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Analysis of today
Assessment of tomorrow

By: Gordon Feller

Enabling Greener Futures: Lessons from the Port of Valencia

Transport contributes more than half of the world's greenhouse gas (GHG) emissions. Maritime transport is responsible for 13% of the whole transport sector's total emissions.

What's being done to greening up maritime and reduce those impacts - and to do so quickly?

Port authorities, terminals, shipping companies, and other stakeholders have joined efforts to improve this sector's environmental performance.

In Spain, the national government's Ministry for Ecological Transition and Demographic Challenge has developed a method for assessing the carbon footprint.

It's been adapted to ports and applied to the Port Authority of Valencia's efforts focused on reducing emissions – with a focus on what's called Scope 1, 2, and 3.

Under the framework of the ambitious "Valenciaport 2030, Zero Emissions" strategy, The Port of Valencia in Spain has implemented several green initiatives.

In comparison with other EU-based ports, these moves truly do stand out – and they have led to several important changes within the port's organization.

Reduced emissions, improved infrastructure

Ships can now plug into the grid while docked, reducing their reliance on onboard generators and cutting air pollution. The port encourages the use of Liquefied Natural Gas (LNG) as a cleaner fuel for ships and port vehicles.

Wind turbines and solar panels are being installed to generate clean energy for port operations. The port authority is replacing its vehicle fleet with hybrid and electric models.

Measures like traffic management and optimized scheduling aim to reduce fuel consumption and emissions from port activities.

As part of the new strategy, the port infrastructure was also improved. The port is implementing smart grid technologies to optimize energy consumption and distribution. Utilizing digital tools for port operations improves efficiency and reduces unnecessary emissions.

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New construction projects incorporate sustainable materials and design principles. Initiatives are implemented for better waste management and recycling within the port.

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This EU-funded project tests innovative technologies like IoT and AI to further improve environmental performance. The port authority actively collaborates on research projects to develop new green technologies and solutions.

Increased traffic, but not the carbon footprint

These changes are contributing to a cleaner and more sustainable port environment in Valencia. While the ultimate goal of zero emissions by 2030 is ambitious, the port is making significant progress as it implements these changes.

The success of these changes depends upon the cooperation of various stakeholders within the port, including shipping companies, terminal operators, and other businesses. The Port of Valencia's commitment to green initiatives sets a positive example for other ports around the world.

The initial results in Valencia help to highlight some key findings. One of these is that ship traffic, within the port, of containers and cruises had a major impact on the carbon footprint.

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The results show a decrease of 17% when emissions are compared using the base year's emissions factors to avoid external factors.

Future projects that include self-consumption or renewable energy policies seem to be the next step in a port that shows good results but still has room for improvement in activities of Scope 3.

Ports are much more than an essential infrastructure for economic growth

The Port of Valencia is the fifth busiest seaport in Europe, and the second busiest container port in Spain. It generates 50,000 jobs and serves a dynamic area with 51% of Spain's GDP within a 350 km radius.

The transport sector is responsible for 29% of all energy consumption globally and, therefore, for a similar amount of GHG emissions.

Maritime transport is responsible for 13% of the total GHG emissions. Maritime transport also emits other harmful gases such as SOx and NOx.

However, there are significant benefits when choosing maritime transport over different types of transport. When maritime transport is not possible, rail transport might be a more sustainable choice.

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For example, the transport of goods by road presents a higher number of accidents, generates traffic congestion, and is responsible for more than 60% of the GHG emissions.

Ports are much more than an essential infrastructure for economic growth. In projects developed to improve ports' environmental performance it is critical to provide accurate information, because it helps involve stakeholders.

Port terminals have made a significant effort to assess their carbon footprint. Although the methodologies applied to vary significantly and, often, only the direct emissions are considered. There are no studies that address all three Scopes under a structured methodology.

How Valencia port improved its environmental performance?

The Port has made a significant effort in the past years, developing projects and initiatives seeking to improve their environmental performance.

The national government's research assessed

the carbon footprint of Valencia port. It applied a standardized methodology and considers direct and indirect emissions (Scopes 1, 2, and 3).

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This organization is the first of its kind to assess and certify its carbon footprint, according to ISO 14064:2018.

The Port's carbon footprint was calculated under the Life Cycle Assessment (LCA) method.

This helps with setting the system boundaries, defining the greenhouse gases, establishing the calculation formula, and interpreting the results obtained.

The Guide for the Calculation and Management of the Carbon Footprint in Port Facilities by Levels was applied. It is noteworthy that this Guide follows the guidance of the Nobel Prize winning International Panel on Climate Change (IPCC).

The "system boundaries" were set to the Port's area of influence. This includes port offices, stockyard machinery and activities, docking line machinery and activities, and ship traffic inside the port area.