



Rijkswaterstaat
*Ministry of Infrastructure
and Water Management*

Shore-side electricity supply inland navigation

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This presentation

- EU regulations
- Situation in the Netherlands
- Costs generator vs shore power
- Shore-side electricity obligation vs generator prohibition
- IEN/g Working group activities



EU regulation

- Green power for transport directive (2014/94/EU)

Considerations

- *Shore-side electricity facilities can serve maritime and inland waterway transport as clean power supply, in particular in maritime and inland navigation ports where air quality or noise levels are poor*
- *Standardisation of shore-side electricity supply should not impede the use of systems already in place prior to the entry into force of this Directive*



EU regulation

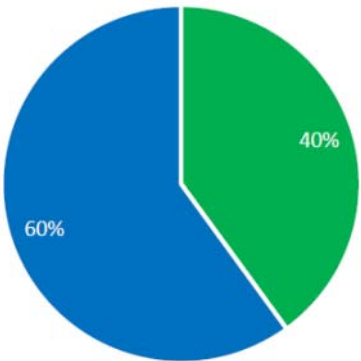
Articles

- 5. **Member States shall ensure** that the need for **shore-side electricity supply** for inland waterway vessels and seagoing ships in maritime and inland ports is assessed in their national policy frameworks. Such shore-side electricity supply **shall be installed** as a priority in ports of the TEN-T Core Network, and in other ports, **by 31 December 2025**, **unless there is no demand** and the costs are disproportionate to the benefits, including environmental benefits.
- 6. **Member States shall ensure** that **shore-side electricity supply installations** for maritime transport, deployed or renewed as from 18 November 2017, **comply with the technical specifications** set out in point 1.7 of Annex II.

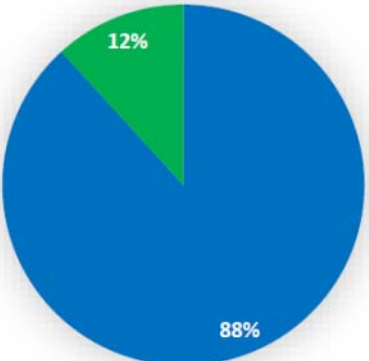
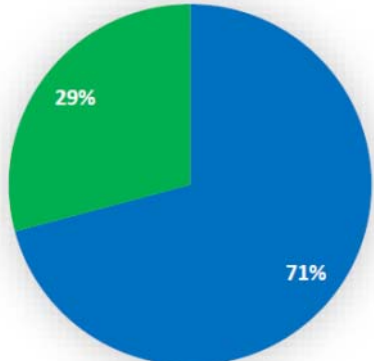


Situation in the Netherlands

Available now

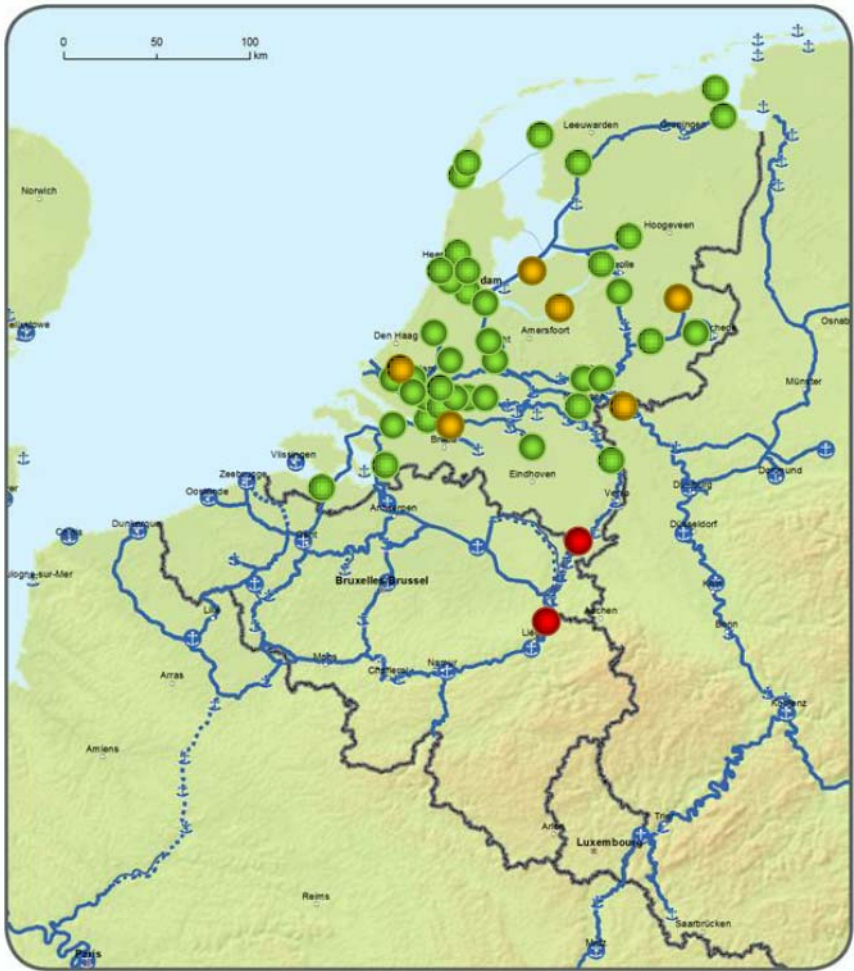


Under construction



- Available
- Not available

Supply vs demand





Generator vs shore-side electricity

- Study by Delft University (2011)
- Break even point depends on:
 - 1) demand → average: 0,4 – 0,6 kWh / h
 - 2) gas oil prices
- On-board generator cheaper when using 3 kWh per hour
 - Tumble dryer = 1,5 kWh
 - Electric heating = 0,5 - 1,5 kWh
 - Washing machine = 1,0 kWh
 - Electric cooking = 1,0 kWh
 - Fridge = 0,3 kWh
- Generator cheaper **only during peak loads** (2 or 3 hrs a day)

€ 0,33 / kWh



Generator vs shore-side electricity

- Why is shore-side electricity not popular?
 - 1) problems with fuses & grounding (max. 28 kW; average 5 kW)
 - 2) at least 3 payment systems
 - 3) distance to junction box

Standards:

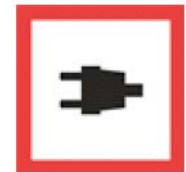
- EN 15869 – junction boxes
- EN 60309 – connectors





Shore-side electricity obligation vs generator prohibition

- Regulation is based on local municipal authority
- CCNR adopted only the shore-side electricity obligation (Rhine police regulations, art. 7.06 sub 3 and 4)
 - supply must be operational
 - no obligation if barge has silent & zero emission alternative
- Why not a generator prohibition?
 - no supply? no obligation possible!
 - supply not operational? no obligation → includes power demand
 - sometimes junction box not reachable





IEN/g working group activities

- CCNR committee on Infrastructure & Environment ordered its working group to make a reference document on berths
- Shore-side electricity supply will be addressed
- EBU/ESO document “what the industry needs”
 - plugs
 - power demand
 - ground and residual current [30 mA]
 - costs
 - etc...





Questions

