Marine Research

Marine Research (MR) is a peer-reviewed open-access journal published by the National Academy of Marine Research (NAMR). Volume 6 Issue 1 is honored to feature Dr. Solomon Chen (Taiwan Association of Maritime Safety and Security) as a guest editor, overseeing a special issue dedicated to the theme of **"Shipping and Marine Industry."**

The global shipping and maritime industry is undergoing rapid transformation driven by decarbonization, technological innovation, and evolving regulations. Addressing these changes requires continued research and innovation to support sustainable and resilient maritime development.

This special issue brings together studies that reflect several key developments currently influencing the maritime sector. The collected papers explore topics including carbon accounting and greenhouse gas reduction strategies in shipping, the development of alternative marine fuels and bunkering infrastructure, port and logistics system integration, maritime transportation service performance, port state control effectiveness and risk-based inspection practices, as well as safety monitoring and assessment technologies for submarine cables. Together, these contributions provide valuable insights into both the opportunities and challenges facing the shipping and marine industry in an era of rapid transition.

MR is published in June and December. The articles are also available for Open Access through MR official website (https://marres.namr.gov.tw/). Given your eminence and contribution to the field of marine research, we warmly invite you to submit your research for publication at MR. We look forward to receiving your manuscripts.

Best regards,
Chung-Ling Chen, Ph.D.
Editor-in-Chief, President of National Academy of Marine Research



Shipping and Marine Industry

The sea has always been more than a physical space across which ships travel. It is a realm where human civilization encounters uncertainty, ambition, danger, and hope. Every voyage reflects not only technological achievement and commercial exchange, but also humanity's enduring attempt to understand and navigate forces far greater than itself. Maritime history has therefore never been merely a history of transportation. It is equally a history of adaptation, resilience, and responsibility.

Today, the maritime world stands at a moment of profound transition. The pressures of climate change, energy transformation, supply chain disruption, operational risk, and geopolitical uncertainty are reshaping the foundations of global shipping. The articles collected in this volume together reveal an industry that is no longer concerned solely with efficiency and expansion, but increasingly with sustainability, integration, safety, and long-term resilience.

The discussion on carbon accounting in shipping reflects this transformation with particular clarity. Environmental impact can no longer remain an invisible externality beyond operational calculation. The ability to measure emissions, trace carbon responsibility, and integrate sustainability into managerial decision making represents a fundamental change in maritime thinking. Such developments signify not merely regulatory compliance, but a gradual redefinition of how the shipping industry understands its obligations to the wider world. In many ways, the act of accounting for carbon is also an act of acknowledging consequence.

The study concerning LNG bunkering capacity and the growth of LNG-fuelled fleets further illustrates the complexity of maritime decarbonization. Technological transition within shipping is not simply a matter of replacing one fuel with another. It requires the synchronized evolution of infrastructure, investment, logistics, and operational readiness across global networks. The expansion of alternative fuels reveals both optimism and fragility within the current transition. Beneath every projection of future growth lies the persistent maritime question of whether systems at sea can evolve quickly enough to support the demands placed upon them.

The integration between dry ports and seaports reminds us that modern maritime transport no longer begins or ends at the coastline. Ports are now embedded within broader logistical ecosystems that stretch deep into inland economic corridors. Efficiency in shipping increasingly depends upon coordination across organizational and geographical boundaries. The movement of cargo is therefore also a movement of information, trust, timing, and cooperation. Maritime competitiveness emerges not only from physical infrastructure, but from the ability of systems and institutions to function in harmony.

Similarly, the evaluation of service quality in global agro commodity logistics demonstrates how maritime transport remains intimately connected to human livelihood and food security. Behind every shipment of agricultural cargo lies an intricate chain of decisions and relationships involving producers, carriers, logistics providers, and consumers across continents. Service quality in this context is not merely a commercial indicator. It reflects reliability, continuity, and the capacity of maritime systems to sustain global interdependence under conditions of uncertainty.

Safety remains another enduring concern within the maritime profession. The analysis of Port State Control performance for RORO vessels reveals that even as shipping technologies advance, vulnerabilities persist within operational practice, vessel condition, and regulatory oversight. Maritime safety has never been achieved through regulation alone. It emerges through vigilance, discipline, professional culture, and the continuous willingness to learn from risk and failure. The sea does not forgive complacency, and every lesson neglected at sea eventually returns with consequence.

The study on submarine cable monitoring technology further expands our understanding of maritime infrastructure in the contemporary age. Beneath the visible movement of ships lies another hidden network carrying electricity, information, and energy across the seabed. These submarine systems have become essential to modern civilization, yet they remain exposed to environmental forces and operational hazards that are often poorly understood by the public. Their protection requires not only technological innovation, but also a deeper awareness that maritime space is now inseparable from the stability of digital society and national resilience.

Taken together, the studies in this volume reveal a maritime sector undergoing intellectual and operational transformation. The challenges facing shipping today are interconnected and cannot be understood in isolation. Environmental sustainability influences economic structure. Infrastructure resilience affects geopolitical stability. Technological innovation reshapes operational practice. Safety and efficiency must coexist rather than compete. Across all these themes runs a shared recognition that maritime development can no longer be guided solely by the pursuit of scale and speed. It must also be guided by wisdom, foresight, and responsibility.

There is perhaps a quiet lesson within the nature of navigation itself. Mariners have always understood that the sea cannot be conquered. It can only be respected, studied, and carefully traversed. The horizon may invite ambition, but survival depends upon humility. In an era where global maritime systems grow ever more complex and interdependent, this understanding becomes more important than ever.

This volume is offered in that spirit. It reflects not only academic inquiry, but also the continuing effort of maritime scholars and professionals to seek clarity amid uncertainty and to contribute knowledge that may guide the future course of the industry. May these studies encourage deeper reflection upon the evolving relationship between humanity, technology, commerce, and the sea that continues to connect them all.

Best regards,
Solomon Chen, Ph.D.
Guest Editor, Taiwan Association of Maritime Safety and Security

