

*A socio-economic analysis of harmonising
the dimensions of truck and loading docks in
Norwegian cities – costs, benefits and
logistics efficiency*

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Motivation



Purpose and focus

- Develop a methodological framework for performing social cost-benefit analyses on harmonized dimensions of lorries and loading docks in urban areas
- We have prepared and tested an analytical instrument that renders possibilities to:
 - Measure the socio-economic effect of adapting the dimensions on drive-ins and parking spaces at loading docks, considering the vehicles used for cargo distribution in cities

The study focused on effects from implementation of measures that would give requirements on:

- Maximum length and/or height for freight trucks in urban distribution
- Design of loading docks connected to height and area for parking and manoeuvring

Assessed scenarios

Scenario	Assumptions
0. Present situation	Description of present situation
1. Gothenburg solution	Max lorry length 10 m and truck height 4,2 m*
2. Low lorry solution	Max lorry length 10 m and truck height 3,2 m
3. Loading dock height	Max lorry length 10 m and truck height 4,2 m
4. Loading dock height and length	Max lorry length 12 m and truck height 4,2 m

* In Gothenburg it is allowed with longer trucks during the morning

Some assumptions and effects for the estimates (1/2)

Scenario 1: Gothenburg solution

- Keep the loading docks as today
- All last mile distribution with large lorries is transferred to medium sized lorries
- Increased transport performance (tonne-km) and operational costs
- Increased external costs
- Gains in delivery situation
- Need for enforcement

Scenario 2: Low lorry solution

- Keep the loading docks as today
- All last mile distribution is transferred to small lorries
- Increased transport performance (tonne-km) and operational costs
- Increased external costs
- Gains in delivery situation
- Need for enforcement

Some assumptions and effects for the estimates (2/2)

Scenario 3: Loading dock increased height

- Last mile distribution with today's lorry fleet
- Loading docks are reconstructed to height 4.5 m to serve lorries with height 4.2 m
- Investments costs for reconstruction of loading docks
- Increased costs for land use connected to loading docks
- Gains in delivery situation

Scenario 4: Loading dock increased height and length

- Last mile distribution with today's lorry fleet
- Loading docks are reconstructed to height 4.5 m to serve lorries with height 4.2 m
- Increased area for manoeuvring
- Investments costs for reconstruction of loading docks
- Increased costs for land use connected to loading docks
- Gains in delivery situation

Effects from using smaller lorries in city distribution



tøi

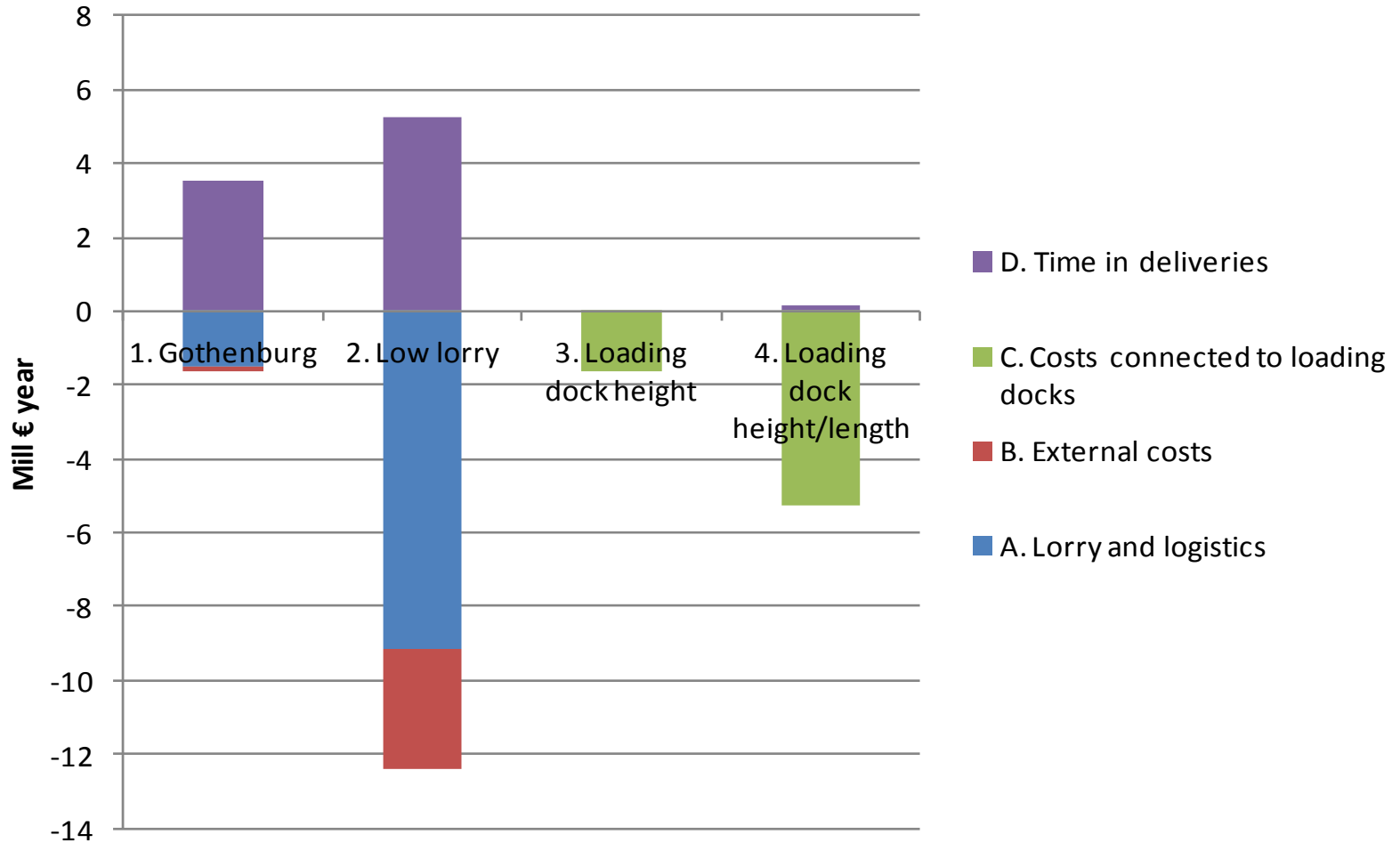
Effects of larger loading docks



Components included in the socio-economic assessment

- *Costs related to lorries and logistics*. Operative lorry costs, reloading costs and costs of forced renewal of lorry fleet
- *External costs*. Local emissions, noise, accidents, road wear, global emission and congestion costs)
- *Costs related to loading docs*. Rebuilding costs and alternative costs (lost income from other profitable use)
- *Effects on the delivery situation*. Time spent on loading and unloading, impacts on other traffic flow
- *Other effects* as societal costs of implementation of the actions, lorry drivers working environment and accessibility conditions

Benefits and costs in different scenarios. Changes compared to basis scenario. Mill € per year



Conclusions

- Our calculations indicate that the Gothenburg alternative gives the best results, but our estimates are uncertain.
- Substantial challenges with data availability. Many assessments and considerations to be done to accomplish analysis.
- The measures are local/regional that needs local case based data
- Clash of interest among stakeholders
 - Cooperation between stakeholders when framing the measures is an advantage
 - Public Private cooperation should be more than financial cooperation
- Technological and organisational solutions must be looked upon together



Thank you for your attention!

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