

# **Emergence and Significance of Dry Ports**

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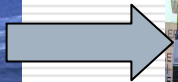
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Göteborg 2008-09-05

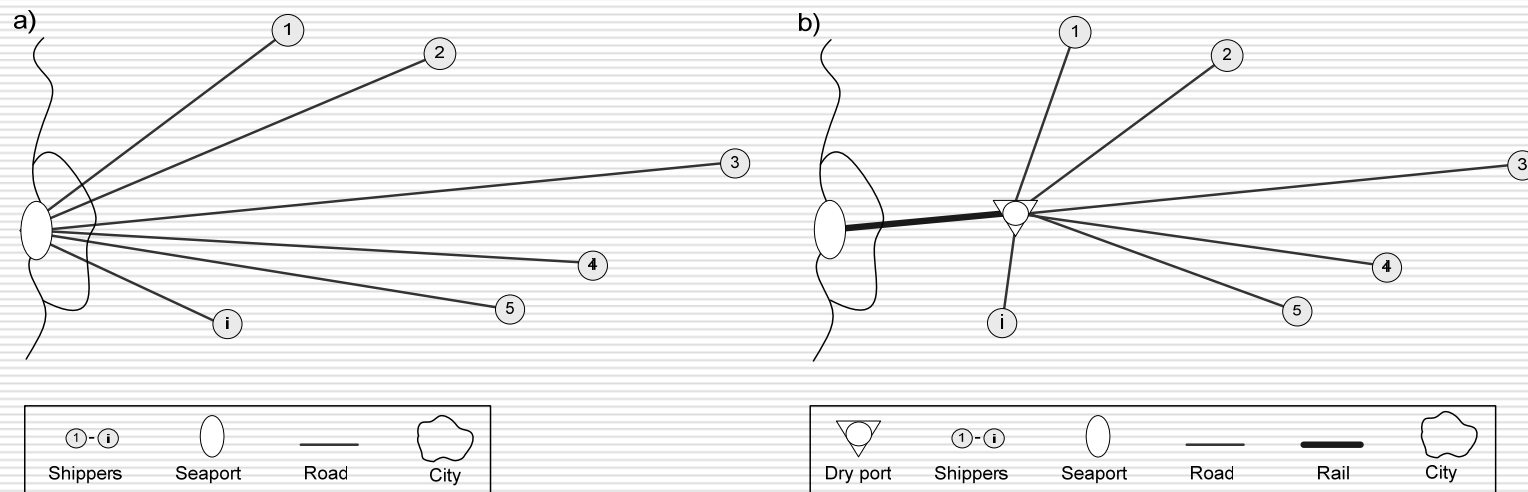
# Background

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# The dry port concept

“A dry port is an inland intermodal terminal directly connected to a seaport by rail, where customers can leave and/or collect their standardised units as if directly to the seaport”



# The dry port concept

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- ❑ Intermodal terminal
- ❑ Situated inland
- ❑ Rail connection to a seaport
- ❑ Offers service that are available at seaports (customs clearance, maintenance of containers, storage, forwarding, etc.)

# Benefits from a dry port

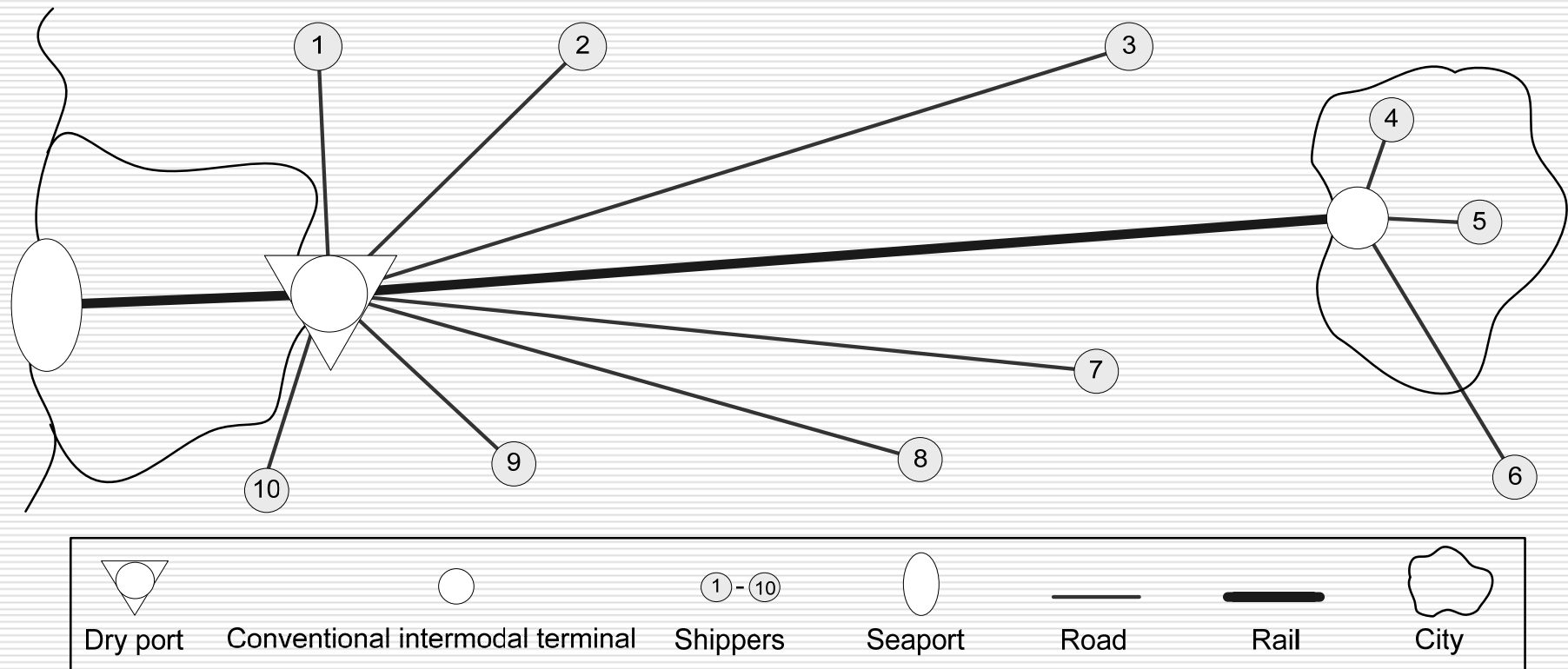
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- ❑ Increases seaport capacity
- ❑ Increases seaport productivity
- ❑ Reduces congestion at seaports
- ❑ Reduces congestion in seaport cities
- ❑ Reduces risk for road accidents
- ❑ Reduces road maintenance cost
- ❑ Lowers environmental impact
- ❑ May serve as a depot
- ❑ Improves seaport's access to areas outside its traditional hinterland

# Benefits for the actors of the system

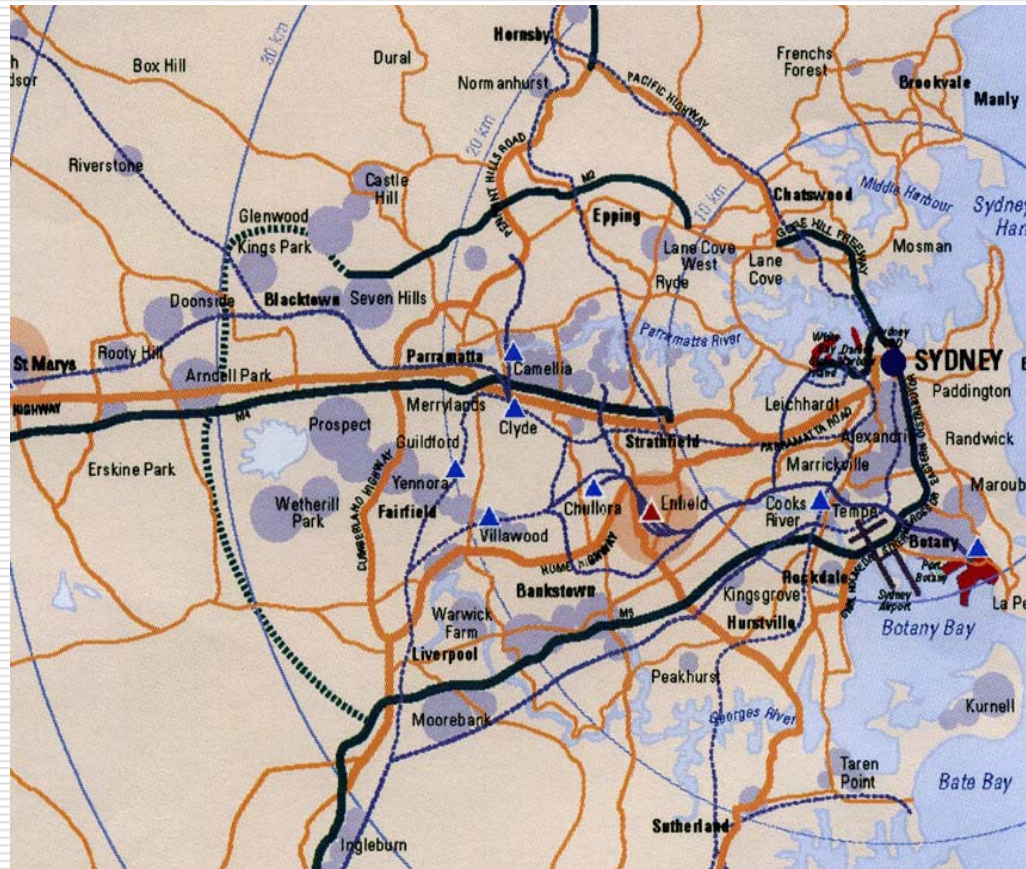
	Distant	Midrange	Close
<b>Seaports</b>	+Less congestion +Expanded hinterland +Interface with hinterland	+Less congestion +Dedicated trains +Depot +Interface with hinterland	+Less congestion +Increased capacity +Depot +Direct loading ship-train
<b>Seaport cities</b>	+Less road congestion +Land use opportunities	+Less road congestion +Land use opportunities	+Less road congestion +Land use opportunities
<b>Shipping lines and forwarders</b>	+Improved service	+Improved service	+Improved service
<b>Rail and intermodal operators</b>	+Economies of scale +Gain market share	+Day trains +Gain market share	+Day trains +Gain market share
<b>Road operators</b>	+Less time in congested roads and terminals	+Less time in congested roads and terminals	+Less time in congested roads and terminals +Avoiding environmental zones
<b>Shippers</b>	+Improved seaport access +“Environment marketing”	+Improved seaport access	+Improved seaport access
<b>Society</b>	+Modal shift +Less infrastructure +Lower environmental impact +Job opportunities	+Modal shift +Less infrastructure +Lower environmental impact +Job opportunities	+Lower environmental impact +Job opportunities

# Close Dry Port



# Enfield, Sydney, Australia

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# Enfield

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- ❑ In September 2007 Sydney Ports received planning approval to develop an Intermodal Logistics Centre at Enfield, ten years after the initial plan
- ❑ Although the site is located in an industrial and commercial area adjacent to a dedicated freight line to the port within easy access of major roads, various obstacles hindered the realization of the plans.
- ❑ The project is initiated because road artery is quite congested and the goal was to minimize the growth of trucks on the roads.
- ❑ 85% of containers originate or are bound for a destination within 40km of the port, therefore there is no use of distant terminals

# Enfield

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Distance from the port	18 km
Surface area	60 ha
Traffic	300,000 TEU
Rail frequency	daily shuttle
Loading rail tracks	920 m
Lifting equipment	3 gantry cranes, 3 container forklifts, 2 reach stackers
Warehouse	60,000 m <sup>2</sup>
Container storage area	yes
Customer service	Separate forwarding service

# Impediments

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## *Regulations*

- ❑ There are no direct subsidies for rail from the government.
- ❑ Government's suggestion - impose so called "infrastructure charge" of 30A\$ for both road and rail; and then rail would be refunded, revenue from the charge would be intended for financing rail infrastructure.
- ❑ One reason for weak involvement of the government in support of rail might be in very strong road lobby that impedes any actions towards increased use of rail and by that intermodal transport.

## *Environment*

- ❑ The Enfield project was delayed due to bureaucracy and politics; fear from increased traffic through the area.
- ❑ In 2007 it was approved to build the intermodal terminal with smaller operating capacity, 300,000 instead of 500,000 TEU a year, traffic in and around the terminal is limited by regulations and will be monitored.

# Impediments

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## *Land use*

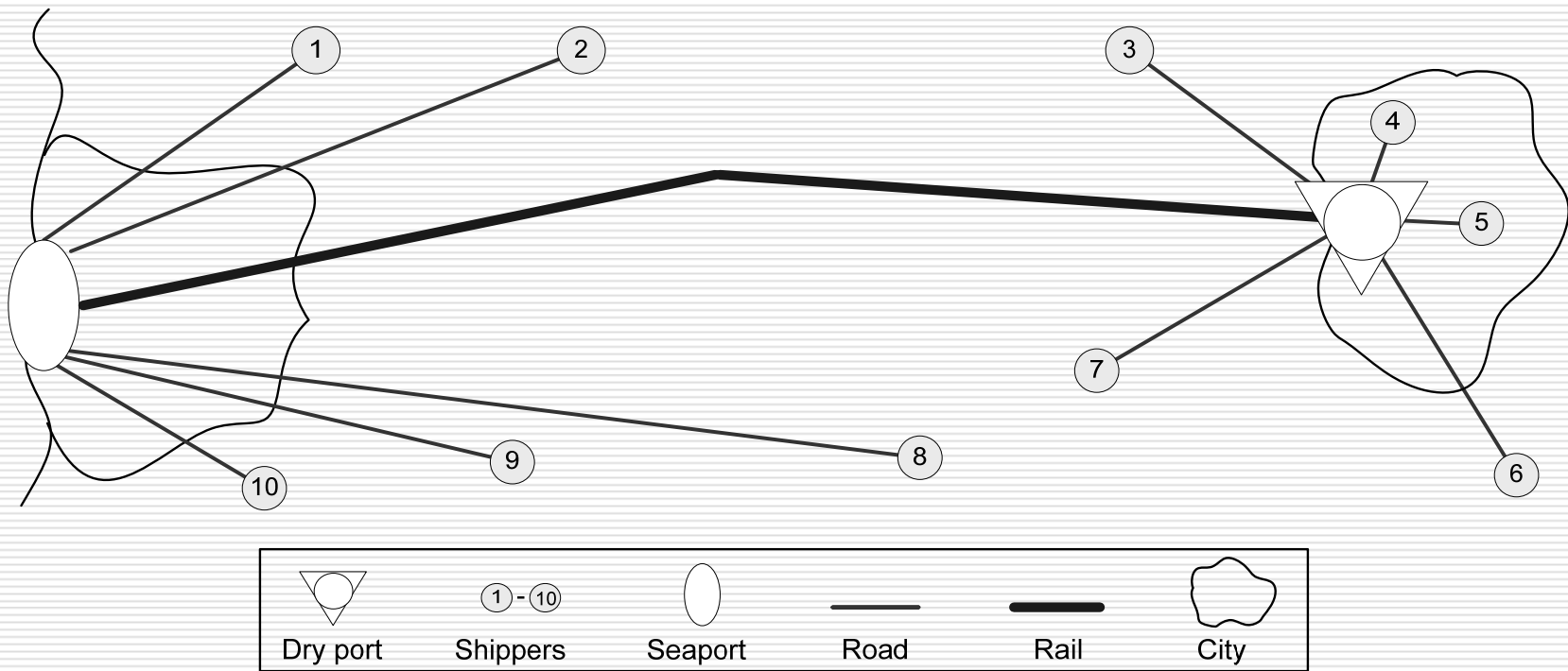
- ❑ The closer the potential site for an intermodal terminal is to metropolitan area the higher the price as well as demands regarding the environmental impacts.
- ❑ Functionality of the seaport depends on its inland access which in this case depends greatly on close intermodal terminal situated within metropolitan area but the residents want parks not transport facilities.

## *Infrastructure*

- ❑ Existing passenger and freight shared rail network is getting more constrained by passengers, and passenger transport has priority.
- ❑ On shared rail freight is not allowed between 6-9am and 3-7pm, and there are very few free slots for eventual new rail operators.
- ❑ Seaport terminals as well as city roads are congested by trucks; but improvements of intermodal network with dedicated freight lines would require considerable investments.

# Distant Dry Port

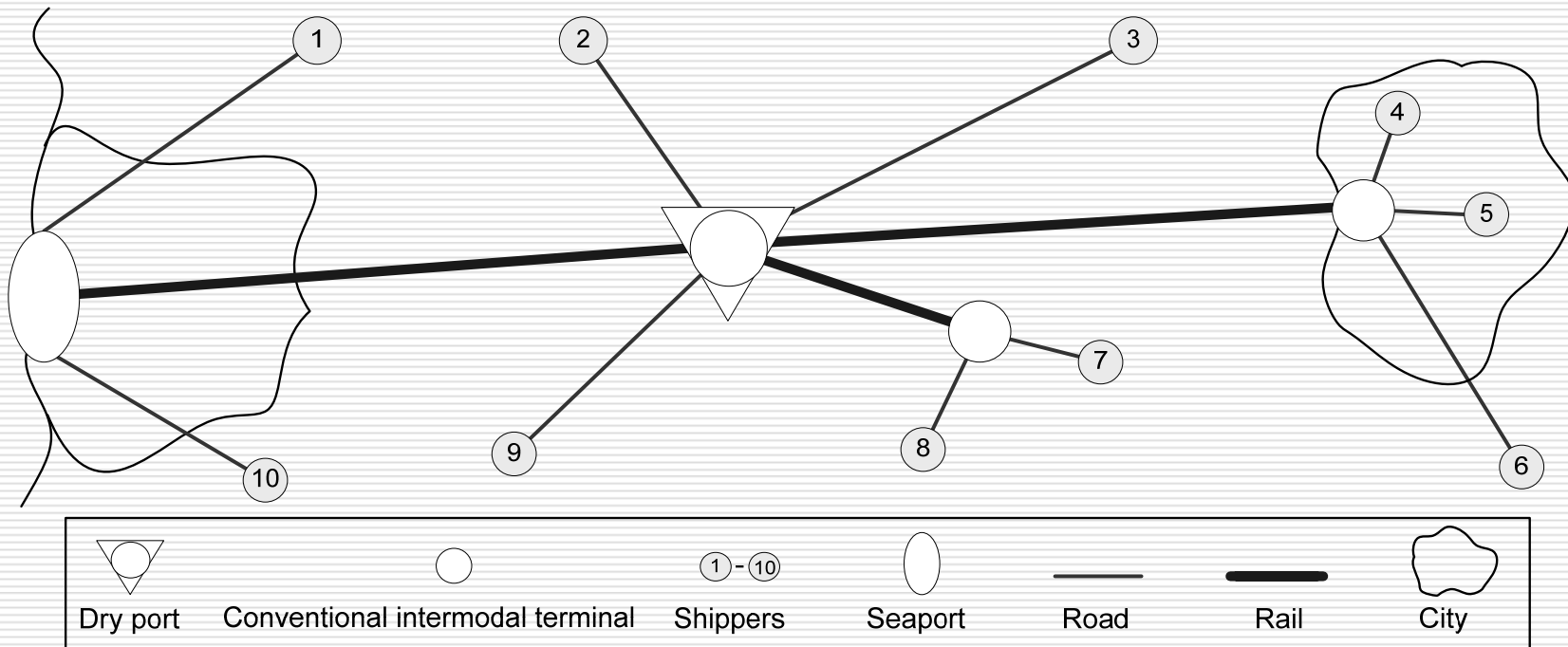
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# Isaka Dry Port, Tanzania



# Midrange Dry Port



# Virginia Inland Port, Virginia, USA

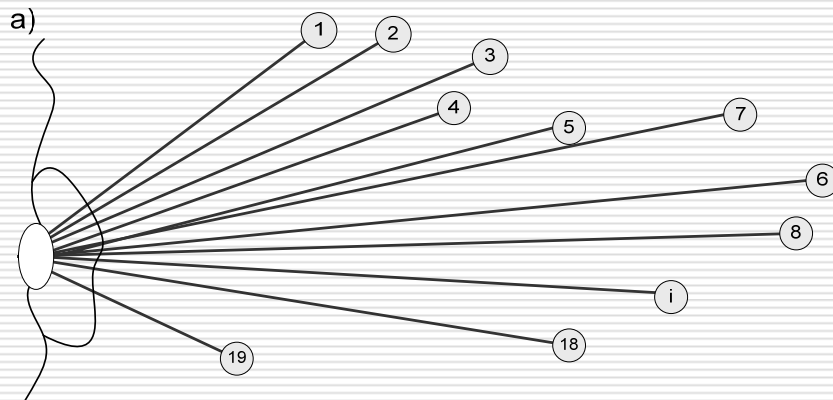
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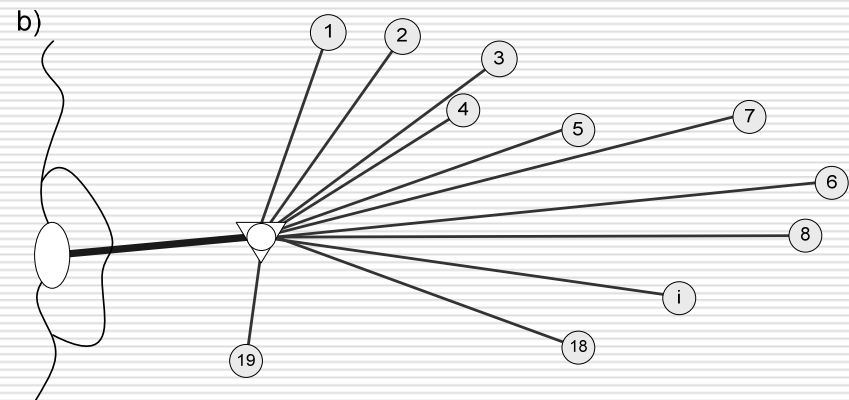


# Environmental evaluation

Reference situation -  
without the dry port



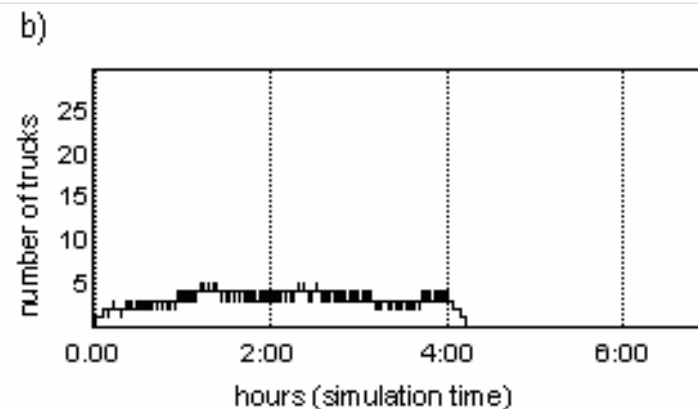
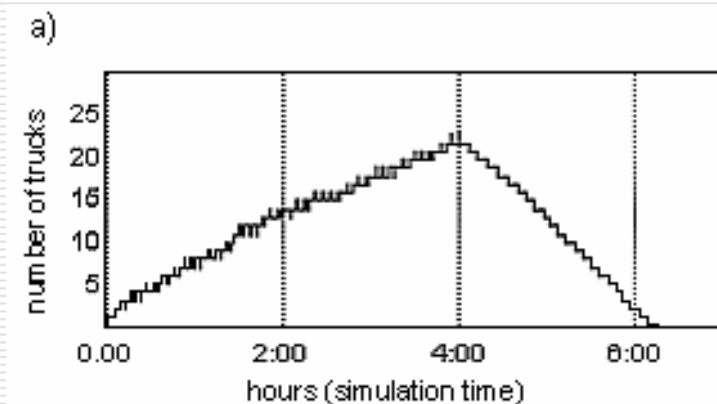
Scenario –  
with the dry port



# Results of the simulation regarding queues at the terminals

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- a) Without DP: 23 trucks – 85min average waiting time
- b) With DP: 5 trucks – 13min average waiting time



# Results of the simulation

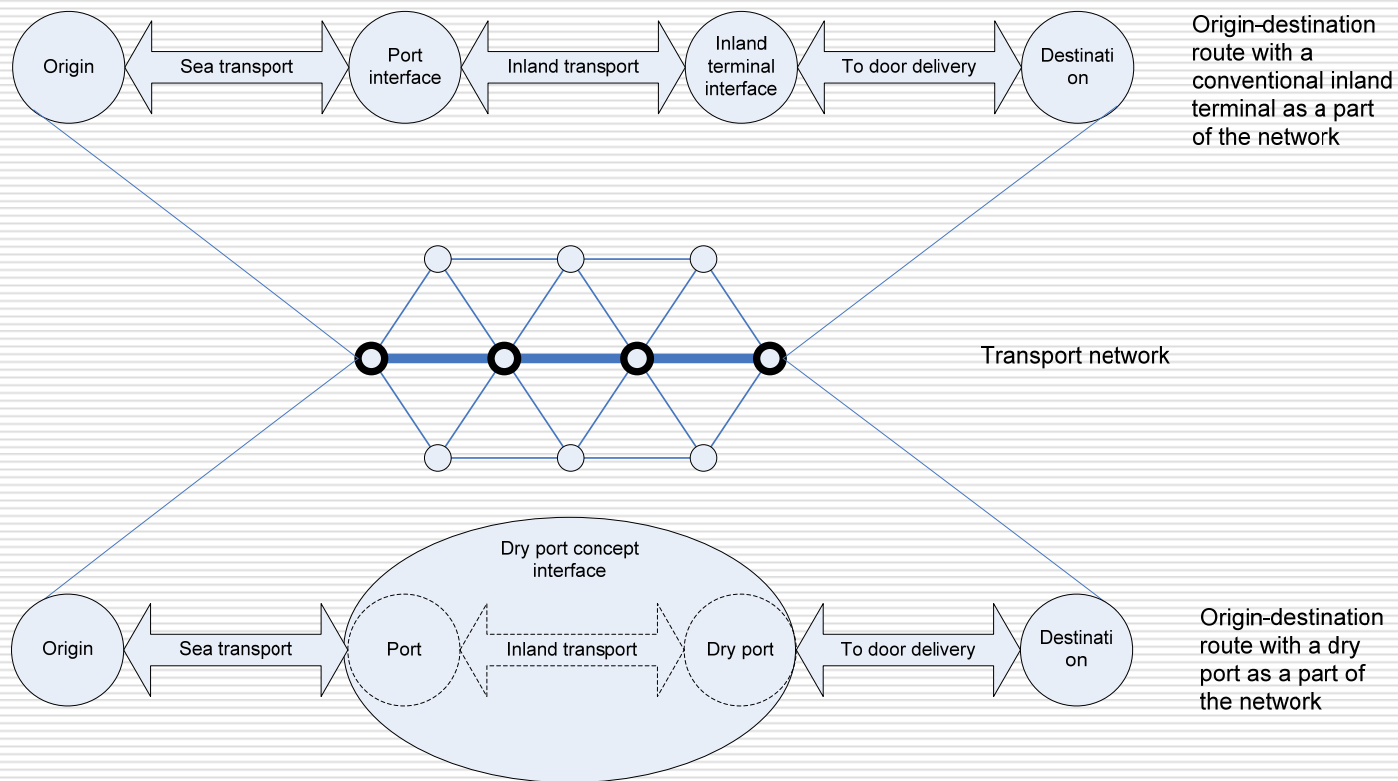
## regarding CO<sub>2</sub> emission

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Simulation for 35 trucks:

- The calculated CO<sub>2</sub> emissions are approximately 25% lower in the model with the dry port
- Road-kilometres reduced: approximately 2000 road-km a day

# The Dry Port Concept



# Conclusion

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A dry port must fit into a complex system where the necessary supporting infrastructure (roads, railways) is in place, maintenance is assured, and the regulatory and institutional systems are properly designed to optimize the involvement of both the public and the private sector."

Vandervoort and Morgan (1999)