
**"NETWORK OF DANUBE WATERWAY ADMINISTRATIONS"**

South-East European Transnational Cooperation Programme

# NATIONAL PLAN FOR IWW MAINTENANCE IN THE REPUBLIC OF CROATIA

## FOR THE PERIOD 2011-2018

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# 1 LIST OF ABBREVIATIONS

| | |
|---|---|
| AGN | European Agreement on Inland Waterways of International Importance |
| AVP | Agency for Inland Waterways |
| BoD | Board of directors |
| CCNR | Central Commission for Navigation on the Rhine |
| CM | Croatian motorways |
| CRO | Croatia |
| DC | Danube Commission |
| EU | European Union |
| EUR | Euro |
| ISRBC | International Sava River Basin Commission |
| IWT | Inland waterway transportation |
| IWW | Inland Waterway |
| km | Kilometre |
| **MSTI** | **The Ministry of the Sea, Transport and Infrastructure** |
| NEWADA | Network of Danube Waterway Administrations |
| SEE (Programme) | South East Europe Transnational Cooperation Programme |
| SRB | Serbia |
| WP | Work Package |

## 2 SCOPE OF DOCUMENT

This document is a planning document for the maintenance activities for inland waterways on the Danube in Republic of Croatia. The document includes the period up to 2018,, taking into consideration current bottlenecks on the Danube River, different solutions for their regulation, and maintenance dredging interventions. It also includes technical and financial aspects of this issue. This document is in accordance with existing strategic documents: Transport Development Strategy of Republic of Croatia (1999), Inland Waterways Transport Development Strategy in the Republic of Croatia (2008-2018) and Inland Waterways and Ports Midterm Development Plan (2009 -2016) . Although this document is a national plan, it also has an international aspect. This is related to coordinated approach for interventions needed on the common sections of the Danube River, as well as to internationally shaped evaluation bodies.

## 3 BACKGROUND INFORMATION

This part of the plan contains the basic information on the NEWADA project and its WP4, national IWW info, as well as the national and international legal framework related to IWW.

### 3.1. NEWADA and WP4 info

The NEWADA (Network of Danube Waterway Administrations) project is co-financed under the South East Europe Transnational Cooperation Programme (SEE Programme) of the European Union. It is a three years project (2009-2012), which objective is to improve international cooperation (in the fields of hydrography, hydrology, waterway maintenance, as well as information and communication technologies on IWWs) between institutions which are dealing with inland navigation on the Danube River, as important international inland waterway. Institutions from eight countries are participating in this project: Austria, Slovakia, Hungary, Croatia, Serbia, Romania, Bulgaria, and Ukraine (Figure 1). **Agency for Inland Waterways** is one of twelve partners on this project, and its involvement is co-financed from EU IPA funds. It is the only institution from Croatia included in the project.

Figure 1: Countries participating in the NEWADA project

The project is based on work packages, six of them in total. The subject of the Work Package 4 is waterway maintenance, and the National plan for waterway maintenance is prepared under this work package.

## 3.2. National IWWs info

Total length of current and planned inland waterways in Croatia is 866,7 km, while 601,2 km is included in the European network of inland waterways of international importance. According to the AGN agreement, the following inland waterways are included in this network:

*Table 1: Croatian inland waterways included in the European network of inland waterways according to the AGN*

| Inland waterway identification code | Inland waterway - section | Required class according to the AGN | Length in km |
|---|---|---|---|
| E 80 | River Danube from Batina to Ilok | VI c | 137,5 |
| E 80-08 | River Drava up to Osijek | IV | 22,0 |
| E 80-10 | Future multifunctional canal | V b | 61,5 |

| | | | |
|---|---|---|---|
| | Danube-Sava from Vukovar to Šamac | | |
| E 80-12 | River Sava from Račinovci to Sisak | IV | 380,2 |
| **Total length of international inland waterways according to the AGN:** | | | **601,2** |

Out of existing Croatian international inland waterways, Danube, Drava up to Osijek and Sava downstream from Slavonski Šamac, are meeting the class requirements defined in the AGN agreement, while parameters of the upstream part of the Sava inland waterway are not meeting these requirements. Other inland waterways in Republic of Croatia are either state of interstate waterways and are not classified in the AGN international inland waterway network.

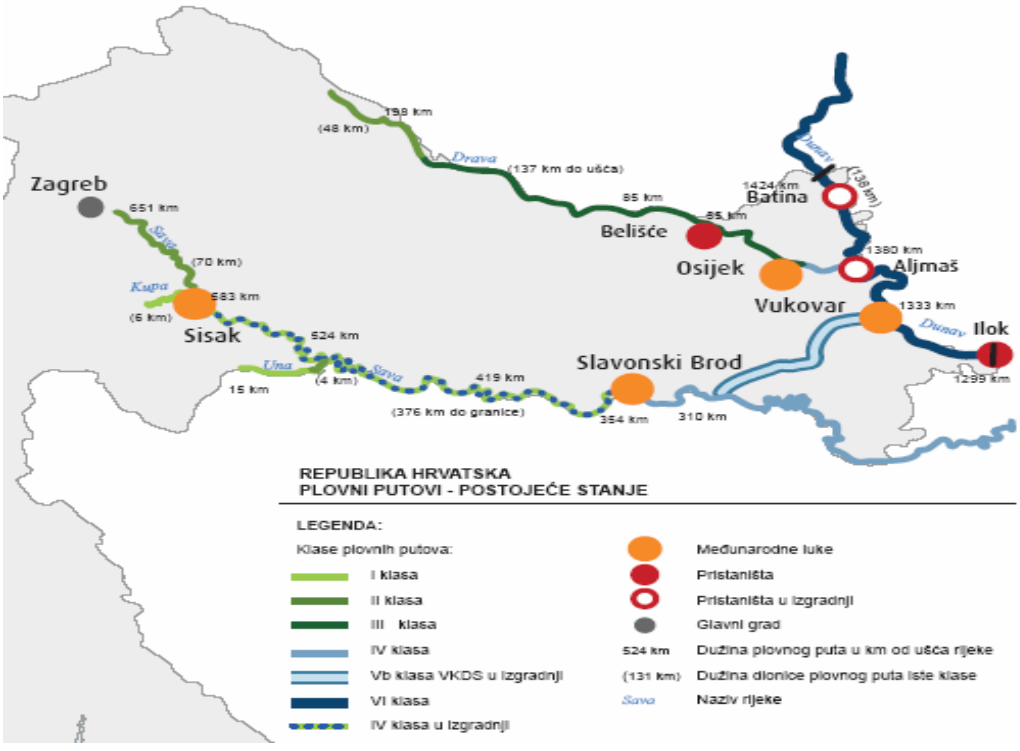


Figure 2: Inland Waterways in the Republic of Croatia

Out of total of 539,7 km of existing inland waterways which are included int he European network of inland waterways, just 287,4 km is meeting the requirements of international inland navigation classification. The longest

section is river Sava, which in Croatia in its larger part is not meeting the requirements of international inland navigation.

Table 2: Classification of inland waterways in Croatia – current status

| River | River section | Length of inland waterway (km) | Inland waterway class |
|---|---|---|---|
| **DUNAV** | 1295+501 (Ilok) - 1433+000 (Batina) | 137.5 | **VIc class** |
| **SAVA** | 203+300 (Račinovci) – 305+700 (Sl. Šamac) | 102.9 | **IV class** |
| | 305+700 (Sl. Šamac)– 330+200 (Oprisavci) | 24.5 | **III class** |
| | 330+200 (Oprisavci)– 363+200 (Sl. Brod-grad) | 33.0 | **IV class** |
| | 363+200 (Sl. Brod-grad)- 583+000 (Sisak) | 219.8 | **III class** |
| | 583+000 (Sisak) – 651+000 (Rugvica) | 68.0 | **II class** |
| **DRAVA** | 0+000(Ušće Dunava) – 14+050 (Osijek luka Nemetin) | 14.0 | **IV class** |
| | 14+050 (Osijek luka Nemetin) –55+450 (Belišće) | 41.4 | **III class** |
| | 55+450 (Belišće) – 198+600 | 143,2 | **II class** |
| **KUPA** | 0+000 – 5+900 | 5.9 | **I class** |
| **UNA** | 0+000 – 4+000 | 4.0 | **II class** |
| | 4+000 – 15+000 | 11.0 | **I class** |
| **TOTAL LENGTH OF EXISITING INLAND WATERWAYS** | | | **805,2** |
| **TOTAL LENGTH OF INLAND WATERWAYS – INTERNATIONAL CLASS** | | | **287.4** |

### 3.2.1 Current status of Croatian inland waterways

***The Danube River Waterway***

Croatian part of the Danube in its entire length of 137,5 km is an international inland waterway with free navigation for all flags. The inland waterway is marked and Croatia has an international obligation for its maintenance. Current status of maintenance measures is meeting the requirements of the VIc. Croatia has just one international port on the river Danube – port Vukovar.

***The Drava River Waterway***

Out of 330 km of river Drava, just 198.6 km are navigable. From the estuary in the Danube up to 70,0 km Drava is an international inland waterway with free navigation for all flags. The commercial transport is taking place on this section up to the international port Osijek. From 70,0 km to 198,6 km (estuary Ždalice), Drava is an interstate inland waterway between Croatia and Hungary. This is the section with navigation of lower intensity.

***The Sava River Waterway***

Out of the total length of Sava in Croatia, this river is navigable on 380,2 km, from Račinovci to Sisak (km 210,8 to km 591). Navigation is even possible up to Zagreb (Rugvica km 651), but in small percentage of days during the year. From the border with Serbia (from Račinovci) to Jasenovac, the inland waterway (304 km) is in the border area with Bosnia and Herzegovina. Upstream from Jasenovac Sava is completely in the territory of Croatia.
In the AGN agreement Sava is classified as inland waterway of class IV from Račinovci to Sisak (km 210,8 do km 591).

The **Kupa River *Waterway***

Kupa is on the territory of Croatia with its entire length of 294 km. 100 km of river Kupa represents the state border with neighbouring Slovenia. Kupa is navigable on just 5 km of its entire length.

***The Una River Waterway***

River Una has the total length of 212 km, out of which 139 km in on the territory of Croatia, while 130 km is a state border. Una inland waterway is 15 km long, out of which 4 km is classified as II and 11 km as I.

***Multifunctional Danube-Sava Canal***

Future multifunctional canal Danube-Sava is in the AGN agreement classified as inland waterway of the Vb class. The canal is also included in the Strategy of physical planning of Republic of Croatia and Strategy of development

of inland waterway transport in Republic of Croatia (2008 - 2018). The canal is a multifunctional water construction for the water protection, irrigation and navigation, which classifies it in the domain of water management.

### 3.2.2. Current status of infrastructure

Besides meeting the class requirements, there are also limitations of navigation because of inadequate maintenance level. During the period from 1990 to 2000 no maintenance works were performed. The status of inland waterways in Croatia is worse because of limited maintenance compared with the situation before 1990. Existing safety objects for the enhancement of navigation conditions are in a very bad shape. The most is in the state of deterioration. Taking this into account it is necessary, alongside regular maintenance works, to intensively perform rehabilitation works and upgrading of existing navigation safety objects.
Depending on the hydrological conditions, bottlenecks are endangering the safety of navigation. Reconstruction of this parts is demanding significant financial resources, as well as expertise necessary for the preparation of these projects. Considering that river Danube is also borderline river Serbia, coordinated approach is necessary in the elimination of problem areas of the river.

## 3.3. Legal framework

Legal framework for inland waterways is defined on three levels: international, bilateral and national.

### 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 08$^{th}$ of December 2010. This is the first EU strategy in which preparation countries outside of EU were included, Croatia 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.
Republic of Croatia is the party of the European agreement of main inland waterways of international importance (AGN), which is signed in 1997 in Helsinki and ratified in Croatian Parliament. With this agreement inland waterways of the river Sava up to Sisak, Drava up to Osijek and future Danube-Sava canal included in the European inland waterway network of the corridor VII – Danube corridor, as well as ports in Vukovar, Osijek, Slavonski Brod

and Sisak. Protocol of the admission of Republic of Croatia to Danube Commission is ratified and Croatia became full member of the Commission and took over all the rights and obligations from the Convention on freedom of navigation on the Danube.
With the ratification of these acts, Croatia positioned itself on the international level towards development of inland waterways and inland ports, as well as overall development of inland waterway transport in Croatia.

### 3.3.2. Bilateral agreements

Croatia has joint sections of the Danube River with Serbia. Croatia and Serbia have signed the bilateral Agreement on navigation on IWWs and their technical maintenance, on October 13th, 2009, in Belgrade.
After the Agreement was ratified in both parliaments, inter-state committee was formed which set up two expert groups in October 2010:
Expert group on inland waterway marking
Expert group on technical maintenance and monitoring of the state of the waterway.

Tasks of the inter-state committee:
a) Drafting Ordinance on waterway marking and the Ordinance on waterway maintenance;
b) Coordination of perennial and annual technical maintenance plans;
c) Inland waterway transport statistics;
d) Coordination and monitoring of projects at the joint section of the waterway;
e) Handling disputes arising from implementation of the Agreement;
f) Other tasks arising from the Agreement.

Two countries share the section of the Pan-European Corridor VII (the Danube River) in the length of 137 km.

### 3.3.3. National legal framework

National legal framework consists of strategic documents, physical planning documents and acts. Important strategic document is the Strategy of transport development in Republic of Croatia, which is adopted in 1999. In the definition of transport policy of the Strategy of transport development in Republic of Croatia, the following objectives were defined:
a) Objectives of overall development of Republic of Croatia and its international connection,
b) Objectives of transport development in the function of unification of Croatian phisycal space,

c) Objectives of transport development in the function of European connection of Republic of Croatia,

d) Objectives of compliant and gradual development of overall transport system and its individual parts,

e) Objectives of transport development concerning safety of transport routes and transport flows,

f) Harmonized objectives of transport development and environmental protection.

The part of the strategy which concerns inland waterway transport indicates to the main functionality problem of the inland waterway transport system, which is disconnection of the network (Figure 3). Concerning this issue the long term goal is set: to integrate the network in combined transport corridor Danube region – Adriatic Sea.

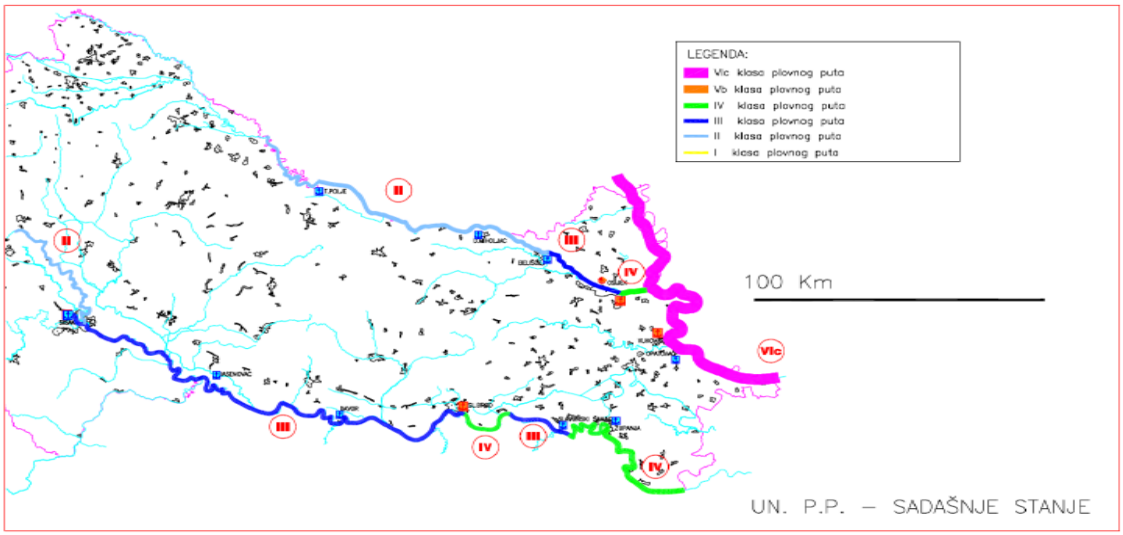


Figure 3. Inland waterways - CRO

Strategy of the development of inland waterway transport in Croatia (2008 – 2018) and Mid-term plan for the development of inland waterways and inland ports in Croatia (2009-2016) are important planning documents, where is stated that significant investments in inland waterways are necessary. All the critical parts on the Danube River are defined in these documents.

There are several national acts which are relevant for this report. The Act on Navigation and Inland Ports (OG 109/07) was adopted in October 2007. This Act, fully consolidated with the EU regulations, defines all important issues related to both inland navigation and inland waterways. As stated in this Act, one of the tasks to be carried out by the Agency for Inland Waterways includes hydrographic measurements on inland waterways, as a part of technical maintenance. The Regulations on technical maintenance of inland waterways (OG 62/09) proscribes the procedure and minimum criteria which need to be followed when doing the hydrographic measurements. The

measurements are coordinated with the neighbouring country in case the waterway is a border line, the readings are exchanged in line with bilateral agreements.

### 3.3.4. Relevant institutions and authorities

Several ministries are relevant for the implementation of this plan. **The Ministry of the Sea, Transport and Infrastructure** is responsible for strategy development and enforcement concerning transportation and traffic infrastructure, including IWT. **Port Authorities** – Harbour Master's offices – are regional offices of the Ministry of the Sea, Transport and Infrastructure. **Port Authorities** perform administrative and other professional tasks in the field of inland waterway traffic ensuring the safety of navigation along the respective river sector within their responsibility. The relevant Harbour Master's office for the Croatian section of the Danube is located in Vukovar. Port Authorities regulate all activities and business at the port in order to provide competitive environment, equal treatment of all port users, all fleet providers, shippers and maximize the available infrastructure. **The ministry of Regional Development, Forestry and Water Management** is responsible for the strategy and policy of water protection and water management improvement. **Ministry of Environmental Protection, Physical Planning and Construction** is responsible for the strategy and policy of nature protection, construction, control, supervision and general protection of natural resources. **The Agency for inland Waterways** is a public institution founded by the Government of the Republic of Croatia, responsible for inland waterway management in the Republic of Croatia.

## 4 THE SUBJECT OF THE PLAN

The subjects of this plan are inland waterway maintenance activities, mainly river training works. These activities include construction of new river training structures and maintenance and reconstruction of the existing structures, as well as dredging activities, in order to achieve certain dimensions of the fairway which are needed to ensure safe navigation.

Besides meeting the class requirements, there are also limitations of navigation because of inadequate maintenance level. During the period from 1990 to 2000 no maintenance works were performed. The status of inland waterways in Croatia is worse because of limited maintenance compared with the situation before 1990.

Critical sections represent the bottlenecks meaning limitations of transport capacity due to the decrease of dimensions of inland waterway. Critical sections can be grouped in the following categories:

- Sections with inadequate depth - shoals,
- Sections with inadequate width according to the class requirements of the inland waterways,
- Sections where the inland waterway is set directly near the river bank which endangers the stability of the bank and safety of navigation.

The most often limitation is inadequate depth or long period of interruption or restriction of draught due to low water levels.

On river Danube it is determined that 23 out of total of 87 safety objects are damaged. The most critical parts are on the part of the river between rkm 1404,5 – 1402. Due to the sandbank formation, the dual river bed of the Danube was formed, with simultaneous erosion of right bank with the tendency of water penetration from the Danube to Kopački rit and shifting of river course towards the right bank. On the left bank erosion had damaged existing protection facilities and the bank.

Critical sections on the Danube River in Croatia are specified in strategic documents: the Mid-term Plan of Inland Waterways and Inland Port Development (2009.-2016.) The list of the critical sections is shown in Table 3.

Table 3: Critical sections

| WATERWAY | Number | Critical section | Problem | Required activites |
|---|---|---|---|---|
| DANUBE | 1. | Šarkanj (rkm 1427-1429) | Narrow inland waterway, dangerous spot | Reconstruction of existing and construction of new navigation safety objects (T-pear) |
| | 2. | Monjoroš (rkm 1412) | Small depth, devastation of right bank | Construction of navigation safety objects |
| | 3. | Kopacki rit (rkm 1410-1400) | Small depth, bank devastation, danger of penetration of Danube in the arms of Kopački rit | Rehabilitation and construction of existing navigation safety objects and construction of new objects, erosion drift excavation works |
| | 4. | Kopacki rit (rkm 1395-1394,3) | Small depth, bank erosion | Bank revetment, inland waterway excavation works |
| | 5. | Petreš (rkm 1393) | Small width, bank damage, danger of penetration of Danube int he old arm | Rehabilitation under construction |
| | 6. | Vemelj (rkm | Small depth, broad bed | Bed and bank rehabilitation |

| | | | | |
|---|---|---|---|---|
| | | 1391,3-1390,5) | | |
| | 7. | Aljmaš (rkm 1377,1-1374,9) | Small depth, bank devastation | Fixing of bank revetments |
| | 8. | Savulja (rkm 1348-1347) | Small depth, bank devastation | Bank and bank revetments rehabilitation |
| | 9. | Vukovar (rkm 1333-1331) | Small depth, bank devastation, broad bed | Bank revetment, navigation safety objects |
| | 10. | Vučedol (rkm 1331-1330,5) | Small depth, bank devastation | Bank and bank revetment rehabilitation |
| | 11. | Sotin (rkm 1322,2-1321,7) | Narrow inland waterway, devastation of the right bank | Rehabilitation of the right bank and cleaning of inland waterway |
| | 12. | Mohovo (rkm 1311-1315) | Small depth, underwater rock | Rehabilitation of the bed – deepening with mining |
| | 13. | Winter terminal Opatovac | Moody river zone and no winter terminal | Cleaning of mood, construction of the bank and piers, construction of infrastructure |

All the critical sections are the borderline area with Serbia. In order to eliminate these bottlenecks, a coordinated approach regarding planning and execution of works is necessary.

# 5 OBJECTIVE AND GOALS

Objectives and goals are arranged according to proposed timeframe in three groups: long term, mid term and short term.

***Long term overall objective:***

- general objective of the plan is the rehabilitation and maintenance of inland waterway in a way to increase the safety and efficiency of the inland navigation. Rehabilitation of the inland waterway has to be in the function of the user, which means to assure unobstructed and safe navigation of the vessel under maximum draught in accordance with the class of waterway.
- Establishment, maintenance and upgrading of the conditions of the safe and secure navigation on the inland waterways is a continuous duty of the state.
- To maintain the section of the international inland waterway of the river Danube in a way to assure the safe, secure and economically sustainable navigation.
- To assure safe, punctual and complete information on the waterway, dangers or limitations for the navigation.

***Mid term objectives*** *(until the end of 2016) are:*

- To renovate the navigation safety objectives (damaged regulation facilities) and rehabilitate the inland waterway and bed of the water course on the sections of the eroded banks and initial course deformations, which could endanger the safe navigation. Priority is the section from the estuary of Drava to the border with Hungary, where the complete renovation is planned, according to the project documentation,
-Construction of the winter terminal Opatovac for vessels which show up on the Danube section during the ice conditions;
- To prepare all required technical documentation (with previous investigation works, geodetic shooting, creation of the necessary hydrological elaborations, maps), as well as the study on environmental impact,
- To apply ecological standards during the rehabilitation and maintenance of the waterways.

***Short term objectives*** *(until the end of 2012) are:*

- To define priority projects and prepare documentation for application of chosen projects for the financial aid from EU funds;
- To establish technical cooperation with neighbouring countries with the objective of coordination of works for the rehabilitation of the inland waterway and the course of the river Danube.

# 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

***Technical documentation***

The current status of the preparation of the design technical documentation is on such level that, without any additional activities on project works, the development of study of environmental impact, expert foundations for location permits and creation of foundations for main projects can start, as preconditions for development of main projects and requesting construction permits.

Table 4: Review of existing technical documentation (Danube)

| Number | | Rkm | Section | Type of project | Project status |
|---|---|---|---|---|---|
| **Danube** | 1. | 1380 -1400 | Drava estuary-Kopacki rit | Preliminary design | Finished in 2006 |
| | 2. | 1400 - 1410 | Section Kopacki rit | Preliminary design | Finished in 2004 |
| | 3. | 1400 - 1410 | Section Kopacki rit | Main project of rapid sanation due to the protection of Kopački rit and inland waterway | One part finished in 2005, the other one in 2006 |
| | 4. | 1410 – 1433 | Section Batina | Preliminary design | Finished in 2007 |
| | 5. | 1314 | Winter terminal Opatovac | Preliminary design | Finished in 2004 |
| | 6. | 1314 | Winter terminal Opatovac | Expert foundation for location permit | Finished in 2005 |
| | 7. | 1314 | Winter terminal Opatovac | Main project | Finished in 2007 |
| | 8. | 1425 | Passenger terminal in | Preliminary design | Finished in 2004 |

| | | | | | |
|---|---|---|---|---|---|
| | | | Batina | | |
| | 9. | 1425 | Passenger terminal in Batina | Expert foundation for location permit | Finished in 2005 |
| | 10. | 1425 | Passenger terminal in Batina | SUO and main project | In the process of requiring the construction permit |
| | 11. | 1380 | Passenger terminal in Aljmaš | Preliminary design | Finished in 2005 |
| | 12. | 1380 | Passenger terminal in Aljmaš | Expert foundation for location permit | Finished in 2006 |
| | 13. | 1380 - 1350 | Aljmaš - Dalj | Preliminary design | |

Also in the process of development is the **Study on the environmental impact on the river Danube for the section rkm 1380 – 1433** and **Preliminary design for the rehabilitation of the river bed and right bank of the river Danube rkm 1350 - 1320**. Because of the limited financial resources it is planned to develop the **Preliminary design for rkm 1320 to rkm 1295+600** in the next five years.

Table 5 shows the planned works and project costs.

Table 5: Planned project works on the inland waterway oft he river Danube

| Number | Type of activities | Planned costs in 000 kn |
|---|---|---|
| **1.** | **Danube (rkm 1433-1295,2)** | **25.000** |
| 1.1. | Investigation works, geodetic shootings, elaboration and maps | 8.000 |
| 1.2. | Development of atlas and nautical chart of Danube | 6.000 |
| 1.3. | Development of studies, preliminary and main projects | 11.000 |

## 6.2. Execution of major river training work projects

The activities of technical maintenance and rehabilitation had started in 2000 with the resources from state budget. At the beginning these resources were from the budget of State department for waters, and from 2002 from the budget of the ministry responsible for inland waterway transport. Review of the financial resources spent on technical maintenance of inland waterway is shown in Table 6.

Table 6: Review of the costs of technical maintenance of inland waterways (mil.kuna)

| **Sources** | **Realization per year** | | | | | | | | **Plan** |
|---|---|---|---|---|---|---|---|---|---|
| | 2000. | 2001. | 2002. | 2003. | 2004. | 2005. | 2006. | 2007 | .2008 |
| **MMTPR /AVP** | 0,00 | 0,00 | 35,35 | 38,14 | 24,70 | 14,88 | 21,46 | 38,34 | 56,46 |
| **DUV/MMPŠVG** | 6,00 | 5,81 | 6,00 | 6,00 | 3,48 | 11,00 | 18,88 | 1,95 | 2,20 |
| **HAC** | 0,00 | 0,00 | 0,00 | 0,00 | 0,00 | 0,00 | 18,30 | 4,55 | 6,00 |
| **TOTAL** | 6,00 | 5,81 | 41,35 | 44,14 | 28,18 | 25,88 | 58,64 | 44,88 | 64,66 |

In Table 7 review is given of the finished works on technical maintenance of the inland waterways in the period 2000-2011.

Table 7: Review of finished technical maintenance works

| | **Number** | **Rkm** | **Description of finished works** |
|---|---|---|---|
| **Danube** | 1. | 1393,0 | Rehabilitation of damaged right bank on the margin of inland waterway and dam on the arm |
| | 2. | 1405,5 - 1407 | Rehabilitation of water constructions fro navigation due to the maintenance of inland waterway and protection from penetration of Danube in Kopački rit |

Construction, rehabilitation and technological modernization plan of the waterways is developed on the basis of expert evaluation of the condition of inland waterways and constructed objects, in accordance with corresponding documents for physical planning and available technical documentation (table 8).

Table 8: Planned construction and rehabilitation works for river Danube (in 000 kuna)

| INLAND WATERWAY ON THE RIGHT BANK OF RIVER DANUBE | | | | | | | |
|---|---|---|---|---|---|---|---|
| Section | rkm | Length km | Planned costs | | | | |
| | | | Excavations | T- pears | Uzd.grad. | Bank revetments | Total |
| I | 1410-1433 | 23 | 0 | 73.718 | 8.291 | 0 | 82.008 |
| II | 1400-1410 | 10 | 0 | 133.272 | 33.393 | 2.884 | 179.549 |
| III | 1380-1400 | 20 | 0 | 73.753 | 125.722 | 3.019 | 212.494 |
| Sotin | 1321-1324 | 2 | 0 | 15.000 | 10.000 | 0 | 25.000 |
| Mohovo | 1307-1312 | 5 | 8000 | 0 | 0 | 0 | 8.000 |
| Opatovac rkm 1313 | | Construction of winter terminal Opatovac | | | | | 20.000 |
| Total Danube: | | 60 | 8000 | 305.742 | 187.405 | 5.903 | 507.051 |

**FINANCIAL PLAN**

The Strategy for transport development in Croatia i the Plan for development of inland waterways and inland ports has determined that for the construction and rehabilitation of inland waterways it is foreseen to use funds from the state budget. Although this strategy foreseen total investment in the inland navigation of 6% of overall investments in transport, those investments were just 1% over the past period, which means six times less than planned.

Funds from the state budget for the rehabilitation of inland waterways, which makes almost 50% of budget foreseen for inland waterway transport, have been estimated so far on 30 million kuna per year. If we add the funds from Hrvatske vode and HAC, total funds for inland waterways were estimated on 43,96 million kuna in the period 2002.2008.

Table 9:Financial plan for rehabilitation and development of inland waterways (in 000 kuna)

| Number | Item | Total |
|---|---|---|
| **1.** | CONSTRUCTION, REHABILITATION AND TRANSPORT AND TRAFFIC TECHNOLOGICAL MODERNIZATION | **532.052** |
| **1.1.** | **Design works for existing inland waterways** | |
| 1.1.1. | Danube | **25.000** |
| **1.2.** | **Construction works and rehabilitation of existing inland waterways** | |
| ***1.2.1.*** | ***Danube*** | ***507.052*** |
| 1.2.1.1. | Section I rkm 1410-1433 | 82.008 |
| 1.2.1.2. | Section II rkm 1400-1410 | 169.549 |
| 1.2.1.3. | Section III rkm 1380-1400 | 202.495 |
| 1.2.1.4. | Sotin 1321-1324 | 25.000 |
| 1.2.1.5. | „Canal Mohovo“ 1307-1312 | 8.000 |
| 1.2.1.6.. | Construction of winter terminal Opatovac | 20.000 |

## 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.

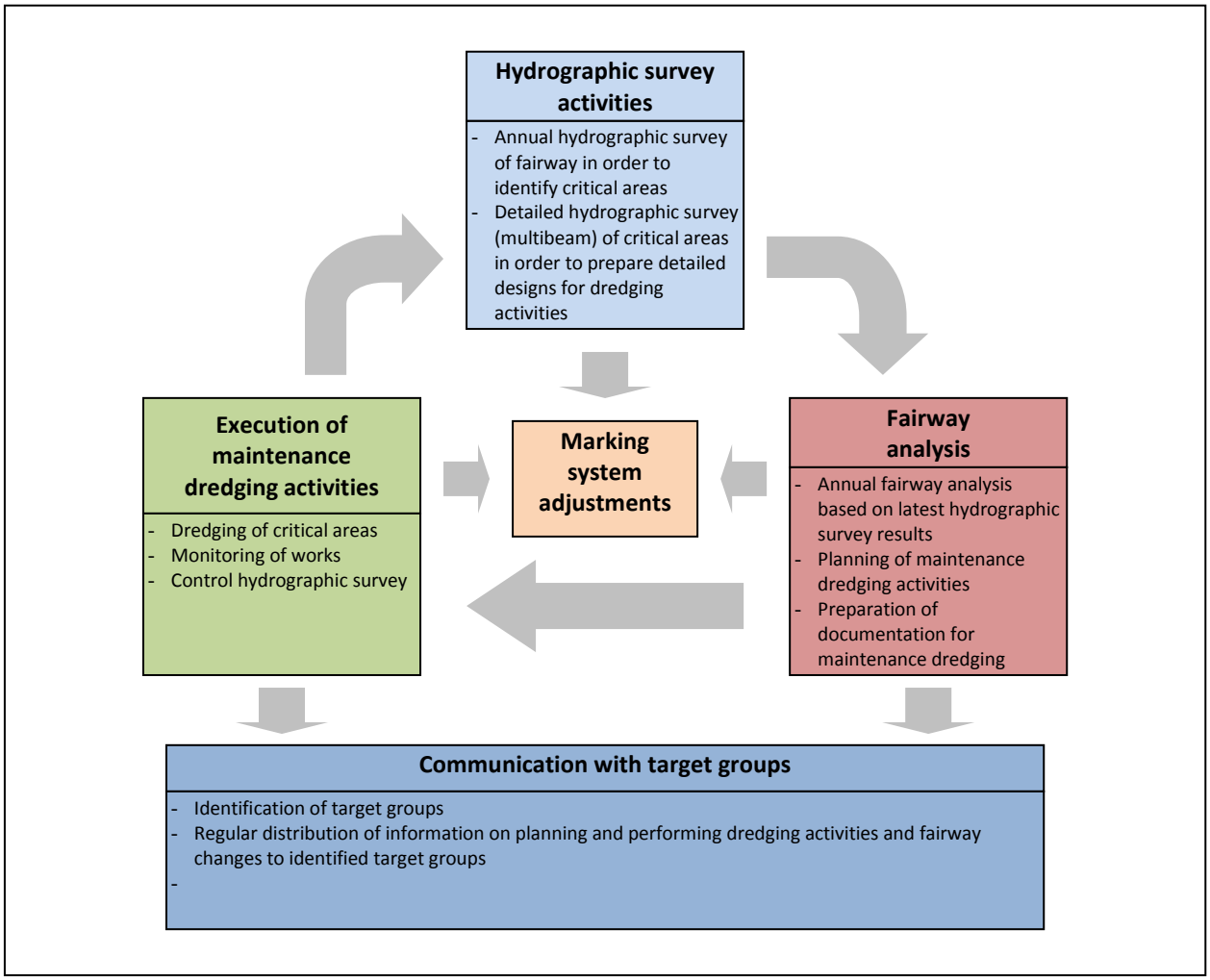


**Figure 4: Annual fairway maintenance cycle**

## 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.

Regular knowledge sharing could be ensured by organizing the annual IWW maintenance expert meetings. On such meetings, river training works experts would present the latest solutions and projects implemented in their countries. This kind of knowledge and experience exchange would guarantee the selection of best solutions for specific bottlenecks and critical sections. In addition, selection of financially not feasible or technically not

appropriate solutions would be avoided. This practice would contribute to improved effectiveness of public investments in IWW infrastructure in the whole Danube region.

IWW maintenance expert meetings will be organized once a year or once in two years. The exact dynamics of meetings will depend on intensity of river training works performing on the Danube River. Specific issues that will be addressed on these meetings will be:

- Categorization of bottlenecks
- Potential solutions for regulation
- Positive and negative aspects of different solutions
- Common approach in treating bottlenecks on the joint sections
- Possible fields for joint research activities.

## 7 IMPLEMENTATION TIMELINE

This plan contains the specification of activities which are foreseen to be performed in the next 7 years. Implementation of these activities requires both time and financial resources. The following table contains implementation of foreseen projects, regular annual maintenance activities, as well as IWW maintenance expert meetings (Table 10).

| | 2011 | 2012 | 2013 | 2014 | 2015 | 2016 | 2017 | 2018 |
|---|---|---|---|---|---|---|---|---|
| | | | | | | | | |
| **IMPLEMENTATION OF PROJECTS** | | | | | | | | |
| Preparation of project documentation for firstly selected two critical sections | | | | | | | | |
| Execution of river training works at firstly selected five critical sections | | | | | | | | |
| | | | | | | | | |
| **ANNUAL MAINTENANCE ACTIVITIES** | | | | | | | | |
| Maintenance dredging activities | | | | | | | | |
| | | | | | | | | |
| **INTERNATIONAL KNOWLEDGE EXCHANGE** | | | | | | | | |
| IWW maintenance expert meetings | | | | | | | | |
| | | | | | | | | |

**Table 10: Implementation timeline**

This timeframe is susceptible to adjustments, depending on the efficiency of the execution of proposed activities.

Regular revision of the document is foreseen to be performed every two years. The proposal for the revision is to be prepared by the implementing body, and to be authorised by the monitoring bodies.

# 8 MEASURES AND INDICATORS

Measures and indicators are defined at the level of objective, goals, as well as activities elaborated in this document. These measures and indicators are presented in Table 11.

| | Measure | Timeframe | Indicator | Number |
|---|---|---|---|---|
| Long term objective | Elimination of the critical sections and navigation bottlenecks on the Danube River in Croatia | 2018 | Number of critical sections and bottlenecks on the Danube River in Croatia which are eliminated | 2 |
| Goal 1 | Necessary project documentation for the river training works on the critical sections of the Danube River in Croatia | 2012-2014 | Number of critical sections and bottlenecks on the Danube River in Croatia for which project documentation is prepared | 2 |
| Goal 2 | River training works on the critical sections of the Danube River in Croatia performed at two critical sections | 2014-2018 | Number of critical sections and bottlenecks on the Danube River in Croatia which are eliminated | 2 |
| Activity 4 | Organization or attendance to IWW maintenance expert meetings on international and bilateral level | 2012-2018 | Number of IWW maintenance expert meetings organized or attended per year | 1 |

**Table 11: Measures and indicators**

## 9 MONITORING AND EVALUATION

Monitoring and evaluation are very important management tools. Their purpose is to follow the progress of the implementation of this plan.

Monitoring of the implementation of this plan would be performed at two levels. The first level would be the national, and the second level would be an international. Proposed monitoring bodies are shown on Figure 7.

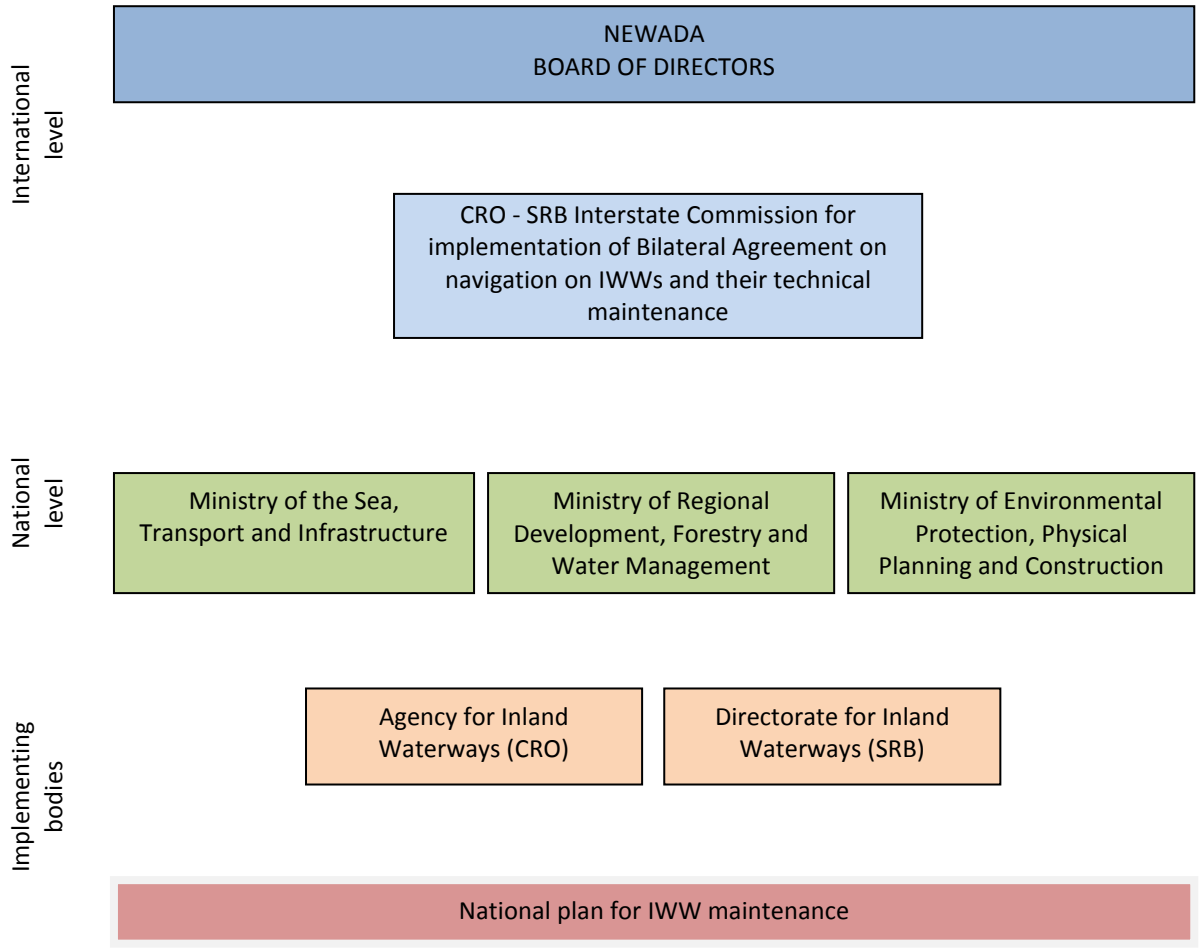


**Figure 5: Monitoring bodies**

Monitoring at the national level will be performed by the Ministry of Maritime Affairs, Transport and Infrastructure - Department of Inland Navigation, **Ministry of Regional Development, Forestry and Water Management** and **Ministry of Environmental Protection, Physical Planning and Construction.**

Ministry of the Sea, Transport and Infrastructure is responsible for strategy development and enforcement concerning transportation and traffic infrastructure, including IWW transportation. **The ministry of Regional Development, Forestry and Water Management** is responsible for the strategy and policy of water protection and water management improvement. **Ministry of Environmental Protection, Physical Planning and Construction** is responsible for the strategy and policy of nature protection, construction, control, supervision and general protection of natural resources. International monitoring will be conducted by joint bilateral groups (for joint Danube sections), as well as the NEWADA project. Most of the critical sections on the Danube River in Croatia are located at the joint section with Serbia. Actions proposed in order to eliminate these bottlenecks need to be executed in tight coordination between Croatian and Serbian side. The Interstate SRB-CRO commission for the implementation of the Bilateral Agreement on navigation on IWWs and their technical maintenance was founded in 2010. Within this Commission, an Expert Group for technical maintenance and monitoring of IWWs will be established, comprising experts from both Serbia and Croatia. It is expected that meetings of this expert group, as well as the Commission it self, will occur twice a year.

The final level of the international monitoring would be the Board of Directors (BoD) of the NEWADA project. It is planned that this body will continue to exist after the project NEWADA itself, in order to perform follow-up activities. It is foreseen that meetings of this body will take place every six months, which is a perfect timeframe for the monitoring process.

# 10 OTHER ISSUES/ASPECTS

## 10.1. Signalization: joint marking systems

- Operational marking activities are coordinated on the level of the two expert organizations in charge, Agency for Inland Waterways and Plovput.

- Marking plans are exchanged between two authorities once a year and if needed, joint visits to some critical points are arranged and joint marking-related decisions are made.

Until now, the cooperation was done on the level of Agency for Inland Waterways and Plovput, without any legal basis

By signing the Agreement and forming the transnational committee, legal basis for further cooperation was set.

## 10.2. Survey in common sector

**19.10.2010.** NEWADA WP3 Bilateral Meeting (SRB-CRO)

Single planning document prepared for the joint section between Serbia and Croatia.

Cross-border cooperation between relevant institutions will lead to:

- Improvement of work efficiency by avoiding overlapping,
- Reduction of survey costs per km by splitting responsibilities, and
- Increasing frequency of survey data collection.

Hydrographic survey data collection and exchange between institutions would be performed according to previously agreed harmonized procedure. This would include several different activities: hydrographic survey according to fairway maintenance cycle, detailed hydrographic survey of critical sections in order to prepare project documentation for river training works, and hydrographic survey data exchange.

### 10.3. RIS

So far no official international agreements between Serbia and Croatia on the IENC production exist. All joint sections are fully covered by Croatian IENCs.

On the 15th of June 2010, first official meeting between AVP and Plovput took place in Vukovar concerning the ENC production on the joint stretch of the Danube within the framework of NEWADA project. General conclusions from the meeting are:

- Both countries will use the same fairway for the IENCs developed by Plovput,
- Both countries will use the same waterway from the ortho-photo images of AVP,
- There is already existing joint marking system which will be continually synchronized in the future and used in the IENCs of both countries,
- Both countries will continue to produce their own IENCs for the joint sector with all mandatory objects completely synchronized.

Under the patronage of the International Sava River Basin Commission agreement on ENC among Croatia, Bosnia and Herzegovina and Serbia is under development. Agreement should be signed and put into the force till the end of 2011.

On the level of the data collecting, there is technical cooperation between Croatian and Serbian inland waterway authorities. Marking system and location of the fairway are mutually agreed on all joint sections.

**- End of document -**