



“NETWORK OF DANUBE WATERWAY ADMINISTRATIONS”
South-East European Transnational Cooperation Programme

**NATIONAL STRATEGY PLAN FOR OPTIMIZATION OF
WATERWAY MAINTENANCE OF SLOVAKIA**

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Antalova Maria	31.03.2011	Draft 01

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1 LIST OF ABBREVIATIONS

AGN	European Agreement on Inland Waterways of International Importance
DC	Danube Commission
EU	European Union
IWT	Inland waterway transportation
IWW	Inland Waterway
km	Kilometre
NEWADA	Network of Danube Waterway Administrations
WP	Work Package

2 SCOPE OF DOCUMENT

This document describes the maintenance of the waterway in the Slovak section of the Danube and the activities carried out in order to maintain the waterway. These activities are undertaken in accordance with current national but also international legislation, and maintain activities are in line with national documents including Inland Waterways Law No. 338/2000, Water Act No. 364/2004, The concept of water transport development and in line with international documents as Water Framework Directive and River Basin Management Plan. This document also includes international cooperation on border sections, which runs through Cross border Commissions. Document contains planning technical measures and financial plan for the coming period.

3 BACKGROUND INFORMATION

This part of document contains current status of the waterway network in Slovakia and legal framework of waterway maintenance.

3.1. NEWADA and WP4 info

3.2. National IWWs info

Across Slovakia flows 172 km long section of the Danube River (rkm 1880,2 - 1708,2).

It is 7.5 km section of the border with Austria (rkm 1880,2 – 1872,7), 142 km section of the border with Hungary (1850,2 – 1708,2) and the remaining 22.5 km (1872,7 – 1850,2) is the national section. Waterway section flows from 1880,2 – 1851,15 is defined like natural flow with reinforced river bank.

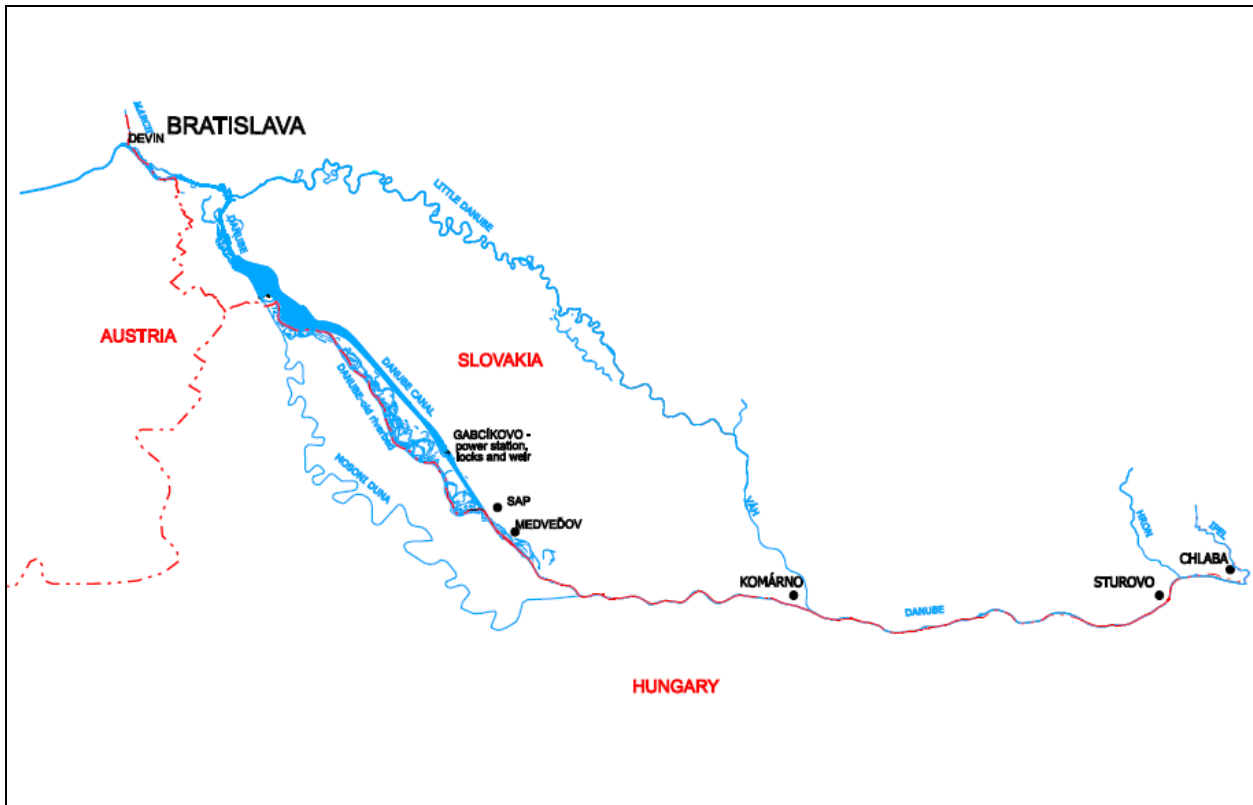
In rkm 1851,15 is located hydraulic structure Čunovo. This facility, among other things, also provides the distribution of the Danube flows into two parts, part of the flow rating is put into the original riverbed of the Danube and second part flows into the reservoir Hrušov, and then into the 38,75 km long artificially channelled river. On this canal is located in 8,15 rkm hydraulic structure Gabčíkovo. The artificial channel with reservoir Hrušov and two objects (Gabčíkovo and Čunovo) called Gabčíkovo Hydro engineering Structure (VD Gabčíkovo) - are artificially engineered.

In 1811,00 rkm of the Danube, the channel associated with the original riverbed of the Danube into the one flow up to rkm 1708.2. Whole Slovak section of The Danube is navigable.

To pass vessels through objects Čunovo and Gabčíkovo provides locks. Lock Čunovo is length 130.70 m (55.70 m) and 24 m width, lock Gabčíkovo is length 275 m and 34 m width.

The parameters of the waterway are defined in "Project of fairway". Proposed width of the fairway is 120 m and depth 2.5 m + 20 cm on section km1880,2 -1791 and on section km 1791 -1708,2 is depth 2.8 + 20 cm.

Fig.1: General map of Slovak section of the Danube



3.3. Legal framework

Legal framework for inland waterways is defined on three levels: international, bilateral and national. The overview of the relevant institutions and authorities in Slovakia is presented at the end.

3.3.1. *International legal framework*

International legal framework consists of strategic documents and multilateral agreements. The **EU Strategy for the Danube Region** was adopted by the European Commission on 08th of December 2010. This is the first EU strategy in which preparation countries outside of EU were included, Serbia among them. The strategy is based on three pillars: establishment of the system for safe navigation and development of transport infrastructure, environmental protection and sustainable use of natural resources, and economic development and strengthening of the regional cooperation and partnership in the Danube region. All activities contained in this plan must be in line with this strategy.

With a view to ensuring the development of internal water transport as an important factor of the European market and eliminate or mitigate the disadvantages and maximize the constraints on the development and operation of this form of transportation, on 19 January 1996 in Geneva The European Agreement on Main Inland Waterways of International Importance (**AGN** Agreement) has been made and accepted. AGN agreement sets out uniform technical and operational parameters that need to be provided on the European waterways and ports of international importance.

The **Danube Commission** is an international organization with which the Slovak Republic has a close cooperation. It was established in 1948 by seven countries bordering the river. The official languages are German, French and Russian. Each country has one representative on the commission, between which a term of three years elected president, vice president and secretary. The aim of the organization is to free navigation on the Danube and the protection of the interests of riparian countries, as well as creating better and more uniform conditions of navigation in all navigable parts of the Danube by:

Supervising the implementation of the international convention, that set it up in 1948.

Unifying the regulations governing river, customs, and sanitary inspection.

Harmonizing regulations on inland navigation with the European Union and with the Central Commission for the Navigation on the Rhine.

Collecting statistical data in terms of navigation on the Danube, within the commission's competence.

Publishing reference works, sailing directions, nautical charts and atlases for purposes of navigation.

As the most influential step of the Danube Commission towards unification parameters of navigability on the Danube is considered the recommendations adopted to ensure the minimum dimensions of the fairway as a part of the waterway (Recommendations Relatives A L'Établissement Des Gabarits Du Chenal, Des Ouvrages Hydrotechniques Et Autres Sur Le Danube). As such, it is defined through its depth H , width B and radius of curvature R . Values and variations of these parameters directly reflect the conditions in the fairway. Their required values are determined criteria for the analysis of the waterway parameters.

3.3.2. Bilateral agreements

Common stretch of the Danube with Austria is 7.5 kilometers long (rkm 1880.2 - 1872.7) and the joint section with Hungary is 142 km (1850.2 - 1708.2). Cooperation on maintenance of these sections of the waterway is via Border Commissions. These committees discuss about signalization and marking out of the fairway, dredging works,

removing of barriers in fairway, repairing of river bank fortification eventually about building construction for improving navigation conditions, sounding work, creation of joint mapping and database documentation....

For signalization of fairway (buoys) is Hungarian border section of the Danube divided into two parts km 1810 – 1791 and km 1791 - 1708. Every two years these sections are exchanged, but the operation and maintenance of coastal signs are carried by each country on its territory. Surveying vessels of both countries personally informed each other about the problems encountered in the common section of the Danube. At this time marks Slovakia km 1791 - 1708. The marking of the fairway we makes by the „Project for signalization fairway”, which is processed in a two-year intervals, then the country turns its processing.

Dredging works are done by „Project for dredging of the Danube”, which is worked out every two years. Project determines locations of dredging, which the countries agreed, and then they separate locations of dredging for Hungary and Slovak.

For these purposes we must to do measurement on the Danube, soundings are negotiated every two years and serves as the basis for the said projects. Data are changing in coordinate system WGS84, format .txt. It must be done after dredging control measurements too.

Some arrangements in the riverbed, or repairing of fortifications of the riverbank made by countries, must be submitted and approved in the Border Commission. For monitoring performance are made at review meetings and field trips by ship.

Similar cooperation is with Austrian college too. There is an engagement with Austrian college about annual measuring of this section of Danube.

3.3.3. National legal framework

The administration of the waterway and all activities related to navigation are defined by strategic documents, master plans, as well as laws in Slovak republic.

Due to the harmonization of national law with European Union law in the waterway have been adopted two laws, **Act No. 338/2000 Law about inland navigation** with effect from 1 January 2001 and Act No. 435/2000 Law about maritime navigation with effect from 1 January 2001.

Government, by Resolution No. 469 of 21 June 2000 approved the "**Concept for development of the waterways in SR**", which fixes the goals and objectives in the next “building” waterways of the Slovak Republic with a view to further development of the waterways, waterways transport and port infrastructure.

The bases for achieving the aims of conception are waterways. As stated the introductory part, the administrator of waterways is the Ministry of Environment in relation to the **Water Act** and significantly will cooperate with the Ministry of Transport of the Slovak Republic.

Within the Conception, the main role has the international waterway Danube, which is part of the European transport corridors as Corridor No. VII – Danube, and under the AGN it is artery waterway E 80. Tasks described in the Conception are transnational and their performance is directly dependent on the opinions and intentions of neighboring states, it is Austria and Hungary. This is a very important decision of those States. Ministry of Transport, Posts and Telecommunications of the Slovak Republic in negotiations of the committees promotes solution of the river sections, which are bottlenecks for navigation, according to parameters set by the AGN Agreement.

Another key document for the development of inland waterways is "**General program for NAIADES implementation in Slovakia** ", which was approved by the Government in September 2009. This material is based on the European Action Programme for Inland Waterway Transport - NAIADES (Navigation and Inland Waterway Action and Development in Europe). The program also speaks about improving the parameters of the waterway, which must cover the following areas: obstacles to navigation section Sap – Štúrovo and navigational obstacles in the section between Bratislava and the mouth of the River Morava.

3.3.4. Relevant institutions and authorities

For navigation are responsible two ministries in Slovak republic. **Ministry of Transport Construction and Regional Development** - department of waterway is responsible for strategy development and enforcement concerning transportation and traffic infrastructure, including IWW transportation and **Ministry of Environment – Water Section**, which is subject the SVPš.p. Banská Štiavnica as an administrator of the river Danube. There is a close cooperation between two Ministries.

There was established in 1st of January 2010 **Agency for development of water transport** as budgetary organization of the Ministry of Transport. The Agency will ensure the development and modernization of waterways, repair parts of the waterway, the pilot projects for the development of intermodal transport axes and to participate in the development and implementation of new technologies and operational systems for the waterways.

For administration of the waterway is responsible **SVP š.p. , OZ Bratislava**. Administrator is at the same time (by Slovak law) also waterway operator. He is responsible for maintenance of the waterway, for improving of

navigation condition. He is responsible for right signalization of the waterway according to direction of State Navigation Administration. **State Navigation Administration** has a function of state inspection in administration and maintenance of waterways and harbours, checks operation of vessels on waterway and in harbour, checks observation of safety rules for inland navigation, keeping the central register of vessels, issuing navigation notices etc.

The important role has a company **Public Ports (Verejné prístavy a.s.)** in the Slovak water transport infrastructure. They have a status of the international public ports. It was established in 2008 by the Ministry of Transport. They are responsible for security service, maintenance and repairing of buildings in the territorial districts of public ports and for other administrative tasks within their responsibility. We have three major ports on the Danube in Slovakia, port Bratislava, port Komárno and Štúrovo.

4 THE SUBJECT OF THE PLAN

The subjects of this plan are inland waterway maintenance activities, mainly dredging activities, repairing of the bank protection, as well as river training works activities, in order to achieve certain dimensions of the fairway which are needed to ensure safe navigation. Furthermore activities, which provides enough relevant data for analysis and decision-making processes such as information systems and automatic data collection.

5 OBJECTIVE AND GOALS

5.1. Long term objectives

The long term development of the waterway SR is defined by two key documents: "General program for NAIADES implementation in Slovakia" and "Concept for development of waterways in the SR. The General program for NAIADES implementation in Slovakia is a recommendation for implementation of The European NAIADES program into Slovak conditions for the next period till 2013 in the following areas:

- Strategic Development Plan, with respect to the major navigation obstacles and institutional framework for inland waterway transport infrastructure, including the preparation of development Slovak ports strategies.
- Development of river information services and choice.
- Increase tolerance of vessels with the environment.
- Preventive measures to protect against accidents of vessels.
- Support programs focused on the transfer facilities and on the implementation of the Fund for the construction of port edges.

The program includes an analysis of the status quo, and defines two sections of the Danube in terms of navigational obstacles. Stretch of the Danube Sap - Štúrovo and stretch between Bratislava and the mouth of the River Morava. In section Sap - Štúrovo are stretches, which are in terms of navigation extremely difficult to maneuver, which is part of the Danube between Gabčíkovo rkm 1821 and Gönyü sector in the rkm 1791.

Also section in rkm 1735 Čenkov is difficult because there are rocky thresholds. There is currently no clear method how to improve the parameters of the fairway in this section, we should research the process on models, then to work out projects and then implementation. Currently, we must maintain this section with traditional methods. Annual costs of maintaining and marking of fairway is approximately 3,3 mil. € / year.

The parameters of the fairway are in section between Bratislava and the mouth of the River Morava is affected by backwater levels caused by the hydropower Čunovo (till Nový Most – New Bridge). Up to the New Bridge are parameters of the fairway secured by regulatory measures. But there are a few problematic sections between Lafranconi Bridge and mouth of Morava River. First is between rkm 1866,00 – 1865,00 and another two sections are in rkm 1878,5 – 1877,5 and rkm 1880,26 – 1879,30. The fairway is narrow and with tendency to sedimentation processes. In this section the regulatory measures such as dredging or training works haven't great efficiency; the ground is exposed to Neogene.

5.2. Short term objectives

Annual routine maintenance of the waterway and fairway makes the waterway operator - SVP state enterprise, branch Bratislava. Waterway operator prepares every year **“Maintenance and repair plan of the fairway”**, and also **“The investment plan”** – plan is implemented some special interventions in the riverbed. These plans are always prepared in line with upcoming budget for a specific year.

Maintenance of the fairway is focused on dredging and the repair of bank protection. Regulatory structures in the Slovak section of the river are built, currently is mainly provided maintenance of these buildings, if is needed.

The critical sections are regularly monitored and maintained by dredging, which appears in the Slovak section of the Danube as the most effective tool for maintaining of the fairway. Problem is storage of excavated material. By reason of the waterway maintenance, Slovakia annually makes regulatory dredging on national section of the Danube about 50 000 m³, Slovakia - Hungarian Danube section 60 000 m³ - 80 000 m³ and the Slovakia - Austria section about 30 000 m³.

Type of maintenance work	Amount (€)
Repair of bank protection of the Danube	799 629,-
Dragging work	1 428 881,-
Training work	39 100,-
Ports (repair and maintenance work)	17 634,-
Measuring work	139 663,-
Design work (projects)	4 980,-

Table 1: Annual budget of the SVP š.p., OZ Bratislava for maintenance of Inland Waterways in the last year 2010

6 ACTIVITIES

Activities proposed in this document are divided in four sections: preparation of project documentations execution of major river training works projects, maintenance dredging interventions in the fairway, as well as international knowledge and experience exchange among the Danube waterway administrations.

6.1. Preparation of project documentation

6.2. Execution of major river training work projects

6.3. Maintenance dredging

Maintenance dredging activities are different in comparison to major river training works. These differences are related to time span, frequency of interventions, scale of works, financial requirements, and cost-benefit ratio. Some bottlenecks require constant annual interventions of smaller scale. The need for these interventions occurs much often then for the major river training works. At the end, these interventions require less financial resources.

Maintenance dredging and major river training works are compatible activities, as they usually do not exclude one another. The need for maintenance dredging activities usually appears in regular time intervals, forming the cycle called fairway maintenance cycle. The usual duration of this cycle is one year, so it can be addressed as the annual fairway maintenance cycle (Figure 6). However, the duration of this cycle can be shorter than one year, depending on the complexity of certain section of the river and the density of bottlenecks.

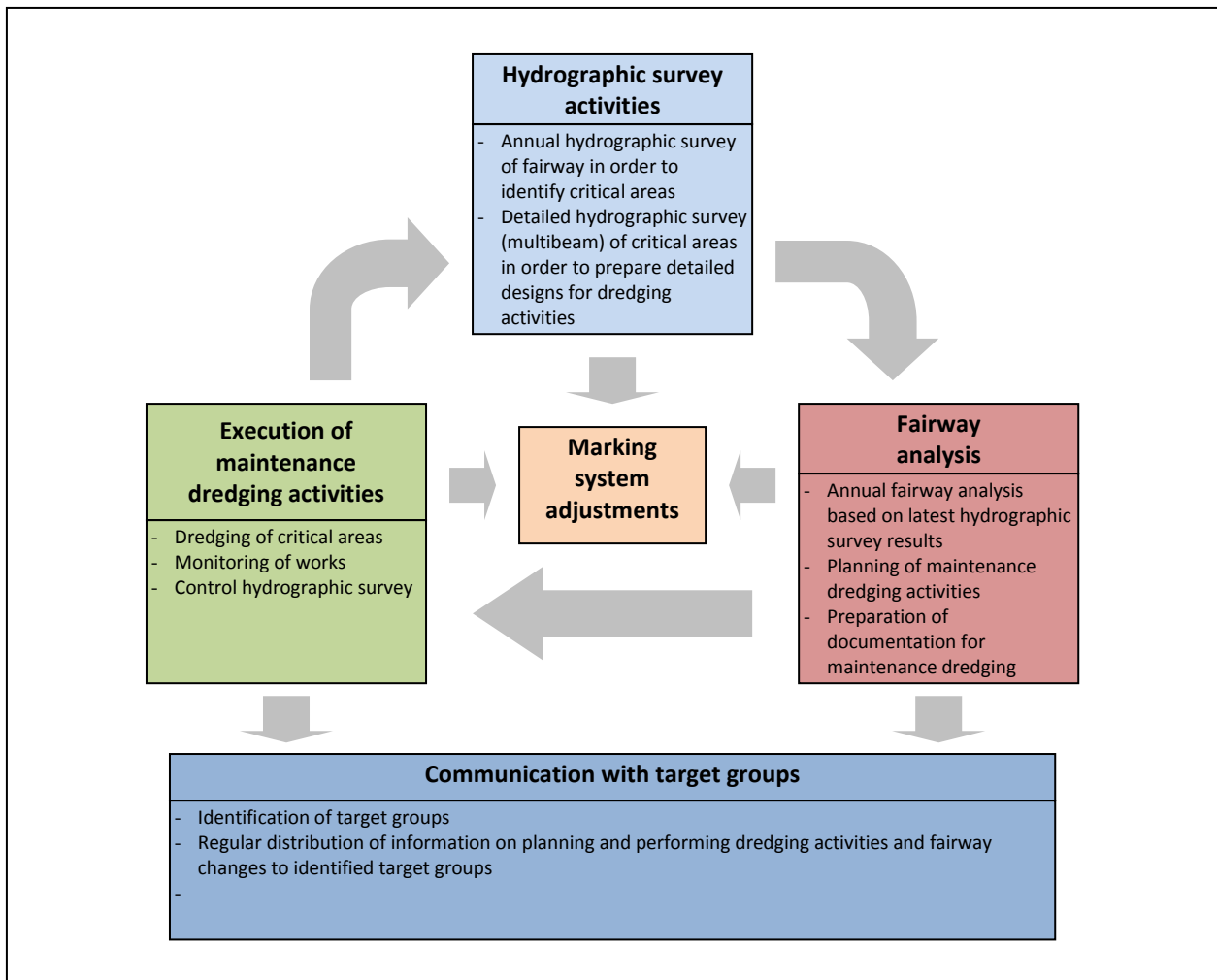


Figure 6: Annual fairway maintenance cycle

6.4. IWWs maintenance knowledge exchange

Inland waterway maintenance activities are very complex. Type of solution proposed for regulation depends on the type of bottleneck. Different countries and different experts tend to propose and to perform different river

training works. Knowledge exchange is very important in this field, having in mind that the financial value of this works can be substantial.

7 IMPLEMENTATION TIMELINE

8 MEASURES AND INDICATORS

9 MONITORING AND EVALUATION

10 OTHER ISSUES/ASPECTS

11 APPENDIX

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