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

**Robert TÖGEL & Markus SIMONER**

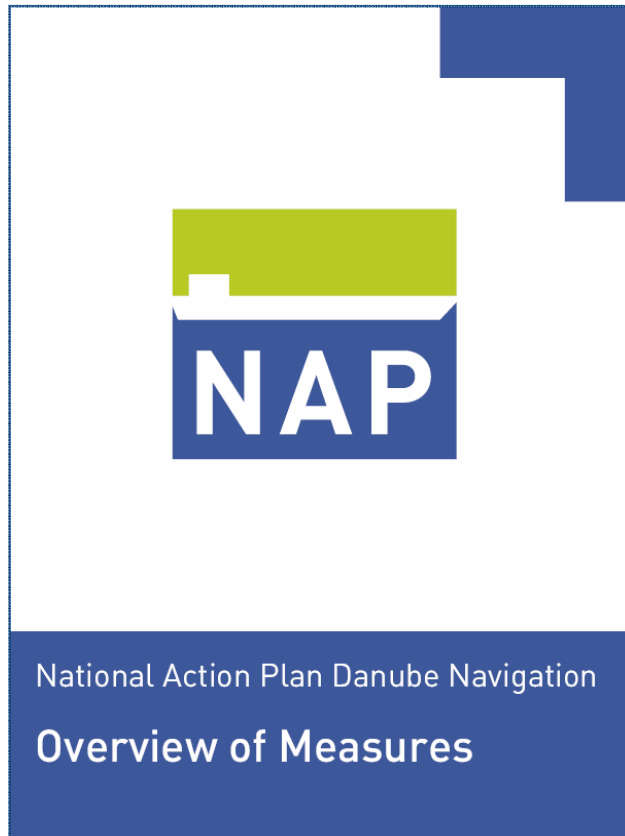
Zagreb, June 9th, 2009

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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

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# NAP - Catalogue of measures

## COMPREHENSIVE STRENGTHENING OF DANUBE NAVIGATION WITHIN THE AUSTRIAN FREIGHT TRANSPORT SYSTEM

INFRASTRUCTURE I Maintain and improve waterway infrastructure	PORTS II Further develop Danube ports into multimodal logistics centres	INFORMATION SYSTEMS III Implement and further develop River Information Services (RIS) on the Danube	FLEET IV Modernize the Austrian fleet	EDUCATION & TRAINING V Invest in jobs and qualifications	PROMOTION VI Raise awareness and boost the image of Danube navigation	FACTS & FIGURES VII Disseminate knowledge and improve the fundamental data on Danube navigation	NEW MARKETS VIII Exploit the Danube waterway's transport potential	GRANTS IX Provide supporting resources for the modernisation of Danube navigation	INTERNATIONAL ACTIVITIES X Strengthen European inland navigation
1 Remove bottlenecks on the Austrian Danube	1 Draw up a development and investment strategy for the Austrian Danube ports and transshipment sites	1 Implement DoRIS in Austria	1 Improve the environmental performance of the Danube fleet	1 Launch a training offensive	1 Create and implement a coordinated PR-strategy	1 Collect and process fundamental data on Danube navigation	1 Provide logistics advice in the field of Danube navigation	1 Fund flexible and competitive transshipment facilities	1 Push the development and implementation of the European action plan
2 Ensure adequate waterway maintenance and management	2 Push for the modernization of ports and transshipment sites	2 Further develop RIS for official and commercial use	2 Increase the safety of inland navigation	2 Improve the availability of education	2 Create a national platform for pre-Danube navigation public relations work	2 Provide web-based facts and figures about Danube navigation	2 Stimulate cooperation between inland navigation and road/rail	2 Fund an environmentally friendly and market orientated Austrian fleet	2 Contribute to the harmonization of legislative and institutional framework conditions
3 Minimize lock closing times due to revision works	3 Stimulate industrial settlements along the Austrian Danube	3 Further develop technologies relevant to RIS	3 Improve the framework conditions for investment in the fleet	3 Facilitate the employment of qualified foreign workers	3 Strengthen pre-Danube navigation national lobbying activities	3 Introduce Danube navigation to training and education	3 Support the construction of scheduled liner services on the Danube	3 Fund the development of scheduled container liner services and new multimodal transport	3 Improve the image of European inland navigation
4 Support an integrative improvement of fairway conditions on the entire Danube	4 Support the further development of South-Eastern European Danube ports	4 Support the Danube countries in implementing of RIS	4 Push innovative plans in the inland navigation sector	4 Improve framework for labour and social conditions through social dialogue	4 Implement a pre-Danube navigation image campaign	4 Construct an information and training centre at the Enns-Ennsdorf port	4 Push the foundation of national inland navigation development agencies in the Danube countries	4 Fund an innovative use of technology in Danube navigation	4 Play an active role in the development of the Pan-European Corridor VI

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# 2008 Implementation Status of the NAP

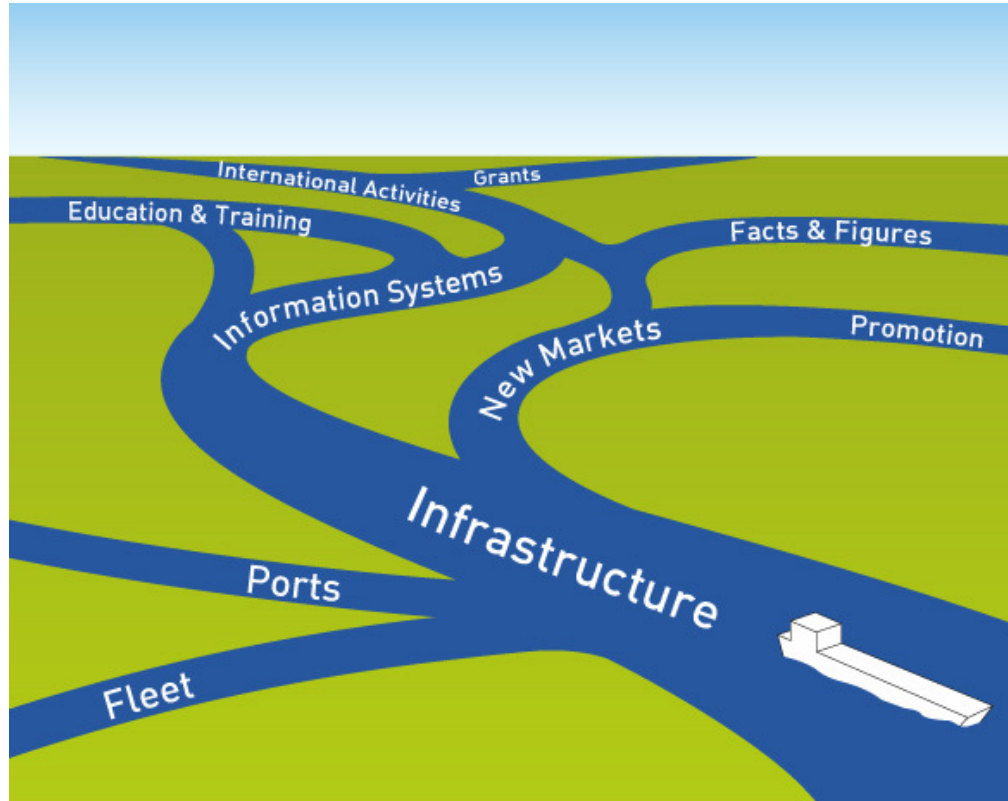
## NACHHALTIGE STÄRKUNG UND FÖRDERUNG DER DONAUSCHIFFFAHRT IM ÖSTERREICHISCHEN GÜTERVERKEHRSSYSTEM

INFRASTRUKTUR	HÄFEN	INFORMATIONSSYSTEME	FLOTTE	AUS- & WEITERBILDUNG	PROMOTION	DATEN & FAKTEN	NEUE MÄRKTE	FÖRDERUNGEN	INTERNATIONALE AKTIVITÄTEN
Erhalten und Verbessern der Wasserstraßen-Infrastruktur	Weiterentwickeln der Donauhäfen zu multimodalen Logistikzentren	Einführen und Weiterentwickeln von River Information Services (RIS) auf der Donau	Modernisieren der österreichischen Flotte	Investieren in Arbeitsplätze und Qualifikation	Erhöhen des Bekanntheitsgrades und Stärken des Images der Donauschifffahrt	Verbreitern des Wissensstandes und Verbessern der Datengrundlagen zur Donauschifffahrt	Erschließen der Transportpotenziale der Wasserstraße Donau	Bereitstellen von Fördermitteln zur Modernisierung der Donauschifffahrt	Stärken der europäischen Binnenschifffahrt
<p>Beseitigen der nautischen Engpässe auf der österreichischen Donau</p> <p>1</p> <p>a) Östlich von Wier</p> <p>b) Wacht</p> <p>Sicherstellen einer adäquaten Wasserstraßen-erhaltung und -verwaltung</p> <p>2</p> <p>a) Erhaltung</p> <p>b) Renaturierung</p> <p>c) Pegelschwankungen</p> <p>d) Enns und Traur</p> <p>Minimieren der Schleuser-revisionszeiten</p> <p>3</p> <p>a) Erarb. Revisionsplan</p> <p>b) Imp. Revisionsplan</p> <p>Mitwirken an einer integrativer Verbesserung der Fahrwasser- verhältnisse an der gesamten Donau</p> <p>4</p> <p>a) Kooperation</p> <p>b) FGP Know-how</p>	<p>Erstellen einer Entwicklungs- und Investitionsstrategie der österreichischer Donauhäfen und -länder</p> <p>1</p> <p>Forcieren der Modernisierung vor Häfen und Ländern</p> <p>2</p> <p>Stimulieren von Industrie- ansiedlungen an der österreichischen Donau</p> <p>3</p> <p>a) Raumplanung</p> <p>b) Ansiederberatung</p> <p>Unterstützen der Weiterentwicklung vor südosteuropäischen Donauhäfen</p> <p>4</p>	<p>Implementieren des Schifffahrts- informationssystems DoRIS in Österreich</p> <p>1</p> <p>Weiterentwickeln von RIS für behördliche und kommerzielle Nutzer</p> <p>2</p> <p>a) Weiterentwicklung</p> <p>b) DoRIS Testzentrum</p> <p>c) Infotätigkeit</p> <p>d) Kommerz. Nutzung</p> <p>Weiterentwickeln von RIS-relevanter Technologier</p> <p>3</p> <p>Unterstützen der Donaustaaten bei der Implementierung von RIS</p> <p>4</p> <p>a) IRIS Masterplan</p> <p>b) EL-Förderung</p> <p>c) Wissenstransfer</p>	<p>Verbessern der Umweltperformance der Donauflotte</p> <p>1</p> <p>a) Emissionsreduktion</p> <p>b) Schiffsabfallpläne</p> <p>Erhöhen der Sicherheit in der Schifffahrt</p> <p>2</p> <p>a) Vernetzung (RIS)</p> <p>b) Schiffbau</p> <p>c) Rech. &amp; Übungen</p> <p>Verbessern der Rahmen- bedingungen für Investitionen in die Flotte</p> <p>3</p> <p>Forcieren vor innovativer Vorhaben im Schifffahrtssektor</p> <p>4</p>	<p>Starten einer Ausbildungs-offensive</p> <p>1</p> <p>a) Ausbildungsplatz</p> <p>b) Ausbildungspersona</p> <p>c) Werbemaßnahmen</p> <p>d) Modalitäten</p> <p>Verbessern des Weiterbildungs- angebots</p> <p>2</p> <p>Ermöglicher qualifizierter Ausländer- beschäftigung</p> <p>3</p> <p>Verbessern der arbeits- und sozialrechtlicher Rahmen- bedingungen im Sozialen Dialog</p> <p>4</p>	<p>Schaffen und Umsetzen einer abgestimmter PR-Strategie</p> <p>1</p> <p>Betreiben einer nationaler Plattform für Öffentlichkeitsarbeit pro Donauschifffahrt</p> <p>2</p> <p>Verstärken der nationalen Lobbying- Aktivitäten pro Donauschifffahrt</p> <p>3</p> <p>Durchführen einer Imagekampagne pro Donauschifffahrt</p> <p>4</p>	<p>Erheben und Aufbereiten von Datengrundlagen zur Donauschifffahrt</p> <p>1</p> <p>a) Korridoranalyse</p> <p>b) Fachpublikationen</p> <p>c) Jahresbericht</p> <p>Bereitstellen von webbasierten Daten und Fakten zur Donauschifffahrt</p> <p>2</p> <p>a) Wet-Infoporta</p> <p>b) Wet-Donaukarte</p> <p>Einbringen der Donauschifffahrt in Aus- und Weiterbildung</p> <p>3</p> <p>a) Unterrichtsmateria</p> <p>b) Lehrtätigkeit</p> <p>c) Wet-Lerntools</p> <p>Aufbauen eines Informations- und Schulungszentrums im Hafen Enns- Ennsdorf</p> <p>4</p>	<p>Betreiben von Logistikberatung pro Donauschifffahrt</p> <p>1</p> <p>a) Anlaufstelle</p> <p>b) Mob. Logistikberate</p> <p>c) Wet-Inf</p> <p>Stimulieren von Kooperationen zwischen Schiff und Schiene / Straße</p> <p>2</p> <p>a) Best-Practice</p> <p>b) Rechtsangleichung</p> <p>Unterstützen des Aufbaus von Liniendiensten auf der Donau</p> <p>3</p> <p>a) Containerliniendien</p> <p>b) RoRc-Verkehr</p> <p>Forcieren der Aufbaus vor nationaler Schifffahrtsent- wicklungsagenturen im Donauraum</p> <p>4</p>	<p>Fördern vor flexiblen und leistungsfähiger Umschlagsanlagen</p> <p>1</p> <p>a) Terminalförderung</p> <p>b) Kaimauern</p> <p>c) Hochwasserschutz</p> <p>Fördern einer umwelt- und marktgerechter österreichischer Flotte</p> <p>2</p> <p>Fördern des Aufbaus vor Container- Liniendiensten und neuen multimodalen Verkehrer</p> <p>3</p> <p>Fördern vor innovativer Technologie- anwendungen in der Donauschifffahrt</p> <p>4</p>	<p>Forcieren der Entwicklung und Umsetzung des Europäischen Aktionspläne</p> <p>1</p> <p>Mitwirken an der Harmonisierung der legislativer und institutioneller Rahmen- bedingungen</p> <p>2</p> <p>a) Legislative Harm</p> <p>b) Institutionelle Harm</p> <p>Verbessern des Images der europäischen Binnenschifffahrt</p> <p>3</p> <p>Ausüben einer aktiven Rolle bei der Entwicklung des Pan-Europäischer Korridors VII</p> <p>4</p> <p>a) Korridormanagement</p> <p>b) Kooperation</p>

  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!

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Co-financed by the European Union  
Trans-European Transport Network (TEN-T)

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## Integrated River Engineering Project on the Danube East of Vienna

[www.donau.bmvit.gv.at](http://www.donau.bmvit.gv.at)

# via donau

## Österreichische Wasserstraßen-Gesellschaft mbH



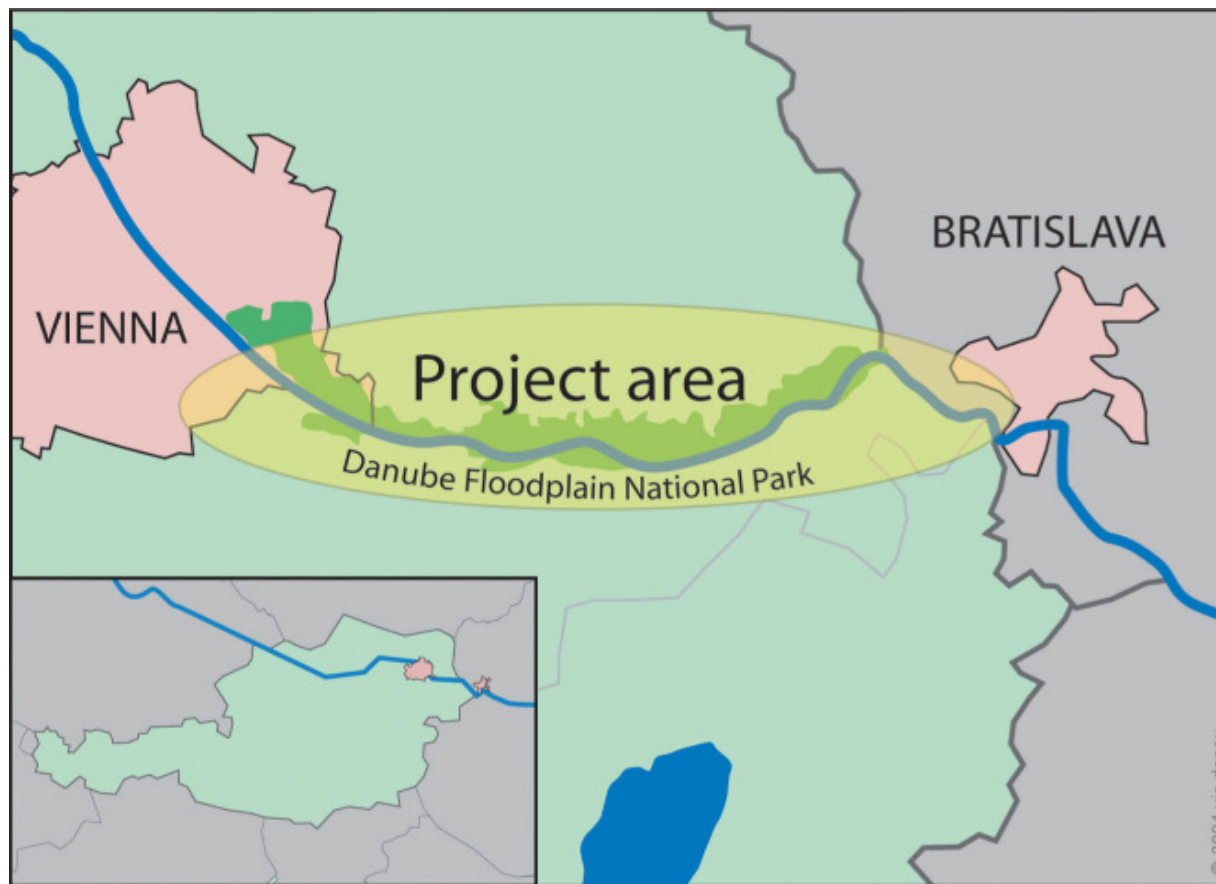
The “**Integrated River Engineering Project on the Danube East of Vienna**” is a project of ...

- 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).

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# Project Area



Project area: stream-km 1.921,0 - 1.872,7  
from the Freudenu Power Plant to the Austrian-Slovak border



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# Danube East of Vienna Existing Deficits

# Ecological Deficits (1)

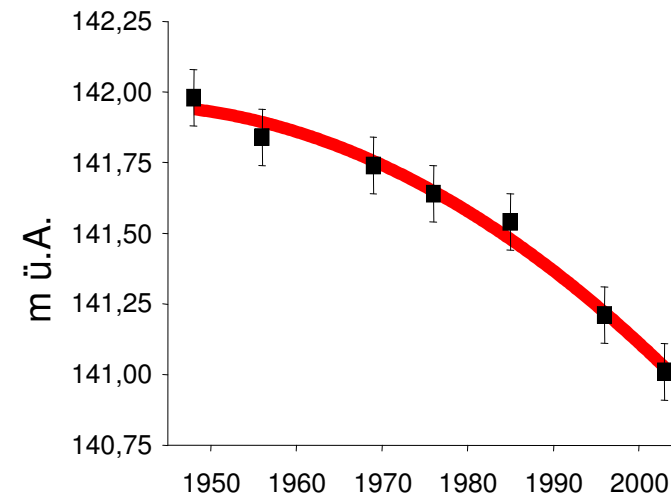
## Deficits caused by river bed degradation



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



Source: Donau Consult

Today's river bed is approx. 1 m lower than 50 years ago!

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# Ecological Deficits (2)



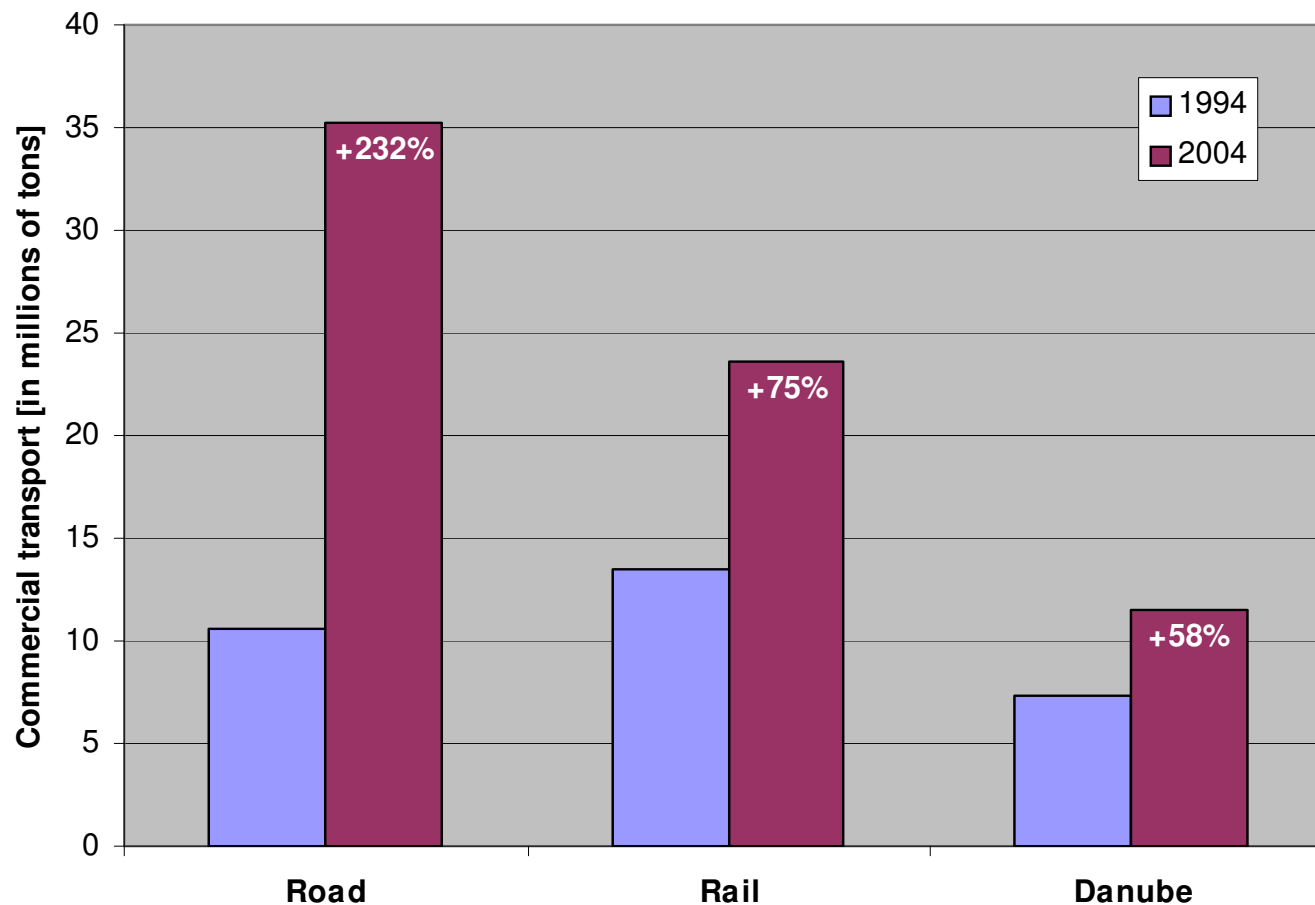
Heavily regulated river in a National Park region. **Sidearms are cutted-off** or have discharge only for a few days a year and slowly fall dry; **heavily protected river banks**; the habitats of typical local fauna and flora are at risk

**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

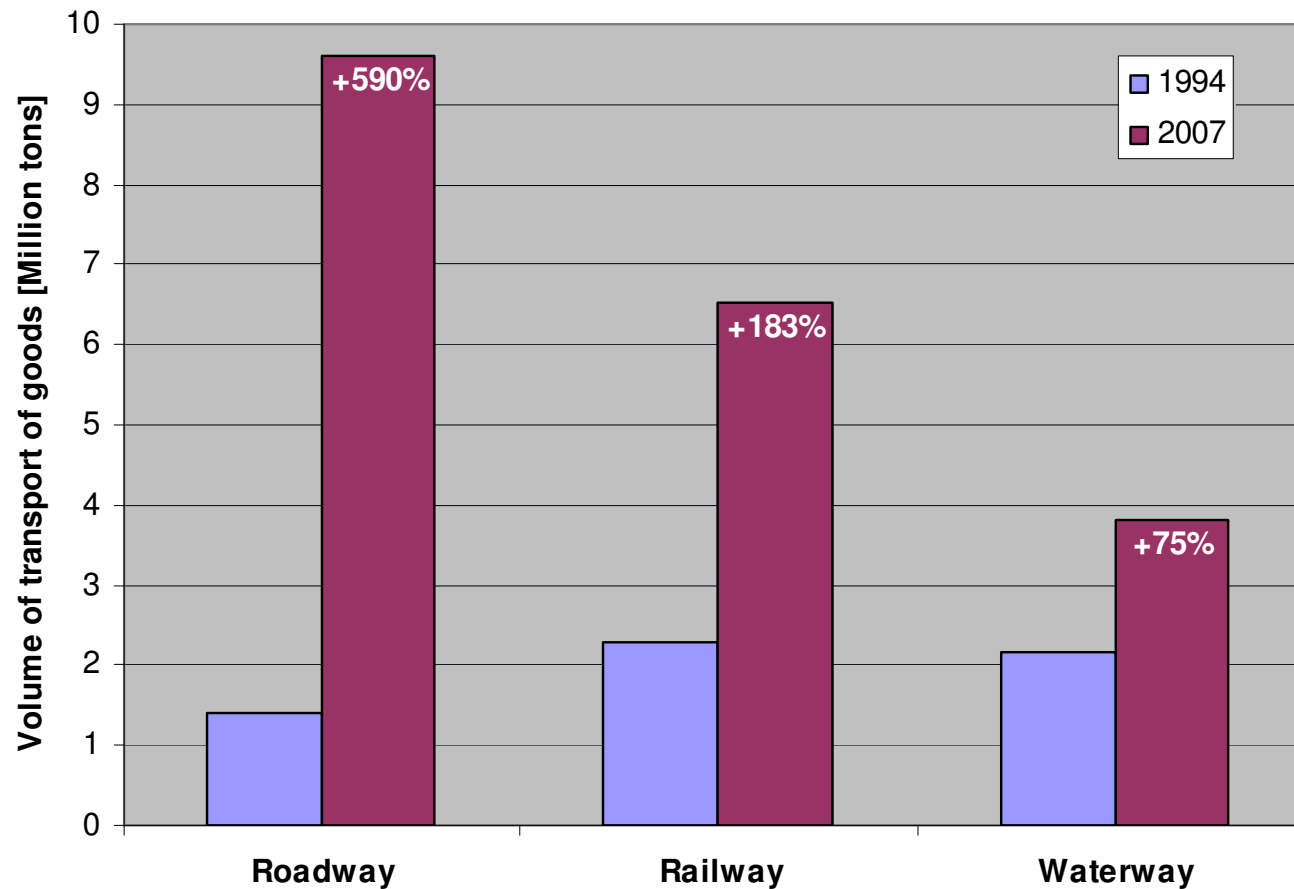


Source: ÖIR / own illustration

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# The Danube Corridor (2)

## Transit in the Austrian section 1994-2007



Source: ÖIR / own illustration

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# 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



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# 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



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# 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**

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# Integrative Planning

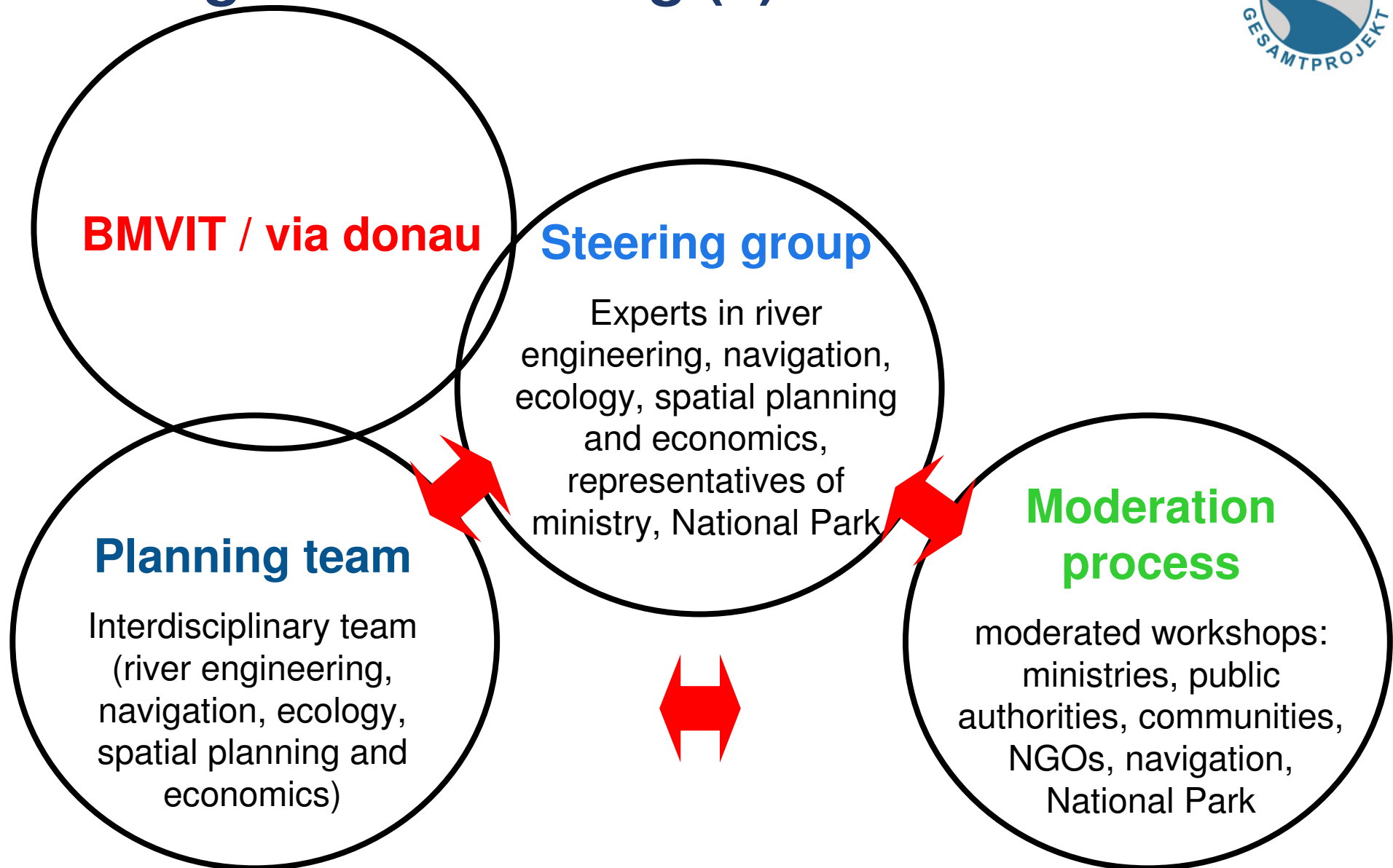
# From the History Book ...



- 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** an initiated the interdisciplinary **steering group**
- 2006 Start of the Environmental Impact Assessment EIA



# Integrative Planning (1) - Structure



# 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)
- ↪ • Moderation process

### 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** !

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

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# 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**“

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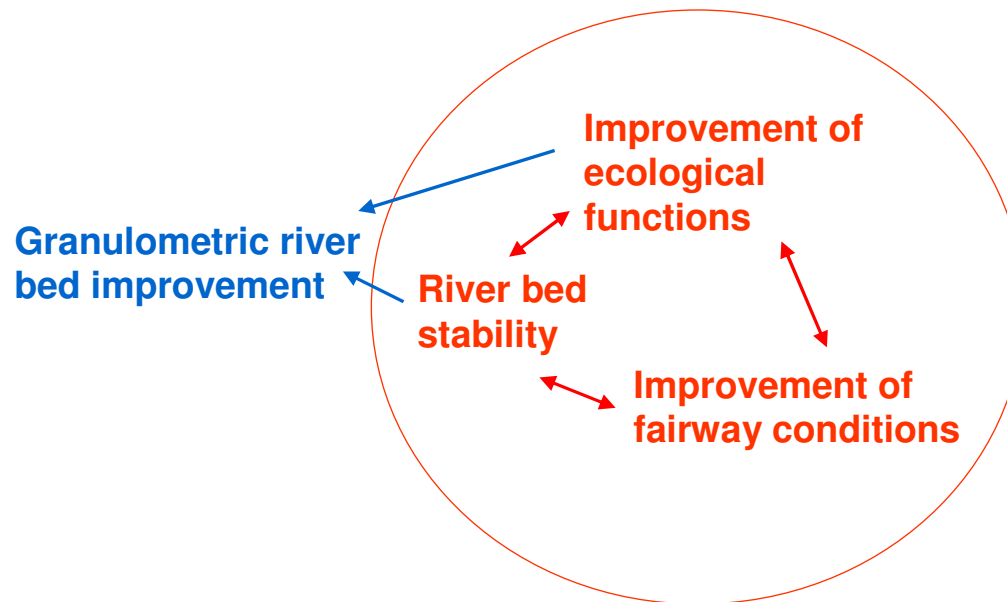
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# Aims & Measures

## The Outcome of Integrative Planning



# Aims and Measures



# Granulometric River Bed Improvement



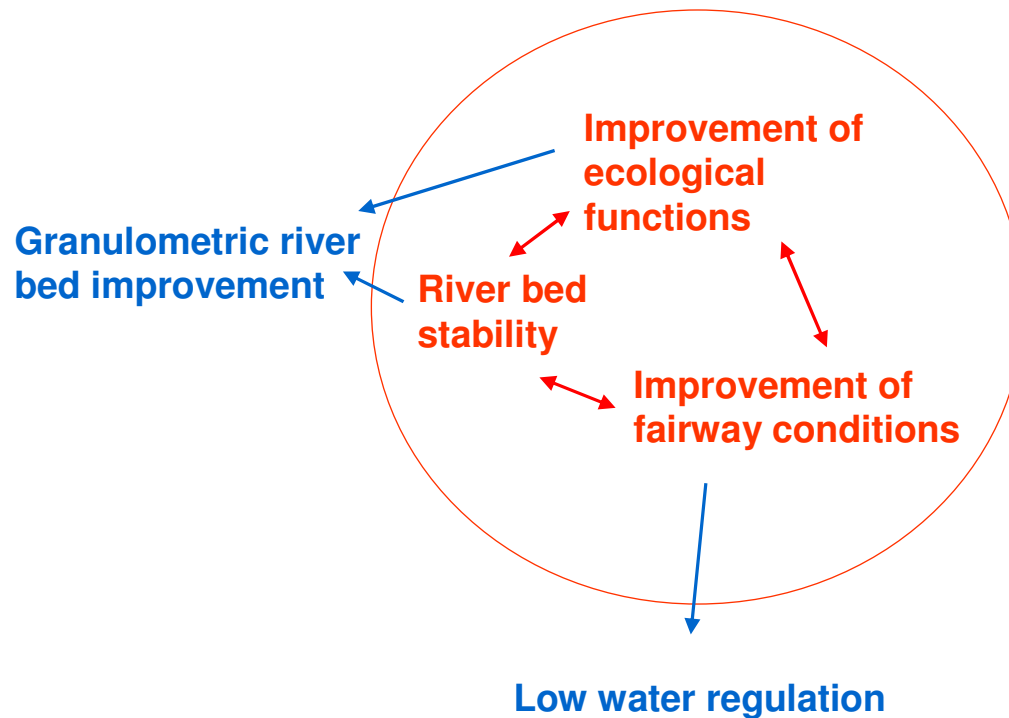
**Reduce river bed erosion** by adding larger gravel sizes (approx. 40 – 70 mm) within the natural grain size spectrum

Reducing bed load transport capacity from 300.000 to 400.000 m<sup>3</sup>/a to 30.000 to 50.000 m<sup>3</sup>/a



Foto: Austrian Hydro Power, Dipl.Ing. Schimpf

# Aims and Measures

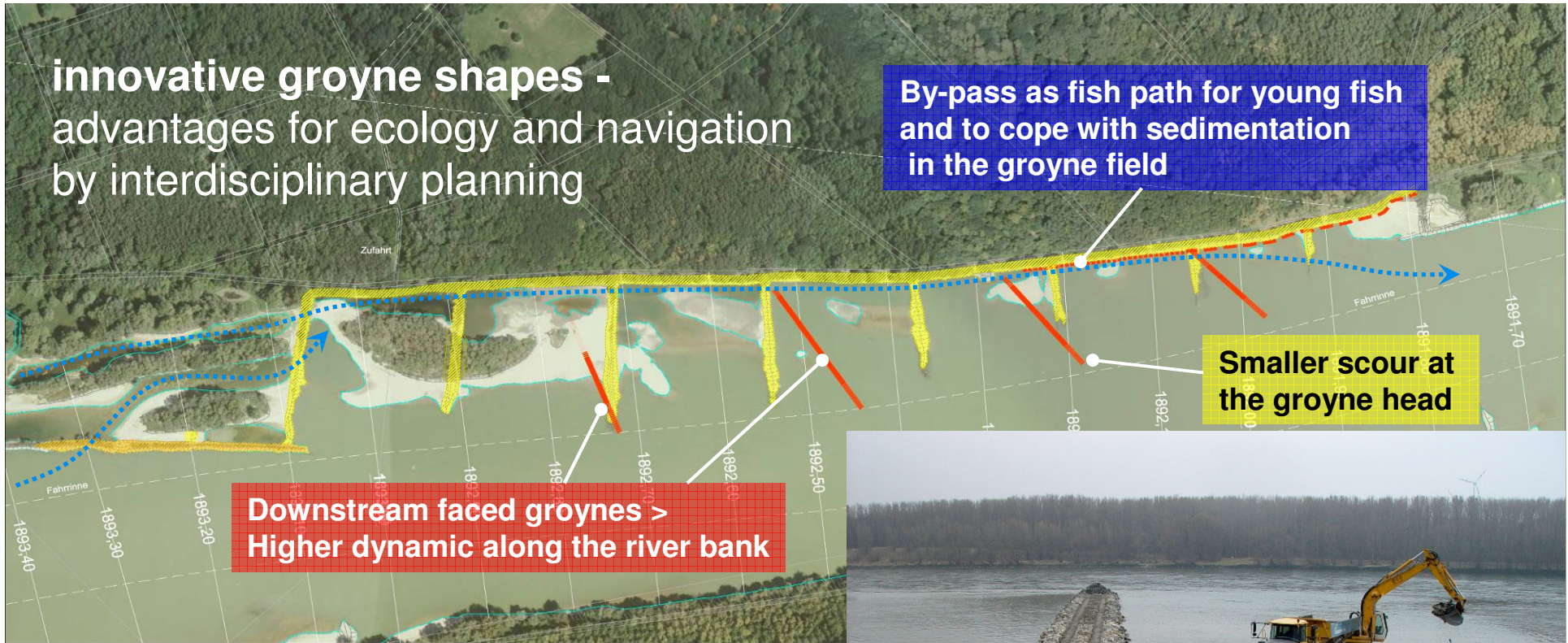


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# Reconstruction of Groynes

## Pilot Project Witzelsdorf



- Removal old groynes and river bank restoration
- Construction of new groynes

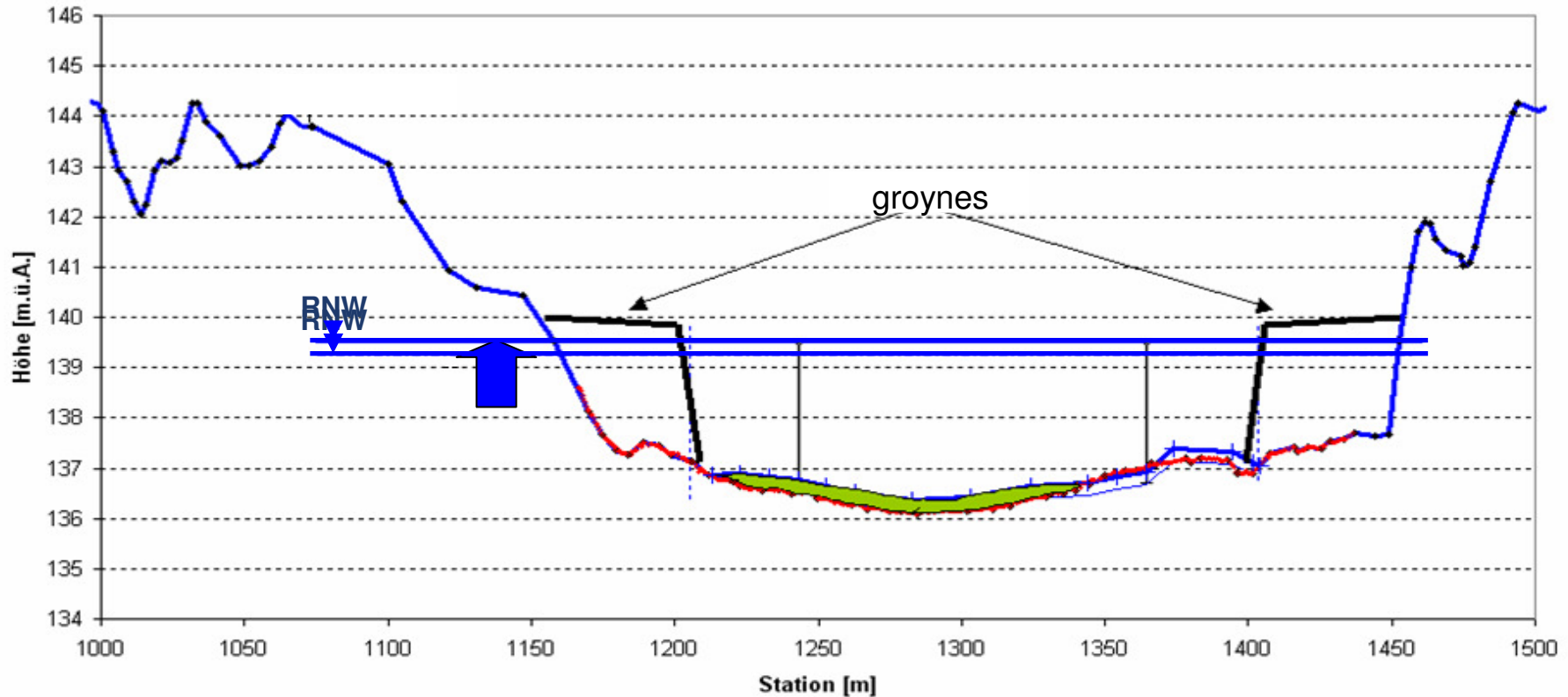




# Reconstruction of Groynes Pilot Project Witzelsdorf



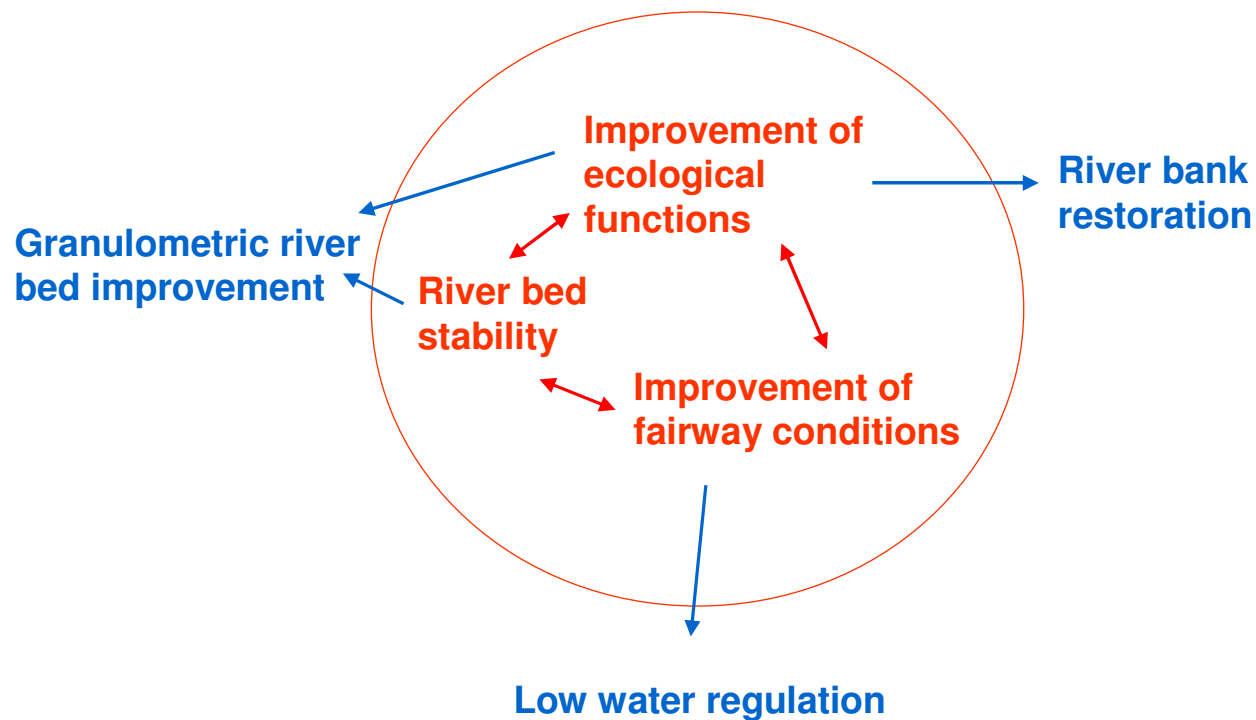
# Low Water Regulation



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

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# Aims and Measures



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# River Bank Restoration Pilot Project Thurnhaufen



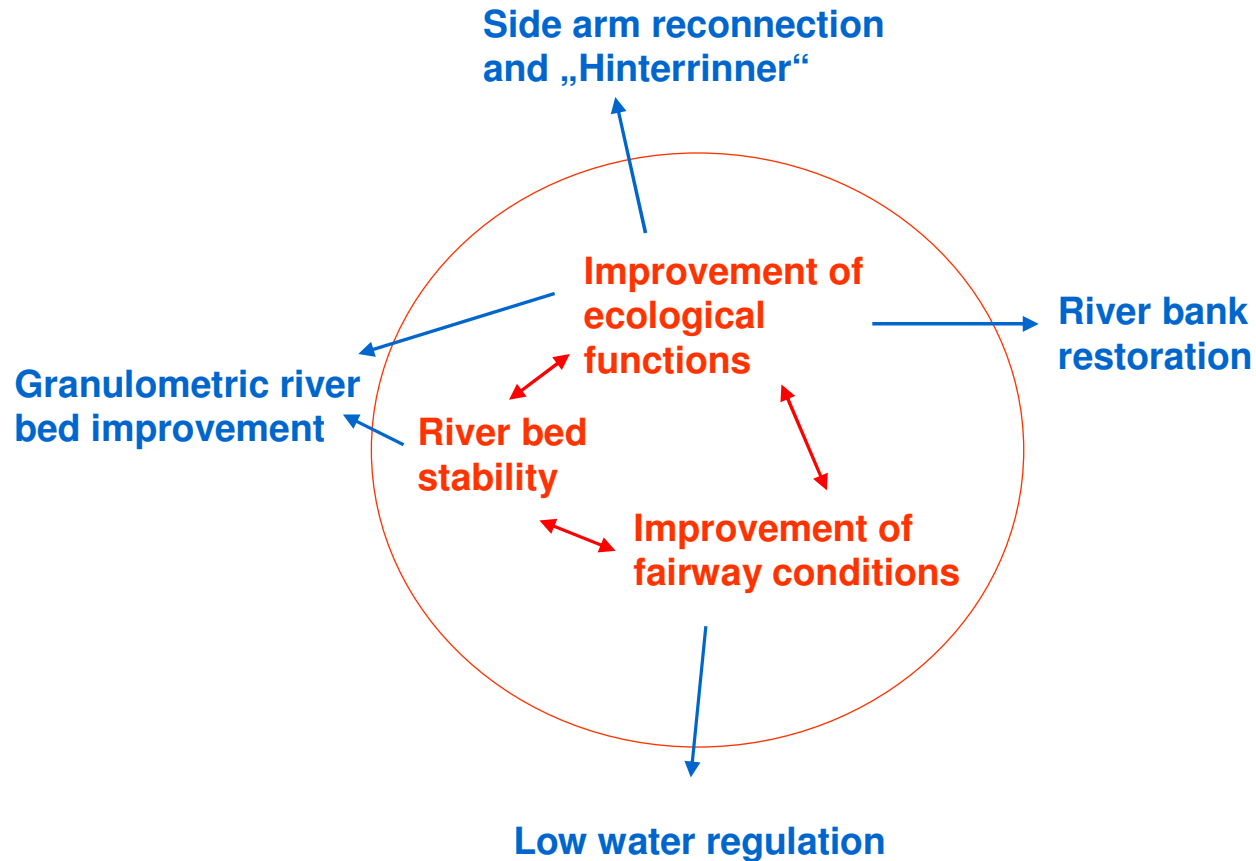


# River Bank Restoration Pilot Project Witzelsdorf



after MW+1,5

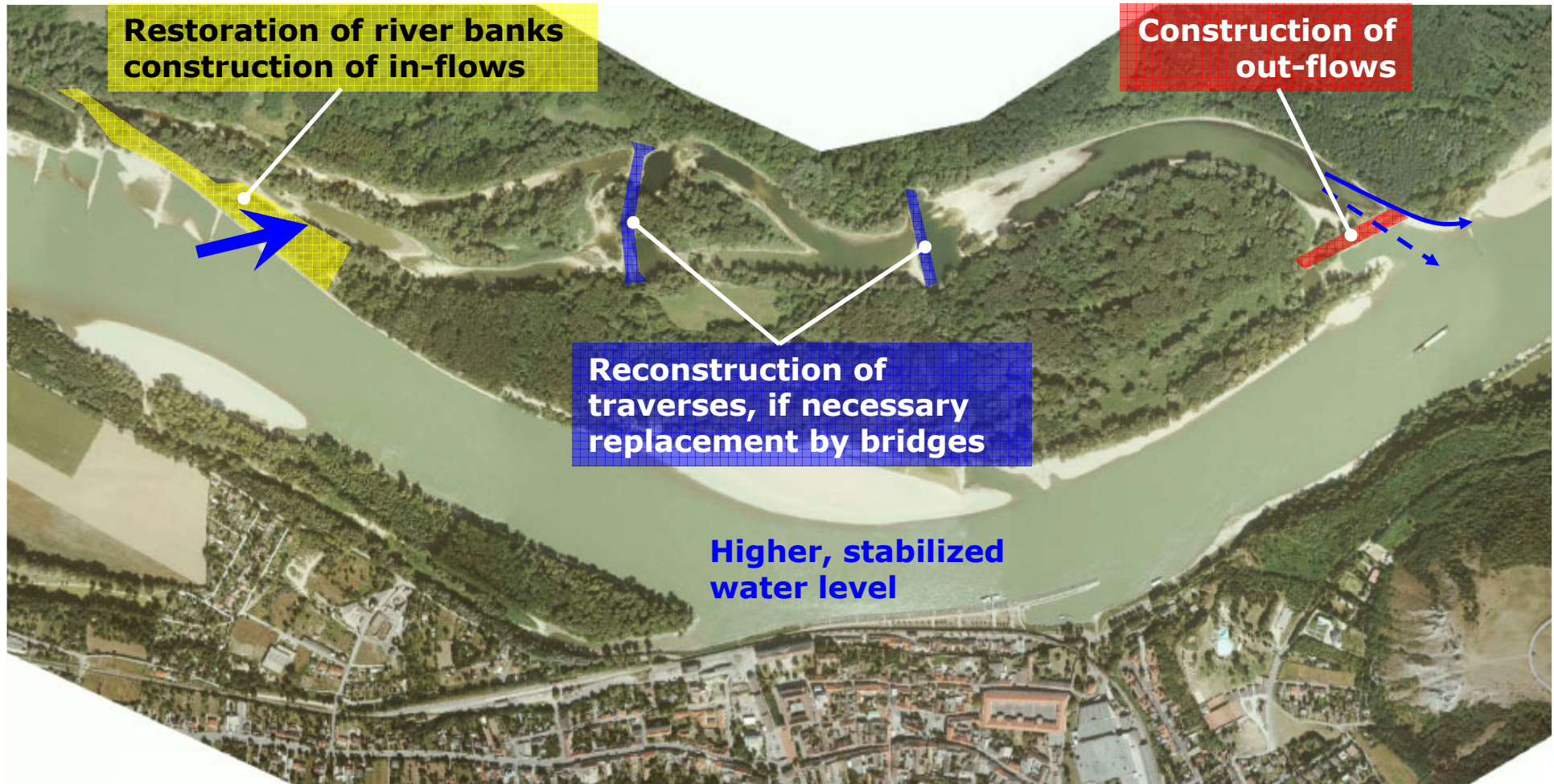
# Aims and Measures



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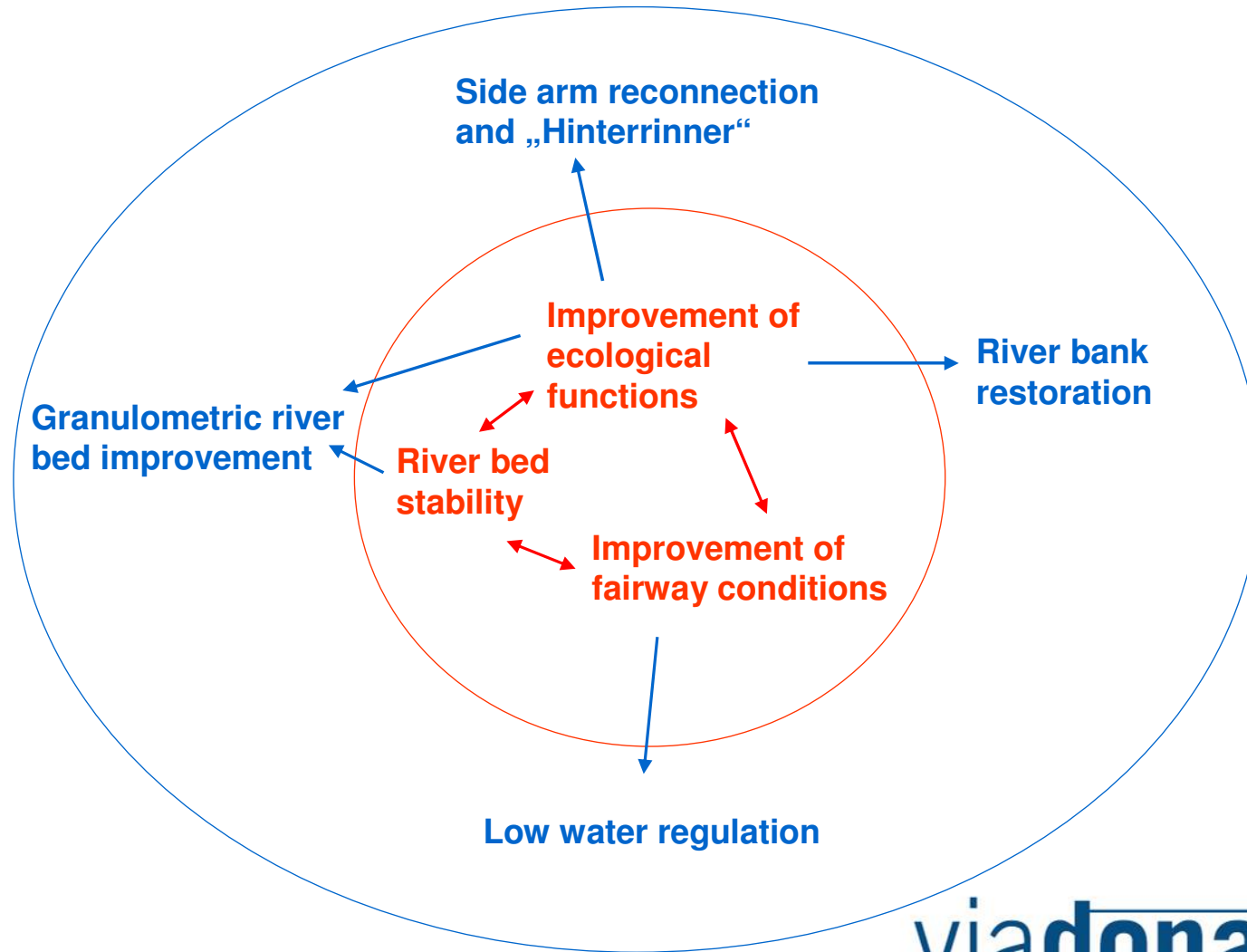


# Reconnection of Side Arms



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# Aims and Measures



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# 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



Out-flow of a side arm reconnection



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# 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





# 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.

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