Ensuring hinterland access

TEACHING NOTE PORT OF ROTTERDAM AUTHORITY

Case summary

The port of Rotterdam (RTM for short) competes with other ports in the Hamburg Le Havre range. Rotterdam is by far market leader for liquid & dry bulk and is also the market leader in containers, but closely followed by Hamburg and Antwerp. Competition between ports is fiercest in the container segment, partially because all ports want to attract this growing market. In the last 15 years, Rotterdam has lost market share in the container market, especially to Antwerp and Hamburg. RTM has suffered from capacity shortages and a lack of intra-port competition. Furthermore, compared to Antwerp, port dues are relatively high. However, the impact of such port dues on the total chain costs is moderate.

With regard to hinterland transport, the 'modal split' is important. Road is the dominant mode for containers for many ports, because of its high flexibility and because the majority of containers is destined within 200 km from the port. Inland shipping has a relatively large share in Rotterdam and extent Antwerp, because the good access to the Rhine. Hamburg is a 'rail port'. Port of Rotterdam Authority invests substantially in the construction of Maasvlakte 2, new land, amongst others for container terminals. Expansion is essential for the port to continue to meet the rising demand in future and to maintain its leading role. Construction has started in 2008 and according to planning, the first containers can be handled in 2013.

Especially given the capacity expansion project Maasvlakte 2, the quality of *hinterland access* is very important for Rotterdam. While there is substantial additional capacity in the inland shipping system, and also additional capacity for

rail transport, after completion of the Betuwe Line, a dedicated railroad that connects Port of Rotterdam to the German rail system, the highway infrastructure is congested, and capacity expansion is problematic given lack of space as well as societal support. Therefore, the board of directors of Port of Rotterdam Authority believe that the modal split needs to change in favour of rail and barge. However, PoR so far has not fully analysed the hinterland access challenge and not developed a clear strategy. Thus, the board has put together a team of young executives to develop such a strategy. More specifically they would like the team to address the following questions:

1. What should be the most important measurable goals of PoR with regard to hinterland transport?

2. Develop a longlist of activities PoR could engage in to improve hinterland access and develop a schematic overview of these possible initiatives of PoR to improve hinterland access. Analyse 'mode selection processes' as well as 'port selection processes' to identify possible initiatives. When developing this longlist, analyse specifically the possibility of concession clauses for terminal operators as well as intermodal transport incentives in port dues. Make an argumented choice for maximum five initiatives that are top priority for PoR to improve hinterland access.

3. Make explicit what criteria you have used to select these initiatives. Indicate how these initiatives are aligned with activities of other companies in the transport chain (such as terminal operators and shipping lines) and discuss to what extent and how a positive business case (e.g. sufficient return on investment) for these initiatives can be developed.

LEARNING OBJECTIVES AND APPROPRIATE AUDIENCES FOR CASE

This case is meant to introduce students to the port industry and more specifically the role played by port authorities in this industry. Futhermore, the case serves to increase the students understanding of the importance of hinterland access and intermodal transport. This is relevant for supply chain students as global supply chains rely on efficient port & hinterland services, and a disruption of such services strongly impacts supply chains. So the following audiences can learn from this case:

- Students with a focus on maritime transport & logistics
- Students with a focus on (global) supply chain management
- Students with a focus on strategic management, across different industries

There is abundant secondary reading, so students can quickly gather new knowledge & insights.
A couple of relevant publications:

- **Franc, P., Van der Horst, M. (2010)** Understanding hinterland service integration by shipping lines and terminal operators: a theoretical and empirical analysis, Journal of Transport Geography, 18, 557-566
- **Giuliano, G. and O'Brien, T. (2008)** Extended gate operations at the ports of Los Angeles and Long Beach: a preliminary assessment, Maritime Policy and Management, 35(2), pp. 215-235.
- **Konings, R. (2007)** Opportunities to improve container barge handling in the port of Rotterdam from a transport network perspective, Journal of Transport Geography, 15(5), pp. 443-454.
- **De Langen, P.W. (2007)** Port competition and selection in contestable hinterlands; the case of Austria, European Journal of Transport Infrastructure Research, 7(1), pp.1-14.
- **De Langen, P.W. (2008)** Ensuring Hinterland Access: The Role of Port Authorities, OECD Discussion Paper No 2008-11 (available at www.porteconomics.eu)
- **Notteboom, T.E. and Rodrigue, J.P. (2005)** Port regionalization: towards a new phase in port development, Maritime Policy and Management, 32(3), pp. 297-313
- **Notteboom, T.E. (2008)** The relationship between seaports and the intermodal hinterland in light of global supply chains. European challenges, OECD Discussion Paper No 2008-10 (available at www.porteconomics.eu)
- **Roso, V., Woxenius, J., Lumsden, K. (2008)** The dry port concept: connecting container seaport with the hinterland, Journal of Transport Geography, 17, 338-345
- **Slack, B., 1999.** Satellite terminals: a local solution to hub congestion? Journal of Transport Geography 7 (4), 241–246.

ESTIMATED TIME INDICATION:

- Case introduction 0,5 hour
- Self study: preparation of case in small groups (3-5 students) minimum10-15 hours
- Presentation of case results (10 minutes per group)

TEACHING SUGGESTIONS

The suggestion is for students new to the industry to do this case as an assignment, so that they can find relevant secondary reading, familiarize with the port industry and discuss potential strategies. Students with background knowledge in the industry may also take the case in class, to come up with answers after two hours.

Questions to facilitate discussion of the case

1. *Why would PoR need to play an active role in ensuring hinterland access in the first place (instead of just leaving it to terminal operators, shipping lines, forwarders and other players in the logistics industry)?*

Considerations:

- Hinterland access is a port wide issue: none of the private firms has resources or incentives to secure good access to the hinterland. In most countries, governments, as owners and planners of infrastructure are deeply involved as well. Thus, some sort of public private partnership is required for effectively investing in hinterland accessibility. The PA has a role in such partnerships.
- Revenue streams of PAs are related to the quality of hinterland access, so PAs have an incentive as well.
- Port authorities generally have a public mission, to contribute to regional economic development. PAs can use revenues to invest in 'collective goods'.

2. *Do you share the conviction of the board that hinterland access –in a growing market- requires a shift from road to other transport modes?*

Considerations:

- Road congestion is often blamed on port traffic, -while this generally is not accurate-. This puts pressure on ports to demonstrate efforts to solve congestion. In this context, lobbying for more road infrastructure is not likely to be effective.
- Road capacity expansion, especially in densely populated areas with organised stakeholders, may be costly & time consuming. This certainly is the case in Rotterdam.
- Use of rail & barge has societal benefits (environment and reduction of congestion), that PAs may take into account.
- Investing in barge and train may be effective in the long term, since a larger share of both is to be expected for a number of reasons (efficiency gains in barge & rail, environmental concerns, introduction of road pricing policies to restrict road freight traffic).

THE CASE QUESTIONS

1. What should be the most important measurable goals of PoR with regard to hinterland transport?

The goals below are identified and monitored by PoR. Most competing ports have similar goals:

- Improve modal split, with less road traffic and more rail and barge traffic
- Increase the market share of Rotterdam, especially in the contestable hinterland
- Increase 'intermodal connectivity' to hinterland destinations

2. Develop a longlist of activities PoR could engage in to improve hinterland access and develop a schematic overview of these possible initiatives of PoR to improve hinterland access. Analyse 'mode selection processes' as well as 'port selection processes' to identify possible initiatives. Also, analyse specifically the possibility of concession clauses for terminal operators as well as incentives in port dues for intermodal transport.

A. Analyse ‘mode selection processes’ as well as ‘port selection processes’ to identify possible initiatives.

Considerations:
The table below provides some guidance

TABLE 1: OVERVIEW OF ROLE OF FIRMS IN CHOICE OF TRANSPORT MODE

Type of company	Role in choice of hinterland mode	Possible PoR proposition for these companies
Shipper	Either makes this choice or outsources choice to LSP	Even large shippers manage small volumes as % of total volume (no more than 1%). So only the truly large shippers are relevant. Provision of information and ease of transactions central in PoR proposition.
Container Shipping Line	Makes choice for hinterland mode for ‘carrier haulage’. Given concentration in industry, carriers control large volumes. Carriers purchase inland transport services from barge/train operators.	Possibly incentives for favourable modal split.
Terminal Operator	Some terminal operators are developing ‘terminal haulage’ services to (a network of) inland ports. Others invest in inland ports.	Incentives and/or modal split clauses in concession contracts. Act as landlord at inland ports; value through port community system.
Freight Forwarder/ 3rd party LSP	Make choice for inland mode. Fragmentation in industry, only the few large forwarders handle large volumes. Very price sensitive. Purchase inland transport services.	No contracts, so no basis for incentives. Hard to develop a strong proposition, based on value creation by PoR
Barge Operator	Provides transport service, generally focused on efficient operations, not on value creation for shipper	Initiatives to enhance efficiency of barge operations. Mostly related to information exchange and planning.
Train Operator		Initiatives to enhance efficiency of barge operations. Mostly related to information exchange and planning.
Inland port terminal operator	No influence over modal choice, but influence over efficiency of operations.	Initiatives to enhance efficiency of barge operations. Mostly related to information exchange and planning.

B. analyse specifically the possibility of concession clauses for terminal operators as well as incentives in port dues for intermodal transport.

Port dues: port dues are paid by the shipping lines. These have a very limited control over modal choice. *Carrier haulage,* hinterland flows controlled by the carrier (the shipping line), in Rotterdam accounts for no more than 30-40% of total hinterland flows. The remaining part is controlled by shippers or forwarders (merchant haulage). These purchase a port-to-port service from the shipping line and organise hinterland transport themselves.

An incentive in port dues for a favourable modal split will affect the shipping lines, as these pay port dues. However, for the largest part of the traffic, the logistics service provider or shipper decides on the transport mode to use. Furthermore, the port dues amount to no more than roughly €4 per TEU, small compared to the terminal costs (roughly €100-150 per TEU) and the hinterland costs (depending on distance, roughly €0.6-0.9 per km from the port, for door-to-door transport (either road or intermodal). So an incentive for intermodal transport in port dues may especially be relevant

from a customer relationship and marketing perspective. A further complication is related to monitoring: can intermodal volumes of shipping lines be measured objectively? This may require costly administration processes.

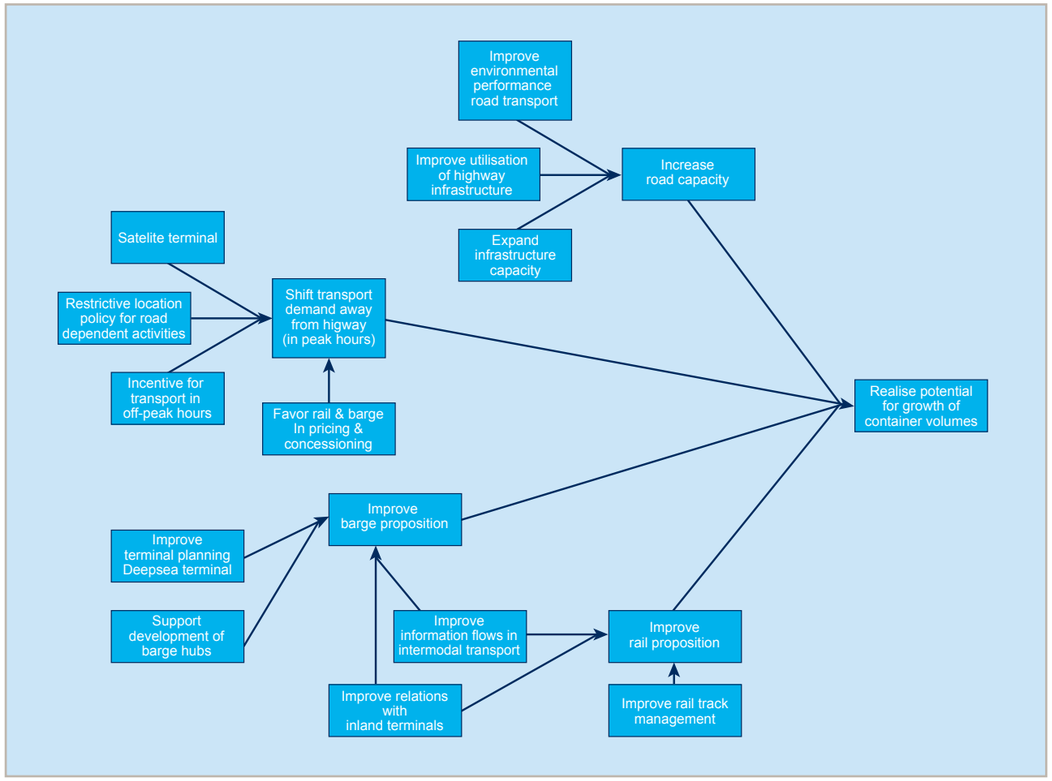
Concession contracts. Terminal operators lease a terminal, generally for a long period, based on a concession contract. In principle: modal split can be influenced in such a contract in three ways:
• As an evaluation criteria in awarding procedures, e.g. in relation to terminal lay-out.
• By providing incentives for intermodal volumes/ disincentives for road volumes
• By including a modal split requirement in the contract that stipulates a minimum required modal split.

The first approach is feasible in general, and can be combined with the second & third approach. The second approach has an advantage in terms of ‘sending the right signals’, but difficulties concerning monitoring. The third approach may only be feasible when the terminal concession is very much in demand and faces similar monitoring issues. Both options can have a huge impact on the modal split and probably constitute the most important direct influence of PoR.

PoR decided to include modal split requirements in terminal concession contracts and not to introduce an incentive for intermodal transport in the port dues.

C. Develop a longlist of activities PoR could engage in to improve hinterland access and develop a schematic overview of these possible initiatives of PoR to improve hinterland access.

A scheme should include most of the elements listed below:



Important considerations
In all initiatives, partnerships are crucial both for PoR to attract other financial resources and to ensure initiatives are widely accepted by stakeholders.
In all initiatives, the 'business case' should be positive.

3. Make an argumented choice for maximum five initiatives that are top priority for PoR to improve hinterland access. Make explicit what criteria you have used to select these initiatives. Indicate how these initiatives are aligned with activities of other companies in the transport chain (such as terminal operators and shipping lines) and discuss to what extent and how a positive business case (e.g. sufficient return on investment) for these initiatives can be developed.

Relevant criteria for PoR include
• Does it improve the accessibility of Rotterdam?
• Does it lead to a modal shift?
• Is the business case for the initiative positive?
• Is the role of PoR in line with its capabilities and market position?

WHAT REALLY HAPPENED

Based on the general framework given below, this is what really happened:

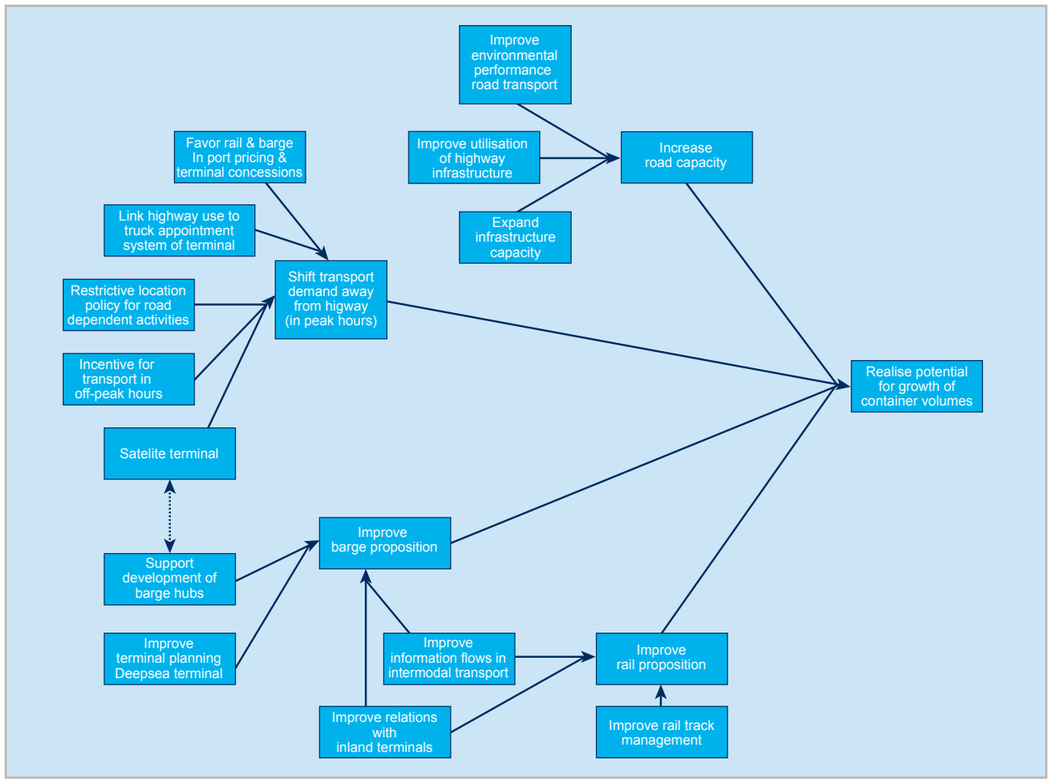


TABLE 2: INITIATIVES BY THE PORT OF ROTTERDAM AUTHORITY

Main objective	Initiative	Activities Port of Rotterdam Authority
Increase road capacity	Improve environmental performance road traffic	Agreements with industry only to allow clean trucks to the access highway for the port
	Improve utilisation of highway infrastructure	Development of a traffic management company, with five partners (PoR, the port industry association, the municipality of Rotterdam, the regional authority in charge of transport policies and the ministry of transport (the owner of the highway infrastrucuture). This 'company' is fully focused on improving utilisation.
	Expand infrastructure capacity	PoR actively develops plans for a 'missing link' (tunnel) in the road infrastructure, and is willing to invest in this infrastructure.
Shift traffic away from (peak hours on road	Favor rail & barge in port pricing & terminal concessions	Modal split clauses in concession contracts.
	Link highway use to truck appointment systems of terminals	No activities so far
	Restrictive location policy for road dependent activities	Road use is estimated for new activities and activities that generate huge road transport flows are no longer actively attracted and in some cases not accommodated (examples of European distribution centers and empty container depots.
	Incentives for transportation off peak The 'traffic management company' provides incentives for passengers	The 'traffic management company' provides incentives for passengers not to use the highway in rush hours, no incentives for freight traffic.
	Satellite terminal	PoR plans to invest in a satellite terminal 50 km away from the port, before the congestion areas.
Improve barge proposition	Support development of barge hubs	No activities
	Improve terminal planning of deep-sea terminal	No activities, left to the barge companies themselves
	Improve relations with barge terminals	Initiative to jointly develop a 'quality label for inland ports'.
Improve rail proposition	Improve information flows in inter-modal chain	Investments in Portbase, a port community system for efficient data exchange in the transport chain.
	Improve rail track management	Development of a rail infrastructure management company, together with the national railway owner and Port of Amsterdam, that commercialises the dedicated rail track from Rotterdam to germany, with the goal to improve utilisation of this infrastructure.
	Improve relations with rail terminals	No activities

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