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BOOK OF ABSTRACTS

2025 INTERNATIONAL CONFERENCE

ADVANCING THE BLUE ECONOMY THROUGH GENDER EQUALITY

Editors: Momoko Kitada, Francis Neat, Renis Auma Ojwala
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2025 INTERNATIONAL CONFERENCE

**ADVANCING THE BLUE ECONOMY
THROUGH GENDER EQUALITY**

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FOREWORD

The International Maritime Organization's (IMO) World Maritime Theme for 2025, "*Our Ocean, Our Obligation and Our Responsibility*," captures not only a global commitment to ensure the maritime and ocean economy that we all depend upon does not adversely impact our ocean's health but also that this is done in an inclusive and fair way for all humanity. This aligns precisely with the concept of the Blue Economy, a term that brings human economic activities in maritime and ocean sectors together within a framework of environmental sustainability and social equity and responsibility. The blue economy has a complex sustainability agenda that requires diverse, innovative, and equitable solutions. Complex challenges require the integration of diverse perspectives, and gender equality might seem an obvious prerequisite for the success of the blue economy. However, surprisingly, limited research and information is available about gender equality and the blue economy. How is the concept of the blue economy understood by different sectors? How does gender equality vary in different sectors and regions, and do they face similar or different challenges in achieving gender equality? What has worked and what has failed with respect to achieving gender equality? How can we demonstrate that gender equality actively enables the blue economy? To address such issues, we need case studies that specifically focus on gender and the blue economy. Sharing ideas, connecting people, and engaging in discussions are required to advance the blue economy through gender equality.

With this in mind, we designed The World Maritime University (WMU) 2025 *International Conference on Achieving the Blue Economy through Gender Equality*. We sought to provide unique collaborative learning and networking opportunities that enable everyone to be part of the innovative solutions needed for a sustainable maritime and ocean future. While the conference has several elements and dimensions, we thought one way to capture the current status of progress was to make a call for case studies in an abstract format from which we can learn about the diverse nexus between the blue economy and gender equality. We aimed to attract case studies from across the various maritime and ocean sectors at different social, economic, political, and cultural levels.

The call attracted 102 abstracts, authored by 79 males and 127 females. The geographical distribution of case studies was global, representing 46 countries from Africa (n=12), Asia and the Pacific (n=8), Europe (n=18), Middle-East (n=1), North America (n=3), and South America (n=4). A group of experts reviewed the abstracts. There was a wide range of blue economy sectors represented, including shipping,

fisheries, ocean sciences, government maritime agencies, energy generation, conservation and tourism.

We would like to express our sincere gratitude to the external reviewers of abstracts from our conference partners: REDO Lookout (Cajsa Jersler Fransson; and Jill Jarnsäter); and EU COST ACTION BlueRights (Eka Siradze; Gabriela Oanta; Gökhan Güneysu; Maja Savic-Bojanic; Patricia Kennedy; Senka Šekularac-Ivošević; and Silvina Zhivkova Bakardzhieva). These external reviewers provided valuable comments and recommendations on all the submitted abstracts, which were incorporated with the recommendations by internal reviewers (Momoko Kitada, Francis Neat, and Renis Auma Ojwala) during the selection process. We also appreciate the generous support of the Lloyd's Register Foundation for the conference. Our gratitude to the other sponsors and supporters of this conference: REDO Lookout project, funded by the Nordic Information on Gender (NIKK), EU COST ACTION BlueRights, Floeshun Maritime Engineering Services and the International Maritime Organization. Finally, we would like to thank our Conference & Events Coordinator, Flavia Destro.

How to use this Book of Abstracts (BoA)?

This BoA is designed to be a resource for the conference participants and anyone who wants to learn about different perspectives on gender and the blue economy. The conference participants are invited to read it before they arrive at the conference, meet the authors, and engage during the panel discussions and workshops. For others who are not able to participate in the conference, case studies collected in the BoA can be inspirational to discover diverse applications of the blue economy in different sectors and regions. The BoA is organized by three thematic areas of the conference: 1. Safety at Sea and Environmental Protection; 2. Human Rights and Well-being; and 3. Blue Economy.

We hope that this BoA will facilitate discussions and engagement across the sectors and regions and make the participants' conference experience more meaningful and inspirational. By recognizing "*Our Ocean, Our Obligation and Our Responsibility*", we can make progress towards a sustainable and inclusive future in maritime and ocean communities.

April 2025, Malmö,
Momoko Kitada and Francis Neat

SAFETY AT SEA & ENVIRONMENTAL PROTECTION



Doing Diversity on Tanker Vessels: A Case Study of the Danish Shipping Company, Hafnia

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The maritime industry has traditionally been a male-dominated field, and despite efforts to promote diversity, gender integration remains a complex and contested issue (Kitada et al., 2015). Findings indicate that while some companies support the inclusion of female seafarers, others remain hesitant due to safety concerns and deeply ingrained gender norms (Sampson & Acejo, 2023). The Hafnia case study examines the integration of women aboard tanker vessels, focusing on resistance and inclusion dynamics. Conducted from March 8, 2024, to September 30, 2025, it employs a mixed-methods approach, with this analysis based on 58 interviews. Male and female seafarers position themselves in different ways to the question of gender onboard. Some male seafarers resist change, due to the influence of more traditional gender patterns, while most welcome women onboard. Some

female seafarers reject special attention, emphasizing equal treatment over distinction, while others argue that women need special treatment to reach the same goals. In some cases, women feel compelled to work harder than men to overcome perceived gender biases and stereotypes. The company actively fosters a learning culture in which seafarers collaboratively develop their safety skills. This approach builds on traditional apprenticeship learning, where safety knowledge has historically been a hands-on experience. However, in this context, safety extends beyond physical measures; it is a socially embedded practice, co-constructed through institutional safety practices and policies, and interaction. Hafnia's safety initiatives, such as the intention to design and provide two-piece boiler suits for female crew members, reflect recognition of inclusion in the maritime workplace.

Keywords Gender diversity, Maritime safety, Workplace inclusion, Cultural perceptions.

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Gender and Safety in Maritime Transition: Preliminary Data

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This case study draws on preliminary data from Brittany, France, to examine the integration of women into emerging sail cargo initiatives, highlighting gaps left by a traditionally masculinised maritime industry (Kitada, 2022; Sampson, 2024). The analysis traces historical efforts to integrate women, particularly during periods of crisis that necessitate the retention of an experienced workforce. Despite these efforts, women face persistent challenges in being accepted and recognised in maritime academies and professional domains (Grövel, 2013; Grövel & Stevanovic, 2020; Flécher, 2023). This preliminary study shows women assuming roles in the maritime sector, yet systemic barriers persist. Labour rights are frequently compromised by reduced salaries, justified by the idea of a “vocational interest” linked to sustainability and decarbonisation efforts. This vocational identity (Suaud, 2018), which has historically reinforced male dominance in maritime professions, risks perpetuating inequities, such as reduced pay and insufficient safety measures for women. Grövel’s (2013) analysis shows how crises open opportunities for a “reserve army” amid

resistance to maritime education reform. Flécher (2023) addresses gender issues in large merchant ships while mentioning how the ETF and ILO in 2019, have worked to combat gender inequalities and workplace violence (VSS). Fotinopoulou Basurko (2024) proposes amendments to the Maritime Labour Convention (MLC, 2006) to align with ILO Convention C.190 by 2025. Pi Joan’s observations of the sail cargo sector reveal an emerging industry with some of the lowest salaries in the merchant navy, exposing gaps in safety, security, and fairness. While this sector prioritises environmental protection and SDGs, new technologies often overlook safety and labour rights, relying on crews composed of women’s contributions to advance the industry. This raises the question: Does the ecological transition in maritime practices foster genuine gender equality, or are women being treated as experimental subjects in an emerging capitalist framework? Without proper integration and risk analysis, ecological transition risks perpetuating systemic inequalities.

Keywords Gender integration, Maritime safety, Labour rights; Environmental transition.

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Equal Teams, Healthier Seas: The Power of Gender-Balanced Teams in Marine and Coastal Protection in Montenegro

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The preservation of Montenegro's marine and coastal areas faces numerous challenges, including plastic pollution, inadequate wastewater management, and the pressure of tourism on ecosystems. An increasing number of organizations recognize the importance of gender-balanced teams in developing more effective environmental protection strategies. This research analyses the roles of women and men in marine conservation sectors, with a particular focus on institutions involved in environmental policies. Special attention will be given to the Bay of Kotor, which, due to its ecological vulnerability and UNESCO-protected status, faces unique environmental preservation challenges. The research was conducted using qualitative methods, including semi-structured interviews with representatives from key institutions involved in marine and coastal protection in Montenegro. Narrative analysis was applied to interpret the responses and gain deeper

insight into the roles and contributions of men and women in environmental protection. Statistical data on the gender composition of these teams will also be presented, showing a balanced presence of men and women. The study confirms that balanced teams, through equal efforts and collaboration, have contributed to a cleaner coastline by jointly initiating strategies to reduce pollution, educating the local population on environmental protection, and raising awareness about the importance of preserving Montenegro's marine ecosystems. The Montenegro proverb "A house does not stand on the ground but on a woman" emphasizes the crucial role of women in building sustainable systems, which is particularly relevant in the context of environmental protection. This research aims to better understand how gender equality in environmental teams contributes to the long-term sustainability of marine ecosystems and the development of effective strategies.

Keywords Environmental protection, Gender equality, Sustainable system, Bay of Kotor.

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The Role of Gender Equality in Ensuring Maritime Safety and Environmental Sustainability

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The issue of gender equality in the modern maritime industry is becoming increasingly relevant, although research in this direction in Georgia remains scarce. This study builds upon the works of Walker and Seafarer (2023) and Nguyen and Peterson (2023), which reveal a positive correlation between gender diversity and the efficiency of maritime operations. Our research advances this direction and, using the environmental model of Zhao and Anderson (2024) presents an innovative approach to assessing the impact of gender balance. The main findings of the study demonstrate that: 1) on vessels where women constitute at least 25% of the crew, safety procedure violations are 34% lower; 2) under gender-balanced management, fuel consumption decreases by 12%, directly contributing to reduced CO₂ emissions; 3) female representation in decision-making positions increases environmental regulatory compliance

by 28%. Methodologically, the research included analysis of data from international maritime organizations (n=245), expert surveys (n=87), and detailed examination of 18 specific cases in the Black Sea region. The study revealed that gender-balanced teams show better results in terms of both adherence to safety procedures and compliance with environmental regulations. The results of this research will make a significant contribution to the formation of maritime policy, particularly in the development of new regulations aimed at achieving the International Maritime Organization's (IMO) 2050 carbon neutrality goals. The model presented within the framework of this conference is innovative in that it connects the principles of gender equality with sustainable development of the maritime industry for the first time and offers specific recommendations for policymakers and industry representatives.

Keywords Gender equality, Maritime safety, Environmental protection, Blue economy, Sustainable development.

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Fisherwomen as Agents of Change: Advancing Coastal Sustainability in Tulungagung, Indonesia

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Fisherwomen in Indonesia's blue economy, particularly in fisheries, require an integrated ecosystem to be recognized as a crucial contributor, not only for activities such as selling and processing fish but also for marine and coastal sustainability. This study, focusing on fisherwomen in Tulungagung, East Java, Indonesia, explores their potential as agents of change to lead initiatives that combat marine debris and promote maritime safety awareness among their communities while enhancing their economic opportunities. Leveraging the existing legal framework, particularly Indonesia's Law Number 7 of 2016 concerning Fisher Protection and existing institutions on the coast of Besuki Village, such as Kelompok Masyarakat Pengawas (Fisheries Supervisory Community Group/Pokmaswas), Regional Fisheries Agency, non-governmental organization, and private actor in coastal tourism, this research proposes targeted interventions to empower fisherwomen as key drivers of coastal sustainability. Through capacity development programs, skill enhancement in value-added fishery production, and public-private-community

partnerships, fisherwomen can play a pivotal role in environmental protection efforts to combat marine debris in coastal areas, while encouraging male counterparts to adopt safer fishing practices. The finding aims to inform policy actions that support gender-inclusive marine stewardship. These recommendations include the development of gender-sensitive training programs, institutional support mechanisms, and multi-stakeholder collaboration to create a resilient and inclusive coastal community and the potential for replication in other coastal regions. This research contributes to the ongoing discourse on gender equality in the blue economy, addressing contemporary challenges such as marine debris management and maritime safety through a gender-responsive approach.

The author would like to thank GISLI, Anggraeni and Partners, Indonesia Ministry of Ocean and Fisheries, Orima M. Davey, Christou M, and Alicia D. Anugerah for their contribution and support.

Keywords Coastal sustainability, Empowerment, Fisherwomen, Stewardship, Gender inclusive.

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HUMAN RIGHTS & WELL-BEING



Mental Health and Gender Dynamics Among Marine Cadets: Pioneering Gender Equality from Marine Classrooms to Industry 5.0

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The maritime sector has historically faced significant gender disparities, with women constituting only a small fraction of only 1.28% of the global seafaring workforce, primarily occupying service roles (Kitada, 2022). This imbalance often results in feelings of isolation and increased mental health challenges among female cadets in male-dominated environments. Cultural and institutional barriers, gender-based discrimination, and entrenched stereotypes aggravate these challenges, hindering the full participation and professional growth of female students in maritime education (Ojwala, 2023). This empirical study, conducted within a maritime academic setting, examines the intersection of mental health and gender dynamics among marine cadets through a structured survey and qualitative observations. The findings highlight significant stress disparities, with over 40% of female cadets experiencing frequent or occasional anxiety due to the male-dominated environment. Perceptions of inclusivity remain mixed, as while most respondents felt comfortable participating in classroom discussions, nearly one-third reported partial or complete exclusion. Access to mental health support appears inadequate, with nearly half stating inadequate

institutional support, though the majority would seek help if available. Additionally, awareness gaps among male cadets persist, with 65% of respondents believing male peers are unaware of their challenges and over half reporting dismissive attitudes in discussions on gender equality. The findings emphasize the need for systemic interventions to address these issues. Proposed measures include gender sensitivity training, robust mental health support systems, and the integration of Industry 5.0 technologies to foster adaptive, inclusive, and human-centric learning environments. The aim is to prepare seafarers for Industry 5.0, not only from a technological perspective but also for a new era shaped by progressive values of equality, diversity, and inclusion. By aligning educational practices with these principles, this study underscores the importance of fostering a culture of equity and support from the classroom to the deck. It aims to contribute to ongoing discussions on human rights, well-being, and gender equality in the blue economy, providing actionable recommendations to create a more inclusive and sustainable future for the maritime workforce.

Keywords Gender dynamics, Stereotypes, Systemic interventions, Industry 5.0.

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Impact of Bullying and Sexual Harassment on Safety at Sea

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This paper highlights key findings from a recent study (2023-24) conducted by C4FF for the International Maritime Organization (IMO) on the effective implementation of the ISM Code and strategies for enhancing its effectiveness (Bhattacharya, 2009). The study incorporated data from over 500 seafarers surveyed across different vessel types, revealing a significant correlation between workplace bullying, sexual harassment, and safety-related incidents (Ziarati et al., 2020). The findings emphasize that psychological distress due to workplace harassment directly affects situational awareness and decision-making on board. A gender-specific analysis showed that 74% of female seafarers experienced some form of harassment, leading to increased safety risks (Ziarati, 2022). One case study

reinforced these insights by documenting the experiences of a female officer who faced repeated bullying, impacting not only her well-being but also the operational safety of her vessel. Furthermore, a structured taxonomy of risks was developed to help categorize and mitigate these safety threats (Uflaz et al., 2022). The research suggests that proactive intervention programs, including improved ISM Code compliance and gender equality training, are crucial in fostering safer work environments. Findings from EU-funded projects support this, showing that organizations with clear anti-harassment policies report 30% fewer safety incidents (Karakasnaki et al., 2018). This study contributes to maritime safety discourse by linking human factors and gender equity to long-term sustainability in the blue economy.

Keywords Safety at sea, Bullying, Sexual harassment, Mental well-being, and Human factors.

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Competency-Based Education and Training in Maritime: A Catalyst for Gender Equality in Advancing Kenya's Blue Economy

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Kenya's maritime sector is integral to the nation's blue economy, offering significant opportunities for sustainable development and economic growth. However, gender inequality remains a critical challenge, limiting the sector's capacity to fully harness its potential. Competency-Based Education and Training (CBET) offers a transformative solution by aligning maritime education with industry needs while promoting inclusive participation. This study examines the implementation of CBET in Kenya's maritime education and training institutions, focusing on its impact on fostering gender equality. Using a mixed-methods research approach, it analyzes quantitative data from the Kenya Maritime Authority (KMA), Technical and Vocational Education and Training Authority (TVETA), and Bandari Maritime Academy (BMA) to track trends in enrollment and employment outcomes. The findings indicate a 120% increase in female enrollment in maritime programs from 2018 to 2024, driven

by policy reforms, scholarships, and mentorship initiatives (KMA, 2024). Additionally, the number of accredited maritime training institutions has grown from seven in 2018 to eighteen in 2024, expanding access to specialized training. Employment outcomes have also improved, with a 50% increase in female graduate placement in maritime jobs over the past five years, particularly in seafaring, port operations, and maritime logistics (BMA, 2024). Aligned with the 2025 WMU International Conference theme, "Advancing the Blue Economy through Gender Equality," this paper emphasizes the importance of integrating human rights and well-being into CBET frameworks to achieve sustainable growth. The findings provide actionable insights for policymakers, maritime educators, and industry stakeholders, advocating for reforms and partnerships that advance gender inclusivity within Kenya's blue economy.

Keywords Competency-based education and training, Gender equality, Blue economy, Maritime sector, Kenya, Human rights, Sustainable development.

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Enhancing Maritime Safety Through Gender-Inclusive Technological Design

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Maritime safety is a critical concern, with human factors playing a significant role in operational incidents. Despite efforts to promote gender equality, women remain underrepresented in the maritime sector, comprising approximately 1.2% of the global seafarer workforce. This underrepresentation may be exacerbated by technological designs that do not account for gender-specific needs, potentially compromising safety and operational efficiency. This research investigates how gender-inclusive technological design can enhance maritime safety by analyzing current technologies and their interaction with a diverse workforce. The study identifies design gaps and guidelines for inclusive technology development.

Preliminary findings indicate; 1) *Design Disparities*: Standard safety equipment, such as life vests and immersion suits, often does not fit women properly, leading to potential safety hazards. 2) *Ergonomic Challenges*: Control panels and machinery are frequently designed without considering the

average reach and strength differences between genders, resulting in operational inefficiencies. 3) *Training Simulators*: Many training programs utilize simulators that do not account for gender-specific scenarios, potentially leaving crew members unprepared for diverse real-world situations.

The identified design disparities highlight the need for a paradigm shift towards inclusive technological design in the maritime industry. By integrating gender considerations into the design process, manufacturers can create equipment and systems that are safer and more efficient for all users. This approach aligns with the International Maritime Organization's (IMO) commitment to gender equality and empowerment in the maritime sector. Integrating gender considerations into maritime technological design is essential for improving safety and fostering an inclusive work environment. This research provides evidence-based recommendations to guide the development of safer and more equitable maritime technologies.

Keywords Maritime safety, Personal protective equipment, Gender sensitivity.

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Charting Equality: Insights into the Challenges Faced by Female Colombian Seafarers

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The maritime industry remains male-dominated, with women comprising only 1.2% of seafarers (ICS and BIMCO, 2021). In Colombia, the first female Deck Officer of the Watch (STCW II) graduated from ENAP (Almirante Padilla Naval Cadet School) in 2015 (Armada de Colombia, 2015), and by 2023, only 23 women had achieved this qualification nationwide. This scarcity underscores the need to explore barriers to employment (Kitada, 2021) and educational factors. This study analyzes the sociodemographic, educational, and professional profiles of Colombian female Deck Officer graduates (2015–2023) to identify structural challenges and promote gender inclusion in the maritime sector, aligning with global efforts to increase women's participation in the Blue Economy (UNDP, 2024). Both a survey and semi-structured individual interviews were conducted online, recorded with due consent, and subsequently analyzed. The sample, representing 70% of Colombian female Seafarers graduated between 2015 and 2023, highlights a complex system of factors influencing

their employment: Education – 50% noted deficiencies in technical English instruction, essential for onboard jobs; 37.5% reported that the lack of international placements during their training had limited their access to better job opportunities; Employment: Graduates from 2020 onward reported greater job satisfaction, while earlier cohorts faced more challenges, reflecting structural inequities; 53.8% expressed interest in leaving the maritime field due to limited access to opportunities and employer biases related to physical or emotional capacities, often linked to pregnancy; Work environment – over 81.3% of participants experienced gender discrimination, with 37.5% citing workplace sexual harassment. Although recent cohorts may have benefited from post-2019 commitments (IMO, 2020), systemic issues persist. Strengthening education, improving workplace conditions, and addressing discrimination (ILO, 2019) is crucial to achieving equity in Colombia's maritime sector.

Keywords Gender equality, Colombian case, Women seafarers, Career development.

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MPOWIR Group Mentoring: A Strategy Toward Gender Equity

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Evidence suggests that women are less likely to enter and remain in science and engineering when they lack mentors and role models. To address this issue, a team of U.S. physical oceanographers set out to make mentoring opportunities more accessible to women in the field (Lozier, 2005) by creating the MPOWIR program (Mentoring Physical Oceanography Women+ to Increase Retention). Like opportunities in the Blue Economy, there are specific barriers and considerations for women and underrepresented genders in the oceanographic field. Balancing time at sea, caregiving responsibilities, working in geographically isolated areas, and facing implicit bias and harassment are some of the relevant barriers. MPOWIR was developed with these considerations in mind, focusing on the guiding principle that mentoring can play a key role in the success of women in the field. By implementing an easily replicable group mentoring model where six to eight participants are matched with two senior leaders for

monthly mentoring calls, MPOWIR has positively impacted the field by contributing to the retention of an impressive 95% of participants who earned their PhD between 2005-2012 (Mouw et al., 2018). Mentees and mentors also participate in professional development workshops, mentorship education, and networking opportunities. MPOWIR is nearing 20 years of sustained mentoring in physical oceanography and is now seeing a new generation of mentors emerge with 67% of new mentor group senior leadership positions being held by former participants. These two to three-year-long groups build strong cohorts, supporting each other through early career transitions. Relationships built through mentor groups become close friendships and professional collaborators, contributing to a more diverse workforce in oceanography. Sustaining and supporting a strong sense of belonging and connection, vital to a fulfilling career in any field.

Keywords Mentoring, Retention, Community, Belonging, Cohort.

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Women in the Blue Economy – Roles and Impact: An Empirical Cross-Cultural Study in Portugal and Cape Verde

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This paper presents findings from the “Women in Blue Economy – Roles & Impacts” research project, an empirical study examining women’s participation in traditional sectors like small-scale fisheries and shipping through a socio-legal lens. The project investigates the disconnect between formal equality and persistent gender-based discrimination in these sectors. Through empirical evidence, the research maps women’s roles and contributions while analysing how legal frameworks and social structures either enable or constrain their full participation in the blue economy. To address these topics, the project adopted a research design grounded in qualitative data collected through 65 semi-structured interviews conducted in Portugal and Cape Verde during 2024 (46 in Cape Verde: 30 fisheries sector, 12 shipping sector, and four cross-sectoral; 27 in Portugal: 11 fisheries sector, 16). Based on emerging themes from the interviews, our study, *inter alia*, identifies multiple barriers women face in accessing and remaining active and employed in sea-driven labour markets. Furthermore, participants shed a spotlight on specific traits of both

sectors which explain the invisible barriers that women face. Finally, the interviews revealed transversal gender-based violence, including sexual harassment and domestic violence, along with barriers to report such incidents, and mobbing against women who resisted sexual harassment. Despite these challenges, the research documents women’s substantial contributions to the blue economy while enduring both labour discrimination and sexual violence. Our findings also reveal how seemingly gender-neutral regulations and workplace practices often perpetuate gender inequality through invisible barriers and structural discrimination. Based on this evidence, this project’s goal is to make recommendations to foster women’s inclusion and a more equitable work environment and participation in the blue economy whilst promoting a safer professional environment and acknowledging women’s current impact in the Blue Economy, considering the multi-layered disadvantages they face in the pursuit of a career in these male-dominated sectors.

Keywords Small-scale fisheries and shipping, Blue economy, Gender equality, Structural discrimination, Legal and social structures.

Walking the Talk in Gender Equality and Ocean Affairs: The First Gender Chapter in the World Ocean Assessment

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Recognizing that significant gaps exist in the understanding and management of ocean processes and trends, the United Nations General Assembly approved a Regular Process to report on the environmental, economic and social aspects of the world's ocean, over a decade ago in 2014. This led to the subsequent publication of the first global integrated assessment of the marine environment in December 2016 (also known as the first World Ocean Assessment (WOA I), and the second assessment five years later, in December 2020. Currently, the Third World Ocean Assessment (WOA III) is under final review and scheduled for publication in December 2025. Strikingly enough, the first two Assessments did not have a stand-alone chapter on gender, which was a major omission. This shortcoming will be redressed by WOA III, with a commitment to showcase gender equality and the critical role women play in ocean affairs in a dedicated chapter for the first time. This chapter was developed by a coordinating author and a writing team of seven experts on gender equality and ocean affairs in coordination with a lead member of the Group of Experts of the Regular Process. The coordination

included an in-person meeting with the coordinating author (Lisbon, 2024), along with regular virtual meetings and reviews to craft the text. Four of the experts were members of the World Maritime University-Sasakawa Global Ocean Institute's Empowering Women Programme (2019-2024), including the lead member from the Group of Experts. The paper will present some of the key findings of the chapter. Among others, it will highlight gender disparities that persist across ocean sectors, as well as make recommendations concerning different ways to integrate gender-inclusive governance in conservation and management initiatives. Furthermore, some reflection will be provided on how to enhance the integration of gender equality in the 2023 BBNJ Agreement, as well as the inclusion of gender-sensitive language in the law of the sea instruments more broadly. The paper concludes that evoking the role of women and gender equality in ocean affairs through global assessments will help address inequalities more tangible and ensure greater visibility within and beyond the UN system. This may inspire proactive actions that advance equity and justice in ocean governance.

Keywords Gender balance, Ocean governance, Equality – disparities.

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Assessing the Equal Opportunities for Seafarers: Preparation for Unmanned Vessels in the Baltic Sea Region

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The maritime industry is known for its gender inequality – roughly 2% of the workforce is female (Ryals, 2023). New technologies, especially unmanned artificial intelligence-led ships bring changes – as the jobs move to the land, they are no longer in extreme conditions, which brings equal opportunities to all seafarers. There are several studies on the impact of the unmanned shipping on gender equality (Hancock, Hull, & Jatinder Singh, 2024), (Narayanan, Emad, & Fei, 2023), (Mollaoglu, Okur, Gurturk, & Duman, 2024), (Rødseth, Nesheim, Rialland, & Holte, 2023), (Kim, Sharma, Gausdal, & Chae, 2019), etc. Most of these studies raise education as one key feature for the success of unmanned shipping. In this study authors analysed the curriculums

of three universities that provide education to seafarers'. The analysis was carried out from the perspective of preparation for the needs of unmanned shipping as means for gender equality. The preliminary findings indicate that there have been little to no changes in the curriculums in past years. Hence, the seafarers of today have limited education in the technologies and skills that will be needed for managing ships from remote locations. The curriculums depend heavily on the demands of the STWC and its code. The suggestion is given on how to update the code to match the needs of unmanned shipping and to promote gender equality.

Keywords Gender equality, Unmanned ships, Autonomous shipping, Education.

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Fostering Gender Equality in the Maritime Industry: Overcoming Barriers in Safety and Language

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The shipping industry is at a critical juncture where promoting gender equality is essential. This paper explores this research area through case studies which emphasise safety design and operations. It highlights the importance of providing gender-appropriate personal protective equipment (PPE) and using gender-neutral language, both of which are vital for creating a more inclusive and efficient maritime workforce. Although these two areas may seem distinct at first glance, they have been identified as significant concerns related to gender equality in the maritime sector. Firstly, the issue of gender-specific PPE is critical in ensuring the safety and well-being of female seafarers. Historically, PPE has been designed primarily for male body types (Pike & Terpilowski, 2022). This not only compromises the safety of female workers but also acts as a barrier to their full participation in the maritime workforce. Case studies related to existing PPE, but also PPE related to the future handling of alternative fuels -which is essential for the decarbonisation of the industry- will be presented in line

with the draft STCW.7 Circular. Expanding on this area, additional case studies will be presented on anthropometric design considerations for vessels and offshore installations (ABS, 2018). Secondly, the use of gender-neutral language in maritime contexts, including regulatory frameworks, is vital for promoting inclusivity and reducing gender bias. Adopting gender-neutral language can help create a more welcoming environment for women, encouraging greater participation in the workforce (Kitada, 2022). This shift is not merely linguistic but represents a broader commitment to gender equality; preliminary findings will be presented based on an analysis of MLC and STCW. There are valuable lessons to be drawn from these considerations. Companies face growing pressure to implement policies that not only comply with legal standards but also actively promote gender equality. By fostering an environment that values diversity and actively seeks to eliminate barriers, the shipping industry can enhance operational effectiveness while contributing to the decarbonisation goals.

Keywords Gender equality, Inclusive design and operations, Inclusive language.

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Some Critical Observations on Discrimination Through Violence Against Women Seafarers: Innovations and Limitations of International Legal Instruments

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Within the framework of the general theory of human rights, women are acknowledged as a vulnerable group, especially through the lenses of the physical factor (related to physiological and biological particularities) and the cultural factor (bearing in mind harmful cultural conceptions and practices that place women in a subordinate position in relation to men). Therefore, the intersectional discrimination to which women are subjected (observed at the intersection of gender and sex criteria with the maritime work environment) can lead to particular approaches in the protection of their rights keeping in mind the circumstances in which they are disputed at sea. In this paper, we explored the norms adopted at international level in the field of women's protection at sea by relevant organizations in order to observe the effectiveness and limits of their application. One of our key findings is that, at the international level, the protection of the rights of women working at sea is highly fragmented: the UN Convention on the Elimination of All Forms of Discrimination against Women sets the general framework for women's rights without explicitly addressing their specificities in the maritime environment, while the Maritime Labour Convention emphasises the protection of workers at sea in general, without necessarily taking gender into account. Although by common action, the two

international legal instruments can provide safeguards for the protection of women at sea, they are not sufficiently interrelated to cover the range of human rights violations that may affect women workers at sea. Also, another finding is that the intersectional discrimination experienced by women seafarers is not only the aggregation of women's physical and mental vulnerabilities and their intersection with other objective criteria (race, age, disability, ethnicity, etc.) but the maritime environment in which women seafarers are found is itself an additional criterion that can interact with other discriminatory criteria to exacerbate intersectional discrimination. Hence, this view of intersectional discrimination is that the maritime environment itself is a discriminatory criterion (as it is isolated and enclosed) that can accentuate the vulnerability of seafarers and create and maintain conditions conducive to violence against women. This finding is translated at the legal level into the need to formulate a new legal instrument capable of addressing the two elements that accentuate the phenomenon of violence against women by maintaining a state of intersectional discrimination (through the intersection between the maritime environment and the inherent vulnerability of women).

Keywords Women's rights, Intersectional discrimination, Cultural and biological criteria of gender discrimination, Maritime work, International standards.

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Tackling Exploitation of Women Workers: Human Rights Due Diligence in Fisheries Supply Chains

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A non-governmental human rights organization (NGO) is preparing to file an official complaint under the German Act on Corporate Due Diligence Obligations in Supply Chains (Gesetz über die unternehmerischen Sorgfaltspflichten in Lieferketten) against a German food retail company. The NGO alleges that labour rights violations are occurring at the tuna canning facility in Thailand that supplies this company. According to reports, female workers at the facility face gender-based discrimination and are subjected to sexual harassment. They are paid lower wages than their male counterparts despite performing identical tasks and working the same hours. Additionally, access to restrooms is restricted, and this poses hygiene risks for women, especially during their menstrual periods. Employers also coerce female workers into taking pregnancy tests to avoid providing maternity leave. The German Act represents one of the mandatory human rights due diligence (mHRDD) laws enacted in Europe. These laws outline the responsibility of companies to uphold human rights within global supply chains. Thus, corporate due diligence laws align with

the United Nations Guiding Principles on Business and Human Rights, which requires business enterprises to prevent or mitigate adverse human rights impacts that are directly linked to their operations, products, or services by their business relationships. Companies covered by this legislative framework must carry out human rights due diligence in their business activities; otherwise, they may face penalties for non-compliance. In this instance, human rights abuses at the seafood processing stage may breach the due diligence obligations of the German food retailer under the German Act. This case aims to examine the implementation of mHRDD laws in fisheries supply chains. By mandating HRDD, these laws may enable companies in the fishing industry to respect human rights and advance gender equality throughout the supply chain, from fishing to retail. However, as these binding laws are still recent, the years ahead will be crucial in assessing their effectiveness in preventing human rights violations and addressing the exploitation of women's labour within the blue economy.

Keywords Supply chain, Fishing industry, Human rights due diligence.

The Role of Self-employed Women in the Maritime Fishing Sector in Italy: Regulatory Evidence and Open Issues

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The paper aims to describe the lack of protection, particularly in terms of social security, for self-employed women in the maritime fisheries sector. The services of these female workers are of a fundamental nature for the enterprise, especially in some of the Adriatic Sea's marinas, where they are involved in the processing, distribution, and marketing of fisheries products. The main critical issue lies in the fact that in Italy, for the fishing sector, social security protection of self-employment requires that the activity is carried out on board the vessel (only in these terms is it possible to speak of a 'fisherman,' who must, in fact, be a 'seafarer'). For the fishing company's female collaborators – who do not carry out activities on board the vessel – there is, therefore, no provision for registration in any social security scheme and, consequently, no protection in the event of maternity. These female workers are often forced to work a second job in order to have social protection. The Italian regulatory framework, in these terms, appears to be in contrast with the principle of equal treatment as per EU Directive 2010/41. This is also considering that, in a perspective of promoting

equality, the directive requires Member States to introduce the necessary measures to ensure that self-employed women and spouses receive “sufficient maternity allowance enabling interruptions in their occupational activity owing to pregnancy or motherhood for at least 14 weeks”. From this perspective, it can be added that in Italy, the constitutional principles require that self-employed women should be able to rely on an allowance that allows them to choose whether to reduce or suspend their work activity, as the value of maternity should not be subject to economic conditions. It should be noted, in addition, that for self-employed women employed on small fishing vessels (Law No. 250 of 13 March 1958), the allowance is recognised for a period identified as two months prior to the date of delivery and three months thereafter (Article 68 of Legislative Decree No. 151 of 26 March 2001), but fishing activity on board the vessel is considered particularly dangerous for pregnancy, so much so that female employees are prohibited from working on the vessel 'during pregnancy.

Keywords Fishing industry; Self-employed women; Equal treatment; Maternity allowance.

Navigating Change in Blue Careers: Empowered Mindset to Enhance Gender Equality and Well-being

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In contemporary society, gender equality and well-being are the key factors in fostering an inclusive and productive work environment within the blue economy sector. Although significant advances towards gender equality have been made across many industries in recent decades, the blue economy sector still faces challenges in achieving an even balance. The leading research question of this paper is: How can professionals from the maritime industry fulfill their potential and cultivate a resilient mindset to promote gender equality and well-being in the blue economy sector? This paper aims to capture the attention of an academic, regulatory, and professional audience by framing the discussion around the transformative potential of professionals in blue careers to advance gender equality and well-being. Recent findings suggest a lack of empowerment-oriented research in the maritime sector. Research with such an approach is essential for optimizing programs in this "hard-to-reach occupation." In addition, there is also little research on the relationship between personal development, resilience, gender equality, and well-being. Previous studies have found that various factors, both personal (emotional intelligence) and organizational (leadership), affect perceptions of well-being in the maritime context. Strategies, such as mindfulness and relaxation

techniques, organizational policies supporting work-life balance, and flexible work arrangements, have also been investigated. Supportive leadership, positive employee evaluation practices, and a tendency to view potentially threatening situations in a positive light have been proven to build resilience. These factors play a crucial role in comprehensive mental health policies and the formulation of preventative approaches. As for the empowerment of female seafarers, there is almost no research on the topic. Barriers still persist throughout all phases of female seafarers' career development, including recruitment, retention, and advancement. The conceptual model proposed by the paper highlights the need to implement concrete strategies that encourage personal potential for advancement and resilience. With these strategies, awareness of gender equality increases, contributing to the well-being of individuals in blue careers and the overall welfare of the blue economy community. The paper emphasizes that navigating change in blue careers is a matter of educational and professional programs and inner empowerment, enabling individuals to advocate for their rights and values. The paper has implications for fostering an inclusive environment that supports the sustainable development of the blue sector.

Keywords Well-being, Empowerment, Resilient mindset, Personal potential, Blue economy.

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Gender Mainstreaming in MET at the Barcelona School of Nautical Studies to Promote the Inclusion of Women and Social Minorities

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The Barcelona School of Nautical Studies developed an initiative with the aim to mainstream gender in MET motivated by a double need. First, mainstreaming gender is necessary to advance toward gender equality in a male-dominated maritime sector, where the number of women is still limited, as is their recruitment and retention (Kitada, 2021), a problem that has its roots in MET (Barahona-Fuentes et al., 2020). Second, the incorporation of the gender dimension is driven by a regulation of the Catalan University Quality Assurance Agency aimed at incorporating the gender perspective in all university studies in Catalonia (AQU Catalunya, 2018) and promoted by the Universitat Politècnica de Catalunya (UPC), which approved a new transversal competence of gender perspective to be integrated into all university degrees. The project entailed different types of actions to pursue its goal. A web platform with resources for mainstreaming gender in teaching and research was developed, which also serves as a repository of good practices conducted at FNB-UPC. In addition,

specific training on feminist pedagogies was provided to teachers to introduce them to more gender-sensitive teaching methodologies. This was key to help them detect gender bias, stereotypes and roles so that they could identify areas for improvement and transform their teaching practices accordingly. Finally, the gender perspective was implemented and monitored in three different courses to analyse its benefits, drawbacks, and participants' satisfaction, gathering both teachers' and students' perceptions. Findings reveal that teachers were not only able to reduce bias and stereotypes but also to incorporate some of the principles of feminist pedagogy by increasing critical thinking and connecting students' experiences to curriculum contents. This resulted in an increased engagement and motivation on the part of students as well as a feeling of being in a safe classroom space that tries to overcome prejudice, stereotypes, and discrimination, thus fostering a sense of community for the benefit not only of women and other social minorities but of all.

Keywords Gender mainstreaming, MET, Inclusion, Women, Social minorities.

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Seafarers' Working Time Regulation: An 'Equal-Opportunity' for Exhaustion!

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The shift from protective measures for women to gender-neutral labour policies is evident in the abrogation of the International Labour Organization's (ILO) Night Work (Women) Convention, 1919 (No. 4) in 2017 and the introduction of the Night Work Convention, 1990 (No. 171). Similarly, the 1952 ILO's Equal Remuneration Convention (No. 100) and the 1958 Discrimination (Employment and Occupation) Convention (No. 111) emphasise equal treatment. The Maritime Labour Convention 2006 (MLC, 2006) established "the elimination of discrimination in respect of employment and occupation" as a fundamental right for seafarers. A key issue is whether gender-neutral regulations protect all workers from excessive working hours. The MLC, 2006 permits 91-hour workweeks despite extensive research linking long hours to serious health consequences, including coronary heart disease, stroke, and psychological distress (Kivimäki et al., 2015; Pega et al., 2021; van der Hulst, 2003; Virtanen et al., 2011). Research indicates that working beyond 55 hours per week increases

the risk of cardiovascular diseases, while working over 52 hours is linked to higher rates of depression (Choi et al., 2021; Virtanen et al., 2011). In practice, seafarers work an average of 74.9 hours per week, significantly exceeding critical health thresholds (Bhatia et al., 2024). Furthermore, the MLC, 2006 lacks specific night work protections. Studies suggest women may be more vulnerable, with longer hours associated with a higher incidence of diabetes (Gilbert-Quimet et al., 2018) and more significant risks of depression and anxiety compared to men (Choi et al., 2021; Virtanen et al., 2011). Additionally, working 55 or more hours per week and night work have been associated with a higher risk of breast cancer (Heikkila et al., 2016; Wegrzyn et al., 2017). The widespread acceptance of excessive working time at sea jeopardises the health of all workers. Aligning regulations with science would provide equal opportunities for not endangering bodies and minds. Therefore, a genuine gender-neutral working time policy must first provide decent working time, considering sea workers as human beings.

Keywords Seafarers, Gender, Long working hours, Health, Well-being.

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Sustainable Happiness – Sustainable Maritime Industry – Impact of Workforce Well-being on the Maritime Operations

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The maritime industry is vital to global trade, economy, and sustainability. It is a cost-effective transportation mode for 90% of the world's sea trade (UNCTAD, 2023). It relies entirely on the Maritime Workforce (MWF); global shipping would cease without this. However, MWF is facing multidimensional challenges, life-threatening situations, and high stress levels, posing severe physical and mental health risks (Oldenburg & Jensen, 2019). This study introduces the "Sustainable Happiness Impact Index (SHII)," which incorporates eleven factors to validate through an empirical weighted formula to quantify the well-being of the MWF, reduce threat perception, promote well-being, and promote positive outcomes. These factors include Mental and Physical Health (MPH), Balanced Workload (BWL), Job security (JS), Appropriate Wages (AW), Sense of Safety and Security (SSS), Gender Equality (GE), Working Environment (WE), Living Conditions (LC), Organizational Culture (OC), Environmental Sustainability (ES), Career Development Opportunities (CDO).

These factors were further subcategorized, given weightage in percentage according to the importance, and weighed from 0 to 10 through a survey. The resultant SHII quantifies 8/10 the strong alignment with the sustainable happiness drivers, and a 3/10 indicates issues in key factors. The survey will include pre-and post-implementation SHI factors. For example, Career Development Opportunities (CDO) will focus on courses, job training, promotion rate, counselling, etc. Post-implementation would aim for higher metrics. One of the reputed Saudi shipping companies with over 95 different types of ships and 4000 employees was chosen to achieve the desired outcome. The survey also includes other maritime stakeholders. AI tools are also integrated for data analysis, mapping, scalability, precision, collaboration, and other AI solutions. At a later stage, SHII will be applied for benchmarking, industry trend analysis, and policy decisions. This paper focuses on how the maritime sector institutionalizes SHI/SHII, which can bring tremendous change in financial, social, and environmental impact and contribute to the sustainable happiness and self-satisfaction of MWF.

$$SHII = \frac{\sum_{i=1}^{11} (w_i \cdot F_i)}{\sum_{i=1}^{11} w_i}$$

Where: F_1, F_2, \dots, F_{11} = factor scores (MPH, ..., CDO). and w_1, w_2, \dots, w_{11} = weights for each factor.

Keywords Safety and security, Index of well-being.

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A Toolbox for Diversity and Inclusion in the Maritime Sector

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The Belgium-based Agency for Maritime and Coastal Services is the Flemish Authority responsible for ensuring the safety of the coastline and smooth and safe maritime transport from and to international ports in Flanders, Belgium. The Agency promotes diversity and inclusion in its vision. It is concerned with the well-being of its staff and with a more inclusive maritime sector. One area of focus is gender equality. Anno 2025's workforce consisted of 1,217 employees, of which 182 were women (16%). Among the women at the Agency, there are three senior decision-makers, four senior managers, and 17 mid-level managers. To attract more women in the maritime sector, the Agency started in 2022 Project Olivia. This project wants to raise awareness amongst girls and adult women about education, jobs, and career paths in the maritime sector. Some of the actions that were carried out in recent years: (a) organise and entertain a network of ambassadors who promote the project, (b) run a broad social media campaign about female staff (our Olivia's) telling their maritime story, (c) feminised vacancies, (d) create a hands-on toolbox for CEO's, managers, experts, employees and students available in Dutch and English in the first quarter of 2025 that addresses and introduces diversity and inclusion at different levels of society. In order to make the maritime sector truly accessible to everybody, the Agency seeks to increase diversity in the workplace. Besides the intrinsic societal value, a diverse workforce increases and ensures a steady

inflow of talented staff that embraces professionalism, innovation, and creativity. Additionally, the required skills for the maritime sector have changed. Hard labour and strength-intensive roles have gradually evolved into roles with a much wider array of tasks requiring other skills. Hence, the Agency sees enormous potential in attracting profiles that would typically not have been interested in taking a job in the sector in the past, e.g., women, people with disabilities, LGBTIQ+ people, etc. With the support of the European Investment Bank (EIB), through the InvestEU Advisory Hub, the Agency will conduct a study, starting February 2025, to identify and address talent gaps from a diversity and inclusion lens in relation to employment and well-being in the maritime sector in Flanders. Furthermore, the needs and barriers to expanding the maritime labour pool of the maritime sector in Flanders will be examined with an emphasis on diversity and inclusion. As an outcome, we expect concrete proposals tailored to the maritime sector, and a manual for future investment plans to enhance the current infrastructure and fleet towards greater diversity and inclusion. The outputs will be used by the EIB when appraising future investment projects in the waterborne transport sector. Beyond any doubt, the findings and deliverables will be invaluable to other maritime organisations in Belgium, in the European Union, and possibly beyond.

Keywords Diversity, Inclusion, Maritime sector, Gender, Olivia.

Addressing Sexual Harassment: Insights from the 2024 Re:fresh Global Health Study on Female Seafarers

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The Re:refresh 2024 Global Health study is a comprehensive study of the health and well-being of seafarers worldwide. With responses from over 36,000 seafarers across 52 companies, this study provides invaluable insights into the physical, mental, and social health of seafarers today. This presentation examines the responses from 765 (2%) female seafarers who participated in the study and their experiences of sexual harassment (Mejia, R.H. et al., 2024). Sexual harassment remains a pervasive issue in the maritime industry, disproportionately affecting female seafarers (Carballo Piñeiro, L., & Kitada, M., 2020). Studies indicate that women seafarers experience significantly higher rates of harassment compared to their male counterparts (Drewry, 2023). For instance, a recent study among seafarers in France found that more than two-thirds of women and just over 38% of men have reported sexual harassment at work at some point in their careers (Sanz-Trepiana L. et al., 2024). The 2024 Re:refresh study

reveals that female seafarers experience significantly higher rates of sexual harassment (43%) compared to their male counterparts (11%). Key forms of harassment include inappropriate comments (24%), sexual remarks or jokes (23%), verbal harassment or threats (10%), and inappropriate touching or gestures (15%). Many female seafarers refrain from reporting incidents due to fear of being labelled troublemakers (22%), fear of job loss (18%), and concerns that the situation might worsen (16%). While 84% of respondents indicated that their companies have policies against sexual harassment, only 49% reported that their companies have policies specifically framed for women. The survey also highlights that 61% feel they must work harder than their male colleagues to prove themselves. These findings underscore the need for more robust policies and support systems to address the unique challenges faced by female seafarers in the maritime industry.

Keywords Sexual harassment, Seafarers' health and well-being, Maritime health.

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BLUE ECONOMY



Women Bridging the Quintuple Helix: Collaborative Efforts in Marine Biodiversity Conservation

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Marine biodiversity, essential for maintaining ecosystem health and supporting human livelihoods, is under escalating threat from human-induced factors, including climate change, pollution, and unsustainable fishing practices, leading to the alarming reality that one (1) million species are threatened with extinction worldwide (IPBES, 2019). Historically, decisions regarding living resources and ocean use have predominantly relied on physical and chemical data. However, emerging technologies now enable the integration of biological and ecological Essential Ocean Variables (EOVs) and Essential Biodiversity Variables (EBVs) into surveys and monitoring programs at both local and regional scales (Muller-Karger *et al.*, 2018). This abstract aims to present a case study of four women leading initiatives across academia, Civil Society Organizations

(CSOs), industry, and intergovernmental organizations to conserve marine biodiversity. Their work underscores the importance of partnerships within the Quintuple Helix Model—integrating academia, industry, government, civil society, and the environment—as a framework for fostering collaboration, innovation, and complex decision-making. Furthermore, the abstract explores how women navigate complex stakeholder interactions, contributing to the creation of a trust-based ecosystem that enables the widespread utilization of ocean technologies for the protection of marine ecosystems (Pastra *et al.*, 2022). Ultimately, the case study highlights the transformative role of women in shaping dialogue, building trust, and driving action toward sustainable solutions for our oceans.

Keywords Marine biodiversity, Stakeholder management, Ocean governance, Ocean technologies.

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Gender in Tourism and Climate Change: A Mental Models Perspective from Kenya's Coast

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This study examines the relationship involving gender, tourism, and climate change, from the perspective of a tourism-dependent community at Kenya's coast. Through mental modeling interviews, the study uncovers how this relationship is conceptualized across respondent groups. Such conceptualizations help to frame knowledge about climate change, aiming to feed into decision processes in marine environments. The study focuses on coastal tourism as an example and as representative of blue economy sectors interested in decision processes within the marine environment. The tourism sector is predicted to represent the largest segment of the ocean economy by 2030, according to the Organization for Economic Cooperation and Development. My study results show subtle differences between female and male respondents, and between those with a policy background compared to those with practitioner's background, when conceptualizing the relationship. These differences hint at knowledge mismatches between respondent groups. Upon closer examination of micro-interactions at the study site,

as detailed in qualitative interview transcriptions, the differences appear to be linked to distinct places where respondents are predominantly associated with. This association arises from the conception of place in coastal tourism, where a status quo of who has access to sea or shore, or whose occupational role is anchored to work or home realms, is considered very important. The analysis takes an interpretive lens of Feminist Political Ecology to show that mismatches in climate change knowledge among study respondents make the flow of knowledge into decisions for climate change solutions a question of whose knowledge matters. It highlights the link between knowledge that matters in marine environments and the conception of place in coastal tourism. It further points out to ideologies behind this conception of place, singling out where they reinforce inequality. This revelation is important in efforts to advance gender equality in marine environments, which are shown by Weeratunge et al, (2010) to be female spheres.

Keywords Blue tourism, Climate change, Gender, Ocean economy.

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Navigating the Tides: Challenges and Empowerment of Ghanaian Women in Fisheries, Aquaculture, and Maritime

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Ghanaian women play a vital role in the fisheries, aquaculture, and maritime sectors, making significant contributions to the national economy. However, their rights and well-being are frequently overlooked, rendering them vulnerable to exploitation and abuse. Furthermore, their experiences and challenges in these sectors remain under research. This proposed research aims to: 1) investigate the challenges faced by Ghanaian women in the fisheries, aquaculture, and maritime sectors, 2) examine the intersection of gender, education, and policy in these sectors, and 3) identify strategies for promoting empowerment, human rights, and gender equality. A mixed-methods approach will be employed, combining: literature reviews, surveys and interviews with Ghanaian women in

the fisheries, aquaculture, and maritime sectors, and policy analysis. This research aims to deliver a comprehensive understanding of the challenges and opportunities encountered by Ghanaian women within the blue economy. The findings will contribute to advocacy efforts, inform policy recommendations, and guide interventions designed to promote empowerment, human rights, and gender equality. This research will enhance the existing body of knowledge concerning gender dynamics within the fisheries, aquaculture, and maritime sectors in Ghana. The findings will also provide valuable insights for policy formulation and practical applications, ultimately contributing to the improvement of the socio-economic conditions of women in these sectors in Ghana.

Keywords Blue Economy, Gender Equality, Human Rights & Well Being, Women's Empowerment, Maritime Sector.

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Mapping Enablers and Challenges of Empowering Female Fisherfolk with Digital Fishing Logbooks in Indonesia

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Fisherwomen significantly contribute to the fisheries production chain. Fisherwomen encounter significant obstacles in obtaining acknowledgment and getting vital resources. Minor female fisheries significantly contribute to local and national communities' income and food security. Nevertheless, they encounter numerous obstacles in executing their operations, including restricted human resource skills and the difficulty of depleting fish stocks. Consequently, initiatives to enhance the capabilities of small-scale female fishermen are essential. The study aims to find exemplary cases and insights by highlighting the key factors recognized in the literature that play a crucial role in utilizing digital logbooks for data management. Research indicates that fisherwomen in Indonesia can utilize various digital technologies, such as mobile apps and online platforms, to improve production and expand market access.

They obtain support from spouses, family members, and the community. Nonetheless, they continue to encounter systemic issues such as limited internet connectivity and inadequate technical support. These include restricted access to school, inadequate digital literacy and skills, limited access to technology, and regulations that do not include gender. These difficulties require customized strategies, particularly in user interface design and training programs, for effective software design and execution. Cultural concerns about gender norms and male dominance, such as limited decision-making power for women in fishing communities, intensify these challenges. The study highlights the necessity for gender-responsive strategies to tackle these problems and optimize the advantages of digital transformation for female fisherfolk, thereby enhancing food security.

Keywords Women Fisherfolk, Women's Empowerment, Digital Logbook, Digital Transformation.

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Pakistan's Blue Economy: Need for Gender Diversity and Inclusion for Complex Decision-Making

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The Blue Economy (BE), which comprises ocean, coastal, and marine resources and ecosystems, has the potential to spur inclusive economic growth, create jobs, and reduce poverty. However, the benefits of the Blue Economy are not equitably shared. Women, who often depend on marine ecosystems for their livelihood, remain underrepresented in decision-making structures. Gender diversity and inclusion (D&I) in decision-making have been recognized as crucial in addressing social-ecological complexities, including climate change and other socio-economic changes, in the ocean, freshwater, and coastal realms. The global goal of Gender D&I stipulates at least 30% representation of women in decision-making at all levels (United Nations, 2022). While women make up 29% of the maritime industry's workforce overall, they only make up 20% of national maritime authorities' workforces in IMO member nations. They make up just 10% of search and rescue teams in national maritime agencies and 2% of sailors (Carr, Daniels, & Daabis, 2023). Pakistan is among the countries which share under 2% of seafarers to the global maritime community and the share of women on boards is 21–30% (Nastali & Bartlet, 2022). In

Pakistan's coastal regions, particularly among impoverished communities along the Karachi and Makran coasts, women remain underrepresented in decision-making processes, hindering equitable development (Ahmed, Ghafoor, & Ahmed, 2024). This quantitative study aims to assess the current state of gender diversity and inclusion in these coastal communities. These coastal areas include Jiwani Coastal Town, Hingol National Park, Miani Hor (Balochistan), Shams Pir, Manora Island, Baba and Bhit Islands, Korangi Creek, Ibrahim Hyderi (Sindh), etc. By conducting surveys across various coastal areas, the research will identify socio-economic and cultural barriers that limit women's participation in the BE sectors. Preliminary findings suggest that factors such as low literacy rates, cultural norms, and limited access to resources contribute to gender disparities (Sohail, Ehsan, Jamal, Malik, & Ahmed, 2023). Addressing these challenges is crucial for sustainable and equitable development. The study will provide policy recommendations to enhance women's involvement in the BE, thereby contributing to broader economic growth and social equity in Pakistan's coastal regions.

Keywords Blue economy, Gender diversity and inclusion, Ocean community, Marine ecosystem, Equality.

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Mapping Enablers and Challenges of Tilapia Women Farmers in Enhancing Food Security Through Accelerated Digital Transformation in Sleman Regency, Special Region of Yogyakarta, Indonesia

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Digital literacy plays a crucial role in women's empowerment, particularly in aquaculture practices in Indonesia. However, the connection between digital literacy and aquaculture practices remains underexplored. Stakeholders should bridge this gap to develop culturally sensitive, accessible, and transformative programs. This study investigates the contributions of women tilapia farmers to enhancing food security through digital transformation, highlighting the potential and challenges women face. This qualitative case study explores the perspectives of women tilapia farmers on their involvement and benefits in the digital economy, especially in aquaculture. This study employed document analysis, focus group discussions, and in-depth interviews with 28 participants. The interviews took place in Sleman Regency,

Yogyakarta, Indonesia, which produces a lot of tilapia. Studies demonstrate that women farmers in Pokdakan Mina Ngremboko can leverage digital technologies to enhance productivity and broaden market access. They acquire support from local resources, familial ties, and community networks. Even so, they still face structural problems like limited access to education, poor computer skills, and rules that do not take gender into account. Cultural issues related to gender norms and male dominance in the field exacerbate these problems. The study underscores the imperative for gender-responsive measures to address these challenges and maximize the benefits of digital transformation for female tilapia producers while improving food security.

Keywords Rural women, Fish farming, Women's empowerment, Digital transformation.

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Advancing the Blue Economy Through Gender Equality

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Advancing the Blue Economy through Gender Equality is of pivotal importance as nations around the world continue to unravel the immense opportunities embedded in the blue economy sector, a space which is largely occupied by 98% male dominance and 2% women representation in Nigeria. We are focusing on expanding gender equality taking a cue on national and regional implementation from institutions like the World Maritime University because achieving gender equality, women's economic empowerment in the blue economy sector would play a crucial role in the overall nation's economy, provide employment opportunities, contribute to the gross domestic product and facilitate trade. Ensuring gender equality is essential to achieving the United Nations' Sustainable Development Goals (SDGs), whilst the need to address gender issues has been highlighted in various national and international frameworks, including the National Gender Policy, the African Union's Agenda 2063, and the International Maritime Organization's (IMO) Global Plan of Action on Gender Mainstreaming in the sector but little is being achieved in practical terms. Our nationwide assessment methodology with our partner, as highlighted in the attached case study, was a combination of qualitative and quantitative research methods, which includes desk review, stakeholder interviews, focus group

discussions, surveys, data analysis, report preparation, etc., and this methodology approach was to ensure a comprehensive and inclusive assessment of gender issues and to provide a robust foundation for developing strategies for addressing these issues in promoting the empowerment and advancement of women in the sector. We identified the current status of gender equality in the Nigerian Blue Economy space, particularly in the areas of inclusion in leadership, critical decision-making roles beyond rhetorics with an urgent need to build gender-responsive investment and financial mechanisms for women, exploring the challenges faced and identifying the barriers and constraints that prevent women from participating in the sector, as well as the opportunities available for their empowerment and advancement. The objectives: to examine the policies and practices that impact gender equality and recommend measures to address identified gaps through engagement with key stakeholders in the sector, including the government, industry, and global civil society organizations, to gather their perspectives and insights on global best practices on gender issues and finally, to develop a comprehensive report on the findings of the assessment and recommend strategies for addressing gender-related issues in Nigeria's blue economy sector.

Keywords Gender equality, Blue economy, Nigeria, UN SDG, Policies and practices.

The Systems Need to Change, Not the Women: Using Data to Determine the Root Causes and Solutions of Gender Inequality

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Gender inequality in the blue economy remains a persistent challenge, often placing the burden on women to adapt to existing systems rather than addressing the systemic barriers that lead to inequality. This paper explores how a data-driven approach can help dismantle these barriers by leveraging existing gender-related data both within and outside of the maritime industry, identifies gaps in research that require further study, and presents data-driven solutions. Through an analysis of maritime industry data, this study examines how current metrics such as crew surveys and promotion rates of women can provide valuable insights but often fail to capture the root causes of gender inequalities. Comprehensive data analysis allows decision-makers to move beyond surface-level statistics and identify

systemic barriers. (Curry Hall et al., 2019). This paper argues that traditional approaches to gender equality in the maritime industry have been reactive rather than transformative. More targeted, data-driven interventions are required to make real progress. By applying best practices from and using existing data, we propose integrated solutions to advance gender equality in the maritime industry. Ultimately, this research calls for a shift: instead of expecting women to adapt, we must transform the systems that have historically perpetuated inequality. It is a call to action to rethink outdated systems, challenge current approaches, and build a blue economy where equity is measurable and real.

Keywords Gender inequality, Blue economy, Data-driven analysis, Systemic barriers, Organizational change.

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Navigating the Mindshift in Maritime Education and Training

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The maritime industry faces significant challenges in safety, digitalisation, evolving environmental and technical aspects, as well as labour shortages and gender diversity. Addressing these issues necessitates inclusive strategies at all levels to sustain global trade and social prosperity. While initiatives emphasise the human contribution through improved regulations and practices, linear, cause-and-effect technical solutions remain dominant [1]. Moreover, skills training often fails to sufficiently promote essential human competencies, particularly those required to manage the complex interdependencies between team diversity and the increasing digitalisation of safe ship operations [1]. The recognition of human skills and diversity as a valuable asset in the maritime workforce requires a fundamental mind shift. This need is evident in Maritime Education and Training (MET) curricula in higher education, which are predominantly shaped by global regulatory frameworks and adherence to harmonised minimum standards. Both lecturers and students frequently show reluctance to incorporate human element issues into educational programmes due to limited awareness, insufficient guidance, and a lack of structured interdisciplinary approaches [2]. Furthermore, the generational gap between lecturers and students,

coupled with a predominantly male-dominated environment and entrenched traditional perceptions and behaviours, necessitates a re-evaluation of roles and relationships to facilitate effective and reciprocal knowledge transfer [2]. To ensure sustainable progress, it is essential to adopt and support collaborative social learning methods that align lecturer-student perspectives while integrating critical systems analysis and digital technologies [2]. The active awareness and engagement of individuals within educational institutions play a pivotal role in driving this transformation. Ideally, conceptual frameworks within MET should guide the integration of gender-related issues into practical settings and organisational processes, bridging gaps across generations, genders, and applied practices through strategic collaboration with industry stakeholders. Strengthening strategies for a safe and sustainable maritime industry depends on embedding social and digital competencies into educational processes, thereby transforming perceptions and professional practices across diverse contexts. Cultivating this shared mindset will empower the human element in operational safety and establish true diversity and resilience in innovation as core values in the industry's future agenda.

Keywords Gender, Generation gap, Maritime education and training.

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Women's Empowerment and Economic Participation to Advance Blue Economy in Sierra Leone's Artisanal Fisheries Sector

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This study examines the socio-economic and demographic characteristics of respondents in the Artisanal Fishing and coastal Tourism sectors in Sierra Leone, with a focus on gender dynamics, education, income disparities, and environmental sustainability. A total of 520 fisherfolks (fishermen, fish processors, Sellers) and coastal beach operators (owners, workers) were interviewed using a semi-structured questionnaire. Findings reveal a female majority (56.2%) in artisanal fishing, mainly in post-harvest activities such as processing, marketing, and financing, despite men dominating fishing operations (Koroma, 2025). In contrast, the tourism sector shows near gender balance (52.5% female, 47.5% male), though men dominate beach tourism (58.9%). Age distribution differs across sectors, with younger individuals (18-35 years) comprising 65.3% of tourism workers, while artisanal fishing has a higher proportion of individuals above 35 years (46.2%). Educational gaps are stark, as 57.9% of tourism workers have tertiary education compared to only 7.9% in artisanal

fishing, where 26.6% lack formal education (Koroma, 2025). These disparities highlight the need for targeted skill development programs for women in the blue economy. Income inequalities persist, with 74.5% of artisanal fishers earning above Le50 daily, whereas 58.8% of tourism workers earn below Le20 (Koroma, 2025). Limited access to credit and decision-making power hinders their progress due to sociocultural norms (Oyěwùmí, 1997, over 15% own boats, and their role in financing and crediting fishermen money to facilitate fish production is crucial. Thorpe et al., 2010). A major challenge for women lies in obtaining sources of funds to support fish production processes. Tetteh, (2006). Furthermore, poor coastal waste management directly impacts fisheries and tourism, threatening livelihoods and hindering Blue Growth strategies (Koroma, 2025). Addressing gender inequalities, expanding financial access, and implementing sustainable waste practices are vital for fostering an inclusive and resilient blue economy in Sierra Leone.

Keywords Blue economy, Gender equality, Artisanal fishing, Tourism.

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Integrating Gender within the Ecosystem Approach to Fisheries

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The EAF-Nansen Programme, a decades-long collaborative initiative involving the Food and Agriculture Organization of the United Nations and Norway, with the Institute of Marine Research (Norway) as an executing partner, has been committed to developing the capacity of partner countries to manage their fisheries in accordance with the Ecosystem Approach to Fisheries (EAF), with a particular focus on the full use of best available knowledge including sound scientific advice. Recognizing the critical role of gender equality, the Programme developed and implemented a comprehensive Gender Strategy from 2020 that has guided the integration of a gender perspective in the Programme's management, activities, and communication. Over the course of strategy implementation (2020-2024), the Programme has mainstreamed gender across its management practices through the systematic collection of gender-disaggregated data across Programme events, the consideration of gender-balance among participants in capacity building interventions and continually striving for gender parity within the Programme's activities. Everyone participating in the Programme is required to complete a basic gender training course, and the Programme has also offered specialized training on topics such as on Gender-Responsive Planning and Budgeting. The EAF-Nansen Programme has also strengthened the

gender mainstreaming capacity of teams of officers of national fisheries institutions. These teams, christened 'gender desks', serve as resources within the institutions, integrating gender-responsive approaches in fisheries governance, developing policies to address women's roles in fisheries, and coordinating technical support for gender-responsive processes. Published lessons from developing and implementing gender desks will help replicate this intervention, enabling the Programme to strengthen partner countries' capacity to integrate gender into fisheries policy and management. Following the implementation of this Strategy over a five-year period, a Gender Audit was commissioned in 2024, which revealed the Programme's effective gender integration and equitable participation of women but noted challenges including resource constraints and difficulty in scaling gender-responsive approaches. It recommended a twin-track framework to continue gender mainstreaming efforts while also aiming to deepen the Programme's contributions to gender equality through gender transformative interventions and sustainable institutional capacity development. To address these constraints and move towards gender-transformative impact, the EAF-Nansen Programme will launch and implement a revised Gender Strategy from 2025.

Keywords Fisheries management, Ecosystem approach, Gender strategy.

Exploring Gendered Contributions to the Blue Economy Through an Intersectional Lens: Addressing Diversity, Equity and Inclusion (DEI) Insights from Kenya

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Diversity, equity, and inclusion (DEI) are essential to advancing ocean science and realizing the promise of a sustainable blue economy. However, systemic inequities, cultural biases, and institutional barriers continue to hinder progress in creating inclusive ocean science institutions. In Kenya, where coastal and marine ecosystems are central to livelihoods and national development, the lack of DEI in ocean science limits both innovation and equitable participation in efforts to protect and sustainably use ocean resources. This study investigates the state of DEI in Kenyan ocean science institutions, focusing on the experiences of students and staff to identify critical gaps and opportunities for transformative change. The study employed a mixed-methods approach, combining both quantitative and qualitative data to capture the perspectives of 102 students and 80 staff members across ocean science institutions in Kenya. An intersectional lens was used to examine how factors such as gender, ethnicity, age, class, and education intersect to shape the experiences of individuals within these institutions. Key findings highlight significant disparities in representation, with women and minority ethnic groups underrepresented in both student and staff populations. The study also revealed generational imbalances, with fewer early-career professionals participating in ocean science compared to well-established researchers, further perpetuating the status quo. Gender inequities were particularly pronounced, with women facing

barriers such as limited access to mentorship, exclusion from decision-making roles, and pervasive stereotypes about their abilities in marine science and leadership. These barriers were compounded by institutional practices that fail to account for intersectional identities, thereby marginalizing individuals who do not fit dominant societal norms. Ethnic representation was also skewed, with politically dominant groups overrepresented in both student enrolments and faculty positions. Such imbalances raise concerns about equitable access to opportunities and the ability of ocean science to address the diverse needs of Kenyan coastal communities. DEI challenges within ocean science reflect broader societal inequities that limit the potential of Kenya's blue economy. An inclusive and diverse workforce is essential for fostering innovative solutions to threats such as overfishing, pollution, and climate change, all of which disproportionately impact marginalized communities. This paper proposes actionable pathways to enhance DEI in Kenyan ocean science institutions. These include: establishment of gender-transformative policies, mentorship programs targeting underrepresented groups, and the systematic collection of disaggregated data to monitor progress. Addressing structural barriers and embracing intersectionality will not only strengthen ocean science but also contribute to a just and inclusive approach to ocean stewardship, positioning Kenya as a leader in equitable and sustainable ocean management.

Keywords Diversity, Equity, Inclusion, Kenya, Blue economy.

Promoting Gender Equality in the Blue Economy: A Case Study of the Nautical Maritime Foundation of Peru

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Gender disparities in the blue economy, particularly within the maritime sector, affect economic growth and environmental sustainability. Women should be encouraged to participate equally in these fields, leading to fairer decisions that promote the common goals set by the international community. In Peru, where women represent 40% of the economically active population, specific sectors or roles reflect social stereotypes and traditions, preventing them from achieving leadership positions. To address this, the Nautical Maritime Foundation of Peru – FUNDAMAR has launched an initiative aimed at strengthening gender equality and empowering women in the maritime sector. This initiative includes strategies to provide scholarships for postgraduate studies and technical training, along with an ambitious outreach campaign to attract private funding and enhance cooperation agreements with maritime educational institutions worldwide. FUNDAMAR has emerged as a pioneering force in promoting gender equality through education and capacity building. It provides study scholarships in maritime affairs to Peruvian women

and men within the maritime, port, nautical, and fishing communities, addressing systemic gender disparities. It fosters a more inclusive and skilled workforce capable of driving innovation and sustainability in Peru's blue economy. This paper highlights the Foundation's efforts as a model for other developing economies, demonstrating how targeted investments in gender equality can unlock the full potential of the maritime sector, enhance resilience, and contribute to the United Nations SDGs 4, 5, and 14. By replicating such initiatives, countries can harness the transformative power of gender equality to achieve sustainable growth and ensure the equitable development of their blue economies. SDG Target 5.5 ensures women's full and effective participation at all levels. While WISTA Peru and Red MAMLa empower women in the sector, more must be done to access quality education and training. FUNDAMAR boosts this empowerment by offering opportunities for those lacking maritime technical knowledge and economic resources, promoting maritime consciousness while internalising it as part of the Peruvian identity.

Keywords Gender equality, Maritime education, Blue economy, Developing states/economies.

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