Innovation-driven Collaborative European Inland Waterways Transport Network

T5.2 – Case Study – Story

Light Version

Lead Beneficiary: FHOOE

Delivery Date: 24/2/2022

Dissemination Level: Public

This project has received funding from the European Union's Horizon 2020 research and innovation programme under grant agreement No 861377.

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1 Learning aims of the case study

After this case study, the case users…

- …know advantages/disadvantages, applicability and transport lead times of transport modes (road/inland waterway) using intermodal equipment
- …have a deeper understanding of the characteristics of inland waterway transportation on the Danube
- …will get familiar with the cost-calculation of transports on the road compared to inland waterways based on the calculation of first- and last mile costs, shipping costs on the road and the Danube as well as handling costs at ports
- …know how to calculate transport emissions based on the GLEC-Framework regarding road and inland waterway transportation

2 Introduction

Today is Clara's first working day as a trainee at the transport company Nothegger. Clara is very happy that she got the acceptance for the trainee program there. She knows the company already very well and is very interested in the efforts of the company regarding the establishment of sustainable transport systems. Nothegger Transport Logistik GmbH was founded in 1992 and has 12 international branches with a fleet of over 700 vehicles. Those branches are located in Austria, Italy, Slovakia, Germany and in Switzerland.

After Clara arrives at the headquarter in St.Ulrich, she meets the senior logistics manager Mr. Landlinger, who will be their supervisor during the internship. He introduces her to the other trainees Jenny and Paul, who are also starting the programme today. Next, he will introduce them to the company and give them all the information they need for their first assignment.

3 Current Situation

Mr. Landlinger gives them an introduction to one of Nothegger's business areas that is the subject of the assignment: “Intermodal Transport”. Nothegger has numerous full train lines stretching over Europe – This enables a total of more than 2,000 loads per week. The trains will transport goods to Finland, Southern Italy, Germany, France and Austria. The intermodal-system can transport anything from bulk to frigo / thermal loads and conventional tarpaulin deliveries.

Mr. Landlinger continues that climate protection also plays a very important role within the company strategy. Transporting goods produces emissions that harm the climate and thus the environment. New environmentally friendly technologies and transport concepts can counteract this. Therefore, the entire transport fleet has been fueled with high-quality biodiesel produced in Austria and the entire passenger car fleet has been converted to electric mobility with electricity from renewable energies[1]. Also worth mentioning is the fact that Nothegger is already shifting a lot of freight from road to rail in order to save more CO2. Currently, the company is focusing on new ways to create inter- and multimodal systems. "So, you may have observed, that we take our environmental, economic and social responsibility very seriously. Therefore, we try to permanently optimize our processes and what we are doing. This applies in particular to all our transports – which is one of the reasons why you are here today” he said.

“By now, we have about 100 shipments (each shipment represents one 45’ high cube container) per day from various clients between Austria and Romania. Our goal is to increase the share of alternative

[1] https://www.nothegger-transporte.at/en/service/klimaaktiv-auszeichnung/

and more sustainable modes of transport of these shipments. We want to make a contribution to the European Green Deal, which you have surely heard of." "Yes", says Clara, "all 27 EU Member States committed to turning the EU into the first climate neutral continent by 2050. To get there, they pledged to reduce emissions by at least 55% by 2030, compared to 1990 levels. Achieving this ambitious climate goals requires a shift to more sustainable transport modes such as rail and inland waterways." "Exactly", comments Mr. Landlinger "In fact, at a project meeting within the framework of the EU project IW-Net, well-founded information has now been published regarding the handling possibilities of various ports on the Danube. The important output for us was that in total four ports (Enns, Vienna, Ruse, Giurgiu, Constanta) can handle intermodal equipment as well as our 45 HC containers.

Therefore, I would like you to analyze our current shipments between Austria and Romania regarding their possibility of getting shifted to the Danube waterway also with a focus on the different emissions. It's now your task to analyze which alternative transport routes are possible for our shipments. You will receive an historical overview of our shipping orders which are part of different framework contracts with clients in Austria and Romania. Please keep in mind to analyze the cost structure of shifting transports to the Danube as well as the saved CO2 emissions (based on the GLEC Framework). Therefore, you should also create a realistic business case." Subsequently, Jenny summarizes "So our task will be to develop a new transport strategy for shipments between Austria and Romania by inland waterways?". Mr. Landlinger answers: "Yes, but please set the focus on creating a draft for a container transportation on the Danube. The utilization of the vessels you don't need to take into account, because we are working together with the shipping company TTS GmbH (Transport Trade Services), who is responsible for this. You will get all the relevant information we can provide you with, so do you have any further questions?" The three of them think for a second. "No, not at the moment," they agree. "Okay", Mr. Landlinger stood up. "I will show you your workplaces and then I'll let you have the file with the shipment statistics, so that you can start working." – "Thank you." Clara, Jenny and Paul left the meeting room and went to their workplaces.

4 Tasks

After the meeting with Mr. Landlinger and the input, the three trainees are immediately getting to work. They have already received a mail from Mr. Landlinger in which all tasks are clearly described. Mr. Landlinger wants to receive the cost comparison between road and inland waterway transport as well as the saved CO2 emission equivalents based on the GLEC Framework:

Data analysis: follow the procedure in the excel file

- Cost analysis
  - Analysis of potential shipments which can be shifted to the Danube based on a positive turnover (comparison road/waterway)
  - Create a cost calculation with the expected turnover
  - To proceed the data analysis, follow the procedure below
- Emissions analysis
  - Calculate the transport emissions of road and inland waterway transport using the GLEC-Framework: https://www.smartfreightcentre.org/en/how-to-implement-items/what-is-glec-framework/58/
  - Define and explain the correct emission value (g/tkm) for the used truck and vessel

Procedure for data analysis:

Step	Excel column	Description
Step 1	1) total costs road	Calculate the costs by truck: - import (RO-AT): truck kilometer * € 1,15 costs/km - export (AT-RO): truck kilometer * € 1,20 costs/km
Step 2		Calculate the total costs of each route ((Danube-kilometer * € 0,46 costs/km) + handling costs of the loading- and unloading port)
Step 3	2) transit time and defined running time analysis	The transit times on the Danube must be extended by minimum one day each for the first mile and last mile. This results in a transit time of at least 8 days for shipments on the Danube. As a result, shipments with a "defined running time by customer" of less than 8 days no longer have to be taken into account. Mark these shipments with "transit time ok" or "transit time too high"
Step 4	3) loading port	Based on the loading place define the right loading port, regarding costs and distance
Step 5	4) unloading port	Based on the unloading place define the right loading port, regarding costs and distance
Step 6	5) first mile km	Check the first mile km of each transport (from loading place to port)
Step 7	6) last mile km	Check the last mile km of each transport (from port to unloading place)
Step 8	7) first mile costs	Calculate the first mile costs (fix costs + (costs /km * km))
Step 9	8) last mile costs	Calculate the last mile costs (fix costs + (costs /km * km))
Step 10	9) main run costs by ship	Insert the shipping costs on the Danube based on the calculation of step 3 and the defined ports
Step 11	10) total costs waterway	Create a sum of the total costs of each shipment (first- and last mile costs + main run costs by ship
Step 12	11) shifting savings	Calculate the difference between total costs road and total costs waterway
Step 13	12) shifting (Yes/No)	Define based on a positive output which shipments can be shifted to the Danube
Step 14	13) CO2e emissions road	Calculate the road emissions based on the GLEC Framework (GLEC 75 CO2e (g/tkm) WTW)
Step 15	14) CO2e emissions first and last mile	Calculate the last- and first-mile emissions based on the GLEC Framework (GLEC 75 CO2e (g/tkm) WTW)
Step 16	15) CO2e emissions main run waterway	Calculate the main run waterway based on the GLEC Framework (GLEC 19 CO2e (g/tkm)
Step 17	16) total CO2e emissions waterway	Create a sum of the total emissions of each shipment based on road and on waterway transportation
Step 18	17) CO2e savings road/waterway	Compare the total emissions of road to the total emissions waterway

5 Recommended Links

www.Rewway.at

www.Retrans.at

www.Reecotrans.at

https://www.viadonau.org/wirtschaft/donaulogistik/initiativen/intermodale-und-rollende-ladung-mit-dem-binnenschiff-2021-2022

Travel Time Calculator (danube-logistics.info)

Transport Planner (danube-logistics.info)

https://www.smartfreightcentre.org/en/how-to-implement-items/what-is-glec-framework/58/