

TOWARDS LOW CARBON GLOBAL SUPPLY CHAINS: A MULTI-TRADE ANALYSIS OF CO2 EMISSION REDUCTIONS IN CONTAINER SHIPPING



Pierre Cariou, Parola Francesco, Theo Notteboom

This paper attempts to address the lack of research on clean maritime supply chains by examining key factors affecting CO2 emissions amongst shipping containers to measure changes from 2007-2016.

APPROACH:

The study identifies key factors affecting CO2 emissions emitted by container ships based on existing literature as well as business insights and measures how much has already been achieved in the past decade by offering multi-trade comparisons of the situations in 2007 and 2016.

MAIN FINDINGS:

- This study points to an overall decrease in CO2 emissions in the shipping industry by approximately 33% since 2007. This is attributed to two primary factors:
 - I: CO2 fuel efficiency in grams per TEU-km (-53%) due to the general decrease in ship speed and change in technology.
 - II: The decrease from changes in network design leading to less distance travelled .
- However, these positive effects are counterbalanced by the increase in total deployed fleet capacities, partly due to an increase in the number and average size of vessels (+81%).
- These changes are trade-dependent and individual factors contribute in different ways to variations in CO2 emissions.