



DISRUPTION IN THE CONTAINER SUPPLY CHAIN

How to ensure a more reliable and more efficient inland container barge handling in seaports and improve IWT transport to and from the Rhine hinterland?

Index

Trends and issues affecting handling of inland vessel cargo in seaports	3
1. Container transport development since 2000	3
2. Several disruptions in the container supply chain influencing handling in seaports and leading to inefficiencies for inland cargo vessels	4
3. Planning priority in handling maritime container deep-sea ships over container inland vessels ..	5
4. Negative impact on inland navigation transport	6
Possible solutions to improve container barge handling in seaports	8
1. Existing measures and best practices set up by the actors along the container supply chain to improve container barge handling in seaports	8
1.1 Enhanced cooperation and awareness building among the actors in the container supply chain under the umbrella of seaport authorities	8
1.2 Association of inland ports for the benefit of information exchange	9
1.3 Fixed window agreements	9
1.4 Continued and enhanced cooperation between inland barge operators	10
1.5 Consolidation hubs: concepts and implementation	10
1.6 Enhanced planning and anticipation of possible disruptions	13
1.7 Capacity and infrastructure	15
2. Public intervention: regulatory, financial and policy measures	16
2.1 Public funding at European, national and regional levels	16
2.2 Political influence leading to market or regulatory changes	17
2.3 To exchange information and good practices at international level	18
2.4 To stimulate policy measures to foster modal shift and reliability of inland navigation	18
Avenues for the future	18
Role of the different actors	19

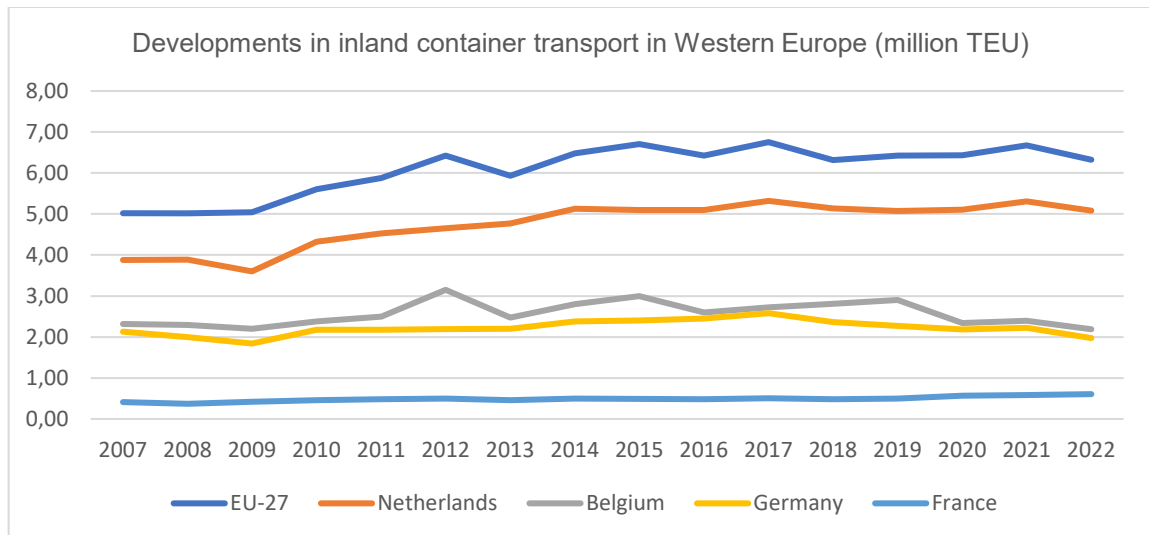
Disruption in the container supply chain influence container barge handling in seaports and lead to inefficiencies for the transport of containers on inland waterways: How to ensure a more reliable and more efficient inland container barge handling in seaports and improve IWT transport to and from the Rhine hinterland?

Trends and issues affecting handling of inland vessel cargo in seaports

1. Container transport development since 2000

Over the years, inland waterways have contributed to the development and performance of port activities and, today, barge hinterland transportation is a key element in large seaports with hinterland connection. Large seaports are important for transshipment, not only with regard to maritime vessels, but also for inland vessels, as they represent the interface between maritime trade and hinterland transport. Strong hinterland connections with such seaports are therefore a cornerstone of the Rhine navigation's success.

The heavy concentration of the container market on the Rhine region and its growth since 2000 on the traditional Rhine is a concrete example of how successful connections with seaports have allowed Rhine navigation to take advantage of opportunities provided by international trade.



Source: Eurostat [iww_go_actygo]

Note: in 2023, deep-sea container volumes at the Port of Antwerp-Bruges and the Port of Rotterdam decreased by 7% 2023. Barge container volumes are expected to decrease by more than 10%.

In order to exploit the potential of container transport even further, a constant improvement of the Rhine navigation's integration into logistics chains is a cornerstone, in particular to adapt to changes affecting global trade flows. Ensuring a faster and more efficient inland vessel cargo handling in seaports is essential to reinforce the role of inland navigation as an economically relevant means of transport.

However, particularly in western ports such as Rotterdam and Antwerp-Bruges, inland vessels still face periods with long waiting times in seaports. The severity of this phenomenon however varies over time. This situation has a negative impact on inland navigation transport.

The difficulties faced by inland navigation are exacerbated by the persistent timetable irregularities of maritime navigation. In addition, recent events such as the Covid-19 crisis, the Suez Canal incident (ship blockage) as well as Brexit, led to increased congestion issues at the level of seaports, highlighting further their vulnerability and the need to find solutions to address this challenge.

2. **Several disruptions in the container supply chain influencing handling in seaports and leading to inefficiencies for inland cargo vessels**

Inefficient handling of inland navigation containers in seaports is not a new problem. Today, inefficiencies in container handling as well as congestion in seaports continue to be a challenge for inland navigation, which results from disruptions at different levels of the container supply chain and with **multiple underlying factors**:

- Increasing global demand and growth in container traffic.
- Use of ever larger container ships (megaships). Indeed, the increase of scale in vessels and operations in the deep-sea terminals creates greater peaks in demand for handling capacity, leading to waiting lines for barges.
- Unreliable liner shipping schedules.
- Lack of coordinated planning of handling for the entire seaport.
- Lack of cooperation and information sharing between the different actors of the supply chain. For instance, lack of swift information to barge operators or inland terminals in case of changes in the “Expected Time of Arrival (ETA)” or “Expected Time of Departure (ETD)” of sea-going vessels can have important impacts on the planning of inland terminals and barge operators. Indeed, changes in ETA leads to adjustment of Cargo Closing and Opening Times.¹ In the case of exports, efficient exchange of information can thereby prevent containers from being delivered too late by barge operators (i.e. after the Cargo Closing Time, leading to the containers being moved to the next sailing) or too early (before the Cargo Opening Time and leading to containers not being accepted by the deep-sea terminals).
- Complexity of the container logistics chains with a large number of players having different kind of arrangements with shippers.
- Lack of a direct contractual relation between the deep-sea terminals and the container barge operator, although such contractual relationships are observed in some instances.² This leads to a lack of binding agreements on an operational level which enables both parties to cancel or reschedule, even at last minute, without any financial consequences.
- Longer loading and unloading processes of inland vessels, due to the choice of barge operators stopping at different terminals within the seaport, which also increases the risk of schedule disruptions.³
- Overall limited capacity and
 - o lack of dedicated handling capacity (berths, cranes, labour force) for inland waterway transport,
 - o as well as a lack of (at times) storage capacity⁴ at deep-sea terminals in ports and inland terminals in the hinterland.
- Increasing tightening of demurrage and detention conditions⁵ from the shipping companies. Such a tightening of the demurrage and detention conditions takes two particular forms: decrease in the agreed periods during which containers can be used free of charge and increase of the detention and demurrage charges outside this free period. This ultimately puts more pressure on the timeframe in which containers can be supplied or disposed of free of charge around a deep-sea call and further increases the peak load.

¹ Which consists in the time window when containers can be delivered at the seaport terminals and be handled. This time window can be adjusted depending on the ETA. Concrete examples at a deep-sea terminal: containers must be present at deep-sea terminal no later than 24 hours prior to the arrival of the seagoing vessel (based on ETA). Containers submitted after the Cargo Closing Time are moved to the next sailing. Deep-sea terminals accept containers from 8 days prior to the arrival of the seagoing vessel (based on ETA). Containers arriving before this Cargo Opening Time are not accepted.

² For instance, in the form of fixed window agreements between barge operators and deep-sea terminals.

³ A possible alternative to this process lies in the cooperation between barge operators to bundle cargo in the hinterland for certain terminals. It has the potential to reduce the potential cascade effects in seaports, improve the planning process and efficiency in the port.

⁴ This could be explained by the increased dwell times or peaks in container transport activities resulting in less space being available to stack containers and ultimately less handling capacity.

⁵ Detention and Demurrage charges are applicable to customers using containers from maritime carriers longer than a free period. Both (charges and free period) are agreed upon between the two parties in a contract. Demurrage charges apply to containers used inside the terminal while detention charges apply to containers used outside the terminals.

3. **Planning priority in handling maritime container deep-sea ships over container inland vessels**

Beyond these factors, handling priority is generally given to maritime container ships in case of disturbance at the seaport terminals, which plays against other parties in the supply chain, including inland container vessels.⁶

- A main reason for this is the **commercial position of the shipping companies compared to container barge operators**. Indeed, shipping companies are the customers of terminals in seaports while barge operators have no contractual relationship with terminals and are not a direct paying customer.
- This situation is reinforced by:
 - o The so-called “call size”: inland containers transported are generally delivered to the maritime terminals in small numbers instead of being collected and delivered in large numbers by (a)vessel(s). From a business perspective, it is therefore more interesting for terminal operators to handle greater numbers of containers.
 - o The use of larger ships, which consists in a further guarantee for an increase in volume and business.
 - o The fact that barge operators, to secure the reliability of the transport operation, are put in a position where they must include wide time margins when planning their terminal visits, which also affects the reliability of the transport operation at a deep-sea terminal. In practice, container barge operators are obliged to make an early request for the handling of containers in the seaport. The terminal then assigns a final timestamp for the call which has to be done for each terminal. The issue is that when there is no capacity, or not enough barge volume to schedule a gang for barges to support the loading and unloading of containers, timestamps are delayed or not delivered at all.

In addition, a wave of market consolidation has also taken place over the last decades in the global container shipping industry, creating further imbalances in the global container trade and, for instance, providing further leverage for liner carriers to tighten their demurrage and detention conditions. Indeed, between 2016 and 2018, the major liner carriers in the east-west trades reorganised themselves into three space sharing alliances:

Alliance	Carriers
2M	Maersk, MSC
Ocean Alliance	CMA CGM, Cosco, Evergreen
THE Alliance	Hapag Lloyd, ONE, Yang Ming

Source: ITF, 2018

Changes in such alliances have already been announced with a new long-term operational collaboration foreseen from February 2025 onwards between Maersk and Hapag Lloyd.⁷

⁶ There is no “per se” priority in handling cargo. The cargo transported in the container belongs to the shipper (cargo-owner), who is the client of the shipping agent (maritime transport) and the freight forwarder (inland transport). The priority in handling containers depends on the planning of deep-sea ships transporting containers at terminals, because it is the shipping agent (the owner of the deep-sea ships) which has a commercial relation with the deep-sea terminal.

⁷ <https://www.maersk.com/network-of-the-future>

The main reason behind such consolidations was to cope with the difficult market conditions faced since the 2008 global financial crisis and to enable the reduction of costs, better manage ship capacity and enhance efficiency. At EU level, such consolidation is made possible by the Consortia Block Exemption Regulation (CBER).

Focus on the Consortia Block Exemption Regulation (CBER)

At EU level, such consolidations are regulated by the EU competition law. EU law generally bans agreements between companies that restrict competition.

However, the Consortia Block Exemption Regulation (CBER) enables, under certain conditions, shipping lines with a combined market share of below 30 percent to enter into cooperation agreements to provide joint cargo transport services.

On the one hand, such consortia can lead to improvements in productivity, service quality and lower price for consumers, as far as there is sufficient competition, and there is no agreement on price or shares on the market. On the other hand, consolidation can also result in negative impact namely reduced competition, constrained supply, market power abuse, and higher rates and prices. Hence the need for regular monitoring and assessment of consolidation trends in container shipping and their effect on the supply chain.

However, according to many stakeholders, shippers, ports, terminals, freight forwarders, port service providers and inland waterway transport, this legislation has several flaws.

- An important concern seems to be the lack of transparent data on consortia, which prevents the effective monitoring of their performance and their effects.⁸ Without such data, it is not possible to evaluate properly whether the CBER should be renewed or not.
- Another concern is the lack of a proper definition of relevant geographic markets to assess market shares. In fact, a report by the International Transport Forum in 2019⁹ indicates that most of the consortia on trades to and from Europe were likely to exceed the threshold, but that this was not possible to know with full certainty in view of the way the regulation is formulated and the lack of data collection on consortia.¹⁰

In light of this, when the CBER was last renewed in 2020, several associations denounced the fact that the Commission had failed to demonstrate that the continuation of the CBER would benefit transportation users and service providers, i.e. consumers.¹¹ In fact, such associations consider that the CBER led to deterioration in the quality of service and in an abuse of power (due to the dominant role of consortia) towards service providers within the logistic chain and therefore resulted in an erosion rather than an increase in economic benefits to share with users and consumers.

4. Negative impact on inland navigation transport^{12 13 14}

Inefficient handling of inland container vessels has negative impacts, both financially and in terms of reliability of IWT. Ultimately, this leads to loss of competitiveness for IWT compared to other transport modes. Given the role inland waterway transport is expected to play on the way to climate neutrality, this situation does not play in favour of modal shift to inland waterway transport. In practice, this contributes - together with other factors (i.e. low water events) - to a reverse modal shift from inland waterways to road transport.

⁸ <https://www.itf-oecd.org/reviewing-competition-exemptions-liner-shipping>

⁹ Container Shipping in Europe Data for the Evaluation of the EU Consortia Block Exemption, 2019, ITF: https://www.itf-oecd.org/sites/default/files/docs/container-shipping-europe-eu-consortia_3.pdf

¹⁰ <https://www.mdst.co.uk/is-there-still-competition-in-liner-shipping>

¹¹ Joint press release by CLECAT, ETA, EBU, ESC, FEPORT, GSF, GSA and UIRR on the renewal of the CBER

¹² Congestie containerbinnenvaart in de Rotterdamse haven: Een structureel probleem, LINc, December 2021

¹³ International Journal of Shipping and Transport Logistics : "Container barge (un)reliability in seaports: a company case study at the port of Antwerp", by Virzhiniia Oganessian, Christa Sys, Thierry Vanelslander, Edwin Van Hassel

¹⁴ Marktbeobachtung Güterverkehr - Situation der Binnenschiffer in den deutschen Seehäfen und den ZARA-Häfen, Bundesamt für Güterverkehr, 2019

Delays at container terminals can quickly cause a domino effect, meaning that subsequent terminals are also affected if agreed time slots are no longer reached due to delays at previous terminals. For instance, in Rotterdam in 2019 and in Antwerp in 2020, waiting times for the handling of Contargo barges amounted to 20-30 hours on average, but peaks of 60 hours were sometimes registered.¹⁵ Such negative impacts affect the Rhine region but also beyond, and western Europe in particular. Regarding the Upper Rhine specifically, Switzerland reported that, with inland waterway transport market participants on the Upper Rhine as their final destination, they feared a sustained loss of market shares as a result of the inland container handling inefficiencies in seaports.

Inefficient handling has a high impact on the reliability of inland waterway transport:

- additional waiting times and delays in the delivery of containers;
- average turnaround times of inland vessels in the hinterland increase;
- fixed sailing schedules customary in inland container shipping are not always adhered to (if a delay takes place in one terminal, the inland vessel may not be in time for the agreed time window for handling at the next terminal).

Furthermore, reliability is of key importance in the decision of shippers or freight forwarders to choose one mode over another. The negative impact of inefficient handling of container barges on the reliability of inland waterway transport plays against modal shift.

Such inefficiencies also have an important impact from an economic and financial point of view, impacting overall transport costs, for instance:

- Direct costs such as the deployment of (extra) vessels to deliver containers which should have otherwise been delivered by the vessels stuck in the port.
- Indirect costs such as:
 - o demurrage and detention charges that are charged by the deep-sea shipping companies for the use of their equipment inside or outside the terminal longer than the agreed free period,
 - o time loss and administrative costs (plannability of vessels deployment suffers).
- This ultimately leads to a decrease in productivity for the barge operator which otherwise could have used the time saved for other transport operations.
- In exchange for guaranteed handling capacity, some terminals in Rotterdam charge additional costs to the inland container shipping sector. While this has a perverse effect of congestion, some inland barge actors seem to accept such additional charges if this is for the benefit of enhanced reliability. The enforceability of such agreements between the container barge operator and the terminals seems to be an issue of concern in some instances. In fact, questions remain regarding, for instance, the responsibility of the terminal operator if it fails to respect a certain time slot and the claim compensation of the container barge operator.

If such costs cannot be absorbed by container barge operators, they can be passed on to final customers. In fact, as there is generally no commercial link between the barge operators and the terminal operators, barge operators cannot hold terminal operators responsible in case of delay and ask them to pay the extra costs generated by that delay. Such extra costs are therefore generally borne by the barge operators. Likewise, terminal operators cannot hold barge operators responsible in case of delays and must bear any extra costs (i.e. costs of gang and cranes that had been standing idle).

¹⁵ Contargo business news, Weekly update about congestion in Antwerp and Rotterdam: <https://www.contargo.net/en/business/business-news/current-customer-information/>

Possible solutions to improve container barge handling in seaports

There is no “one-size-fits-all” solution to improve container barge handling in seaports. In fact, the potential solutions will have to combine measures implemented at different levels, in different fields and according to different timeframes.

Until longer term solutions are also available, such as investments (when economically viable) in dedicated barge handling infrastructure in the seaports and in optimising available capacity, it is imperative to find measures that have a positive effect on container handling in the short-term. Dedicated barge and barge/feeder quays/ infrastructure already exist at some deep-sea terminals at Maasvlakte in Rotterdam and in the Port of Antwerp-Bruges.

For the long-term, several solutions and measures are being developed in order to improve container barge handling. Some of them lie in digitalisation, the improvement of information exchange between the ports’ actors, others in the development of new container handling concepts implying new organisation and co-operation models between the different parties in the supply chain. It seems clear that solutions to address this planning/matching problem must combine measures that address infrastructure/capacity but also the organisation of the overall logistics within the seaport and possible disruptions in the container supply chain.

1. **Existing measures and best practices set up by the actors along the container supply chain to improve container barge handling in seaports**
- 1.1 **Enhanced cooperation and awareness building among the actors in the container supply chain under the umbrella of seaport authorities**

For the short-term, it is clear that enhanced cooperation and exchange of information between the different actors in the container transport chains and port operations can generate “quick-wins”.

Organising workshops at regular intervals between the relevant stakeholders in the container supply chain can also be a way to foster such cooperation for the short-term, such as in the seaports of Rotterdam and Antwerp-Bruges where consultations take place on a regular basis and in a structured manner. This enables to set up specific action plans and develop strategies to improve container handling which are suitable to the maximum number of actors in the supply chain. For instance, an action plan for container barge transport was signed by the Antwerp port community. Since 2018 the Port of Rotterdam Authority is facilitating structural sector-wide meetings between all players in the container supply chain to improve barge handling. Such cooperation also results in awareness building on the functioning of the entire supply chain, to make each actor aware of the consequences of its actions on the rest of the chain.

One measure that is worth mentioning as an outcome of such consultations in Rotterdam is the introduction of inland container shipping guidelines for the port of Rotterdam. This document is addressed to shippers and freight forwarders and contains recommendations about the way all parties involved in the port operations can have an influence on the development of a more transparent and efficient structure for the inland container shipping chain. It notably underlines the importance of information sharing and contractual agreements.¹⁶

¹⁶ <https://www.portofrotterdam.com/sites/default/files/2021-06/inland-container-shipping-guidelines.pdf>

1.2 Association of inland ports for the benefit of information exchange¹⁷

Through cooperation and networking, the flow of goods can be made more efficient by improving bundling concepts for containers in the hinterland and optimising container movements at the seaport terminals.

- Rheincargo: association of the ports of Cologne, Düsseldorf and Neuss.
- DeltaPort Niederrheinhäfen GmbH: association of the city port of Wesel (salt, animal feed), the Rhine-Lippe port (heavy cargo), the ports of Emmelsum and Emmerich (containers), and the port of Orsoy (bulk cargo).
- Inland port in Duisburg cooperates with the port of Dortmund: cooperation between port locations enables a better shift of road freight transport to waterways.

More transparent information sharing (i.e. for ETAs) and flexible cargo opening and closing times

Strict cargo closing and opening times can be detrimental to inland barge operators, depending on the operational areas. For the trade in the Rhine region and beyond, strict cargo opening and closing times, as well as unpredictable delays of seagoing vessels, lead to severe and lasting competitive disadvantages for inland navigation, particularly when the journey time to the seaport lasts between three and five days (i.e. Basel to Rotterdam), as highlighted by Switzerland. Indeed, strict cargo closing and opening times are particularly problematic when container vessels are already underway from the hinterland and which, on arrival at the seaport, are confronted with adjusted cargo closing or opening times and cannot unload their containers at the seaport terminals as planned. The extension and flexibility of such cargo closing and opening times or more generally operating hours for the handling of inland waterway cargo in the seaport terminals appears as an important short-term measure to improve container barge handling.

In addition, more transparency regarding ETAs and cargo opening time of maritime ships also contributes to more efficiency on the part of seaport terminals. The Port of Antwerp-Bruges therefore launched an ETA platform¹⁸ to enhance transparency and the real time flow of information in the event of a maritime ship schedule being changed. Yet, cargo opening times may vary from one container to another, even if such containers are transported on a single maritime ship. This remains a hurdle for barge operators to deliver the containers when being faced with two or three different cargo opening times for one single maritime ship.

1.3 Fixed window agreements

Fixed windows for barge handling provide room for improved container barge handling as they enable barge operators to unload and load at fixed times at deep-sea terminals in the seaports. This enhances reliability for barge operators and solutions should be found to make such fixed window arrangements available to more barge operators in seaports. However, fixed windows are not always adhered to and are not proposed by all deep-sea terminals. In addition, fixed window agreements are generally subject to meeting specific criteria.

In the Port of Rotterdam for instance, it has been possible for barges to make use of (fixed) windows at all deep-sea terminals.

While the benefits of such (fixed) window agreements between deep-sea terminals and barge operators are clear, their use requires specific criteria to be met by inland vessel operators:

- o A minimum call size. In Rotterdam, a minimum call size which can vary between 150 and 200 or more containers per inland vessel.
- o Payment of a fee for fixed windows. In Rotterdam, this can vary from 800 to 1,600 euros for single or dual vessels with fixed windows. This fee is about 5 euro per container.

¹⁷ Marktbeobachtung Güterverkehr - Situation der Binnenschiffer in den deutschen Seehäfen und den ZARA-Häfen, Bundesamt für Güterverkehr, 2019

¹⁸ <https://www.portofantwerpbruges.com/en/our-port/open-data-platform/eta-terminal?fromSearch=true&query=ETA>

The possibility to enforce such agreements between the container barge operator and deep-sea terminals must be ensured in order for such agreements to be sustainable in the long run.

Deep-sea terminals cannot draw up fixed window agreements with all barge operators. Therefore, both handling of barges without windows and with fixed windows should take place at the deep-sea terminals and planned in practice. In Rotterdam, even without fixed windows, there is a minimal call size of 10 to 15 containers or more at the deep-sea terminals.

1.4 Continued and enhanced cooperation between inland barge operators

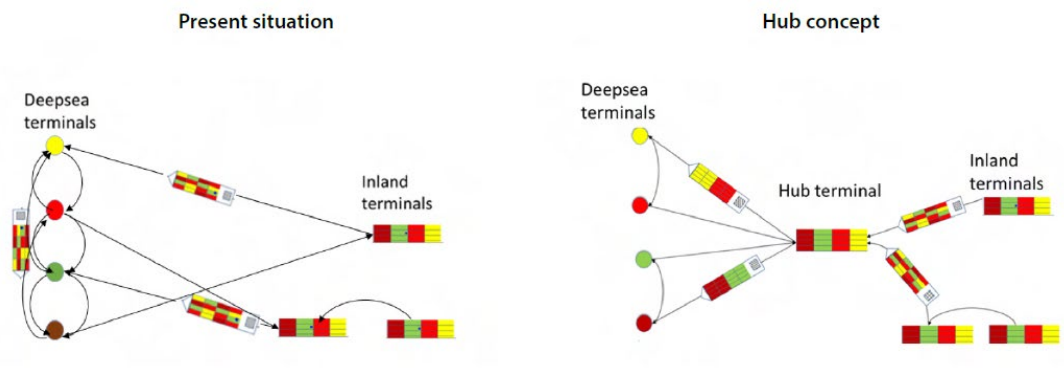
Outside such fixed windows, concepts to enhance container barge handling are also being pushed forward under the impulse of inland barge operators. In the Port of Rotterdam, Barge Transferium Maasvlakte - which connects the inland barge terminal in the Hartelhaven port area to the ECT Delta deep-sea terminal - has been in service since June 2020.¹⁹ It consists of a partnership between the terminal operator ECT and a consortium of inland barge operators and terminals. According to this agreement, ECT makes up a section of the terminal quay and a crane, as well as a crane team, which is available to the consortium on fixed days and times, at a fixed rate, while the handling planning is managed by the barge operators themselves. This transfer point concept was initially elaborated by the Danser Group and Combi Terminal Twente who subsequently formed a consortium with 26 other parties to ensure that the Transferium capacity would be used. This arrangement is not subject to minimum call size. However, it is subject to a standard rate and requires resources from inland barge operators dedicated to the planning.

In the Port of Antwerp-Bruges, the barge operators WeBarge and Contargo Transbox²⁰ have been operating container shuttle operations together in the Port of Antwerp-Bruges since the beginning of January 2021. They bundle their volumes with the purpose of optimising their container shuttle services to and from the maritime terminals. This can be seen as a “natural” way of cooperating to optimise operations.

This kind of cooperation can also be found in the bundling and hubs concepts which are explained in the next section.

1.5 Consolidation hubs: concepts and implementation²¹²²

Containers transported on inland waterways are regularly presented at sea terminals in small numbers spread over several vessels, instead of being collected and delivered in larger numbers by one or a few vessels. To optimise handling at the deep-sea terminal, call sizes of barges can be increased through the consolidation of container barges. Such consolidation can take place in the hinterland or in the port directly and can be represented as follows:



Source: CE Delft, Outlook hinterland and continental freight 2020

¹⁹ <https://www.portofrotterdam.com/en/news-and-press-releases/launch-barge-transferium-maasvlakte>

²⁰ https://www.contargo.net/en/news/2021-01-22_contargo_transbox_und_we/#:~:text=Since%20the%20beginning%20of%20January,optimising%20their%20container%20shuttle%20services.

²¹ <https://www.portofantwerp.com/en/optimising-container-barge#bundeling>

²² https://www.contargo.net/en/news/2021-01-22_contargo_transbox_und_we/

Beyond an increased call size for barges in the deep-sea terminals, other advantages can result from this concept. If one ship serves one or two deep-sea terminals instead of visiting several terminals in one trip, handling can be optimised in deep-sea terminals leading to higher reliability. Depending on the location of the hub, the total number of kilometres can be reduced, which could also offer opportunities, for instance, for vessels running on batteries. However, this concept also comes with shortfalls, mainly an extra transshipment operation leading to extra costs and legal issues. Currently such costs are borne by the inland navigation sector.

1.5.1 Hubs in the ports²³²⁴²⁵

In the Port of Antwerp-Bruges, the concept of consolidation was first introduced through the implementation of a five-year project in 2018. This pilot project consisted in the setting-up of a minimum call size of 30 moves at deep-sea terminals. As mitigating action, in order to offer an intermediate solution for barge operators who were not able to reach the minimum call size themselves and who were not able to find a partner with which to bundle its cargo, two consolidation hubs in the port and five on the main corridors to Antwerp-Bruges were installed. Extra handling costs on the side of barge operators linked with the use of such hubs are covered by subsidies. During this pilot project, the port noticed that the consolidation hub in the port was not used as much as expected, while barge operators adapted and collaborated to consolidate their container volumes, either outside consolidation hubs or in those in the corridors. As a result, the consolidation hub in the port was terminated and only the consolidation hubs on the corridors currently remain (until end of October 2023).

In the Port of Rotterdam, the concept of container bundling has been applied since 2018. Containers in the port are bundled at Maasvlakte, Waal-Eemhaven and Alblasterdam and transported directly by inland vessels to and from the deep-sea terminals according to a fixed schedule. This service is called the Rotterdam corridor.

All the barge service centres (barge/feeder/depot terminal), close to Maasvlakte deep-sea terminals offer the barge operators an escape route to unload (export) containers at this barge terminal with last-mile transport via road to the deep-sea terminals.

These initiatives in both ports have resulted notably in call sizes that are two to four times larger than previously and in fewer port calls with smaller volumes (approximately -40%), reducing the port stay time by 30%.

1.5.2 Hubs in the hinterland²⁶

Barge operators in the hinterland can work in hubs to bundle containers. They have assigned slots for scheduled services at one or more deep-sea terminals.

The port of Duisburg is, for instance, the most important hinterland hub of the ARA ports with regular services to the ports of Rotterdam and Antwerp-Bruges.

Bundling in the hinterland with services to the **Port of Rotterdam** is organised in the form of corridor partnerships, for example, the North West Central Corridor, the West Brabant Corridor, the Ruhr Express and the Limburg Express.

- These partnerships are the outcome of an inland container shipping consultation organised in 2017 at the initiative of the Port of Rotterdam Authority. This sector-wide consultation was set up in response to increasing waiting times for inland container vessels at terminals in the port of Rotterdam.

²³ <https://www.portofantwerp.com/en/optimising-container-barge#bundeling>

²⁴ <https://www.portofrotterdam.com/sites/default/files/2021-06/bundle-nodes-map-port-of-rotterdam.pdf>

²⁵ <https://www.portofrotterdam.com/en/news-and-press-releases/port-authority-welcomes-new-market-initiatives-increased-container-bundling>

²⁶ <https://www.portofrotterdam.com/en/news-and-press-releases/corridor-partnerships-help-strengthen-inland-container-chain>

- The corridor partnership concept was created according to the following observation: there are different shipping connections between the Port of Rotterdam and regions in the hinterland. A large number of inland terminals are located along these routes which are used by many inland vessels.
- Thus, various barge operators and inland terminals have decided to work together to bundle the flow of containers destined for specific deep-sea terminals. As a result, large volumes of containers can be moved between the different deep-sea and inland terminals using inland vessels that sail according to a fixed schedule. In addition, the barge operators and the deep-sea terminals have agreed to load and unload containers during specific time slots, and to put through a minimum number of containers (moves) per inland vessel. These agreements have made the handling of inland container shipping flows in the port of Rotterdam both more reliable and more efficient.
- The first corridor partnerships set up in 2018 were the West Brabant Corridor (WBC) and the Ruhr Express. They were soon followed by the North West Central Corridor, the CAN Corridor, the Limburg Express and the Maascorridor.

In the **Port of Antwerp**, in the context of the pilot project launched in 2018 and referred to in point a) above, the consolidation hubs on the corridors proved to be successful and will continue to be promoted. In terms of achieved results, it was observed that as a result of the consolidation hubs programme (2018-2023), the average call size at the maritime terminals increased significantly, with efficient cooperation in bundling containers. The cooperation on the corridors is now supported by the project “Impulse programme/Barge Express”²⁷ which promotes the “corridor shuttle” and the “Terminal Hub Shuttle” transport concepts.²⁸ A total of 2,6 million euros are available as part of this project in view of setting up fixed corridor shuttles from inland terminals to deep-sea terminals in the Port of Antwerp-Bruges (time period: 2022-2025). A main added value of such shuttles is that they are focused on one or two deep-sea terminals carrying large volumes, therefore increasing reliability (less domino effect in case of delays, more efficient handling by terminals, possibility to offer time window, etc.)

1.5.3 Overflow hub²⁹

The Port of Rotterdam is exploring the possibility of implementing overflow hubs to use capacity more efficiently, absorb peaks more effectively, spread volumes and respond to changes in the chain. Such overflow hubs can be understood as a temporary depot where containers can be diverted in case of huge delays or any other urgent situation that requires the (direct) need of a back-up scenario. It allows the sea and inland shipping processes to be disconnected so that disruptions to one process do not affect the other. As soon as the situation allows, the volume diverted to the overflow hub should be transported to the original destination.

To make sure that all types of volumes and flows can be diverted to these overflow-hubs, legal, governance and economic issues still need to be addressed before this concept can be applied in practice. In particular, a main challenge lies in identifying who would be responsible for transporting containers from these overflow hubs to the deep-sea terminals (arranging the transport, supporting the costs, supporting the responsibility in case of delays at the deep-sea terminals or damage during transit), and how the costs should be divided (because costs and benefits are not accrued to the same party). The overflow hub is a collective hub system that can only be profitable to all parties in the chain if the costs associated with its use are collectively shared (and not only paid by the barge operators/ terminals that will use the overflow hub (when collectively and not individually needed).

²⁷ <https://www.vlaanderen.be/impulsprogramma> . For this project, the Port of Antwerp established a partnership with the Flemish government, North Sea Port and Lantis.

²⁸ Corridor shuttle: a barge service between up to two maritime terminals (in practice usually one) and several inland terminals located along the same corridor. Terminal hub shuttle: a direct barge service for the main leg between up to two maritime terminals and one terminal hub along a corridor.

²⁹ <https://www.portofrotterdam.com/en/logistics/connections/intermodal-transportation/inland-shipping/optimising-inland>

1.5.4 “Mega” hubs

The concept of an overflow hub described above is more often foreseen in the case of urgent situations. However, it could be envisaged that such hubs could be available at all times, thereby enabling fixed-hubs systems. It would allow to disconnect the sea and inland shipping processes on a more structural basis and would provide certainty on the side of barge operators regarding where and when to unload their containers. With regard to the hub, a stable optimization on and long-term operation is required in order to be viable from an economic point of view. Such hubs could become “mega hubs”. It would remain possible for barge operators to call directly at deep-sea terminals when fixed windows are agreed upon, but such mega hubs could be alternatives for barge operators not calling directly at deep-sea terminals. The same legal, governance and economic issues outlined above would also need to be addressed.

1.6 Enhanced planning and anticipation of possible disruptions³⁰

1.6.1 Central planning as a best practice

An example of a best practice to optimise handling plans lies in central planning. In the Port of Hamburg, deep-sea terminals (HHLA and Eurogate) set up a joint company³¹. Hamburg Vessel Coordination Center (HVCC), to coordinate vessel approach, the rotation and stow planning of feeder vessels and barges, the communication with all stakeholders regarding vessel calls as well as the coordination of ultra-large vessels during the approach and departure. The objective was to increase handling quality and schedule reliability.

In the Port of Antwerp-Bruges, one single office (Antwerp Terminal Services, part of PSA) has been drawing up the barge handling schedules for the PSA, MPET and DP World terminals since 2019 on a 24/7 basis. Among the next steps foreseen to improve this central planning, it would be desirable to ensure that more terminals connect to this service.

In the Port of Rotterdam, Nextlogic³² was launched in 2023, providing a new integral and neutral planning system for handling inland container barges at all deep-sea terminals in Maasvlakte. Most of the barge operators participate, representing more than 60% of barge volumes in order to improve handling of barges at deep-sea terminals. Also, empty depots are starting to participate, to enable the planning of barge container flows in the port of Rotterdam and therefore be integral (and not bilateral) across all terminals. It consists of a planning tool and an information platform that ensure timely handling of inland container ships in seaports.

1.6.2 Digitisation

The share and/or exchange of data have become essential in a globalised world where planning processes need to be as efficient as possible. A key challenge is therefore to make information systems compatible with each other so that they can be used by all those involved in the process. A prerequisite for this is the willingness of all process participants to share their information with each other which, according to professionals from the sector, is not always the case. In fact, the lack of willingness can be explained, on the one hand, by the confidentiality problems this implies, and on the other hand by the fact that barge operators do not want to bear additional costs for the use of such systems without the assurance that those systems are operational.

In this regard, berth management systems ensure a cross-company exchange of data and information flow of all parties involved in the process.

³⁰ Marktbeobachtung Güterverkehr - Situation der Binnenschiffer in den deutschen Seehäfen und den ZARA-Häfen, Bundesamt für Güterverkehr, 2019

³¹ Information about HVCC available here: https://www.hvcc-hamburg.de/site/assets/files/1/feb_2020_hvcc_company_presentation-1.pdf

³² Nextlogic is a joint initiative of ship operators, seaport terminals, depots, shipping companies and inland terminals in cooperation with the Port of Rotterdam Authority and the Dutch Ministry of Infrastructure and the Environment. See [Nextlogic moves to standard service provision | Port of Rotterdam](#)

- Port of Hamburg:
 - o No digital berth management system for inland shipping.
 - o Development of a digital platform specifically for inland vessels that can be used to centrally coordinate ship calls (HPCC).
 - o A digital port map is currently being created and will provide an overview of all public inland vessel berths.
- Port of Rotterdam:
 - o Portbase:³³ it uses the Port Community System to provide a platform for all parties to exchange information relating to the logistics chain involving Rotterdam. For the hinterland services, barge operators can make use of the Hinterland Container Notification Barge to pre-notify barge calls and obtain insight on the status of rotations, visits and cargo data. This enables obtaining real-time information about a container's current status.³⁴ All deep-sea terminals are connected to this system, but it is not yet the case of all of the port locations (terminals and depots).³⁵
 - o Routescanner:³⁶ this platform offers a visual overview of all deep sea, short sea, rail and inland shipping connections that run via the port of Rotterdam, but also via the Port of Antwerp-Bruges and all ports in Europe. It then allows operators to share their transport schedules free of charge and in real time for shippers (cargo-owners) and forwarders to find optimal and sustainable routes.
 - o Cargo Tracker:³⁷ this application allows shippers and freight forwarders to 'track and trace' a container's journey via the port of Rotterdam to its destination in the hinterland.
- Port of Antwerp-Bruges:
 - o The platforms "C-POINT" and NextPort offer a complete package of applications to promote digital communication between all actors present in and around the Port of Antwerp-Bruges.
 - o The Barge Traffic System (BTS) is used by barge operators to request a slot at the terminals in Antwerp. Moreover, it gives information on the locks in the port and the position of the barge. This system is free of charge, but mandatory for all container terminals and for all barges that load or unload containers. This system is periodically updated to meet the needs of users.
 - o Based on the slot request in BTS, the central barge planning draws up a schedule for the barges at the terminals of MPET, DPWorld and PSA, using their own planning software.
- Port of Bremerhaven:
 - o No digital berth management, but the port authority is staffed and available every day at any time to answer enquiries about berths.
 - o Inland vessels are registered with the port authority by radio or telephone.
 - o The project "Intelligent" aims to optimise the coordination between the actors involved, in particular the interaction between inland ports and seaports as well as between waterborne and landborne modes of transport.
- Port of Amsterdam:
 - o No digital berth management but there is a digital port map showing the berths for inland vessels.
 - o The reporting obligation of inland vessels entering and leaving the port is done by contacting the harbour master via VHF radio channels.

³³ Portbase services are smart IT solutions aimed at facilitating the easy and efficient exchange of data in the logistics chain.
[Services - Portbase](#)

³⁴ Portbase: [Hinterland Container Notification Barge - Portbase](#)

³⁵ <https://www.portbase.com/en/services/hinterland-container-notification-barge/>

³⁶ [Direct Connections \(routescanner.com\)](#)

³⁷ idem

- RPIS (RheinPorts Information System): new cooperation project of the nine Upper Rhine ports known as “RPIS 4.0”. The project with a financial volume of €1.4 million aims to extend the RPIS platform to new traffic and develop new digital services for the port community. The project coordinated by the port of Karlsruhe ran until April 2022.³⁸ It consisted in a comprehensive port communication system (traffic management platform) in the hinterland which today covers the handling of container vessels at numerous inland ports on the Upper Rhine.
- Port of Marseille and the Rhône-Saône axis: implementation of the MeRS project which focuses on the Blockchain technology. The latter consists of securely sharing the recording and tracking of transactions and goods thanks to a general data pooling logic in real time.
Through the continuous inventory of exchanges, the blockchain offers a permanent overview of the logistical process. The result is an increased capacity for anticipation and, consequently, greater fluidity in the management of transport.³⁹

1.7 Capacity and infrastructure

- **Investments in dedicated barge handling infrastructure in the seaports.** Small cranes could be used to enhance the handling of the barges and dedicated handling space/berths for inland barges could be developed to reduce the waiting time of the barges. Such dedicated barge quays and barge cranes already exist in the Port of Rotterdam at the deep-sea terminal in Maasvlakte as well as in the Port of Antwerp-Bruges. Investment in extra capacity is also projected in the Port of Antwerp-Bruges with the “Extra Container capacity Antwerp” (ECA) project.
Nevertheless, outstanding issues remain, notably as to who would bear the responsibility for these investments and what the cost-benefit analysis of these investments would be. For instance, in the Port of Antwerp-Bruges, the three maritime terminals have dedicated barge berths which are not always active as their use is often suboptimal for terminals (less efficient, extra transportation costs to reach the dedicated berths...).
- **Ensuring that labour force is available for the handling of container barges.** Labour force is not always available for the handling of container barges. This can result from labour shortage, from the labour force being occupied with the handling of a large maritime ship or from the lack of optimization of the labour force shifts. The availability of dedicated teams for the handling of container barges could be a solution (i.e. fixed window or example of the Barge Transferium Maasvlakte). Digitisation can certainly also improve optimization of shifts. It can be observed more and more that the availability of dock labour force is not necessarily linked to labour shortage, but rather the choice of terminals not having dedicated gangs. Indeed, if container barge volumes are too low, there is a risk that the labour force remains partly idle, which is not a cost-effective solution for terminals.
- **Improving navigability conditions between seaports and the hinterland.** For instance, increasing the size of lock chambers can enable the transit of larger vessels, thereby improving the interconnection between the different basins. This is illustrated in the example of the lock of Lanaye in Belgium.⁴⁰ In this context, the Sunday opening of the Albert Canal locks from January 2024 onwards can also be mentioned as a positive development. In the Netherlands, the Ministry of Infrastructure and Water management has asked the provinces/businesses/ barges to pay for extra Saturday and Sunday opening of locks in the Meuse and Brabant canals (‘24/7’ opening) in 2025.

Nevertheless, even if handling inefficiencies in seaports are strongly linked to commercial issues, it seems that they cannot be solved by the market alone. Such inefficiencies would ultimately lead to difficulties in achieving the ambitious European and national modal shift to inland waterways targets. This justifies possible interventions on the part of national public authorities which could have a non-negligible influence on this issue.

³⁸ <https://www.strasbourg.port.fr/actualites/rpis-4-0/>

³⁹ <https://lefranchsmartportinmed.com/les-actualites/mers-une-blockchain-mediterranee-rhone-saone>

⁴⁰ https://ec.europa.eu/transport/sites/default/files/3rd_workplan_nsm.pdf

2. Public intervention: regulatory, financial and policy measures

2.1 Public funding at European, national and regional levels

Several examples of projects and programmes supported by public funding exist in various fields.

There are many programmes (generally multiannual) at national level that address the **infrastructure needs for inland navigation**. Collaboration between the port authorities and the relevant Ministries could take place and/or be strengthened to determine the infrastructure needed to address the issue of congestion/inefficient handling for barges in seaports.^{41 42 43} The Trans-European Transport Network (TEN-T) supports the construction of infrastructure in European ports through the CEF programme. Member States' support is generally needed for a project to receive funding. Application for funding should be sufficiently anticipated by the different parties to ensure that the different projects are supported at national level.

Public funding is also available in other fields. The NOVIMOVE project is for instance an EU-funded project which works, in collaboration with stakeholders of different backgrounds, on reducing waiting times at seaports in the Rhine-Alpine corridor from Rotterdam/Antwerp all the way to Basel. Through virtual simulations, scaled model tests and full-scale demonstrations, it conducts research on how to improve the logistics of inland waterway transport.⁴⁴ The RPIS project mentioned above was also supported by the EU Interreg funds.

Public funding can also play a role in subsidising projects for the benefit of enhanced planning through digitisation.

Several examples of public funding provided to support market solutions also exist. This is the case for:

- the pilot project in the Port of Antwerp-Bruges relating to consolidation, where the setting up of hubs and the extra handling linked to their use were co-financed by the Flemish government;
- the “Barge Express” project aiming at developing corridor container shuttled, also co-financed by the Flemish government.

In the Netherlands, the Ministry of Infrastructure and Water management launched a modal shift programme for the period 2021-2025.⁴⁵ It consists of yearly calls for shippers/forwarders and for barge operators via:

- subsidies: stimulate the shippers and forwarders to shift containers from road to barge and pay a maximum of 20 euros per container for a three-year period;
- tenders: stimulate barge operators to apply for tenders/concessions and to start new or scale up existing liner barge services to transport more containers via barge for a period of three years (with a maximum of 500,000 euros for a three-year period).

A financial intervention from national authorities could also be appropriate to support over capacities which would only be used in some instances (peaks in congestion, economic boom leading to an unexpectedly high number of containers for a certain period, etc.) Indeed, from a business perspective, it might not be economically viable to invest in such extra capacities. However, financial support programmes take a long time to be negotiated and by the time such programmes are up and running, they might no longer be suited to the changing economic environment. Therefore, such programmes should be designed in a way that they can be adjusted to a fast-changing economic environment in order to be efficient.

⁴¹ <https://www.portofrotterdam.com/en/building-port/accessible-port>

⁴² https://transport.ec.europa.eu/transport-themes/infrastructure-and-investment/trans-european-transport-network-ten-t_en

⁴³ <https://www.haropaport.com/fr/rouen/projet-damelioration-des-acces-maritimes-du-port-de-rouen>

⁴⁴ <https://novimove.eu/concept/>

⁴⁵ See [ModalShift \(modalshiftprogramma.nl\)](#) and [Meedoen – ModalShift \(modalshiftprogramma.nl\)](#)

2.2 Political influence leading to market or regulatory changes

2.2.1 To influence competition law at European level

Organisations representing the inland waterway profession at European and national levels are raising awareness regarding the possible risks linked with the ever-growing market power of deep-sea shipping companies which give them leverage to:

- tighten demurrage and detention conditions (often to the detriment of rail or inland navigation which have longer round trips than road);
- gain market shares on the land-side logistics (transport of containers from seaport to hinterland and vice-versa), thus competing directly with freight forwarders. This is not necessarily a bad option as long as the service provided is of good quality.

It appears important to ensure that such developments are always in favour of an efficient container supply chain and modal shift.

Competition authorities are those best placed to monitor the competition setting in the container shipping market and evaluate its impact on the container supply chain. This requires improved data collection and transparency on the side of maritime carriers, in particular regarding the shipping rates and charges.

In the short term, attention could be given to the ongoing evaluation of the CBER regulation to assess whether it should be renewed and if so, according to which conditions. In the longer term, guidelines on the use of detention and demurrage conditions or other behaviour which could possibly disturb the equity or modal shift objectives, could be developed.

2.2.2 To build awareness among the actors in the container supply chain and authorities whose decisions can improve container barge handling

Under the influence of public authorities in France, the pooling of Terminal Handle Charges (THC) is now applied in Dunkerque, and more recently in the Port of Marseille-Fos. Indeed, France is a very specific example in this matter, as container barge operators must bear part of the handling costs, while for other modes this is borne by the maritime companies. This situation has a negative impact on the competitiveness of inland transport compared to other modes. This situation can be addressed by pooling THCs, which implies that the additional handling costs are no longer borne by the container barge operators alone.⁴⁶ Similarly, the merger of the ports on the Seine axis (Rouen, Le Havre and Paris), whose objectives included optimising container handling processes, was stimulated by public authorities. A similar reflection is underway for the Rhône-Saône axis.

In the Netherlands, under pressure from the Dutch government, the Port of Rotterdam agreed with some deep-sea terminals that on Maasvlakte 2, intermodal transport (barge and rail) must capture at least 65% of total container transport flows to the hinterland. Rotterdam is the only documented example in western Europe where modal split targets have been formally integrated in legally binding clauses of terminal concession contracts. This certainly puts additional pressure on deep-sea terminals to ensure that the container barge handling process is efficient. However, it remains to be seen how such clauses will be enforced and whether the integration of such modal shift clauses will lead to improvements.

The inland container shipping guidelines developed by the container barge handling platform in Rotterdam could be promoted at European, national and regional levels to influence the development of a more transparent and efficient structure for the inland container shipping chain. In this process, the need to introduce binding agreements on an operational level (between barge operators and deep-sea terminals) could be highlighted further.

⁴⁶ <https://portsetcorridors.com/2022/le-ministre-des-transport-annonce-des-mesures-en-faveur-du-fluvial/>

Similarly, the importance of the Rhine in optimising the container logistic chain should be promoted. For instance, studies showing how the container logistic chain would be affected in the event where Rhine navigation would no longer be available could be relevant. Data from the 2018 low water episode on the Rhine could certainly be used for this purpose. This could raise awareness among the different actors in the container supply chain about the importance of inland navigation for the transport of containers to and from the hinterland and therefore point to the need to ensure reliable and efficient container barge handling.

2.3 **To exchange information and good practices at international level**

Exchange of information and good practices at international level can play an important role to improve container barge handling. This can take the form of regular exchanges and presentation about projects in various Rhine states to improve container barge handling and, on the other hand, regular reporting from Rhine Member States, from organisations representing the profession or from the container barge handling platforms in Rotterdam or Antwerp-Bruges.

Indeed, this would enable Member States to possess up-to-date information and learn from best practices implemented in the various Member States in order to take action directly where possible or influence the decision-making process at the right level where needed (at the level of ports, at national level, at European level, etc.)

2.4 **To stimulate policy measures to foster modal shift and reliability of inland navigation**

Should the demand for container barge transport increase in the future, it will be necessary to improve the efficiency of container barge handling to accommodate this increased demand.

The positive development of container barge transport requires the inland navigation leg of the container transport chain to perform efficiently, to ensure that shippers, freight forwarders, or maritime carriers continue to choose inland navigation to transport their containers from and to the hinterland. This calls for policy measures fostering modal shift to inland navigation, its sustainability and its reliability.

- How to improve the sustainability of inland navigation?
- Should external costs be internalised?
- Should pricing policies be modified/adapted/harmonised to foster modal shift (charges/tolls for trucks? Emission trading schemes? Differentiated surcharges at deep-sea terminals according to modes in case of fixed windows?)
- How to improve the resilience of inland navigation to low waters?
- How to ensure year-round navigation?

Avenues for the future

While the issue of congestion in seaports and inefficient container barge handling was not new, the Covid-19 pandemic and the Suez Canal blockade, brought another dimension to the problem as new restrictions at the terminals aggravated the infrastructure's bottleneck. This crisis particularly enhanced three key elements:

- **The necessity to achieve a higher degree of predictability for arrival and departure times of deep-sea and inland vessels**
Reflection on the use of AIS (with permission of barge owners /operators) for better voyage planning and forecasting of ETA and ETD of vessels.
- **The need for a well-functioning slot management:** it can ease the current pressures on ports, carriers and shippers caused by congestion and the consequent unpredictability and increased expenditure. A slot time provides each actor involved with the opportunity to plan ahead and coordinate their activities towards achieving the common goal of a predictable and timely delivery. At the same time supply chain visibility is improved.

- **The need for data sharing:** a well-functioning slot management regime depends heavily on data sharing. In fact, the purpose of this regime is to enable all affected actors to share a common situational awareness which is particularly important when plans and forecasts begin to change.⁴⁷

In order to stimulate modal shift to inland navigation, the issue of inefficient handling of inland waterway cargo in seaports must be addressed. Cooperation and exchange of information between the different actors in the transport chains must continue and be improved. This is particularly relevant when contractual agreements are being arranged. When it comes to demurrage and detention for instance, establishing appropriate parameters with the deep-sea shipping company could reduce time pressure on the delivery and collection of containers.

It seems necessary to find the right equilibrium between low costs and quality of transport. For instance, in a press release published in early 2021,⁴⁸ EBU underlined the necessity for port authorities to focus on quality instead of mainly focusing on volumes and traffic. In fact, this strategy led to the increasing number of megaships which have a disrupting effect on the overall quality of the local port operations given the priority they enjoy. Thus, many European seaports suffer from congestion which affects the reliability of inland navigation operations and therefore affects its image.

Finding this equilibrium certainly requires shared efforts on the side of all actors involved in the transport chain: port authorities (maritime and inland), Member States, EU, local/regional authorities, maritime industries, container barge operators, shippers/forwarders, terminal operators.

Role of the different actors

Port authorities should not underestimate their role, which is key in improving container barge handling, not only as a landlord, but first and foremost in their role as monitor and facilitator which brings together the relevant actors in the chain, draws up joint action plans, optimises capacity, guards the process and stimulates working together to build efficient and sustainable supply chains.

All actors along the chain have a role to play in sharing information at the right time and take actions that are their own responsibility to improve efficiency in the container barge handling process.

While **CCNR** has no mandate or power to play a direct role in solving inefficiencies with regard to container barge handling, it can contribute to improving container barge transport in several ways:

- Building awareness among relevant actors with regard to how and why container barge handling should be improved, i.e. promote the essential role played by the Rhine when to support the container logistic chain through its market observation studies.
- Exchanging information and best practices at international level.
- Stimulating policy measures within its mandate contributing to foster modal shift and reliability of inland navigation and thereby container barge transport (i.e. adaptation to low waters, reflection on implementation of polluter-pays principle to promote sustainable modes of transport). Indeed, in order to foster the development of container barge transport, the inland navigation “leg” of the container logistic chain must be optimal.
- Exercising political influence, where relevant and within its field of competence, leading to possible market or regulatory changes.

⁴⁷ <https://www.maritime-executive.com/editorials/how-time-slot-management-could-help-resolve-port-congestion>

⁴⁸ https://www.ebu-uenf.org/wp-content/uploads/Port-handling-congestion_EBU-reaction-on-ESPO-20210208.pdf

