#IWTS: Mobilising small waterway transport potentials

#IWTS 2.0 is an Interreg VB North Sea Region project. 10 partners from the region seek to enhance smaller waterway transport potentials in a transnational context.

New waterway-, barges- and training solutions will enable green modal shifts from road to water.

Total budget
€ 3.462.734

Project duration:
01/08/2017 to 30/06/2021

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Inland waterway solutions realized

IWTS 2.0 CONFERENCE-GOTHENBURG:

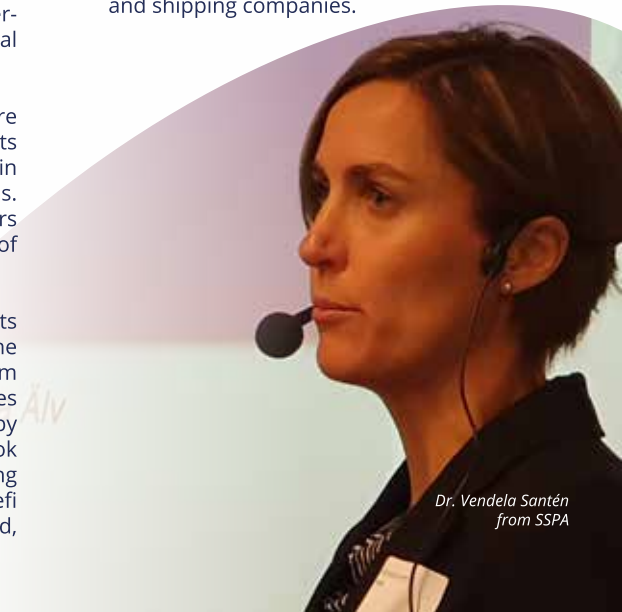
On 15th October 2019, the 3rd annual conference of IWTS 2.0 was held in Gothenburg, Sweden with the collaboration of SSPA (IWTS 2.0's Swedish partner) and Lighthouse (Swedish maritime competence center).

The conference attracted about 100 attendees, while another 30 chose to watch the live stream of the conference via Lighthouse website. Attendees included all the project partners, Swedish organizations that provide services and consultancy in regard to the inland waterways and freight shipment and governmental stakeholders.

The topics discussed in the conference were divided into three themes: regions and ports perspective, applying new logistic solutions in practice and using waterways in urban areas. All the discussion were focused on 'how others could be aware and convinced of the benefits of inland waterways?'

Under the theme Regions and ports perspective: Inland and coastal shipping – the Norrköping was discussed by Ola Hjärtsröm from port of Norrköping, new opportunities for coastal shipping in north of Sweden by Ulrika Nilsson from Piteå port & Hub, Outlook from the Netherlands – municipality shaping conditions for using IWW by Mariet Tefi Dontje from municipality of Smallingerland, the Netherlands, realizing inland waterway shipping on lake Malaren by Carola Alzén from Mälarhamnar and Actor perspectives on new logistics concepts in Sweden by Dr. Vendela Santén and Sara Rogerson from SSPA.

Under the theme applying new logistic solutions in practice: using self-propelled barge for IWW transport in Sweden was discussed by Fredrik Backman, Preem and John Lantz from Avatar Logistics, Transshipment solutions for a competitive modal shift by Danny Van Rijkel from POM Oost Vlaanderen. Moreover, Jan Snoeij from 4Shipping company presented/Introduced the application 4Shipping to the audience; which is an open marketplace for shippers, freight forwarders and shipping companies.



Dr. Vendela Santén from SSPA

Dr. Sara Rogerson from SSPA

The theme using of waterways in urban areas was presented by discussing the following topics: Waterborne urban mobility was discussed by Karl Garme from Royal Institute of Technology. What role can the cities play for enabling freight transports on the inland waterways? By Amanda Baumgartner from Traffic office city of Stockholm, Flating Recycling center on urban water infrastructure by Spyros Ntemiris from Urban Transport administration and Peter Årnes from department for sustainable Waste and water city of Gothenburg.

The conference ended with a concluding speech given by Pia Berglund, National coordinator inland waterways of Swedish Transport, saying: " we have a job to promote shipping in order to get to the boat factor and when we build cities we should keep in mind how to promote and facilitate waterways."

TOOLS: TRANSSHIPMENT MANUAL

Overview of solution examples

One of the tasks of the POM Oost-Vlaanderen (East Flemish development agency) is to exchange information with private stakeholders in the province. Amongst other topics, discussions are set up on the efficient use of transport modes (truck, water, rail, maritime), taking into account the characteristics of the incoming flows (and origin) and outgoing flows (and destinations).

Download this manual now on: ***www.northsearegion.eu/iwts20*** *and help IWW transport grow!*

During this alignment, we regularly detect opportunities for a modal shift towards IWW as our province is connected through the Scheldt and the Leie, two class IV -Va waterways. Unfortunately we determine several reasons why companies won't consider the use of the waterway. Most often we hear that the volume of a shipment is too small, the product isn't suited to be transhipped via the waterway or the first-last mile is a bottleneck (too far from a quay).

Until now, we could only share some basic information on possible transshipment solutions, but we weren't able to share information on investment (CAPEX) and operational costs (OPEX), two critical factors for any company.

Thanks to IWTS, we were able to create an overview of all transshipment solutions we can find in the market and bundled them in a manual. We ended with four categories: bulk, palletized goods, project cargo and containers. On a single A4 page, we present per solution an image of the method, together with capex and opex information and some specific remarks like the minimum required waterway infrastructure (for the quay). Also special remarks like transshipment speed are added.

From now on, the manual will allow us as well as any ambassador of the waterway, to show companies existing solutions and inform them about the essential financial and operational parameters.

Hopefully this tool will be trigger for many more future waterway transports to be realised in Europe.

IWTS2.0 CANAL & RIVER TRUST

The Canal & River Trust is using the IWTS2.0 project to help develop its freight capabilities in the Yorkshire region, on the Aire & Calder Waterway. In its hey-day, the Aire & Clader carried upto 8m tonnes of bulk cargo, but this has diminished to virtually zero.

One of the reasons for the reduction in freight traffic is a number of bottlenecks on the navigation, one of which is Bulholme Lock, close to Castleford. These bottlenecks are impacting on the financial viability of the waterborne freight in the area, and dissuading freight carriers from using water.

Interreg funding is being used to undertake a costed design solution that will inform us how we can increase the capability of Bullhome Lock to accommodate the larger Euro II freight carrying craft.

To do this, we have recently dewatered the lock between October and December to undertake a full topographic and laser survey of the lock to give accurate current measurements which will inform any future design works to increase its capacity. A full condition survey of the structure has also been completed.

To enable accurate design works for any increase in capacity, an investigation survey has been carried out on and around the lock. This includes ground investigation and core samples of the dock walls through the lock structure to determine wall thicknesses, invert thickness and make up.

Now that the above surveys have been completed, and we have confirmation of the size of Euro Class II vessels required to pass through the lock, our contracted design consultancy will be able to propose a number of costed design solutions to widen the lock to accommodate the freight vessels. These should be available in the Spring 2020.

Running parallel with this, we continue to meet local businesses to promote the benefits of waterborne freight.

IDENTIFYING GOODS FLOWS SUITABLE FOR INLAND WATERWAY TRANSPORT

A major barrier to increasing transport on inland waterways is securing the necessary goods volume for a successful business set-up. To identify potential goods volumes that could use the inland waterways it is important to map the freight flows in the regions in question. For this reason, during the spring of 2019, two students from Chalmers University of Gothenburg in Sweden conducted a master thesis at SSPA on Goods flow mapping. Their study concludes that there is undeniable potential for an increased usage of inland waterway transport in Sweden, but that there needs to be structural changes made relating to the Swedish IWT framework in order to facilitate a balanced transport system. The students Mr. Dennis Ekberg and Mr. Martin Wedberg investigated goods flows in the region around lake Vänern and Göta Älv river based on Swedish national statistics, presenting origins and destinations of goods flows, type of goods transported and mode of transport used. To investigate potential goods flows for inland waterway transport, the students investigated suitable goods types. To account for containerization, i.e. that more goods could be transported in containers, the students investigated what commodities that could be transported in containers.

The students also investigated the catchment area – i.e. proximity to ports. The catchment area is also connected to the infrastructure, i.e. where roads and rail exist. In addition, to increase the understanding regarding potential use of inland waterway transport, the students conducted several interviews.

Interviewing actors in the supply chain it was concluded that there is a positive attitude towards inland waterway transport and with the right prerequisites and proven concept, there exist goods flows that could utilize the waterways to a higher degree. Identifying goods volume is important for succeeding with transferring goods flows to inland waterways. A master thesis presents the goods flow in the region around lake Vänern and Göta Älv river.

Mr. Martin Wedberg and Mr Dennis Ekberg present their mapping of goods flows in the region around lake Vänern and river Göta Älv in Sweden.

STAKEHOLDER ANALYSIS OF INTRODUCING INLAND WATER-WAY TRANSPORT SERVICES

Starting up new IWT services requires the involvement of many stakeholders. To further understand the motivations of these stakeholders, researchers at SSPA have conducted a Multi-Actor-Multi-Criteria Analysis (MAMCA). MAMCA is a decision-making tool developed by Cathy Macharis of Vrije Universiteit Brussels (www.mamca.be), that enables simultaneous evaluation of several alternatives, involving multiple actor perspectives. The MAMCA tool captures information regarding key criteria for various stakeholder groups and evaluation of different alternatives. In the context of introducing inland waterway transport services on the Swedish river Göta Älv and lake Vänern, SSPA used the MAMCA tool to evaluate three alternative business concepts. The MAMCA was conducted during the spring of 2019, through two workshops and four interviews.

Multi-Actor-Multi-Criteria-Analysis (MAMCA) workshop with Swedish stakeholders.

7th of March 2019 SSPA arranged a workshop with the purpose of discussing stakeholder perspectives on various business concepts for container transport on inland waterways in Sweden.

After analysing each perspectives, the results from all groups were presented. This allowed the participants to reflect on and discuss differences, which increased their understanding of the perspectives of other actors. "Very useful discussions that provided valuable insights", says dr. Sara Rogerson (SSPA). "A good tool for visualizing different actor perspectives", says dr. Vendela Santén (SSPA) who organized the workshop.

Dr. Sara Rogerson explaining how companies sending goods view inland waterway transport opportunities.

Disseminating results of stakeholder perceptions on inland waterway transport concepts at big international conference

In June 2019 SSPA researchers presented results of their Multi-Actor-Multi-Criteria Analysis (MAMCA) of how shipping operators, ports, authorities, transport providers and transport buying companies perceived three business concepts for introducing inland waterway services at the annual Conference of the International Association of Maritime Economists (IAME). The IAME conference is an event that contributes to the exchange of current research of relevance to the maritime sector. This year it was held in Athens, Greece, with participants from around the globe. "A great forum for reaching an international audience and spreading the results of our research on inland waterways", says Dr. Vendela Santén (SSPA). The title of the presentation was 'A modal shift to inland waterways: Actor perspectives on alternative business concepts'.

Presenting stakeholder analysis to key Swedish stakeholders

On 17th of September 2019, SSPA arranged a meeting to present results from the Multi-Actor-Multi-Criteria Analysis that had been conducted during the spring of 2019. Fifteen participants representing shipping lines, municipalities, authorities and transport providers gathered to listen to the results and discuss what could be learnt from the analysis. The participants discussed how new inland waterway transport could be realized. A lot of the discussion focused on how an emission-free shuttle could be introduced and the role of the various stakeholders in making this happen. "A lot of engaged people with constructive suggestions for moving forward", says Sara Rogerson (SSPA), who facilitated group discussions.

MAMCA RESULTS

The MAMCA visualizes stakeholder perceptions of authorities, forwarders, ports, shipping operators and transport buying companies needing to send goods. Under the guidance of researchers, each stakeholder group listed and prioritized their financial, efficiency, delivery service and sustainability goals. Thereafter three business concepts for inland waterway transport were evaluated per stakeholder goals. Knowledge of what is important to each stakeholder helps to explain why stakeholders prefer certain business concepts and even which parts of the business concepts are important.

The MAMCA shows that stakeholders prefer different business concepts, but that at least one inland waterway business set up is preferable to the current situation of using rail or truck transportation.

The concept called 'Emission-free shuttle' was preferred by most of the stakeholders. Differences in opinions depended on comparisons with rail or truck, the location of companies (near or far from the waterway), existing equipment in ports. The authorities are the most positive to inland waterway transport.

Visualization of stakeholder perspectives on new business concepts

RESEARCH PAPER ON MODAL SHIFT TO INLAND WATERWAYS

In July 2019 the research paper 'Modal shift to inland waterways: dealing with barriers in two Swedish cases' was published online in the International Journal of Logistics Research and Applications. The paper was written by researchers at SSPA and University of Gothenburg and features results from following two Swedish entrepreneurs attempting to start up container transport on inland waterways in Sweden. The entrepreneurs faced regulatory and financial barriers as well as barriers related to service quality and market characteristics.

The entrepreneurs interacted with ports, shipping companies, regulatory actors, forwarders, hauliers and companies sending and receiving goods to tackle the barriers. Strategies to manage barriers included negotiating, educating stakeholders, securing volumes, conducting a proof-of-concept run and identifying business opportunities for stakeholders. The paper also highlights that policy makers aiming to promote modal shift need to understand that fees and legislation act as barriers.

CONFERENCE PRESENTATION ON THE POTENTIAL FOR MODAL SHIFT

At the 2019 Logistics Research Network (LRN) conference in Northampton (UK) on 5th of September Dr. Sara Rogerson (SSPA) presented findings from a Swedish study aimed at increasing the understanding of how power balances and trust between shippers and transport providers influence a change from road to more environmentally sustainable modes of transport. The research paper was co-written by researchers at SSPA Sweden and University of Linköping. The study was based on interviews with transport providers and companies buying transport. It was shown that power balances can be used to initiate or draw attention to new transport solutions, while trust is essential to get the other party to listen and implement a shift.

UNIVERSITY OF HULL, UK IS WORKING ON THE FEASIBILITY OF INLAND WATER TRANSPORT (IWT) IN THE HUMBER ESTUARY AND EAST YORKSHIRE, UK

A Green Logistics IWT:

Key Points Addressed by Dr Mahsa Zolfaghari Researcher at University of Hull;

- IWT has considerable potential for reduction of CO2 emissions;
- Whilst most studies focus on exhaust emissions, recently non-exhaust emissions have increasingly become a concern;
- Monetary costs should be considered along with the environmental cost. IWT has the potential to make a greener transport, ie reducing CO2 and NOx gas emission;
- UK Inland Waterways comprise mainly non-tidal rivers and canals (beneficial for improving fuel consumption efficiency) while generally accommodating vessels of between 350 and 1000 tonnes payload, although a few are smaller.

Approach to Analysis

- Optimization algorithms provide a virtual approach to minimising the price of different logistics methodologies;
- The use of Multi Objective Genetic Algorithm (MOGA) with Reverse Logistics (RL) can lead to green logistics against freight emission cost;
- If the warming Arctic releases more planet-warming methane, that could lead to more warming;
- Check which countries will be in danger of being sunk!

Conclusion

- The freight cost for modal shift to IWT needs to be investigated against the cost of reducing the carbon and non-carbon emission cost of road transport;
- Short distance IWT (up to about 100 km) needs to adopt the same logistics supply chain model is currently used for urban IWT in countries having a high level of current usage;
- Improved subsidy guidelines could make IWT more efficient and sustainable in terms of cost;
- Last mile delivery methods need to be reviewed to change to green logistics, with minimised carbon and non-carbon emissions using, for example, electric trains and electric bikes;
- The investment required to design new up-to-date canals, with optimum road and rail access, should be kept under review in the face of changing public perception of the cost of environmental protection.

#IWTS 2.0

Inland navigation provides an environmentally friendly way to serve transport needs in a growing, and increasingly digital logistics industry across Central Europe. The project #IWTS 2.0 – IWTS for Inland Waterway Transport – brings together public infrastructure managers, private barge operators and training institutions to offer a fresh perspective on inland shipping.

#IWTS 2.0

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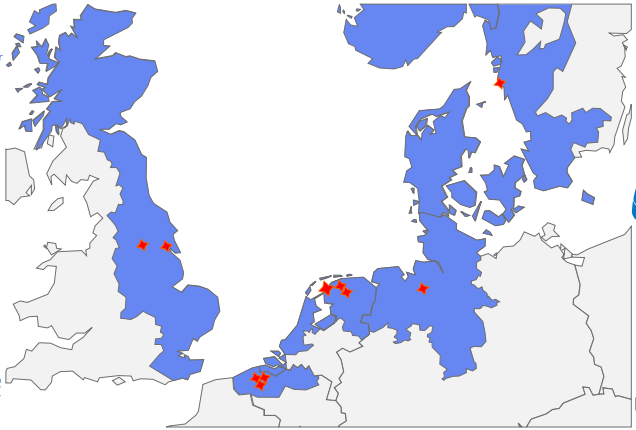

Canal & River Trust – Making life better by water

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