# FINAL IMPLEMENTATION REPORT (D.T2.6.5)

*Upper Austria* *30th November 2018*

## A. Overall Pilot Aproach

### a. Pilot Phase Summary

Within the pilot phase, a series of meetings with LSPs and chemical companies has been executed. The main aim was to promote multimodal transport and encourage a modal shift. A final pilot workshop summarizing learnings and outcomes was conducted in November 2018.

To extend the number of participating companies we still contact chemical companies from the established list by FHOÖ. Those companies are contacted via mail, additionally FHOÖ makes follow-up phone calls. All companies are located in the most industrial areas of Austria, mainly in Upper Austria. Once companies accepted to arrange a meeting, the workload (personal visits, documentation etc.) is separated between FHOÖ and Business Upper Austria. Furthermore, companies that participated in the analysis phase are constantly kept up-to date in terms of current development.

In the first phase of the pilot activities companies from the kick-off meeting were contacted and an appointment was arranged and realized. By then the project partners met with five stakeholders (four chemical companies and one LSP) and were provided with facts about destinations, product type, volumes and transport departing frequencies from the Austrian factory.

As a further step it is planned that all participants in the pilot activities will be invited to the final workshop and bilateral meetings carried out by FHOÖ.

As a result of the discussions the project partners issued recommendations for the shift of transport mode and, also we provided personal contact with the logistics service providers as a part of the consulting service (match making). However, the negotiation and implementation phase is then again entirely their responsibility. Seven routes were proposed to the companies and are still in the process of decision making.

## b. Pilot Phase Impact

Achievements have been accomplished through successful kick-off meetings with chemical companies (carried out by FHOÖ and Business Upper Austria) and the Circular Economy Sector (carried out by Business Upper Austria). We received important information regarding the current attitude towards multimodal transport and had the chance to present our approach and pilot activities to the participants. During the meetings, we were able to attract a company to arrange a follow-up meeting with their manager of SCM.

All participating companies in the project received a training for the toolbox. Especially the intermodal link planner helped the chemical companies to get a first overview of possibilities to shift transport volumes on specific routes. Furthermore, chemical companies can profit from the arrangement of a contact to an LSP from the network of FHOÖ. To sum up, a good communication and cooperation between shippers and logistic service providers is the most important key to initiate a modal shift.

Foremost, the task of creating a match-making between supply (LSP) and demand (chemical company) was targeted in combination with CO2 and road transport reduction.

The project partners will continue and consolidate their cooperation with the LSP until the end of the project in May 2019. Subsequently, the then established support structures should be continued by the involved chemical associations and clusters.

# B. Participating companies

| Name of company | Profile (products/services) | SME or large enterprise? | Location (subject to pilot) |
|---|---|---|---|
| Business 1 | Raw material | SME | Upper Austria and surrounding |
| Business 2 | Logistics Service Provider | SME | Upper Austria and surrounding |
| Business 3 | Raw material | large | Upper Austria and surrounding |
| Business 4 | Finished products | large | Upper Austria and surrounding |
| Business 5 | Recycling Company | large | Upper Austria and surrounding |
| Business 6 | Business enterprise in different sectors (steel, pharma, chemicals, food, etc.) | large | Upper Austria and surrounding |
| Business 7 | Plastics Recycling | SME | Upper Austria and surrounding |
| Business 8 | Raw material | SME | Upper Austria and surrounding |
| Business 9 | Raw material | Large | Upper Austria \| Vienna |

| | | | |
|---|---|---|---|
| Business 10 | Finished Products | Large | Upper Austria |
| Business 11 | Finished products – plastics | Large | Upper Austria |

## C. Transport routes addressed

| GENERAL DATA | | | BEFORE PILOT LAUNCH | | | |
|---|---|---|---|---|---|---|
| **Chemical company addressed** | **Shipped materials or goods** | **Quantity (estimate; per month)** | **Logistic service provider(s)** | **Transport distance and mode(s)** | **Modal split (before pilot launch)** | **CO2 emitted (per month; calculated)** |
| **Business 1** | Semi-finished goods | Σ 3863t | n.a. | Average Σ 5.846 km | 100 % truck | Σ 120t |
| Most potential routes based on transport volumes and departing frequency of FTLs: | | | | | | |
| **Route No.** | **Destination** | **Approx. Quantity/month** | | **Ø Distance/country** | **Modal Split** | **CO2** |
| A | Belgium | 97t | | Ø 1150 km | 100 % truck | 6.92t |
| B | Germany | 541t | | Ø 703 km | 100 % truck | 21.0t |
| G | Austria | 1314t | | Ø 172km | 100 % truck | 14.01t |
| H | Switzerland | 281t | | Ø 738km | 100 % truck | 12.80t |
| J | Serbia | 272t | | Ø 643km | 100 % truck | 9.92t |
| L | Slovakia | 98t | | Ø 260km | 100 % truck | 1.58t |
| M | Czech Republic | 427t | | Ø 140km | 100 % truck | 5.44t |
| P | Turkey | 204t | | Ø 1730km | 100 % truck | 21.88t |
| Q | Hungary | 441t | | Ø 310km | 100 % truck | 4.74t |

| | | | | | | |
|---|---|---|---|---|---|---|
| **Business 2** | Different goods (raw material, finished products etc.) | Σ 440t | Cooperation with other LSPs | Average Σ 2750km | 100 % truck | Σ 39.68t |
| **Route No.** | **Destination** | **Approx. Quantity/month** | | **Ø Distance/country** | **Modal split** | **CO2** |
| A | Turkey | 240t | | 2500km | 100 % truck | 37.20t |
| B | Munich (mainly transhipment) | 200t | | 250km | 100% truck | 2.48t |

| | | | | | | |
|---|---|---|---|---|---|---|
| **Business 3** | **Chemical substances** | **Σ 3064t** | **LSP n.a.** | **Average Σ 4550km** | **100 % truck but also intermodal** | **Σ 143.80t** |
| **Route No.** | **Destination** | **Approx. Quantity/month** | | **Ø Distance/country** | **Modal Split** | **CO2** |

| | | | | | |
|---|---|---|---|---|---|
| A | Belgium | 440t | Ø 1000km | 100% truck | 27.30t |
| B | Germany | 180t | Ø 600km | 100 % truck | 6.70t |
| | Germany | 618t | Ø 670km | intermodal | 9.65t |
| C | Finland | 440t | Ø 2000km | 100 % truck | 54.50t |
| D | Netherlands | 360t | Ø 950km | intermodal | 7.17t |
| E | France | 126t | Ø 1000km | 100% truck | 7.81t |
| | France | 288t | Ø 1100km | intermodal | 7.38t |
| F | Turkey | 324t | Ø 1730km | intermodal | 13.01t |
| G | Italy | 270t | Ø 620km | 100% truck | 10.38t |

| **Business 7** | Plastics Recycling Machine | Σ x t | LSP: strategic partner | Average Σ x km | x % truck but also intermodal | Σ x t |
|---|---|---|---|---|---|---|
| **Route No.** | **Destination** | **Approx.** Quantity/month | | **Ø Distance/country** | **Modal Split** | **CO2** |
| | **Annual differences** | **Annual differences** | | **Annual differences** | **Europe: Truck**<br>**Overseas: rail + sea** | **n.a.** |
| **No suitable business case for the project (due to MTO – make to order)** | | | | | | |

| **Business 8** | Raw Material | Σ x t | Cooperation with different LSP | Average Σ x km | 80 % truck but also intermodal (average to all routes) | Σ x t |
|---|---|---|---|---|---|---|
| **Route No.** | **Destination** | **Approx.** Quantity/month | | **Distance/country** | **Modal Split** | **CO2** |
| A | Czech Republic | 320t | | 220km | tbd | tbd |
| B | Germany | 151t | | 250km | tbd | tbd |
| | Germany | 895t | | 741km | 100% truck | 41,16t |
| C | Spain | 261t | | 2.000km | tbd | tbd |
| D | France | 138t | | 1.400km | tbd | tbd |
| | France | 214t | | 1.085km | tbd | tbd |
| | France | 642t | | 1.170km | 100% | 46,67t |
| E | Great Britain | 526t | | 1.530km | tbd | tbd |
| F | Greece | 104t | | 1.400km | tbd | tbd |
| G | Croatia | 129t | | 400km | tbd | tbd |
| H | Italy | 84t | | 700km | tbd | tbd |

| | | | | | |
|---|---|---|---|---|---|
| | Italy | 196t | 600km | tbd | tbd |
| | Italy | 252t | 600km | tbd | tbd |
| I | Netherlands | 78t | 900km | tbd | tbd |
| J | Poland | 160t | 500km | tbd | tbd |
| | Poland | 160t | 890km | tbd | tbd |
| | Poland | 310t | 860km | tbd | tbd |
| K | Russia | 272t | 2.350km | tbd | tbd |
| L | Slovakia | 71t | 320km | tbd | tbd |
| M | Ukraine | 169t | 1.500km | tbd | tbd |
| | Ukraine | 450t | 1.550km | tbd | tbd |

## D. Planned and Realized Multimodal Shifts

| # | Number of small face-to-face meetings | ANTICIPATED OR REAL SITUATION AFTER PILOT PHASE | | | | CHANGE |
|---|---|---|---|---|---|---|
| | | Logistic service provider(s) | Transport distance and mode(s) | Modal split (in %) | CO2 emitted (per month; calculated) | CO2 reduction (anticipated or real) |
| 1 | 2,<br>Ongoing process<br>(telephone conversations and e-mails) | LKW Walter | Kortrijk (BE) – Rotterdam (NL) – /multimodal road-rail-road transport | Road 359km (31%)<br>Rail 781 km (69%) | 0.42 t | 0.24 t (42.8%) |
| 1 | 2,<br>Ongoing process<br>(telephone conversations and e-mails) | LKW Walter | Gemert (NL)-Neuss (DE)-/multimodal road-rail-road transport | Road 244km (25%)<br>Rail (75%) | 3.71 t | 1.91 t<br>(48.5%) |
| 1 | 2,<br>Ongoing process<br>(telephone conversations and e-mails) | Berger | Chatel St.Denis (CH) – Hamburg (DE) – Basel (CH) / multimodal road-rail-rail-road | Road 258km (29%)<br>Rail 622km (71%) | 1.25 t | 0.68 t<br>(45.6%) |
| 8 | 1, telephone conversations and e-mails | | Salzgitter-Ringelheim (DE) – Hamburg (DE) – Enns (AT) / multimodal road- | Rail (83%)<br>Road (17%) | 1.88 t | 1.05t<br>(44.1%) |

| | | | | | | |
|---|---|---|---|---|---|---|
| | | | rail-road | | | |
| 8 | 1, telephone conversations and e-mails | | Gaillon (FR) - Rottedam (NL) - Dourges (FR) / multimodal road-rail-rail-road | Road (25%)<br>Rail (75%) | 3.34 t | 1.71 t<br>(48.9%) |

- ## Business 1

Due to the requirements of the chemical company, cranable trailers need to be calculated in the transport planning. Based on the references made by the Logistics Service Provider no suitable service can be offered. The price situation compared to direct truck transport is the main barrier which was hindering a successful modal shift. The chemical company prepared specific routes on which transport is still carried out by truck and which are longer than 300km. The majority of European countries were listed and evaluated according to specific criteria (Destination, freight zone, volumes, full truck loads, etc.). If the value of the average FTL per week is higher than 1, intermodal transport poses an alternative. If the value is between 0.5 and 0.9 it is suggested to take a closer look as intermodal transport might pose an alternative. If the value is below 0.5, intermodal transport does not demonstrate an alternative. This is due to too little volumes.

To sum up, the tool helped the chemical company to get a first overview of possibilities to shift transport volumes on specific routes. Based on the intermodal link planner as well on a first calculation of the underlying data several routes have been identified for further use in the pilot phase.

One challenge occurs within the matchmaking steps in order to get suitable offers from Logistics Service Providers. Though the intermodal link planner gives the stakeholder a first idea of feasible routes and services it is still hard to get connected to concrete transport operators.

Below are the routes which are in test mode:

| **Route No.** | **Destination** | **Approx. Quantity/month** | **Ø Distance/country** | **Modal Split** | **CO2** |
|---|---|---|---|---|---|
| **A** | Belgium | 6t | Ø 1140 km | 100 % truck | 0.42t |
| **B** | Netherlands | 61t | Ø 980 km | 100 % truck | 3.71t |
| **C** | Switzerland | 23.8 t | Ø 880 km | 100% truck | 1.25t |

**Route No. A:**

In order to look for a suitable transport route via multimodal transport modes, Intermodal links was used. Intermodal links revealed various possible connections.

### 3105 ST.PÖLTEN - KORTRIJK

| Route | Transport time (days) | Frequency (per week) | Number of transshipments | Modality |
|---|---|---|---|---|
| Linz - Rotterdam | 1 | 2 | 0 | |
| Wien - Rotterdam | 1 | 2 | 0 | |
| Wels - Antwerp | 2 | 2 | 0 | |
| Wien - Antwerp | 2 | 2 | 0 | |
| Krems - Ceska Trebova - Rotterdam | 3 | 2 | 1 | |
| Wien - Rotterdam - Terneuzen | 4 | 2 | 1 | |

### LINZ ROTTERDAM


With the help of the Intermodal Links Planner, the possibilities were shown and discussed with the logistics service provider. The match-making between logistics service provider and shipper was arranged and the multimodal routes are now being tested. The following savings can be achieved by shifting the route: 0.24 t CO2.

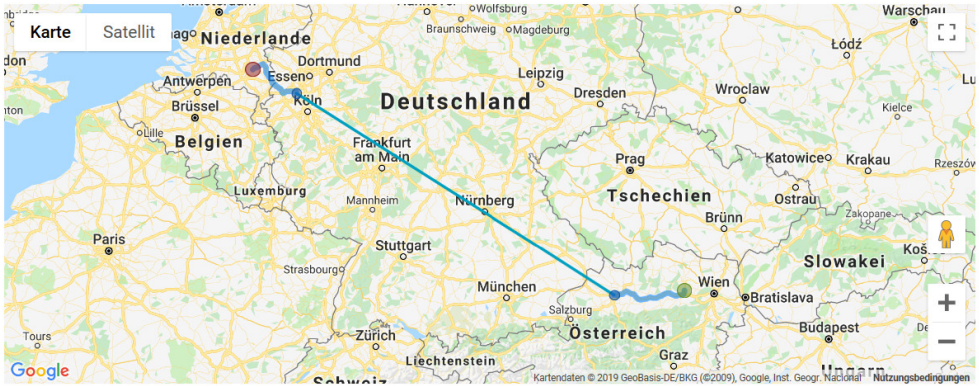
**Route No. B:**

In order to look for a suitable transport route via multimodal transport modes, Intermodal links was used. Intermodal links revealed various possible connections. A **transport time up to 1 day** is feasible for the shipper so the first two connections were explored.

## 3105 ST.PÖLTEN - GEMERT

| Route | Transport time (days) | Frequency (per week) | Number of transshipments | Modality |
|---|---|---|---|---|
| Wels - Neuss | 1 | 5 | 0 | |
| Wien - Herne | 1 | 5 | 0 | |
| Wels - Duisburg | 1 | 3 | 0 | |
| Linz - Rotterdam | 1 | 2 | 0 | |
| Wien - Rotterdam | 1 | 2 | 0 | |
| Wien - Duisburg | 1 | 2 | 0 | |

## WELS NEUSS



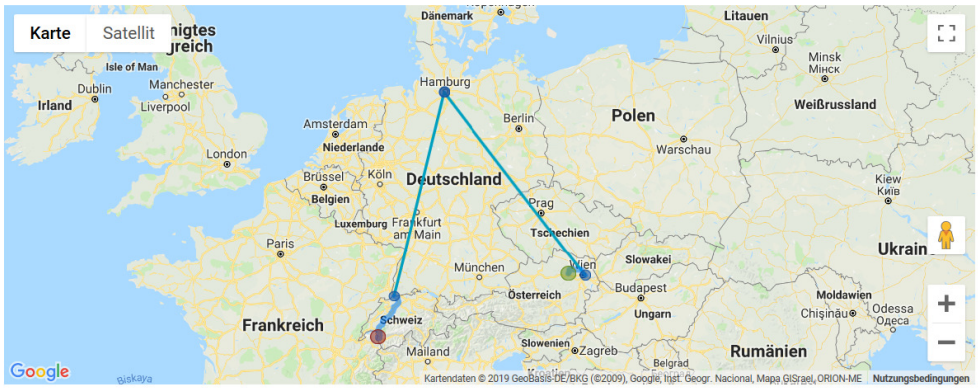

The potential route has a pre haulage of 144 km and an end haulage of 110 km in Netherlands that has to be organised by truck. Main transport is organised by rail of about 700 km length. The result is an optimized modal split with 75% rail and 25% road. CO2 emission are only 1.91t per month – that means a CO2 saving of about 1.8 tons per month using the ChemMultimodal CO2 calculator for Truck + electrified rail. The match-making between logistics service provider and shipper was arranged and the multimodal routes are now being tested.

## Route No. C:

### 3105 ST.PÖLTEN - CHATEL ST. DENIS

| Route | Transport time (days) | Frequency (per week) | Number of transshipments | Modality |
|---|---|---|---|---|
| Wien - Hamburg - Weil am Rhein | 3 | 4 | 1 | |
| Wien - Hamburg - Basel | 3 | 4 | 1 | |
| Wien - Bremerhaven - Basel | 3 | 4 | 1 | |
| Wien - Duisburg - Milano | 3 | 2 | 1 | |
| Wien - Duisburg - Lyon | 3 | 2 | 1 | |
| Wien - Rotterdam - Novara | 4 | 2 | 1 | |
| Wien - Rotterdam - Milano | 4 | 2 | 1 | |
| Wien - Rotterdam - Basel | 4 | 2 | 1 | |

WIEN HAMBURG BASEL




The potential route has a pre haulage of 90.4 km and an end haulage of 221 km in Basel that has to be organised by truck. Main transport is organised by rail of about 621.6 km length. The result is an optimized modal split with 71% rail and 29% road. CO2 emission are only 0.68t per month – that means a CO2 saving of about 45% per month using the ChemMultimodal CO2 calculator for Truck + electrified rail. The match-making between logistics service provider and shipper was arranged and the multimodal routes are now being tested.

## Result of the Pilot (by 30 November 2018)

☐ proposed transport reorganisation discarded because found solutions are not competitive

☐ proposed transport reorganisation discarded because of lacking logistic service providers or infrastructures

☐ proposed transport reorganisation under evaluation by company decision-makers

☐ proposed transport reorganisation tested under real-life conditions (__x times)

☐ proposed transport reorganisation effectively approved

X other: The routes are currently being tested for the first time.

## Success Factors

The chemical industry has the objective to strengthen multimodal transport and modal shift from road to rail with strong focus on improvement of safety and security in combination with increased logistics efficiency. The optimization of the supply chain is a crucial factor for long-term competitiveness.

Intermodal transport is not carried out due to current market conditions and bad experiences (especially delays, tracking and tracing, low reliability), therefore companies switched back to road transport.

## Use of Tool-Box

| Tool-Box Element | Who used this tool-box element? (project representatives/logistics service provider/chemical company representatives) | How was the element evaluated? (scale: not useful, somewhat useful, very useful, not used) |
|---|---|---|
| IT-Visualization | chemical company representatives | very useful (Intermodal-Link Planner gives the possibility to receive a quick overview regarding intermodal routes) |
| Consulting services | - | - |
| Planning Guideline | chemical company representatives | somewhat useful (regulative differences are nice-to-have) |
| CO2-Calculator | chemical company representatives | not useful (customer does not request it – price is always the most relevant aspect) |

- ## Business 3

Within the case of business 3 all mentioned routes have potential at first sight. This is due to the fact that all destinations have enough volumes and indicate a critical amount of kilometres at least from the theoretical point of view. The company (Business 3) is currently screening the market in terms of LSP, thus FHOÖ might act as a neutral mediator. Business 3 stated that multimodal transport is difficult to realize when transporting sensitive products, which require certain temperatures (heating or cooling) as the state of the substance changes.

Future steps: After Business 3 discussed the type of products and routes that might be relevant for testing internally, they will get back to us. The arrangement of a future meeting is anticipated.

In the meanwhile, FH OÖ was analysing the identified potential routes by using the intermodal links planer. This process supports the development of the toolbox as new insights from the research partners can be obtained by using real data and cases. The following routes are seen as the base for further discussions. Especially the matchmaking part will be again the most challenging task. The procedure looked as follows:

(1) As soon as a potential modal shift was identified and in consent with the chemical company, specific LSPs will be consolidated to make an offer. If both parties agree on the conditions, the LSP acquired a new business case and contributes to securing its own business.

(2) The chemical company can profit from the arrangment of a contact to an LSP from the network of FHOÖ. In addition CO2 emissions will be reduced, image is influecend positively and price savings are attained.

(3) FHOÖ is able to make use of its logistics network and can enlarge it at the same time. Foremost, the task of creating a match-making between supply (LSP) and demand (chemical company) should be achieved in combination with CO2 and road transport reduction. This has been done by adresssing the following routes:

| Route No. | Destination | Approx. Quantity/month | Ø Distance/country | Modal Split | CO2 |
|---|---|---|---|---|---|
| A | Belgium | 440t | Ø 1000km | 100% truck | 27.30t |
| The first route examined indicates several intermodal operators that offer direct services. The average distance to the destinations for truck transport is within a theoretical range that should bring advantages for rail transport. Additionally, the route is offered several times per week (ranging from 2 to 4) by different operators. Within the next steps the consortium will establish contact to the operators mentioned in the intermodal links planner. During several discussions with the chemical company it came up that a possible barrier is the prohibition of transshipment due to dangerous goods regulations. These details need to be analyzed and planned in further discussions with the operators. | | | | | |

| Route No. | Destination | Approx. Quantity/month | Ø Distance/country | Modal Split | CO2 |
|---|---|---|---|---|---|
| G | Italy | 270t | Ø 620km | 100% truck | 10.38t |
| E | France | 126t | Ø 1000km | 100% truck | 7.81t |
| B | Germany | 180t | Ø 600km | 100 % truck | 6.70t |

These routes are currently operated by truck. Due to available multimodal services based on data from intermodal links planner there would be several options for modal shifts. A more detailed planning will indicate the economic competitiveness of the services based on the requirements from the chemical company.

In the end, Business 3 has unfortunately informed us that the project has become obsolete because a 4PL logistics solution has been implemented and therefore all existing routes and transports have been reorganised from scratch and handed over to an operational partner. Therefore, the termination of the cooperation was announced by business 3.

## Result of the Pilot (by 30 November 2018)

☐ proposed transport reorganisation discarded because found solutions are not competitive

☐ proposed transport reorganisation discarded because of lacking logistic service providers or infrastructures

☐ proposed transport reorganisation under evaluation by company decision-makers

☐ proposed transport reorganisation tested under real-life conditions (__x times)

☐ proposed transport reorganisation effectively approved

X other: Cooperation was stopped due to internal structural changes

## Success Factors

The chemical industry has the objective to strengthen multimodal transport and modal shift from road to rail with strong focus on improvement of safety and security in combination with increased logistics efficiency. The optimization of the supply chain is a crucial factor for long-term competitiveness.

Intermodal transport isn't carried out due to current market conditions and bad experiences (especially delays, tracking and tracing, low reliability), therefore companies switched back to road transport.

## Use of Tool-Box

| Tool-Box Element | Who used this tool-box element? (project representatives/logistics service provider/chemical company representatives) | How was the element evaluated? (scale: not useful, somewhat useful, very useful, not used) |
|---|---|---|
| IT-Visualization | chemical company representatives | Very useful: good overview |
| Consulting services | | Not used |
| Planning Guideline | | Not used |
| CO2-Calculator | chemical company representatives | Somewhat useful: nice to have but not |

| | | |
|---|---|---|
| | | relevant |

- ## Business 8

In April 2018 the Austrian ChemMultimodal team organized a bilateral meeting with Business 8. The chemical company has specific requirements regarding transport planning as very sensitive goods are handled within this case. It is not possible to combine all goods together in order to realise bundling effects. The chemical company has a well-established Logistics Service Provider-network which enables them to have enough service offerings concerning specific transport requirements. Within this aspect one issue was raised by the chemical company. There is no detailed transparency when it comes to new routes and services from Logistics Service Providers. Therefore, Business 8 is looking for a tool which supports the internal market observation to get knowledge about routes and their operators. On this base the further Pilot activities will help to analyse a long list of routes mentioned by the chemical company. In total 13 destinations are now determined (based on the first analysis) The intermodal links planner will now open further discussions which should foster the final matchmaking between intermodal transport operators and the chemical company. At this point almost any route seems to be possible when comparing with intermodal links planner. This effect is due to the filtering already done (the company provides us with a long list of potential routes where also small number of shipments and frequencies where excluded). We filtered them in the first pilot activities according to suitable distances, number of operations (frequency) and volumes. A more detailed planning from the Logistics Service Providers' perspective will indicate the economic competitiveness of the services based on the requirements from the chemical company.

Below are the two routes with the largest volume, frequency and potential for shift from road to rail:

| Route No. | Destination | Approx. Quantity/month | Ø Distance/country | Modal Split | CO2 |
|---|---|---|---|---|---|
| A | Germany (Salzgitter-Ringelheim) | 896t | Ø 741km | 100% truck | 41.16t |
| The first route analysed shows several intermodal operators via Intermodal Links Planner offering direct services. The average distance to truck destinations is in a theoretical range that should benefit rail transport. In addition, the route is offered several times a week (from 2 to 4) by different providers. We are in contact with the shipper and various logistics service providers and are trying to achieve a shift. | | | | | |
| B | France (Gaillon) | 643t | Ø 1170km | 100% truck | 46.67t |
| The second route examined also shows a large number of intermodal operators via Intermodal Links Planner offering direct services. The requirements for regularity and distance is met. As we experienced so far in the project, multimodal transport in France is only possible with difficulties. Nevertheless, FHOÖ is in contact with the shipper and various logistics service providers and are looking for possibilities to achieve a shift. | | | | | |

## Result of the Pilot (by 30 November 2018)

☐ proposed transport reorganisation discarded because found solutions are not competitive

☐ proposed transport reorganisation discarded because of lacking logistic service providers or infrastructures

☐ proposed transport reorganisation under evaluation by company decision-makers

☐ proposed transport reorganisation tested under real-life conditions (__x times)

☐ proposed transport reorganisation effectively approved

X other: still in negotiation with potential LSPs

## Success Factors

The chemical industry has the objective to strengthen multimodal transport and modal shift from road to rail with strong focus on improvement of safety and security in combination with increased logistics efficiency. The optimization of the supply chain is a crucial factor for long-term competitiveness.

Intermodal transport is not carried out due to current market conditions and bad experiences (especially delays, tracking and tracing, low reliability), therefore companies switched back to road transport.

## Use of Tool-Box

| Tool-Box Element | Who used this tool-box element? (project representatives/logistics service provider/chemical company representatives) | How was the element evaluated? (scale: not useful, somewhat useful, very useful, not used) |
|---|---|---|
| IT-Visualization | chemical company representatives | Somewhat useful: more possibilities and service providers would be nice |
| Consulting services | chemical company representatives | - |
| Planning Guideline | | Not used: time intense to insert data |
| CO2-Calculator | chemical company representatives | Somewhat useful: interesting to know but not relevant |

## • Business 5

Business 5 is operating within the logistics of waste streams as a partner for the public authority. Within the topic of circular economy significant material streams of plastics, chemicals and other goods are collected, sorted and transferred to Recyclers or Converters within the European Community and within the ChemMultimodal Counties.

At the moment it is a 100% truck business from short distances within upper Austria to collect the waste types from the local collecting centres to the central logistic terminal and short to medium distances where the chemicals or plastic materials are treated or converted to new recycling materials.

The geographical location of the company is embedded in a well-established logistics infrastructure although Business 5 has no direct rail access on its site. As sustainable operations are a strategic factor for the company current recycling operations are carried out within nearby partners and short distances. This fact leads to road transport as multimodal operations are not suitable on short relations within Upper Austria. Nevertheless, three destinations in Italy, Belgium and Germany were mentioned as promising to realise a modal shift based on active recycling operations.

Another very interesting approach was mentioned by Business 5. They see great potential in the ChemMultimodal project as the pilot phase could be used to screen established train routes and to get in touch with Logistics Service Providers. If there is some good train connection, Business 5 would look for new customers within the area of the final transport destination. This approach is rather unconventional as normally the destinations are determined by existing customers and their requirements. In the case of business 5 we potential routes are searched and afterwards the market is screened for customers. This makes this case very attractive for the project and the pilot phase. In general, the company has a strategic orientation towards sustainability. The CO2 calculator will be further used to measure the current logistics performance and to create awareness and strategies for the use of more sustainable transport modes as multimodal transport.

Business 5 promised to provide routes for the ChemMultimodal project for a long time but after numerous phone calls and e-mails, they informed FHOÖ that no potential routes had been identified and that no routes could be provided.

### Result of the Pilot (by 30 November 2018)

☐ proposed transport reorganisation discarded because found solutions are not competitive

☐ proposed transport reorganisation discarded because of lacking logistic service providers or infrastructures

☐ proposed transport reorganisation under evaluation by company decision-makers

☐ proposed transport reorganisation tested under real-life conditions (__x times)

☐ proposed transport reorganisation effectively approved

X other: no potential routes could be determined

## Success Factors

The chemical industry has the objective to strengthen multimodal transport and modal shift from road to rail with strong focus on improvement of safety and security in combination with increased logistics efficiency. The optimization of the supply chain is a crucial factor for long-term competitiveness.

Intermodal transport is not carried out due to current market conditions and bad experiences (especially delays, tracking and tracing, low reliability), therefore companies switched back to road transport.

## Use of Tool-Box

| Tool-Box Element | Who used this tool-box element? (project representatives/logistics service provider/chemical company representatives) | How was the element evaluated? (scale: not useful, somewhat useful, very useful, not used) |
|---|---|---|
| IT-Visualization | chemical company representatives | Very useful |
| Consulting services | chemical company representatives | - |
| Planning Guideline | | Not used |
| CO2-Calculator | chemical company representatives | Somewhat useful |

# E. Conclusion and further plans

## a. Task of the national project team

**Partner 1:** Business Upper Austria - Plastic Cluster (PP 11)

Main tasks:

- active participation in the Working Group Meetings in Budapest, Bratislava and Novara
- organisation and documentation of stakeholder workshops
- bilateral discussion/consulting with chemical companies

Approximate project resources spent for local pilot (including personnel):

**Partner 2:** University of Applied Sciences Upper Austria (PP 9)

Main tasks:

- active participation in the Working Group Meetings in Budapest, Bratislava and Novara
- organisation and documentation of stakeholder workshops
- bilateral discussion/consulting with chemical companies
- usage of the toolbox elements and analysis of the requirements for further development
- further development of the toolbox elements planning guidelines and CO2 calculator

## b. Sustainabiltity and transferibility

There are high potentials to increase the percentage of multimodal transport in all sectors of chemical industry and plastics converter industry in Upper Austria. It is necessary that industry and Logistics Service Providers work intensively and closely together to find suitable and customized solutions for multimodal transport lines which guarantee fast and secure services in an acceptable time frame. The intermodal link planner gives the stakeholder a first idea of feasible routes and help the chemical company to get a rough overview of possibilities to shift transport volumes on specific routes. Furthermore, chemical companies can profit from the arrangement of a contact to a LSP from the network of FHOÖ.

The transferability is given because the intermodal link planner is publicly available on the internet after the project ends. The methodological approach of the tool can be transferred to other regions/ countries outside the partnership. There will be open access without any costs. Special focus is given to promote the use of the tool in other chemical regions to ensure transferability. FHOÖ also promotes the toolbox elements on their online learning platforms www.rewway.at/en and www.retrans.at/en where interested stakeholders can find information material on sustainable transport.

## c. Lessons learned

Intermodal transport was carried out increasingly in the past, but due to current market conditions and bad experiences (especially delays, tracking and tracing, low reliability), some companies in Upper Austria switched back to road transport. Nevertheless, companies need to increase awareness internally in terms of multimodal alternatives. Besides this, external factors play a significant role as the crude oil price has an impact on the transport costs, especially for the trucks. As this price is rather low and thus the decision in favour of the truck is the consequence.

Through intermodal transport CO2 emissions will be reduced, image is influecend positively and price savings are attained.

The intermodal link planner helped the chemical company to get a first overview of possibilities to shift transport volumes on specific routes. One challenge occurs within the matchmaking steps in order to get suitable offers from Logistics Service Providers. Though the intermodal link planner gives the stakeholder a first idea of feasible routes and services it is still hard to get connected to concrete transport operators.

Another learning was that it is of major importance to contact stakeholders which are supposed to participate in workshops, personally via email and if necessary make a follow-up phone call.

# Annexes

| Document | Cloud link |
|---|---|
| Documentation pilot project workshop | https://fmbcloud.ovgu.de/s/vECivs6xxAHmLWq?path=%2F04%20WPT2%20Pilot%20Implementation%2FAustria%2FD.T2.6.2%20Kick-off%2FD.T2.6.2%20Kick-off%20July#pdfviewer<br>https://fmbcloud.ovgu.de/s/vECivs6xxAHmLWq?path=%2F04%20WPT2%20Pilot%20Implementation%2FAustria%2FD.T2.6.2%20Kick-off%2FD.T2.6.2%20Kick-off%20November#pdfviewer |
| Documentation mid term project workshop | https://fmbcloud.ovgu.de/s/vECivs6xxAHmLWq?path=%2F04%20WPT2%20Pilot%20Implementation%2FAustria%2FD.T2.6.3%20Mid-term#pdfviewer |
| Documentation final project workshop | https://fmbcloud.ovgu.de/s/vECivs6xxAHmLWq?path=%2F04%20WPT2%20Pilot%20Implementation%2FAustria%2FD.T2.6.4%20Final#pdfviewer |