THE 11TH OUR OCEAN CONFERENCE

OOC 11 · KENYA · 2026

ACADEMIA AND RESEARCH

PRE-CONFERENCE SYMPOSIUM

BOOK OF ABSTRACTS

14 – 15 June 2026

Pride Inn Paradise, Mombasa, Kenya

Organized by

State Department for the Blue Economy and Fisheries

in partnership with

State Department for Science, Research and Innovation. Kenya Marine and Fisheries Research Institute (KMFRI).

World Resources Institute

Ministry of Mining, Blue Economy and Maritime Affairs

KMFRI Kenya Marine and Fisheries Research Institute

WORLD RESOURCES INSTITUTE

This volume comprises abstracts of oral and poster presentations submitted to the ACADEMIA AND RESEARCH Pre-Conference Symposium of the 11th Our Ocean Conference (OOC 11), convened in Mombasa, Kenya, 14–15 June 2026. The views expressed are those of the authors and do not necessarily represent the views of KMFRI, its partners, or the Government of Kenya.

Kenya Marine and Fisheries Research Institute
P.O. Box 81651-80100, Mombasa, Kenya · www.kmfri.go.ke

ABOUT THIS VOLUME

This Book of Abstracts presents the oral and poster contributions accepted for the ACADEMIA AND RESEARCH Pre-Conference Symposium of the 11th Our Ocean Conference (OOC 11), convened in Kenya in 2026. The collection comprises scientific outputs from researchers, practitioners, community voices, and policy actors from across continents, united by a shared commitment to healthy, resilient, and equitably governed oceans.

The abstracts are organized around the six OOC action areas: Marine Protected Areas, Sustainable Blue Economy, Ocean–Climate Nexus, Maritime Security, Sustainable Fisheries, and Marine Pollution. Within each theme, oral presentations are listed first, followed by posters. Eight cross-cutting keynote addresses precede the thematic presentations, framing the science–policy interface that anchors the Symposium. Together, these contributions reflect the breadth and depth of ocean science and action being advanced today from community-led reef restoration and blue carbon governance to satellite monitoring of fisheries, youth-led advocacy, and inclusive blue economy innovation.

The Government of Kenya remains committed to developing a thriving, sustainable Blue Economy as a catalyst for national, regional, and global economic transformation. Anchored in the National Blue Economy Strategy 2025–2030 and aligned with the African Union Blue Economy Strategy, the Sustainable Development Goals, and the UN Decade of Ocean Science, this Symposium advances the science–policy interface needed to translate ocean knowledge into investments, livelihoods, and lasting stewardship for people and nature. We invite readers to engage with these contributions as a foundation for dialogue, collaboration, and decisive action at OOC 11 and well beyond.

FOREWORD

Hon. Hassan Ali Joho, EGH

Cabinet Secretary

Ministry of Mining, Blue Economy and Maritime Affairs

Republic of Kenya

June 2026

It is my distinct honour, on behalf of the Government of Kenya, to welcome the global ocean community to Mombasa for the 11th Our Ocean Conference and the inaugural Academia and Research Pre-Conference Symposium. The Ministry of Mining, Blue Economy and Maritime Affairs is proud to anchor this convening and to place science and research at the very heart of how we govern, develop, and safeguard the ocean we share.

The ocean is a strategic national asset, offering transformative opportunities in sustainable fisheries, maritime transport, ocean tourism, offshore renewable energy, and marine biotechnology. Through the National Blue Economy Strategy 2025–2030, and in alignment with the African Union Blue Economy Strategy, the SDGs, and the UN Decade of Ocean Science, this Ministry is steering an evidence-led transition toward a productive, resilient, and equitable Blue Economy.

Sustainable utilization of our marine resources can only be secured when investment, regulation, and community action are grounded in rigorous research. Our priorities are unambiguous: expand and effectively manage Marine Protected Areas; combat Illegal, Unreported and Unregulated fishing; scale blue carbon and nature-based solutions for climate-resilient coasts; advance maritime security; and unlock inclusive economic opportunities for women, youth, and coastal communities.

This Symposium gives full expression to the science–policy interface that the Ministry is determined to deepen. The contributions presented here, from Kenya, Africa, and partners around the world, offer evidence-based pathways for action and amplify the voices of coastal communities, women, and youth.

I commend the State Department for the Blue Economy and Fisheries, KMFRI, and all partners whose dedication has made this Symposium possible. May the dialogue catalysed in these pages translate into investments, policies, and partnerships that secure ocean health and improve livelihoods locally, regionally, and globally.

Karibuni sana!

PREFACE

Betsy M. Njagi, CBS
Principal Secretary
State Department for the
Blue Economy and Fisheries
Republic of Kenya
June 2026

It is my privilege to present this Book of Abstracts and to welcome delegates to the first Academia and Research Pre-Conference Symposium of the 11th Our Ocean Conference. The State Department for the Blue Economy and Fisheries convenes this Symposium in the firm conviction that science is the indispensable foundation on which Kenya's Blue Economy will be built, sustained, and shared.

Our mandate is to formulate, coordinate, and oversee policy across the Blue Economy and Fisheries sub-sectors. Delivering on this mandate requires that public policy be informed, at every stage, by credible scientific evidence. The National Blue Economy Strategy 2025–2030, which this Department is operationalizing alongside sister State Departments, county governments, and partners, places research, data, and innovation at the centre of national planning, regulatory reform, and investment.

This Symposium is, in this regard, an instrument of policy. It convenes the scientific community to interrogate the evidence base and translate findings into options that policymakers can act upon. The abstracts in this volume, organized around the six Our Ocean Conference action areas, speak directly to the priorities the State Department is advancing: strengthening fisheries governance and combating IUU fishing; scaling sustainable aquaculture; expanding effectively managed Marine Protected Areas; promoting blue carbon and nature-based solutions; and ensuring that coastal communities, women, and youth share equitably in the Blue Economy.

We undertake this work in close collaboration with the Kenya Marine and Fisheries Research Institute, our principal research agency, with sister State Departments, the five coastal county governments, and a wide community of regional and international partners.

I extend my appreciation to the Hon. Hassan Ali Joho, Cabinet Secretary for Mining, Blue Economy and Maritime Affairs for his strategic leadership, and to all colleagues who have shaped this convening. I invite every reader to engage with these abstracts not as a closed record, but as a working agenda that policy, investment, and community action can take forward. The State Department stands ready to translate the science before us into the policies and partnerships the ocean now demands.

ACKNOWLEDGEMENT

Dr. Paul Sagwe Orina
Director General/ CEO
Kenya Marine and Fisheries Research Institute
June 2026

The 11th Our Ocean Conference Academia and Research Pre-Conference Symposium, and this Book of Abstracts, are the product of an extraordinary collective effort. On behalf of the Board of Management and staff of Kenya Marine and Fisheries Research Institute, I acknowledge with deep gratitude the institutions, partners, and individuals who have made this convening possible.

We are sincerely grateful to the Ministry of Mining, Blue Economy and Maritime Affairs, under the leadership of the Cabinet Secretary, Hon. Hassan Ali Hassan Joho, and to the State Department for the Blue Economy and Fisheries, under the stewardship of the Principal Secretary, Betsy Njagi, for the policy direction and institutional support that have enabled KMFRI to host this Symposium. We further acknowledge all Agencies and the six coastal county governments of Mombasa, Kwale, Kilifi, Tana River, Lamu, and Taita Taveta, whose cooperation continues to anchor Kenya's blue economy and fisheries agenda.

Our profound appreciation goes to our development partners, in particular the World Resources Institute, WIOMSA, together with all sponsors and collaborating institutions whose support is reflected throughout this volume.

We extend sincere thanks to the Symposium Organizing Committee, abstract reviewers, keynote speakers, session chairs, presenters, and rapporteurs, whose input safeguards the scientific integrity of the Symposium, and to every author and co-author whose research appears in these pages.

Above all, we thank the delegates, researchers, practitioners, community representatives, students, and ocean champions who have travelled from across Kenya, Africa, and the world to participate in this Symposium. Your presence affirms the premise on which this gathering rests: that the future of our ocean will be secured by the partnerships we build and the science we choose to act upon.

Asanteni sana!

SYMPOSIUM ORGANIZING COMMITTEE

The Symposium is organized by the Academia and Research Committee, comprising researchers, practitioners, and partners working at the science–policy interface across Kenya and the region.

#	NAME	DESIGNATION / AFFILIATION	ROLE
1.	**Dr. James Mwaluma**	Director, Ocean and Coastal Systems - KMFRI	*Chair*
2.	**Dr. Jacob Ochiewo**	Director, Socioeconomics - KMFRI	*Member*
3.	**Dr. Davies Makilla**	Director, Fisheries and Blue Economy - SDBEF	*Member*
4.	**Ms. Morine Mukami**	Senior Research Scientist - KMFRI	*Secretary*
5.	**Ms. Josephine Marigu**	Research Scientist - KMFRI	*Secretary*
6.	**Dr. Amina Hamza**	Senior Research Scientist - KMFRI	*Member*
7.	**Dr. Amon Kimeli**	Principal Research Scientist - KMFRI	*Member*
8.	**Dr. Antony Nzioka**	AD, Mariculture - KMFRI	*Member*
9.	**Dr. Eric Okuku**	Chief Research Scientist - KMFRI	*Member*
10.	**Ms. Caroline Owade**	State Department for Science, Research and Innovation	*Member*
11.	**Dr. Levy Otwoma**	Senior Research Scientist - KMFRI	*Member*
12.	**Dr. Esther Fondo**	Principal Research Scientist - KMFRI	*Member*
13.	**Ms. Fridah Munyi**	Assistant Director, Socioeconomics - KMFRI	*Member*
14.	**Dr. Gladys Okemwa**	Chief Research Institute - KMFRI	*Member*
15.	**Dr. Jacqueline Uku**	Chief Research Scientist - KMFRI	*Member*
16.	**Dr. James Kairo**	Chief Research Scientist - KMFRI	*Member*
17.	**Dr. Joseph Langat**	Senior Research Scientist - KMFRI	*Member*
18.	**Dr. Victoria Tarus**	Deputy Director, Technical Capacity Building - KMFRI	*Member*
19.	**Mr. Peter Kimwele**	Assistant Director, SDBEF	*Member*
20.	**Ms. Meaghan Cuddy**	OOC Programme Head - WRI	*Member*
21.	**Mr. Noah Kiprop**	Principal, RM - KMFRI	*Member*
22.	**Mr. Noah Ngisiang'e**	Senior Research Scientist - KMFRI	*Member*
23.	**Mr. Roy Aseka**	Assistant Director, Fisheries and Blue Economy - SDBEF	*Member*
24.	**Dr. Arthur Tuda**	Executive Director, Western Indian Ocean Marine Science Association (WIOMSA)	*Member*
25.	**Dr. Ibukun Adewumi**	Head, IOCAFRICA	*Member*
26.	**Mr. Alex Lee-Emery**	World Resources Institute	*Member*
27.	**Phionalorna Nzikwa**	Corporate Communication Officer - KMFRI	*Member*
28.	**Sharon Siele**	Senior Fisheries and Blue Economy Officer - SDBEF	*Member*
29.	**Nelly Kerebi**	Fisheries Officer - KeFS	*Member*

NOTES FOR PRESENTERS

Oral Presentations

Each presenter is allocated 20 minutes including Q&A. Please upload your presentation on the session room computer at least 30 minutes before your session. All presentations should be in PowerPoint (.pptx) or PDF format.

Poster Presentations

Poster boards are A0 portrait (841 mm × 1189 mm). Posters should be mounted by 08:00 on Day 1 and remain displayed throughout the conference. Authors should be present at their posters during the designated poster session (Afternoon Break / Poster Exhibition).

General Instructions

All presenters must disclose any conflicts of interest at the beginning of their presentation. Presenters are responsible for obtaining all necessary permissions for data, images, and figures used in their presentations.

PROGRAMME AT A GLANCE

DAY 1 · SUNDAY 14 JUNE 2026	
07:00 – 08:25	Registration · All delegates · Registration desk
08:30 – 10:15	Opening Ceremony · Plenary Hall : ○ KMFRI Choir ○ Remarks by KMFRI Director General ○ Remarks by BOM Chair ○ Remarks by Prof Micheni Ntiba ○ Remarks by Prof Shaukat Abdulrazak (PS, SDSR&I) ○ Official opening by Hon. Julius Ogamba, EGH, CS, Ministry of Education
10:15 – 10:30	Group photo · Plenary Hall
10:30 – 11:00	Morning break · Poster Exhibition
11:00 – 12:50	Keynote Addresses · Plenary Hall : ○ Marine Protected Areas - Dr. Arthur Tuda ○ Blue Carbon - Dr. James Kairo ○ Science to Policy - Ibukun Adewumi ○ Maritime Security - Tony Long
13:00 – 14:00	Lunch break · Networking & *Poster Exhibition
14:00 – 15:35	Parallel Oral Sessions: ○ Room A - Plenary Hall: Marine Protected Areas ○ Room B - Sail Fish Room: Marine Pollution ○ Room C - Manta Ray Room: Maritime Security
15:40 – 17:00	Afternoon break · *Poster Exhibition

**NB:* *All posters will be mounted in the respective thematic session rooms. Presenters are expected be available during the scheduled poster sessions to engage with delegates on their research.*

DAY 2 · MONDAY 15 JUNE 2026	
09:00 – 10:50	Keynote Addresses · Plenary Hall : ○ Sustainable Fisheries – Prof. Shaukat Abdulrazak ○ Sustainable Fisheries – Dr. Christina Hicks ○ Sustainable Blue Economy – Dr. Kilaparti Ramakrishna ○ Ocean–Climate Nexus – Dr. Jared Bosire
11:00 – 11:30	Morning break
11:30 – 13:05	Parallel Oral Sessions: ○ Room A - Plenary Hall: Sustainable Fisheries ○ Room B - Sail Fish Room: Sustainable Blue Economy ○ Room C - Manta Ray Room: Ocean–Climate Nexus
13:10 – 14:10	Lunch break · Networking & Exhibition
14:15 – 16:00	Closing Ceremony · Plenary Hall ○ Awards & adoption of the Ocean–Climate Declaration (Arthur Tuda)
18:30 – 23:30	Networking Reception & Cocktail Evening

All times are local (EAT). Programme is indicative and subject to confirmation.

☛ CLICK THIS LINK **to access the detailed Symposium Programme**

TABLE OF CONTENTS

KEYNOTE ADDRESSES

Cross-cutting reflections from leading voices on ocean science, governance, and the science–policy interface.

K 1
Dr. Arthur Tuda

K 2
Dr. James Kairo

K 3
Ibukun Adewumi

K 4
Tony Long

K 5
Prof. Shaukat Abdulrazak

K 6
Dr. Christina Chemtai Hicks

K 7
Dr. Kilaparti Ramakrishna

K 8
Dr. Jared Bosire

Eight Keynote Addresses

K E Y N O T E 0 1

Dr. Arthur Tuda

Executive Director

Western Indian Ocean Marine Science Association (WIOMSA)

T I T L E O F K E Y N O T E A D D R E S S

Marine Protected Areas and Biodiversity: From Global Targets to Local Impact

A B S T R A C T

Marine Protected Areas (MPAs) are central to global biodiversity conservation efforts, including the 30x30 target under the Kunming-Montreal Global Biodiversity Framework. However, achieving meaningful biodiversity outcomes requires moving beyond designation to ensuring effective management, ecological connectivity, and integration with broader ocean governance systems. Drawing on experiences from the Western Indian Ocean, this keynote will explore how MPAs can be strengthened through science-based decision-making, community-led approaches, and alignment with marine spatial planning and other area-based conservation measures. It will highlight pathways to translate global commitments into locally relevant, equitable, and sustainable conservation action.

S H O R T B I O G R A P H Y

Dr. Arthur Tuda is the Executive Director of the Western Indian Ocean Marine Science Association (WIOMSA), where he leads regional efforts to strengthen the science–policy interface for marine and coastal conservation. He has extensive experience in marine governance, fisheries management, and ecosystem-based approaches, and has played a key role in advancing marine spatial planning, MPA networks, and community-based conservation across the Western Indian Ocean. Dr. Tuda works closely with governments, research institutions, and regional bodies to support the implementation of global ocean commitments, including the Kunming-Montreal Global Biodiversity Framework and the 30x30 target.

K E Y N O T E 0 2

Dr. James Kairo

Marine Ecosystems/Blue Carbon Specialist

Kenya Marine and Fisheries Research Institute

T I T L E O F K E Y N O T E A D D R E S S

Through a Looking Glass... The Future of Blue Carbon Research and Innovations

A B S T R A C T

Looking ahead, blue carbon research and innovation offer transformative potential for climate mitigation, biodiversity conservation, and improving coastal livelihoods. Kenya's mangroves and seagrass beds face mounting threats that undermine fisheries productivity, shoreline stability, and community wellbeing. Advances in restoration techniques, carbon monitoring, and financing mechanisms provide promising pathways to reverse these declines and enhance ecosystem benefits. Restoration efforts are projected to reduce greenhouse gas emissions by 0.5 million tons of CO_2 by 2030, with an additional 0.18 million tons by 2035. Access to carbon markets creates sustainable revenue streams while strengthening coastal resilience. Fisheries productivity could increase by up to 25%, benefiting 300,000 to 600,000 households. To fully realize these gains, blue carbon initiatives must be embedded in policy frameworks, supported by robust governance, inclusive community engagement, and innovative finance models. This integrated approach positions Kenya as a global leader in harnessing blue carbon science and innovation for a sustainable ocean future.

Keywords: Blue carbon, innovation, mangroves, seagrass, climate mitigation, restoration, carbon markets, coastal resilience, Kenya.

S H O R T B I O G R A P H Y

James Gitundu Kairo is a Pew Fellow (2019) and Chief Scientist at the Kenya Marine and Fisheries Research Institute. He has vast knowledge and working experience on the conservation, rehabilitation, and sustainable utilization coastal and marine resources, which has earned him several national and international awards. In 2010, Dr. Kairo was awarded Kenya's Presidential Award of the Moran of the Order of the Burning Spear (MBS) for his contribution in the advancement of marine conservation in the country. He is member of International Scientific Working Group on Blue Carbon and served as the coordinating lead author (CLA) and Lead Author (LA) on IPCC's reports on coastal wetlands.

KEYNOTE 03

Ibukun Adewumi

Head

UNESCO-IOC Sub Commission for Africa and the Adjacent Island States

TITLE OF KEYNOTE ADDRESS

Ocean Science as Strategic Infrastructure: Governing Africa's Blue Economy in the Ocean Decade

ABSTRACT

Africa's ocean spaces are increasingly central to the continent's development agenda, offering opportunities for food security, climate resilience, biodiversity protection, energy transition, trade, and livelihoods. Yet the promise of the blue economy cannot be realized through political commitments and investment announcements alone. It depends on the scientific, institutional, and governance systems that enable countries to understand, monitor, plan, and sustainably manage their marine and coastal resources. This presentation argues that ocean science must be treated as strategic infrastructure for Africa's blue economy. Ocean observations, marine data systems, early warning services, marine spatial planning, ecosystem assessments, and science-policy interfaces are not supporting activities; they are the foundations upon which credible ocean governance and sustainable investment depend. Drawing on the work of IOC and IOCAFRICA, the presentation examines how the Africa Ocean Decade Roadmap provides a continental framework for aligning science, policy, capacity development, and partnerships around Africa's ocean priorities. It highlights the need to move from fragmented projects to sustained systems: stronger national ocean institutions, interoperable data platforms, regional observing networks, inclusive capacity development, and decision-support tools that serve governments, communities, investors, and coastal economies. As Kenya hosts the first Our Ocean Conference on African soil, Africa has a unique opportunity to shape the global ocean agenda from a position of leadership. The central message is that the future of Africa's blue economy will not be determined only by how much is invested in the ocean, but by whether those investments are guided by knowledge, equity, and governance systems capable of sustaining ocean health and human prosperity together.

SHORT BIOGRAPHY

Ibukun Adewumi is Head of the UNESCO/IOC Sub-Commission for Africa and the Adjacent Island States (IOCAFRICA) Secretariat, where he leads regional efforts to strengthen ocean science, policy, observations, data systems, and capacity development across Africa and adjacent island states. He also coordinates Africa's engagement in the UN Decade of Ocean Science for Sustainable Development, including the implementation of the Africa Ocean Decade Roadmap. With over 16 years of experience across ocean governance, marine spatial planning, blue economy policy, coastal resilience, and science-policy processes, Ibukun has worked with

governments, intergovernmental organizations, research institutions, and development partners across Africa and globally. His work focuses on strengthening the use of ocean knowledge for sustainable development, climate resilience, and inclusive blue economy transitions. His scholarly and professional work sits at the intersection of ocean science, governance, and sustainable development, with particular interest in ocean economy governance, institutional cooperation, and the role of science in decision-making. He is keen to advance Africa's leadership in ocean science and sustainable ocean governance, with emphasis on translating scientific knowledge into practical action for resilience, equity, and inclusive blue economy transitions.

K E Y N O T E 0 4

Tony Long

Chief Executive Officer (CEO)
Global Fishing Watch

T I T L E O F K E Y N O T E A D D R E S S

Strengthening Maritime Security through Innovation and Technology

A B S T R A C T

Coupling over 25 years of military experience with more than 10 years in the NGO sector, Tony Long is uniquely placed to reflect on the evolution of innovation and technology in Maritime Security. Maritime security is the implementation of measures and strategies to protect vessels, ports, maritime infrastructure and natural resources. Done properly, it requires collaboration between governments, international organizations, and maritime industry stakeholders to deliver a comprehensive response to the threats that exist in the maritime domain. Maritime security is National security because secure navigation, commerce, and environmental protection drives national and international economies. Global Fishing Watch (GFW) uses satellite technology, machine learning, and vessel GPS data to map and publicly share information on industrial fishing activity. It increases ocean transparency to curb illegal fishing, protect marine habitats, and promote sustainable management of marine resources. With the world ever more focused on maritime domain awareness, this keynote will explore how technology, innovation and collaboration can strengthen maritime security – now and into the future.

S H O R T B I O G R A P H Y

Tony Long is chief executive officer of Global Fishing Watch, an international nonprofit organization dedicated to advancing ocean governance through increased transparency of human activity at sea. Before joining Global Fishing Watch in 2017, Tony worked for The Pew Charitable Trusts, where he directed their global campaign to end illegal fishing. In this role, Tony applied an integrated approach to combating illegal, unreported and unregulated fishing by combining policy, technology and enforcement efforts. During his tenure, he worked to promote ratification of the Port State Measures Agreement and also pioneered the creation of a maritime monitoring system to provide authorities with information to identify, sanction and deter illegal fishing. Tony joined the nonprofit sector after 27 years with the British Royal Navy where he commanded HMS BLYTH and HMS MONMOUTH. He later taught at the Defence Academy of the United Kingdom and provided planning and policy support to the head of the Navy and government ministers. A specialist in maritime surveillance, Tony has spent extensive time at sea, including patrols throughout the Atlantic Ocean, Arabian Gulf, Indian Ocean and the Far East. Tony holds a master's degree in defense studies from King's College London.

KEYNOTE 05

Prof. Shaukat Abdulrazak, PhD, EBS

Principal Secretary

State Department for Science, Research, and Innovation
Government of the Republic of Kenya

TITLE OF KEYNOTE ADDRESS

Science, Research and Innovation (SR&I) as Enablers of a Sustainable Blue Economy:
Protecting Our Ocean, Our Heritage, Our Future

ABSTRACT

The ocean is a global common good, fundamental to climate regulation, biodiversity, food systems, and livelihoods worldwide. Yet it faces mounting pressures from climate change, over-exploitation, pollution, and competing uses. Experience from successive Our Ocean Conferences and the United Nations Ocean Conference processes has demonstrated that sustainable ocean action depends not on ambition alone, but on decisions anchored in robust scientific evidence. This keynote examines the role of Science, Research and Innovation (SRI) as essential enablers of sustainable fisheries and a sustainable blue economy. It argues that science underpins effective fisheries management by improving understanding of stock dynamics, ecosystem interactions, and climate variability, while research strengthens governance tools such as ecosystem-based management and marine spatial planning. Innovation, both technological and institutional, enables the translation of knowledge into implementation—supporting monitoring and compliance, post-harvest value addition, and resilient aquatic food systems. The address highlights the persistent global challenge of weak science–policy interfaces, where research outputs do not consistently inform policy, investment, and practice. Drawing on global frameworks including Sustainable Development Goal 14 and the United Nations Decade of Ocean Science for Sustainable Development (2021–2030), the keynote underscores the importance of coordinated institutions, predictable investment in research systems, and international scientific cooperation. Using experiences from different regions, including coastal and developing states, the presentation emphasizes that science-led ocean governance is a necessity for sustainability, equity, and resilience, and that research-driven dialogue remains central to credible and accountable ocean commitments.

SHORT BIOGRAPHY

Prof. Shaukat Abdulrazak is the Principal Secretary for the State Department for Science, Research and Innovation in the Government of the Republic of Kenya, a position he assumed following the establishment of the State Department in 2025. He has over three decades of experience as a scholar, science policy leader, and senior public servant. Prof. Shaukat previously served as Director for Africa at the International Atomic Energy Agency (IAEA) and as Chief Executive Officer of the National Commission for Science, Technology and Innovation (NACOSTI). He has also held senior leadership roles in academia and national research institutions and is a Fellow of the World Academy of Sciences and the African Academy of Sciences.

K E Y N O T E 0 6

Dr. Christina Chemtai Hicks

Professor

Lancaster University, UK

T I T L E O F K E Y N O T E A D D R E S S

Maintaining Diversity Across Fisheries is Key to Sustainability

A B S T R A C T

Small-scale fisheries (SSF) comprise 90% of the world's fishers, and though the concept only emerged in the early 2000's it has since grown rapidly. The concept been widely successful in distinguishing small-scale fisheries from their industrial counterparts, and in mobilizing directed research, governance, and funding. However, a focus on the politics of representation has separated their study into predominantly social or natural science foci and led to a homogenization of SSF, undermining understanding and sustainability of some of the most socially important, ecologically biodiverse, and vulnerable socioecological systems globally. Here I re-embed an interdisciplinary understanding and appreciation of SSF, encompassing biodiversity, catch, livelihoods, nutrition, and governance. Although SSF differ considerably, by geography, habitat, and scale, they all tend to be characterized by diversity. Across multiple domains, diversity is a critical, interdependent, and reinforcing component of small-scale fisheries and inherent in building and maintaining resilience. Governance approaches to support and maintain diversity will therefore be key to the future sustainability of SSF and the ecosystems that support them.

S H O R T B I O G R A P H Y

Prof. Christina Chemtai Hicks is a globally recognized interdisciplinary social scientist and marine conservationist. Her work covers fisheries governance and conservation, food justice and nutrition, and the politics of finance and investment in fisheries and food systems. Hicks is a Pew Fellow in Marine Conservation, an ISI Highly Cited Researcher, and has won several awards for her work, including the Phillip Leverhulme Prize in Geography and the Royal Geographical Society's Gill Memorial award.

For Dr. Kairo's publications, please visit https://www.researchgate.net/profile/JG_Kairo

KEYNOTE 07

Dr. Kilaparti Ramakrishna

Senior Advisor to the President and Director on Ocean and Climate Policy

Woods Hole Oceanographic Institution

TITLE OF KEYNOTE ADDRESS

From Ocean-Based Growth to a True-Blue Economy: Africa's Opportunity, Africa's Leadership

ABSTRACT

This keynote reframes the blue economy as an aspirational transformation, not a rebranding of the traditional ocean-based economy. It argues that economic activity must align with ocean health, resilience, and equity, particularly for developing countries. For Africa, the blue economy offers pathways to food security, jobs, climate adaptation, and innovation, but only if it avoids extractive models that degrade ecosystems and marginalize communities. The address highlights the roles of governance, finance, and ocean science, and calls for integrated, regionally grounded approaches. Mombasa represents a pivotal moment to anchor the blue economy in actionable commitments that deliver sustainability, inclusion, and long-term prosperity.

SHORT BIOGRAPHY

Kilaparti (Rama) Ramakrishna is the Senior Advisor to the President and Director on Ocean and Climate Policy at the Woods Hole Oceanographic Institution. Prior to this he had worked extensively with the United Nations, as Head of Strategic Planning at Green Climate Fund; head of the UNESCAP ENEA Office, covering six member States of ESCAP- China, Democratic People's Republic of Korea, Japan, Mongolia, Republic of Korea and Russian Federation, and two Associate members – Hong Kong and Macao; as Chief of Cross Sectoral Environmental Issues and Principal Policy Advisor to the Executive Director of UNEP. Dr. Ramakrishna also provided secretariat services to the North-East Asian Subregional Programme for Environmental Cooperation (NEASPEC) and was a lead author of the fifth assessment (and many before it) by the Intergovernmental Panel on Climate Change (IPCC); coordinating lead author of the Millennium Ecosystem Assessment; and lead author of the Interlinkages Assessment. Before joining the United Nations, Dr. Ramakrishna worked for many years as director of science in public affairs and vice president at the Woods Hole Research Center in Massachusetts. During this time, he taught at several law schools including at the Fletcher School of Law and Diplomacy, Harvard Law School, Boston University and Boston College Law Schools, Brandeis and Yale Universities. He is an elected life member of the US Council on Foreign Relations. He is also the Chair of Strategic Advisory Group of the Nippon Foundation-GEBCO Seabed 2030 Project, Member of the Advisory Board of Back to Blue – a global initiative of Economist Impact, a Member of Board of Directors of the Woodwell Climate Research Center, Consensus Building Institute, One Ocean Foundation and the ClientEarth. Dr. Ramakrishna holds B.Sc and B.L degrees in sciences and law, masters and PhD degrees in international law.

K E Y N O T E 0 8

Dr. Jared Bosire

Head
UNEP-Nairobi Convention

T I T L E O F K E Y N O T E A D D R E S S

Ocean-Climate Nexus in the WIO Region

A B S T R A C T

Globally, the ocean economy is valued at approximately $3.3 trillion. In our own Western Indian Ocean (WIO) region, the "Blue Economy" is not just a sector; it is our lifeblood, it contributes significantly to the GDP of our coastal states. The total ocean asset base of the Western Indian Ocean is conservatively valued at US$333.8 billion, where ocean-based industries—fisheries, coastal tourism, and maritime trade—generate at least US$20 billion in annual output. More than 30 million people in the WIO region depend directly on the ocean for food security and employment. Fisheries alone support millions of livelihoods, providing the primary source of protein for coastal communities. Climate change is a "threat multiplier" for our ocean economy. Warming waters are driving shifts in fish stocks—notably tuna species—moving them further from traditional fishing grounds and threatening artisanal livelihoods. Ocean acidification and rising sea temperatures are causing unprecedented coral bleaching. This isn't just an ecological tragedy; it is an economic one, undermining the natural barriers that protect our coastlines and the reefs that sustain our tourism and biodiversity. For the person on the beach in Kilifi or the fisherman in Pemba, climate change means smaller catches, more dangerous storms, and an uncertain future for their children. While our understanding has grown, critical science-policy gaps remain. To build true resilience, policymakers need science to answer specific issues. How can we design Marine Protected Areas (MPAs) that are "climate-smart," moving and evolving as species migrate due to warming? What is the precise, localized dollar value of our "Blue Carbon" (mangroves and seagrasses) to allow us to enter global carbon markets effectively? At what specific warming tipping points do our critical maritime industries—like coastal aquaculture—become unviable? How can a huge industry like ports and shipping reduce its environmental footprint by ensuring that sustainability is at the core of its operations? The ocean does not recognize national borders. Regional collaboration is the only way to manage shared resources. For the WIO region, the Nairobi Convention provides the legal and collaborative platform for this. Through partnerships like the Forum for Academic and Research Institutions (FARI), WIO Consortium, Regional Economic Communities and Commissions through the Convention's Science-Policy Platform, we are harmonizing policies across ten nations to ensure that science-based governance is the standard, not the exception. The "ocean opportunity gap" is the distance between what we know and what we do. I challenge

this symposium to close that gap. Let us ensure that the research presented here today becomes the policy of tomorrow. Our ocean is our heritage, and through the marriage of science and policy, it will be our future.

SHORT BIOGRAPHY

Dr. Jared Bosire has a PhD in marine sciences with more than 20 years' experience focusing on environmental sustainability in various sectors ranging from wildlife, freshwater, energy and climate change, forestry and coastal and marine ecosystems. This diverse experience encompasses governmental, non-governmental and inter-governmental organizations. At the Kenya Marine and Fisheries Research Institute (KMFRI), Jared worked as the Assistant Director of the Marine and Coastal Research Division during which time he led a strategic planning process and restructuring, which made the Institution to be recognized as a Center of Excellence in the East African Community. At WWF Kenya, he worked as the Conservation Director and also spearheaded a change process which transitioned the Office into a National office. He currently works as the Head of the Nairobi Convention at the United Nations Environment Programme supporting inter-governmental coordination, strategic partnership development and policy formulation and implementation. He has received a number of international awards in recognition of his work.

THEME 01

MARINE PROTECTED AREAS

Advancing the design, governance, and management of marine protected areas to safeguard biodiversity, support livelihoods, and strengthen inclusive ocean stewardship.

4 Oral Presentations · 5 Poster Presentations

THEME 1 · MARINE PROTECTED AREAS

ORAL PRESENTATIONS

O 1 . 1 · *MARINE PROTECTED AREAS* · ORAL PRESENTATION

Revolutionizing Community-Managed Coral Restoration in Kenya with Low-Tech Floating Nurseries

AUTHORS	O. Farouk, D. Gube
AFFILIATION	REEFolution Trust, Diani Beach, Kenya
PRESENTER	O. Farouk, REEFolution Trust
EMAIL	ofytamim98@gmail.com

ABSTRACT

Coral reefs provide billions of dollars in ecosystem services annually but are rapidly declining due to climate change and human disturbances. Coral restoration, particularly coral gardening, has become a key strategy for enhancing reef resilience, with mid-water nurseries proving effective due to their low cost, high survivorship, and fast coral growth. However, these approaches remain financially and logistically demanding, limiting their scalability and accessibility for coastal communities.

This study introduces a low-cost, low-tech floating nursery to address these challenges. The floating table nursery is designed for easy deployment, maintenance, and monitoring, reducing costs and technical barriers. To evaluate its effectiveness, we deployed and compared two nursery structures — the coral tree nursery and the floating table nursery — assessing the specific growth rate (SGR) and survival of four coral species: *Acropora formosa, Acropora verweyi, Pocillopora cylindrica,* and *Pocillopora verrucosa*. We also analyzed the costs and time required for deployment, maintenance, and monitoring of both nursery designs, specifically considering their feasibility for community-led restoration efforts.

Results show P. verrucosa exhibited the highest mean growth rates, particularly in floating tree nurseries, while P. cylindrica demonstrated lower average SGR values regardless of nursery type. *A. formosa* and *A. verweyi* maintained high survival (>80–90%) across methods. Maintenance costs for the floating table nursery were significantly reduced to $0 per fragment, compared to $0.17 per fragment for the floating tree nursery. The floating nursery also exhibited shorter deployment and maintenance times, as snorkel-based activities require less preparation and maintenance is conducted at the surface. By minimizing costs and simplifying maintenance, this innovative nursery design enhances affordability and scalability, empowering local communities to engage in coral restoration.

KEYWORDS

Coral restoration; floating nursery; community-managed; Kenya; reef resilience

O 1 . 2 · *MARINE PROTECTED AREAS* · ORAL PRESENTATION

Community-Based No-Take Zones Enhance Mud Crab Populations and Fishery Yields in Indonesia's Mangrove Forests

AUTHORS	Adam Miller
AFFILIATION	Planet Indonesia (Yayasan Planet Indonesia), Kubu Raya, West Kalimantan, Indonesia
PRESENTER	Adam Miller, Planet Indonesia
EMAIL	adam.miller@planetindonesia.org

ABSTRACT

Overexploitation of mud crabs (Scylla serrata) threatens both ecosystem function and the livelihoods of coastal communities across Southeast Asia, yet empirical evidence on locally led management responses remains scarce. This study evaluates the ecological and fishery outcomes of community-based no-take zones (CBNTZs) established within mangrove forests in Kubu Raya, West Kalimantan, Indonesia. Since 2017, seven coastal villages have collaborated with Planet Indonesia to designate and enforce 900 hectares of permanent no-take zones embedded within 28,889 hectares of community-governed mangrove ecosystems.

Using a dual-data-stream approach, we combined fisheries-independent trap surveys comparing crab biometrics between protected and fished areas with fisheries-dependent landings data from 8,985 fishing events recorded by trained local enumerators between 2020 and 2024. Linear mixed-effects models revealed that crabs inside CBNTZs were significantly larger than those from adjacent fishing grounds, averaging 16% higher body weight and 7.5% greater carapace length. Concurrently, fishers' catch-per-unit-effort (CPUE) increased approximately 75% between 2021 and 2024, indicating growing stock productivity and spillover benefits to surrounding fisheries.

Although the persistence of truncated size structures suggests an early recovery stage, these combined results demonstrate that community-managed spatial closures can enhance both biological indicators and fishery performance within a few years of establishment. The study provides rare quantitative evidence that rights-based, community-led conservation can deliver measurable outcomes for invertebrate fisheries in tropical mangrove systems. These findings carry direct implications for sustainable fisheries policy across the Indo-Pacific, demonstrating that empowering coastal communities with governance authority over marine resources can simultaneously advance conservation objectives and food security.

KEYWORDS

community-based conservation; mangrove fisheries; spatial closures; small-scale fisheries governance; Indo-Pacific

O 1 . 3 · *MARINE PROTECTED AREAS* · ORAL PRESENTATION

Scaling Inclusive Marine Protected Areas in Africa: Lessons from Namibia's NIMPA+ Programme in the Benguela Current Region

AUTHORS	Samantha Matjila, Carolin Mutorwa, Angus Middleton, Rob Barnes
AFFILIATION	Namibia Nature Foundation (NNF), Windhoek, Namibia; GRID-Arendal, Norway
PRESENTER	Carolin Mutorwa, Namibia Nature Foundation
EMAIL	samantha@nnf.org.na

ABSTRACT

Achieving global ocean targets such as 30x30 requires scalable models that integrate biodiversity conservation, livelihoods, and effective governance, particularly in data-limited but high-value marine systems. Namibia's Namibian Islands' Marine Protected Area (NIMPA) and the NIMPA+ programme present a case study of an inclusive, next-generation Marine Protected Area (MPA) model within the Benguela Current ecosystem.

This study explores how NIMPA+ operationalizes integrated marine conservation by linking biodiversity data, governance systems, and livelihood outcomes through a consortium-based implementation model. The programme brings together national and international partners, combining technical expertise, science communication, and policy support to strengthen marine conservation outcomes. Using a mixed-methods approach, including ecological monitoring, stakeholder engagement, and policy analysis, the study assesses how biodiversity indicators (e.g., the African penguin), spatial planning tools, and co-management frameworks inform adaptive decision-making and governance effectiveness.

Findings indicate that inclusive governance structures, linking government, NGOs, and coastal stakeholders, enhance alignment between conservation objectives and socio-economic priorities. Species-focused interventions demonstrate how targeted conservation actions can inform broader ecosystem management and fisheries sustainability. Early outcomes show improved coordination across marine spatial planning processes, increased stakeholder participation, and strengthened capacity for evidence-based policy implementation.

The NIMPA+ model highlights the added value of strategic partnerships, including collaboration with international technical partners such as GRID-Arendal, in supporting knowledge exchange, capacity development, and the translation of science into policy and practice. Overall, the programme demonstrates how MPAs can evolve into dynamic systems that support livelihoods, climate resilience, and sustainable blue economy outcomes.

KEYWORDS

Ocean governance; Small-scale fisheries; Marine spatial planning; Blue Economy; Adaptive management

O 1 . 4 · MARINE PROTECTED AREAS · ORAL PRESENTATION

Integrating Local and Scientific Knowledge to Understand Dynamic Social-Ecological Change in Small-Scale Fisheries

AUTHORS	Carter A. L., Wilson A. M. W., Maniry Soa S., Tudhope A. W.
AFFILIATION	Smithsonian Tropical Research Institute; University of Edinburgh; Blue Ventures Madagascar
PRESENTER	Carter A. L., Smithsonian Tropical Research Institute
EMAIL	CarterAL@si.edu

ABSTRACT

In coastal social–ecological systems undergoing rapid change due to human pressures and environmental shifts, data scarcity constrains sustainable marine management. Local ecological knowledge (LEK) provides longitudinal insight into ecosystem dynamics and how small-scale fishing (SSF) communities respond to environmental and social change. Distinct gendered roles in SSF shape how marine resources are accessed and understood, resulting in differentiated knowledge systems. This study integrates LEK with quantitative modelling to reconstruct ecological change and examine social–ecological dynamics in SSF communities in southwest Madagascar over the past half century. Using semi-structured interviews (n = 62), we reconstructed time series of perceived catch rates for finfish and octopus and explored perspectives on ecosystem change, adaptation, and resource management.

Men, who predominantly target finfish, reported relatively stable catches until the early 1990s followed by persistent decline. Women, who primarily target octopus, described increasing catches until around 1990 and subsequent decline. Respondents attributed these trends to rising fisher numbers, gear modernization, expansion into deeper waters, and nearshore habitat degradation from destructive gleaning. Adaptation strategies differed by gender: male fishers reported shifting gear, target species, and fishing grounds, while women's intertidal gleaning activities imposed spatial and ecological constraints that limited adaptive options.

By integrating LEK with quantitative modelling, we reconstruct long-term catch trajectories and identify the social–ecological mechanisms driving decline and adaptation. These findings provide policy-relevant insights for sustainable fisheries management in data-scarce contexts, highlighting the importance of gender-inclusive and knowledge-diverse governance. In Madagascar and comparable African coastal systems, incorporating differentiated local knowledge can support more equitable, adaptive conservation outcomes, including Marine Protected Areas and broader blue economy initiatives.

KEYWORDS

adaptive capacity; historical ecology; gender; marine resource governance; catch reconstruction

THEME 1 · MARINE PROTECTED AREAS

POSTER PRESENTATIONS

P 1 . 1 · *MARINE PROTECTED AREAS* · POSTER PRESENTATION

Beyond Restoration: Towards Livelihood Diversification for Coral Reef Conservation and Resilience in the Shimoni Seascape, Kenya

AUTHORS	Joshua Wambugu
AFFILIATION	Marine Animal Ecology Group, Wageningen University & Research, Netherlands; CORDIO East Africa, Mombasa, Kenya
PRESENTER	Joshua Wambugu, Wageningen University & Research / CORDIO East Africa
EMAIL	joshua.wambugu@wur.nl

ABSTRACT

Tropical marine ecosystems are central to the sustainable blue economy by supporting coastal livelihoods through fisheries, tourism, and diverse marine enterprises. However, coral reef ecosystems are under growing pressure from human-induced and climate-related stressors, threatening both ecological integrity and coastal community livelihoods. In Kenya's south coast, where coral reef restoration is increasingly adopted as a nature-based solution for coral reef ecosystem recovery, its long-term success depends on reducing local dependence on degraded reef resources through inclusive and sustainable livelihood options.

This paper assesses existing and potential alternative livelihood opportunities in the Shimoni seascape as part of a broader strategy to strengthen coastal community resilience and advance a sustainable blue economy. Using the Sustainable Livelihoods Framework and qualitative research methods, we identified six main categories of existing livelihood opportunities, with fisheries and marine tourism remaining dominant. We further highlight seven priority pathways for strengthening local livelihoods, including capacity development, economic empowerment, and infrastructural support.

Our findings point to several underutilized but promising opportunities for blue economy development, including community-based marine enterprises, youth empowerment, and climate-smart sustainable agriculture, all of which could help reduce pressure on coral reef ecosystems while improving local livelihoods. However, these opportunities are constrained by persistent barriers such as limited technical skills, weak governance and institutional leadership, poor market access, inadequate financial resources, and increasing climate-related vulnerability. We conclude that a sustainable blue economy in coastal Kenya requires integrated and co-led approaches that link coral reef restoration with livelihood diversification, inclusive governance, and strategic investment.

KEYWORDS

Co-management; coastal livelihoods; livelihood pathways; resource access; Western Indian Ocean

P 1 . 2 · *MARINE PROTECTED AREAS* · POSTER PRESENTATION

Community-Based Participatory Monitoring in Shisiwani National Park: A Replicable MPA Governance Model for Small Island Developing States

AUTHORS	Youssouf Ben Ali Abdallah
AFFILIATION	Parc National Shisiwani; RNAP – Agence Nationale des Aires Protégées (ANAP), Union des Comores
PRESENTER	Youssouf Ben Ali Abdallah, ANAP
EMAIL	benalimail@yahoo.fr

ABSTRACT

Small Island Developing States (SIDS) face disproportionate pressures on their marine ecosystems, including biodiversity loss, habitat degradation, and the impacts of climate change. In the Comoros archipelago, the Shisiwani National Park (Anjouan Island) encompasses critical marine and coastal ecosystems, including dugong habitats, seagrass beds, mangroves and coral reefs. Despite its ecological significance, the park has historically operated under a top-down management model with limited resources and weak community engagement, reducing the effectiveness of conservation efforts.

The Shisiwani Eco-2030 project (UN Ocean Decade Endorsed Project No. 150.9; SmartNET No. 90; IOC/UNESCO) aims to transform MPA governance in Anjouan by integrating participatory monitoring and community-based spatial planning into the national parks management system. This study presents the design, implementation, and early results of a community-based participatory monitoring framework developed in collaboration with local fishing communities, women's groups and village conservation committees. A multi-method approach was adopted, combining participatory ecological surveys, community-led patrol networks, drone-assisted cartography, and traditional ecological knowledge (TEK) documentation. Monitoring protocols were co-designed with 12 coastal communities across four marine zones of Shisiwani National Park, covering fish biomass, seagrass cover, dugong sightings, and illegal fishing incidents.

Preliminary findings show a 23% increase in community-reported compliance with no-take zone regulations over 18 months, alongside improved detection of illegal fishing activities. Dugong sighting frequency increased in monitored zones, suggesting reduced disturbance. Participatory cartography generated the first comprehensive marine habitat map of Shisiwani, informing a revised management plan aligned with the Kunming–Montreal Global Biodiversity Framework 30x30 target. The Shisiwani model demonstrates that community-driven MPA governance, underpinned by participatory science and Ocean Decade principles, can deliver measurable conservation outcomes in resource-limited SIDS contexts and offers a replicable framework for MPA managers across the Western Indian Ocean and other island states.

KEYWORDS

Marine Protected Areas; participatory monitoring; SIDS; community-based conservation; Western Indian Ocean

P 1 . 3 · *MARINE PROTECTED AREAS* · POSTER PRESENTATION

Empowering Youth as Ocean Advocates: The Youth4MPAs Movement in South Africa

AUTHORS	Asandiswa Nonyukela, Samkelisiwe Danisa, Tracy Khuzwayo-Dube, Alwande Dube
AFFILIATION	WILDTRUST, Durban, South Africa; Youth 4 Marine Protected Areas; Oceanographic Research Institute (ORI), SAAMBR
PRESENTER	Asandiswa Nonyukela, WILDTRUST
EMAIL	AsandiswaN@wildtrust.co.za

ABSTRACT

Youth engagement is increasingly recognized as a critical component in advancing ocean conservation and sustainable marine governance. Established in 2018, Youth4MPAs is a youth-led movement that mobilizes young marine enthusiasts from diverse backgrounds across South Africa and beyond to advocate for the proclamation, expansion, and effective management of Marine Protected Areas (MPAs). With a growing membership of over 500 youth, the movement aims to strengthen public support for candidate sanctuary areas while fostering a new generation of ocean stewards.

Through a combination of advocacy, education, and experiential learning initiatives, Youth4MPAs has actively contributed to raising awareness about the ecological and socio-economic importance of MPAs. Key activities include youth-led outreach at ocean festivals, school engagement initiatives such as the 'Letters to the Sea' campaign, and experiential ocean learning programmes that introduce young people to marine ecosystems, threats to ocean health, and the role of MPAs in biodiversity conservation.

Beyond education and outreach, Youth4MPAs has played an active role in youth-led conservation campaigns, including advocacy around the protection of African Penguins and awareness initiatives linked to the High Seas Treaty. These efforts demonstrate the growing influence of youth voices in environmental advocacy, public engagement, and policy discourse.

This presentation highlights the journey of Youth4MPAs as a case study of youth-driven ocean conservation in South Africa, illustrating how empowering young people through knowledge sharing, community engagement, and international collaboration can strengthen marine protection efforts. The work underscores the importance of youth participation in shaping the future of ocean governance and ensuring the long-term sustainability of marine ecosystems.

KEYWORDS

Youth engagement; Marine Protected Areas (MPAs); ocean conservation; environmental advocacy; youth leadership

P 1 . 4 · *MARINE PROTECTED AREAS* · POSTER PRESENTATION

Mapping Uneven Impacts of Coastal Degradation: Local Knowledge as a Pathway to Equitable Ocean Governance in Inhambane Bay, Mozambique

AUTHORS	R.E. Thoms, J.J. Chambo, H.J. Madivadua, A.d.S. Cabral, C. Savoldelli, K.P. Findlay, N. Chauque, M. Bezabih, R.J. Shellock, D. Dyer, S.L. Hampton, P.A.S. James, J. Baines
AFFILIATION	World Resources Institute, Washington DC, USA; Ocean Revolution Moçambique, Inhambane, Mozambique; AfriSeas Solutions, Cape Town, South Africa; Instituto Nacional de Estatística, Maputo, Mozambique; Centre for Sustainable Development Reform, UNSW, Australia; School of Biological, Earth and Environmental Sciences, UNSW; University of Hawai'i at Mānoa, USA; Global Ocean Accounts Partnership Secretariat, UNSW
PRESENTER	Rachel Thoms, World Resources Institute
EMAIL	rachel.thoms@wri.org

ABSTRACT

Climate change, biodiversity loss and ecosystem degradation are reshaping marine environments and the livelihoods that depend on them. Yet the distinct ways in which local populations are affected by ecological change, and the knowledge they hold, remain largely invisible in the data used for national ocean planning. Using Inhambane Bay, Mozambique, as a case study, we apply participatory mapping to generate spatially explicit information on fishers' knowledge of ecosystem change, ecosystem use, and the contribution of ecosystems to their well-being.

We use these outputs to assess the social impacts of seagrass loss across different fisheries activities, examining exposure (the degree of overlap between seagrass degradation and fishing areas) and sensitivity (dependence on seagrass for income and food security). Nearshore fishers, predominantly women engaged in foot-based harvesting, face the greatest exposure to seagrass loss. Their sensitivity varies by community location, reflecting how nearby ecosystems and available alternatives shape dependence.

We compare our findings with existing datasets used to inform marine and coastal policy and investment decisions in Mozambique. These sources are limited in their ability to capture nuanced patterns of exposure and sensitivity that emerge clearly through local knowledge systems. By identifying limitations in existing national data and drawing insights from our participatory approach, we outline recommendations to fill these gaps by better representing coastal communities and the knowledge they hold within national information systems.

KEYWORDS

Gender equity; seagrass degradation; social impacts; participatory mapping; small-scale fisheries

P 1 . 5 · *MARINE PROTECTED AREAS* · POSTER PRESENTATION

Seasonal Protected Areas as a Tool for Enhancing Sea Turtle Conservation in Seychelles

AUTHORS	Christophe Mason-Parker, Vanessa Didon, Alice Mascarenhas
AFFILIATION	Marine Conservation Society Seychelles
PRESENTER	Alice Mascarenhas, Marine Conservation Society Seychelles
EMAIL	mcssoffice@gmail.com

ABSTRACT

Sea turtles are long-lived, migratory species whose reproductive success depends on the protection of critical nesting habitats during specific periods of the year. In Seychelles, increasing coastal development and other anthropogenic disturbances have intensified threats to nesting females and emerging hatchlings, particularly for the Critically Endangered hawksbill turtle (Eretmochelys imbricata), which relies heavily on Seychelles' beaches as one of its most important remaining global strongholds.

In response, the Government of Seychelles approved the designation of five Seasonal Protected Areas (SPAs), marking a significant advancement in the country's conservation framework for marine megafauna. SPAs introduce time-bound regulations designed to reduce disturbance during peak nesting and hatching seasons, while enabling targeted management interventions that are both ecologically meaningful and operationally feasible.

The development of the SPAs was informed by extensive ecological monitoring, long-term nesting data, and a series of structured stakeholder consultations. These consultations engaged local communities, tourism operators, NGOs, and government agencies, generating strong public support and ensuring that the proposed measures reflect both scientific evidence and local priorities. The designation of SPAs also creates new opportunities to mobilize funding for enhanced monitoring, enforcement, beach clean-ups, and habitat rehabilitation.

A collaborative process between the Marine Conservation Society Seychelles (MCSS) and the Ministry of Environment, Climate, Energy, and Natural Resources is currently underway to establish a co-management model for the SPAs. This approach aims to combine governmental oversight with community-based stewardship, strengthening long-term compliance and fostering shared responsibility for conservation outcomes.

KEYWORDS

Hawksbill; Endangered; Co-management; Stakeholders; Sea turtle

THEME 02

SUSTAINABLE BLUE ECONOMY

Photo credits: ouroceanconference.org

Pathways for inclusive, climate-resilient, science-informed economic transformation that delivers prosperity for people and nature alike.

5 Oral Presentations · 5 Poster Presentations

THEME 2 · SUSTAINABLE BLUE ECONOMY

ORAL PRESENTATIONS

O 2 . 1 · SUSTAINABLE BLUE ECONOMY · ORAL PRESENTATION

Surfer Scientists: A Community-Driven, Low-Cost Sensor Network for Coastal Monitoring Supporting Sustainable Blue Economies

AUTHORS	Jethan d'Hotman, Tamaryn Morris, Lizzie Murray, Francisco Campuzano, Juan Francisco Martinez Osuna, Patrick Gorringe
AFFILIATION	South African Environmental Observation Network (SAEON), Cape Town, South Africa
PRESENTER	Jethan d'Hotman, SAEON
EMAIL	js.dhotman@saeon.nrf.ac.za

ABSTRACT

Surf breaks are particularly dynamic and socio-ecologically important systems, yet remain under-monitored due to the high costs and complexity of traditional oceanographic instrumentation. New instrumentation is being developed to fill these gaps, but is often still unable to measure the nearshore environment. Communities living and working in these environments have intimate knowledge of these systems, yet are rarely integrated into formal monitoring frameworks. There is a growing need for accessibility in the collection of coastal datasets that empower local communities while generating scientific value.

Surfer Scientists is a multi-component citizen-science project that integrates three complementary data streams being developed for South Africa, Indonesia, and (with a view to roll out in other surf-break regions): (1) low-cost wearable sensor devices, capable of measuring sea surface temperature and wave properties; (2) low-cost tide gauges deployed at key coastal sites to measure sea-level dynamics; and (3) drone-based mapping of surf breaks to monitor physical changes within a region. All three environmental datasets, along with social data, will be fed into a multi-layered coastal monitoring dashboard for each region. These dashboards will be co-designed with local communities to ensure relevance and long-term community ownership.

By pairing smart sensor technology with community ocean-science programmes, everyday people become active contributors to marine research, driving sustainable blue economies that go beyond promises and produce tangible results. As this project is in its conceptual and design phase, this presentation will focus on the framework and showcase the various technologies already developed for use in the project.

KEYWORDS

Accessible ocean observations; citizen science; coastal monitoring; surf breaks; sustainable blue economy

O 2 . 2 · SUSTAINABLE BLUE ECONOMY · ORAL PRESENTATION

PAVE Proposal for the West Africa Youth Blue Economy Value-Chain Advocacy, Awareness and Local Capacities Development Project

AUTHORS	Aghaji Ujunwa Victoria, Akpan Anthony J.
AFFILIATION	Pan African Vision for the Environment
PRESENTER	Aghaji Ujunwa Victoria, Pan African Vision for the Environment
EMAIL	aghajivictoria@gmail.com

ABSTRACT

The Blue Economy presents significant opportunities for sustainable development and youth employment in West Africa; however, limited awareness, inadequate skills, and weak access to financing continue to hinder youth participation across its value chains. This study presents the design and implementation framework of the West Africa Youth Blue Economy Value-Chain Advocacy, Awareness, and Local Capacity Development Project.

The primary objective is to enhance youth engagement (ages 15–29), particularly among women, in key Blue Economy sectors including aquaculture, fisheries, coastal tourism, marine biotechnology, ocean energy, and maritime transport. The project adopts a mixed-methods approach involving value-chain mapping, stakeholder engagement, capacity-building programs, and policy advocacy. Key interventions include training-of-trainers models, school and community awareness campaigns, development of digital tools such as a Massive Open Online Course (MOOC), a Blue Career Guide, and an integrated Blue Economy information platform.

Expected outcomes include increased awareness of Blue Economy opportunities, enhanced technical and entrepreneurial capacities among youth, and the creation of youth-led enterprises across multiple value chains. The project also establishes an ICT-based Youth Blue Economy Value-Chain Information and Resource Centre to support data-driven engagement and decision-making.

Early results indicate improved knowledge of career pathways, increased participation in training programs, and growing interest in blue sector innovations among young people. This initiative demonstrates the potential of integrated capacity development and policy-supported frameworks to unlock youth-driven growth in the Blue Economy.

KEYWORDS

Blue Economy; Youth Employment; Value Chain Development; Capacity Building; West Africa

O2.3 · SUSTAINABLE BLUE ECONOMY · ORAL PRESENTATION

Mangrove Conservation and Blue Carbon Finance as Drivers of Sustainable Community Development: A Case Study of the Vanga Blue Forest Project, Kenya

AUTHORS	Meali Mohamed, Hamadi Tsunusi, Amina Juma
AFFILIATION	Vanga Blue Forest CBO; Kenya Marine and Fisheries Research Institute
PRESENTER	Meali Mohamed, Vanga Blue Forest CBO
EMAIL	mealimohamed044@gmail.com

ABSTRACT

Mangrove forests are among the most carbon-dense coastal ecosystems globally, yet they face degradation driven by anthropogenic pressures. In Kenya, coastal communities bear the heaviest burden of this loss, facing diminished fisheries, weakened coastal resilience and reduced livelihoods. The Vanga Blue Forest (VBF) Project in Kwale County emerges as a pioneering community-led response, integrating mangrove conservation with blue carbon finance to advance sustainable blue economy goals.

This study examines how the VBF Project leverages voluntary carbon markets to incentivize mangrove conservation, and assesses the socioeconomic impacts of carbon credit revenues on the approximately 8,700 residents of the Vanga, Jimbo and Kiwegu communities. The study employs a qualitative case study design, drawing on project documentation, Plan Vivo verification reports, community impact assessments and secondary literature. Thematic analysis was applied to evaluate governance structures, benefit-sharing mechanisms and reported community outcomes.

Accredited under the Plan Vivo Standard, the project conserves 460 hectares of mangroves and generates carbon credit revenues. Approximately one-third of proceeds are reinvested into community development, funding educational, health, water and sanitation resources. Beyond carbon sequestration, conserved mangroves deliver critical co-benefits including coastal protection, fisheries nursery habitat and biodiversity conservation. The project pilots a biodiversity credit bundling for adjacent seagrass ecosystems, diversifying its financing base.

The VBF Project demonstrates that community ownership, transparent benefit-sharing and credible third-party verification are foundational to successful blue carbon initiatives. It offers a replicable model for coastal communities, affirming that ecosystem conservation and community prosperity are mutually reinforcing within a sustainable blue economy framework.

KEYWORDS

Blue carbon; mangrove conservation; community development; carbon markets; Kenya coast

O 2 . 4 · SUSTAINABLE BLUE ECONOMY · ORAL PRESENTATION

Beyond Carbon: A Community Perspective on the Benefits of Blue Carbon Initiatives in Kenya through an Environmental Justice Lens

AUTHORS	Abel Kiprono Lagat, Paul Kamau, Rahma Hassan, Iben Nathan
AFFILIATION	Institute for Development Studies, University of Nairobi; University of Copenhagen, Denmark
PRESENTER	Abel Kiprono Lagat, University of Nairobi / University of Copenhagen
EMAIL	kipronoabel@yahoo.com

ABSTRACT

Blue carbon ecosystems such as mangroves, seagrasses, and salt marshes have been increasingly promoted as nature-based solutions for their roles in climate mitigation, conservation of biodiversity, and community development. Their integration into carbon markets has attracted a multiplicity of actors, each with different interests and agendas, introducing complex challenges in governance and raising fundamental questions on environmental justice.

This paper explores community perceptions and lived experiences to understand community needs and priorities, as well as the distribution of benefits and burdens among stakeholders, focusing on two pioneering carbon initiatives: Mikoko Pamoja and Vanga Blue Forest in Kenya. Using a qualitative case study approach drawing on focused group discussions, interviews, observation, and document analysis, our findings revealed that the two projects have contributed to ecological recovery and community benefits — mangrove protection and restoration, community infrastructure such as schools, health facilities, and water supply.

At the same time, the study reveals governance challenges related to transparency in financial management with persistent gaps in equity in decision-making processes. While voices from the ground perceive the initiatives as beneficial, others expressed concerns about limited livelihood benefits and restricted access to the mangrove's resources. This study reveals a complex reality in which carbon initiatives present both opportunities and tensions among the stakeholders.

As such, the study underscores the importance of strengthening transparency, inclusivity, and governance processes that reconcile global and national frameworks with local needs and priorities to ensure that socially just outcomes are achieved, besides the ecological and climate goals. This paper contributes to scholarly debates and policies on the justice-oriented governance of blue carbon initiatives in Kenya and beyond.

KEYWORDS

Blue carbon; community perceptions; mangrove conservation; carbon credit; coastal livelihoods

O2.5 · SUSTAINABLE BLUE ECONOMY · ORAL PRESENTATION

The Role of Research, Policy and Communication in Planning Kenya's Ocean Space

AUTHORS	Dr. Jacqueline Uku, Harrison Onganda
AFFILIATION	Kenya Marine and Fisheries Research Institute
PRESENTER	Dr. Jacqueline Uku, Kenya Marine and Fisheries Research Institute
EMAIL	juku@kmfri.go.ke

ABSTRACT

The recent launch of the Kenyan Blue Economy Strategy marked the intention of the nation to accelerate the transformation of the Ocean space into an economic space. In order to achieve the Blue Economy vision of jobs, climate resilience and shared prosperity, there has been an urgent need to plan the space for sustainable blue investments.

Kenya has adopted the Marine Spatial Planning (MSP) process to organize the uses of its Ocean space. This complex process is anchored in research findings from both the nearshore and deep-water ecosystems. Beyond the use of GIS mapping tools, planning this multi-dimensional space requires investment in geo-referenced scientific data for modelling, zoning, cost benefit analysis and scenario building. The process is also reliant on indigenous knowledge systems and the documentation of historical uses of ocean spaces by coastal communities.

The MSP process is expected to provide policy interventions and guide multi-sectoral collaborations in the management of the ocean space. For this to be effective, there is a critical need to communicate findings from this process in the public arena using messages that demonstrate the relevance of the process in promoting sustainable Blue Economy development.

This presentation provides insights into the tools used for the ocean planning process, the policy framework used to advance the process, and the importance of building robust communication systems to support such complex processes.

KEYWORDS

Research; Marine Spatial Planning; Policy; Communication

THEME 2 · SUSTAINABLE BLUE ECONOMY

POSTER PRESENTATIONS

P2.1 · SUSTAINABLE BLUE ECONOMY · POSTER PRESENTATION

Circular Aquaculture Using Black Soldier Fly Larvae as a Sustainable Fishmeal Alternative in Coastal Kenya

AUTHORS	Linah Samra Minangi
AFFILIATION	Kenya Marine and Fisheries Research Institute, Mombasa Research Center, Mombasa, Kenya
PRESENTER	Linah Samra Minangi, KMFRI
EMAIL	linahsamra91@gmail.com

ABSTRACT

The rapid expansion of aquaculture has intensified demand for fishmeal, placing significant pressure on marine ecosystems and increasing feed costs for small-scale farmers. This study evaluates the potential of black soldier fly larvae (BSFL) as a sustainable, locally producible alternative protein source for aquaculture feed within coastal Kenya. Drawing on field-based insights and existing applications, the study examines the integration of BSFL into circular aquaculture systems that link organic waste valorization with fish production.

BSFL efficiently convert organic waste streams, including market waste and fish-processing by-products, into high-quality biomass containing 40–50% protein and 25–30% lipids, suitable for fish diets. Their use as a partial or complete replacement for fishmeal has been associated with comparable growth performance in key aquaculture species while significantly reducing feed costs and dependence on marine-derived inputs. BSFL production can also reduce organic waste volumes by up to 50%, addressing waste-management challenges common in coastal urban and peri-urban areas. The study further highlights the role of BSFL frass as an organic fertilizer within integrated aquaculture–agriculture systems, supporting nutrient recycling and enhancing overall system productivity.

This closed-loop approach aligns with blue economy principles by improving resource efficiency, reducing environmental pollution and strengthening climate resilience. Findings indicate that BSFL-based aquaculture systems present a scalable and economically viable solution for sustainable fish production in Kenya. However, widespread adoption will depend on improved regulatory frameworks, farmer training, and optimization of production systems. The study recommends targeted research on species-specific feed performance and policy support to accelerate the integration of insect-based feeds into the aquaculture sector.

KEYWORDS

Insect-based feed; organic waste valorization; blue economy; nutrient recycling; alternative protein source

P 2 . 2 · SUSTAINABLE BLUE ECONOMY · POSTER PRESENTATION

De-Risking Ocean Investment through Strategic Communication and Outreach: Linking Kenya Blue Economy and Namibia Waves of Change

AUTHORS	Rob Barnes, Hasan Abbas, Kipkorir Sigi Lang'at, Amina Hamza, James Kairo, Carolin Mutorwa, Disney Andreas
AFFILIATION	GRID-Arendal, Norway; Kenya Marine and Fisheries Research Institute; Namibia Nature Foundation
PRESENTER	Rob Barnes, GRID-Arendal
EMAIL	rob.barnes@grida.no

ABSTRACT

Ocean investment in emerging blue economies is often constrained by high levels of perceived and actual risk, including data uncertainty, governance complexity, and limited stakeholder trust. While financial and policy instruments are commonly used to address these risks, the role of communication and outreach remains underexplored.

This study examines how strategic communication can function as a practical de-risking tool, drawing on comparative insights from two contexts: Kenya's blue economy governance processes under the Ocean for Development programme, and Namibia's Waves of Change initiative focused on public engagement and awareness.

Findings suggest that communication contributes to de-risking in four key ways: (1) reducing technical uncertainty through translation of scientific data into accessible formats, (2) strengthening governance by enabling participatory decision-making, (3) increasing social acceptance through inclusive engagement, and (4) improving uptake of interventions by aligning stakeholders and public understanding. The Kenya case demonstrates the role of communication at the institutional level, while Namibia highlights its function at the societal level.

The paper concludes that communication and outreach act as enabling infrastructure for ocean investment by reducing both decision and acceptance risks. Integrating communication early in project design can improve investment readiness and sustainability outcomes. However, communication is most effective when combined with strong governance and technical capacity, rather than as a standalone solution.

KEYWORDS

risk management; stakeholder engagement; ocean literacy; investment readiness; governance

P2.3 · SUSTAINABLE BLUE ECONOMY · POSTER PRESENTATION

Integrated Multi-Trophic Aquaculture as a Nature-Based Solution for Climate Resilience and Livelihood Improvement in Kijiweni, Kwale County, Kenya

AUTHORS	Ninyoha Madzitsa
AFFILIATION	Kenya Marine and Fisheries Research Institute, Mombasa, Kenya
PRESENTER	Ninyoha Madzitsa, Kenya Marine and Fisheries Research Institute
EMAIL	binti.madzitsa@gmail.com

ABSTRACT

Coastal communities in Kwale County are increasingly vulnerable to climate change impacts, including rising sea temperatures, ecosystem degradation, and declining fish stocks, all of which have intensified livelihood insecurity and reduced food availability. In this context, nature-based solutions such as Integrated Multi-Trophic Aquaculture (IMTA) offer a promising approach for enhancing ecological sustainability while supporting socio-economic resilience. IMTA integrates species from different trophic levels, such as finfish, seaweed, and other marine resources within a shared system to promote nutrient recycling, improve water quality, and diversify production.

This study assessed the effectiveness of IMTA in improving fish growth and productivity under different feeding regimes, and evaluated its role in enhancing climate resilience and sustainable livelihoods among coastal communities in Kijiweni. A mixed-methods approach was employed, combining experimental and participatory techniques. Fish growth performance was monitored in IMTA cage systems using commercial feed and Eucheuma seaweed, while environmental parameters were measured to evaluate system efficiency.

Preliminary findings indicate IMTA systems supplemented with seaweed achieved higher fish growth rates compared to conventional systems. The integration of seaweed enhanced nutrient uptake, reducing environmental pollution while enhancing water quality. Community members, particularly women, reported increased income opportunities through seaweed farming and value addition activities. The system also demonstrated strong potential for enhancing resilience to climate variability by diversifying livelihoods and reducing dependence on capture fisheries. Overall, IMTA presents a practical and scalable nature-based solution for sustainable aquaculture, environmental management, and livelihood improvement.

KEYWORDS

Nutrient recycling; Climate resilience; Livelihood diversification; Ecosystem-based aquaculture; Community empowerment

P 2 . 4 · *SUSTAINABLE BLUE ECONOMY* · POSTER PRESENTATION

Mobilising the World's Marine Stations: The World Association of Marine Stations (WAMS) for International Collaboration, Ocean Diplomacy and Capacity Sharing

AUTHORS	Matt Frost, Neil Davies, Ben Harvey, Anna Gebruk, Sean Rogers
AFFILIATION	Plymouth Marine Laboratory, UK; University of California, USA; University of Tsukuba, Japan; University of Edinburgh, UK; Bamfield Marine Science Centre, Canada
PRESENTER	Matt Frost, Plymouth Marine Laboratory
EMAIL	mafr@pml.ac.uk

ABSTRACT

Globally coordinated ocean science is required to support the delivery of a multitude of ocean-related international law and policy and to address the environmental challenges impacting the Ocean on a global scale. There is therefore an urgent need to mobilize global capacity in a way that is equitable and supports international cooperation.

The world's marine stations occur across every continent on earth and represent a huge global resource that can be utilized to meet these challenges as they deliver fundamental marine research, sustained ocean observations, training, public engagement, a science-policy interface and an opportunity for science-diplomacy. The World Association of Marine Stations (WAMS) is a mechanism for collaboration between all of the world's marine stations and marine station networks.

This presentation discusses progress on WAMS including key outputs and how this global collaboration can address challenges on a global scale. The evolution of WAMS from the concept of marine 'stations' as a single global network through to plans for the third World Congress of Marine Stations being held in Canada in September 2026 will be discussed, including how Indigenous and Local communities are being included in the generation of scientific knowledge.

The latest developments include how the first comprehensive Atlas of the world's Marine Stations is being used to support research and delivery of the Sustainable Development Goals (SDGs, including SDG14) on a global scale.

KEYWORDS

cooperation; equity; science-policy; marine stations; ocean diplomacy

P 2 . 5 · *SUSTAINABLE BLUE ECONOMY* · POSTER PRESENTATION

Satellite Imagery Reveals Small-Scale Fishing Activity and Industrial Encroachment across Africa

AUTHORS	Zihan Wei, David Kroodsma, Tim Hochberg, Yuexin Li, Fernando Paolo, and co-authors
AFFILIATION	Global Fishing Watch, Washington, DC, USA; Marine Geospatial Ecology Lab, Duke University, USA
PRESENTER	David Kroodsma, Global Fishing Watch
EMAIL	david@globalfishingwatch.org

ABSTRACT

Small-scale fishing (SSF) provides food and employment for hundreds of millions of people, yet the full global extent of SSF activity remains unmapped. Drawing on 1.8 petabytes of ~4m-resolution PlanetScope imagery, we developed an AI-powered framework to detect vessels across the majority of the global coastline — over 26 million km² of coastal waters, obtaining one low-cloud image every one to three weeks.

This study demonstrates how this technology can reveal the diverse and dynamic footprint of SSF across Africa's coastline. Although only a fraction of the SSF fleet is active during any given time, we detect over 30,000 sub-20m vessels on the water on average. We also identify over 1,000 anchorages used by small-scale vessels. Combining the PlanetScope small-vessel detections with AIS tracking and a decade of medium-to-large vessels detected with Sentinel-2 imagery, we map the overlap and potential competition between large and small-scale vessels.

Our results provide an updated, evidence-based assessment of the 'preferential access areas' (PAAs) designed to protect SSF from industrial encroachment. While we find that industrial vessels respect PAAs in 14 of the 18 African countries, SSF activity routinely extends beyond PAAs and overlaps with industrial fishing in Senegal, Nigeria, and Ghana. Our multi-sensor framework highlights the mismatch between static PAAs and the dynamic picture of African SSF.

We are engaging with researchers and partners across Africa to ensure the effective and ethical use of this data, aiming to provide actionable information to safeguard SSF livelihoods, monitor both established and future PAAs, and inform Marine Spatial Planning across African and global coastal waters.

KEYWORDS

Preferential Access Areas; Fisheries Access Rights; Unmonitored Fleets; Automated Vessel Detection; Marine Spatial Planning

THEME 03

OCEAN–CLIMATE NEXUS

Photo credits: ouroceanconference.org

Science, governance, adaptation, and mitigation responses to a changing ocean — from coral reefs to polar systems and coastal communities.

5 Oral Presentations · 5 Poster Presentations

THEME 3 · OCEAN–CLIMATE NEXUS

ORAL PRESENTATIONS

O 3 . 1 · *O C E A N – C L I M A T E N E X U S* · O R A L P R E S E N T A T I O N

Barriers and Enablers to Blue Carbon Projects in Africa: A Horizon Scan Analysis

A U T H O R S	Derrick Omollo, Peter I. Macreadie, Melissa Wartman, Ebrahem M. Eid, Kabari Sam, and co-authors
A F F I L I A T I O N	RMIT University, Melbourne, Australia; Deakin University, Australia; multiple African and European institutions
P R E S E N T E R	Derrick Omollo, RMIT University
E M A I L	derrickomollo.do@gmail.com

A B S T R A C T

Africa's blue carbon ecosystems are increasingly recognized for their role in climate change mitigation, biodiversity conservation and sustainable livelihoods, with existing carbon offset projects showcasing their potential to sequester carbon and support community livelihoods. Despite this promise, blue carbon (BC) projects remain scarce across Africa. Understanding the barriers to BC implementation is therefore critical for unlocking their potential across the continent.

Through a horizon scan and expert solicitation involving 41 participants from 20 countries, this study identified 13 major barriers spanning social, technical, economic, environmental, and policy domains. Governance obstacles, such as weak law enforcement, complex land tenure, and unclear carbon rights, emerged as the most significant — reflecting Africa's diverse regulatory landscapes and often unstable political contexts. Socio-economic challenges, such as few sustainable livelihood options for those involved in or impacted by BC projects, further constrain progress. Economic barriers, particularly limited funding for project design, monitoring, and delivery, also featured prominently.

Technical and environmental factors, including low scientific capacity, fragmented ecosystem distribution, and climate-driven impacts, further complicate project design and scalability. The barriers identified varied significantly across regions and ecosystem types. To overcome them, we propose targeted policy reforms, innovative financing, capacity building, and integrated management approaches that align local priorities with national climate goals. Collectively, these strategies can unlock Africa's BC potential, delivering substantial climate, biodiversity and socio-economic benefits.

K E Y W O R D S

coastal wetlands; coastal restoration; carbon sequestration; policy and governance; mangroves; seagrasses; carbon markets; sustainable finance

O 3 . 2 · *O C E A N – C L I M A T E N E X U S* · O R A L P R E S E N T A T I O N

Spatial and Socio-Ecological Characterization of Suitable Areas for Mangrove Conservation, Restoration and Sustainable Use in Marracuene, Mozambique

A U T H O R S	Benedito Lopes Julião Issa, Estevão M. Mazuze, Ana C. C. Nunes, Borge Q. V. Benzane, Channice W. Tembe, Saddam C. Achaa
A F F I L I A T I O N	Associação Mar Moçambique (MARMO); Centro de Pesquisa e Investigação em Economia Circular (CMPIEC); NADEC, Mozambique
P R E S E N T E R	Benedito Lopes Julião Issa, Associação Mar Moçambique
E M A I L	beneditoissa@gmail.com

A B S T R A C T

Mangrove ecosystems in southern Mozambique are under increasing threat from climate variability, urban expansion and the unsustainable use of resources, which compromises coastal protection and local livelihoods. This study aimed to identify priority areas for mangrove restoration and assess the socio-ecological conditions influencing their sustainability in Marracuene District, Maputo Province.

A mixed-methods approach was employed, combining remote sensing analysis (NDVI and Mangrove Vegetation Index – MVI) from 2014 to 2024, ecological field surveys, hydrological analysis and community questionnaires (n = 80). Results indicate a decline in vegetation vigour between 2014 and 2019, followed by partial recovery in 2024 (NDVI = 0.68; MVI = 0.61), suggesting ongoing ecological regeneration. A total of 73.89 hectares were identified as priority areas for restoration, primarily in low-lying zones (0–3 m elevation) susceptible to tidal flooding and rising sea levels.

Ecological assessments revealed the dominance of Avicennia marina (>90% basal area), indicating resilience, albeit with reduced diversity, in the face of anthropogenic pressure. Socioeconomic findings show that 52% of households depend on fishing, while 78.3% reported mangrove degradation, primarily driven by tree cutting and coastal development. Nevertheless, 86.9% of respondents expressed a willingness to participate in restoration activities.

The study proposes an integrated mangrove management framework combining hydrological restoration, ecological rehabilitation, strengthened community-based governance and sustainable livelihood diversification — providing insights for coastal planning, climate adaptation and blue economy strategies in Mozambique and other similar coastal regions.

K E Y W O R D S

Mangrove restoration; Community participation; Coastal resilience; Nature-based solutions; Livelihoods

O 3 . 3 · *O C E A N – C L I M A T E N E X U S* · O R A L P R E S E N T A T I O N

Dissolution Kinetics of Olivine Bearing Rocks Conditioned to Temperature and pH Parameters of Mangrove Forests

A U T H O R S	Joseph Nyingi Kamau, Anthony Kenga, Evans Wanyama, Paul Kahuha, Stephen Mwangi, Veronic Wanjeri, Gilbert Owato, Anthony Chege, Nicolus Munya
A F F I L I A T I O N	Kenya Marine Fisheries Research Institute, Mombasa, Kenya; State Department for Mining, Mombasa, Kenya
P R E S E N T E R	Joseph Nyingi Kamau, Kenya Marine Fisheries Research Institute
E M A I L	jkamau@kmfri.go.ke

A B S T R A C T

Marine carbon dioxide removal (mCDR) is emerging as a critical strategy for mitigating the impacts of elevated atmospheric greenhouse gas concentrations. Emission reduction efforts alone are unlikely to sufficiently limit climate change, highlighting the need for complementary carbon removal approaches. Among these, the application of olivine-bearing rocks in marine environments has gained attention due to their potential to enhance natural weathering processes and sequester carbon.

This study investigates the dissolution kinetics and carbon sequestration potential of compositionally variable olivine-bearing rocks under controlled laboratory conditions. Rock samples with varying Mg/Fe ratios and trace element compositions were collected and characterized using X-ray diffraction (XRD), scanning electron microscopy (SEM), and inductively coupled plasma optical emission spectrometry (ICP-OES). Batch dissolution experiments were conducted to simulate natural mangrove sediment environments. The batch reaction chamber temperature was maintained at 30 °C, while pH values ranged from 3 to 8.3 to represent the variability observed in natural systems.

Results indicate that dissolution rates are significantly enhanced under mildly acidic conditions (pH 3–4). Magnesium-rich olivine compositions exhibited faster dissolution rates and higher carbonation efficiencies compared to iron-rich varieties, likely due to differences in lattice stability and surface reactivity. However, extremely low pH conditions promoted rapid mineral dissolution without proportional carbonate precipitation.

Overall, the findings demonstrate that mineral composition plays a critical role in controlling reaction kinetics and carbon sequestration efficiency, highlighting the importance of geochemical screening when selecting suitable materials for large-scale enhanced weathering or engineered carbon mineralization projects.

K E Y W O R D S

Olivine rocks; carbon dioxide; marine carbon dioxide removal; climate change

O 3 . 4 · *OCEAN–CLIMATE NEXUS* · ORAL PRESENTATION

Strengthening Marine Conservation through Ranger Training, Reef Restoration, and Community Engagement in Zanzibar

AUTHORS	Camilla Floros, Andrew Venter, Crispo Ndembeka, Lebogang Matlakala, Diandra Naidoo
AFFILIATION	Wild Impact Foundation
PRESENTER	Diandra Naidoo, Wild Impact Foundation
EMAIL	Diandra.Naidoo@wildimpact.earth

ABSTRACT

Effective marine conservation requires not only protected areas but also the capacity of the people responsible for managing and protecting these ecosystems. This presentation highlights the work of the Oceans Without Borders programme under Wild Impact, which supports community-driven marine conservation initiatives in Zanzibar, Tanzania. Working alongside conservation rangers, local communities, and government partners, the program focuses on strengthening marine conservation efforts around key ecosystems such as the Mnemba Island Marine Conservation Area.

Core activities include training and upskilling conservation rangers — 8 of which have received coral restoration and dive training — supporting coral reef restoration initiatives, and building local capacity for long-term ecosystem management. The program also engages local schools through the Wild Impact ECHO outreach program, which introduces students to important marine conservation topics and provides opportunities to learn about the conservation work taking place around Mnemba Island. From October to December 2025, a total of 214 lessons were conducted, impacting the lives of 3,691 students.

By sharing lessons from these initiatives, this session highlights how ranger training, reef restoration, and community engagement can strengthen marine protected areas while supporting resilient coastal communities. These activities help improve ocean literacy and encourage greater community involvement in protecting marine ecosystems.

KEYWORDS

Marine protected areas; Partner communities; Skills development; Marine stewardship; Western Indian Ocean

O 3 . 5 · *O C E A N – C L I M A T E N E X U S* · O R A L P R E S E N T A T I O N

Intersecting Inequalities and Climate Maladaptation: Rethinking Sea Defence-Induced Vulnerability in Coastal Ghana

A U T H O R S	Dorothy K. Lukhabi, Linda Bana, Richard Adade
A F F I L I A T I O N	Centre for Coastal Management / Africa Centre of Excellence in Coastal Resilience (ACECoR), University of Cape Coast, Ghana
P R E S E N T E R	Dorothy K. Lukhabi, University of Cape Coast
E M A I L	dorothy.lukhabi@ucc.edu.gh

A B S T R A C T

At the ocean–climate nexus, ambitious adaptation actions are critical for safeguarding coastal livelihoods threatened by rising seas and extreme climate events. However, hard-engineering adaptation interventions such as sea-defence structures can generate unintended social and ecological consequences when implemented without inclusive planning. This study examines how sea-defence-induced displacement and loss of access to coastal resources have reshaped household vulnerability in two coastal communities in Ghana.

Drawing on the Sustainable Livelihood Framework and the IPCC AR5 vulnerability framework, we assess how disruptions across natural, physical, social, human, and financial assets, mediated by intersectional factors such as gender, age, education, occupation and disability, shape differentiated exposure and adaptive capacity. Using a mixed-methods approach that integrates household surveys (n = 251), key-informant interviews and gender-disaggregated focus group discussions, the study combines quantitative and qualitative analyses to uncover the compounding effects of maladaptive infrastructure.

Findings reveal that sea-defence structures, while mitigating localized erosion, have intensified livelihood precarity through displacement, reduced access to marine resources and weakened social networks. Vulnerability outcomes vary significantly across social groups, underscoring the need for gender-responsive and socially inclusive coastal adaptation planning. We argue that achieving equitable ocean–climate action requires embedding social safeguards, participatory engagement and ecosystem-sensitive design in coastal-defence strategies to enhance resilience and align with global climate goals.

K E Y W O R D S

Ocean-climate nexus; sea defence; vulnerability; maladaptation; intersectionality; coastal resilience; Ghana

THEME 3 · OCEAN–CLIMATE NEXUS

POSTER PRESENTATIONS

P 3 . 1 · *OCEAN–CLIMATE NEXUS* · POSTER PRESENTATION

'My Spirit Was Crushed': Gendered Insights from Farmers and Fishers into Climate Shocks, Livelihood Disruptions, and Mental Wellbeing in Kenya

AUTHORS	Sally Atieno Odunga, Wendy Janssens, Lia van Wesenbeeck
AFFILIATION	Vrije Universiteit Amsterdam; Amsterdam Centre for World Food Studies; Amsterdam Institute for Global Health and Development, Netherlands
PRESENTER	Sally Atieno Odunga, Vrije Universiteit Amsterdam
EMAIL	odungasally@gmail.com

ABSTRACT

Globally, research increasingly documents climate-induced livelihood loss and food and nutrition insecurity, largely among farming populations. Yet far less attention has been paid to the gendered mental wellbeing consequences of these disruptions in both small-scale farming and fishing-dependent households, especially in sub-Saharan Africa.

This study examined how men and women in small-scale farming and fishing-dependent households in Homa Bay and Kwale Counties, Kenya, perceive climate shocks relative to observed climatic changes; how these shocks affect livelihoods and food and nutrition security; how these impacts shape mental wellbeing; and the coping strategies adopted. The study draws on 64 in-depth interviews and 16 sex- and age-disaggregated focus group discussions.

Participants reported increasing climate variability, with perceptions largely aligning with observed climate data, except for temperature, which was described as declining despite gradual increasing trends. In farming households, women more frequently reported erratic rainfall, while men more often perceived extreme events. Across livelihoods and counties, men more frequently reported reduced productivity, income loss, and employment disruptions, while women more often reported declines in food availability and dietary diversity. Women more frequently reported chronic stress and anxiety related to caregiving roles, while men reported feelings of sadness and hopelessness, linked to provider roles.

Findings underscore the need for integrated, gender-responsive, and livelihood-specific climate interventions that strengthen livelihoods, protect food and nutrition security, and explicitly incorporate mental wellbeing.

KEYWORDS

Food and nutrition security; income; employment; coping strategies; gender; climate shocks

P 3 . 2 · *OCEAN–CLIMATE NEXUS* · POSTER PRESENTATION

Co-Producing Climate-Resilient Coastal Tourism

AUTHORS	David Cabana, Louis Celliers
AFFILIATION	Climate Service Center Germany (GERICS), Helmholtz-Zentrum Hereon, Hamburg, Germany
PRESENTER	David Cabana, GERICS Helmholtz-Zentrum Hereon
EMAIL	David.cabana@hereon.de

ABSTRACT

Coastal tourism is a cornerstone of the global Blue Economy yet is highly exposed to sea-level rise, coastal erosion, changing thermal comfort, and extreme rainfall that jointly threaten ocean-based livelihoods, beach ecosystems, and municipal revenues.

Using a social–ecological systems lens, this study develops governance-oriented adaptation pathways for a Baltic Sea tourist town, drawing on co-produced tourism futures, climate-signal-informed vulnerability assessments (sea-level rise, Universal Thermal Climate Index, extreme precipitation), and stakeholder workshops with municipalities, tourism operators and community groups. This approach is applicable in other contexts outside of Europe.

The results from the visioning process — spanning a spectrum from nature-based to infrastructure-intensive development — include sequences of near-, medium- and long-term climate adaptation measures across policy/governance, social/knowledge, economic/finance, and physical/ecological domains, including dune restoration, soft engineering, harbor investments, and all-season tourism offerings that jointly support climate-resilient coastal economies and ocean health.

The pathways illustrate how locally grounded climate information and services can help small coastal municipalities avoid maladaptive lock-in, align tourism growth with marine ecosystem protection, and contribute to a socially just and sustainable Blue Economy that is directly relevant to emerging ocean-climate policy debates worldwide.

KEYWORDS

Social–ecological systems; Adaptation pathways; Climate vulnerability assessment; Stakeholder co-production; Coastal tourism futures

P 3 . 3 · *OCEAN–CLIMATE NEXUS* · POSTER PRESENTATION

Triple Threat in Coastal Socioecological Systems: Climate Change, Biodiversity Loss and Pollution in the Honduran Caribbean

AUTHORS	Joel Güity Zapata
AFFILIATION	Cádiz University, Spain
PRESENTER	Joel Güity Zapata, Cádiz University
EMAIL	joel.guityzapata@alum.uca.es

ABSTRACT

The continental Caribbean coast of Honduras represents a highly complex socioecological system characterized by the interaction between coastal ecosystems and human communities dependent on ecosystem services. However, this region is increasingly threatened by the combined effects of climate change, biodiversity loss, and pollution, forming a 'triple threat' that undermines ecological integrity and human well-being.

This study analyzes the dynamics of this triple threat using the Drivers–Pressures–State–Impact–Responses (DPSIR) framework. A systematic review of scientific and technical literature was conducted to identify key drivers such as unplanned urbanization, agro-industrial expansion, population growth, and tourism development, which generate cumulative pressures on coastal ecosystems.

The results reveal significant degradation of critical ecosystems, including coral reefs, mangroves, and seagrass beds, evidenced by declining biodiversity, reduced habitat coverage, and deteriorating water quality. These environmental changes directly impact ecosystem services, leading to decreased fisheries productivity, coastal protection loss, and increased vulnerability of local communities to extreme climate events.

The study highlights that the interaction between global and local stressors amplifies socioecological risks, particularly in regions with limited governance capacity and inadequate environmental management. Addressing this triple threat requires integrated coastal management approaches that incorporate ecosystem-based planning, multi-level governance, and active community participation. The findings contribute to the development of practical, science-based strategies aimed at enhancing resilience and promoting sustainable coastal development in the context of global environmental change.

KEYWORDS

Coastal resilience; Ecosystem services; Integrated coastal management; DPSIR framework; Honduras

P 3 . 4 · *OCEAN–CLIMATE NEXUS* · POSTER PRESENTATION

Roadmap for Biodiversity Net Gain in the Offshore Renewable Energy Sector

AUTHORS	Qiulin Liu, Rachel Asante-Owusu, Aonghais Cook
AFFILIATION	International Union for Conservation of Nature; The Biodiversity Consultancy
PRESENTER	Qiulin Liu, International Union for Conservation of Nature
EMAIL	qiulin.liu@iucn.org

ABSTRACT

The rapid expansion of offshore renewable energy is vital to achieving global decarbonization goals, yet this growth must be aligned with international commitments to halt and reverse biodiversity loss. As governments and regulators increasingly require offshore wind developers to go beyond minimizing harm and demonstrate measurable biodiversity net gain, there is an urgent need for coherent, practical guidance tailored to offshore environments. Delivering net gain at sea is particularly challenging due to limited ecological baselines, the complexity and cost of marine monitoring, uncertainty about the feasibility and scalability of restoration actions, and the lack of harmonized regulatory expectations across jurisdictions.

This paper presents a structured roadmap designed to operationalize biodiversity net gain for offshore renewable energy projects. The roadmap comprises five interlinked components: (1) prioritizing biodiversity values by identifying ecologically significant species, habitats, and ecosystem functions; (2) selecting fit-for-purpose metrics that reflect offshore ecological dynamics; (3) designing enhancement measures that are both practical and environmentally credible; (4) establishing robust baselines and setting measurable, time-bound net gain targets; and (5) embedding adaptive management supported by transparent monitoring and reporting frameworks. The roadmap also highlights emerging opportunities for meaningful biodiversity enhancement, including shellfish reef restoration, eco-engineered scour protection, nature-inclusive design for foundations and cables, and targeted marine litter removal linked to quantifiable ecological outcomes.

Given that the offshore wind footprint may exceed 200,000 km² by 2050, the sector has a unique opportunity to contribute positively to national and global biodiversity objectives. By embedding net gain principles throughout the project lifecycle—from site selection to long-term monitoring—the offshore renewable energy sector can support delivery of the Kunming–Montreal Global Biodiversity Framework while accelerating a just and nature-positive energy transition. This roadmap provides a practical and scalable foundation for policymakers, developers, investors, and conservation practitioners seeking to achieve both climate and biodiversity outcomes offshore.

KEYWORDS

Nature-positive energy; biodiversity metrics; marine ecological enhancement; adaptive management frameworks; offshore restoration

P 3 . 5 · *OCEAN–CLIMATE NEXUS* · POSTER PRESENTATION

Sustainable Blue Energy: Unlocking Marine Renewable Potential in the West Indian Ocean

AUTHORS	Rodney Mugo, Noah Ngisiange, Amon Kimeli, Juliet Karisa, Marie Smith
AFFILIATION	Kenya Marine and Fisheries Research Institute, Kenya; Council for Scientific and Industrial Research, South Africa
PRESENTER	Rodney Mugo, Kenya Marine and Fisheries Research Institute
EMAIL	rmugo@kmfri.go.ke

ABSTRACT

Energy security has been a key driver of economic growth, largely the case for Africa where vast renewable energy potential remains underutilized due to infrastructure and policy constraints. The West Indian Ocean (WIO) is presented with an opportunity to integrate marine renewable energy (MRE) and achieve sustainability by offering an energy alternative that supports economic development by enhancing energy security and contributing to a green transition in the region.

This study utilized earth observation and ocean monitoring systems to access satellite-derived ocean variables to assess the spatial and temporal distribution of key MRE resources — namely wave energy, offshore wind, and ocean currents. Numerical models are used to analyze variables like significant wave height, wind speed and ocean current velocity to characterize the energy density and identify high energy potential sites. Computed power outputs include an output power anomaly of 750,000 W/m, mean power outputs of 50,000 kW/m, and mean power density of 1,400 W/m² for wind, waves and currents respectively.

Beyond the technical resource assessment, this study explores how MRE can be integrated to enhance regional marine governance and cooperation under the Ocean, Marine and Coastal Governance framework. MRE deployment and infrastructure can be used to power autonomous ocean monitoring systems, supporting real-time environmental data collection and research through ocean observation. By providing reliable electricity to fisheries, maritime transport, desalination plants and eco-tourism activities, MRE creates opportunities for socio-economic development, a key pillar for sustainable blue economy, while emphasizing the importance of inclusive marine governance and the inclusion of marginalized coastal communities for MRE planning and benefit sharing.

KEYWORDS

Marine renewable energy; West Indian Ocean; wave energy; offshore wind; ocean currents; blue economy

THEME 04

MARITIME SECURITY

Strengthening the systems, technologies, partnerships, and laws that secure peaceful, lawful, and equitable use of the ocean.

5 Oral Presentations · 5 Poster Presentations

THEME 4 · MARITIME SECURITY

ORAL PRESENTATIONS

O 4 . 1 · *MARITIME SECURITY* · ORAL PRESENTATION

AI-Driven Marine Data Systems for Strengthening Sustainable Blue Economy Governance in East Africa

AUTHORS	Geoffrey Ochieng
AFFILIATION	Independent Researcher / Global Youth Constituency on Fisheries and Aquaculture (GYCFA), FAO
PRESENTER	Geoffrey Ochieng, Independent Researcher
EMAIL	Jeffreysewe7@gmail.com

ABSTRACT

The sustainable governance of marine resources in East Africa is increasingly constrained by fragmented data systems, limited monitoring capacity, and insufficient integration of scientific evidence into policy and management decisions. As countries along the Western Indian Ocean expand their blue economy strategies, there is a growing need for innovative tools that can strengthen marine data collection, analysis, and policy implementation.

This study explores the potential of Artificial Intelligence (AI)-driven marine data systems to support evidence-based governance and sustainable management of ocean resources in the East African region. The research examines how machine learning, satellite data analytics, and automated monitoring systems can enhance the detection and analysis of critical ocean indicators such as illegal fishing activities, marine pollution hotspots, and ecosystem degradation.

Using a conceptual framework that integrates AI technologies with marine governance structures, the study evaluates existing digital infrastructure and identifies key gaps in data interoperability, institutional coordination, and policy alignment across coastal states including Kenya, Tanzania, and Somalia. The paper highlights opportunities for leveraging data-driven systems to improve transparency, decision-making, and resource management within the blue economy.

The findings demonstrate that AI-driven marine data systems can significantly improve ocean governance by enabling real-time monitoring, predictive analytics, and enhanced policy coordination. However, successful implementation requires investment in digital infrastructure, capacity building, and harmonized regional data governance frameworks. The study concludes by proposing policy recommendations to support the integration of AI technologies into sustainable blue economy governance in East Africa.

KEYWORDS

Marine Data Systems; Artificial Intelligence; Ocean Governance; Digital Infrastructure; Western Indian Ocean

O 4 . 2 · *MARITIME SECURITY* · ORAL PRESENTATION

Eyes on the Sea: A Review of Maritime Domain Awareness Systems in the Western Indian Ocean

AUTHORS	Prof. Dr. Christian Bueger
AFFILIATION	University of Copenhagen, Denmark; Charles Telfair Centre, Mauritius
PRESENTER	Prof. Dr. Christian Bueger, University of Copenhagen
EMAIL	Christian.bueger@ifs.ku.dk

ABSTRACT

Maritime domain awareness (MDA) is widely conceived as the cornerstone of effective ocean governance and maritime security provision. Since the early 2000s, MDA systems have proliferated. Many of these are single purpose and geared at a particular issue, such as counter-smuggling, piracy, or sanction evasions. Others are more encompassing attempts to fuse data and understand activities in the maritime domain for operational purposes.

This presentation draws on a systematic study of the systems that have been developed in the Western Indian Ocean since 2010. Documenting the breadth of activities and their evolution, the study aims at identifying synergies between platforms and systems to establish a network of networks that can serve multiple purposes of maritime security, blue economy, ocean health and coastal communities.

The presentation lays out options for donors and regional countries on how to streamline and enhance effectiveness, including by building stronger and systematic links between operational, analytic and scientific communities and platforms. It also identifies how dedicated training and education programmes and coastguard cooperation might close the gaps in maritime surveillance.

KEYWORDS

Maritime Security Governance; Global Ocean Regions; Security-Development Nexus; Blue Crimes

O 4 . 3 · *MARITIME SECURITY* · ORAL PRESENTATION

From Fragmented to Unified: Compilation of the First Western Indian Ocean Bathymetry Grid

AUTHORS	Kimeli A., Mathai D., Makori A., Simwa P., Kosgei E., Ngisiang'e N., Thoya P., Osore M., and regional co-authors
AFFILIATION	Kenya Marine and Fisheries Research Institute; Survey of Kenya; Nippon Foundation-GEBCO Seabed 2030; Columbia University (LDEO); regional partners
PRESENTER	Amon Kimeli, Kenya Marine and Fisheries Research Institute
EMAIL	akimeli@kmfri.go.ke

ABSTRACT

Comprehensive seafloor mapping is essential for marine spatial planning, maritime safety, and sustainable ocean governance. The Western Indian Ocean (WIO) region, encompassing over 6 million km² of maritime space across ten coastal and island states, has historically lacked a unified bathymetric dataset, with existing data remaining spatially fragmented and inconsistently documented.

The WIObathy Project (2023–2025), funded by the Nippon Foundation and implemented by the Kenya Marine and Fisheries Research Institute (KMFRI), aimed to discover, compile, standardize, and integrate existing bathymetric datasets from the WIO into a coherent regional grid aligned with GEBCO and Seabed 2030 standards. Rather than undertaking primary data acquisition, the project maximized value from previously collected datasets through rigorous in-country stakeholder workshops, quality control, metadata enhancement, datum reconciliation, and harmonized gridding.

Data types compiled included multibeam echosounder (MBES) surveys, single-beam echosounder (SBES) transects, airborne LiDAR bathymetry, digitized navigation chart soundings, and Satellite-Derived Bathymetry (SDB). Project activities included multiple in-country stakeholder workshops across five nations and a regional Satellite-Derived Bathymetry training in Mombasa, which produced a 10 m resolution bathymetric product over the Bazaruto Archipelago, Mozambique. Collectively, these efforts contributed over 11,000 km² of new seafloor coverage to the global GEBCO grid.

WIObathy established a foundational regional bathymetric compilation that supports marine spatial planning, maritime safety, climate resilience, and sustainable Blue Economy development, demonstrating that data harmonization and regional collaboration can significantly advance ocean floor mapping.

KEYWORDS

Seabed 2030; multibeam echosounder; satellite-derived bathymetry; marine spatial planning; Blue Economy

O 4 . 4 · *MARITIME SECURITY* · ORAL PRESENTATION

The 4D Chain of Deterrence: A Multidisciplinary Framework Bridging the Gap between Maritime Surveillance and Legal Enforcement against IUU Fishing in Africa

AUTHORS	Romain Langeard, Steven Lutz, Viviane Koutob
AFFILIATION	GRID-Arendal, Norway; Trygg Mat Tracking (TMT)
PRESENTER	Romain Langeard, GRID-Arendal
EMAIL	Romain.langeard@grida.no

ABSTRACT

Illegal, Unreported, and Unregulated (IUU) fishing remains a primary threat to the food security and economic sovereignty of African coastal states, affecting over 150 million people. While advancements in remote sensing have increased 'detection,' a persistent 'enforcement gap' prevents maritime intelligence from translating into legal prosecution.

This research evaluates the '4D' framework — Detection, Deterrence, Documenting, and Defunding — as a multidisciplinary solution to close the enforcement gap. The study utilizes a socio-technical case study methodology, synthesizing results from regional pilot projects in the Gulf of Guinea and the South-West Indian Ocean. The approach integrates high-resolution satellite data (AIS/SAR) and UAV-based aerial surveillance with a legal-institutional analysis of the Port State Measures Agreement (PSMA) and the Fisheries Transparency Initiative (FiTI) standards.

Initial findings indicate that the 'Visibility Gap' is only one of four critical failure points. Significant deterrence is achieved only when surveillance is coupled with 'Documenting' (identifying beneficial ownership) and 'Defunding' (engaging financial actions impacting real beneficiaries of IUU fishing activities, such as insurance and banking sectors). Evidence suggests that inter-agency 'Contact Groups' effectively break administrative silos, significantly increasing the success rate of port denials and legal sanctions.

The 4D framework provides a scalable, evidence-based roadmap for coastal and island states to operationalize maritime security, transforming high-level Sustainable Blue Economy commitments into concrete maritime justice and long-term deterrents against illegal operators.

KEYWORDS

Transborder cooperation; Fisheries governance; Port State Measures; Remote Sensing; Maritime Justice

O 4 . 5 · *MARITIME SECURITY* · ORAL PRESENTATION

Strengthening Governance and Community Institutions to Combat Illegal, Unreported, and Unregulated (IUU) Fishing in the Western Indian Ocean

AUTHORS	Stephen Nduvi
AFFILIATION	Global Centre for Policy and Strategy (GLOCEPS)
PRESENTER	Stephen Nduvi, Global Centre for Policy and Strategy
EMAIL	stevenduvi88@gmail.com

ABSTRACT

The Western Indian Ocean is a critical economic and ecological lifeline for Eastern African states including Kenya, Tanzania, Mozambique, Somalia, Seychelles, and Comoros. However, Illegal, Unreported, and Unregulated (IUU) fishing has emerged as a persistent threat undermining marine sustainability, economic development, and regional security. Coastal states in the region lose hundreds of millions of dollars annually due to illicit fishing activities, while fish stocks continue to decline at unsustainable rates.

This policy analysis examines governance and enforcement weaknesses that enable illicit extraction within the region's fisheries sector. Using a qualitative policy review approach, the study identifies four interconnected bottlenecks sustaining the crisis: weak institutional capacities among community-level fisheries governance structures such as Beach Management Units (BMUs); opaque beneficial ownership arrangements that conceal criminal financiers behind fishing fleets; fragmented maritime governance systems operating in institutional silos; and severe maritime enforcement deficits across vast and poorly monitored maritime territories.

The study argues that effectively addressing IUU fishing requires a comprehensive governance response that integrates community empowerment, institutional reform, and stronger regional coordination. Key policy recommendations include strengthening the operational capacity and technological capabilities of BMUs and Fisheries Cooperative Associations; enhancing transparency in vessel ownership and financial flows; establishing unified regional vessel blacklisting mechanisms; creating National Maritime Information Fusion Centres to improve intelligence sharing; and expanding sustained maritime patrols through national investment, donor partnerships, and regional joint enforcement initiatives.

KEYWORDS

Blue Economy Governance; Maritime Security; Coastal Livelihoods; Fisheries Transparency

THEME 4 · MARITIME SECURITY

POSTER PRESENTATIONS

P 4 . 1 · *MARITIME SECURITY* · POSTER PRESENTATION

Assessing Quantities, Causes, Mitigation and Prevention Measures for Abandoned, Lost, or Otherwise Discarded Fishing Gear (ALDFG) in Kenya

AUTHORS	Kombo M. M., Okuku E. O., Owato G., Mwalugha C., Mbuche M., Otieno K.
AFFILIATION	Kenya Marine and Fisheries Research Institute
PRESENTER	Maureen Kombo, Kenya Marine and Fisheries Research Institute
EMAIL	mokeirakombo@gmail.com

ABSTRACT

Marine litter, particularly abandoned, lost, or discarded fishing gear (ALDFG) and end-of-life fishing gear (EoLFG), threatens ocean health, coastal economies, and biodiversity. Once lost, they remain for decades, causing marine animal entanglement, habitat destruction, and navigational hazards. Tackling their impacts requires urgent, evidence-based management strategies.

To better understand the extent and causes of fishing gear loss along the Kenya coast, a survey of 439 fishers was carried out. The study identified key gaps, including: limited awareness of ALDFG hotspots (44.3%), low retrieval and return of lost gear (70%), lack of structured management systems, and no established market for stored gear. Disposal practices remain informal, with repurposing (57%), burning (31.4%), storing (14.3%), selling (10.4%), and beach dumping (11.6%) being the most common methods. Seasonal peaks in fishing during the Northeast Monsoon (November to April) further increase gear use and loss.

The study findings show that ALDFG and EoLFG are polluting marine environments and causing ghost fishing, with little effort to improve their management. There is an urgent need for clear gear reporting guidelines, structured end-of-life management systems and awareness programmes integrated into county government frameworks. Strengthening local capacity and incentivising pollution reduction initiatives will be essential to lower ALDFG and EoLFG, protect marine biodiversity, and safeguard livelihoods that depend on healthy coastal ecosystems.

KEYWORDS

Marine litter; ALDFG; EoLFG; Ghost fishing; Kenya

P 4 . 2 · *MARITIME SECURITY* · POSTER PRESENTATION

From Data to Dollars: Leveraging Digital MRV Frameworks to Unlock Blue Economy Potential

AUTHORS	Alex Shyy, Yunching Tseng, Regine Liu
AFFILIATION	International Cooperation and Development Fund
PRESENTER	Regine Liu, International Cooperation and Development Fund (TaiwanICDF)
EMAIL	alex.shyy@icdf.org.tw

ABSTRACT

As the East African Community (EAC) advances its 'Blue Horizon' strategy, a critical barrier remains: the need for robust, verifiable Monitoring, Reporting, and Verification (MRV) data baselines. Without accurate marine data, coastal nations struggle to access climate finance, quantify blue carbon, and combat Illegal, Unreported, and Unregulated (IUU) fishing.

This research presents the 'Palau Model,' a digital ocean governance framework spearheaded by the International Cooperation and Development Fund. The model integrates a Vessel Monitoring System (VMS) with digital catch reporting, enabling the establishment of electronic baselines through granular data collection — including species, catch locations, and timestamps. By transitioning from paper logs to a centralized digital database with integrated analytics, the project transformed raw operational data into actionable management insights and a transparent MRV foundation for sustainable fisheries.

Findings indicate that digital footprints from integrated monitoring serve as a robust basis for institutional capacity and data integrity. This study explores transferring these Digital MRV practices to the East African context to support the EAC Regional Blue Economy Strategy (2025–2034). By establishing reliable electronic baselines, East African nations can bridge the 'data gap' hindering sustainable management, implementing field-proven tools like geo-fencing and automated analytics.

A verifiable MRV framework is an essential foundation for addressing practical and technical barriers in the blue economy, enabling bankable, workable, and scalable projects that reduce investment risks and attract diverse financing, such as Blue Bonds and Green Climate Fund (GCF) support.

KEYWORDS

Digital Transformation; Ocean Governance; Climate Finance; South-South Cooperation; Electronic Monitoring

P 4 . 3 · *MARITIME SECURITY* · POSTER PRESENTATION

Hydrospatial Architecture for Resilient Marine Observation in Small Island Developing States

AUTHORS	Francesca Adrienne
AFFILIATION	Seychelles Hydrospatial Observatory for Research and Exploration (SHORE) Institute
PRESENTER	Francesca Adrienne, SHORE Institute
EMAIL	connect@francescaadrienne.com

ABSTRACT

Islands in the Western Indian Ocean sit at the frontline of climate impacts, blue economy expansion and ocean data inequity, yet their seafloor and coastal waters remain the least mapped and least represented in decision making. The Hydrospatial Analytics for Resilient Marine Observation & Navigation through Innovative Science & Engagement (HARMONiSE) Project is designed for the realities of Small Island Developing States, focusing on Seychelles. The project aims to develop, test and deliver a prototype hydrospatial architecture and an open data environment that can generate decision-ready ocean information to support a sustainable blue economy in Seychelles.

Building on emerging work on marine spatial data infrastructures, the project will integrate seafloor mapping, coastal ocean observations and community knowledge into a modular architecture that can operate in data-limited, capacity-constrained contexts. Methodologically, the project combines targeted seabed and coastal mapping, the design of an open hydrospatial data environment, and participatory engagement with local agencies and communities to co-interpret and apply the resulting information in planning and management. Expected outputs include a documented architecture design, a pilot open data platform and co-developed use cases for tourism, fisheries, conservation and marine spatial planning.

HARMONiSE is conceived as a science and technology backbone for a sustainable blue economy, strengthening Seychelles' capacity to produce, share and govern high-resolution ocean knowledge in line with national priorities for innovation, knowledge-led development and long-term stewardship of marine ecosystems. It is expected to offer pathways for marine protection, climate resilience and ocean finance. As it matures, the project aims to strengthen Seychelles' position as a regional hub for hydrospatial science by building local capabilities in ocean data production, analysis and governance, demonstrating how a SIDS-designed architecture can deliver rigorous science while directly informing sustainable blue economy strategies.

KEYWORDS

Ocean data governance; ocean justice; marine data equity; coastal observation networks; SIDS

P4.4 · *MARITIME SECURITY* · POSTER PRESENTATION

Whale Alert: Reducing Ship Strike Risk for All Vessels through Collaborative Sharing of Sightings and Detections along with Approach Guidelines and Management Zones

AUTHORS	Deanna Richburg Zetterlind, Virgil Zetterlind
AFFILIATION	Conserve.io
PRESENTER	Deanna Richburg Zetterlind, Conserve.io
EMAIL	deanna@conserve.io

ABSTRACT

The Whale Alert mobile app was first released in 2014 to disseminate seasonal and dynamic management zone information for north Atlantic right whales. Subsequent releases added support for citizen science sighting reporting for all large cetaceans with a focus on North America. In 2025, Whale Alert's geographic focus was expanded to cover European waters including the Mediterranean, with outreach to Europe-based commercial shipping companies, ferries, and the sailboat racing communities to drive adoption. Whale Alert is available for free in English, French, and Spanish.

In early 2026, an improved desktop-based Whale Alert was launched to target large ship bridge use where mobile devices are not allowed. Whale Alert aggregates sightings and automated detections from its own users and a growing network of third parties including protected species observers, volunteer naturalists, government observing programs, and robots for whales. Work is underway to integrate new, automated detection systems based on cameras and other sensors to Whale Alert.

We are onboarding additional countries with local management zones, regulations, and boater guidelines with a focus on Small Island Developing States (SIDS), and Whale Alert now works globally. This presentation shares lessons learned and current work in expanding Whale Alert's network of sighting and detection sources and increasing uptake of the aggregated information by third-party information systems used in vessel operations and planning.

KEYWORDS

Marine Mammal Protection; Citizen Science; Conservation Technology; Sustainable Shipping

P 4 . 5 · *MARITIME SECURITY* · POSTER PRESENTATION

WSR Model in Bahía de Todos Santos: Surf Ecosystems, Surfonomics and Community-Led Territorial Defense

AUTHORS	Armando Efraín Olachea García
AFFILIATION	Save The Waves Coalition
PRESENTER	Armando Efraín Olachea García, Save The Waves Coalition
EMAIL	efrain@savethewaves.org

ABSTRACT

This presentation examines the World Surfing Reserves (WSR) model — an initiative of Save The Waves Coalition that identifies, values and protects iconic surf breaks through participatory processes and community-led conservation — as applied in Bahía de Todos Santos (Ensenada, Mexico). It demonstrates that surf ecosystems (wave breaks and associated nearshore habitats) are undervalued natural assets with measurable socioecological and economic importance.

Using a mixed-methods approach (ecological monitoring, policy analysis, stakeholder interviews, participatory mapping and surfonomics valuation), we document how the WSR designation mobilized local organizations, strengthened social and legal recognition of surf breaks, and produced concrete conservation outcomes: reduction of damaging activities in priority areas, incorporation of surf values into planning instruments, and improved monitoring systems.

The case analyzes socio-environmental conflict generated by a proposed port expansion with potential to permanently alter wave breaks and coastal ecosystems. Through coordinated legal, scientific and political strategies — strategic litigation, technical briefs, alliances with fishers and tourism stakeholders, and public mobilization — the coalition secured a public commitment by the President of Mexico, announced on 2 February 2026, to suspend the project.

We present methodological steps, key surfonomics indicators, and a replicable toolkit for practitioners to rapidly value surf breaks, generate participatory evidence, design strategic legal-policy interventions, and build resilient community stewardship. The case demonstrates that surf-focused conservation instruments, grounded in rigorous socioecological evidence and inclusive mobilization, are effective for territorial defense and advancing sustainable blue economy outcomes.

KEYWORDS

*surfonomics**; surf reserves; coastal governance; community stewardship; socioecological valuation*

THEME 05

SUSTAINABLE FISHERIES

Evidence and innovation for fisheries and aquaculture that sustain ocean health, food security, and dignified livelihoods.

5 Oral Presentations · 5 Poster Presentations

THEME 5 · SUSTAINABLE FISHERIES

ORAL PRESENTATIONS

O 5 . 1 · *SUSTAINABLE FISHERIES* · ORAL PRESENTATION

Contemporary Reef Fisheries Governance and Institutional Fit in Kenya

AUTHORS	Anastasia Smith, Prof. Christina Hicks, Prof. Nick Graham, Dr. Omukoto Johnstone, Dr. Antonio Allegretti, Dr. James Robinson
AFFILIATION	Lancaster University; Kenya Marine Fisheries Institute; Envision
PRESENTER	Anastasia Smith, Lancaster University
EMAIL	a.smith55@lancaster.ac.uk

ABSTRACT

The devolution of coral reef fisheries governance in Kenya through Beach Management Units (BMUs) was intended to strengthen community participation and improve sustainability outcomes. However, questions remain regarding the extent to which these systems meaningfully integrate local voices and align with community priorities. This study evaluates the institutional fit between formal governance frameworks and the socio-ecological realities of reef-dependent communities, with particular attention to community participation, customary marine tenure, and gender inclusion.

Guided by an interactive governance framework, the study employs a qualitative research design combining open-ended and semi-structured interviews with government officials, NGO representatives, BMU leaders, and other stakeholders across local and national scales. Fieldwork was conducted in four coral reef-dependent sites — Kilifi Central, Munje, Mwakamba, and Kuruwitu — in collaboration with the Kenya Marine and Fisheries Research Institute (KMFRI).

Results demonstrate that while BMUs serve as a formal mechanism for local engagement, their influence is constrained by persistent centralization and limited consultation in policy development, including recent regulatory reforms. Perceived authority remains concentrated within national institutions, undermining the intent of devolution. Furthermore, uneven NGO engagement has created spatial disparities in capacity-building support, while gender inclusion efforts rarely extend beyond nominal representation to transformative participation.

These findings highlight a misalignment between governance structures and community realities. The study provides policy-relevant recommendations to strengthen institutional fit, including enhancing participatory decision-making, supporting under-resourced BMUs, and embedding gender-transformative approaches to advance inclusive and effective coral reef fisheries governance in Kenya.

KEYWORDS

Co-management; BMUs; Customary Marine Tenure; Gender Inclusion; Power misfit

O 5 . 2 · *SUSTAINABLE FISHERIES* · ORAL PRESENTATION

ReefFish: Deep Learning-Based Reef Fish Monitoring for Fisheries Management along the East African Coast

AUTHORS	Jules Gerard, Leandro Di Bella, Filip Huyghe, Marc Kochzius
AFFILIATION	Vrije Universiteit Brussel (VUB), Brussels, Belgium
PRESENTER	Jules Gerard, Vrije Universiteit Brussel
EMAIL	julesgerard91@gmail.com

ABSTRACT

Coral reef fish communities underpin small-scale fisheries and food security across the Western Indian Ocean (WIO), yet their monitoring remains constrained by the limitations of existing approaches. Underwater visual census (UVC) surveys are labour-intensive and time-consuming to analyses, while molecular methods do not capture key ecological information such as abundance, size, and behaviour. Scalable approaches that integrate emerging technologies into existing monitoring programmes are therefore needed to support evidence-based fisheries management.

Here we present ReefFish, a high-resolution coral reef fish detection dataset derived from diver-operated line-intercept transects collected along the coasts of Kenya and Tanzania (2023–2025). The dataset comprises approximately 1,000 images extracted from 47 transects, with around 6,800 annotated fish instances across 25 families. All visible individuals are annotated at a consistent family-level resolution using full-frame, multi-individual labelling that preserves assemblage structure.

We evaluated eight detection models as a diagnostic framework to assess how dataset characteristics influence detection performance under realistic survey conditions. Results show that fish presence can be reliably detected, while family-level classification remains more sensitive to challenging visual conditions such as small body size and low visibility. These patterns highlight the influence of object scale, image quality, and ecological complexity on detection outcomes.

This work demonstrates that deep learning can complement existing monitoring programmes by reducing processing time and increasing data throughput, enabling more frequent and spatially extensive assessments of reef fish communities. Such approaches can support adaptive fisheries management, improve detection of ecological change, and strengthen evidence-based decision-making in the WIO.

KEYWORDS

Deep Learning; Underwater Imagery; Biodiversity Assessment; Small-Scale Fisheries; Computer Vision

O 5 . 3 · *SUSTAINABLE FISHERIES* · ORAL PRESENTATION

Achieving Sustainable Development Goals through Small Scale Seafood Production in Kenya

AUTHORS	Fondo Esther N., Bitoun Rachel E., Kimani Edward N., Wambiji Nina, Munga Cosmas N., Barabara Mwaka S., Maina George W., Ishmael Nimrod, Mwandikwa David, Busolo Bonface, Abas Sinina, Okeri Maorine, Devillers Rodolphe
AFFILIATION	Kenya Marine and Fisheries Research Institute; Espace-Dev (IRD, Univ. Montpellier); Mpala Research Centre; Technical University of Mombasa; Kenya Fisheries Service; The Nature Conservancy; CORDIO East Africa
PRESENTER	Fondo Esther N., Kenya Marine and Fisheries Research Institute
EMAIL	efondo@yahoo.com

ABSTRACT

Small-scale fisheries (SSF) play a crucial role in supporting economic growth, job creation, and providing healthy, affordable food. Small-scale artisanal coastal fisheries are characterized as being multi-gear, multi-species and landed at multiple landing sites, and thus complex to understand and manage. In Kenya, approximately 80% of marine production is by small-scale artisanal fishers.

An expert-based rapid appraisal framework was used to identify and characterize the relationships between SSF and the Sustainable Development Goals (SDGs). The framework includes 32 of the 169 SDG targets belonging to 12 of the 17 SDGs that are related to SSF. Forty-four variables were used to measure fisheries' contributions to the 32 SDG targets, with variable scoring performed using empirical evidence and multi-stakeholder expert knowledge.

Small pelagic and shrimp fisheries display higher overall contributions to SDGs than other fisheries, while handline and octopus display the lowest. Overall, the SSF make notable contributions and achievements to multiple SDGs including SDGs 1, 2, 3, 10, 12 and 16, and support sustainable blue economy. The study promoted cooperation among stakeholders; large data and information gaps in SSF are now being filled, while improved teamwork and information sharing is ensuring SSF sustainability.

Increased local data collection has helped in better understanding the role that SSF plays in sustainable development and the trade-offs that exist between the SDGs, which will guide national policies and initiatives.

KEYWORDS

Artisanal fisheries; sustainability; stakeholders; SDGs; Blue Economy

O5.4 · SUSTAINABLE FISHERIES · ORAL PRESENTATION

A Decade in Review (2014–2024): Assessing the Sustainability and Management Trajectories of Kenya's Priority Marine Fisheries

AUTHORS	Gladys Okemwa, Edward Kimani, Esther Fondo, George Waweru, Benedict Kiilu, Stephen Ndegwa, Elizabeth Mueni
AFFILIATION	Kenya Marine and Fisheries Research Institute, Mombasa, Kenya; The Nature Conservancy, Africa Regional Office, Nairobi, Kenya; Kenya Fisheries Service, Mombasa, Kenya
PRESENTER	Gladys Okemwa, KMFRI
EMAIL	gokemwa@kmfri.go.ke

ABSTRACT

Over the past decade, the sustainable management of Kenya's marine fisheries sector has become a central pillar of the national Blue Economy agenda. The sector balances the dual goals of economic development and ecological sustainability, yet an important question remains regarding the true status of exploited stocks and the effectiveness of current management approaches. We synthesize a decade of scientific evidence (2014–2024) on the status of selected priority fisheries, integrating multi-source datasets including fishery-dependent catch records, biological sampling, and stock assessment outputs, to provide a comprehensive examination of Kenya's priority commercial marine fisheries.

The emerging picture is mixed. While some stocks remain relatively stable, several nearshore fisheries show consistent and concerning signs of overfishing and reduced productivity. Coastal reef and lagoon systems remain under the greatest pressure, with key indicators showing that priority species are increasingly harvested below their size at reproductive maturity. These contrasting trajectories highlight the need for differentiated and targeted management responses.

Beyond diagnosis, we highlight key actions implemented over the decade to support the sustainable management of Kenya's marine fisheries: (i) modernizing fisheries monitoring through digital, near real-time data systems to reduce information gaps; (ii) scaling up gear transition and exchange programmes to eliminate destructive fishing practices; (iii) developing fishery management plans, National Plans of Action, and science-based harvest control measures to regulate fishing effort; (iv) strengthening inclusive co-management to enhance participation of women, youth and local communities; (v) expanding active community-based habitat restoration to protect critical "blue infrastructure", including spawning and nursery grounds; and (vi) exploring the potential of underutilized offshore fisheries resources. This evidence-to-action pathway demonstrates Kenya's transition toward more adaptive and science-based fisheries management, supporting long-term sustainability, climate resilience, and the livelihoods of coastal communities.

KEYWORDS

Marine fisheries; stock assessment; fisheries management; sustainability; time-series analysis

O5.5 · SUSTAINABLE FISHERIES · ORAL PRESENTATION

Development and Application of a Loop Mediated Isothermal Amplification (LAMP) Assay for the Detection of White Spot Syndrome Virus (WSSV) in Shrimp in Mozambique

AUTHORS	Ervinio da Ana Eusébio, Vanadia Renato Massingue, Thoko Flav Kapalamula, Valera Lucena Dias, Célio Machaieie, Amélia Mondlane-Milisse, Stephen Mutoloki
AFFILIATION	Lilongwe University of Agriculture and Natural Resources (LUANAR), Malawi; Eduardo Mondlane University, Mozambique; Norwegian University of Life Sciences (NMBU), Norway
PRESENTER	Ervinio da Ana Eusébio, LUANAR / Eduardo Mondlane University
EMAIL	erviniolitsuri@gmail.com

ABSTRACT

White Spot Syndrome Virus (WSSV) is one of the most damaging viral pathogens affecting shrimp aquaculture worldwide. In Mozambique, the 2011 outbreak caused substantial economic losses and highlighted the need for accessible and rapid diagnostic tools.

This study aimed to develop and validate a Loop-Mediated Isothermal Amplification (LAMP) assay for the detection of WSSV under local laboratory conditions. Primers targeting conserved regions of the wsv343 and wsv360 genes were designed and systematically optimized for incubation temperature, reaction time, and primer concentration. The optimized assay showed consistent amplification at 61 °C for 30–60 minutes and reached a detection limit of 10^{-9} ng/µl, outperforming conventional PCR. No cross-reactivity occurred with IHHNV or DIV1.

Field testing across 50 wild shrimp samples from five districts in Zambézia Province revealed a 14% prevalence of WSSV (95% CI: 4.4–23.6%), with heterogeneous distribution across districts, indicating persistent environmental circulation.

These results demonstrate that the LAMP assay provides a rapid, specific, and cost-effective method for WSSV surveillance. Its simplicity and reduced equipment needs make it suitable for decentralized laboratories and field use. Adoption of this assay can strengthen biosecurity, support timely outbreak response, and contribute to sustainable shrimp aquaculture in Mozambique. This study provides a practical framework for local disease monitoring and enhances resilience in the aquaculture sector.

KEYWORDS

Aquatic animal health; Molecular diagnostics; Biosecurity; Viral surveillance

THEME 5 · SUSTAINABLE FISHERIES

POSTER PRESENTATIONS

P5.1 · SUSTAINABLE FISHERIES · POSTER PRESENTATION

Influence of Rocky Tidal Pool Characteristics on Diversity and Abundance of Fish in Tudor Creek, Kenya

AUTHORS	Immaculate Kinyua, Chrisestom M. Mlewa, James Mwaluma
AFFILIATION	School of Pure and Applied Sciences, Department of Biological Sciences, Pwani University, Kilifi, Kenya; Kenya Marine and Fisheries Research Institute, Mombasa, Kenya
PRESENTER	Immaculate Kinyua, Pwani University / KMFRI
EMAIL	immaculate.kinyua@example.org

ABSTRACT

The intertidal zone, including sandy shores, mudflats, coral reefs and rocky shores, plays a vital role in supporting local fisheries and coastal livelihoods. Tropical rocky intertidal zones are poorly studied, yet they hold significant ecological and commercial value that should be considered when developing coastal management strategies. This study examined how rocky pool characteristics on different substrata influence the diversity and abundance of fish species in the rocky intertidal zone of Tudor Creek, Kenya. Monthly fish sampling from selected 'sandy' and 'seagrass' tidal pools was conducted using scoop nets with a 500 µm mesh size, alongside measurements of physico-chemical parameters such as temperature and salinity.

A total of 1,906 fish individuals belonging to 35 families and 85 taxa were recorded during the study, including different life stages of permanent residents, transient species, and species typically associated with coral reef habitats. Overall, seagrass-dominated pools supported a greater number of species than sandy pools. The family Pomacentridae was the most dominant, representing 23% of all individuals, followed by Apogonidae (22%), Gerreidae (14%), Blenniidae (10%), and Gobiidae (6%). Fish density was significantly affected by pool volume, with higher densities found in smaller pools that also exhibited the most extreme physico-chemical variability.

The higher diversity in seagrass pools can be attributed to the structural complexity of seagrass beds, which offer protection from predators and access to food resources. The presence of species in both substrata suggests some degree of ecological overlap and habitat flexibility, allowing species to use resources across multiple pool types. These findings indicate that rocky tidal pools serve as important recruitment areas for coastal fish and play a critical role in replenishing fish populations. Protecting and managing these areas is therefore essential for the long-term sustainability of fisheries and the well-being of coastal communities.

KEYWORDS

Intertidal zone; life stages; coastal livelihoods; fisheries management; Tudor Creek

P 5 . 2 · SUSTAINABLE FISHERIES · POSTER PRESENTATION

From Reef to Landing Site: Trophic-Level Responses to Fishing Technology and Spatial Variation in Kenyan Coastal and Marine Small-Scale Fisheries

AUTHORS	John Ndarathi Ngatia, Cosmas Nzaka Munga, Huxley Mae Makonde, Levy Otwoma, Marc Kochzius
AFFILIATION	Technical University of Mombasa; Kenya Marine and Fisheries Research Institute; Vrije Universiteit Brussel
PRESENTER	John Ndarathi Ngatia, Technical University of Mombasa
EMAIL	nngatia@gmail.com

ABSTRACT

The trophic structure of reef fish catches provides a powerful diagnostic lens for evaluating ecosystem conditions and the ecological footprint of fisheries. This study evaluated spatial and seasonal variation in catch per unit effort (CPUE), mean trophic level (TL), and trophic CPUE across five artisanal fish landing sites (Shimoni, Gazi, Mkunguni, Kilifi, and Mayungu) in Kenya, and dominant propulsion–gear categories operating during the Northeast Monsoon (NEM) and Southeast Monsoon (SEM) seasons.

A total of 44,652 catch records were analyzed using linear models to assess the influence of propulsion–gear combinations, seasons, and sites on catch yields and trophic composition. Log-transformed CPUE varied strongly among propulsion–gear combinations, with motorized dhow-based fisheries consistently exhibiting higher CPUE than traditional canoe-based gears. The CPUE model explained a large proportion of variation ($R^2 = 0.89$), identifying dhow-gillnets and ring nets as the most productive vessel-gear combination types. Mean TL showed significant variation among propulsion–gear combinations, between seasons, and across sites (adjusted $R^2 = 0.16$), with dhow-based gears targeting higher trophic-level species (3.70 ± 0.08) compared with most canoe-based gears.

These results demonstrate that propulsion–gear combinations function as integrated technological filters, consistently shaping trophic signatures across seasons. The study highlights the necessity for gear-sensitive, site-specific management to safeguard the functional integrity of Kenya's nearshore reef ecosystems within Kenya's evolving blue economy and co-management frameworks.

KEYWORDS

Fishing down the food web; Beach Management Units (BMUs); Marine Trophic Index (MTI); Artisanal; Food security

P5.3 · SUSTAINABLE FISHERIES · POSTER PRESENTATION

Community-Led Reef Closures for Octopus Fisheries: Supporting Ecological Health and Sustainable Livelihoods — Case of Kilwa, Tanzania

AUTHORS	Kaitira Benard, Pooja Solanki, Lydia Mgimwa
AFFILIATION	Sea Sense, Tanzania
PRESENTER	Kaitira Benard, Sea Sense
EMAIL	benardkaitira3@gmail.com

ABSTRACT

Octopus fishing is typically carried out by artisanal fishers, using simple methods such as hand collection during low tide, sticks, or small spears. The octopus is highly sensitive to overexploitation due to its biological characteristics — it grows fast and has short life cycles, meaning it can recover quickly if managed but can also collapse rapidly if overfished.

Community reef closures have emerged as an effective locally driven approach for managing octopus fisheries in coastal areas of Tanzania. These closures, implemented within Locally Managed Marine Areas (LMMAs), play a significant role in restoring marine ecosystems while improving the productivity of small-scale fisheries and improving the livelihoods of coastal fishers. These closures allow octopus populations to grow and reproduce undisturbed for a period of often 3 months.

The methodology was conducted through community engagement meetings to raise awareness and build strong local ownership; mapping to identify suitable octopus fishing grounds for closure areas; establishment of temporary reef closures with agreed rules, duration, and defined boundaries; community training on monitoring and enforcement; and baseline and ongoing monitoring of catch, size, and fishing effort.

The project resulted in functioning reef closure areas protecting octopus habitats. Catch per unit effort increased, with larger octopus of 4 kg improving total yields. Fishers' incomes improved by USD 30 during reopening, supporting livelihoods and household food security. Compliance with regulations increased. Strong recovery of ecological health was observed in all closed areas.

KEYWORDS

Temporary reef closure; Octopus Fishery; Household income; LMMA; Tanzania

P5.4 · SUSTAINABLE FISHERIES · POSTER PRESENTATION

Integrating Artemia Production into Kenya's Blue Economy Policy Framework: Opportunities for Coastal Saltworks and Local Communities

AUTHORS	Hinzano Sheban, Morine Mukami Ngarari, Anthony Nzioka, Miriam Wainaina, Betty Nyonje, David Midumbi, Derrick Gitari, Mary Opiyo
AFFILIATION	Kenya Marine and Fisheries Research Institute, Shimoni Mariculture Center; KMFRI Mombasa; KMFRI Sagana Aquaculture Research Centre
PRESENTER	Hinzano Sheban, Kenya Marine and Fisheries Research Institute
EMAIL	hinsheban@kmfri.go.ke

ABSTRACT

Artemia (brine shrimp) represent a strategic, underutilized asset for Kenya's blue economy, with significant potential to transform coastal saltworks into high-value, integrated production systems. Despite rising domestic demand for high-quality live feed in aquaculture, Kenya remains heavily dependent on imported Artemia cysts, making the resource costly and sometimes unreliable in supply. Scaling up local Artemia production within existing saltworks offers a sustainable, affordable and locally driven solution to this challenge.

This study explores the multi-faceted benefits of Artemia integration in coastal saltworks. Due to its filter feeding characteristics, Artemia improves brine quality through microalgal control, resulting in cleaner brine, higher-quality salt crystals and reduced chemical inputs. Furthermore, the integrated production systems support circular economy principles by enabling simultaneous production of salt, Artemia cysts and biomass production within shared infrastructure, thereby maximizing resource efficiency and value addition. Beyond production benefits, Artemia act as effective bioindicators, supporting environmental monitoring and adaptive management.

Realizing this potential requires scalable production models that optimize salinity gradients, improve pond management and strengthen linkages between salt producers and other stakeholders such as researchers and hatchery managers. We argue that embedding Artemia production into national aquaculture strategies and blue economy policies, supported by targeted investment, research and public-private partnerships, is critical. Such integration will reduce import dependence, enhance salt industry value and promote climate-resilient livelihoods in Kenya's coastal communities.

KEYWORDS

Artemia; Blue Economy; Kenya; Integrated Saltworks; Aquaculture; Circular Economy

P5.5 · SUSTAINABLE FISHERIES · POSTER PRESENTATION

Lessons from AfriMAQUA: Regional Collaboration for Sustainable and Nutrition-Sensitive Marine Aquaculture in Africa

AUTHORS	David Mirera, Antoinette Adingra, Teejaswani Bachoo, Célestin Blé, Marissa Brink-Hull, and co-authors
AFFILIATION	Kenya Marine and Fisheries Research Institute; Centre de Recherches Océanologiques, Côte d'Ivoire; University of Mauritius; and regional partners
PRESENTER	David Mirera, Kenya Marine and Fisheries Research Institute
EMAIL	dimirera@yahoo.com

ABSTRACT

Marine aquaculture in Africa remains limited despite its potential to contribute to food and nutrition security, livelihoods, and the sustainable blue economy. Its development has been constrained by weak research capacity, limited technical training, and insufficient integration of fisheries and aquaculture into wider food and nutrition policy debates.

In this context, AfriMAQUA was established in 2019 as a collaborative network of researchers from several African countries and France, and was endorsed in 2023 as a programme of the UN Decade of Ocean Science for Sustainable Development. The network aims to strengthen South-South-North collaboration and promote sustainable and nutrition-sensitive marine aquaculture through research, training, and participatory exchange.

Collaborative activities have addressed integrated multi-trophic aquaculture, species diversification, sustainable feed development, nutritional evaluation of cultured species, and the socio-economic importance of shellfish farming in different African coastal contexts. These research efforts have been complemented by courses on integrated and sustainable aquaculture, specialized technical training, training on participatory approaches for nutrition-sensitive aquaculture, and multi-stakeholder workshops involving academia, government, the private sector, and civil society.

These experiences highlight the value of coordinated regional collaboration for strengthening exchanges among researchers and practitioners, supporting capacity development, and encouraging dialogue on marine aquaculture development in Africa. AfriMAQUA illustrates how research networks can help align scientific collaboration, training, and stakeholder engagement with broader sustainable blue economy objectives.

KEYWORDS

Global; Network; knowledge; exchange; training; marine aquaculture; Africa

THEME 06

MARINE POLLUTION

From plastics to microfibers, sewage and chemicals — confronting pollution sources, pathways, and impacts on ocean ecosystems and human health.

5 Oral Presentations · 5 Poster Presentations

THEME 6 · MARINE POLLUTION

ORAL PRESENTATIONS

O 6 . 1 · *MARINE POLLUTION* · ORAL PRESENTATION

Lagrangian Modeling of Marine Plastic Debris Transport in the Western Indian Ocean: The Interplay of Currents, Wind, and Diffusion along the Kenyan Coast

AUTHORS	Athman Salim Hussein
AFFILIATION	Coastal & Marine Sciences Programme, Kenya
PRESENTER	Athman Salim Hussein, Coastal & Marine Sciences Programme
EMAIL	athman.salim@coastalmarine.ac.ke

ABSTRACT

Marine plastic pollution constitutes one of the most pervasive threats to coastal and open-ocean ecosystems globally, and its trajectory is increasingly shaped by climate-driven modifications to regional ocean circulation. In the Western Indian Ocean — a region of exceptional biodiversity and strong socioeconomic dependence on fisheries and coastal tourism — the physical mechanisms governing the transport and stranding of plastic debris remain poorly constrained at high spatial resolution.

This study develops and applies a custom Lagrangian particle-tracking model to simulate the fate of buoyant plastic debris along the northern Kenyan coast (38.97°E – 41.44°E, 4.22°N – 1.74°S), forced by HYCOM global ocean current fields and ECMWF ERA5 reanalysis winds (windage coefficient = 0.02; wind scaling = 0.5), with stochastic diffusion ($D = 0.01$ m²/s) and a strict 5-metre beaching criterion applied over 193 hourly time steps.

Results reveal a clear two-phase transport regime: a rapid onshore transport event in the first half of the simulation resulted in 61.5% of particles beaching along the coast, driven primarily by HYCOM-resolved currents, after which no further beaching occurred and the remaining 38.5% persisted in stable offshore circulation. This bifurcation of particle fate into a near-term coastal impact group and a long-term offshore hazard group underscores the dominant role of mesoscale current structure over wind-driven advection in determining plastic stranding outcomes.

These findings provide a physically grounded baseline for prioritizing coastal waste management and motivate future work incorporating Stokes drift, larger particle ensembles, and CMIP6-forced climate scenarios to support regional probabilistic risk mapping.

KEYWORDS

marine plastic debris; Lagrangian particle tracking; HYCOM; ECMWF; Western Indian Ocean; coastal pollution; beaching dynamics; ocean transport modelling

O 6 . 2 · *MARINE POLLUTION* · ORAL PRESENTATION

Assessment of the Impact of Abandoned, Discarded or Lost Fishing Gear and Plastic on the Seabed

AUTHORS	Déthié Faye, Waly Ndiaye, Alassane Sarr, Selle Mbengue
AFFILIATION	Ministry of Fisheries, Maritime and Port Infrastructure, Department of Seabed Management and Exploitation, Dakar, Senegal
PRESENTER	Déthié Faye, Ministry of Fisheries, Senegal
EMAIL	dethifaye@gmail.com

ABSTRACT

Abandoned, lost, or discarded fishing gear (ALDFG) and plastic are a major concern for the sustainability of fisheries due to their socioeconomic and environmental impacts. In Senegal, particularly in Hann Bay, the problem of lost fishing gear and plastic is very significant due to the intensity of activities including small-scale fishing using numerous types of gear, industrial activities, and trade.

The overall objective of this study is to assess the impact of abandoned, lost, or discarded fishing gear and plastic on the seabed. The study was carried out in 2023 thanks to the Seabed Development Program of the Seabed Management and Exploitation Directorate. A set of diving equipment was used, including underwater cameras to take pictures and videos, and bottles and ropes to bring up recovered nets and any other heavy equipment found on the seabed.

A total of thirty (30) tons of waste were removed from the seabed. Inventories identified seven (07) types of gear and four (04) categories of plastic and other types of waste in Hann Bay. Their negative impacts were disproportionate on wildlife, marine habitats, the landscape, and the coastal population.

Given the scale of these impacts, managing pollution from plastic and fishing gear that has been abandoned, lost, or discarded is becoming a top priority, but it is important to note that this is an exceptionally complex task requiring an integrated approach that encompasses scientific, legislative, economic, and social aspects.

KEYWORDS

Seabed; plastic; lost; abandoned or discarded fishing gear; assessment; impact

O 6 . 3 · *MARINE POLLUTION* · ORAL PRESENTATION

Biodegradable Fishing Gear

AUTHORS	Kenya Marine and Fisheries Research Institute (KMFRI) — Catchgreen Project Team
AFFILIATION	Kenya Marine and Fisheries Research Institute, Mombasa, Kenya
PRESENTER	Emma Algotsson, KMFRI Catchgreen Project / South Africa
EMAIL	info@kmfri.go.ke

ABSTRACT

Plastic-based fishing gear is a major contributor to ghost fishing and marine plastic pollution in coastal ecosystems. Under the Catchgreen project, the Kenya Marine and Fisheries Research Institute (KMFRI) piloted the use of biodegradable polybutylene succinate (PBS) ropes and twines in artisanal fisheries and seaweed farming along the Kenyan coast. This study evaluated the technical performance, catch efficiency, and production outcomes of biodegradable materials compared with conventional plastic gear.

Gillnet modification trials in Tudor Creek (Mombasa County) compared partially biodegradable gillnets — incorporating PBS headropes and cotton twine joiners — with standard nylon nets. Across seven consecutive fishing days, modified nets caught 72 fish compared to 58 for normal nets, with no statistically significant differences in mean length, weight, or species diversity. Basket traps fitted with biodegradable joiners yielded higher total catch weight (22.45 kg vs. 10.9 kg) and significantly greater species diversity ($H' = 1.6$ vs. 0.7; $p \leq 0.05$).

Seaweed farming trials conducted from August 2023 to February 2025 in Kibuyuni, Kwale County, assessed 56 experimental ropes across nursery and community farms. In the KMFRI nursery, biodegradable ropes achieved an 8.5% higher mean productivity (2.72 ± 0.33 kg/seed) than conventional ropes (2.51 ± 0.30 kg/seed). Community farms recorded a 5.3% yield advantage for biodegradable ropes.

Overall, the findings demonstrate that biodegradable ropes and twines can match or exceed the performance of conventional plastic gear in artisanal fisheries and seaweed aquaculture, while offering a practical pathway to reduce ghost fishing and long-term marine plastic accumulation.

KEYWORDS

biodegradable fishing gear; ghost fishing; marine plastic; PBS ropes; seaweed farming; Kenya coast

O 6 . 4 · *MARINE POLLUTION* · ORAL PRESENTATION

When Circularity Meets Geography: Community-Led Logistics Governance for Marine Plastic Mitigation in Small Islands of the Indonesian Archipelago

AUTHORS	Kristanto Irawan Putra
AFFILIATION	BINTARI Foundation (PLASMA-B Programme), Indonesia
PRESENTER	Kristanto Irawan Putra, BINTARI Foundation
EMAIL	kristantoirawan.putra@gmail.com

ABSTRACT

Marine plastic pollution remains a critical threat to coastal and marine ecosystems, particularly in archipelagic regions, where waste management systems are fragmented and unevenly distributed. While global discourse often emphasizes technological innovation and recycling, less attention is given to the role of logistics governance and community-led systems in shaping plastic leakage pathways.

This paper presents practice-based research from small island communities in Maluku Province, Indonesia, focusing on Saparua and Banda Islands. The study builds on operational experience from the PLASMA-B Programme implemented by the BINTARI Foundation under the Ocean Grants Programme supported by UK International Development. Using field observations, stakeholder engagement, and waste flow analysis, the research examines how plastics move through inter-island logistics systems and how governance structures influence these flows.

Findings show that community-led working groups (Pokja) play a critical role in designing locally adapted waste collection and management systems, particularly in geographically isolated contexts. However, despite improvements in local collection and segregation, the effectiveness of plastic recovery is constrained by multi-stage logistics chains, high transportation costs, and the absence of nearby recycling infrastructure. Low-value plastics are often excluded from recovery systems, increasing the risk of leakage into marine environments.

By linking terrestrial waste governance with marine ecosystem protection, this research contributes to advancing inclusive and context-sensitive approaches to marine pollution mitigation and sustainable blue economy development in small island regions.

KEYWORDS

waste working groups; archipelagic governance; waste leakage pathways; decentralized recovery; coastal resilience

O 6 . 5 · *MARINE POLLUTION* · ORAL PRESENTATION

Assessment of Marine Litter on the Mogadishu Coastal Area: The Case of Lido and Urubo Beaches

AUTHORS	Abdinasir Abdulle Mohamed
AFFILIATION	City University of Mogadishu, Somalia
PRESENTER	Abdinasir Abdulle Mohamed, City University of Mogadishu
EMAIL	fiilaale114@gmail.com

ABSTRACT

Marine litter, particularly plastic debris, is a growing global environmental challenge with significant implications for marine ecosystems, coastal livelihoods, and sustainable ocean governance. In many developing coastal nations, including Somalia, limited waste management infrastructure and rapid coastal urbanization exacerbate the accumulation of debris in marine environments.

This study assesses the composition, sources, and management implications of marine litter along two major recreational beaches in Mogadishu — Lido and Urubo. The study employed a mixed-methods approach, combining beach litter surveys, direct observation, and structured questionnaires administered to coastal users including fishers and beach visitors (n = 30). Field sampling using quadrat-based surveys was conducted to quantify debris categories and composition.

Results identified 12 categories of marine debris, with plastics representing the dominant component. Plastics accounted for 55% of total debris at Lido Beach and 47% at Urubo Beach. Among the 11 plastic item types recorded, plastic beverage bottles were the most prevalent, comprising 49% of plastics at Lido and 45% at Urubo. Source attribution indicated that tourism and recreational activities contributed 67% of litter at Lido Beach, while land-based sources such as poor waste disposal systems accounted for 60% of debris at Urubo Beach.

The findings demonstrate that plastic waste is the predominant form of marine litter along Mogadishu's urban coastline, posing risks to marine biodiversity, fisheries productivity, and coastal tourism. The study highlights the need for policy interventions that integrate waste management, coastal governance, and public awareness, including improved municipal waste systems, regulations on single-use plastics, and community-based beach stewardship programmes.

KEYWORDS

macroplastics, coastal pollution; plastic waste; marine litter; Mogadishu

THEME 6 · MARINE POLLUTION

POSTER PRESENTATIONS

P6.1 · *MARINE POLLUTION* · POSTER PRESENTATION

A Scalable Ship-Based System for Large-Scale Marine Plastic Removal: 100 Days, 100,000 Tons, $500 Million

AUTHORS	Jianwen Zhang
AFFILIATION	Independent Researcher (Solid Waste Utilization, Marine Plastic Remediation)
PRESENTER	Jianwen Zhang, Independent Researcher
EMAIL	atlaseco956@gmail.com

ABSTRACT

This study presents a patent-pending ship-based system capable of removing 100,000 tons of plastic from the Pacific Ocean in 100 working days at a total cost of $500 million. The technology utilizes in-situ solidification with volcanic ash-based binders, eliminating the need for washing, drying, or land-based transport — thereby generating no secondary pollution (wastewater, fuel emissions, or solid residues).

The system has been tested and certified by SGS/TÜV with the following specifications: Leachate < 0.1 mg/L; Formaldehyde: 0.005 mg/L; Compressive strength: 5–15 MPa; Fire resistance: Class B1.

The resulting material can be converted into durable land reclamation products, offering a circular economy pathway for ocean plastic. This technology aligns with the conference's goals of advancing ocean health and scalable blue economy solutions.

KEYWORDS

marine plastic removal; ship-based system; in-situ solidification; circular economy; ocean remediation

P 6 . 2 · *MARINE POLLUTION* · POSTER PRESENTATION

Imprint of Human Activities Records Recovered at Monthly Resolution from Massive Porites lutea Coral Skeleton at Watamu National Marine Park in Kenya

AUTHORS	Nyinge N. Mwadzombo, Mwakio P. Tole, Guyo P. Mwashimba, Florence Le Cornec
AFFILIATION	Pwani University, Kilifi; Laboratoire d'Océanographie et du Climat (LOCEAN), Paris, France
PRESENTER	Nyinge N. Mwadzombo, Pwani University
EMAIL	n.mwadzombo@pu.ac.ke

ABSTRACT

The synergic interaction between natural and anthropogenic activities continues to compromise the health of the Kenyan coral reef ecosystems, especially in marine protected areas, through trace metal pollution. This study nominates two coral reef ecosystems in Watamu National Marine Park — the Mida Creek (a reef in an enclosed lagoon) and Richard Bennett (a reef that communicates with the open ocean) — to evaluate the impact of the synergic interaction between natural and anthropogenic activities on trace metal pollution.

Environmental markers preserved in a Porites spp. coral skeleton for seasonality (U and B/Ca), terrestrial inputs (Ba, Mn, and Fe/Ca), and urbanization (Cr, Ni, Cu, Zn, and Pb/Ca ratios) are integrated with multivariate analysis to distinguish between natural and anthropogenic coral stressors.

Results characterize the reef in Mida Creek as purely impacted by anthropogenic activities, whereas in Richard Bennett, seasonality seems to dominate. The main drivers responsible for the trace metal budget in Mida Creek were identified as antifouling effluents discharge (36.9%), municipal wastes (18.2%), and oil pollution (18%), whereas in Richard Bennett, seasonality (35.83%) and terrestrial inputs (19.84%) are identified as the main drivers.

These findings provide a baseline for assessing the relative contributions of natural and human-induced stressors to coral reef degradation in Kenyan marine protected areas, with important implications for coastal management and conservation policy.

KEYWORDS

*Environmental tracers; Coral Reef Ecosystems; Multivariate Analysis; Coral stressors; **Watamu*

P6.3 · *MARINE POLLUTION* · POSTER PRESENTATION

Microbial Contaminants Trail in Siganus sutor Landed by Artisanal Fishers along the Kenyan Coast

AUTHORS	Winnie Kadzo Jefwa
AFFILIATION	Kenya Marine & Fisheries Research Institute, Mombasa, Kenya
PRESENTER	Winnie Kadzo Jefwa, Kenya Marine & Fisheries Research Institute
EMAIL	wjefwa@kmfri.go.ke

ABSTRACT

Fish is highly susceptible to spoilage and environmental contamination, leading to quality deterioration and significant food safety concerns. At the Kenyan coast, untreated or partially treated sewage and other pollutants are frequently discharged into inshore waters, which also serve as artisanal fishing grounds. This study aimed to identify microbial contamination hotspots in Siganus sutor from artisanal fisheries in order to enhance fish safety and inform stakeholders about risks associated with pollution and poor handling practices.

Sampling sites were selected based on a pretested questionnaire covering both the North and South Coast of Kenya. Mtwapa and Tudor Creek represented polluted fishing grounds, while Mkunguni and Mayungu were selected as relatively pristine sites. Fish samples were collected immediately after capture and tracked along the value chain. Microbial analysis focused on total plate counts, coliforms, and specific pathogens including Escherichia coli, Salmonella spp., and Pseudomonas spp.

Results showed significantly higher microbial loads in fish from polluted sites compared to those from unpolluted areas. However, all tested microorganisms were detected across all fishing grounds and value chain nodes, regardless of handling practices. Sanitary handling methods were associated with reduced microbial growth. Fried fish samples exhibited the lowest microbial levels due to high cooking temperatures, though the presence of microorganisms in fried fish suggests possible post-processing contamination from frequent handling by consumers.

The consistent detection of fecal coliforms and pathogenic bacteria such as E. coli, Salmonella, and Enterococcus faecalis highlights potential public health risks. The findings underscore the need for improved hygiene practices and stronger regulatory measures across the fish value chain.

KEYWORDS

Fish; microbial; safety; value chain; artisanal; food safety; Kenya coast

P6.4 · *MARINE POLLUTION* · POSTER PRESENTATION

Reduced Plastic Pollution for Biodiversity Conservation and Improved Communities' Livelihoods

AUTHORS	Catherine Sezi Mwalugha, Eric Okuku, Maureen Mokeira, Gilbert Owato, Emma Allgotson
AFFILIATION	Kenya Marine and Fisheries Research Institute, Mombasa, Kenya
PRESENTER	Catherine Sezi Mwalugha, KMFRI
EMAIL	cmwalugha@kmfri.go.ke

ABSTRACT

Globally, the fisheries and aquaculture sector plays a vital role in enhancing food security, providing sustainable livelihoods, generating income and driving economic growth. Despite its significance, the sector also contributes notably to marine plastic pollution, which persists in the marine environment and causes substantial environmental and health impacts. These impacts are especially concerning in Africa, where approximately 12 million people depend on fisheries for their livelihood. Kenya's fisheries are characterized by small-scale artisanal operations, particularly the use of gillnets, which pose a complex challenge. Additionally, seaweed farming has seen exponential growth since its introduction in 2008 and involves plastic ropes that frequently become lost during bad weather, fragmenting into microplastics.

This study pilots the use of biodegradable nets and ropes in artisanal fisheries with the Mikindani Beach Management Unit (BMU) in Mombasa County, and in seaweed farming with the Kibuyuni seaweed farmers in Kwale County. Results from testing biodegradable gillnets showed the same fishing efficiency as traditional synthetic nets, measured by the species, size and number of fish caught. Furthermore, the mean seaweed biomass over 16 months across five locations was 8% higher than that of synthetic ropes.

Fishermen and farmers involved in the pilots will continue to fish and farm using biodegradable nets and ropes until they are no longer functional, in order to measure the longevity of the biodegradable materials and assess them through the end of their lifespan. This study offers a promising solution to marine plastic pollution by actively involving local communities in leading these initiatives, contributing to both environmental sustainability and food security.

KEYWORDS

Biodegradable ropes; marine plastics; fisheries; seaweed farming; Kenya

P6.5 · *MARINE POLLUTION* · POSTER PRESENTATION

Textile Microfibers in the Marine Environment: Sources, Transport, Impacts, and Implications for Ocean Sustainability

AUTHORS	Giuseppe Suaria
AFFILIATION	Consiglio Nazionale delle Ricerche, Istituto di Scienze Marine (CNR-ISMAR), Lerici, Italy
PRESENTER	Giuseppe Suaria, CNR-ISMAR
EMAIL	giuseppe.suaria@sp.ismar.cnr.it

ABSTRACT

The rapid growth of global textile production, now exceeding 130 million tonnes annually, has significantly increased the release of textile-derived microfibers into marine environments. These fibers, originating from both synthetic and natural materials, now dominate microplastic pollution, frequently accounting for up to 80–90% of particles recorded in marine surveys.

This presentation synthesizes current knowledge on the occurrence, sources, transport pathways, and accumulation of textile microfibers across oceanic systems, presenting original data from surface waters, deep-sea sediments, polar regions, and coastal environments. The analysis integrates field observations and methodological approaches used to quantify microfiber pollution, highlighting inconsistencies in sampling and reporting that hinder comparability across studies.

Results indicate that microfiber pollution is driven by both land-based sources (e.g., textile washing, wastewater discharge, atmospheric deposition) and oceanic transport processes, enabling long-range dispersal to remote regions. Fibers have been detected in marine organisms, food systems, and even human tissues, raising concerns about trophic transfer and potential health risks. Additionally, textile fibers act as vectors for hazardous chemicals such as dyes and additives, amplifying their ecological footprint.

The findings underscore major knowledge gaps, particularly regarding degradation rates, long-term ecological effects and standardized monitoring protocols. The study highlights the need for integrated mitigation strategies, including improved wastewater treatment, sustainable textile design, and regulatory frameworks targeting microfiber emissions.

KEYWORDS

microplastics; anthropogenic particles; wastewater discharge; pollutant transport; environmental monitoring

AUTHOR INDEX

The list below presents the principal presenting authors of the abstracts in this volume, organized alphabetically. Each entry shows the presentation ID, theme and page number of the corresponding abstract. (O: Oral Presentation; P: Poster Presentation)

PRESENTING AUTHOR	CODE	THEME	PAGE
Giuseppe Suaria, CNR-ISMAR	P6.5	*Marine Pollution*	143
Gladys Okemwa, KMFRI	O5.4	*Sustainable Fisheries*	109
Hinzano Sheban, Kenya Marine and Fisheries Research Institute	P5.4	*Sustainable Fisheries*	120
Immaculate Kinyua, Pwani University / KMFRI	P5.1	*Sustainable Fisheries*	114
Jethan d'Hotman, SAEON	O2.1	*Sustainable Blue Economy*	39
Jianwen Zhang, Independent Researcher	P6.1	*Marine Pollution*	136
Joel Güity Zapata, Cádiz University	P3.3	*Ocean–Climate Nexus*	75
John Ndarathi Ngatia, Technical University of Mombasa	P5.2	*Sustainable Fisheries*	116
Joseph Nyingi Kamau, Kenya Marine Fisheries Research Institute	O3.3	*Ocean–Climate Nexus*	65
Joshua Wambugu, Wageningen University & Research / CORDIO East Africa	P1.1	*Marine Protected Areas*	27
Jules Gerard, Vrije Universiteit Brussel	O5.2	*Sustainable Fisheries*	105
Kaitira Benard, Sea Sense	P5.3	*Sustainable Fisheries*	118
Kristanto Irawan Putra, BINTARI Foundation	O6.4	*Marine Pollution*	131
Linah Samra Minangi, KMFRI	P2.1	*Sustainable Blue Economy*	49
Matt Frost, Plymouth Marine Laboratory	P2.4	*Sustainable Blue Economy*	55
Maureen Kombo, Kenya Marine and Fisheries Research Institute	P4.1	*Maritime Security*	93
Meali Mohamed, Vanga Blue Forest CBO	O2.3	*Sustainable Blue Economy*	43
Ninyoha Madzitsa, Kenya Marine and Fisheries Research Institute	P2.3	*Sustainable Blue Economy*	53
Nyinge N. Mwadzombo, Pwani University	P6.2	*Marine Pollution*	137
O. Farouk, REEFolution Trust	O1.1	*Marine Protected Areas*	18
Prof. Dr. Christian Bueger, University of Copenhagen	O4.2	*Maritime Security*	85
Qiulin Liu, International Union for Conservation of Nature	P3.4	*Ocean–Climate Nexus*	77
Rachel Thoms, World Resources Institute	P1.4	*Marine Protected Areas*	33
Regine Liu, International Cooperation and Development Fund (TaiwanICDF)	P4.2	*Maritime Security*	95
Rob Barnes, GRID-Arendal	P2.2	*Sustainable Blue Economy*	51
Rodney Mugo, Kenya Marine and Fisheries Research Institute	P3.5	*Ocean–Climate Nexus*	79
Romain Langeard, GRID-Arendal	O4.4	*Maritime Security*	88
Sally Atieno Odunga, Vrije Universiteit Amsterdam	P3.1	*Ocean–Climate Nexus*	72
Stephen Nduvi, Global Centre for Policy and Strategy	O4.5	*Maritime Security*	90
Winnie Kadzo Jefwa, Kenya Marine & Fisheries Research Institute	P6.3	*Marine Pollution*	139
Youssouf Ben Ali Abdallah, ANAP	P1.2	*Marine Protected Areas*	29

OUR PARTNERS

The 11th Our Ocean Conference and its Academia And Research Pre-Conference Symposium have been made possible through the generous support and steadfast collaboration of our partners. Their commitment — financial, technical, and intellectual — has shaped every dimension of this gathering, from the abstracts assembled in this volume to the convening that brings together delegates from across continents.

We acknowledge with deep appreciation the institutions, governments, and organisations whose partnership has helped advance science-informed ocean stewardship in Kenya, across the Western Indian Ocean, and globally.

SPONSORS & ACKNOWLEDGEMENTS

SPONSORS

National Bank

Tabasuri DT SACCO Jawabu tunalo

Britam With you every step of the way

INSTITUTIONAL PARTNERS

Kenya Marine and Fisheries Research Institute (KMFRI) · State Department for the Blue Economy and Fisheries · State Department for Science, Research and Innovation · World Resources Institute

We extend our sincere gratitude to all sponsors, partners, the Scientific and Organizing Committee, session chairs, rapporteurs, reviewers, and the KMFRI Secretariat whose dedication has made this Symposium and its Book of Abstracts possible.

A CALL TO ACTION

The ocean is large and resilient, but it is not too big to fail. What we are taking out of the sea, what we are putting into the sea — these are actions undermining the most important thing the ocean delivers to humankind: a planet capable of supporting life as we know it.

We need to respect the oceans and take care of them as if our lives depended on it. Because they do.

DR. SYLVIA EARLE

Marine Biologist · National Geographic Explorer-in-Residence
Founder, Mission Blue · IUCN Patron of Nature

OUR OCEAN, OUR HERITAGE, OUR FUTURE

OOC 11 · KENYA · 2026

14–15 June 2026 | Pride Inn Paradise, Mombasa, Kenya
Organized by the Kenya Marine and Fisheries Research Institute