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Fairway Rehabilitation and Maintenance Master Plan – Danube and its navigable tributaries : National Actions Plans

Transmitted by the European Commission

The present document represents the summary of the update to National Action Plans for the Fairway Rehabilitation and Maintenance Master Plan for the Danube and its navigable tributaries developed within the EU co-financed project FAIRway, May 2016.

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

NATIONAL ACTION PLANS

UPDATE MAY 2016

SUMMARY

Developed within the EU co-financed project FAIRway

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Connecting Europe Facility

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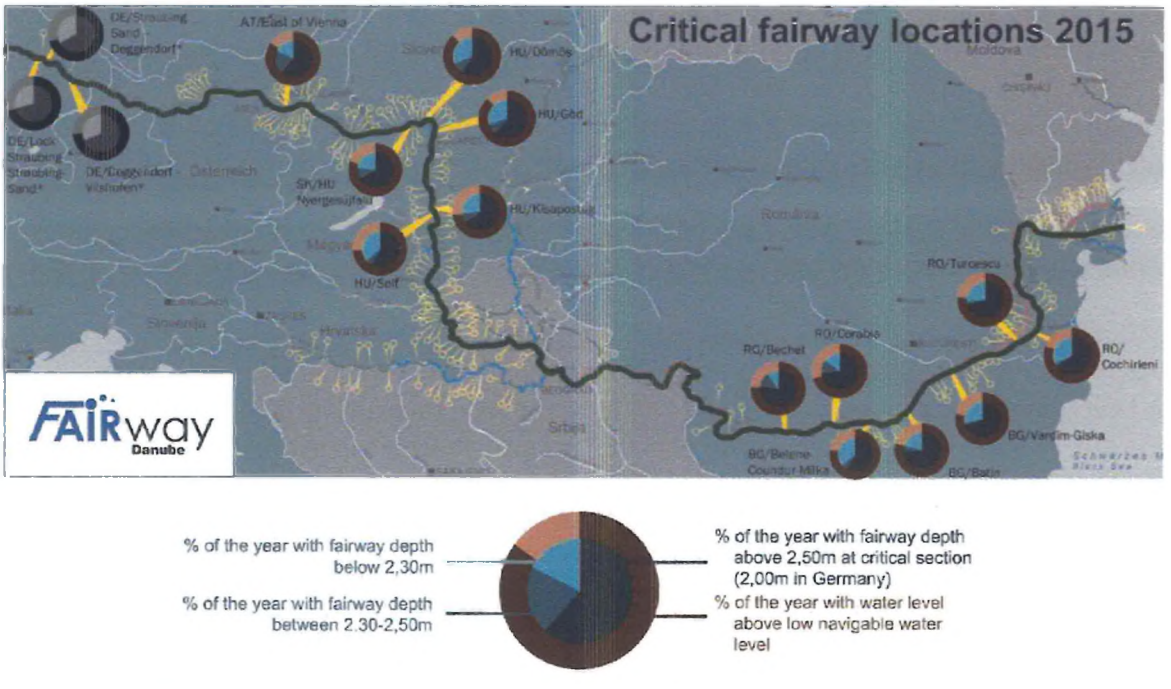
3 Synthesis and conclusions

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 months[13].

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.



* In the free flowing section between Straubing and Vilshofen a fairway depth of 2.50m is neither developable nor maintainable. In this section the objective is to maintain the fairway depth of 2.00m related to Low Navigable Water Level. Depicted values in Germany therefore refer to 2,00m fairway depth.

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

The recommended **target** of the Fairway Rehabilitation and Maintenance Masterplan is to provide a **fairway depth exceeding 2.5 m**[14] **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 depth**[17] 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.

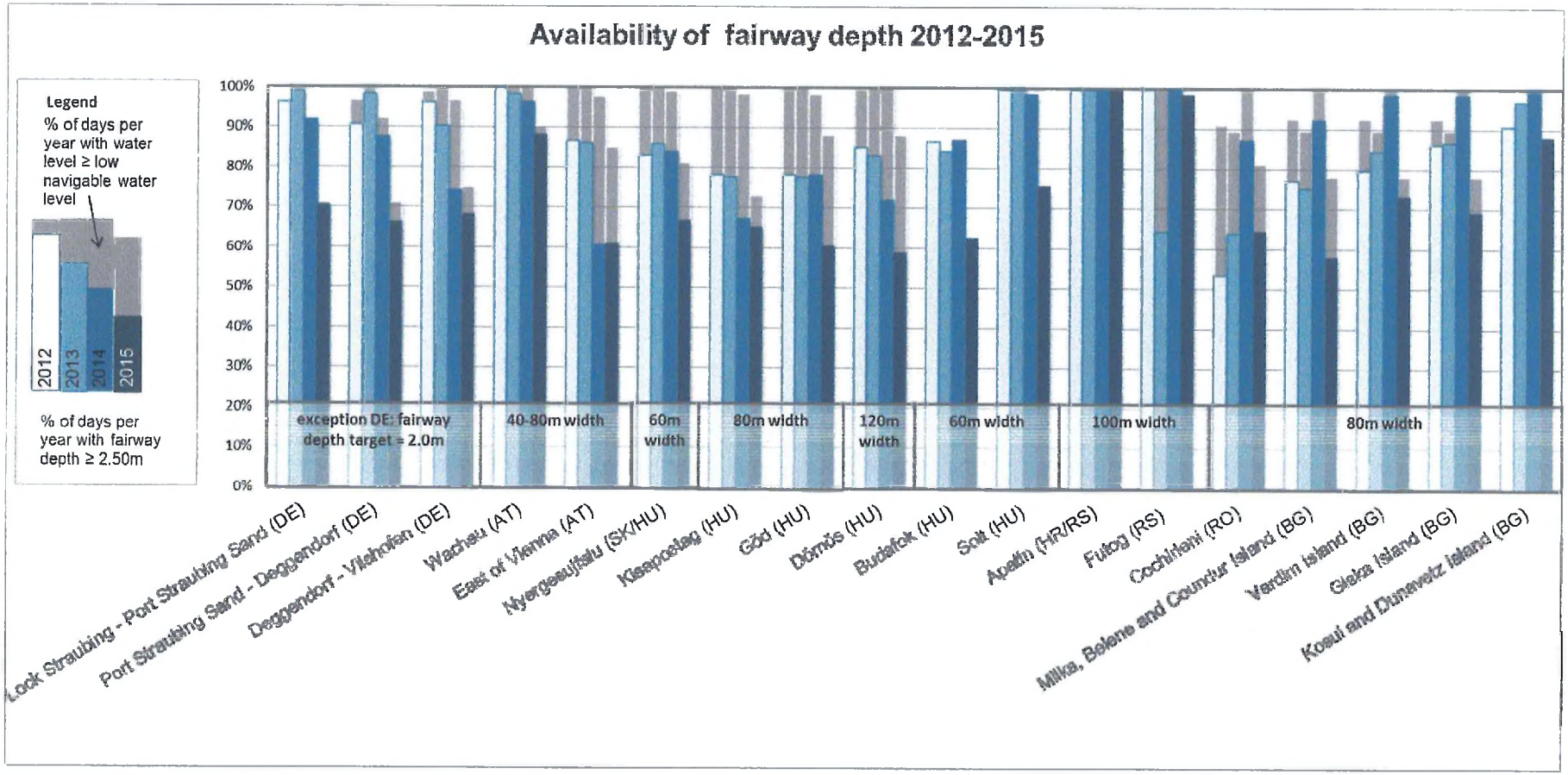
Please note: **For detailed interpretation, the individual conditions of the critical sections illustrated in the country chapters of the Action Plans need to be taken into account,** as the causes, detailed locations and severity of the critical sections are strongly varying. For example, some sections 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.*

Analoguous to the first figure, the targeted availability of 2.5m fairway depth[17] 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


Availability of fairway depth 2012-2015
Legend
% of days per year with water level ≥ low navigable water level
2012
2013
2014
2015
% of days per year with fairway depth ≥ 2.50m
100%
90%
80%
70%
60%
50%
40%
30%
20%
10%
0%
exception DE: fairway depth target = 2.0m
40-80m width
60m width
80m width
120m width
60m width
100m width
80m width
Lock Straubing - Port Straubing Sand (DE)
Port Straubing Sand - Deggendorf (DE)
Deggendorf - Vilshofen (DE)
Wachau (AT)
East of Vienna (AT)
Nyergesujfalu (SK/HU)
Kisapostag (HU)
Göd (HU)
Dömös (HU)
Budafok (HU)
Solt (HU)
Apatin (HR/RS)
Futog (RS)
Cochirleni (RO)
Milka, Belene and Coundur Island (BG)
Verdin Island (BG)
Gleika Island (BG)
Kosui and Dunavetz Island (BG)

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.

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 practices[16]. 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.