

# 7th European Conference on ICT for Transport Logistics

Title: Ports and Terminals in the view of emissions  
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# Content

- Maritime economy and environmental policy
- GREEN EFFORTS
  - Terminal energy consumption
  - Goals and consortium
  - Escalating saving strategy
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  - Information material
- Conclusion



# Maritime economy and environmental policy

Most important drivers for environmental actions in the maritime economy are<sup>1</sup>:

- Image
- Legislation
- Cost:  
65% increase of electricity price for the European economy (between 1995 and 2010)<sup>2</sup>

Question:

How can we design and realize a greener future for ports and terminals?

1) Jahn, Bosse, Schwientek (2011) Seeschifffahrt 2020

2) Bundesministerium für Wirtschaft und Technologie (2012) Internationaler Preisvergleich Energie





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# GREEN EFFORTS



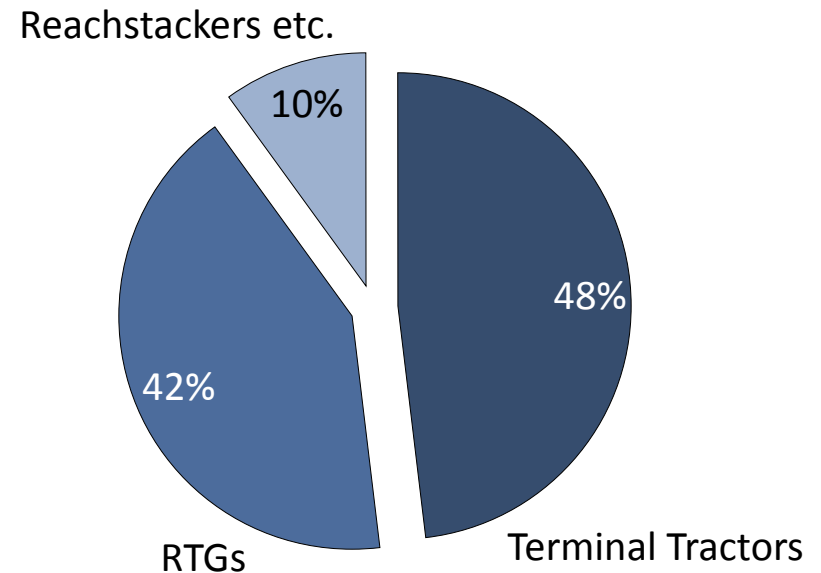
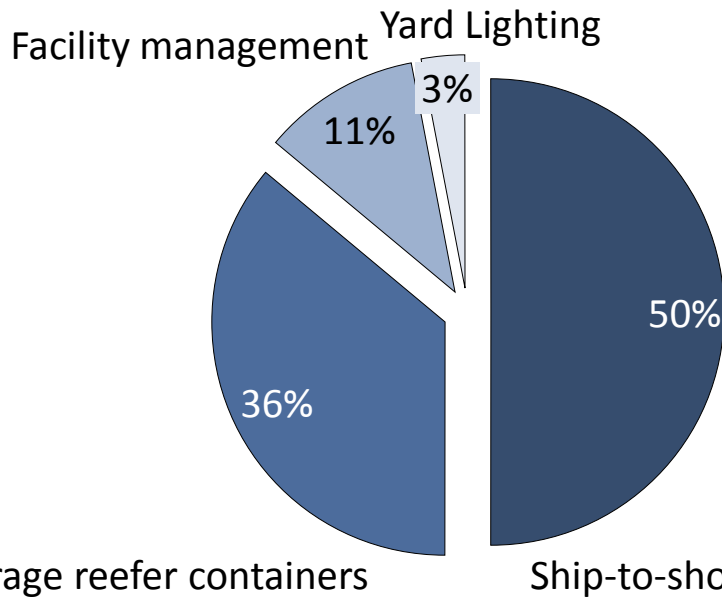
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## Terminal energy consumption

### Container terminal 1,6 m TEU/a

Consumption of electric energy:  
 $\Sigma \sim 12 \text{ mwh/a}$

Consumption of combustibles (Diesel):  
 $\Sigma \sim 3 \text{ m liters/a}$





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## Goals and consortium



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- Reduction of the carbon footprint (and other emissions)
- Reduction of the energy consumption
- Improvement of the energy mix



## Escalating saving strategy

1. Training investment:  
Changing attitude of staff and management by raising awareness and motivation to use energy thoughtfully
2. Organizational investment:  
Modifying operations to increase productivity per energy consumption
3. Technical modification investment:  
Modifying equipment and systems to reduce consumption/ increase productivity
4. Technical purchase investment:  
Put new equipment/systems into operation





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## Organizational investment



- Implementation of dual cycling for equipment (STS, yard equipment)
- Reducing travel distance and number of handling operations per box by applying a TOS using optimization algorithms
- Reducing standby consumption





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## Technical investments



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- Measuring energy consumption
- Checking possibilities for own energy production (e.g. wind and photovoltaic)
- Downsizing of drives
- Using LED lighting
- Implementing power management using smart grid technology





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## Information material



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- White papers on energy production, efficiency, storage and emissions
  - Wind energy
  - Photovoltaics
  - Biogas
  - Biomass
  - Geothermal energy
  - LED und LEP lighting
  - Hybrid drive
  - Hydrogen
  - Cogeneration of heat and electricity
  - Particulate matter emissions
  - Cool roofs and pavement
  - Energy storage
- Video



The screenshot shows the Green Efforts website interface. At the top, there is a navigation menu with links for HOME, ABOUT, DIALOGUE FORUM, NEWS & EVENTS, MEDIA, KNOWLEDGE CENTER, EXTERNAL LINKS, and LOG IN. Below the menu, there is a search bar and a user profile section for 'Buhi' with options for Talk, Preferences, Watchlist, Semantic watchlist, and My new messages. The main content area displays the title 'White Papers' and a specific white paper titled 'WP#1 Reduction of the CO2 Footprints of Container Terminals by Photovoltaics'. The paper's content is partially visible, mentioning 'This paper discusses the feasibility of installing photovoltaic panels on container terminals, taking into account location, range, and their final contribution to maintenance.' A large image of a container terminal with solar panels is overlaid on the text. The Green Efforts logo is also present in the bottom right corner of the screenshot.

<http://www.green-efforts.eu>



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## Video



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# Conclusion

- Improved insight
- Raised awareness
- Next steps: Industry implementation and international standardization

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<http://www.green-efforts.eu>



# Supporting Entities

- Ports & Terminals (Europe)
  - Port of Antwerp
  - Port of Hamburg
  - Bremen Ports
  - SBO/Riesa
  - Port of Trelleborg
  - MSC Valencia
  - Kleipeda Smelte
  - Eurogate Hamburg
  - ECT Rotterdam
  - MSC Antwerp
  - HHLA Hamburg
  - NTB Bremerhaven
- Ports & Terminals (worldwide)
  - Port of Singapore
  - Port of LA
  - PSA HQ Singapore
  - Exolgan Buenos Aires (PSA)
  - BACTSSA Buenos Aires (Hutchinson)
  - APM Buenos Aires Terminal
  - DP World (Terminales Rio de la Plata)
  - Terminal Zarate (Murchinson Group)
  - Katoen Natie Montevideo
  - TERPORT - San Antonio, Paraguay
- European Bank for Restructuring and Development (EBRD), London
- World Bank, Washington
- UN CEPAL, Santiago de Chile

