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SUSTAINABLE DEVELOPMENT OF PORTS: ANALYSIS OF CLIMATE NEUTRALITY STRATEGIES FOR CASE OF LATVIA

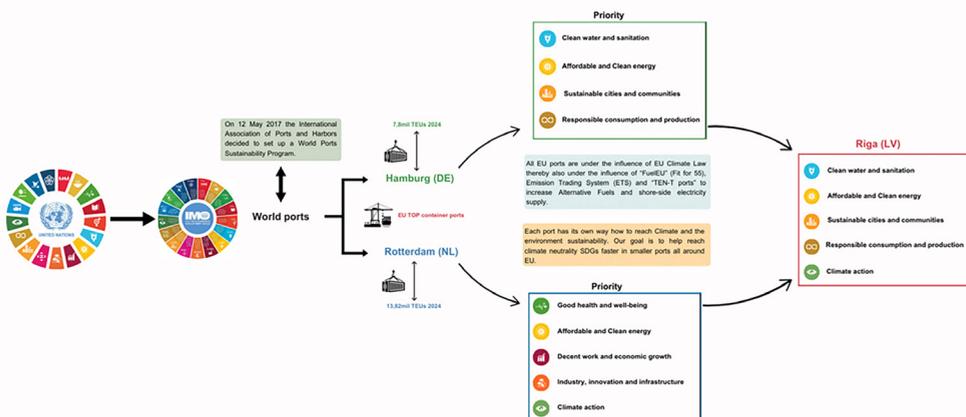
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Abstract – In an increasingly complex and uncertain world, port resilience is essential; ensuring port sustainable development is the key to maintaining a competitive national economy. Ports are key nodes in global supply chains, which must transition to low-carbon systems, while aligning with the rest of Sustainable Development Goals (SDGs) to ensure economic viability, environmental sustainability, and social responsibility. The main research question of the study is how to achieve climate neutrality in ports in a sustainable way in the case of Latvia. Achieving such transformation requires a holistic approach that integrates decarbonization strategies that allow the alignment of the decarbonisation of the port with multiple SDGs. By investigating existing sustainable development strategies implemented in the Port of Hamburg and Port of Rotterdam, focusing on their contributions to specific SDGs, this study identifies key measures that contribute to climate neutrality in ports and evaluates their applicability in the Latvian context. Various energy transition pathways are assessed, comparing fossil fuel-based maritime operations with alternative fuels and best-fit scenarios for the case of Latvia are proposed from a systems thinking perspective. The results of the analysis provide insights into how different strategies will impact port infrastructure adaptation and contribution to SDGs. In such way, this study contributes to a deeper understanding of the challenges and opportunities for Latvian ports in achieving climate neutrality while enhancing resilience and sustainability.

Keywords – Decarbonisation; low-carbon ports; marine transport; renewable fuels; SDG



Sustainability priorities of EU ports in alignment with UN SDGs