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### **IWTS 2.0 WP3: DEVELOPING SMALLER** WATERWAYS - FINAL REPORT & **SUMMARY**

IWTS 2.0 a project co-funded by the North Sea Region Programme 2014 - 2020.



#### • IWTS 2.0 WP3: Developing Smaller Waterways - Final report & Summary

This document is published within <u>the #IWTS project, click here</u>, an INTERREG project of the North Sea Region as one of the reports for WPXX.

- A co-production of the IWTS partners involved in WP3
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#### ABSTRACT

This report sets out what we were aiming to achieve in this Work Package (WP3) it's Objectives, brief summaries of the activities that were carried and which partners were involved. A series of links and appendices should help the reader find out much more if they are interested in more detailed information about the work we carried out and the reports produced as a result of the funding available through Interreg North Sea Region.

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## IWTS 2.0 WP3: DEVELOPING SMALLER WATERWAYS - FINAL REPORT & SUMMARY

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#### 1. BACKGROUND: The IWTS 2.0 project

Within the project we strove to develop solutions for minimum intrusion adaptations of existing, smaller waterways to make them accessible for Classification of European Inland Waterways (CEMT) standard vessels. Partners reported every six months. The Project Report (PR) periods were;

(PR1) 8 June 2017 to 30 April 2018

- (PR2) 1 May 2018 to 31 October 2018
- (PR3) 1 November 2018 to 30 April 2019
- (PR4) 1 May 2019 to 30 November 2019
- (PR5) 1 December 2019 to 31 July 2020
- (PR6) 1 August 2020 to 30 June 2021

#### Key objectives of IWTS 2.0 were;

(TO) Support IWT transport on smaller un/underused waterways outside the core TEN-T network

(BY) Supporting modal shift decision makers to include small waterway solutions in their policies, provide them with tools, demonstrations, and best practices.(BY) Creating awareness about road transport related health, climate change, road congestion costs and including these in modal shift decision making, by also considering waterway solutions.





#### 2. INTRODUCTION to WP3

WP3 specific focus was to look at ways of developing the potential of *Smaller Waterways*.

The overall aim was to develop and prototype solutions for minimum intrusion adaptations of existing, smaller waterways to make them accessible for CEMT standard vessels. A key ambition was to test and implement sustainable long term solutions by identifying and promoting long term potentials / capacities such as new links between existing smaller waterways.

By linking and improving IWT infrastructures, the potential for use increases significantly. By delivering proven concepts out of this WP and allying these to credible business planning, waterway adaptations as developed in #IWTS will serve as a role model for further IWT infrastructure enhancements that can be adopted by other organisations and operators across the North Sea Region and wider Europe.

#### 3. PARTICIPANTS AND THEIR MAIN ACTIVITIES AND CONTRIBUTIONS TO WP3

#### **Regional public and private stakeholders**

We involved our target groups of users and developers (and other stakeholders) in the delivery of WP3 and progress in general wherever possible.

Regional public and private stakeholders (Freight owners, Shippers, Waterway authorities) were approached in the Leeds region (GB), the Flemish region (B), Southwest Sweden, Northwest Germany (around Bremerhaven) and in the province of Friesland (NL)

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At a national level, CRT worked with the UK's Department for Transport (DfT). De Vlaamse Waterweg (DVW) made 2 studies (GIS study/heat mapping and potential of small waterways) that are used on national level (by MOW = Department of Mobility).

These studies revealed an enormous potential of 7 million tons that can be (additionally) transported by the small waterways (CEMT I and II). The case studies with Wienerberger and De Brabandere are new flows of goods that are transported by the small waterways - as a consequence of the studies.

Their contributions were integral when developing IWT solutions users and these authorities were involved throughout the entire project. Their input was very relevant, it increased their commitment and thus increased the chance to adopt new #IWT solutions.

#### **IWTS 2.0 Project Partners**

#### Canal and River Trust (CRT)

Participated in a freight flow mapping exercise assessing materials and goods currently being brought into the ports of Goole and Hull from northern Europe and the Baltic States and investigated the Aire & Calder (A&C) and Sheffield & South Yorkshire Navigations (SSYN) to identify all bottlenecks and costed solutions for removing them.

The focus was on Bullholme Lock, on the A&C - a key bottleneck where improvements would allow Euro Class II barges on to the waterway which would be a significant step forward.



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PR2 Organised the "Freight to Water" conference in Leeds in October 2018 which was attended by c80 delegates from regional authorities, freight operators and cargo owners.

Other conferences (directly related to WP3) included;

- SSPA presented results of studies at the Logistics Research Network (LRN) conference in Plymouth, UK in September 2018, and Northampton, UK in September 2019.
- SSPA hosted the IWTS 2.0 conference Inland and coastal shipping What's on? in Gothenburg in October 2019.
- Bremen Ports Innovation and Competence Delivered (IWTS 2.0) Bremerhaven. May 2019
- WEZ Inland navigation summit in Ghent. March 2019

The freight flow analysis for the A&C (developed jointly by UOH, CRT, WEZ and SSPA) started in early 2018 (PR1) and continued through the latter half of 2018 (PR2). CRT already had a lot of data on the goods and cargoes coming into the Humber Ports. Transport Economists, *MDS Transmodal* were commissioned to assess how to refresh this data. LINK 1 FINAL Freight Flow Mapping Report

Similar conversations were held with UoH and SSPA, about how we should analyse baseline data before they commissioned anything new.

They watched with interest how Smallingerland and SSPA approached their respective external engagement and adopted some of their methods. In PR4 CRT paused the promotion of their waterways to focus on the survey works at Bullholme Lock.

The Engineering Study on the bottleneck "Bullholme Lock" on the A&C aiming on adaptation of the structure to make it accessible for Classification of European Inland Waterways (CEMT) standard (Class II) vessels, started in late 2018 and continued into Spring 2019 (PR3). The lock was drained and thoroughly inspected in Autumn 2019 (PR4).

The study was completed in Spring 2020 and set out ways the lock can be made more suitable for freight use. LINK 2 CRT Bulholme Lock Study + LINK 2a CRT Bulholme Lock Study update



CRT circulated the report to partners and key local stakeholders such as the Commercial Barge Operators Association (CBOA). The task going forward is to examine which of two solutions presented in the report is the best and which should be further elaborated.

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This is a future decision for the CRT Executive, but what the IWTS2.0 project has provided is a sequence of proposals and decisions that will get us to a decision point for the future.

UoH developed a transport planning tool which can be used to compare inland waterways routing with road freight transport and working with them was important when investigating the current situation on the A&C (a waterway system connecting the Leeds region via the Humber with the seaport of Hull (and therefore the North Sea) The short term aim was to gather all our information on waterway bottlenecks into a comprehensive report.

CRT promoted Inland waterways freight potential and the role being played by IWTS 2.0 to the Urban Freight Group, a collection of ten city councils in the UK who face significant challenges with the inner city logistics due to congestion and pollution (PR5). In February 2020 CRT met West Yorkshire Combined Authority to discuss last mile deliveries and held talks with a local aggregates company and barge operator about a future modal shift operation.



CRT made great efforts to promote freight on water and the IWTS2.0 project to stakeholders such as the Dept for Transport (DfT) National Infrastructure Commission, High Speed 2, and Transport for North (a transregional transport authority) as well as regional and local stakeholders. The Commercial Boat Owner Association were another key stakeholder CRT regularly spoke to.

#### SSPA Sweden (SSPA)

Used AIS data to map current goods flow. Analysed future potentials for shifting goods from land to IWW on the Swedish west coast.

A major barrier to increasing transport on inland waterways is securing the necessary goods volume for a successful business setup. Within the IWTS 2.0 project various approaches to identify goods flows with potential to transfer to inland waterways were identified. The approaches included identification of current goods flows, assessment of those flows that might be amenable to IWW transport using currently available infrastructure and assessment of new waterside facilities that would lead to improved business cases for use of IWW.

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To identify potential goods volumes that could use the inland waterways it was important to understand current transportation pattern and therefore map the freight flows in the regions in question.

SSPA's two main studies contributed to the freight flow mapping: an analysis of AIS data. See the presentation **LINK 3** *Göta Älv-och Vänern traffic 2017:* AIS-data analysis, and a goods flow mapping based on national statistics (see the report Goods flow mapping lake Vänern and Göta Älv <u>https://odr.chalmers.se/bitstream/20.500.12380/256898/1/256898.pdf</u>).

For identification of current goods flow, AIS-data analysis in combination with national goods flow statistics provide a broad picture of the situation.

First, to identify current shipping set up, SSPA conducted an analysis of AIS data that mapped traffic on the inland waterways Göta Älv and Vänern. Data from AIS (automatic identification system) offers an opportunity to map existing traffic patterns. All ships above 300 GT are obliged to use AIS transponders and transmit messages with short intervals regarding static data (e.g. ship type) and dynamic data (speed, direction etc.).

From the analysis of the AIS data, traffic patterns in terms of port calls, vessel types and their capacity, and links between ports were identified ADD LINK 3 *Göta Älv-och Vänern traffic 2017:* AISdata analysis

The results show the number of inland ports used for cargo vessels operating today and the number of calls in each port, as well as number and type of vessels calling inland ports. At the time of the analysis 161 unique ships operated on the inland waterways Göta Älv and Vänern (although no IWW-classed vessels operate on the inlands waterways, - only IMO classed vessels). In addition, information regarding connections between the ports along the river and lake and other Swedish ports, and the share of traffic calling international ports provides an understanding of how current goods flows utilize the IWT today.

Second, SSPA supervised a master thesis on Goods flow mapping, conducted by students from Chalmers University of Gothenburg in Sweden <a href="https://odr.chalmers.se/bitstream/20.500.12380/256898/1/256898.pdf">https://odr.chalmers.se/bitstream/20.500.12380/256898/1/256898.pdf</a>).

The purpose of the study was to identify potential for increased use of inland waterway transport in Lake Vänern and the river Göta Älv, based on existing goods flows. The report concludes an undeniable potential for an increased usage of inland waterway transport in Sweden, but a need for structural changes.

The study 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.

The report presents the result of the goods flow mapping, visualizing inbound and outbound goods flows in the region near the river Göta Älv and lake Vänern. To investigate potential goods flows in the geographical area that could be transferable to inland waterway transport, the report identifies types of goods that may be suitable for transport in inland waterways.

In addition, to account for containerization, meaning that more goods could be transported in containers, the report investigated what commodities could be transported in containers. The catchment area, in terms of proximity to ports and available road and rail infrastructure, is discussed.

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The report estimates goods volumes with potential for transferring to inland waterway transport, also comparing it to the number of corresponding road transport it would replace. In addition, to increase the understanding regarding potential use of inland waterway transport, several interviews were conducted with actors in the supply chain. Based on these interviews the report concludes that there is a positive attitude towards inland waterway transport and with the right prerequisites and proven concept, goods flows do exist that could utilize the waterways to a higher degree.

In addition to the freight flow mapping, SSPA has also conducted studies to increase understanding of challenges to increased use of IWW, including challenges related to infrastructure. Specifically, one study transferring key learnings to Sweden from countries where IWT is more established (see the report What Sweden could learn from a Modal Shift Process in the Netherlands <a href="https://odr.chalmers.se/bitstream/20.500.12380/256481/1/256481.pdf">https://odr.chalmers.se/bitstream/20.500.12380/256481/1/256481.pdf</a>), and one study identifying barriers in a Swedish setting and how to overcome them.

The transfer of key learnings between countries started with the premise that Swedish inland waterways are barely utilised at all, despite current available capacity. By contrast, in Germany, Belgium and the Netherlands, IWT is embedded in the transport system to a larger extent. Therefore, SSPA in the autumn of 2018 supervised a master thesis with the focus of transferring experiences of modal shift from two regions in Belgium and the Netherlands to the Swedish context.

Key questions asked were:

- (1) What are their drivers and barriers identified for IWT?
- (2) What factors could Swedish companies consider when preparing for a modal shift to IWT?

This was an excellent example of true transnational co-operation. Data collection was arranged together with GSL, DVW / WEZ, and Provinsje Fryslan, arranging interviews with water-bound entrepreneurs in Drachten (NL) and the inland shipping information office in Rotterdam.

The report (What Sweden could learn from a Modal Shift Process in the Netherlands

https://odr.chalmers.se/bitstream/20.500.12380/256481/1/256481.pdf ) provides recommendations for Sweden, where transport on inland waterways is still rare.

The report stresses the importance of having a long-term perspective, since it could take time before the investments break even and the benefits are realized. It is recommended that companies preparing for a modal shift to IWT should consider the following factors in particular:

- Have a thorough process before the pilot to realise all benefits and prepare for challenges
- Evaluate and take go/no-go decisions regarding the modal shift after the pilot, a long process can result in loss of motivation
- Stakeholder motivation is important, put enough effort in
- Without mental shift there is no modal shift, even if current solutions are working well. Stakeholders should be convinced that a modal shift leads to a more sustainable solution
- Promoting and supporting organization can help connect actors
- An administration system can help with coordination and transparency to improve efficiency, e.g. consolidation if one company cannot fill a vessel

With particular focus on the Swedish setting, SSPA studied two Swedish entrepreneurs aiming to initiate container transport on the inland waterways. The study resulted in the journal article *Modal shift to inland waterways: dealing with barriers in two Swedish cases* 

(<u>https://doi.org/10.1080/13675567.2019.1640665</u>). In the paper barriers to inland waterway transport are highlighted, particularly in markets where the utilisation of IWW is low.

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The barriers include regulatory, financial, service quality and market characteristics. The main focus of the paper concerns strategies to overcome such barriers. Drawing on the experiences of the Swedish entrepreneurs it pinpoints that modal shift involves multiple actors, and the entrepreneurs need to interact with ports, shippers, shipping companies, regulatory actors, forwarders, and hauliers, depending on the barrier. Strategies to manage barriers included negotiating, educating stakeholders, securing volumes, conducting a proof-of-concept run and identifying business opportunities for stakeholders.

The insights from the research project were communicated throughout the project, for example presenting at the Freight by Water Conference in Leeds (UK), Transport forum in Linköping (Sweden) and Vänertinget in Karlstad (Sweden). SSPA continuously organised and participated in external meetings with stakeholders and discussed issues for modal shift in the Swedish context and continued throughout the project to identify ways forward.

One solution-oriented analysis consisted of a Multi-Actor-Multi-Criteria-Analysis (MAMCA), in which three business concepts for Swedish IWT were compared from various stakeholders' perspectives; ship owners, goods owners, forwarders, ports, and authorities (including municipalities).

Stakeholders agreed on important performance criteria for respective stakeholder group, prioritised these criteria and evaluated the three alternative business concepts against each criteria. As a result, important issues were raised and discussed among stakeholders, increasing the understanding of other actor perspective and the potential of the different business concepts.



#### De Vlaamse Waterweg nv (DVW) and former Waterwegen and Zeekanaal (WEZ)

The Flemish waterway managers WEZ, assessed waterway developments in UK and Sweden from a managing authority perspective.

In PR2 they conducted a study as part of their drive to galvanise the use of the Flemish Region's small waterways (CEMT I and II). The intensified use of these waterways should be seen in the context of a purposive mobility policy in support of the economic activities along these waterways.

PR3 Carried out a GIS-study and produced an Inventory of water-bound industrial sites. LINK Report: Industrial estates with water-dependent activities (WEZ)

This study provided interesting insights regarding the current water-dependent infrastructure in the operating territory of De Vlaamse Waterweg. Which estates are located by a navigable waterway and use this waterway? Which are the public quay walls, where are they located and how are they being used? All the answers are given in this study

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(Small Waterways in Flanders) – Blue Lines CEMT I class, Yellow Lines CEMT II class)



(Industrial sites in Flanders Industrial sites <=2km of waterways)

The GIS analysis identified 496 industrial estates that are located by a navigable waterway. Just 1 in 3 of these estates have a link-up with the waterway (although this group of 157 estates does represent 70% of the total surface area of industrial estates bordering on waterways).

There are 42 public quay walls, nearly half of which are situated along the Maritime Canal and the Brussels-Charleroi Canal. Their utility varies greatly. Some have fallen into disuse; others could be reactivated if specific interventions are carried out, and several are successfully used for goods transhipment activities. Around 40% of these quay walls are in an industrial estate, 60% are not.



The know-how gleaned through this study, supported by their seven key points, should provide substantial added value for other water-dependent projects and assignments - especially when combined with other IWT studies and can help the development of a targeted policy in favour of inland navigation, and modal shift.



PR4 PR5 they continued researching the potential of their small waterways in Flanders. LINK Report: Potential for freight transport by small waterways in Flanders

In addition, they researched the existing flow of goods by heat mapping (a further GIS study). Through this work they identified two concrete cases *Wienerberger* and *De Brabandere* that could deliver a successful modal shift from road to water.

<u>Wienerberger</u> (6 mio tonkm) is a leading international supplier of building materials and infrastructure solutions. Given the location on the water of some (large) factories and some (large) customers on and near the waterway, there was a reasonable potential for modal shift (of up to 6 mio tonkm) in the case of Wienerberger. That is why Wienerberger has contacted VW and opted for an inland shipping route Beerse-Brussels and Brussels-UK.

<u>Group de Brabandere (potential of another 4 mio tonkm) consists of 5 companies: Road Construction</u> De Brabandere nv, Betoncentrale De Brabandere bvba, Transport De Brabandere nv, Flandres Béton sarl and Flandres Béton Transport sarl. One of the sites of the Brabandere is located in Veurne, channel plassendale Nieuwpoort (CEMT I). CEMT I is the smallest waterway in Flanders: 38.50x5.10x2 (but has potential to carry another 4 mio tonkm)

WEZ believes that both the Wienerberger and De Brabandere cases can create several important transnational flows of goods or have already been achieved in the case of Wienerberger. What an added value in this IWTS 2.0. project.

Through the project, two Swedish students and WEZ managers of De Vlaamse Waterweg visited De Brabandere to consider their options for the use of the small waterways (in Veurne). Also a tool called TAG is developed for De Brabandere.

#### University of Hull (UOH)

Worked with CRT to examine intermodal aspects of the A&C. Started the freight-flow mapping of existing & potential goods flows and helped implement 'demonstrator' projects.

This included Identifying source ports (e.g. Rotterdam) and destination (Eg Leeds), identifying type of goods and identifying trans-shipment hubs (e.g. New Holland Bulk Terminal)

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Initially worked on a computer application to allow analysis of the relative benefits of different transport modalities over an end-to-end route including CO2 emission. They started to identify companies whose type of business and proximity to accessible canals might make them candidates for inclusion in pilot trials and have the potential to switch to IWT.

They worked with CRT to understand the current freight flows through the Humber Estuary into the hinterland in the direction of Leeds, including capturing learnings from any relevant recent studies. Identified possible goods flows that might be possible to shift to canal transport, specifically onto the Aire and Calder Canal and helped identify additional new possible goods flows.

#### **Gemeente Smallingerland (GSL)**

Worked with co-beneficiary, the Provincie of Fryslan to assess ways to prevent negative modal shift (if there is no investment to upgrade the waterways to class Va), by identifying & evaluating existing & new innovative transport concepts. Researched opportunities for innovative transport concepts.

PR2 GSL set up a project group with harbour connected companies in the municipality of Smallingerland very early on in the project. Numerous meetings subsequently followed in (PR3-5) with port operators, waterbound industries, politicians, and policy makers around the municipality of Smallingerland. The focus was mainly on the towns of Hegewarren, and Harlingen (to assess the restart of the Frisian Harbour in Harlingen).

GSL played a key role by managing public and private stakeholders, supporting this with feasibility research. A key outcome was that GSL and the port-related entrepreneurs jointly provided 15 million euros for a possible new waterway in and around the city of Drachten. This waterway is considered important for De Hegewarren, an area in the municipality of Smallingerland.

GSL and the Province of Friesland, together with the larger port-related companies, investigated options for fleshing out the investment of 15 million euros - encouragingly, a waterway (class Va)

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along or through De Hegewarren is a particular contender. The money will be used, among other things, to make the waterway accessible to larger ships.



The next step in the area development of the port was to build a simulator environment of the Drachten Vaarweg with MAH to test whether class 5A ships can sail through the current waterway.

LINK Report The importance of a competitive port network in Fryslân – perspective inland port of Drachten.

Two promotional videos were made;

- 1. 1<sup>st</sup> pilot return flow Drachten: <u>https://youtu.be/AxKgS\_E8NVE</u>
- 2. Frisian Ports: <a href="https://youtu.be/QiU8ILmC5YY">https://youtu.be/QiU8ILmC5YY</a>

By late 2019 GSL had developed their research on the possibilities of enhancing the Frisian waterways in collaboration with the Province of Fryslân. GSL also consulted MAH about the simulation of the Drachten waterway and spoke with *Renewi* about the possible modal shift giving a presentation about the new Frisian harbour cooperation on the and a presentation for waterbound business in Hegewarren.

Articles on the local newssite of Omrop Fryslân was published:

https://www.omropfryslan.nl/nieuws/922284-boeren-polder-hegewarren-onzeker-over-toekomstwe-willen-duidelijkheid

#### Maritieme Academie Harlingen (MAH)

Collaborated with Stichting Dunamare Onderwijsgroep to use its new IWT simulator centre and its smaller freight-training vessel Emeli to facilitate testing of new ship concepts and waterways.

PR2 Started by creating awareness about smaller waterway IWT by promoting the project and its aims on a wide array of stakeholder's conferences.

PR3 & PR4 The institute continued this involving stakeholders, through the network of European IWT educational institutions "EDINNA" (the educational network of inland waterway navigation schools and training institutes), the working groups on standardization in IWT, CESNI, which is a combined effort of the European Commission and the Central Commission for the navigation on the Rhine, in which the MAH participates as expert and through the United Nations Economic Council for Europe (UNECE) where the MAH also participates as an expert.

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MAH supported the province of Fryslân with a modal shift in the region by hosting simulator workshops for interested parties. They hosted a workshop in April 2019 for companies in the city of Leeuwarden, as well as for the municipality of Leeuwarden and the Province of Fryslân to serve as an example for IWT opportunities on the "Greuns", a small waterway within the city of Leeuwarden.

In the same period, MAH implemented a simulator model of a standard CEMT class Vb inland container barge with a gauge of 135 by 11,45 meters to test these waterways with this type of vessel, which is in demand at the ports but not yet allowed on Frisian waterways.

PR5 MAH worked up plans to participate in the upcoming PLATINA 3 program, the EU instrument for IWT development and support as expert for IWT education and certification. #IWTS 2.0 is an integral part of expertise here.

#### 4. TRANSNATIONAL CO-OPERATION

This was fundamental to effective delivery of the Work Package. Joint working, exchange of ideas and expertise features prominently in all activities.

An excellent example of this was where researchers from SSPA and UoH jointly wrote a research paper, 'Increasing the use of inland waterways– evaluating approaches for identifying goods flows for modal shift', which was presented at the Logistics Research Network (LRN) conference 2018.

UoH and SSPA explored various approaches for identifying goods flows for modal shift.

In Sweden, SSPA analysed AIS data to map current traffic patterns on the inland waterways.

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In the UK, UoH described an audit of all businesses with premises close to the waterways in Hull, identifying goods volumes, transhipment potential and investment that would be needed to implement a modal shift.

These methods have helped identify candidate businesses for a modal shift.

It was very valuable to exchange practices between the UK and Sweden and learn from each other. In addition to the examples described in this research paper, there was also knowledge transfer between other IWTS 2.0 partners analysing goods flows, such as CRT and DVW.

SSPA, GSL, DVW and Provinsje Fryslan collaborated in transferring key learnings from the Netherlands and Belgium to Sweden, particularly with regards to drivers, barriers, and key factors for modal shift. Master thesis students, supervised by SSPA, visited the Netherlands and Belgium in 2018, where IWTS 2.0 partners in these countries had arranged interviews with relevant actors.

Other good examples were;

- GSL and MAH development of a simulation model of the Drachten waterway
- Conference planning and delivery
- All partner peer reviews of CRT's Bulholme Lock report and development options



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#### **5. ACTIVITIES & DELIVERABLES**

This section shows what we were tasked with achieving by the funders - and how we fared.

#### **ACTIVITY 1**

Identification of solutions for smaller waterway bottlenecks and their impact on modal shifts from road to water.

The Engineering Study <u>CRT Report on Bullholme Lock</u> was completed in Spring 2020 and set out ways the lock can be made more suitable for freight use. CRT circulated the report to all the partners.

CRT's <u>Freight Flow Mapping Report</u> was completed in May 2021. CRT already had a large amount of data on the goods and cargoes that are coming into the Humber Ports. Transport Economists, *MDS Transmodal* were consulted about how best to refresh this data.

<u>Master thesis report</u> supervised by SSPA, entitled Goods flow mapping - the potential of inland waterway transportation in the region around lake Vänern and Göta Älv river

W&Z: carried out a goods flow analysis for the smaller Flemish waterways. This presentation set out "WEZ waterway developments from the view of a managing authority"

The reports formed the basis of an "Elaborated strategy for Managing Waterway infrastructure in order to facilitate modal shift from road to water" This target of 75 readers was easily exceeded; SSPA had over 191 views of journal article, and 50 of thesis.

#### **ACTIVITY 2**

Developing minimum intrusion waterway adaptations in order to make the respective waterways accessible for standard vessels

The following Pilots / Demonstrations developing minimum intrusion waterway adaptations for selected waterways in GB, Sweden and NL (also using MAH Simulators for research and testing) were delivered; (WEZ were tasked with assessing these solutions from a managing authority perspective)

#### Adaption / Pilot 1 Bulholme Lock

CRT conducted an extensive evaluation at the Bullholme Lock located at the A&C to consider how it could be made accessible for larger vessels by removing a concrete structure from the bottom of the lock, which is currently in the way of this endeavour.

The study commissioned helped CRT by providing design solution as to how they should deliver the modifications. CRT commissioned some preliminary works with Arcadis which included;

- a. Review of baseline data
- b. Site visit and start up meeting
- c. Draft site investigation design and programme including brief for topographical survey
- d. Commission a Sonar Survey at the site that provided 3D Imaging of the Lock.

This first stage of work also offered five options with regards to potential solutions for lock modifications which would meet the brief (of facilitating Euro Class II vessels. When this stage was completed. CRT consulted internal colleagues, the Commercial Barge Owners Association and the IWTS2.0 partners to narrow these options to two.

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The second stage of the work with Arcadis and framework contractor Kier to further develop and provide a cost estimate against the two favoured options, with a focus on 'deliverability'. Before the time comes to deliver the project, it was essential to determine what issues they could potentially face, and this work helps determine that.

Problems encountered included CRT's Marine Engineer belief that a certain amount of water to flow between vessel and lock chamber, for Euro Class II barges would be needed to be able to manoeuvre successfully through the lock chamber. The initial plan of making limited alterations is possibly unviable. A full Lock Chamber re-build has not been discounted but would be very costly and certainly be a significant barrier to our long term aspirations for their freight programme.

#### Adaption / Pilot 2 Göta Älv and Vänern

SSPA is currently looking into the implementation of IWT in the Göta Älv area, a waterway that connects the city of Gothenburg with the lake Vänern. There is not a technical obstacle, that hampers the use of IWT here, but an administrative one since there are no specific rules for IWT in effect in Sweden yet and the vessels have to adhere to the much stricter maritime rules.

#### Adaption / Pilot 3 Frisian waterways

MAH provided a simulator model of the developed solution to visualize and to test several potential solutions. The simulations were quality tested and implemented into the MAH simulator centre.

- The province of Fryslan was looking into the adaptation/ rerouting of a branch of the Prinses-Margriet Canal, which joins the port of Groningen, and which could be made accessible for larger vessels.
- For the Waterway link to the port of Drachten, which belongs to the municipality of GSL.
- The stretch of waterways being developed in and around the municipality of Smallingerland.

#### Adaption / Pilot 4 Using MAH Simulators for research and testing

MAH although playing a minor, supportive role in this part of the project, developed a simulator model of a standard CEMT class Vb standard container vessel with variable load (3 or 4 layers of containers) and a gauge of 135 by 11,45 meters to be able to test waterways with this type of ship, which is in high demand at the ports. (See Pilot 3)

#### **ACTIVITY 3**

#### Report on the outcomes of the testing of the minimum intrusion waterway adaption solutions

It was difficult to report on this activity. Covid delayed additional or follow up testing of solutions developed and presented by WP3 partners. Successes included;

- SSPA's three conference papers based on the outcome of the data collection in the first reporting period. The focus in the papers are how to identify goods flows for modal shift (one paper) and how to deal with barriers in a Swedish context (two papers).
- Several useful outcomes from MAH testing.
- CRT consultations with commercial operators on the first stage of their work with Arcadis to ascertain their view of the five options being considered. These constitute 'testing' as the responses really did influence later decision making.











# **BEHIND COVER**

TITLE OF REPORT

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