CONFERENCE ON ADAPTATION OF WATER MANAGEMENT TO EFFECTS OF CLIMATE CHANGE IN THE DANUBE RIVER BASIN

Navigation and Climate Change

Otto Schwetz, Manager of Corridor VII – Danube
Challenges for the European transport system

• Growing overseas trade and enlargement of the European Union towards Eastern Europe

• Freight transport volumes in Europe expected to increase by one third between 2005 and 2015

• Present transport growth leads to traffic gridlock and escalating logistics costs
Inland navigation is already important …

- Around 125 billion ton-km in Europe in 2005
- Impressive growth rates achieved in regional markets: e.g. increase by 57% between 1995 and 2005 on Flemish waterways
- Markets shares up to 43% in the catchment areas of major seaports like Rotterdam
- In Germany alone some 400,000 jobs directly or indirectly depend on the inland waterway sector and related companies.
… and offers high societal benefits

• Safest mode: in the Netherlands – the country with Europe’s highest densities of inland waterway traffic – the number of yearly fatalities caused by accidents is next to zero.

• Most environmental-friendly mode: without inland waterway transport, emissions to air in Europe would be at least 10% higher.

• Lowest external costs of IWT: 10 €/1000tkm (rail: 15 €/1000 tkm, road: 35 €/1000tkm)
NETWORK OF MAIN EUROPEAN WATERWAYS OF INTERNATIONAL IMPORTANCE ACCORDING TO THE AGN
Towards motorways of the seas …
The Danube as a transport corridor
The “Danube belt” – an axis for development
INCREASING OF TRAFFIC OF CARGO AND PASSENGERS

Development of Cargotransport till 2015
(in bill. tonnkilometers per year)

Development of Passengertransport 2015
(in bill. passenger transports per year)

Quelle: Verkehrsmodell Österreich (BMVIT), Regional Consulting
Trade volumes between Western Europe and Black Sea countries

Source: OIR (Austrian Institute for Spatial Planning), 2006
Development of Modal-Split of transport volume in the Austrian Danube corridor

Source: OIR (Austrian Institute for Spatial Planning), 2006; figures include bilateral and transit traffic
Enormous growth of container traffic

Asia-Europe 2004: + 16.5 % !!!

Quelle: Hulocon 2005
Relation Constantza - Vienna

Container traffic

CO2-Balance:

Inland
Vessel: 349 kg CO2/TEU

Rail: 567 kg CO2/TEU (+62% compared to vessel)

Road: 933 kg CO2/TEU (+167% compared to vessel)
Prognosis Danube Corridor 2015
Impacts of Measures for Danube Navigation [Mio. tons]

Source: ÖIR, Prognose ALSO DANUBE. Grenzüberschreitender und donauparalleler Binnenverkehr
Bottlenecks on the Danube waterway

- Inadequacy of navigation conditions
- Need of international co-operation
- Appropriate solutions for different forms of bottlenecks
MAIN ISSUES:

• Physical Improvement of the River Danube
• Physical Improvements to the Ports
• Improvements to Shipyards
• Improvements to Fleets
• Improvements to Operations
• Institutional and Legal Issues
Austrian Action Plan Danube Navigation

- Comprehensive and dynamic planning and decision-making instrument for Austrian shipping 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
NAIADDES Action Programme

• Presented by the European Commission on 17 January 2006
• Multi-annual Action Programme in order to foster transport by inland waterways in Europe (2006 – 2013)

• **Objectives:** Increase competitiveness of inland waterway transport & integrate into door-to-door logistic chains
  → More freight transport on European inland waterways

• **Addressee:** EU member states, industry, social partners, river commissions, European Commission and other EU institutions
Tri-modal Terminal Vienna - Freudenau
THE WHITE FLEET
<table>
<thead>
<tr>
<th>Year</th>
<th>Vessels</th>
<th>Passengers</th>
</tr>
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<tbody>
<tr>
<td>1992</td>
<td>31</td>
<td></td>
</tr>
<tr>
<td>2003</td>
<td>75</td>
<td>140,000</td>
</tr>
<tr>
<td>2004</td>
<td>84</td>
<td>145,000</td>
</tr>
<tr>
<td>2005</td>
<td>99</td>
<td>155,000</td>
</tr>
<tr>
<td>2006</td>
<td>114</td>
<td>200,000</td>
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</tbody>
</table>
System Inland Vessels

FUTURA CARRIER / FUTURA TANKER
Definition of Design and Construction Elements:

- Highest Security in Operation
- Highest Maneuvering Possibilities
- High Cargo Loads at less Draught
- High Propulsion Efficiency in Shallow Watersections
- High Environmentally Friendly
- High Service- and Repair Friendly
Flexible Usage of the four Propellers
**FUTURA CARRIER FC -MPC- 975**

Binnenschiff für Kupfererz

<table>
<thead>
<tr>
<th>Merkmal</th>
<th>Wert</th>
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<tbody>
<tr>
<td>Länge über alles:</td>
<td>97,50 m</td>
</tr>
<tr>
<td>Breite über alles:</td>
<td>13,50 m</td>
</tr>
<tr>
<td>Seitenhöhe bis Hauptdeck:</td>
<td>4,00 m</td>
</tr>
<tr>
<td>Tiefgang max:</td>
<td>3,00 m</td>
</tr>
<tr>
<td>Ballasttiefgang:</td>
<td>2,00 m</td>
</tr>
<tr>
<td>Fixpunkt im Ballast:</td>
<td>4,00 m</td>
</tr>
<tr>
<td>Laderauminhalt über 3 Räume:</td>
<td>2648 m³</td>
</tr>
<tr>
<td>(Lukenabdeckung)</td>
<td></td>
</tr>
<tr>
<td>Antriebssystem:</td>
<td>4 Ruderpropeller</td>
</tr>
<tr>
<td>Propellerdurchmesser:</td>
<td>1,05 m</td>
</tr>
<tr>
<td>Dieselmotoren hinten:</td>
<td>2 x 338 kW</td>
</tr>
<tr>
<td>Dieselmotoren vorne:</td>
<td>2 x 338 kW</td>
</tr>
<tr>
<td>Geschwindigkeit:</td>
<td>max. 19 km/h</td>
</tr>
<tr>
<td>Generatorleistung:</td>
<td>2 x 107 kVA</td>
</tr>
<tr>
<td>Brennstoff:</td>
<td>80 m³</td>
</tr>
<tr>
<td>Trinkwasser:</td>
<td>10 m³</td>
</tr>
<tr>
<td>Schmutzwasser:</td>
<td>10 m³</td>
</tr>
<tr>
<td>Ballastwasser:</td>
<td>800 m³</td>
</tr>
</tbody>
</table>

Zuladung inkl. Vorräte:
bei T = 3,00 m: 2750 t
bei T = 2,50 m: 2120 t
bei T = 2,00 m: 1470 t
bei T = 1,50 m:  870 t
„Till Deymann“ (NL Baunummer FC 004)
„RMS Kiel“ at Beaufort 7 in the North Sea
River Information Services

Telematics Systems and Information Services in order to increase the safety and efficiency of inland waterway transport
Vessel installation

280 vessels are already equipped through the Austrian equipment programme within DORIS
innovative technology since 30 years

VIENNA:
THE ENVIRONMENTAL FRIENDLY CITY
LIQUID-GAS BUSSES

CO NMHC Methan NOx Partikal
Gasförmige Emissionen [g/kWh]

- Euro 3
- Euro 4 (ab 2005)
- Euro 5 (ab 2008)
- EEV (Enhanced Environmental Friendly Vehicle)
- heutiger LPG-Motor (177 kW)
- neuer LPG-Motor ab 2005 (200 kW)
- Erdgasmotor (228 kW)

Streuband abhängig von der Flüssiggaszusammensetzung
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