PORT DECARBONISATION & ENVIRONMENTAL SUSTAINABILITY WORKSHOP
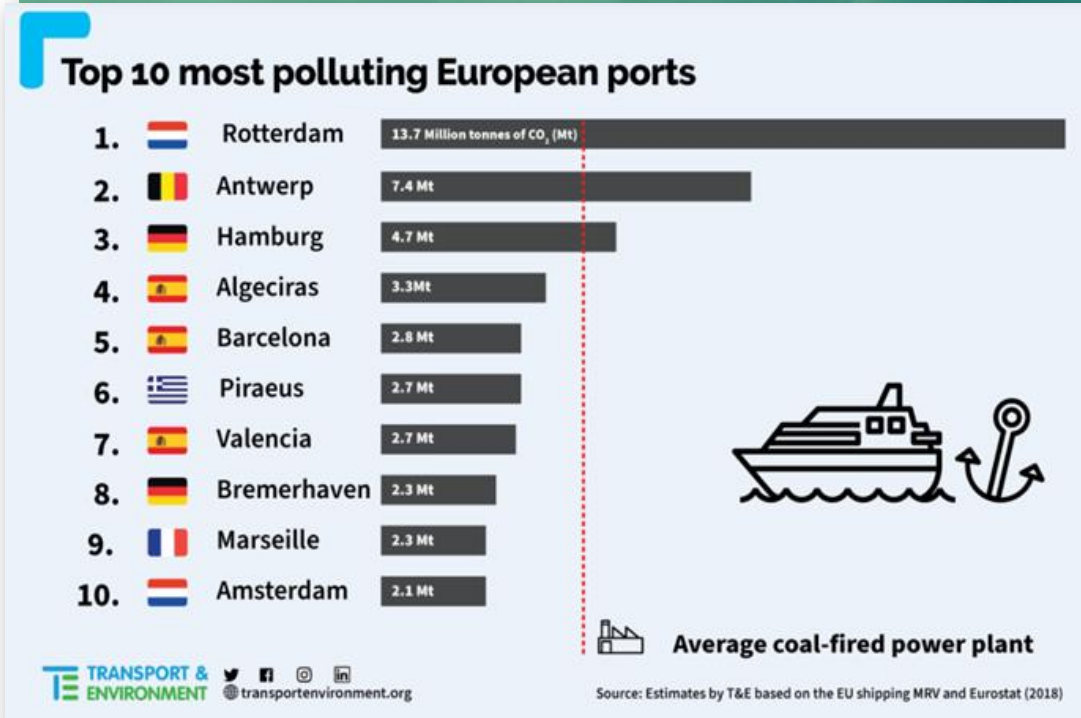
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CACHE NET ZERO – LEVERAGING SPACE ASSETS TO ACCELERATE PORT DECARBONISATION

Dave Fox | CEO | Geospatial Insight

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CACHE Net Zero - Vision

The Growing Problem

o Global carbon dioxide (CO2) emissions in 2023 were at record highs, driven by human activities that release more carbon into the atmosphere than natural processes can remove.

o Fossil fuel emissions reached record levels, increasing 1.1% from 2022 to 36.8 billion metric tons

o The maritime sector accounted for *circa* 2.7% of global emissions in 2023 (OECD)

o Ports, and their supply chain, are significant emitters of GHGs and other air pollutants, but regulation and action to address this lags behind other sectors

o CACHE NZ supports and accelerates the development, adoption and ongoing deployment of low emission strategies for port operators and stakeholders globally

Top 10 most polluting European ports

1.	🇳🇱	Rotterdam	13.7 Million tonnes of CO₂ (Mt)
2.	🇧🇪	Antwerp	7.4 Mt
3.	🇩🇪	Hamburg	4.7 Mt
4.	🇪🇸	Algeciras	3.3 Mt
5.	🇪🇸	Barcelona	2.8 Mt
6.	🇬🇷	Piraeus	2.7 Mt
7.	🇪🇸	Valencia	2.7 Mt
8.	🇩🇪	Bremerhaven	2.3 Mt
9.	🇫🇷	Marseille	2.3 Mt
10.	🇳🇱	Amsterdam	2.1 Mt

Average coal-fired power plant

TRANSPORT & ENVIRONMENT
@transportenvironment.org

Source: Estimates by T&E based on the EU shipping MRV and Eurostat (2018)

Source: The European Federation for Transport and Environment, Feb 2022

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Redshift Associates

BABLE
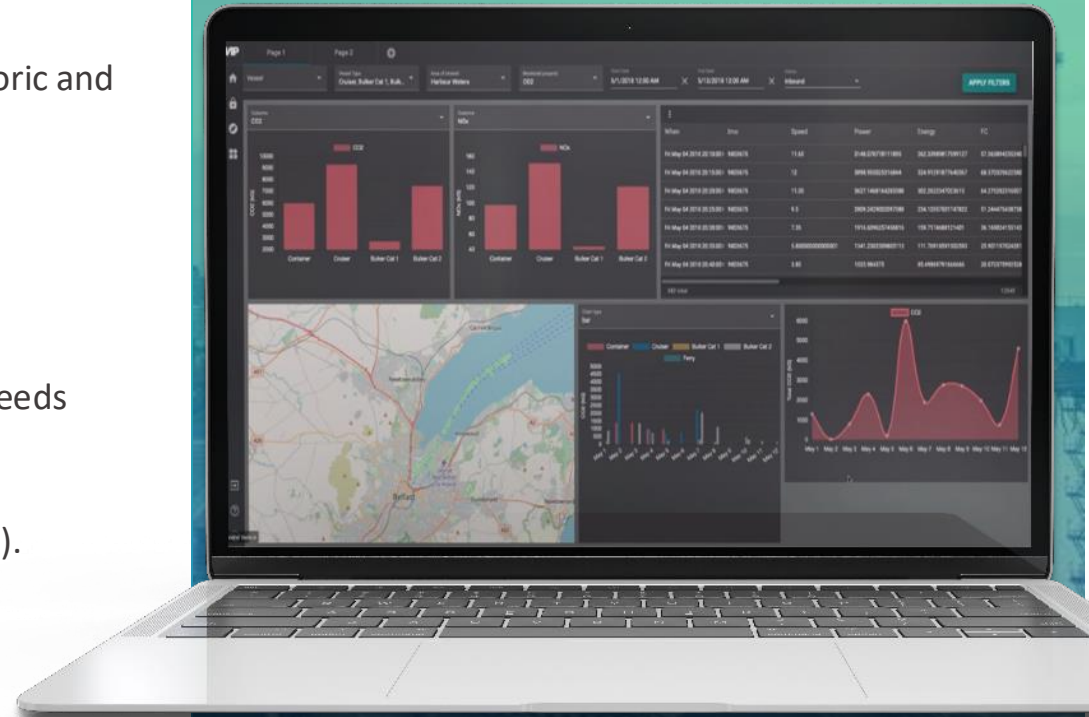
Funded by esa

Introducing CACHE Net Zero

A subscription-based service to assist Port Authorities, Port Operators, and Shipping companies to develop, implement and monitor the progress of strategies to reduce emissions and energy consumption.

- **Air Quality Inventory and Baseline:**
  - Mapping and locating the main sources of air pollution, differentiating between emissions from land- and maritime-side activities.

- **Ongoing Air Quality Emission Monitoring:**
  - Regular, data-driven monitoring and analytics of air quality and emissions.
  - Provides Monitoring, Reporting and Validation (MRV) of pollution reduction activities and input into future air quality strategies.

- **Analytics:**
  - Clean Energy Audit: independent technical and economic analysis of renewable energy potential and storage systems to support ports' transition to net zero.

- **GHG Emission Inventories:**
  - Baseline surveys of greenhouse gas emissions to develop and update strategies for port environmental sustainability.
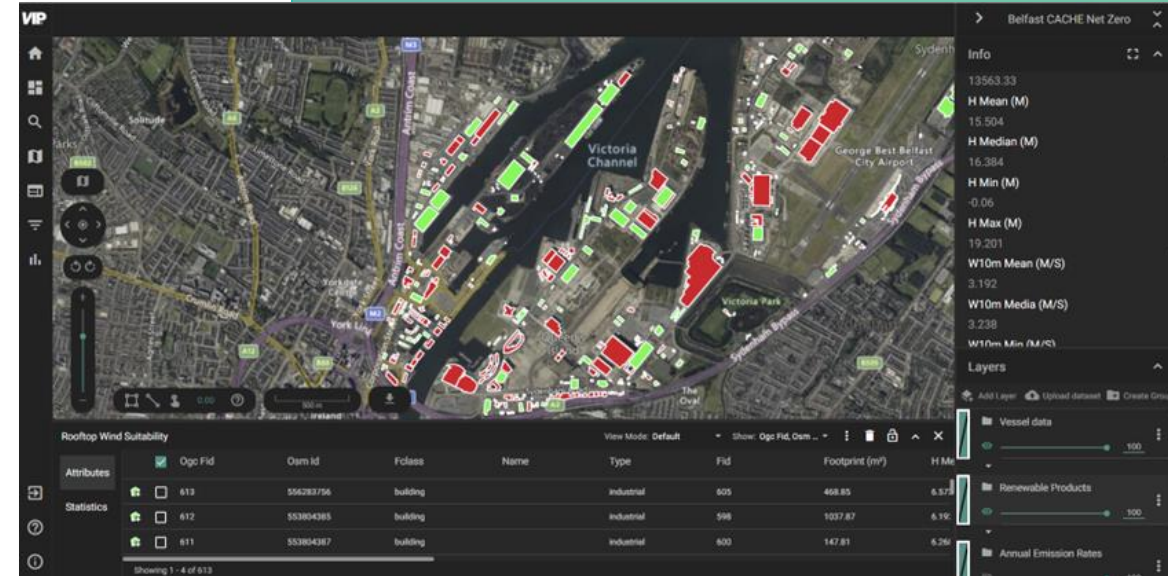
Emissions Intelligence - Powered by Data

- **Air Quality Inventory and Baseline:**
  - Uses a wide range of geospatial, emission and localised activity databases. These include:
    - Traffic data for the port and its surrounding area
    - National level intelligence for industrial point and grid emission sources
    - Shipping activity using Automated Identification System (AIS) feeds for historic and current shipping activity within the port area
    - Weather data and other satellite data sources (e.g. CAMS)
    - On-site ground-based air quality sensor data

- **Ongoing Air Quality Emission Modelling & Monitoring:**
  - Automatic emission updates
  - Sources accessed as per above with additional satellite data and other real-time feeds

- **GHG Emission Inventories:**
  - Upgrading the air quality monitoring to include other emissions sources (e.g. CO_2). Potentially includes:
    - Client data
    - Available energy usage/performance data
    - Additional weather data
    - Methane monitoring services using satellite analytics

Adding Value to Strategic Planning

○ **Renewable energy planning**
  ○ Leveraging geospatial intelligence, scenarios for renewable energy generation can be created and evaluated

○ **Electric vehicle infrastructure planning**
  ○ Existing charge point availability can be mapped and optimal siting of new sites for both the port and surrounding area generated

○ **Visualisation**
  ○ Access geospatial intelligence via a dedicated platform-based tool.
  ○ Analytics are accessed through an on-line portal which can be integrated into wider port management systems
  ○ Additional layers of land optimisation, renewable energy planning and other key intelligence layers can be added
  ○ All intelligence provided by the system can also be accessed via an API for direct delivery into an existing Net-Zero or operational port management system

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