once per 2015 (in May 2015)	single-beam survey
495.4 – 494.8 *	once per 2015 (in July 2015)	single-beam survey
491**	once per 2015 (in May 2015)	single-beam survey
488***	3 times per year (in April, May and September)	single-beam survey
476 – 472	once per 2015 (in April 2015)	single-beam survey
469.2 – 463****	once per 2015 (in April 2015)	single-beam survey
403.3-401.9	once per 2015 (in July 2015)	single-beam survey

*surveyed on request of Ruse Municipality for the purpose of reconstruction and ennoblement of the river bank;

**EAEMDR specialized port;

*** bridge Ruse-Giurgiu; survey was performed for the purpose of the periodic common Bulgarian-Romanian commission for the bridge;

****at this location, a control of the area and quantity of dredged materials for market purposes was performed through the survey.

Fairway relocation activities 2015

In the period 1 January 2015 – 31 December 2015 no relocation interventions of the fairway trajectory were performed. The only changes with regard to the navigational channel were connected with mounting and dismounting of buoys that were damaged or accidentally moved by convoys (51 times).

Dredging activities 2015

No dredging activities on the fairway were performed by EAEMDR during 2015. The main reason lies in the lack of suitable dredging equipment available to EAEMDR (see key issue BG 05). The extremely limited financial resources additionally hamper the execution of dredging works with the equipment which is available. Thus, only in-house dredging activities of a total volume of 7000 m³ were performed in 2015 to deepen the entrance of EAEMDR's specialized port.

9.6 BG | Summary of current ecological status and environmental impacts

The whole Bulgarian stretch of the Danube River is classified as Heavily Modified Water Body. According to the Danube River Basin Management Plan 2010-2015 the ecological status and ecological potential of the Bulgarian Danube was determined as moderate. The new Danube River Basin Management Plan 2016-2021 has been updated and currently it is under procedure of public hearings. The process is not finalized and the updated plan is not approved yet.

The Danube River in the Bulgarian stretch was determined in DRBMP 2010-2015 as “heavily modified water body” on the basis of following criteria: water discharge alteration due to significant withdrawals of water bodies (category “River”) after dams; regulation of the flow (via built dams); morphological changes (due to extraction of inert materials from the river beds, corrections riverbed and building hydropower plants).

During a technical meeting between Bulgaria and Romania in 2004 and an agreement was achieved for the classification of the Danube River in the common Bulgarian-Romanian section (from km 833.6 – Novo selo to km 375.5 - Silistra) as HMWB. For the WBMP 2010-2015 the final tests from the Common implementation strategy for WFD were not applied.

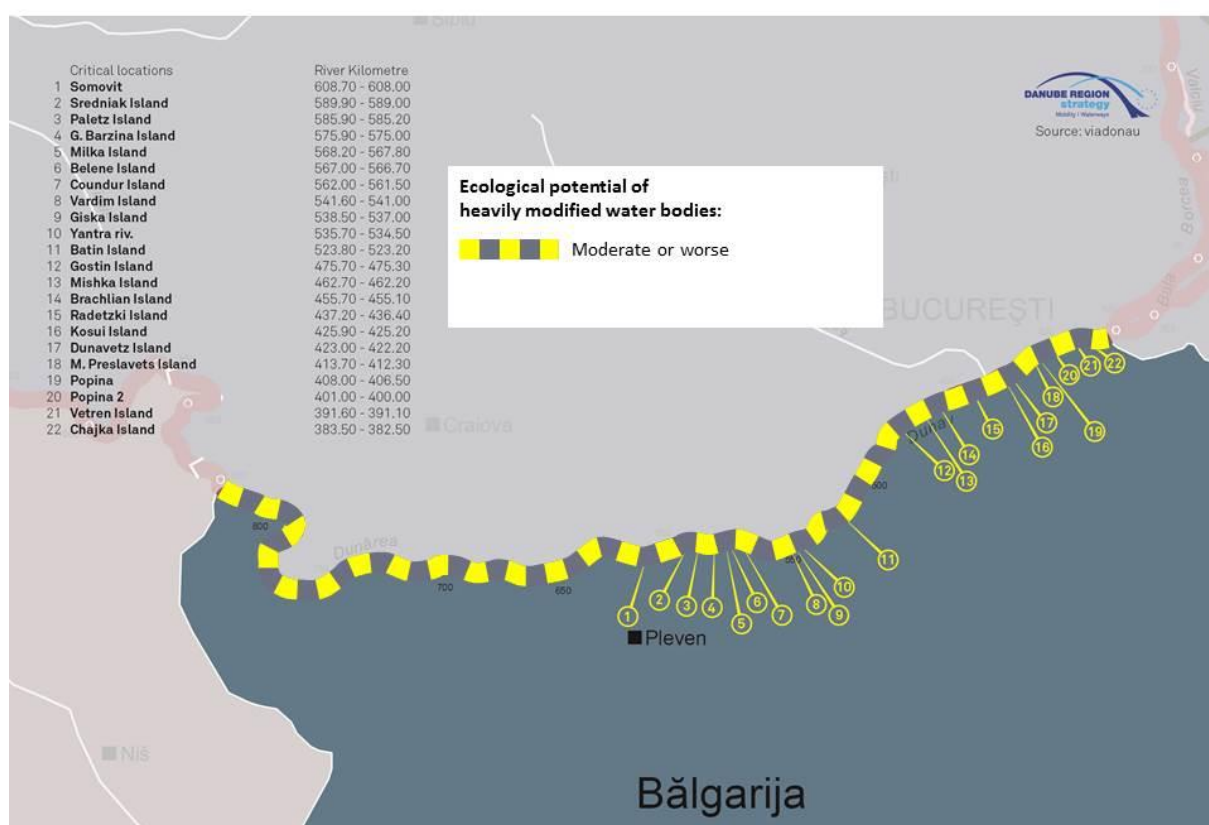
During the update of the DRBMP the current impact on the Bulgarian stretch of the Danube River was investigated, according to the Criteria for preliminary HMWB identification. Based on the preliminary results for the Danube River, it could not be determined as HMWB. Moreover the approved national criteria for HMWB identification are not applicable for large rivers as Danube in their original version.

One of the main deliverables of the on-going project “Intercalibration of the methods for analysis of biological quality elements (BQE) for the types of surface waters on the territory of Bulgaria, corresponding to common European types in the Geographical intercalibration groups” (November 2013 - December 2016) is detailed assessment of the hydro morphological change of the Danube River. The project foresees assessment of the stage of modification of the lateral connectivity of the river, because construction of dikes for the purpose of flood protection exercise the main impact on the hydromorphological regime of the river.

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Taking into account that the Danube River is boundary during the process of HMWB classification the impact of the Romanian side should be also considered, including the cumulative effect of both countries. In the updated DRBMP for Romania the Danube River is classified as HMWB. During the joint meeting in 2015 between Bulgarian and Romanian Ministries of environment, the Bulgarian delegation informed the participants that at this stage the Danube could not be identified as HMWB based only on the analysis of the hydromorphological impact on the Bulgarian territory. For the moment the Danube River is defined as HMWB, but could be finally determined as such after the conclusions of “Intercalibration of the methods for analysis of biological quality elements (BQE) for the types of surface waters on the territory of Bulgaria, corresponding to common European types in the Geographical intercalibration groups” project are ready.

The following map displays the ecological status and ecological potential of the Bulgarian Danube – according to the Danube River Basin Management Plan/Update 2015 – against the background of the critical navigation locations in Bulgaria.



Ecological status and ecological potential of surface water bodies
(Source: DRBM Plan – Update 2015)

For the heavily modified water bodies measures are to be implemented for the achievement of the good ecological potential.

Measures to improve environmental conditions

According to the Structural Regulations of EAEMDR the only ecology related activities, performed by the Agency are:

- participation in localization and removal of pollution, caused by navigation in the common BG-RO section of the Danube River;
- collecting oily and greasy ship waste from transit vessels.

In the past 10 years the Executive agency has implemented two projects, related to the waste management of inland navigation on the Danube (WANDA – 2009-2012; CO-WANDA – 2012-2014) and a project called WATER – Danube integrated water management. The three – year strategic project launched in June 2012 addressed the achievement of the integrated water management and environmental protection objectives for the Danube Floodplain as required by the European Union Water Framework Directive 2000/60/EC (WFD). The general objective of the Danube WATER project was to create a common management and monitoring system for water quality in extreme environmental conditions (floods, droughts, accidental pollution by chemical and radioactive substances), including providing a data and information dissemination mechanism, necessary for the regional development of the border area.

Several ecological projects were implemented in the period 2009-2015 along the Bulgarian stretch of the Danube River, with focus on natural parks.

The project: Limiting the negative influence of invasive species and restoration of the natural habitats, through planting of local species in Srebarna Nature Reserve has been financed under the national operational programme on environment 2007-2013. The beneficiary was The Regional Inspectorate of Environment and Water – Rousse and the project was implemented during 2013. The goal of the project is to protect the biodiversity in the Srebarna Nature Reserve and to restore and maintain the habitats - subject of protection. The project included exploration activities as: inventory of the forest habitats (natural and / or semi-natural) in Srebarna Nature Reserve and the habitat 91 EC*, as part of them; analysis of the state and the evaluation of its favourable conservation status; working out a program for reforestation of areas with native species (technological plans for reforestation), exempt from hybrid poplar; initial study of the vegetation in terms of invasiveness of the territory of Srebarna Nature Reserve, by walkthrough and testing of the protected territory and determining of the invasive plant species, their area distribution and their impact on the natural vegetation in the wetland; and implementation of the practical measures: marking of the invasive species and implementation of effective measures for eliminating them and limiting their negative impact; activities on utilization operations of the extracted material, according to the developed methodology; implementation of activities for rehabilitation and repair of the gateways in the Srebarna Nature Reserve, etc.

Project Implementation of activities for planning and management of reserve "Chuprene", reserve "Gorna Korja" and managed reserve "Ibisha" (situated on km 717 of the River Danube). The project has been financed under the national operational programme on environment 2007-2013. The beneficiary of the project was the Regional Inspectorate of Environment and Water – Montana. The main activities implemented within the project were:

- Identification and analysis of currently available information for each of the three protected areas;
- Field research, incl. forestry taxation in order to provide the necessary additional information;

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- Conducting workshops both formal and in operating order;
- Data analysis and evaluation of the environmental and socio-economic importance of the protected areas;
- Development of database for protected areas and identifying monitoring scheme for its supplementing;
- Defining territorial regimes and norms for use;
- Identifying the main threats to protected areas as well as identifying long-term objectives and constraints;
- Development of long-term and short-term programmes, plans and projects;
- Conducting a public discussion for each of the protected areas.

Navigation maintenance measures and environmental impacts

Maintenance works of the fairway on the Danube River are executed in the framework of the Water Act (SG 67/27.07.1999, last amended SG61/11.08.2015), Law for the maritime spaces, the inland waterways and the ports of the Republic of Bulgaria (SG 12/11.02.2000, last amended SG52/10.07.2015).

No dredging activities on the fairway were performed by EAEMDR during the past years. The main maintenance activity performed by the Agency is marking on the fairway. The negative environmental impact from the marking activity could be considered insignificant.

9.7 BG | Budget status 2015 – 2016

Operational expenditures 2015 and budget needs 2016

Need areas	Operational expenditures 2015	Required operational budget 2016	Secured operational budget 2016	Remaining Financing gap 2016
Minimum fairway parameters (width/depth)	0	642.000	0	642.000
Surveying of the riverbed	104.000	600.000	90.000	510.000
Water level gauges	30.500*	30.500	30.500*	0
Marking of the fairway	170.000	300.000	150.000	150.000
Availability of locks / lock chambers	n/a	n/a	n/a	n/a
Information on water levels and forecasts	30.500*	30.500	30.500*	0
Information on fairway depths	6.000	6.000	6.000	0
Information on marking plans	6.000	6.000	6.000	0
Meteorological information	30.500*	30.500	30.500*	0
Other needs	20.000	20.000	20.000	0
Sum	397.500	1.665.500	363.500	1.302.000

* The operational expenditures for water level gauges, information on water levels and forecasts as well as meteorological information cannot be provided separately. Thus the table above, the whole amount (91.391,57€) was distributed to each of the three categories equally.

The total expenditures of EAEMDR for 2015 were 1 104 542.32 € and were distributed as follows:

Staff costs:	636.156,01
Operational costs:	298.099,53
Taxes:	7.766,00
Membership due/fees:	138.103,00
Capital costs:	24.417,77

9.8 BG | Outlook: planned actions, milestones and funding sources

BG 01: Old or insufficient measuring equipment		
Planned activities:	Implementation of FAIRway Danube project - delivery of surveying vessel, equipped with a multi-beam echo sounder and delivery of automatic gauging stations.	
Current shortcomings:	None identified	
Environmental relevance of planned activities:	What are the main expected environmental impacts?	The automatic gauging

		stations will be installed in the area of natural parks but no negative impact is expected
	Which measures are taken to mitigate these impacts?	-
	Is water status still expected to deteriorate?	-
Possible funding:	CEF	
Next steps:	The public procurement procedure for the surveying vessel and gauging stations will be launched in April 2016. The delivery of the equipment is expected until March 2017 when the monitoring pilot sub-activity within FAIRway Danube project will start. This sub-activity covers the analysis of the data collected by the surveying vessel and the water level gauges. The measurements will be carried out at critical locations on the Danube and the Danube-Black Sea Canal.	2016-2017
BG 02: Education and skilled staff		
Planned activities:	<p>The requirements for sufficient training for personnel to operate the equipment, delivered within FAIRway Danube project and project "Improvement of the systems for navigation and topohydrographic measurement – phase 2", are included in the terms of reference for the deliveries.</p> <p>A project proposal for improving the administrative and technical capacity of the Agency will be submitted to priority axes 5 – Technical assistance of Operational program on "Transport and Transport Infrastructure 2014-2020".</p>	
Current shortcomings:	None identified	
Environmental relevance of planned activities:	What are the main expected environmental impacts?	n/a
	Which measures are taken to mitigate these impacts?	n/a
	Is water status still expected to deteriorate?	n/a
Possible funding:	Operational Programme "Transport and Transport Infrastructure 2014-2020"	
Next steps:	Application of a project proposal under the Operational Programme "Transport and Transport Infrastructure 2014-2020".2014-2020	2016
BG03: Improved monitoring procedures, data quality and analyses		
Planned activities:	<p>Currently EAEMDR operates 9 automatic hydrological and 9 automatic meteorological stations, delivered within project "Improvement of the systems for navigation and topohydrographic measurements along the Danube River", OPT2007-2013</p> <p>The delivery of additional number of gauging stations, surveying vessel, online monitoring system and integration of WMS, foreseen in project FAIRway Danube is expected until March 2017.</p>	
Current shortcomings:	Insufficient data available and non-state-of-the-art methods of gathering of fairway information (multi beam)	

Action Plan: Bulgaria

Environmental relevance of planned activities:	What are the main expected environmental impacts?	The automatic gauging stations will be installed in the area of natural parks but no negative impact is expected
	Which measures are taken to mitigate these impacts?	-
	Is water status still expected to deteriorate?	-
Possible funding:	CEF	
Next steps:	Implementation of FAIRway Danube project -public procurement procedure for the surveying vessel and gauging stations will be launched in April 2016. The delivery of the equipment is expected until March 2017.	2017

Fairway Rehabilitation and Maintenance Master Plan for the Danube and its navigable tributaries:

ANNEX

to the

NATIONAL ACTION PLANS

UPDATE MAY 2016

Coordinated by **Priority Area 1a** of the **EU Strategy for the Danube Region**.

10 Germany

The **Federal Waterways and Shipping Administration (WSV)** is responsible for fairway maintenance, rehabilitation and upgrade.

10.1 DE | Status report on main critical locations 2012 – 2015

Number of days with fairway depths > 2.00 m (target value¹⁷) for main critical locations

Critical location	2012	2013	2014	2015
Lock Straubing– Port Straubing-Sand	352	362	335	258
Port Straubing- Sand–Deggendorf	332	359	320	243
Deggendorf– Vilshofen	352	330	272	250

During 2012–2015 there was no critical sedimentation in the first section from lock Straubing to port Straubing-Sand. That is why the number of days with fairway depths above 2.00 m (target value²⁴) is equal to the number of days with available water levels above LNWL (cf. 10.3).

Regarding the section from port Straubing-Sand up to the city of Deggendorf dredging activities had to be undertaken above all in the (late) summer of 2012. Sedimentation formed an obstacle above all in the low water period end of July. In 2013 existing sedimentation do not yield fairway limitations due to sufficient available water levels (sole exception: few days in August). The main reasons for not meeting the target value²² of 2.00 m below LNWL in 2014 lied in the combination of required dredging works and low water levels in April and June. The year 2015, however, was characterised by difficult waterway conditions in the whole free flowing section of the German Danube from midmonth July to midmonth November. Water levels exceed LNWL only occasionally and sedimentation sometimes became relevant (15 days).

In section Deggendorf–Vilshofen in 2012 sedimentation lead to fairway limitations only for a couple of days in August, combined with particularly low water levels. 2013 was characterized by massive disturbing sedimentation in August and September due to the recent flood event. In 2014 the fairway still was restricted above all in March, April and June followed by short periods in August and September. Due to the above mentioned period of low discharges from July to November available fairway depths dropped below 2.00 metres on 104 days in 2015 (28,5%).

Moreover, there was massive sedimentation at the confluence of river Isar in 2015. Naturally, the Isar fills up a gravel cone into the Danube which leaves room for one-way traffic to all vessels.

¹⁷ In the free flowing section between Straubing and Vilshofen a fairway depth of 2.50 m as defined by NEWADA duo is neither developable nor maintainable. In this section the objective is to maintain the fairway depth of 2.00 m related to LNWL (in Germany: RNW).

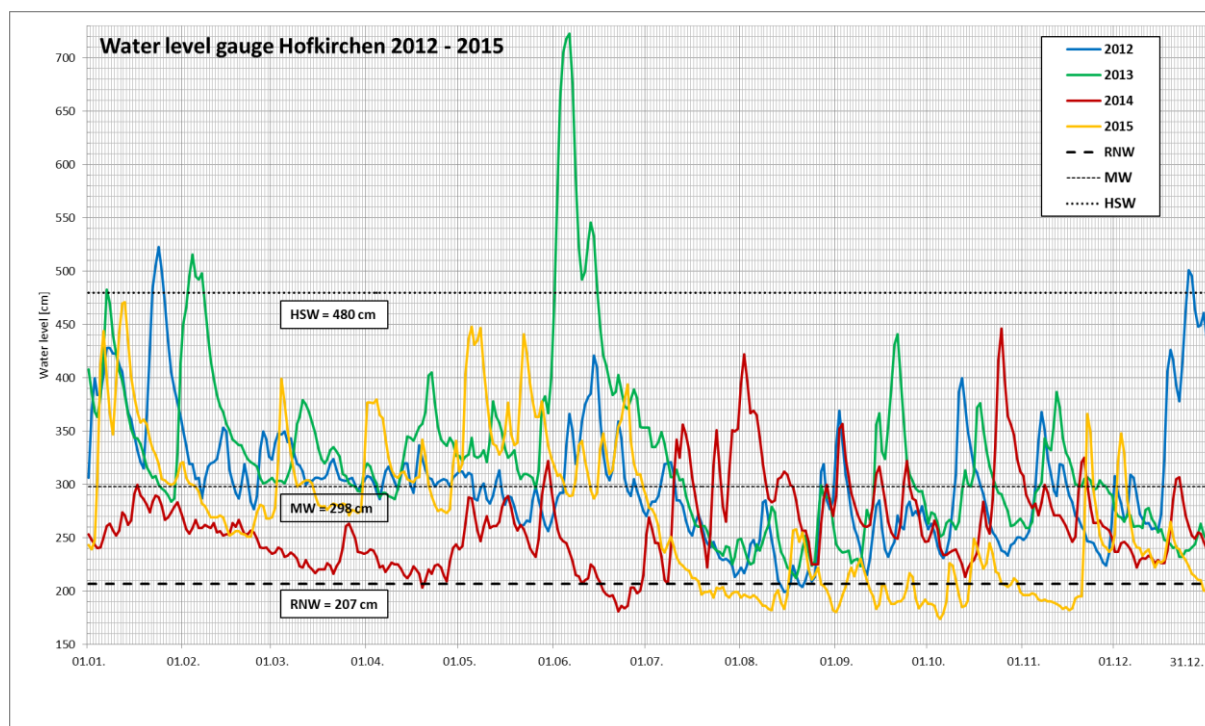
From midmonth August to the end of the year the passage was only permitted for vessels with a maximum beam of 11.55 m (no barge combination allowed).

10.2 DE | Hydrological conditions on main critical locations 2012 – 2015

Critical location	Reference gauges	No. of days \geq multiannual average flow discharge (m ³ /s)			
		2012	2013	2014	2015
Lock Straubing–Port Straubing-Sand	Pfelling	157	219	51	122
Port Straubing-Sand–Deggendorf	Pfelling	157	219	51	122
Deggendorf–Vilshofen	Hofkirchen	185	224	59	128

10.3 DE | Water level information on main critical locations 2012 – 2015

Critical location	Reference gauges	No. of days \geq LNWL			
		2012	2013	2014	2015
Lock Straubing–Port Straubing-Sand	Pfelling	352	362	335	258
Port Straubing-Sand–Deggendorf	Pfelling	352	362	335	258
Deggendorf–Vilshofen	Hofkirchen	360	365	351	273



10.4 DE | Key issues and related activities 2015

Activities performed related to the key issues illustrated in the Fairway Rehabilitation and Maintenance Master Plan (version: December 2014):

	Key issues	Need for action	Activities performed 2015
DE 01	20% of dredging works may be conducted by WSV itself, while 80% are tendered (providing sufficient available capacity)	Preserve a certain percentage of execution by the authority itself to keep professional expertise, equipment, skilled staff, autonomy, and the capacity to act in special market or emergency situations	<i>Dredging activities overall: 127.156 m³ Thereof government-operated: 0 m³ (however, own capacities would have been available)</i>
DE 02	Enhancing the information on water levels	Implementation of an hourly push-mode (currently pull-mode via modem)	<i>Approximately 25% successful implementation for gauges at German section of the Danube</i>

10.5 DE | Review of rehabilitation and maintenance activities

The following activities relate to the entire German Federal Waterway Danube.

Riverbed surveying activities 2015

Monitoring of the fairway is conducted annually. Every two years the navigable water beyond the fairway is recorded. These measurements (survey for several purposes) are performed by the sounding vessel "Kepler" via trifold multibeam echosounder (each producing a swath of depth readings from a single ping). Furthermore, the free flowing section Straubing-Vilshofen is measured each year to safeguard safety and ease of shipping by means of multiple single beams

mounted on a frame (work boats “Laber” and “Regen” and by means of a multibeam system mounted on sounding vessel “Tangens”). Additional surveying is executed after special incidents (e.g. floods, naval accidents). The following table exclusively contains scheduled interregional soundings. Additional local soundings which are conducted by the branch offices are neither projectable nor calculable. Surveying activities in the context of new constructions or upgrading measures are also not included.

River-km (from-to)	Frequency of surveying	Type of survey (single-/multi-beam)
2201,7 – 2247,0	Once p.a.	Trifold multibeam echosounder
2247,0 – 2327,5	Twice p.a.	Trifold multibeam echosounder Multiple single beams (frame)
2327,5 – 2414,7	Once p.a.	Trifold multibeam echosounder

Fairway relocation activities 2015

Due to the geometrical and hydraulic boundary conditions (e.g. limited cross-section, narrow curves, small discharges) at the German section of the Danube, fairway relocation is usually not an option. In 2015 there was no significant relocation activity in Germany.

Dredging activities 2015

The following fairway dredging measures for commercial navigation were conducted on the German Danube.

Designation of assignment (navigable route only)	Dredging site (river-km)	Dumping or placement site (river-km)	Beginning - end of service	Material	Quantity [m³]
Reservoir Jochenstein	Erlau	2215,35 - 2214,95	2221,00 - 2220,00	23.02.2015 - 02.03.2015	Sand / Gravel 2.575
	Passau	2224,00 - 2223,00	2221,00 - 2220,00	23.02.2015 - 10.04.2015	Sand / Gravel 6.934
	Passau Tailwater Kachlet	2230,41 - 2229,98	2221,00 - 2220,00	26.03.2015	Sand / Gravel 301
Reservoir Kachlet	Windorf	2244,525 - 2244,275	2242,00 - 2241,00	27.03.2015 - 01.04.2015	Sand / Gravel 613
	Windorf	2244,525 - 2244,275	Removal	27.03.2015 - 01.04.2015	Sand / Gravel 613
Straubing - Vilshofen (free flowing section)	Vilshofen	2249,75 - 2249,30	2242,00 - 2241,00	02.04.2015 - 10.04.2015	Sand / Gravel 1.121
	Vilshofen	2249,75 - 2249,30	Removal	02.04.2015 - 10.04.2015	Sand / Gravel 1.121
	Between Winzer and Hofkirchen	2263,25 - 2258,875	2265,200 - 2259,20	30.06-09.07. / 04.-27.08.15	Sand / Gravel 11.577
	Winzer	2268,475 - 2266,975	2277,60 - 2277,30	13.07.2015 - 23.07.2015	Sand / Gravel 4.163
	Nederalteich	2276,05 - 2274,75	2277,60 - 2277,30	24.07.2015 - 14.08.2015	Sand / Gravel 3.985
	Deggendorf	2284,45 - 2283,98	2328,40S - 2321,20S	11.09.2015 - 15.09.2015	Sand / Gravel 936
	Bogen	2309,725	2317,00	28.07.2015	Sand / Gravel 66
	Straubing	2317,318 - 2317,275	2317,00	31.08.2015	Sand / Gravel 111
	Tailwater Straubing	2321,744 - 2320,606	2328,40S - 2321,20S	01.09.2015 - 19.09.2015	Sand / Gravel 4.444
	Southern Arm Straubing	2319,415S - 2319,225S	2329,50S - 2328,50S	15.06.2015 - 18.06.2015	Sand / Gravel 3.914
Reservoir Straubing	Pondorf	2344,495 - 2337,45	Removal	13.04.2015 - 31.05.2015	Sand / Gravel 22.809
	Pfalter	2351,25 - 2352,30	2353,30 - 2351,50	13.04.2015 - 31.05.2016	Sand / Gravel 5.858
Reservoir Regensburg	Northern Arm Bad Abbach	2396,70N - 2396,40N	2401,00N - 2398,70N	19.06.2015 - 30.06.2015	Sand / Gravel 8.902
	Tailwater lock Bad Abbach	2396,569 - 2396,275	2388,175	29.06.2015 - 30.06.2015	Sand / Gravel 1.560
Reservoir Bad Abbach	Kelheim	2412,10 - 2411,60	2381,00S - 2380,10S	12.05.2015 - 16.06.2015	Sand / Gravel 20.763
	Kelheim	2412,10 - 2411,60	2381,05N - 2380,80N	19.10.2015 - 03.11.2015	Sand / Gravel 10.490
	Kelheim	2412,10 - 2411,60	Removal	12.05.2015 - 16.06.2015	Sand / Gravel 12.177
	Kelheim	2411,675 - 2411,55	2388,175	24.06.2015 - 25.06.2015	Sand / Gravel 2.122

In total 127.156 m³ were dredged for commercial navigation in 2015.

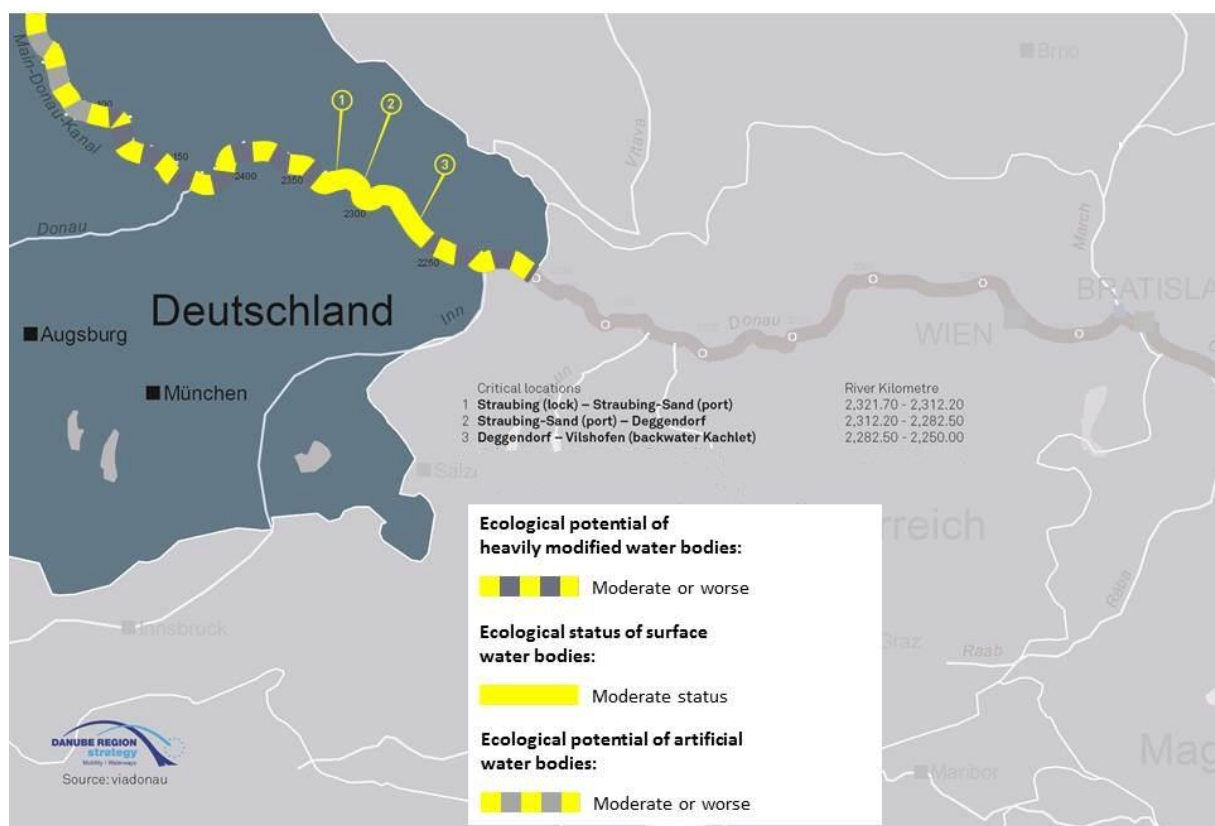
Regarding official permission (cf. 10.6), the Waterways and Shipping Office Regensburg presents annually (usually February) all planned dredging measures (e.g. scheduled evacuation of a sediment trap) at all four local branch offices to institutions and stakeholders from water

resources management, fishery and nature conservation in order to achieve mutual agreement. In addition, unscheduled dredging works are conducted as sovereign task to maintain safety.

10.6 DE | Summary of current ecological status and environmental impacts

As regards the Danube corridor there are all classifications of surface water bodies for the German waterway section. The Main-Danube Canal is classified as artificial and heavily modified water body, respectively. The main stretch of the German Danube is impounded and therefore declared as heavily modified while the free flowing section between Straubing and Vilshofen is designated as natural water bodies.

The following map displays the ecological status and ecological potential of the German Danube – according to the Danube River Basin Management Plan/Update 2015 – against the background of the critical navigation locations in Germany.



Ecological status and ecological potential of surface water bodies

(Source: DRBM Plan – Update 2015)

The ecological potential of the heavily modified German Danube stretches is moderate. The same classification applies to the free flowing section Straubing–Vilshofen though the status of the biological quality elements fish and benthic invertebrates is actually good.

Measures to improve environmental conditions

Measures have already been taken until 2015 to improve river continuity for fish migration, reconnecting adjacent floodplains/wetlands, impoundments, and water abstractions. *“Inland navigation can contribute to making transport more environmentally sustainable, particularly where it can act as a substitute for road transport. It can, however, also have significant influence on river ecosystems, jeopardizing the goals of the WFD”* (DRBM Plan – Update 2015).

These different ecological points of view, namely a regional and a global perspective, also apply to the development of the waterway and improvement of flood protection on the Danube between Straubing and Vilshofen. This project contains an upgrading of the waterway solely by stream control measures (without locks/weirs) and improvements of flood protection measures up to a 100-year-event, both in combination with a suitable landscape management plan. The latter is characterized by an interactive and iterative planning procedure of engineering and accompanying landscape management measures to prevent, minimize, (re)assess and finally compensate unavoidable impacts. These obligations and responsibilities under environmental law include a public and stakeholder involvement. April/May 2015, the approval and hearing procedure under public law for the 1st subsection from Straubing to Deggendorf (confluence Isar) took place. As regards the 2nd subsection from Deggendorf to Vilshofen a scoping was held and a planning approval procedure is prepared to start in 2017. Further information on the project is provided on the project's website <http://www.lebensader-donau.de/>.

Navigation maintenance measures and environmental impacts

Maintenance works are executed under environmental law (Federal Nature Conservation Act) and in accordance with the Federal Waterways Act. The corresponding measures in Federal waterways do not require permission under water law, but have to consider the objectives of WFD as well as all significant flood protection issues by mutual agreement with the water resources management administration. Maintenance measures are neither impacts in terms of environmental law nor projects/plans in terms of environmental impact assessment or FFH Directive because the approved state is restored. Naturally, the respective issues have to be considered but no special permission or exemption is needed. The same release with regard to formal requirements exists for species conservation law. The implementation in practice is described in chapter 10.5.

10.7 DE | Budget status 2015 – 2016

For Germany, no data on cost and budget is available.

Operational expenditures 2015 and budget needs 2016

Need areas	Operational expenditures 2015	Required operational budget 2016	Secured operational budget 2016	Remaining Financing gap 2016
Minimum fairway parameters (width/depth) (here only dredging costs cf. 10.5)	1.858.200	*1	*3	0
Surveying of the riverbed	*1	*1	*3	0
Water level gauges	50.000	150.000 and *1	150.000 and *3	0
Marking of the fairway	*1	*1	*3	0
Availability of locks / lock chambers	*1	*1	*3	0
Information on water levels and forecasts	*1,2	*1,2	*3	0
Information on fairway depths	*1,2	*1,2	*3	0
Information on marking plans	*1,2	*1,2	*3	0
Meteorological information	*1,2	*1,2	*3	0
Other needs				
Sum	1.908.200	150.000 and *1,2	150.000 and *3	0

*1 Operation and maintenance works are mandatory tasks (sovereign duties) of the Federal Waterways and Shipping Administration (WSV). Due to in-house efforts a complete assignment of tangible costs per need area is not possible. The sum (see above) only comprises all definable costs. Therefore, actual costs are in fact substantially larger due to the mentioned intangible in-house expenses.

*2 Job completion in legal and administrative co-operation with Free State of Bavaria (Water Resources Management Administration), German Federal Institute of Hydrology (BfG), and German Weather Service (DWD).

*3 For sovereign tasks all necessary investments are by default covered by federal budgets.

10.8 DE | Outlook: actions, milestones and funding sources

DE 01: 20% of dredging works may be conducted by WSV itself (providing sufficient available capacity for government-operation)		
Planned activities:	Continuous training (personnel), maintenance and repair (gear) to provide skilled operational staff and appropriate equipment	
Current shortcomings:	No current shortcomings identified	
Environmental relevance of planned activities:	What are the main expected environmental impacts?	No such impact
	Which measures are taken to mitigate these impacts?	n/a
	Is water status still expected to deteriorate?	n/a
Possible funding:	Budget availability 2015/2016: Sufficient national funding is available	
Next steps:	Market Observation (current dredging prices), monitoring waterway (safety and ease of shipping)	permanent
DE 02: Improved water level information		
Planned activities:	Provision of hardware Implementation of an hourly push-mode	
Current shortcomings:	No current shortcomings identified	
Environmental relevance of planned activities:	What are the main expected environmental impacts?	No such impact
	Which measures are taken to mitigate these impacts?	n/a
	Is water status still expected to deteriorate?	n/a
Possible funding:	Budget availability 2016/2017: National Funding is assured	
Next steps:	Improvement of central EDP systems in terms of availability including redundancy for remaining 75% (cf.10.4)	until 12/17

11 Serbia

PLOVPUT (Directorate for Inland Waterways within the Ministry of Construction, Transport and Infrastructure) is responsible for fairway maintenance.

11.1 RS | Status report on main critical locations 2012 – 2015

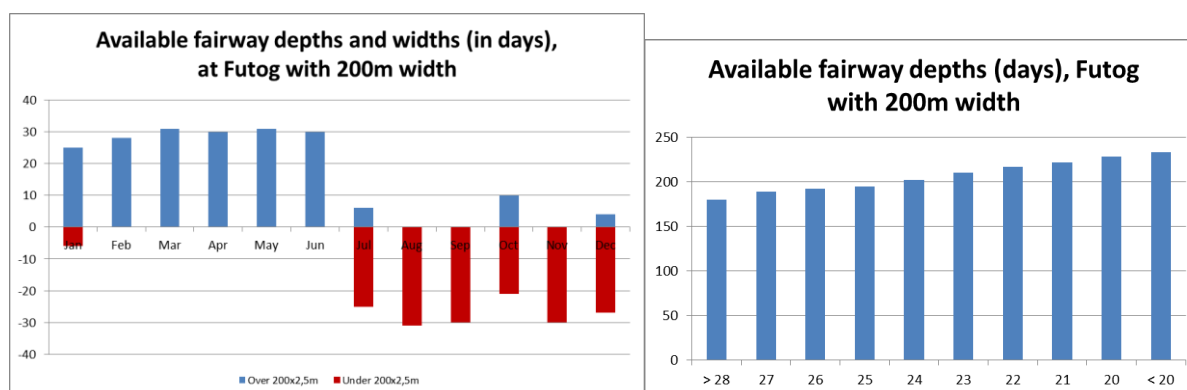
Number of days with fairway depths > 2.5m (on the fairway width reduced to 100 m – minimum LoS) on main critical locations:

Danube

Critical location	2012	2013	2014	2015
Apatin	366	365	365	365
Futog	366	235	365	360

The critical sector Apatin was identified as the most critical one by Danube waterway users in a survey by PA1a concluded in December 2014. The Serbian Directorate for Inland Waterways stresses that also Futog needs to be reported as it is also highly critical.. That is why Futog was also taken up in the Action Plans. The Apatin critical section is dealt with in the Croatian chapter. Data on Apatin is jointly prepared by both the Croatian and Serbian administration, in order to guarantee harmonized data provision. Futog is reported in the Serbian chapter.

The situation on the critical sector Futog was a bit worse in 2015 compared to 2014, having in mind available fairway depth and width. Fairway width is still reduced to the minimum Level of Service, which is 100 m. On the 100 m fairway width, fairway depth of 2.5 m was achieved for 360 days (98.6%). On the 120 m fairway width, fairway depth of 2.5 m was achieved for 273 days in 2015 (74.8%).





Sava River

Number of days with fairway depths > 2.5m (on fairway width 55 m) on main critical locations:

Critical location	2012*	2013*	2014	2015
Sabac	n/a	n/a	306	216
Kamicak	n/a	n/a	346	203

11.2 RS | Hydrological conditions on main critical locations 2012 – 2015

Danube

Critical location	Reference gauges	No. of days \geq multiannual average flow discharge (m ³ /s)			
		2012	2013	2014	2015
Apatin	Bezdan*	151	217	134	205
Futog	Novi Sad	128	213	163	212

There are no flow discharge measurements on the Apatin gauging station, instead, discharge measurements from the Bezdan gauging station have been used for calculation.

11.3 RS | Water level information on main critical locations 2012 – 2015

Danube

Critical location	Reference gauges	No. of days \geq LNL			
		2012	2013	2014	2015
Apatin	Apatin	366	365	365	316
Futog	Novi sad	366	363	365	324

Gauging station Apatin: In 2015, 49 days with water levels below LNL have been recorded.

Water level data for the **gauging station Novi Sad** (which is the reference gauging station for the critical sector Futog): In 2015, 41 days with water levels below LNL have been recorded.

11.4 RS | Key issues and related activities 2015

	Key issues	Need for action	Activities performed 2015
RS 01	Limitations of available data due to insufficient number of vessels and surveying equipment Limited budget for monitoring activities	Support acquisition/retrofit of up-to-date single-beam sounding equipment, software and vessels Enforce cooperation with AVP on joint stretch and improve data exchange	No new surveying equipment has been acquired, due to limited budget resources. Exchange of hydrographic data with AVP has been performed, in line with established procedure, improving the frequency of hydrographic data collection.
RS 02	Insufficient number of skilled staff	Secure education and provision of well-trained staff in the short, medium and long term Facilitate different geographical organization of surveying teams to allow more effective and efficient performances Enable expert exchange with other Danube waterway	At the end of 2015, decision of rationalization of the number of employees in the Governmental institutions have been announced, According to that decision, Directorate for Inland Waterways started procedure of reduction of the number of employees from 89 to 70. This reduction has been performed at the beginning of 2016.

		administrations	<p>Different geographical organization of surveying teams to allow more effective and efficient performances is linked to the acquiring additional vessel and equipment for hydrographic survey activities. Since no acquisition of vessel and equipment for hydrographic activities have been performed, due to lack of budget resources and rationalization of the number of employees, no changes in geographical organization have been performed.</p> <p>No expert exchange with other Danube waterway administrations has been performed.</p>
RS 03	Insufficient number of automatic gauging stations in the free flowing section	Support acquisition and operation of additional gauging stations.	No new automatic gauging stations have been acquired, due to limited budget resources.
RS 04	Further absence of budget for dredging activities will lead to deterioration of navigation conditions, while the cost-benefit ratio of these activities is very favourable.	Secure sufficient and predictable financial means	No dredging in the fairway have been performed, due to limited budget resources.
RS 05	Old marking vessels and equipment	Support acquisition of up-to-date marking vessels and buoys	No acquisition of up-to-date marking vessels and buoys have been performed, due to lack of budget resources.
RS 06	Inefficiencies due to missing comprehensive database and web tool for navigation aids	Support development of a web application for marking activities on the Danube and its tributaries integrating Croatia and Romania	Web application for marking activities on the Danube have been developed and put into operations.
RS 07	Limited number of skilled personnel and inability to employ new staff due to Government regulation and restrictions	Secure education and provision of well-trained staff in the short, medium and long term	At the end of 2015, decision of rationalization of the number of employees in the Governmental institutions have been announced, According to that decision, Directorate for Inland Waterways started procedure of reduction of the number of employees from 89 to 70. This reduction have been performed at the beginning of 2016.

RS 08	The low number of gauging stations results in incomplete water level information and lead to inaccurate forecasts.	Support acquisition and operation of additional gauging stations.	No activities performed, due to lack of budget resources.
Other	Provision of dynamic fairway information to users	Launching of Navigational Bulletin, an on-line fairway information services portal for the Republic of Serbia (Danube, Sava and Tisza Rivers)	<p>Navigational bulletin, and online portal for provision of dynamic fairway information services, was launched in 2015. The following dynamic information are available: water levels, water levels forecast, wind speed and direction, Notices to Skippers, waterway marking system, available depths at critical sectors, available vertical clearances at bridges, availability of locks, availability of river information services, contact information of relevant authorities. Data are available in Serbian and English language.</p> <p>url: http://www.plovput.rs/navigational-bulletin </p>

11.5 RS | Review of rehabilitation and maintenance activities 2015

The following activities relate to all critical locations as identified in the Rehabilitation and Maintenance Master Plan (version December 2014):

Riverbed surveying activities 2015

Danube

River-km (from-to)	Frequency of surveying	Type of survey (single-/multi-beam)
1.433 – 1.299	1-2	Singlebeam – 200 m whole stretch and 50 m cross-sections for critical sectors
1.299 – 1.170	1-2	Singlebeam – 200 m whole stretch and 50 m cross-sections for the most critical sectors (the most critical sector Futog surveyed twice)

Fairway relocation activities 2015

Danube

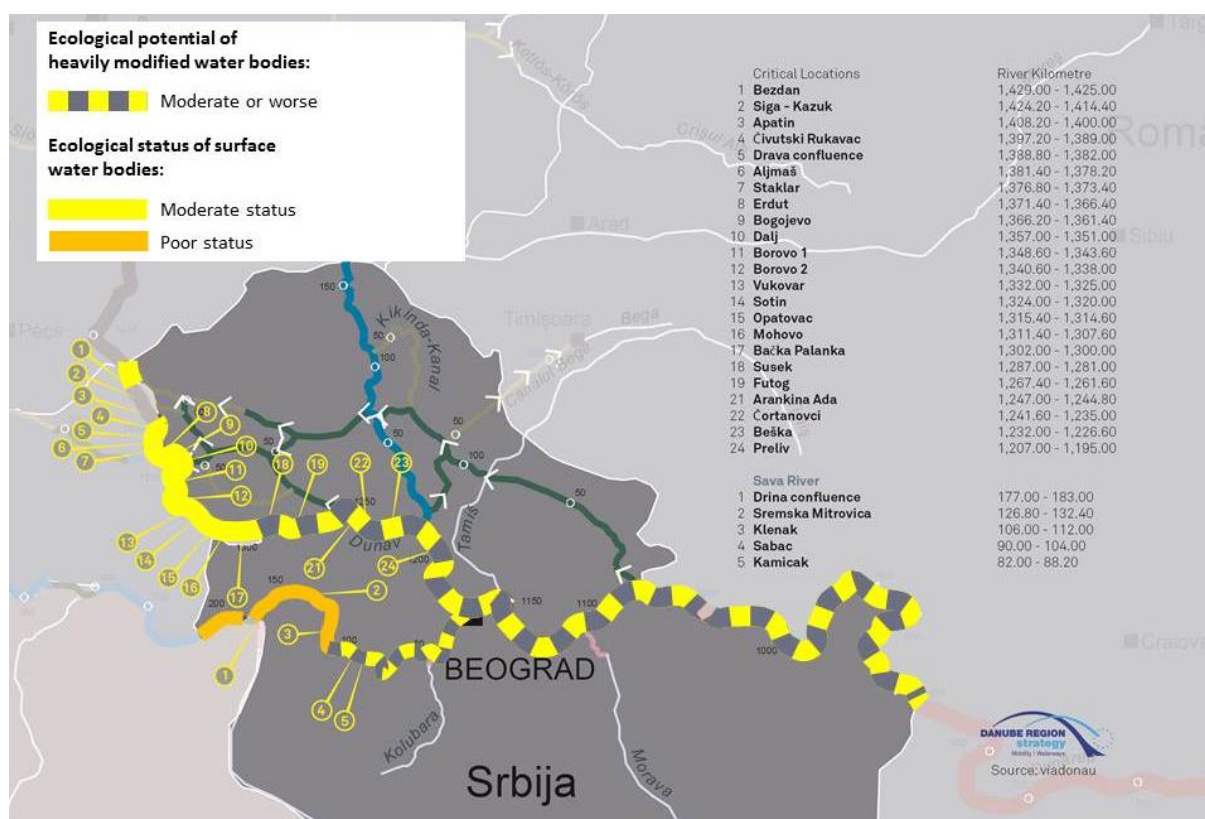
River-km (from-to)	Frequency of relocation interventions	Comments
1.267 – 1.261	3	<i>Realignment and reduction of the width of the fairway at the critical sector Futog due to dynamic morphological developments</i>

Dredging activities 2015

No dredging activities performed in the fairway. Dredging of sediment from entrance to winter port and from winter port on the Danube River in Novi Sad was performed.

11.6 RS | Summary of current ecological status and environmental impacts

The following map displays the ecological status and ecological potential of the Serbian Danube – according to the Danube River Basin Management Plan/Update 2015 – against the background of the critical navigation locations in Serbia.



Ecological status and ecological potential of surface water bodies

No data provided

Measures to improve environmental conditions

No data provided

Navigation maintenance measures and environmental impacts

No data provided

11.7 RS | Budget status 2015 – 2016

Operational expenditures 2015 and budget needs 2016

Need areas	Operational expenditures 2015	Required operational budget 2016	Secured operational budget 2016	Remaining Financing gap 2016
Minimum fairway parameters (width/depth)				
Surveying of the riverbed				
Water level gauges				
Marking of the fairway				
Availability of locks / lock chambers				
Information on water levels and forecasts		No data provided		
Information on fairway depths				
Information on marking plans				
Meteorological information				
Other needs				
Sum				

11.8 RS | Outlook: planned actions, milestones and funding sources

No activities planned due to budget limitations.

12 Bosnia and Herzegovina

Currently there is no agency on state level which is responsible for maintenance, rehabilitation and upgrade.

12.1 BA | Status report on main critical locations 2012 – 2015

Number of days with fairway depths > 2.5m on main critical locations (as identified by the Danube waterway users in a survey by PA1a concluded in December 2014):

No data provided

Critical location	2012	2013	2014	2015
From rkm 69,7 To rkm 72,9	No data provided			
From rkm 79,9 To rkm 85,8				
From rkm 88,3 To rkm 101,9				
From rkm 103,5 To rkm 109,8				
From rkm 173,8 To rkm 176,6				
From rkm 177,8 To rkm 187,4				
From rkm 189,2 To rkm 202,5				
From rkm 202,5 To rkm 225,1				
From rkm 225,1 To rkm 260,7				
From rkm 260,7 To rkm 306,8				
From rkm 306,8 To rkm 331,5				
From rkm 364,4 To rkm 395,5				
From rkm 417,1 To rkm 445,7				
From rkm 445,7 To rkm 459,9				
From rkm 459,9 To rkm 480,4				
From rkm 480,4 To rkm 511,8				

The main reasons for not meeting the level of service are the following:

The Sava river waterway needs huge and comprehensive rehabilitation and reconstruction works in order to ensure considerable and fully usage of the waterway. The rehabilitation and reconstruction works should also ensure necessary conditions for safe navigation along the Sava River, which concedes afterwards regular maintenance works of the navigation path. Sava river waterway is included in the core transport network in Bosnia and Herzegovina, and its rehabilitation is one of the priorities in the transport sector in the country. Bosnia and Herzegovina shall again apply for EU funds for preparation of necessary study and technical documentation needed for further execution of construction works. Once the works are completed and fairway infrastructure parameters are harmonised with the appropriate parameters along the Danube fairway, the regular maintenance works shall be established, following the principles and guidelines from the Fairway Rehabilitation and Maintenance Master Plan (cycle of monitoring, planning, execution, information), including usage of best practices and experience of other countries in the Danube region in this respect.

Bosnia and Herzegovina currently maintains the fairway signalling system of the Sava river fairway from rkm 343 to rkm 211 on BiH and Croatian fairway/river banks, and from rkm 211 to rkm 178 for BiH part of the fairway/river bank, according to the Agreement between the Government of the Republic of Croatia and the Council of ministers of Bosnia and Herzegovina on inland waterways navigation, its signalling and maintenance.

12.2 BA | Hydrological conditions on main critical locations 2012 – 2015

Not applicable (please see the explanation given above).

Critical location	Reference gauges	No. of days \geq multiannual average flow discharge (m ³ /s)			
		2012	2013	2014	2015
x	X	x	x	x	X
x	x	x	x	x	X

12.3 BA | Water level information on main critical locations 2012 – 2015

Not applicable (please see the explanation given above).

Critical location	Reference gauges	No. of days \geq LNWL			
		2012	2013	2014	2015
x	x	x	x	x	X
x	x	x	x	x	x

12.4 BA | Key issues and related activities 2015

	Key issues	Need for action	Activities performed 2015
BA 01	In order to rehabilitate the Sava fairway, it is necessary to prepare Study and Technical documentation for rehabilitation works. Documentation includes prepare of Environmental and Social Impact Assessment Study (ESIA), update of Preliminary design from the Feasibility study (FS prepared by the Sava Commission in 2008) and Main design.	The financial means need to be secured for preparation of study and technical documentation for the rehabilitation works on the Sava river waterway, to be upgraded to Va navigation class (according to the parameters for Va class given by the Sava Commission)	Within 15. Round of WBIF call for proposals, Bosnia and Herzegovina has applied for the grant funds for preparation of study and technical documentation

12.5 BA | Review of rehabilitation and maintenance activities 2015

Surveying activities 2015

River-km (from-to)	Frequency of surveying	Type of survey (single-/multi-beam)
-No data provided		

Fairway relocation activities 2015

Not applicable

Dredging activities 2015

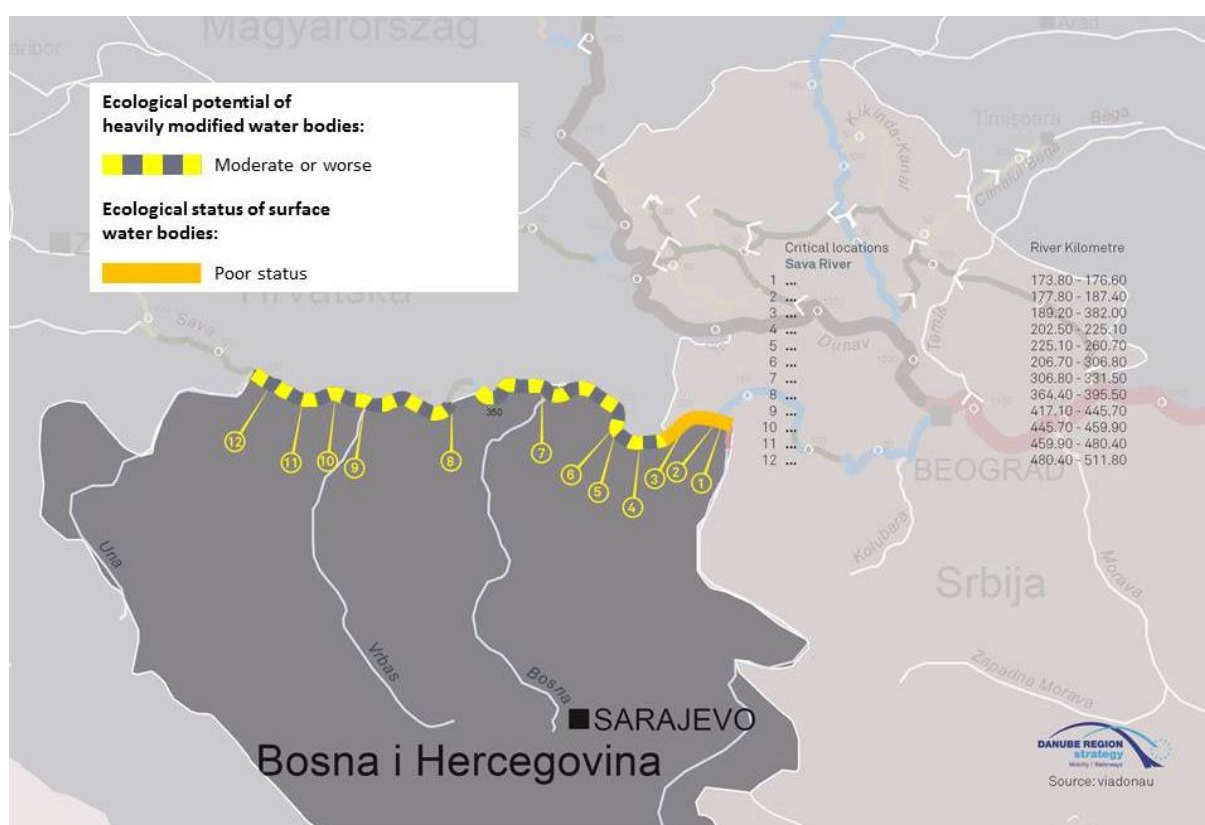
Data given for dredging activities relates to the entity Republika Srpska in Bosnia and Herzegovina (Source of data: Republika Srpska, Ministry of traffic and communications of Republika Srpska, Port Authority of Republika Srpska in Brčko)

Designation of assignment	Dredging site		Dumping or placement site		Beginning of service	End of service	Material	Utilisation	m3	Reference and relevant permits (see next table)
	from river-km	to river-km	from river-km	to river-km						
xxx	481+500	482+500	459+750	459+750	31.07.2014 30.09.2015	31.07.2015 31.12.2016	Gravel and sand	xxx	3.008	Water approval, Traffic approval for river sediment exploitation

Referenced and relevant permits	Title of permit (original language)	Permitting authority	Permit applicable		Valid until	Type of permit (e.g. environmental, water, navigation law)	Main conditions for permit
			from river-km	to river-km			
1	Traffic approval for river sediment exploitation	Ministry of traffic and communications of Republika Srpska and Port authority Brčko	481+500	482+500	31.12.2016	Law on inland navigation of Republika Srpska – traffic approval	Water approval, Elaborate for maintenance of the Sava river bed

12.6 BA | Summary of current ecological status and environmental impacts

The following map displays the ecological status and ecological potential of the Save in waters Bosnia and Herzegovina – according to the Danube River Basin Management Plan/Update 2015 against the background of the critical navigation locations in Bosnia and Herzegovina.



Ecological status and ecological potential of surface water bodies

No data provided

Measures to improve environmental conditions

No data provided

Navigation maintenance measures and environmental impacts

No data provided

12.7 BA | Budget status 2015 – 2016**Operational expenditures 2015 and budget needs 2016**

Need areas	Operational expenditures 2015	Required operational budget 2016	Secured operational budget 2016	Remaining fin. gap 2016
Minimum fairway parameters (width/depth)				
Surveying of the riverbed				
Water level gauges				
Marking of the fairway	98.511,64	120.450,51	127.822,97	-
Availability of locks / lock chambers				
Information on water levels and forecasts				
Information on fairway depths				
Information on marking plans				
Meteorological information				
Other needs				
Sum	98.511,64	120.450,51	127.822,97	

The cost for „Marking of the fairway“ result from maintenance of the marking system from rkm 343 to rkm 211 on both river banks, and from rkm 211 to rkm 178 on BIH river bank of the Sava (works and supervision).

12.8 BA | Outlook: planned actions, milestones and funding sources

No data provided

13 Moldova

No update has been provided by Moldova for October 2015 and May 2016. The text of Roadmap June 2015 is given below.

Fairway administration and maintenance of the Danube waterway in Moldova is carried out by the Romanian AFDJ on the basis of a bilateral agreement.

13.1 MD | Status report on main critical locations 2012 – 2015

According to the Fairway Rehabilitation and Maintenance Master Plan (version December 2014), there are no critical locations.

13.2 MD | Hydrological conditions on main critical locations 2012 – 2015

Not relevant.

13.3 MD | Water level information on main critical locations 2012 – 2015

Not relevant.

13.4 MD | Key issues and related activities 2015

In the Fairway Rehabilitation and Maintenance Master Plan (version December 2014), no key issues were identified.

13.5 MD | Review of rehabilitation and maintenance activities 2015

According to the Fairway Rehabilitation and Maintenance Master Plan (version December 2014), no rehabilitation and maintenance activities were implemented.

13.6 MD | Summary of current ecological status and environmental impacts

The following map displays the ecological status and ecological potential of the Hungarian Danube – according to the Danube River Basin Management Plan/Update 2015 – against the background of the critical navigation locations in Hungary.

MAP MOLDOVA

Ecological status and ecological potential of surface water bodies

(Source: DRBM Plan – Update 2015)

[short verbal description: see example in Austrian chapter].

Measures to improve environmental conditions

[short verbal description: see example in Austrian chapter].

Navigation maintenance measures and environmental impacts

[short verbal description: see example in Austrian chapter].

13.7 MD | Budget status 2015 – 2016

Secured operational budget 2015

No data provided.

13.8 MD | Outlook: planned actions, milestones and funding sources

Not relevant.

14 Ukraine

Responsible for fairway maintenance, rehabilitation and upgrade:

The State Enterprise «Ukrainian Sea Ports Authority» of the Ministry of Infrastructure of Ukraine is responsible for maintenance, rehabilitation and upgrade.

14.1 UA | Status report on main critical locations 2012 – 2015

The report on the state of the main critical areas in 2012 – 2014, subject to the list of the Main European inland Waterways- IWT («The blue book») The United Nations Economic Commission for Europe (UNECE), the part of river Danube from 0 to 116 km of Chilia arm where *Danube-Black Sea Deep-Water Navigation Route* (DBSDWNR) was defined as a category E80-09 waterway with the planned depth to 7.2 m. «The blue book» developed under the AGN - European Agreement on Main Inland Waterways of International Importance ((Decree of the President of Ukraine from 28.09.2009 №767/2009 on the accession of Ukraine to the European Agreement on Main Inland Waterways of International Importance (CMBП/AGN).

Number of days with fairway depths > 2.5m on main critical locations

Critical location	2012	2013	2014	2015
0 - 60 km	366	365	365	365
60 – 116 km	366	365	365	365
44 – 72 mile	366	365	365	365

Hydrometeorological regime and its variability are among the main factors defining the opportunities for navigation on the Danube. Difficulties for navigation on the Ukrainian part of Danube occur in following situations:

- Minimum water levels in the summer and autumn low-water period
- Maximum water levels during the spring and summer floods
- A sharp decline in depth on limiting sections of the river as a result of sedimentation after the passage of flood or flash-flood
- Periods of high intensive ice phenomena (thick ice drift, ice jams and freezing)

Thus, the main principle of customers support lies in operative provision with actual and forecast information on hydrological regime for navigation companies.

Long-term hydrological monitoring performed at the Ukrainian section of the Danube reveals some tendencies in alterations of hydrological regime affecting the navigation conditions

Permanent mathematical model of the Danube delta must be created in future to become a tool for the feasibility study and evaluation of changes in hydromorphology of the delta due to possible

scenarios of climate change, Danube water and sediments runoff alterations, Black Sea level fluctuations, or planned hydrotechnical works.

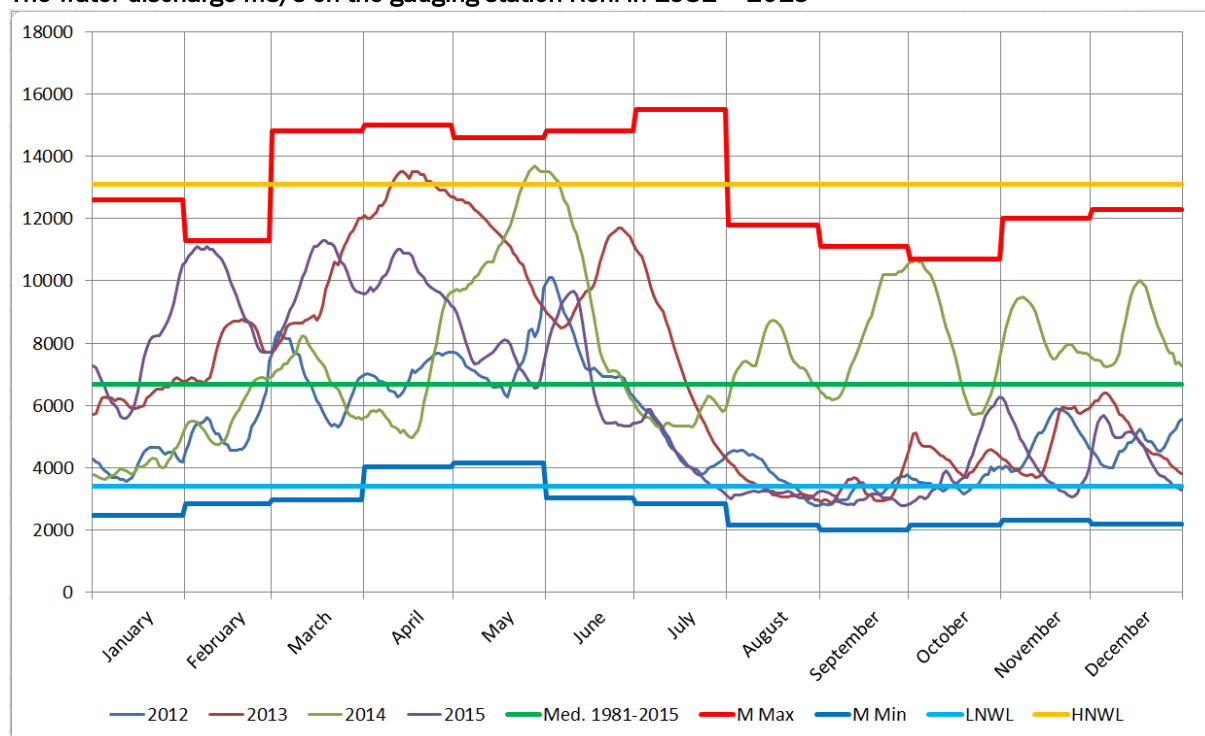
14.2 UA | Hydrological conditions on main critical locations 2012 – 2015

The Danube Hydrometeorological Observatory (DHO) is responsible for the hydrometeorological issues of the Ukrainian part of Danube.

Number of days with flow discharge above multiannual average flow discharge for the main critical locations.

Critical location	No. of days \geq multiannual average water discharge (m ³ /s)			
	2012	2013	2014	2015
0 – 60 km	91	173	222	156
60 – 116 km	91	173	222	156
44 – 72 m	91	173	222	156

The water discharge m³/s on the gauging station Reni in 1981 – 2015



14.3 UA | Water level information on main critical locations 2012 – 2015

Number of days above LNWL:

Critical location	Reference gauge	No. of days \geq LNWL			
		2012	2013	2014	2015
0-60 km	Vylkove	330	348	363	343
60-116 km	Izmail	305	328	365	282
44-72 mile	Reni	327	326	365	279

14.4 UA | Key issues and related activities 2015

	Key issues	Need for action	Activities performed 2015
UA 01	Maintenance of the waterway	Ensuring compliance with the international environmental conventions and bilateral agreements with Romania	x
UA 02	Hydrological forecasts are not precise enough	Improve the accuracy of hydrological forecasts supporting Danube navigation	the software complex of “Analytical and expert system for navigable water level forecasting” was developed by Ukrainian Scientific Research Hydrometeorological Institute

UA 2:

One of main tasks of DHMO is the provision with hydrometeorological support to the companies and organizations of the Danube region. Water level forecasts for the Danube navigation way from Germany to the Black Sea are published with different lead-time. Short-term forecasts with lead-time from 24 to 72 hours for 17 gauging stations are published daily. Forecasts of characteristic water levels (mean, minimal and maximal) for 10 days are published for 11 gauging stations as so as monthly forecast.

One in four days forecasts of average, minimum and maximum water levels on 11 paragraphs are provided and once a month forecasts of average, minimum and maximum water levels(16 paragraphs) on coming month.

Water level forecasts are provided to companies of the marine industry and also are published on web-sites of DHMO (www.dhmo.org.ua) and River Information Service on inland waterways of Ukraine (<http://ukrris.com.ua/>).The accuracy of hydrological forecasts during the period of 2012 – 2014 was:

97- 98% (daily)

92 - 96% (for 10 days)

76 - 85% (monthly)

Tending to improve the accuracy of hydrological forecasts supporting Danube fairway the software complex of “Analytical and expert system for navigable water level forecasting” was developed by Ukrainian Scientific Research Hydrometeorological Institute. Method of corresponding daily water level gradients implemented in analytical system allows producing of highly reliable daily, 10-day and monthly forecasts. Experimental use of this software complex in Danube Hydrometeorological Observatory during 2015 demonstrated the proven quality of water levels forecast for Danube fairway. Further implementation of computer-assisted methods of hydrological forecasting in DHMO practice will raise the quality of customers’ hydrological support.

14.5 UA | Review of rehabilitation and maintenance activities 2015

The following activities relate to all critical locations as identified in the Rehabilitation and Maintenance Master Plan (version December 2014)

Riverbed surveying activities 2015

Hydrographic activities were conducted according to the plan in 2015. Except surveying in port areas, researches were done in areas with potentially hazardous conditions (shoals) and minimum depths.

River-km (from-to)	Frequency of surveying	Type of survey(single/multibeam)
Sea approach channel Bystre	1 time per year	Single-beam
22-23 km Kulia arm	1 time per year	Single-beam
46.5 – 49.3 km	1 time per year	Single-beam
46.3 – 48 km	1 time per year	Single-beam
51.2 – 53 km	1 time per year	Single-beam
56 – 57.5 km	1 time per year	Single-beam
95.3 – 55,8 km	1 time per year	Single-beam
56 – 57.5 km	1 time per year	Single-beam
56 – 57.5 km	1 time per year	Single-beam

56 – 57.5 km	1 time per year	Single-beam
61 – 63 km	1 time per year	Single-beam
75.0 – 76.8 km	1 time per year	Single-beam
84 – 85 km	1 time per year	Single-beam
115 km – 44 m	1 time per year	Single-beam
75 – 76.8 m	1 time per year	Single-beam
52 – 72 m and Ivanshet Arm	1 time per year	Single-beam

Marking of the fairway activities 2015

The operation of the following navigation equipment was maintained on the regular basis:

shore-based facilities in total	357 pcs
including: created	2 pcs
luminous	54 pcs
informational	130 pcs
km and m	171 pcs
light buoys in total	43 pcs
including on the Ukrainian Danube	28 pcs
sea approach channel Bystre	15 pcs

To ensure the smooth action of these aids to navigation, according to established modes of operation in 2015, carried out the following activities:

Coastal aids to navigation and port facility security	Visual swim on the area 0 km – 72 mile
Service of Port Facility Security	cancellation buoys that have lost value navigation
	permutation shifted buoys on the regular place
	permutation the buoys for application administration
	replacement the batteries on the buoys
	replacement of flashing devices on buoys
Service of aids to navigation	check the functioning of light - optical devices and batteries
	clearing of undergrowth and painting signs
	service of the leading marks of the sea approach channel to the Bystre Arm
The scheduled replacement of metal with plastic buoys	replacement of the power change on coastal world marks
	The buoys №6,8,10,11,12,13 old type have replacement by the plastic type at anchor chain caliber 22 mm and concrete anchors type Б – 1500 (Б-2000)

In case of failure aids to navigation is to restore as soon as possible. All information about changes in the mode of aids to navigation, as well as changes in navigation - hydrographic conditions constantly have to ship driver.

Riverbed surveying activities 2015

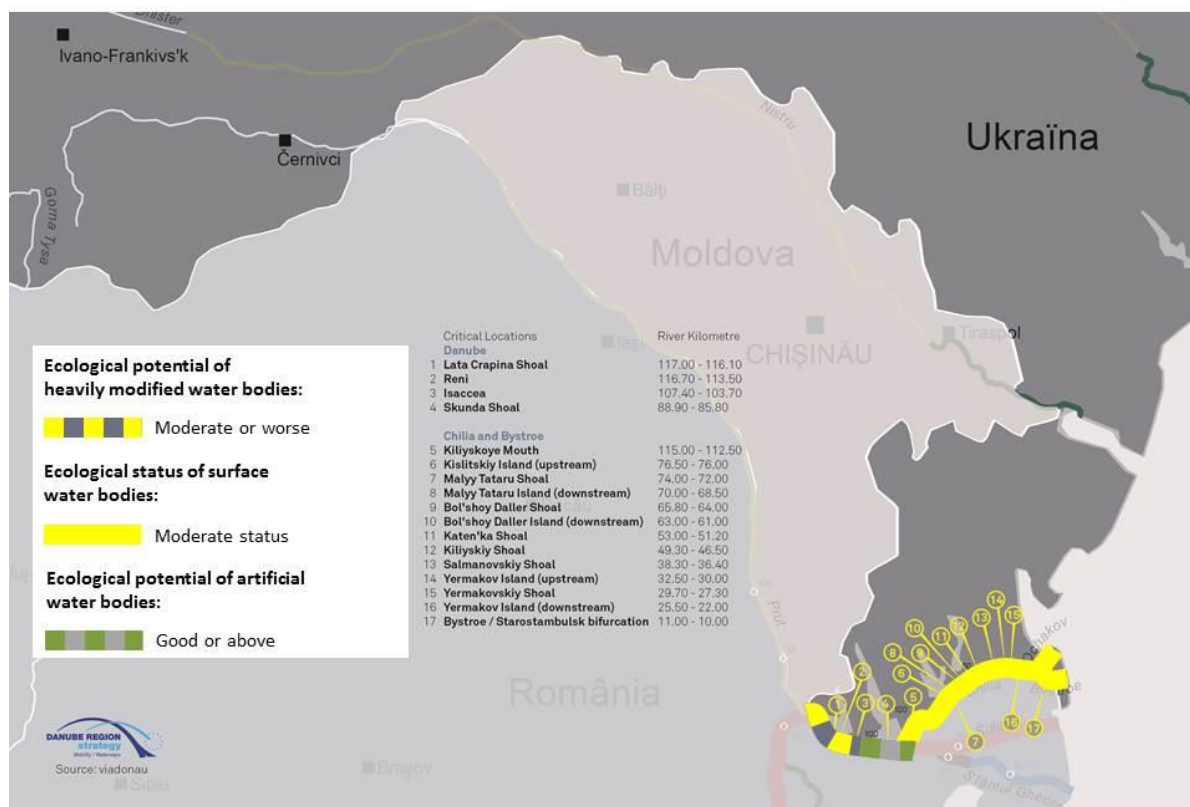
River-km (from-to)	Frequency of surveying	Type of surveying
Sea approach channel Bystre	2 times per year	multi-beam
64,0-65,8 km	1 time per year	single

Fairway relocation activities 2015

River-km (from-to)	Frequency of relocation interventions	Comments
64,0-65,8 km	1 per year	moving of staff marking of the fairway and the establishment of additional Floating safety sings through the shift of natural fairway toward the left bank of 50-70 m.

14.6 UA | Summary of current ecological status and environmental impacts

The following map displays the ecological status and ecological potential of the Ukrainian Danube – according to the Danube River Basin Management Plan/Update 2015 – against the background of the critical navigation locations in Ukraine.



To resolve the issues related to the implementation of the Espoo Convention provisions, Resolution of the Cabinet of Ministers of Ukraine (02.04.2008 №295) formed Interagency Coordinating Council for implementation the Espoo Convention in Ukraine which is headed the Minister of Ecology and Natural Resources of Ukraine.

Decision-making on the future implementation of the project to creating the DNR Danube - Black Sea (full development or of the first phase of the project) is exclusively within the competence of the Government of Ukraine.

In October there is no decision by the Government of Ukraine (in terms of funding) for the further implementation of the project "Creation of the navigable tributaries of the Danube - Black Sea in the Ukrainian part of the delta."

On March 15-17th 2016 in Geneva (Switzerland) Ukrainian delegation participated in the open part of the 35th Meeting of the implementation of the Espoo Convention and the Protocol on strategic environmental assessment for the Danube-Black Sea Deep Navigation Route. At the

same time was held the third round of Ukraine-Romanian consultations on issues of the Danube-Black Sea Deep Navigation Route in terms of the requirements of the Espoo Convention.

The Ukrainian delegation forwarded non- paper offers prepared by the Ministry of Infrastructure of Ukraine where offers of the Ukrainian side are expressed concerning the creation ad hoc group to regulate the navigation in Danube Delta.

The Ukrainian delegation offered to the Romanian side to negotiate the issue of conducting the procedures provided by the Convention Expo regarding the project «Creating the deep Fairway on Danube river – The Black Sea on the Ukrainian part of the Delta» and work out step-by-step mechanism concerning the termination Case within the Expo Convention.

In response the Romanian part mentioned that its apply to close proceedings is possible in case of project shutdown on the step I and the recall of the final decision approved by the prime minister H. Nemuria (Г. Немиря) in 2010. The Romanian side agreed to lay out its remarks in written and send to the Ukrainian side.

The discussion of the program on mutual complex ecological monitoring of the Danube delta with the participation Ukrainian and Romanian experts is notified to have taken part on 23 November 2015. Up-to-date program of the mutual monitoring is forwarded to the Romanian side by the letter dated 15.12.2015 № 5/25-13/15187-15.

Also, the Ministry of Ecology and Natural Recourses of Ukraine by the letter dated 20.10.2015 № 5/25-13/12909-15 forwarded the Romanian side the report «Complex ecological monitoring when building and operating the deep fairway Danube – The Black Sea in 2014:The sea approach channel» .

The Romanian side during the meeting notified that suggestions on the program of mutual monitoring from Romania will be provided on the 4th meeting of Ukrainian – Moldovian – Romanian commission on 23-24 March 2013, Odessa.

14.7 UA | Budget status 2015 – 2016

Operational expenditures 2015 and budget needs 2016

Need areas	Operational expenditures 2015	Required operational budget 2016	Secured operational budget 2016	Remaining financing gap 2016
Minimum fairway parameters (width/depth)	11.810			
Surveying of the riverbed	51.000	24.400	24.400	0
Water level gauges	192.177	300.000	54200	-245.800
Marking of the fairway	0	230.612	230.612	0
Availability of locks / lock chambers				
Information on water levels and forecasts	33.000	540.000	35500	-504.500
Information on fairway depths	0			
Information on marking plans	0			
Meteorological information	54.000	360.000	58400	-301.600
Other needs	54.000	300.000	60500	-239.500
Sum	395.987	1.755.012	463612	1.440.000

14.8 UA | Outlook: planned actions, milestones and funding sources

UA 01:		
Planned activities:		
1. Hydrographic research in 2016		
River – km (from-to) Critical areas	Frequency of surveying	Type of surveying (single/multibeam)
Bystre	2 times per year	single-beam + multi-beam
10,0-10,5 km	2 times per year	single-beam + multi-beam
31,2-32,5 km	2 times per year	single-beam + multi-beam
36,4-38,3 km	2 times per year	single-beam + multi-beam
45,6-49,3 km	2 times per year	single-beam + multi-beam
51,2-53,00 km	2 times per year	single-beam + multi-beam
61,0-63,0 km	2 times per year	single-beam + multi-beam
64,0-65,8 km	2 times per year	single-beam + multi-beam
68,5-70,0 km	2 times per year	single-beam + multi-beam
72,0-74,0 km	2 times per year	single-beam + multi-beam
76,0-76,5 km	2 times per year	single-beam + multi-beam
46,3-48,0 mile	2 times per year	single-beam + multi-beam
56,0-57,5 mile	2 times per year	single-beam + multi-beam
Fairway 0-116 km	1 times per year	multi-beam

Fairway 44-72 mile	1 times per year	multi-beam
Solomoniv Arm	1 times per year	multi-beam
Ivanshet Arm	1 times per year	multi-beam
2. Marking the fairway		
Area	Planned activities	Amount
0-60 km	introduction of plastic beacon	6
0-116 km	introduction of new buoys type	10
Current weaknesses:		
Possible funding:		State Hydrographic Service of Ukraine funds carried out as part of cost navigation - hydrographic navigation safety, according to the annual plans of financial institutions approved by Ministry of Infrastructure of Ukraine
Next activity:		
<i>Other: if additional key issues arising in the period</i>		
Planned activity:		
Current weaknesses:		
Possible funding:		
Next activity:		