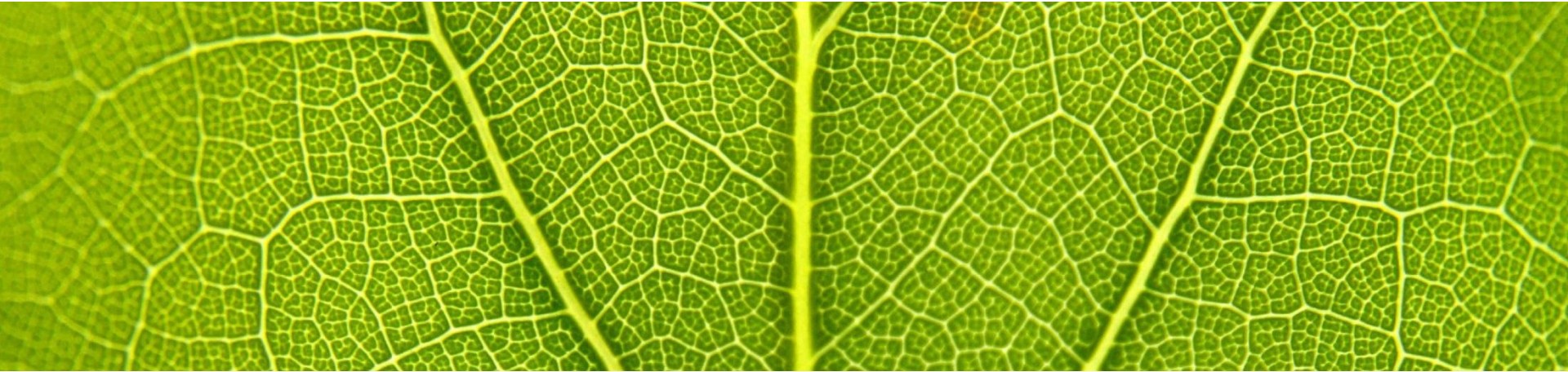




sustainable energy for everyone



The sustainable seaport of the future

The potential of Shore Side Electricity for European Ports

22/05/2015

Rob Winkel

Ecofys at a glance

Facts & figures

- Founded in 1984
- Knowledge leader in the field of
 - Renewable energy
 - Energy & carbon efficiency
 - Energy systems & markets
 - Energy & climate policy
- Over 250 professionals, 6 offices in 5 countries
- Over 500 clients served across 50 countries
- Eneco Shareholder since June 2009



Vision, Mission & Values

Vision

Sustainable energy for everyone

Mission

We are a leading knowledge company that creates sustainable energy solutions that impact people's everyday environment. Based on our deep expertise in renewable energy, energy & carbon-efficiency, energy systems & markets, and energy & climate policy

we develop smart policies and concepts and bring them to life.

We know that, if we act now, the 2050's global energy system can be sustainable, secure, affordable and fully based on renewable sources. Together with our ambitious clients we are committed to achieve our mission.

Values

Dedicated

Original

Impact

Trust

Why is sustainability important?

- Five major drivers that will affect the business of seaports:
 1. Air quality (NO_x, PM)
 2. Biodiversity (Nitrogen deposits in nature)
 3. Climate change (CO₂, CH₄)
 4. Noise (dB)
 5. Security of supply (reduce fossil fuel dependency)



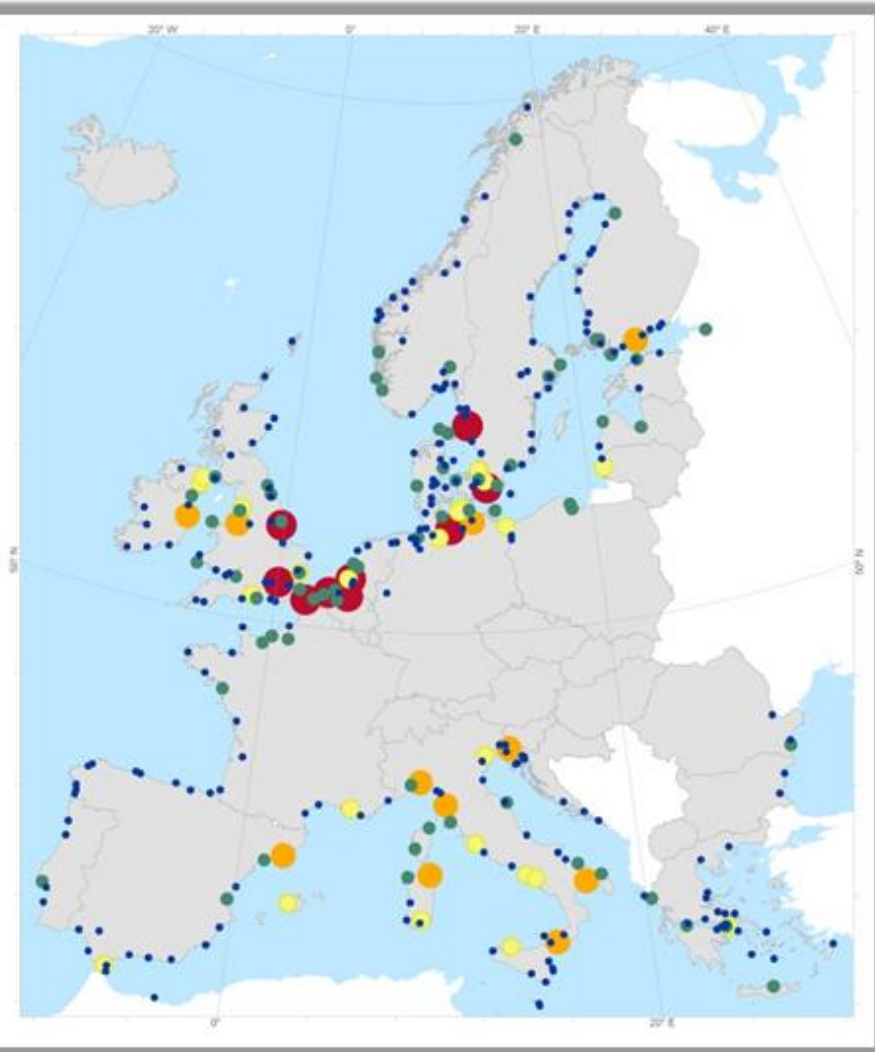
All ask for shift towards alternative fuels and new technology

- Cleaner fuels: e.g. biofuels, LNG
- Emission after treatment: e.g. De-NO_x, Scrubbers
- **Electrification, for instance:**



© Princess Cruises

Shore Side Electricity offers great potential for ports

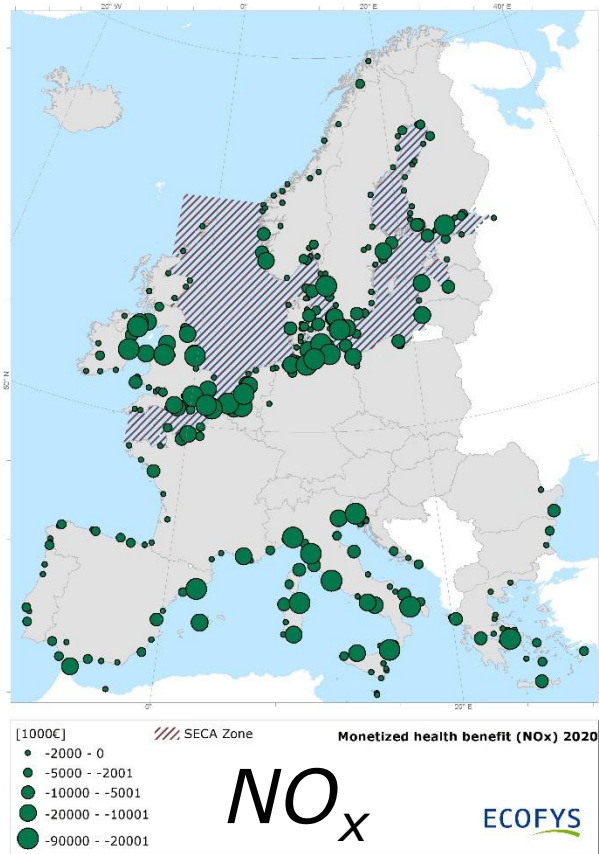


- Ecofys tool provides answers:
 - CO₂ reductions
 - Grid requirements (MW & GWh)
 - Harmful emission reductions
- For ships with highest potential (Cruise, Container, Ferry, RoRo)
- Both today and for 2030-2050

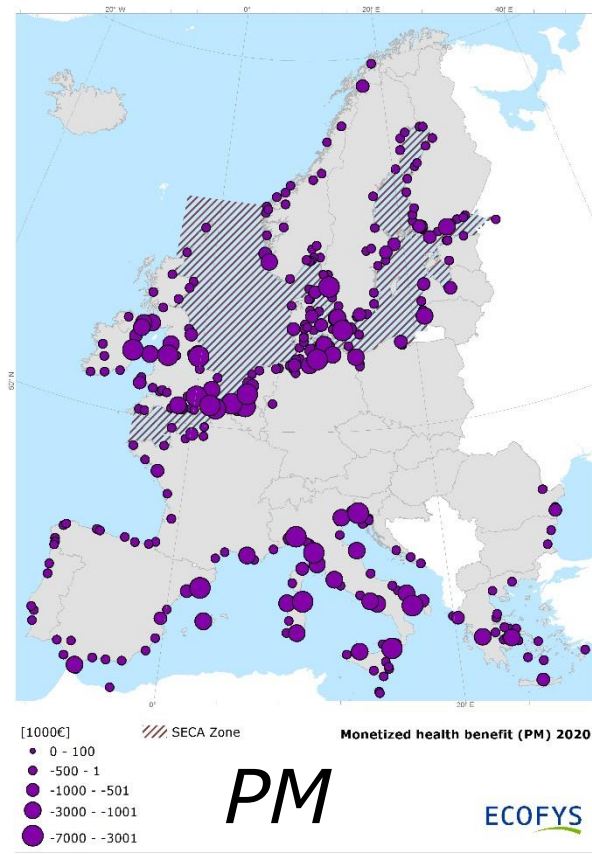


Harmful emission reductions

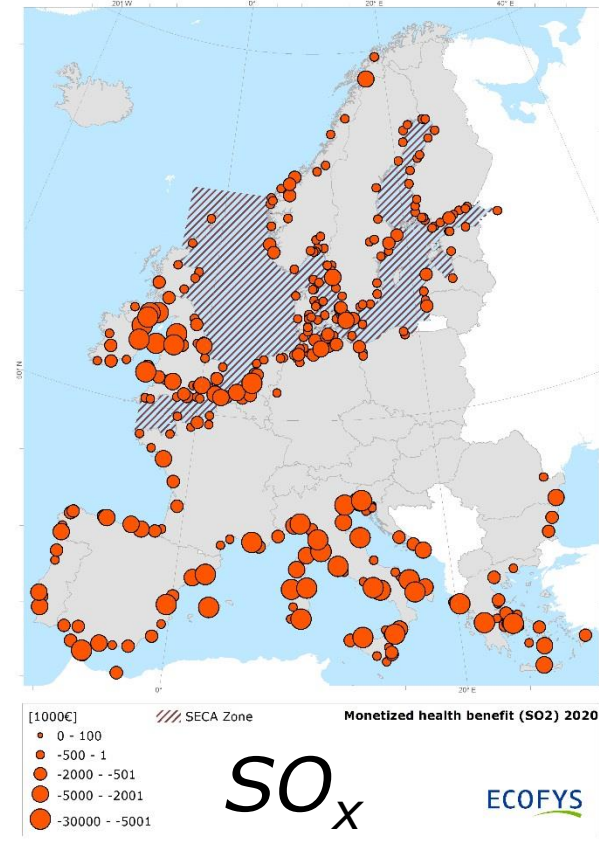
Health benefit at least 3 Milliard €



2,000 M€

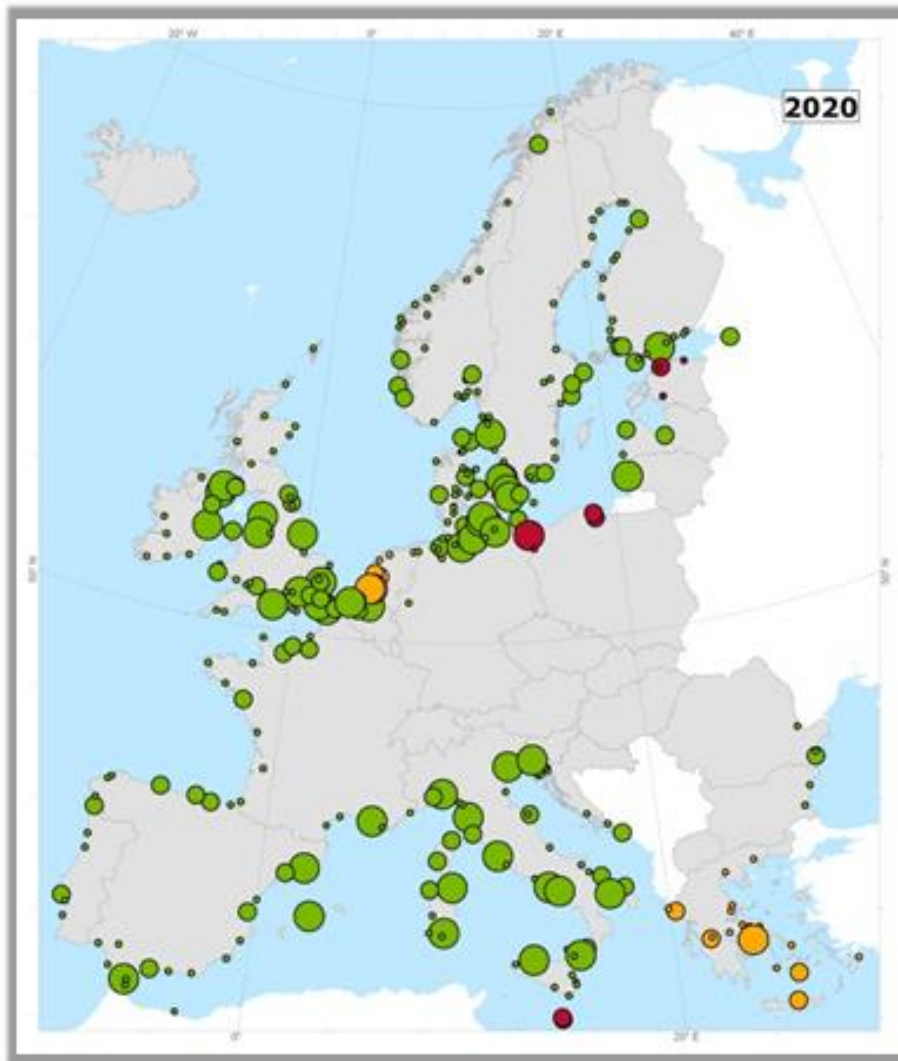


200 M€

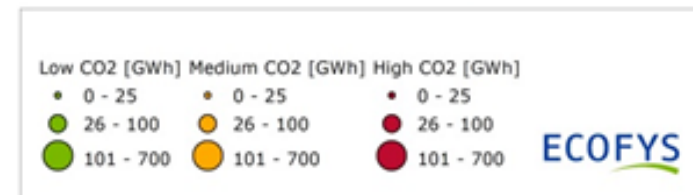


700 M€

Potential of Shore Side Electricity for Europe in figures



- Results for Europe:
 - CO₂ reduction: 40%
 - **Red**: Up to +50% (e.g. Poland)
 - **Orange**: reduction 0 - 20% (Netherlands/Greece)
 - **Green**: reduction 20 - 90% (e.g. France)
- Extra grid requirements: 3.4 TWh (0.1%)



Results can be tailored to port level

Sustainable energy for everyone

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Thank you very much.

