

The logo for CLINSH, featuring the word "CLINSH" in a stylized font with a blue ribbon-like element.

*Welcome*

# **How to proceed with Onshore Power Supply?**

## Programme workshop

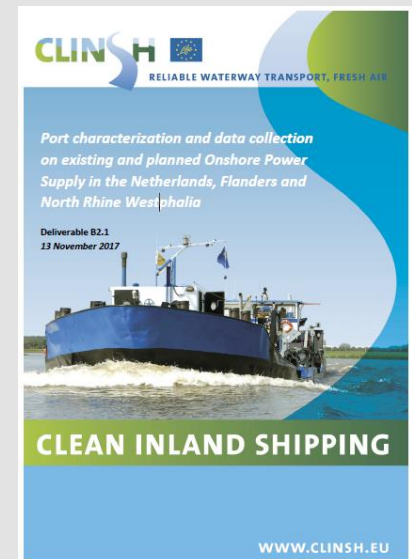
- 15:00 - 15:05 Introduction workshop by Moderator Remco Hoogma, City of Nijmegen
- 15:05 – 15:20 Results of Onshore Power study in CLINSH, by Erik Lubberding, City of Nijmegen
- 15:20 – 15:35 TEN-T Onshore Power in Flanders project, by Mohssine El Kahloun, Flanders Department of Mobility & Public Works
- 15:35 – 15:50 Innovative shorepower facilities in Arnhem, by Jan Fransen, Walvoorziening Nederland BV
- 15:50 – 16:00 Discussion

# Results of Onshore Power study in CLINSH

Erik Lubberding

12 April, 2018

Ports and the City Conference, De Lindenberg, Nijmegen



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- 3 Policy implications**

# 1A Introduction

## *Goal task*

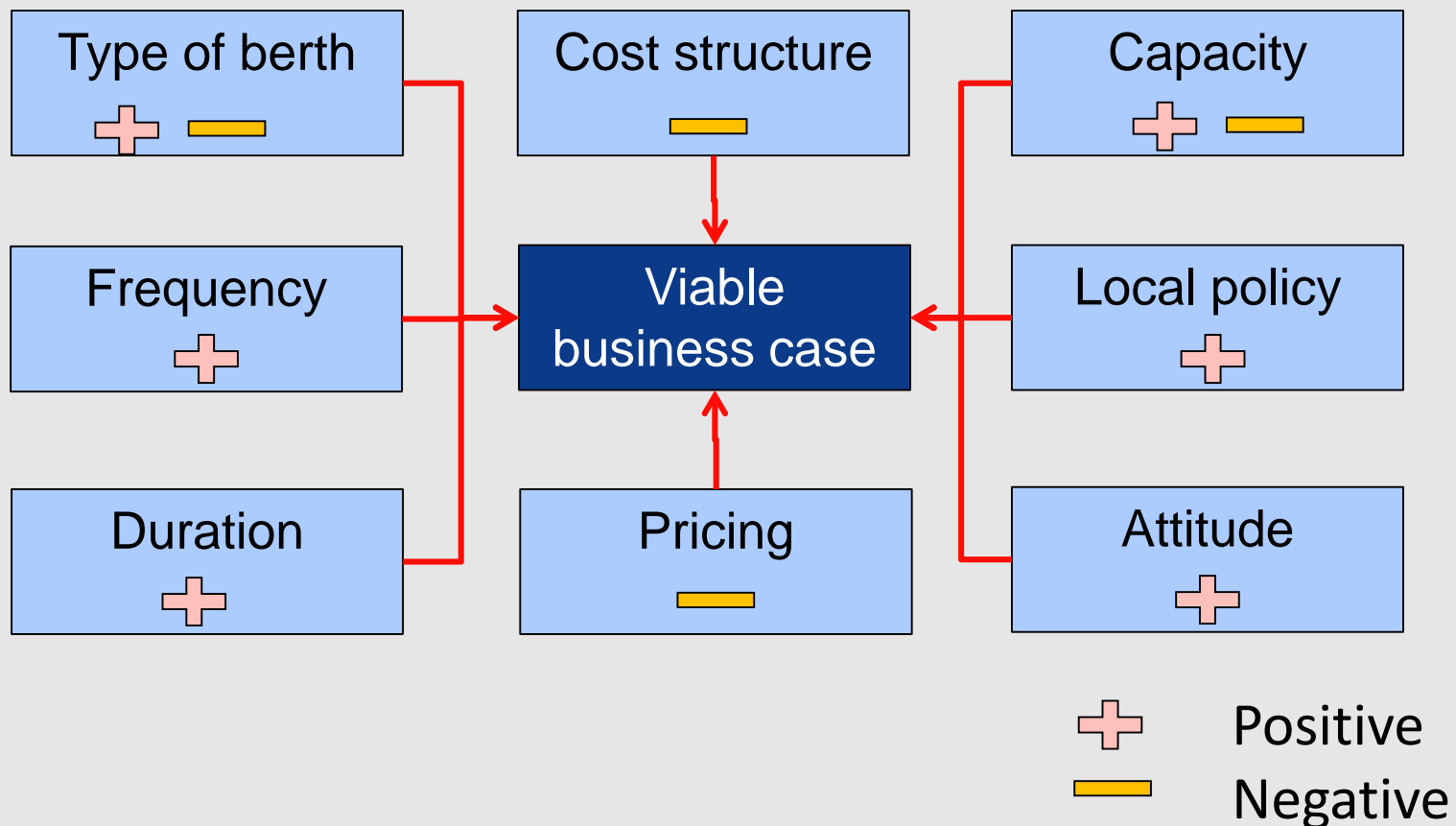
- study the characteristics of OPS initiatives
- describe the different modes of OPS which have been installed in ports and along waterways, and the existing plans for OPS installations.
- examine locations that might benefit from OPS.
- characterize ports so that costs and impacts can be compared, and priority locations can be identified.

## 1B Method

- Analysis of data provided by Invoctum, covering over 50,000 transactions from 2011 until 2015.
- Anonymized, categorized
- (Some) additional data from port authorities and municipalities and service provider Park Line Aqua.
- Additional interviews with ports and OPS providers in NL and for case study Arnhem-Nijmegen region, used to verify and provide context to data analysis.

# 1C Port characteristics

## *Building blocks for business case OPS for port authorities*



# 1C Port characteristics

## *Priority locations for successful implementation of OPS*

River cruise in home ports,  
ports of call and off season  
(repair ports)



Cargo (container) terminals  
with long (un)loading



Waiting docks and overnight  
mooring for cargo vessels



Maintenance and repair  
docks



Home ports nautical services





## **2 Key results & conclusions**

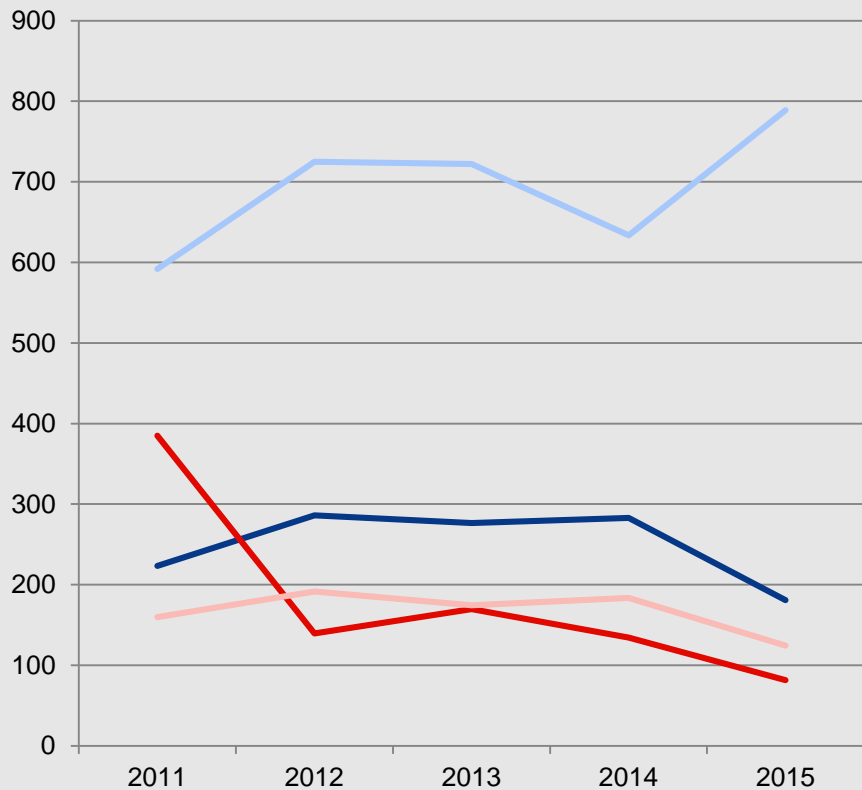
- A. Key findings data analysis**
- B. Conclusions, backed by interviews**

## 2A Key findings data analysis

### Overall findings all vessels

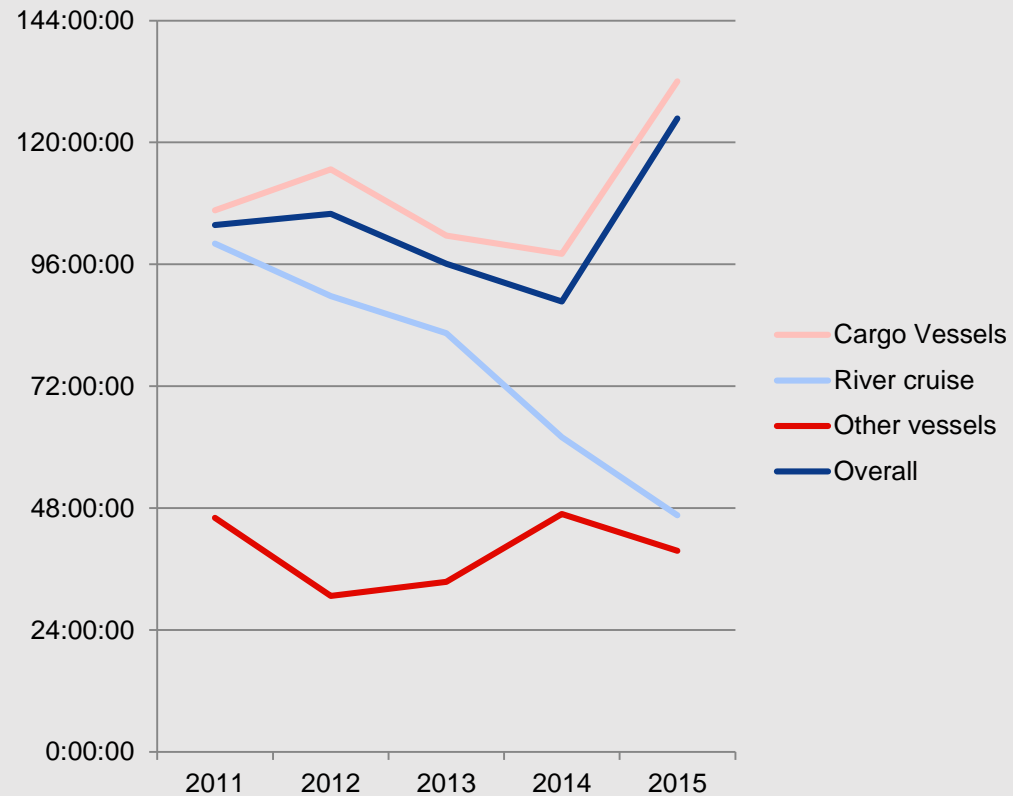
#### Average electricity usage per transaction

in kWh, 2011-2015, source: InvoItum



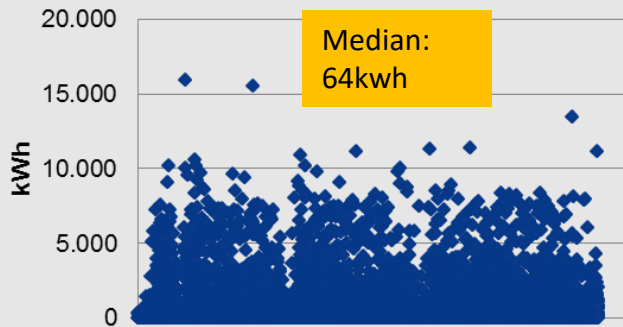
#### Average transaction time

in hh:mm:ss, per type of berth  
2011-2015, source InvoItum

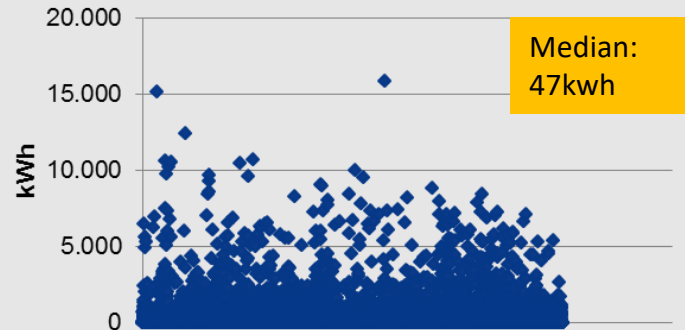


# Average vs distribution

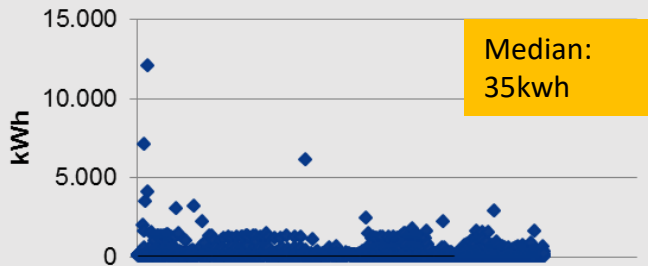
Scatter plot river cruise



Scatter plot cargo vessels



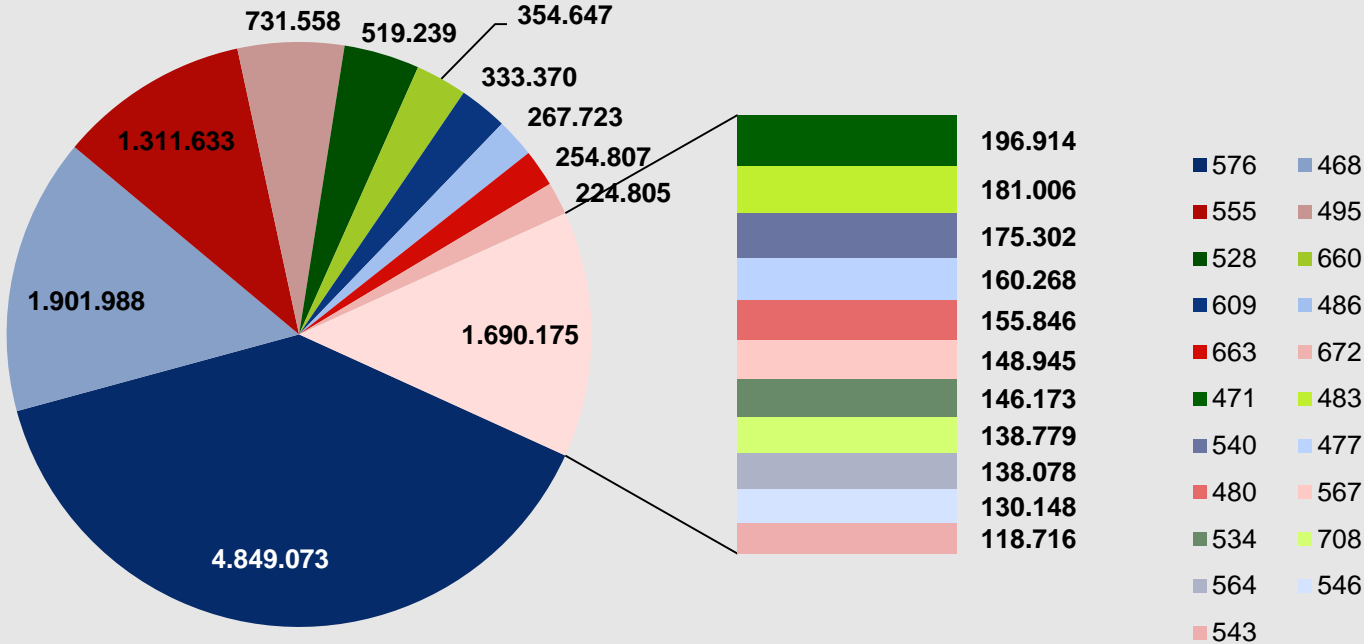
Scatter plot other vessels



Median sign. lower dan average, because of small # high frequent users

# 2A Key findings data analysis Netherlands

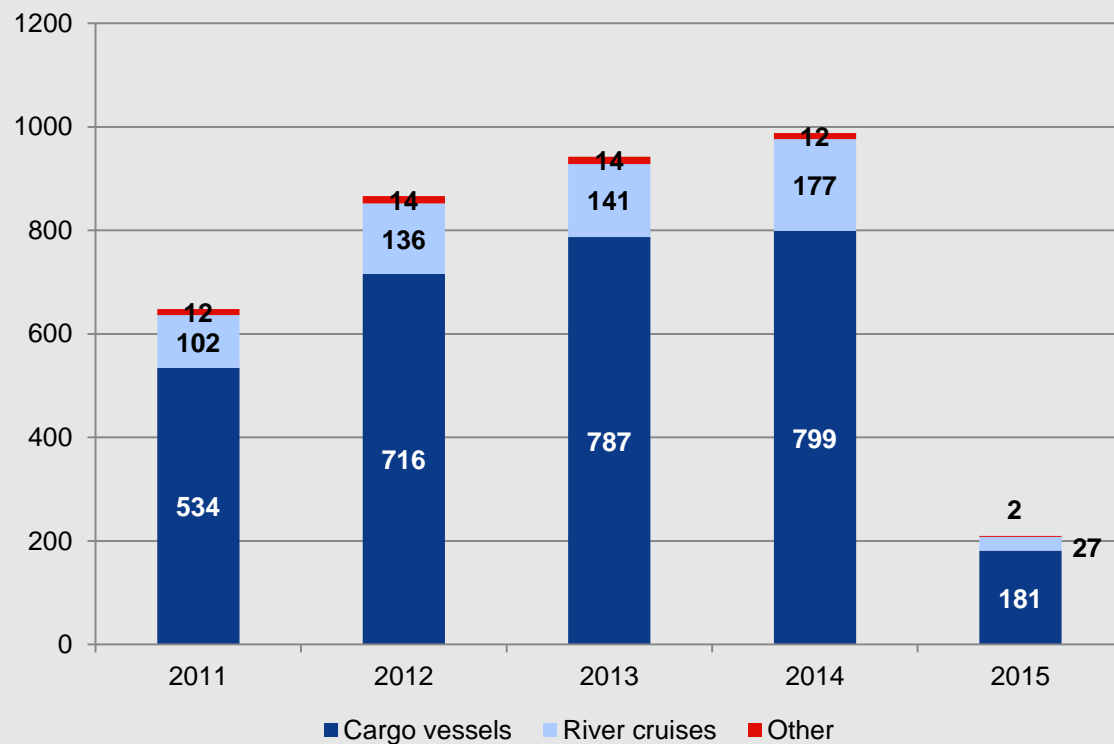
**Total OPS energy usage in kWh**  
 for top-21 quays and port basins (accounting for >90% of total OPS usage)  
 for period 2011-2015  
 Total 13,710,445 kWh



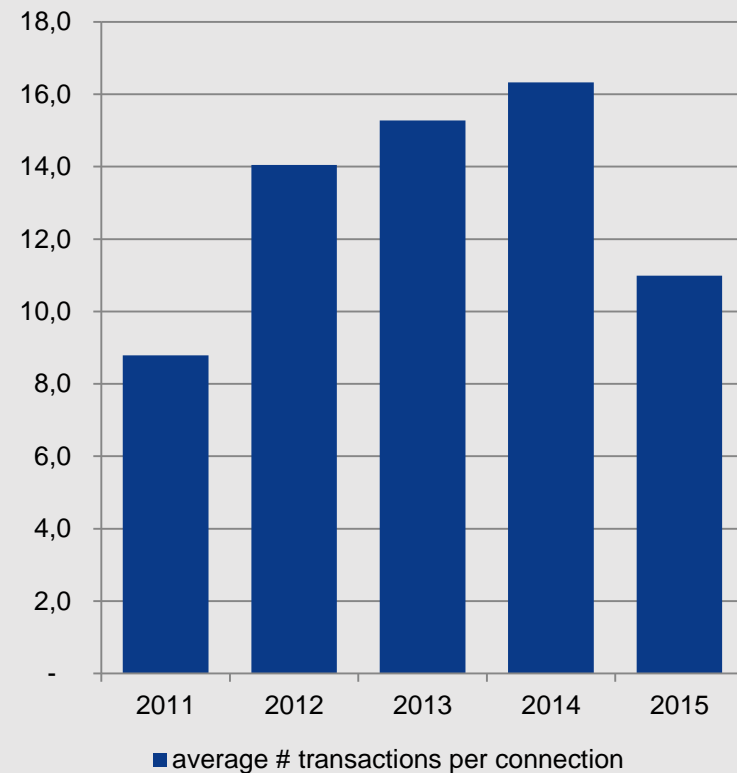
## 2A Key findings data analysis Netherlands

### # active connections for all vessels per year

Source: Involtum



### Average # transactions per connection all berths



## 2B Conclusions, backed by interviews

- Energy consumption cruise vessels is much higher than for cargo and other vessels. It should therefore be easier to build the business case for OPS on river cruisers, although the costs (CAPEX and OPEX) will also be higher.
- The frequency and duration of berthing is most of all determined by (macro, meso, micro) economic factors, such as demand for cargo transport from or to a port, and demand for cruise holidays.
- The utilization of OPS cabinets for cargo ships is the highest in the places where ships are waiting for new cargo for extended periods of time.

## 2B Conclusions, backed by interviews

- Using medium voltage grid connections rather than low voltage (which provides better power purchase rates) or registering a group of OPS cabinets under one meter offers cost efficiencies (which means that a lower energy price and tax rate applies).
- When the price of OPS is too high, then it is attractive for the skippers to generate their own electricity on board, especially when diesel fuel is cheap. The price of OPS is more or less the same in most of the Netherlands and Flanders. There are cases where lower rates are charged or OPS is offered for free.

## 2B Conclusions, backed by interviews

- The type of port management (private, public) is important for the ability and willingness to invest in and make policy to promote use of OPS.
- The benefit of OPS to society will be highest in locations that are close to residential areas where vessels' noise and emissions cause nuisance and health impacts. This will increase the willingness to invest in and make policy to promote use of OPS
- a small amount of heavy OPS users (vessels) at a small number of berths and a small number of connections make up the vast majority of OPS transactions and energy consumption.



### 3 Policy implications

#### ***Overall conclusion***

OPS policy should focus on:

- targeting potential heavy users;
- selecting sites for OPS provision in a demand-driven approach and in close collaboration with the ship owners and their principals;
- Ideally the ship owners articulate their demand for OPS in locations that suit them and the authorities facilitate accordingly. This way the public funding can be concentrated on those OPS sites that will show the highest utilization and therefore maximum public benefit (improving air quality and reducing noise).

### 3 Policy implications

#### ***Next steps***

1. Combine EU-wide available knowledge on OPS and formulate do's and don'ts for implementing OPS as a air quality measure in ports
2. Share best practices on procurement, schemes, incentive programs as input for “demand-driven facilitation” approach
3. Governments should find ways to facilitate OPS by creating a friendly fiscal regime (energy tax)
4. In spatial-economic projects in urban areas along the river: include OPS as a measure to improve Air Quality and reduce noise.

### 3 Policy implications

5. To significantly increase the utilization of OPS instead of on-board diesel generators the OPS solution should be cheap and easy to use for skippers
6. (Innovative) Technical solutions can *and should* improve the business case for port authorities and municipalities
7. (Innovative) Energy as a Service (EaaS) solutions can offer “on-demand” solutions for skippers (waste, utilities, port dues etc.)

# Questions?



*Overview of different types of OPS equipment in NWE region*