Integrated River Engineering Project
Catalogue of Measures for the Danube east of Vienna

10th Joint Statement Meeting; Budapest; 11.-12. September 2019
Part of the Rhine-Danube Corridor and a protected area.

- Approx. 48 km long (river-km 1,921.0 Freudenau Power plant to river-km 1,872.7 Austrian-Slovak border)
- Height difference: approx. 18 m (40 cm/km)
- Mean discharge MQ: 1,930 m³/s
- Fluctuations in water levels: up to 7 m
Danube East of Vienna – major challenges

- Riverbed degradation
- Decoupling of river and floodplains, falling groundwater levels
  → Stabilization of water levels

- River in National Park area
- Habitats of typical local flora and fauna are at risk
  → Improvement of environmental conditions

- Inadequate fairway depths
- Limited competitiveness of inland waterway transport
  → Improvement of fairway conditions / opt. waterway infrastructure

High diversification of objectives
Interdisciplinary approach, stakeholder participation
The results of the pilot phase (6 pilot projects) have been combined with new developments in waterway management (WAMS) and traffic management (DoRIS Services).

The implementation strategy was adopted to the findings: modified maintenance processes in combination with ‘small’ optimization projects.

Realization in order by priority
- First measures implemented in 2016
- Priority 1: Realization by 2022 (Action Programme Danube of the MoT)
- Priority 2: Realization by 2030
Coordinated and written with the stakeholder forum ("navigation" & "ecology")

Decided unanimously by the stakeholder forum in late 2018

www.lebendige-wasserstrasse.at
Catalogue of Measures – Maintenance processes to counteract river bed erosion
Catalogue of Measures
Integrative Sediment Management

Maintenance section viadonau (Stream-km 1910,0 – 1872,7)

- Bed-load trap Treuschütt
- Future: Addition of gravel
- Bed-load relocation

Bed-load addition Verbund
Bed-load relocation

Since 2015: Relocation of the dredged gravel over distances up to 20 km to keep the material longer in the stretch. Effect on riverbed degradation similar to an external gravel addition.

**Transport performance**

\[ \text{Transport performance} = \text{Quantity gravel} \ [\text{m}^3] \times \text{distance} \ [\text{km}] \]

- **Bed-load relocation:** Which quantity over was moved upstream over which distance?

- **Period 2009 – 2014:** 2.8 million m³.km
- **Period 2015 – 2018:** 10.2 million m³.km

![Graph showing transport performance from 1996 to 2018](image-url)
Catalogue of Measures – Current optimization projects
Catalogue of Measures
Optimization projects

Step-by-step approach in order by priority

Low-water regulation

Sidearm reconnection

Riverbank restoration

Optimizing regulation structures:
„More” in critical fords
„Less” in sections with river bed degradation

Small-scale measures are modifications of piers, traffic management measures, etc.
Optimization of critical fords

Dredging east of Vienna 2014-2016
752,444 m³ in 3 years
250,815 m³ per year

Island 2018
Furt Bad Deutsch-Altenburg - 5 x; 57,611 m³/a
Furt Rote Werd - 5 x; 49,600 m³/a
Furt Regelsbrunn - 5 x; 34,468 m³/a
Low-water regulation
Furt Petronell-Witzelsdorf - 4 x; 30,524 m³/a
Furt Käsmacher - 3 x; 15,006 m³/a
HR Hainburg - 2 x; 10,717 m³/a
Wendeplatz Theben - 1 x; 2,582 m³/a

Baggerkubatur [m³]

Stromkilometer

1917 1912 1907 1902 1897 1892 1887 1882 1877 1872
Realized in 2018

- Relocation of pier Hainburg
- Groyne optimization Furt Treuschütt
- Creating an island Furt Rote Werd
- Groyne optimization Furt Petronell
Gravel piles Fischamündung & Wildungsmauer

Redistribution of both gravel piles into the Danube:

• **Fischamündung** (river-km 1904,8; ca. 40,000 m³) Status: returned in February/March 2019 (see pictures)

• **Wildungsmauer** (river-km 1895,1; ca. 45,000 m³) Status: prepared, implementation in fall 2019
Critical ford Rote Werd
Creating an island by using excavated gravel

- improvement of fairway conditions
- island and side channel as habitats (gravel breeding birds, fish)
  - river-km 1896.2
  - nearly 50,000 m³ gravel from maintenance dredging
- construction works: February-March 2018
- Monitoring ongoing
Critical ford Treuschütt
Groyne optimization

- improvement of fairway conditions
- low groyne roots, side channel, gravel structures
- River-km 1888,6 - 1887,6
- construction works: September 2018
- Monitoring ongoing
Optimization
Furt Treuschütt
Critical ford Treuschütt
Groyne optimization

Pilot Project Bad Deutsch-Altenburg as role model.
Pier Hainburg
Relocation of the pier

- Relocation away from fairway to increase traffic safety
- Room to move the navigation channel to deeper areas → maintenance dredging is minimized. This saves costs and reduces the need for intrusion into the ecosystem.
- Construction works: Q2+Q3 2018
• Lowering groyne roots
River-km 1875,8 and 1876,8 (right)
• Planning in
DANUBEparksCONNECTED
• Realization MID-NOV 2018 – END JAN 2019
Island Wolfsthal
Measures Johler Arm

- Bioengineering measures to secure the Hollitzer Allee and wastewater-pressure line
- 130 m long; larch (Lärchen) & robinia (Robinien) wood
- Completion 15.11.2018
- Realization by viadonau
- Participation Dr. Rauch (Ingenieurbiologie und Landschaftsbau), Nationalpark, WWF
Measures Johler Arm
Dynamic LIFE Lines Danube

- Austrian-Slovak cooperation
- 23.5 km of sidearm reconnections (14 km in AUT)
- 4 km riverbank restorations (AUT)
- Pre-planning phase finalised
- Detail planning works in progress
- Application for LIFE funding in June 2018, decision pending
Fischa – Renaturation of the river mouth

River bank restoration
river-km 1904

• Work package of Interreg „Alpine Carpathian River Corridor“ (Lead: Nationalpark Donau-Auen)
• Official Kick-Off 17.05.2018
• Tendering procedure finalised on 09.09.2019
• Construction works winter 2019/2020
The Integrated River Engineering Project and its Pilot Projects Bad-Deutsch Altenburg and Witzelsdorf were co-financed by the European Union within the Trans-European Transport Network (TEN-T)