



Retrofitting towards climate neutrality

D4.8 Summary of Techno-economical assessment

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Nomenclature

0D	Zero-dimensional
1D	One-dimensional
API	Application Programming Interface
BX	BlueXprt
CAPE-OPEN	COmputer Aided Process Engineering – Open interface standard
CCM	Carbon Capture Machine
CFD	Computational Fluid Dynamics
DSL	Domain-Specific Language
GHG	Greenhouse Gas
LCA	Life Cycle Assessment
N ₂	Nitrogen
NPV	Net Present Value
NO _x	Nitrogen Oxides
O ₂	Oxygen
SEA	Social Economic Assessment
SO _x	Sulphur Oxides
TEA	Techno-Economic Assessment
UPM	Università Politecnica delle Marche
UV	Ultraviolet
WP	Work Package

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EXECUTIVE SUMMARY

This document is deliverable “D4.8– Summary of Techno-Economic Analysis” of the European Union project “Retrofitting towards climate neutrality” (herein referred to as “**Green Marine**”), with **Grant Agreement** No. 101096522.

This deliverable, D4.8, presents the techno-economic framework developed within Green Marine under WP4 – KPIs, Integration, TEA, SEA, LCA, Risk, Safety, & Legal Evaluations. It provides a structured overview of the process-modelling work undertaken to support feasibility assessment and future decision-making. The report covers preliminary backpressure estimation, CAPE-OPEN/COCO-based process modelling of the engine and membrane capture system, and the influence of key operating parameters such as engine load, relative humidity, membrane area, and auxiliary power demand. It also includes the current status of the deacidification of minerals activity, which remains under review pending further technical and budgetary consideration.