SMART AND GREEN CANAL TRAFFIC
SMART AND GREEN CANAL TRAFFIC
SMART AND GREEN CANAL TRAFFIC
European Union EU is making a new inland navigation strategy in year 2023

- emission reductions from 70% till 100% by year 2050.
SMART AND GREEN CANAL TRAFFIC
SMART AND GREEN CANAL TRAFFIC

Finland
SMART AND GREEN CANAL TRAFFIC

LAKE SAIMAA
(Finland)

INLAND WATERWAYS NETWORK

- total length 3 600 km
- 800 km is navigable for sea vessels (3200 dwt)
SAIMAA CANAL
- 23 Km + 20 Km = 43 Km
- unique in the world
- area on 50 year lease for Finland
SMART AND GREEN CANAL TRAFFIC

"Developing Saimaa Inland Waterways"

- project aims at tackling the challenges and opportunities
- focusing on environmentally friendly inland shipping in the Saimaa Lake region and the Saimaa Canal
- fostering a better integration of inland shipping in the transport chains.
SMART AND GREEN CANAL TRAFFIC

Photo: Antti Vehviläinen
SMART AND GREEN CANAL TRAFFIC

Inland waterway ship 3200 dwt

Railway waggon, 40 tons

Trailer truck, 25 tons

Kuva: M4traffic AB
Case: Lake Saimaa port – River Rhine port in Germany, 200 000 ton wood pulp in bales
<table>
<thead>
<tr>
<th>Alternative:</th>
<th>A1 Direct vessel</th>
<th>A2a Truck + RoRo</th>
<th>A2b Truck + Ferry</th>
<th>A3 Truck + GC ship</th>
<th>A4 Train + GC ship</th>
<th>A5 Truck + GC ship</th>
<th>A6 Train + GC ship</th>
</tr>
</thead>
<tbody>
<tr>
<td>Distance cost [MEUR]</td>
<td>72,2</td>
<td>257,2</td>
<td>727,4</td>
<td>247,9</td>
<td>90,5</td>
<td>254,4</td>
<td>96,5</td>
</tr>
<tr>
<td>Time-based cost [MEUR]</td>
<td>60,7</td>
<td>198,8</td>
<td>499,8</td>
<td>205,3</td>
<td>73,8</td>
<td>209,7</td>
<td>77,2</td>
</tr>
<tr>
<td>Loading and unloading [MEUR]</td>
<td>191,6</td>
<td>175,5</td>
<td>51,9</td>
<td>229,2</td>
<td>242,3</td>
<td>229,2</td>
<td>242,3</td>
</tr>
<tr>
<td>Emissions [MEUR]</td>
<td>22,4</td>
<td>38,8</td>
<td>80,3</td>
<td>33,6</td>
<td>11,7</td>
<td>34,3</td>
<td>15,3</td>
</tr>
<tr>
<td>Infrastructure cost [MEUR]</td>
<td>-</td>
<td>6,9</td>
<td>21,4</td>
<td>6,9</td>
<td>16,9</td>
<td>7,1</td>
<td>18,3</td>
</tr>
<tr>
<td>Accident cost [MEUR]</td>
<td>-</td>
<td>11,3</td>
<td>35,3</td>
<td>11,3</td>
<td>-</td>
<td>11,6</td>
<td>-</td>
</tr>
<tr>
<td>Fairway dues and port costs [MEUR]</td>
<td>-</td>
<td>4,9</td>
<td>29,7</td>
<td>40,3</td>
<td>32,4</td>
<td>3,7</td>
<td>32,4</td>
</tr>
<tr>
<td>Total social-economic costs [MEUR]</td>
<td>351,7</td>
<td>718,2</td>
<td>1 456,3</td>
<td>766,6</td>
<td>438,9</td>
<td>778,6</td>
<td>453,3</td>
</tr>
</tbody>
</table>

Cost Benefit Analysis IWW Saimaa
Socio-Economic Cost Related to Different Transport Scenarios
SMART AND GREEN CANAL TRAFFIC

Why inland navigation?

/ Inland waterway transport is a competitive alternative to road and rail transport.

/ Emissions can be reduced almost to zero with modern techniques: e-ships

/ In particular, it offers an environmental friendly alternative in terms of both energy consumption and noise emissions.

/ Its energy consumption per km/ton of transported goods is approximately 17 % of that of road transport and 50 % of rail transport.

/ In addition, inland waterway transport ensures a high degree of safety.

/ However, too often, inland shipping is not even considered as transport alternative by many forwarders and stakeholders in the transport sector.
SMART AND GREEN CANAL TRAFFIC

Photo: Chinanews

e-ship built 2017 by Guangzhou Shipyard (GSI)
SMART AND GREEN CANAL TRAFFIC

e-ferry “ELEKTRA” for 90 cars and 375 passengers in Finland

Photo: Finferries
SMART AND GREEN CANAL TRAFFIC

e-Ferry “NORDLED” for 120 cars and 360 passengers in Norway

Photo: Norled/Google images
SMART AND GREEN CANAL TRAFFIC

e-ferry ”ELLEN” for 30 vehicles and 200 passengers

- Operation start in Denmark one month ago
- Prevents annually: 2000 tons of CO2, 42 tons of Nox, 2.5 tons particulates and 1.2 tons of SO2
"Port Liner", world’s first fully electric, emission-free container barges
- Battery driven, 6720 KWh
- 5 barges of 52 meter in service
- 6 barges of 110 m under construction
- In future potentially crewless vessel
SMART AND GREEN CANAL TRAFFIC
SMART AND GREEN CANAL TRAFFIC

1.68 MWh

Hydrogen power
Why smart and green canal traffic?

- Important challenges such as climate change, greening, decarbonization and digitalization require specific steps for developing inland waterways.
- Canals and inland waterways are the best test field for new technologies.
- Towns and people along canals and inland waterway routes benefit from this development.
- Socio-economic reasons are clearly showing the benefits of inland navigation.
- Noise reduction with electric vessels improves our life quality.
- This is the way to better world...
SMART AND GREEN CANAL TRAFFIC

Antti Vehviläinen
+358 40 667 2434
antti.vehvilainen@ekarjala.fi

www.ekarjala.fi