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BOOK OF ABSTRACTS

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SESSION 1: MARINE MANAGEMENT: GOVERNANGE ISSUES AND COMMUNITY ENGAGEMENT

Adaptive capacity and learning in EU marine policy implementation

Ben McAteer and Wesley Flannery

The sustainable governance of marine resources has been a topic of continued concern. Prevailing management approaches have tended to be technocratic, largely neglecting complexity and the human dimension. This has led to critical arguments being made for major paradigm shifts in the design and implementation of marine management. Attention has moved towards an improvement of our comprehension of the factors required for sustainable marine governance, with adaptive governance and social learning identified as essential for governing social-ecological systems during periods of abrupt change and uncertainty. However, knowledge about the relationship between the characteristics of marine governance regimes and their performance requires continued examination. Learning from the concept of multi-level 'loop learning', this paper demonstrates an approach to assessing the adaptive capacity of governance regimes by focusing on change and learning across eight European regions. Evidence of single-loop (reactionary change), double-loop (system change), and triple-loop learning (transformational change) are identified. Synthesising the findings, an array of key barriers and enablers to adaptive capacity are found. Hierarchical policy processes and short-term political frameworks, as well as 'silo thinking' across governance networks, are understood as major institutional barriers. Informed decision-making, transparency and shifts towards co-management are key enablers of adaptive governance. All network actors – government, stakeholders and sectors – play a crucial role in enabling adaptation. Therefore, marine governance regimes must focus on developing greater interaction with non-state actors and should facilitate their active engagement in the design, implementation and evaluation of management activities.

Developing pathways to transformation of coastal and marine social-ecological systems across Europe to reach ecosystem-based management goals. Insights from the Marine SABRES project

Zacharoula Kyriazi, Julie Bremner, Bruno Meirelles de Oliveira, Francis Mynott, John P. Pinnegar, Cristina Huertas, Angel Borja, Furqan Asif, Emma Verling

Marine SABRES is a multidisciplinary project aimed at reversing biodiversity decline in Europe's coastal and marine ecosystems by balancing human and ecological needs while fostering a resilient blue economy. Working across three diverse demonstration areas—the Arctic, Macaronesia, and Tuscany Archipelago—the project utilizes a simple socio-ecological systems (SES) framework to co-develop innovative transformation pathways. Participatory scenario-building is central to this effort, tailoring Shared Socioeconomic Pathways (SSPs) to local contexts to explore plausible futures that integrate biodiversity, socio-economic, and climate targets while highlighting trade-offs between priorities such as tourism growth and marine conservation. The development of pathways to transformation involves an iterative, stakeholder-driven process that employs tools such as causal loop diagrams (CLDs) and influence maps to model system dynamics and identify leverage points for change. By incorporating PESTLE analyses (Political, Economic, Social, Technological, Legal, Environmental), the project systematically evaluates the pressures, opportunities, and governance needs in each demonstration area. For example, scenarios in Macaronesia address the challenges of managing tourism corridors and marine protected areas, while Arctic scenarios explore sustainable fisheries and adaptive responses to climate change. In Tuscany, pathways focus on balancing biodiversity preservation with economic activities tied to tourism. Preliminary findings emphasize the importance of adaptive governance structures, equitable stakeholder participation, and the integration of local priorities into broader sustainability frameworks. The pathways being developed not only navigate complex trade-offs but also provide a roadmap for scaling transformative solutions, offering actionable strategies for policy and practice that align with international biodiversity and climate commitments.

SESSION 1: MARINE MANAGEMENT: GOVERNANGE ISSUES AND COMMUNITY ENGAGEMENT

Atlantic-Arctic Agora project in Co Cork: Combining community engagement, volunteer led action and science to support future decision making

Emma Verling

The Atlantic-Arctic Agora (A-AAgora) project is a Horizon Europe-funded project part of the EU Mission 'Restore our ocean and waters by 2030' program. Using 3 demonstration areas across Europe (in Portugal, Norway and Ireland), the project aims to identify innovative solutions to coastal restoration activities in collaboration with nature and citizens. With the 'living lab' approach at the core of the project, the Irish Demonstration Area within the project has adapted this concept by collaborating with community/volunteer-based actions for coastal wetland restoration at Harper's Island, Cork. Multi-disciplinary solutions were successfully tested, providing habitat and increasing biodiversity. This success story has since been reported to facilitate further replication in Ireland and abroad. Another aspect of the Irish A-AAgora work is to identify coastal erosion-related challenges along the Co. Cork coast. Strategic study sites facing coastal erosion, tidal flooding and human activities were selected for local monitoring in East and West Cork. The next phase of our project is to better understand local long-term morphodynamics at each site, including the potential morphological cycles/patterns, and the impact of evolving hydrodynamics in the context of climate change. The ultimate aim of this work is to facilitate more sustainable decision-making for long-term management plans to tackle coastal erosion locally, and to evaluate the potential for these ideas to be replicated more broadly.

An analysis of ecosystem approach for the management of Oslofjord Norway

Wenting Chen

The Oslofjord is facing historic deterioration of ecosystem condition. At the same time, the fjord is experiencing high population growth and increased use of the fjord and coastline. There is a growing conflict of interests between coastal development and nature conservation. To facilitate sustainable ecosystem-based management of the Oslofjord, we study the trade offs between eutrophication reduction and ecosystem services benefits. We test whether the ecosystem accounting methods can be a tool to provide decision-support to the different planning levels in the contested, complex and dynamic coastal-marine ecosystems of the Oslofjord.

SESSION 2: BLUE CARBON - THE VALUE OF SEAGRASS ECOSYSTEM SERVICES

Enhancing climate resilience through seagrass restoration along Europe's shores: Insights from the CLIMAREST project

Liam Morrison, Juan Lugilde-Yáñez, Sara Haro, África Núñez García, Ricardo Bermejo

Seagrasses are marine flowering plants that form extensive coastal meadows worldwide, offering critical ecosystem services, such as carbon sequestration, nutrient cycling, sediment stabilization, and habitat provision for marine species. Despite their ecological importance, seagrass meadows are among the most threatened ecosystems globally, facing declines due to natural and anthropogenic pressures such as coastal development, eutrophication, and climate change. The CLIMAREST project focuses on restoring and monitoring coastal ecosystems along the Atlantic coast, with emphasis on seagrass meadows particularly in Ireland and southern Spain. In Ireland, efforts target the species Zostera marina and Nanozostera noltei across four estuaries

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selected as donor and recipient sites, in intertidal and subtidal zones. Small-scale experimental trials aim to refine seagrass restoration, identify suitable sites and evaluate how restoration influences ecosystem benefits.

Advanced methodologies are central to CLIMAREST's approach, including remote sensing, carbon sequestration quantification, and physiological assessments of seagrass health. Additionally, the project explores innovative seed and shoot restoration techniques while analysing the ecophysiological responses of meadows to human pressures. By integrating restoration trials with monitoring tools, CLIMAREST seeks to enhance seagrass recovery and maximize their contributions to ecosystem services, particularly in the face of growing environmental challenges.

Preferences for Seagrass restoration in the UK

Danny Campbell

Seagrass restoration offers numerous ecological benefits, including carbon sequestration, water quality improvement, coastal protection, and habitat provision. However, restoration efforts are costly, necessitating a thorough assessment of their economic value. This presentation focuses on the economic benefits of seagrass restoration in Great Britain, specifically examining recreational and non-use values. Using a travel cost survey, we analyse how the presence and condition of seagrass influence recreational choices at a coastal site. Additionally, an innovative stated choice experiment explores non-use values associated with seagrass restoration. Combining these datasets, we aim to quantify the public's preferences for seagrass restoration in Great Britain. Please note that this research is ongoing, and the findings presented are preliminary.

Seagrass restoration in Ireland – Value and financing options

Geraldine Doolan and Stephen Hynes

The BlueC project aims to investigate Ireland's Blue Carbon potential through a scientific, socio-economic and legislative approach. An important aspect of this is understanding the value of and potential to finance restoration of Ireland's blue carbon ecosystems - seagrass and saltmarsh. Although the need to conserve and restore these ecosystems is increasingly reflected in international policy goals, a significant barrier in undertaking restoration projects continues to be availability of finance. For instance, a 2015 review found that financial mechanisms for marine restoration were under-developed and under-utilised, and recommended more research in this area. Through the method of a systematic review, the current state of the literature on marine restoration finance is analysed, and we address whether this call for increased research has been met, paying particular attention to opportunities for financing seagrass restoration. In addition, future research on estimating the value of seagrass restoration to the general public is outlined.

SESSION 3: BUSAN CITY GROUPS SESSION: OCEAN ECONOMY ANALYSIS

Worldwide Review of Ocean Economy Activities Classifications

Chang Jeong-In and Kim Sung Eun

The ocean economy means the total sum of industrial activities based on the ocean and marine ecosystem services. Major ocean countries including Korea are measuring the ocean economy

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in terms of industrial activities now. However, each classification system is different from country to country as each country has different environment, resources, industrial structure and technical conditions. OECD has proposed 14 common marine economic activities, and the United States is building satellite accounts for 10 sectors. The ocean economy satellite accounts in Korea is being conducted for 9 industries belonging to the special classification system of the Marine and Fisheries Industry. This study aims to suggest an establishment plans for the international satellite account classification system by comparing the classifications of ocean countries (Canada, France, Ireland, Korea, Norway, Philippine, Portugal, US), and Organizations (OECD, GOAP). The results can contribute to the establishment of a classification system consistent with the purpose of satellite accounts, finally, to enhancing the link between international satellite accounts and countries' domestic satellite accounts on the ocean economy.

Ocean economy measurement in OECD

Claire Jolly

The ocean economy is attracting attention across the globe as a source of economic growth, while marine ecosystems are increasingly facing the consequences of pollution, climate change and biodiversity loss. OECD monitors the ocean economy to offer insights and policy advice on balancing economic development with ocean health. It supports national ocean economy measurement strategies and provides best practices to harness ocean science and innovation to boost sustainable uses. In this presentation how we do this and some of the results of our global analysis will be discussed

Women in the EU blue economy

Hasmik Grigoryan and Mariana Almeida

Gender equality and the empowerment of women are priority objectives of the EU. Despite this, key EU sectors, such as the EU blue economy, have been somewhat understudied with respect to potential barriers to female participation. The EU Blue Economy remains male-dominated in both traditional and emerging industries. Against this backdrop, this paper presents findings from a systematic literature review of studies published from 2010-2024 focusing on gender equality issues in the EU blue economy. In total, 65 publications met the eligibility criteria. There was a concentration of studies from the UK, Spain, Norway and Sweden. Most of the studies covered traditional blue economy industries, such as fisheries and maritime transport, while less is written about gender inequalities in emergent sectors like blue biotechnology, marine renewable energy or blue sports. Societal inequalities, such as lack of recognition and unpaid work, combined with power inequalities such as the lack of capital and access to funds, are persistent in fisheries and aquaculture. The literature also suggests that women in marine robotics and research and innovation face issues of access to funds, and lack opportunities for training, mentorship and networking. Institutional challenges, such as harassment and bullying, have been reported in maritime transport. The recommendations reported emphasize research and data collection needs across all activities and institutional and organizational policy changes.

SESSION 3: BUSAN CITY GROUPS SESSION: OCEAN ECONOMY ANALYSIS

Ocean Data in Korea: Current framework and the role of AI in enhancing utilization

Kim SungEun and Han Jang-Hyup

The growing importance of digital transformation has elevated the significance of ocean data in Korea, which is crucial for addressing environmental challenges, optimizing maritime logistics, and enhancing fisheries management. This presentation explores the current state of Korea's marine and ocean data industry, focusing on its structural framework, key public data platforms such as VadaHub and KOMC, and major challenges, including accessibility issues and the lack of standardization.

To address these challenges, the potential of Artificial Intelligence (AI) is highlighted as a transformative tool for enhancing the utility of ocean data. Case studies of AI applications in pollution prediction, vessel route optimization, and fisheries management demonstrate its effectiveness in maximizing economic and environmental value. Furthermore, the presentation outlines strategic policy recommendations, such as improving data quality management, adopting cloud computing and IoT technologies, and fostering AI-driven innovations.

By integrating insights from the latest reports, this presentation proposes a sustainable vision for Korea's ocean data ecosystem, emphasizing global competitiveness and collaboration. This work provides insights for utilizing AI to overcome barriers and drive the growth of the ocean data industry in Korea.

Ireland's ocean economy: An update

Niall Flynn and Deirdre Frost

The Marine Institute, in collaboration with the Socio Economic Marine Research Unit (SEMRU) in the University of Galway, has produced an update on the performance of Ireland's Ocean Economy. The update provides a snapshot on Ireland's ocean economy across three main economic indicators: turnover, gross value added (GVA) and employment (FTEs). The presentation examines the annual trends across 13 industries as well as information on the relative contribution of each marine industry to the ocean economy and the wider economy. The update is accompanied by an online dashboard to enable further dissemination of the data and also encourage further analysis and research.

SESSION 4: OFFSHORE ENERGY

Powering Prosperity – Ireland's Offshore Wind Industrial Strategy

Liam Curran

Powering Prosperity – Ireland's Offshore Wind Industrial Strategy, the first strategy of its kind for Ireland, aims to build a successful, vibrant and impactful offshore wind energy industry in Ireland, ensuring that the sector creates as much value as possible throughout Ireland and maximises the economic benefits associated with government ambitions to deliver its 2030, 2040 and 2050 offshore wind targets. Powering Prosperity, which includes 40 actions that will be implemented in 2024 and 2025, was developed as part of close ongoing collaboration between the Department of Enterprise, Trade and Employment and other government departments and agencies within the Offshore Wind Delivery Taskforce (OWDT). These actions aim to build a strong and resilient offshore wind supply chain in Ireland, as well as exploring opportunities for Irish companies to play a major role in the development of offshore wind projects in Ireland and abroad. It also explores opportunities to leverage Ireland's existing strengths in RD&I, finding ways to support the sector to reach the cutting edge of future developments in offshore wind.

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In the longer term, the strategy will consider routes to market for Ireland's abundant clean renewable energy, as well as assessing regional development opportunities in areas central to the production of offshore wind energy.

The wider impacts of offshore wind development in Ireland: An input-output analysis

Cathal Geoghegan, Cathal O'Donoghue, and Stephen Hynes

Many countries are expanding their production of renewable energy to decrease dependence on fossil fuels and combat climate change. Offshore wind represents one such source of renewable energy. Ireland has committed to raising its offshore wind capacity to 5GW by the year 2030, with further capacity increases envisaged. This paper uses input-output analysis to assess the economic impact of an expanded offshore wind sector in Ireland. We use the Arklow Bank Wind Park 2, an 800MW offshore wind project currently in development off the coast of Co. Wicklow, as a case study. For the capital expenditure (CAPEX) stage of the project, the model shows small output multipliers of 1.05 and 1.07 for the indirect and induced multipliers respectively. This is due to the large reliance on imports in this phase of the project. Larger multipliers of 1.29 (indirect) and 1.49 (induced) are seen during the operational (OPEX) phase of the project. The model predicts yearly gross value added (GVA) of €14.82 million associated with the project. 444 annualised full time equivalent (aFTE) jobs will be generated in the CAPEX phase while 44 FTE positions will be created during the operational stage. We find that while there is there is high direct investment associated with proposed offshore wind projects in Ireland, the low level of local contribution, especially in the CAPEX phase, means that the projects' knock-on economic impact for the Irish economy will be limited.

Acceptance of Alternative Energy Sources Amongst the Irish Public.

Marie Lanser

Renewable energy development is crucial as Ireland strives to achieve its net-zero emissions target by 2050. Public acceptance of renewable energy projects remains a critical factor in ensuring successful implementation. This study uses choice experiment data to examine preferences for renewable energy, focusing on technology types, biodiversity considerations, and community representation. The findings reveal widespread public support for renewable energy, with a preference for marine-based projects such as offshore wind and tidal energy over land-based alternatives. Biodiversity emerged as the most influential factor in shaping public acceptance, with higher willingness to pay (WTP) observed for projects prioritising biodiversity protection. Community engagement also plays a significant role, with preferences split between those who favour being fully informed and those who value active collaboration in decision-making processes. These insights align with Ireland's Marine Spatial Planning framework, which promotes sustainable marine development while balancing ecological, economic, and social goals - offering valuable insights for advancing Ireland's renewable energy transition.

Social and Environmental impacts of tidal energy developments: A review

Marc Ayoub

This paper conducts a systematic review of the social and environmental impacts of tidal energy development using Scopus and Web of Science core collection databases. A total of 85 articles have been considered, and were complemented by grey literature (Masters/theses dissertations) around the topic extracted from ProQuest database as well and the University of Galway's research repository. Results suggest that the social impacts of tidal energy revolve around public acceptance and stakeholders' engagement, decision-making and local ownership, fisheries,

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marine recreation and tourism, place attachment, economic considerations and procedural and distributive justice. On the environmental front, the main impacts covered in the reviewed literature involved issues related to changes on velocities and hydrodynamics, sedimentation, water quality, benthic habitats and species, coastal birds, acoustic effects, collision risks and migration and landscape change. Overall, the review has shown that potential social and environmental impacts of tidal energy projects are location and technology-specific, and vary depending on the technology used as well as the marine context in which they are present. Several factors enter into play including the type and number of turbines, its operational characteristics, the energy extracted as well as available species in the location's habitats. Although some impacts are proven to be existing post-device installation, their level of harm will need to be assessed when understanding the geographic and technological circumstances.