Austrian inland navigation policy & the Integrated River Engineering Project on the Danube East of Vienna

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Austrian inland navigation policy
Austrian Action Plan Danube Navigation

- Comprehensive and dynamic planning and decision-making instrument for the Austrian inland navigation policy until 2015

- Austrian implementation strategy of the European NAIADES Action Programme

- Catalogue of measures developed in cooperation with inland ports and the inland navigation sector
**NAP - Catalogue of measures**

**Comprehensive Strengthening of Danube Navigation within the Austrian Freight Transport System**

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<td>Maintain and improve waterway infrastructure</td>
<td>Further develop Danube ports into multimodal logistics centres</td>
<td>Implement further development of information services for the Danube</td>
<td>Modernize the Austrian fleet</td>
<td>Invest in jobs and qualifications</td>
<td>Raise awareness and boost the image of Danube navigation</td>
<td>Disseminate knowledge and improve the fundamental role of Danube navigator</td>
<td>Explore the Danube waterway as transport potential</td>
<td>Provide supporting resources for the modernization of Danube navigation</td>
<td>Strengthen European inland navigation</td>
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1. **Remove bottlenecks on the Austrian Danube**
2. **Ensure adequate waterway maintenance and management**
3. **Minimize lock closing times due to revisor works**
4. **Support an integrative improvement of fairway conditions on the entire Danube**

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## 2008 Implementation Status of the NAP

**NACHHALTIGE STÄRKTUNG UND FÖRDERUNG DER DONAUSCHIFFFAHRT IM ÖSTERREICHISCHEN GÜTERVERKEHRSSYSTEM**

### INFRASTRUKTUR
- Erhalten und Verbessern der Wasserstraßen-Infrastruktur

### HÄFEN
- Weiterentwicklung der Donauhafen z. B. durch Logistikzentren

### INFOSYSTEME
- Entwicklungs und Weiterentwicklung von multimedialen Informations-Systemen (z B. auf der Donau)

### FLOTTEN
- Modernisieren der österreichischen Flotte

### AUS & WEITERSCHULUNG
- Zunahme im Schiffahrts- und Logistikbereich

### PROMOTION
- Erhöhen der Bekanntmachung und Förderung der Donauschifffahrt

### DATEN & FAKTEN
- Verbessern der Vorauswahl und Verbreiten der Informationen zum Donauverkehr

### NEUE MARKTE
- Entwicklung von Transportservices in anderen Regionen

### FORDERUNGEN
- Bereitstellen von Fördermitteln zu der Förderung der Donauschifffahrt

### INTERNATIONALE AKTIVITÄTEN
- Unterstützung der internationalen Logistik

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### Maßnahmen umgesetzt / in Arbeit

- Maßnahme umgesetzt
- Maßnahme in Arbeit
Conclusion

Inland waterway transport is an interlinked system with many parameters to be taken into consideration.

The river Danube is the most international river of the world with 10 riparian countries.

**Integrated actions, international cooperation** and **active national policies** are needed to maintain and restore the Danube as a natural living space and habitat as well as a European transport axis!
Integrated River Engineering Project on the Danube East of Vienna

www.donau.bmvit.gv.at
The “Integrated River Engineering Project on the Danube East of Vienna” is a project of …

• via donau - Österreichische Wasserstraßen-Gesellschaft mbH ...
• realized on behalf of the Austrian Ministry of Transport, Innovation and Technology (bmvit) ...
• as well as a priority project of the European Commission (Trans-European Transport Network - TEN-T, Corridor VII).
Project Area

Project area: stream-km 1.921,0 - 1.872,7
from the Freudenau Power Plant to the Austrian-Slowak border
Danube East of Vienna
Existing Deficits
Ecological Deficits (1)
Deficits caused by river bed degradation

the most demanding task is the minimization of the continuous river bed degradation (2 - 3.5 cm per year)

→ decoupling of river and floodplains
→ falling groundwater levels

**Aim:** sustainable stabilization of the mean bed level maintaining the character of the free flowing river

Today's river bed is approx. 1 m lower than 50 years ago!
Ecological Deficits (2)

Heavily regulated river in a National Park region. **Sidebarms are cutted-off** or have discharge only for a few days a year and slowly fall dry; **heavily protected river banks**; the habitats of typical local fauna and flora are at risk

**Aim**: Improvement of ecological functions of the river, the river banks and the floodplain
The Danube Corridor (1)
Commercial Transport in the Austrian section 1994-2004

Source: ÖIR / own illustration
The Danube Corridor (2)
Transit in the Austrian section 1994-2007

Source: ÖIR / own illustration
Deficits for Inland Navigation (1)

- Inadequate water depth - during low-water periods the Danube river is too shallow for navigation; limited competitiveness of inland navigation;
- high maintenance costs

**Aims:** Better minimum fairway depths during low-water periods; reduction of maintenance costs
Deficits for Inland Navigation (2)

Commercial transport in the Danube corridor will grow significantly within the next years.

→ Measures must be taken to cope with the growing traffic-volume in a social and environmental sustainable way

→ Inland navigation can make a significant contribution
National Action Plan (NAP)

The European Action Program NAIADES and the National Action Plan (NAP) include measures to …

• to increase the efficiency and the competitiveness of inland navigation in order
• to benefit from the free capacities of the Danube river!

one element of NAP:
    improvement of the insufficient and extremely varying fairway conditions on the Danube to the east of Vienna hand in hand with the ecological situation of the Danube Floodplain National Park by implementing the …

Integrated River Engineering Project on the Danube East of Vienna
Integrative Planning
From the History Book …

1984 „Aubesetzung“ – the occupation of the construction site was the beginning of the end for a power plant near Hainburg

1985 The ecology commission was founded – the search for an environmental friendly method to compensate river bed degradation begun

1996 The Danube Floodplain National Park was founded

2002 The bmvit assigned the Wasserstraßendirektion (today via donau) with the planning of the Integrated River Engineering Project and initiated the interdisciplinary steering group

2006 Start of the Environmental Impact Assessment EIA
Integrative Planning (1) - Structure

BMVIT / via donau

Steering group
Experts in river engineering, navigation, ecology, spatial planning and economics, representatives of ministry, National Park

Planning team
Interdisciplinary team (river engineering, navigation, ecology, spatial planning and economics)

Moderation process
moderated workshops: ministries, public authorities, communities, NGOs, navigation, National Park
Integrative Planning (2)
Planning Process

- Listing alternatives
- Selection of options
- Comparison of 11 different options
- Development of planning principles
- Preparation of the environmental impact statement considering all relevant acts and directives (e.g. WFD)

Consequence:
- Integrated ecological planning replaces the need for measures to minimize impact on nature
Integrative Planning (3)

Why is the Integrated River Engineering Project called “integrated”? Because of the 5 i’s!

- integration of all relevant disciplines and the Danube Floodplains National Park in the project design phase
- integration of ecological, nautical aims and aims related to water management into a single project
- integration of the public – e.g. via the moderation process
- integration of all relevant disciplines in the project planning phase (within the planning team)
- design of every single measure in an integrative way – e.g. new groyne shapes
Integrative Planning (4)
Joint Statement

“Joint Statement on Guiding Principles for the Development of Inland Navigation and Environmental Protection in the Danube River Basin”

• initiative by the ICPDR in cooperation with the Danube Navigation Commission and the International Sava Commission in 2007
• the integrated planning approach was honored as „best practice“
Aims & Measures
The Outcome of Integrative Planning
Aims and Measures

- Improvement of ecological functions
- Improvement of fairway conditions
- River bed stability
- Granulometric river bed improvement
Granulometric River Bed Improvement

Reduce river bed erosion by adding larger gravel sizes (approx. 40 – 70 mm) within the natural grain size spectrum.

Reducing bed load transport capacity from 300,000 to 400,000 m³/a to 30,000 to 50,000 m³/a.
Aims and Measures

Granulometric river bed improvement

River bed stability

Improvement of ecological functions

Improvement of fairway conditions

Low water regulation
Reconstruction of Groynes
Pilot Project Witzelsdorf

innovative groyne shapes - advantages for ecology and navigation by interdisciplinary planning

- By-pass as fish path for young fish and to cope with sedimentation in the groyne field
- Smaller scour at the groyne head
- Downstream faced groynes > Higher dynamic along the river bank

- Removal old groynes and river bank restoration
- Construction of new groynes
Reconstruction of Groynes
Pilot Project Witzelsdorf

RNW+0,5

RNW+0,3
Low Water Regulation

Improve navigation conditions, particularly during low flow periods, by raising water levels using modified groyne shapes and river bed adjustments.
Aims and Measures

- Improvement of ecological functions
- Improvement of fairway conditions
- River bed stability
- River bank restoration
- Granulometric river bed improvement
- Low water regulation
River Bank Restoration
Pilot Project Thurnhaufen
River Bank Restoration
Pilot Project Witzelsdorf

after MW+1,5
Aims and Measures

- River bed stability
- Improvement of ecological functions
- Side arm reconnection and „Hinterrinner“
- Granulometric river bed improvement
- Improvement of fairway conditions
- River bank restoration
- Low water regulation
Reconnection of Side Arms

- Higher, stabilized water level
- Restoration of river banks, construction of in-flows
- Construction of out-flows
- Reconstruction of traverses, if necessary replacement by bridges
- Reconnection of Side Arms
Aims and Measures

- Granulometric river bed improvement
- River bed stability
- Improvement of ecological functions
- Improvement of fairway conditions
- Low water regulation
- River bank restoration
- Side arm reconnection and „Hinterrinner“
The Benefits of Integrative Planning
Benefits for the National Park (1)

- Linking of old meanders and branches to the main river, creating a connected river system
  - Improvement of the connectivity
  - Increase of the flow rate, increase of rheophile habitats
- Removal of reinforcement on certain sections of the river bank
  - Improvement of the flood dynamics
  - Increase of sediment relocation
- Stabilization of ground water conditions
  - Stabilization of the declining ground water table
  - Improvement of water balance
- Preservation of typical local fauna and flora habitats
Benefits for the National Park (2)
Preservation of typical local fauna and flora habitats

- Slowdown of the negative trends caused by river bed degradation
- Creation of new / reactivated aquatic habitats of high quality – especially in side arms
Benefits for the National Park (3)
Preservation of typical local fauna and flora habitats

- Creation of gravel banks, flat water zones and steep faces by river bank restoration and side arm reconnection
- Creation of undisturbed areas by reconnection of side arms and the construction of islands

Kingfisher
steep face and gravel bank
Little ringed plover
Economical Benefits for Austria (1)

- **Shift of traffic from roads to the Danube**
  - Double the transport of goods along the Danube Corridor in combination with means of logistics and telematics
  - Reduction of traffic jams
  - Increase of transport safety

- **Reduction of emissions (noise, pollutants) and consumption of landscape**
  - especially important with regard to Kyoto goal
Economical Benefits for Austria (2)

- **Promotion of the competitiveness of the national economy**
  - Potential savings of transport costs
  - Investment in the economic future of the national economy

- **Reduction of maintenance costs**
  - Costs for dredging fords
  - Costs for fighting river bed erosion
Synopsis

The Integrated River Engineering Project …

… improves the ecological and nautical situation of the Danube east of Vienna

… by means of river engineering

… meeting the requirements of the sensitive area of the National Park Donau-Auen.