Business Plan

New inland navigation service in Sweden

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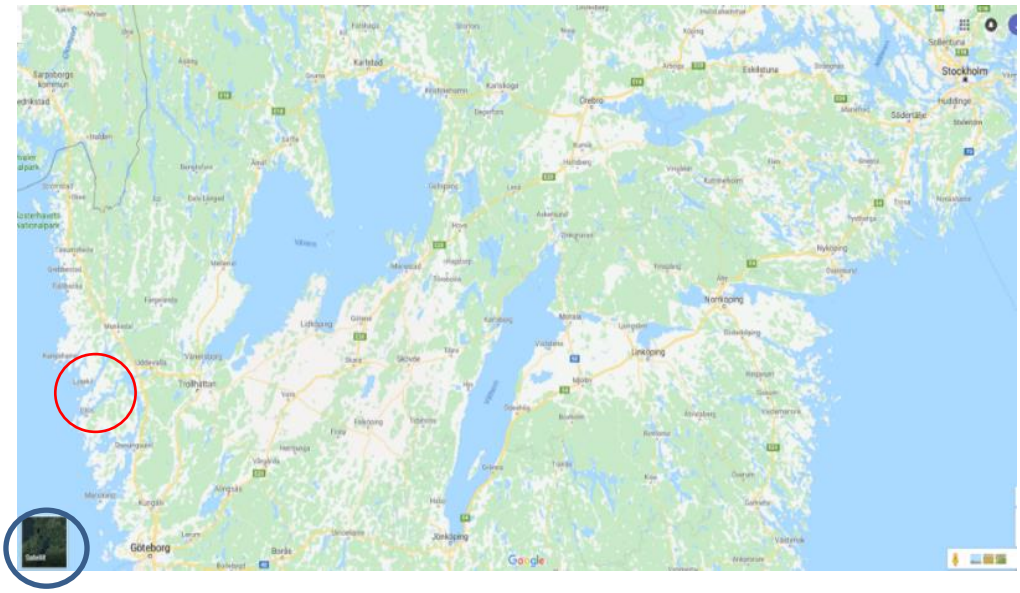
CONTENT

Inland navigation service – business plan summary

The new IWT(Inland Waterway Transportation) service is based on a barge container service on Göta älv between the port of Göteborg to receivers in the geographic area of Trollhättan-Vänersborg. By using existing inland waterways, the new IWT service has a potential to shift cargo from the road network into a more sustainable way of transportation looking at emissions, congestion and safety.

Looking into the container market the trend shows that new warehouses and production sites are established in the Trollhättan/Vänersborg region and the main container flows are passing the port of Göteborg in import or export direction. By locating new industries to this geographical area, it is possible to benefit from lower land prices and building cost combined with the availability of a reliably workforce. The downside of these new establishments is an increase of frequent transportation to and from the port of Göteborg on the roads along the Göta älv valley. Since Göteborg and the area around the city already are suffering from heavy congestion and high environmental impact a more sustainable logistics is needed. A possible solution to meet this need is a modern barge container service with high cargo capacity that can move about hundred trucks per day from the road system.

A new IWT-service can offer a more sustainable and safe solution than today's traditional transport on road however; transport on inland waterways has a too high cost level due to the present regulations where high fees and expensive handling costs are affecting the barge alternative in a negative way. Facing the high costs and at the same time trying to operate on a mature transport market with extreme low pricing means that a new IWT concept will be associated with high financial risks.
To succeed with the intended modal shift, Sweden needs rapidly to adapt the remaining IWW-regulations and standards as the rest of the EU. The main conclusion is that during the present circumstances the business risk is too big for establishing a new IWT solution for containers on Göta älv.



Pic 1: Potential IWW service on Göta älv – Connection between Port of Göteborg & Port of Trollhättan

1 INLAND WATERWAY TRANSPORT MARKET POTENTIAL

1.1 Geographical area

The new Swedish IWT service has a market potential in west Sweden around the area of the Göta älv river that connects port of Göteborg with the Lake Vänern.

The Göta älv river has a regular traffic with IMO-vessels trading on the European market however; today there is no inland navigation by barge existing. The Göta älv river has in total six locks that needs to be passed and which limits the vessel size to a length of 89,00m, width of 13,40m and a draft of 5.7m. In addition to the locks there are eleven bridges crossing the river. Looking at the possible IWT concept the benefits with a modern standard EU barge is that only one bridge needs to be opened during the voyage between Göteborg and Trollhättan.

As established in the market investigation, EMMA activity 4.2, there is potential IWT-customers in the geographic area.

1.2 Potential cargo volume per month/year

Avatar Logistics is investigating a container barge shuttle project between port of Göteborg and port of Trollhättan. On this route container volumes are constantly increasing. While the transport is still organized by truck only, there is the requirement for more sustainable transport solutions like a new IWT service. The potential customers have responded cautiously positive to a new IWT service that in case of a start will become the first one ever in Sweden. The intention is to operate a liner service with a modern inland barge with high environmental standard. The target is to develop an intermodal hub in the existing river berth in Trollhättan and the main objective is to create a possibility for a modal shift from road transportation to inland navigation. Linking the export and import flows via the container terminal in Port of Gothenburg, the potential volume for this new service is about 19.000 TEU p.a.

	Facts & Estimations
Kind of goods transported	Containers, 40’, 20’ & 40’ & possible project cargos on spot market.
Estimated volume	20.000 teu:s p.a.
Sailing schedule	Service scheduled for minimum 3 times per week during the first start-up year. The plan is to increase the number of sailings when the volumes increase.

Possible customers & Cargo direction	• Varner Group – Import 40’ container, • Vargön Alloys – Export 20’ container, • NEVS – Export 40’ container, • Fraktservice - Import & Export of 20’ and 40’ container • Katoen Natie – Import & Export of 20’ and 40’ container
Volume Growth	Volume growth is estimated to 5% per year.

2 POTENTIAL NEW INLAND NAVIGATION SERVICE

2.1 The customers

Following main customers has volumes possible for a new IWT service

- Varner Group AB http://varner.com/en/about-us/
  Varner Group is a Norwegian clothing retailer with 1500 stores around Europe and in 2016 the main warehouse for all Europe was opened in Vänersborg. Looking and a new IWT service Varner Group is the base customer with about 10.000 import teu:s per year. During the customer interviews, Varner Group, has expressed an interest for inland navigation since it is a more environmentally friendly way of transportation however they express that they only will give minor volumes during the start up to test the new service to test . An important aspect to consider is that Varner Group has a need of high frequency from port of Göteborg and they also require a bonded warehouse area in the port of Trollhättan and an IT-solution connected to the Swedish Customs Authority is needed for customs clearance. The biggest benefit is that Varner Group decides transport mode from the ocean port in Göteborg which makes it easy to test and shift to an IWT solution.

- Vargön Alloys AB http://www.vargonalloys.se/index_eng.html
  Vargön Alloys is a Turkish owned alloy producer which ship bulk volume in containers worldwide from their site in Vargön-Vänersborg. The customer has an export flow of 1500 teu:s per year. The containers are 20’ containers are heavy loaded, up to 28 tons, which requires high lifting capacity in the ports as well as strong container chassis for the last mile transport.

- Katoen Natie AB https://www.katoennatie.com/
  Katoen Natie is worldwide storage and cargo handling company with Belgium owners. The warehouse in Trollhättan is a cross docking facility where export and import cargos are packed, stored and reloaded. The warehouse which also has rail connection is seated just 100m from the river port in Trollhättan. Due to the poor rail service Katoen Natie are interested

of an IWT solution connected to port of Göteborg. The customers potential is estimated to 1500 teu:s per year (depending on their handling contracts).

- Fraktservice AB http://www.fraktservice.se/pages/en/index.html
  Fraktservice is specialized in stripping and stuffing of containers and the terminal is seated in Marieholm about 20 km from APM Terminal in port of Göteborg. Due to the growing congestion in City of Göteborg Fraktservice sees an IWT Solution as a future scenario also taken in consideration that the terminal has a direct quay access to the Göta älv. Volume estimation 4.000 teu:s per year.

- NEVS https://www.nevs.com/en/
  NEVS a Swedish manufacturer of electric cars. The company is derived from the former SAAB car producer in Trollhättan and after the bankruptcy 2011 the company has Chinese owners. The company has a potential of transporting car parts to China, volume ca 4000 teu:s per year.

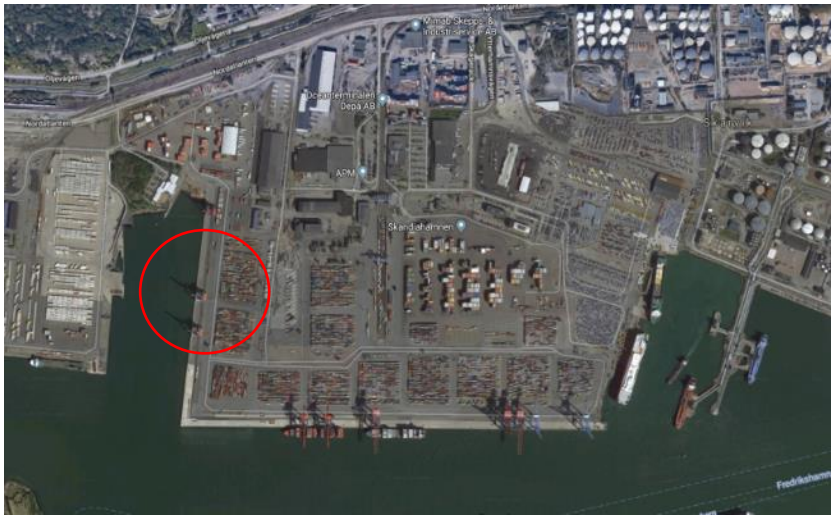
2.2 New container service Göteborg-Trollhättan

The new container service will be operated on a regular timetable between APM Terminals in Göteborg and port of Trollhättan with a regular call northbound/southbound in Fraktservice-Marieholm. The timetable needs to fit into the ocean carries weekly calls in APM Terminals and the customers need of frequency needs to be taken in account.

2.3 Loading and discharging port

Loading port:

APM Terminals in Göteborg is the biggest container port in Sweden with an annual handling volume of about 800.000 teu:s. Within the terminal area there are smaller container cranes that are suitable for barge handling and the general idea is to handle the barge in a fixed time table which will dock into the ocean carriers and feeder liner services to Göteborg.



Pic 2: IWT berth in APM Terminals Göteborg

Discharging port:

The river port in Trollhättan is seated in an industrial area where there are possibilities to extend the storage area if needed. The port operations are executed by Vänerhamn AB http://www.vanerhamn.se/en and the cargo today consists of smaller spot vessel with various bulk cargos. The draft is up to 5m and the quay is in good condition which makes it suitable for handling of a standard EU container barge. There is no fixed crane or lifting equipment in the port. A mobile crane or reach-stacker needs to be investigated as a handling gear if container should be handled.
The port has easy access to the main road E45 which makes the last mile transport efficient. Katoen Natie has a rail connected warehouse within the port area and they can offer external customers a bonded storage for custom clearance of import cargo.

Pic 3: Port of Trollhättan

2.4 Organisation of last mile transport

For the last mil transport from the port in Trollhättan will the logistics company, Centralen AB http://www.centralen.se/ has been requested to the do the distribution to the customers. Centralen AB is a local haulage company that offer truck transport on standard trailer chassis. The biggest customer, Varner Group AB, is seated 10 km from the port in Trollhättan and distance to Vargön Alloys is 8 km. By having the two biggest customers within the same area, Centralen AB should be able to utilize their fleet of container chassis in an efficient way.

2.5 Competition to potential new market

Today all potential customers are using direct transport by truck to and from the APM Container Terminal in port of Göteborg. The roundtrip market price is about EUR 200 per teu.

Main competitors on road in the Göteborg-Trollhättan container trade:

Competitor	Established date	Size	Market share	Value to customers	Strengths	Weaknesses
Ancotrans AB	1882	140 own Employee 600 trucks Turnover EUR 80 Mill	30%	Big fleet of trucks & chassis	Low price & availability	Environmental impact. Low cost drivers & small margins
Skaraslätten Transport AB	2008	30 own employees 130 trucks Turnover EUR 36 Mill	45%	Seated in the port of Göteborg	Low price & availability	Environmental impact. Low cost drivers & small margins

2.6 Conclusion: Potential for the new IWT service

- All the involved customers have indicated the they are ready to give minor volumes during the start up to try the new IWT service and if the service perform well they are willing to grow the volumes.
- Transport by inland navigation is completely new in Sweden which makes it difficult to predict the customers will to test a new IWT service.

- The initial costs are high to establish a new IWT service and therefore the sales target is to contract and to secure basic volumes before starting the service.
- The land transport market in the Göteborg region is under hard competition and market price for container transport by truck is extreme low between Göteborg and the Trollhättan region.
- A large capital needs to be secured before the IWT service starts to meet the initial approximately one year with low volumes. A long-term commitment is needed from the operator's stakeholder and a strong financial plan is needed before a decision of starting the new IWT-service.

3 INLAND NAVIGATION BUSINESS SET-UP

3.1 Service characteristics

- Frequency of service during start up phase 3 roundtrips per week
- Option to increase frequency when volume grows
- Sailing time estimated to 9 hours one way
- Estimated transit time for a roundtrip including time in the ports is about 26 hours
- Sailing schedule needs to be coordinated with the port operations and the customers demand of frequency and delivery time.

3.2 Market and customer requirements

The market for container in the Göta älv area has a stabile growth mostly due to the new warehouse's and production unit's establishment in Trollhättan-Vänersborg. In addition, the trend shows that container stuffing and stripping services are moved out from port of Göteborg to more remote and cost-efficient areas.

The major part of the containers is import or export volumes via port of Göteborg and the customers has different demands of transit time depending on cargo type.

The market needs constantly information of the container's position and estimated time of delivery and pick up. Therefore, is a high-class IT-solution needed that can communicate with the ocean carries, terminals, customer and customs.

3.3 Barge characteristics

The vessel planned for the IWT service is a time charter of a Dutch motor barge from Avatar Logistics partner company Vigilia Shipping Ltd in Dordrecht Netherlands http://vigilia-shipping.nl/
The barge is constructed to fit the limitations in Göta älv, vessels length 86m, width 11m & draft of max 3,5m. The barge will carry Dutch flag and the crew onboard will be employed by Vilgila Shipping. The Swedish Transport Agency has accepted the Dutch barge and crew set up however; the barge is undertaken the Swedish national pilot regulation which mean that pilot onboard is mandatory for all vessels over 60m.

The barge needs to be towed from the Netherlands to port of Göteborg. Estimated cost for this operation is about EUR 45.000.

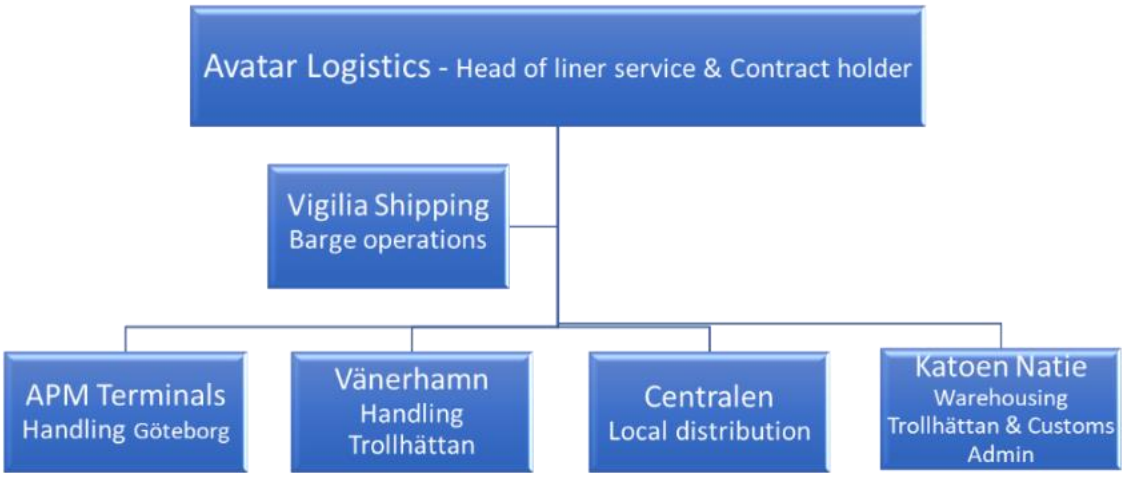
The time charter contract period is minimum three years with option for additional two years.

Pic 6. Barge type for new IWT service

3.4 Barge, cargo handling and distribution set-up

- Over all logistics operator – Avatar Logistics
- Time Charter of Dutch river barge – Avatar Logistics
- Sales, bookings, invoicing etc. – Avatar Logistics
- Handling equipment & port operations – APM Terminals in Göteborg & Vänerhamn AB in Trollhättan
- Container securing, twist locks and other services onboard etc – included in TC agreement
- Last mile transport in Trollhättan area – Centralen AB
- Customs service – Katoen Natie

3.5 Logistics organisation chart



3.6 Legal considerations

Regarding the technical regulation's aspects, a standard EU barge can operate in Göta älv as its classified as a Zone 3 standard according to the EU:s legislation of inland waterways. The manning onboard is undertaken the flag stat in where the barge is registered. The Dutch barge that will be contracted for the Göta älv service is approved by the Swedish Transport Agency. Pilot is mandatory onboard for vessels with length over 60 meters, after several voyages the master has the possibility to make test to achieve pilot assumption. One risk that can occur is waiting time for the pilot, which can cause delays in the schedule as well as additional costs.

The present Swedish regulations for inland waterways transportation give additional costs for the barge alternative compared to truck transportation. According to the regulations a barge is equal to an IMO-vessel which means high costs for pilot and fairway dues while a truck transport on roads not is charged with the same costs. To establish a long term IWT alternative Sweden needs to copy e.g. the legislation in Germany and Netherlands which gives a cost neutrality between IWT and transportation on road. To achieve a modal shift to inland waterways, the barge must be considered as a "truck on water".

3.7 Conclusion: schedule

Looking at the physical setup an IWT service on Göta älv should be possible to implement without any major problems. The river has good draught and slow current, the navigation is safe since the Göta älv has few ship movements compared to e.g. Netherlands, Belgium and Germany. The conclusion is that physical it's possible to establish an IWT service but that the hurdles is on the administrative side. The market demands a low-price level, frequency and IT-communication, something that will be a challenge to meet a new operator on a market with strong competition.

4 FINANCIAL REVIEW: THE ECONOMIC FEASIBILITY OF THE NEW POTENTIAL IWT SERVICE

4.1 Start-up cost

- Positioning of the barge from Netherland to port of Göteborg – EUR 45.000
- IT-solution implementation cost – EUR 25.000
- Inspection of class society & documentation – EUR 20.000

4.2 Service operation cost

- Time charter for EU barge with crew = EUR 2.750/day
- Fuel consumption 4000l/roundtrip
- Handling costs in APM Terminals – EUR 50/unit
- Handling cost in Trollhättan - EUR 35/unit
- Last mile distribution – EUR 60/unit

4.3 Swedish state fees & operation costs

Cost components incl rebates	Costs in SEK
Time charter cost per round trip	66 733
Fuel cost roundtrip	60 000
Pilot fee northbound	18 130
Pilot fee southbound	18 130
Boatmen in the river locks	6000
Pilot readiness fee	0
Fairway dues Vessel	0
Fairway dues Cargo	4700
Harbour dues Gothenburg	2880
Linesmen Gothenburg	2500
Harbour dues Trollhattan	6000
Linesmen Trollhättan	0
Agency	5000
Total cost per round trip	**190 073**

Comments:
All costs are in Swedish currency.
The time charter is a fixed cost and amount in the table is the weekly TC cost divided by three trips per week.
Pilot and fairway dues are will full rebate after which will be achieved after six voyages.
Pilot cost can be ruled out if the master onboard can get pilot assumption after a mandatory test.

4.4 Conclusion of the economic feasibility & break-even estimation

Since an IWT service has a high fixed cost looking at the time charter of the vessel, minimum EUR 2,750, it is necessary to have a high cargo intake on every voyage. Adding cost for port handling in Trollhättan and the last mile transport the remaining revenue for the vessel is too low to fulfil a break-even level even with a full cargo intake each voyage. Since the business case has a high financial risk the deeper cost analyses needs to be executed. Conclusion is that with today's risk analyses, Avatar Logistics will not go for a start of an IWT service in Göta älv.

5 MARKETING ACTIVITIES

Avatar Logistics will control the marketing and sales activities. A standard price tariff will be established and published to the container market, industrial customers, container lines, forwarding companies and port agents.

Customers will be offered more attractive rates with a volume guarantee; spot bookings will reserve the tariff price.

After the start-up phase other sales channels can be considered.

6 RISK MANAGEMENT

Risk	Likelihood	Impact	Strategy
Risk 1 *Cash flow problems due to low price & high initial costs*	*Highly*	*High*	*No start of service before a big venture capital is secured & a commitment from the stake holders*
Risk 2 *Fluctuating container volumes depending on season and market impacts*	*Highly*	*High*	*IWT-production strategy to meet varieties in demand and seasons, preparation for idle vessel*
Risk 3 *Weather, ice conditions & technical problems in locks & bridges in Göta älv*	*Likely*	*High*	*Safe unforeseen external factors in the contract writing* *Backup plan for securing customers cargo*
Risk 4 *Initial communication problems during the container IT-solution set up*	*Likely*	*Medium*	*A manual backup system must be established to secure the onboard & stock control*

7 SWOT ANALYSIS OF POTENTIAL NEW IWT SERVICE

Strengths	Weaknesses
• *Strong & solid owners of Avatar Logistics* • *Good skills in inland navigation* • *Reliable partners in barge operations, port handling & distribution* • *Offering a sustainable solution*	• *High fixed costs on long term* • *High initial costs before start* • *Low volume during start-up phase* • *Difficult to predict start date of the IWT service* • *Inland navigation is a new transport mode in Sweden, a lot of marketing needs to be done* • *High cost factors in port, fairway & pilot dues*

Opportunities	Threats
• *Offering a sustainable solution* • *IWT has high transport capacity* • *Reliable time table with a IWT solution alternative* • *Barge will be established as the fifth transport mode reised from pilot & infrastructure fees*	• *Strong competition from road transport* • *Low price services* • *Price shocking campaigns from competitors* • *Negative or none political decisions for IWT future in Sweden* • *Non-performance in contracted ports*