Participants on a field trip during the workshop “Ocean Acidification Experimental Set Up: From Scratch to results approach”, Mombasa, Kenya.
WIOMSA is currently implementing two initiatives: the **MASMA Programme and the Cities & Coasts (C&C) project**. Both initiatives have competitive research grant programmes overseen by separate Programme Committees (PCs). This year, for the first time, the two initiatives hosted a joint Grantees meeting on 14 to 15 November 2019 in Mombasa, Kenya.

While the competitive grant programmes are similar in some respects, they are quite different in their focus areas. **The priority of the MASMA programme is to support research focused on understanding the ecological or socio-ecological systems in the Western Indian Ocean (WIO) region**, whereas the C&C project has a much narrower scope. Its focus is coastal cities, which are recognized by both Agenda 2030 and the Paris Agreement as the transformative force for development in most countries. The C&C grant programme aims to support research that generates solutions-oriented knowledge required to address the complex challenges facing coastal cities in the WIO region. The project also supports research that improves the planning of coastal cities, and identifies the opportunities offered by coastal cities in advancing sustainable development. It is because of the marked differences in focus that the two grant programmes have separate PCs.
The 2019 joint grantees meeting was co-chaired by Prof Ian Bryceson (Acting Chair of the MASMA PC) and Prof Lena Gipperth (Chair of the C&C-PC). It served as a platform for grantees to present the results of their work to a wide audience and review and evaluate their performance based on the scientific results generated so far against their research objectives. The meeting was attended by 45 participants, including members of the PCs, the WIOMSA Secretariat and representatives of seven MASMA-supported projects and four C&C projects.

The 11 projects were broadly categorized into three groups. First were those projects which were approved in 2018 and have had a year of implementation. This group was expected to highlight how they have addressed the comments provided to their projects by the PC during the 2018 grantees meeting; what scientific results they have generated so far; the number of students involved in the project; publications produced or in preparation; and strategies proposed to package information and forge links with on-going or planned research projects/management authorities relevant to their project. The second group comprised the projects that were approved in 2019. This group was tasked with providing general overviews of their projects, focusing mainly on research questions, the hypotheses to be tested, the study sites and rationale for their selection, the methodologies being used and the roles and responsibilities of the participating institutions. Links with on-going or planned research projects/management authorities relevant to their project and a summary of how the PC comments have been addressed were also included in their presentations. The third group consisted of two projects under the C&C project, whose proposals are being considered by the PC. This group based their presentations on the same aspects as group two and also provided the background and rationale for their project proposals.

During the meeting, the grantees and the PC held group discussions in which they explored possible areas of collaboration and synergy between the projects and how to jointly implement these areas. They also identified other non-MASMA/C&C projects working on common issues, and effective ways of partnering with these initiatives. Focus areas for future calls for proposals were also discussed.

The joint meeting provided a good opportunity for the two initiatives to work more closely together, foster understanding among the approved projects and create opportunities for future partnerships between projects. It enhanced linkages between projects and opened avenues for joint sampling, sharing of data, application of common methodologies and joint publications.
Most urban areas and cities have been associated with the production of household and industrial waste; both liquid and solid. In properly designed cities, liquid waste, which includes wastewater from laundry and sludge from toilets, is released into treatment plants, but in many cases, wastewater is drained into water systems and onto land without being treated.

The management of wastewater remains a challenge for many coastal cities, particularly in the Western Indian Ocean region. Moreover, the release of poorly treated wastewater into the ocean and other water bodies has resulted in marine pollution and degradation in the quality of seafood which most coastal communities depend on for food and livelihoods.

It is against this backdrop that WIOMSA, in partnership with the Nairobi Convention under the Implementation of the Strategic Action Programme for the protection of the Western Indian Ocean from land-based sources and activities (WIOSAP) and the Kenya Marine and Fisheries Research Institute (KMFRI), organized a regional training course on the use and application of constructed wetlands systems (CWS) for wastewater treatment. The course took place in Mombasa, Kenya on 18 to 22 November 2019.

Constructed wetlands are natural wastewater treatment systems. They are designed to maximize the removal of wastewater contaminants and they consist of beds of aquatic macrophytes (wetland plants). These wetlands are used as secondary or tertiary treatment units; that is, wastewater is generally treated first in primary treatment units such
as settling tanks or industrial treatment plants. A variety of treatment processes such as filtration, sedimentation and biological degradation then takes place in constructed wetlands. These processes work together to effectively remove contaminants from domestic wastewater. In general, constructed wetlands require little operation and maintenance when compared with technical treatment systems. Involvement of local residents and organisations in CWS is important” Prof Luke Obala.

The Mombasa training course attracted a large number of participants from the region including Kenya, Tanzania, Seychelles, Mauritius, Mozambique, Comoros, Madagascar and South Africa. There was attendance from a diverse range of professionals, including local city employees and board members and engineers and architects who design and build the infrastructure that is used in CWS. Also included were urban and spatial planners, biologists and marine scientists dealing with marine pollution and its effects on the marine environment. The richness of the professionals made it possible to discuss the constructed wetlands technology from inception to management systems and why most of these systems in the region are dying a natural death.

The main aim of the training course was to shed some light on the status of coastal wastewater pollution issues, and how this simple technology can be used to address the challenges, especially in the region.

During the training, the participants visited two sites in Mombasa that are using CWS technology. The first of these was a private development site at the Swaminarayan Estate in Kiambeni. The Estate has a functional CWS which helped the participants to understand the wastewater treatment process within a planned
The training was successful as an initial step and more engagement is foreseen in the near future for wastewater and pollution management in the coastal cities of the WIO. **The outcomes of the training included:**

- An **agreement to review the CWS design manuals** and update them to current industry standards.
- **Agreement on the generation of a regional status report** on CWS for shared learning.
- **Production of a policy brief** on CWS in the region.
- **Creating a platform for education** and adoption of CWS technologies for wastewater treatment.
- **Awareness creation on the importance of wastewater treatment** in coastal cities, and the use of CWS through events and forums, for example, World Wetlands Day.

As part of the Cities and Coasts project’s objective of building the capacity of planners and marine science professionals in the region to address Sustainable Development Goal (SDG) 11 on sustainable cities and communities, and SDG 14 on life under water, the CWS training is on course to create an understanding of the link between coastal cities and marine pollution and how land-based activities can be controlled to minimize impacts on the marine environment.

A special speaker, **Dr Renison Ruwa, a Deputy Director of KMFRI**, set the stage for a high-level session during the workshop to address:

- **How well-constructed wetlands technology is applied** in the region, and how it relates specifically to ocean sustainable development and the blue economy.
- **The challenges and opportunities for better advancing** constructed wetlands technology, especially regarding sustainable development and marine pollution control.
- **The synergies that can be developed between maritime protection**, sustainable development and coastal planning and design to improve the opportunities for investment in the constructed wetlands.

estate. The second site was the Shimo La Tewa prison CWS site which is not functional at the moment because of maintenance issues but is being considered for funding under the WIOSAP project. The Nairobi Convention, in collaboration with the Green Water systems and KMFRI, are planning a decommissioning and renewal of the Shimo la Tewa treatment site to reduce the impacts of untreated wastewater being drained into the Mtwapa creek. The renewal of the Shimo La Tewa Site is a step in the right direction the control of marine pollution control.
The workshop was attended by 26 trainees from different coastal cities in Africa including South Africa, Mozambique, Comoros, Seychelles, Madagascar, Tanzania and Kenya. The diverse group of professionals included aspiring geographers, urban planners, conservationists, researchers and environmentalists who were linked through their proximity to the Western Indian Ocean (WIO). They underwent tutelage on a variety of remote sensing and GIS applications.

Attending the training added value to the basic knowledge of planners, environmental specialists, GIS analysts, academics and practitioners in coastal and marine sciences, enabling them to use more advanced and comprehensive geospatial analysis to find solutions to space allocation and management within the coastal cities of the WIO region. This is because geospatial technology (remote sensing and GIS) is essential in assisting them to carry out the analysis that facilitates well-informed decision-based recommendations in research, training and practice in their respective workstations and countries.

The Chief Officer of the Department of Lands, Planning and Housing in Mombasa County, Dr June Mwajuma officially opened the workshop and was happy to welcome the team to Mombasa for what she termed “a great initiative”. She explained how Mombasa County is planning on having its
GIS lab equipped with geospatial systems to address challenges in the planning of Mombasa City. She added that it was a great opportunity for Mombasa County staff to be part of the training because the lessons learnt would be an asset to the department. Najma Lelei, a physical and land-use planner from the Mombasa County staff was sure of bringing innovation back to the department.

The trainees were inducted and given advanced training on the use of various GIS tools such as Erdas Imagine 2020, ME.App Enterprise, Sublime Text, R x 64 3.6.1, QGIS 2.81 and GeoMedia Professional. Decision Support Systems (DSS), Satellite Laser Ranging (SLR), Unmanned Aerial Vehicles (UAV) and Normalized Difference Vegetation Index (NDVI) were some of the interesting acronyms the students learnt during the sessions.

The team formed groups that can help in advising and helping each other in the region in the application of geospatial tools for the coastal city and smart city enhancement in Africa. For more information on the available training and research opportunities remember to check in with https://www.wiomsa.org and https://twitter.com/Cities_n_Coasts

**QUOTES FROM THE COUNTRY REPRESENTATIVES**

"Apart from learning on change detection and land-use modelling, creating a geographically assisted mobile app and even developing a reusable spatial model, the true charm of the workshop was the experience of social interaction. Having to go through advanced GIS and remote sensing training with my African peers has bred a sense of collegiality and familiarity that only comes with being forged in the same flames of tuition. I quickly made friends in Albert Nyiti, Nashon Njoroge, Dinah Ajwah and Najmah Lelei among other attendees. Together we explored the fantastic expanse of our accommodation, the English Point Marina Hotel, as well the local shopping complex, Chandarana. One of the highlights was embarking on a Bajaj (tuk-tuk) drive around Mombasa in complete safety of my new friends late one evening". *(South African Team)*

"This retreat has been one of the most enjoyable times of our life. The venue was fantastic, the group talented and diverse. It was a great way to network and learn from each other in a beautiful destination. We loved the workshop and the structure. It has given us a great boost in our geospatial technique’s confidence. We benefited in feeling that we could be an asset in our professional career”*. *(Kenyan team)*

"We feel privileged to have received this unique opportunity to attend the Geospatial Training for Smart Sustainable Coastal Cities in Mombasa from 2nd to 7th December 2019. We came from Tanzania mainland and Zanzibar with the expectation to learn new knowledge that can boost our capacities to address urban issues in our local coastal cities. These coastal urban issues include urbanization; inadequate stormwater systems and solid waste management systems; traffic management; climate change-induced effects e.g. coastal flooding and beach erosion just to mention a few". *(Tanzania Team)*
The Kenya Institute of Planners, a professional body of planners in Kenya, had their annual conference and meeting at the Diani Reef Hotel and Spa on 3 to 9 November 2019 with the theme “Unoccupied Mansions”. The primary question at the conference was “what it is about vacant mansions?” To most delegates, it was a call to address grey areas that can be developed but are yet to be managed in the field of planning.

The meeting was officially opened by the Cabinet Secretary of Devolution in Kenya, Honorable Eugene Wamalwa and Dr Chris Obure who represented the Cabinet Secretary in charge of Transport, Infrastructure, Housing and Urban development in Kenya.

Through the opening speeches, it was made clear that there are several “mansions” in the sphere of planning that are seen to be unoccupied. These are areas that are not adequately addressed by the planning fraternity and include the blue economy; innovations for sustainable climate resilient cities; planning for extractive industries, especially in coastal systems; marine spatial planning (MSP) and sustainable coastal cities design in Kenya and many other developing countries.

The challenges for planners was alluded to by Timothy Mwangi, the Deputy Director of physical planning in Kenya. He said that as a rule, land use maps generated for the coastal regions are devoid of the effects of land-based sources and impacts.
due to the lack of planning of the 22 nautical miles off the coastline. He added that the MSP is done on a single platform devoid of feedback from the land use plans generated by the planners, as well as the lack of training and skill enhancement in the country of professionals dealing with MSP. This broken link between the land-based planning and marine-based management instruments is an unoccupied mansion that needs to be attended to so that the fruits of the blue economy can be achieved in coastal ecosystems.

The planning fraternity was encouraged to pursue improved land use and MSP for the sustainability of coastal regions and especially sea front/lake front planning in regions adjacent to water bodies. A further need to reorganize planning policies to address grey areas for the sustainability and functionality of cities was also highlighted.

WIOMSA was represented by WIOMSA President, Jacqueline Uku and the project manager of the Cities and Coasts project, Valentine Ochanda. Dr Ochanda delivered a presentation on the project focused on facilitating research in coastal cities, building the knowledge base through research activities, creating partnerships, especially among planners, researchers, state actors and communities living in coastal cities, and building capacity of the relevant stakeholders through training to help and offer policy advice on the unoccupied mansions in coastal planning. She encouraged planners to seek out available opportunities to promote sustainable city-based planning in coastal cities.

Zachary Maritim of WWF and Justus Kithiia of Macquire University presented two projects on the effects of large-scale projects on coastal ecosystems and the uptake of the smart city concept. Both projects are funded by Cities and Coasts. In their presentations, a call was made to planners in Kenya and the region at large, to get involved in smart cities concepts for sustainable cities and communities. Mr Maritim urged planners to pursue due diligence with regards to social, economic and environmental integrity and safeguards when dealing with infrastructure development in the coastal regions to reduce the ecological and maritime impacts of these projects on the ecosystems.

Dr Uku presented a roadmap that the Kenyan government has embarked on through the Kenya Marine and Fisheries Research Institute (KMFRI) to align several components of the blue economy to national government objectives. She reiterated the importance of planners joining the KMFRI taskforce so that they may add their voice to issues of spatial planning and coastal environments; both land-based and marine-based.

As part of WIOMSAs' objective of building strategic partnerships in the region, the planners conference was an ideal opportunity to make the Association’s programmes available to a wider audience. This will create solutions to issues that affect coastal cities and enhance the positive influence and role that the planning fraternity plays in ensuring effective space allocation in cities and the facilitation of communal services.
A first-time WIOMSA–MASMA funded project entitled “Billfish Interactions, Livelihoods, and Linkages for Fisheries Sustainability in the Western Indian Ocean” – or BILLFISH-WIO – brings together a diverse group of collaborators to explore several key research questions that address knowledge gaps on billfish populations. The work by this team will contribute information on how billfish enhance coastal livelihoods, the sustainability of billfish fisheries, and governance issues around the management of billfish resources.

Led by Nelly Isigi Kadagi and Nina Wambiji as co-principal investigators, the BILLFISH-WIO project has a unique opportunity to work with regional researchers, the fishing sector, national institutions, and non-governmental organizations, among others, in Somalia, Kenya, the United Republic of Tanzania, Mozambique, Madagascar and South Africa to implement this timely initiative.

Billfish, are large pelagic apex predators belonging to the family Istiophoridae (sailfish and marlin) and Xiphiidae (swordfish), with six species occurring in the Indian Ocean. Known for their elongated, spear-like rostrum or bill, these highly migratory fish species are one of the most sought-after gamefishes in the Indian Ocean.

Recreational/sport fishers have for over five decades recognized countries such as Kenya, Tanzania, Seychelles, Mozambique and Mauritius as billfishing hotspots. Billfish are also caught in artisanal and recreational fisheries. Despite their significance in multi-sectoral fisheries and ecologically, populations of billfish have continued to decline globally – and the Western Indian Ocean is not an exception. Therefore, the BILLFISH-WIO Project aims to explore four specific objectives to (i) examine the historical and present status of
billfish species; (ii) evaluate the genetic structure of key species; (iii) determine the billfish distribution and habitat association at transboundary levels; and (iv) evaluate the socio-economic contribution and governance of billfish populations.

Research findings from this three-year project will provide a framework for further investigations, support policy changes at a national and regional scale, and complement ongoing work by the Indian Ocean Tuna Commission, national fisheries institutions and regional projects to improve the sustainable use and management of vulnerable Indian Ocean billfish stocks. The findings are also critical in driving efforts to achieve the transboundary national priorities, the goals of the blue economy Initiative, and the Sustainable Development Goals.

More importantly, the support from WIOMSA is significant in developing regional and in-country technical capacity for emerging scientists by bringing on board six students – two pursuing PhDs and four registered for Master’s degrees.

To kick-start this project, the BILLFISH-WIO team held a three-day inception meeting from 11 to 13 November 2019 in Kilifi, Kenya to define a clear action plan. Country coordinators for the project presented information on the current status of billfish fisheries in their countries, while students discussed their thesis structure and potential scientific publications.

The inception meeting and the project preparation phase has had several highlights. First, the collaboration with One Earth Future – Secure Fisheries brings on board Salma Ahmed (City University of Mogadishu) to work on the Somali component of the project as a Master’s student at Pwani University in Kenya. Second, the involvement of Rashid Sumaila as one of the collaborators made it possible for Shakila Muendo from Kenya to be considered for a Master’s position at the University of British Colombia in Canada. Third, the inception meeting also provided a great avenue for Prof Sumaila’s timely talk entitled, “Fishing subsidies and why we should all care” at the Kenya Marine and Fisheries Research Institute in Mombasa.

“Africa has the opportunity to seize the moral high ground on harmful subsidies through finding innovative ways to use public funds” Prof Sumaila.

WE THANK OUR COLLABORATORS, including the African Billfish Foundation, Kenya; Kenya Marine and Fisheries Research Institute; University of Dar es Salaam, Tanzania; Deep Sea Fishing Authority, Tanzania; Kenya Fisheries Services; Oceanographic Research Institute, South Africa; Community Centred Conservation, Madagascar; Instituto Nacional de Investigação Pesqueira, Mozambique; Macquarie University, Australia; University of Queensland, Australia; University of British Colombia, Canada; University of Florida, USA.

More information: (www.billfishwio.com)
OCEAN ACIDIFICATION. If you are hearing this word for the first time, it may sound like a very difficult and complex term; something for scientists and researchers only! *In its simplest form, ocean acidification can be referred to as the change in ocean water carbon chemistry to either alkalinity (baking powder-like test) or acidity (orange-like test).*

The increase in the orange-like state of the ocean water is what is described as ocean acidification, in most cases. However, the situation is far more complex in the scientific context, it relates to the exchange of carbon dioxide gas at the water–air interface. This complexity is not a matter of discussion here but rather, the concern is about how marine organisms cope with ocean acidification.

It is known for sure that the amount of carbon dioxide gas in the atmosphere has been increasing over the years. It is a global concern to cut down the amount of carbon we as humans emit to the atmosphere. This could be due to the burning of fossil fuels or any other form of emission. The increase of carbon dioxide in the air has an effect on marine organisms, especially larvae and shell organisms. Many marine organisms that produce calcium carbonate shells or skeletons are negatively impacted by increasing carbon dioxide levels and decreasing pH in seawater. Their ability to produce a skeleton is reduced by low pH conditions. The increase in ocean acidification will compromise the successful fertilization, larval settlement and survival of most marine larvae species and other shell-building marine organisms. This, in turn, will have a significant impact on food security, the economy of coastal states and the world at large. It is for this reason that WIOMSA and partners have teamed up to monitor the rate of ocean acidification in the Western Indian Ocean (WIO) region.
WIOMSA, in partnership with the Intergovernmental Oceanographic Commission of UNESCO, the Ocean Acidification International Coordination Centre and the Global Ocean Acidification Observing Network, is supporting six projects along the eastern African coast to support monitoring of ocean acidification observation systems in the field, the implementation of the SDG 14.3.1 indicator methodology and/or the investigation of biological response to ocean acidification using experimental set-ups in the laboratory.

The main objective is to establish baseline data for the carbonate system in the WIO and to document the ongoing ocean acidification along the coast in an effort to support, in particular, SDG 14.3 to minimize and address the impact of ocean acidification. The projects have made significant progress since their inception early this year.

One of the project’s objectives is to strengthen individuals’ understanding of conducting ocean acidification laboratory experiments and preparing a regional standardized approach to conducting the experiments.

Secondly, because it’s important to be prepared for the future, the project is preparing a roadmap for handling the science and communication around ocean acidification.

WIOMSA and partners hosted two workshops on ocean acidification during October. The first workshop was held in Mombasa from 21 to 25 October 2019. Kenya Marine and Fisheries Research Institute (KMFRI) in partnership with WIOMSA and the UN International Atomic Energy Agency organized a training workshop at the KMFRI laboratory in Mombasa. This was attended by ocean acidification practitioners from West and East African countries. The workshop introduced participants to the best practice in sample collection, setting up of laboratory experiments and monitoring the measurement of water carbonate chemistry. The end goal was to bring participants to a common understanding of the concept of ocean acidification and draft standardized regional data collection and experiment protocols for monitoring ocean
acidification. Once it is complete, the workshop report will be shared on the WIOMSA website.

A second workshop was held in Zanzibar from 28 to 29 October 2019. WIOMSA partnered with the Nairobi Convention and the IUCN-chaired Ocean Acidification International Reference User Group. The workshop was organized with the financial support of the Prince Albert II Foundation, the UN International Atomic Energy Agency, the Nairobi Convention and WIOMSA. It built on the outcomes of the “WIOMSA Ocean Acidification workshop – developing regional capacity for ocean observations in support of SDG target 14.3” which was held in Dar es Salaam, Tanzania in October 2017, and the Decision CP.9/9 (2) on Ocean Acidification of the Ninth Conference of Parties to the Nairobi Convention that took place in Mombasa, Kenya in August 2018. The main objectives of the workshop were to: take stock of current regional knowledge and actions on ocean acidification and develop a regional action plan for the WIO region that will guide how the region will respond to this challenge.

The Zanzibar workshop recognized the ongoing initiatives around ocean acidification and suggested the following sets of activities to benchmark the existing activities in the region: reviewing existing policies and other initiatives around ocean acidification; exploring how ocean acidification might impact the blue economy; consolidating and coordinating the science around ocean acidification; and, lastly, strengthening communications around ocean acidification.

Judging from the number of scientific articles produced over the years, the WIO region is lagging behind on the number of publications and monitoring programs. This could be due to several reasons, one of which is limited financial resources. The WIO region is still struggling to mobilize resources for the conservation and safeguarding of marine resources, let alone setting aside funds to minimize the impact of ocean acidification. The workshop participants agreed that for the region to move forward there is a need to mobilize resources from different sources, especially but not limited to multi-lateral sources. There was also agreement that there is a need to broaden the scope of discussions and considerations under the Green Climate Fund to address ocean acidification at regional and global level.

While field monitoring and biological experimentation are ongoing, here are some suggested actions that can be taken at the individual, regional and global level to support the reduction of ocean acidification:

- reducing local sources of acidification
- reducing other stressors to the marine environment to enhance overall ecosystem resilience (get involved in the sustainable use of marine resources)
- protecting natural carbon sink ecosystems such as seagrass beds and mangroves
- exploring other food production options (e.g. food sources from aquaculture and other non-marine sources).
The Western Indian Ocean Certification of Marine Protected Areas Professionals (WIO-COMPAS) Programme held a Level 1 assessment for rangers in Mombasa, Kenya on 27 to 30 November 2019. Following a thorough assessment of their competences, eight candidates were certified as Level 1 MPA PROs. With these new MPA PROs added to the ranks, the number of certified professionals in the WIO now stands at 103! This represents steady progress towards the development of a “critical mass” of competent MPA professionals needed to ensure the effective management of MPAs in the Western Indian Ocean region.

The certification event was held following a call for applications in September 2019 that elicited 28 applications from Kenya, Tanzania and South Africa. Following a review of the applications by the assessors, 12 candidates were accepted to attend the event. WIO-COMPAS would like to congratulate Lydia Illa (Malindi Marine Park, Kenya), Tima Dago (Mombasa Marine Park, Kenya), Theodora Abraham (Tanga Coelacanth Marine Park, Tanzania), Betty Ojuka (Mombasa Marine Park, Kenya), Salim Polleh (Kisite Mpunguti Marine Park, Kenya), Samuel Muriithi (Malindi Marine Park), Nelson Mdogo (Tanga Coelacanth Marine Park, Tanzania) and Amos Singo (Mnazi Bay Ruvuma Estuary Marine Park, Tanzania) for successfully going through the Level 1 certification process and earning their right to wear the MPA PRO badge.

Four candidates did not quite meet the overall pass mark and were either asked to provide supplementary evidence which will be reviewed by the assessors over a six months period, or to reapply for certification in another two years.
WIO-COMPAS uses various tools to assess the competence of Level 1 candidates. These include the application form, core activity documents which candidates prepare focusing on their core mandates in their MPAs, portfolios which provide documentary proof of work-related activities, the ecology quiz which assesses their knowledge of the biophysical and social-economic context, boat and beach patrols, and face to face interviews. The tools assess competences and knowledge across seven competence areas: management effectiveness; marine conservation, MPA and other approaches; communication and stakeholder engagement; human and financial resources management; management implementation and effectiveness; biophysical and socio-economic context; and leadership and ethics.

"After attending the certification event, I now think differently about competences and keeping good records of my activities and achievements. The assessment has sharpened my focus and perception in understanding my work. I was working blindly without knowing the logic behind MPA operations and management actions. I now understand the importance of the competences". Quote from one of the Kenyan candidates.

"I have been challenged to know my park and understand ecology because it is embarrassing if I do not know or cannot identify fish species in the MPA". Quote from one of the Tanzanian candidates.

Strategic meeting held to chart the future path of WIO-COMPAS

In the lead up to the Level 1 Certification assessment event, a strategic planning session was held by the WIO-COMPAS core team to map the future path of the programme. Several issues were agreed on during the meeting including (a) a mentorship and leadership training programme for WIO-COMPAS professionals; (b) representation of the WIO-COMPAS certification model in the global arena including at the IUCN World Conservation Congress 2020 in Marseille, France, the United Nations Convention on Biological Diversity’s 2020 UN Biodiversity Conference in China, and the 2020 United Nations Ocean Conference in Lisbon, Portugal, among others; (c) renewal of WIO-COMPAS certification for MPA professionals; (d) modelling of the regional MPA training courses to respond to the competence gaps and the priority issues facing MPAs in the WIO region; (e) inclusion of WIO-COMPAS in the network of MPA practitioners.
THE WESTERN INDIAN OCEAN WAS WELL REPRESENTED IN THE MARINE REGIONS FORUM

A first Marine Regions Forum was held from 30 September to 2 October 2019 in Berlin, Germany, with the theme of “Achieving a healthy ocean – Regional ocean governance beyond 2020”. The aim of the forum was to catalyze the transformation of ocean governance through regional actions and initiatives, in support of the ocean dimension of the 2030 Agenda for Sustainable Development (2030 Agenda), especially Sustainable Development Goal (SDG) 14 “Life Below Water.”

The Forum is a contribution to the Partnership for Regional Ocean Governance, a collaborative initiative between the Institute for Advanced Sustainability Studies, the Institute for Sustainable Development and International Relations, TMG–Think Tank for Sustainability – and UN Environment. The Western Indian Ocean (WIO) was one of the regions that was well covered during the event through important presentations delivered by decision-makers, representatives of regional bodies and regional non-governmental organizations.
On the first day, themed “understanding challenges and achievements”, several presentations were delivered by regional representatives. Dixon Waruinge, the head of the Nairobi Convention Secretariat, presented the state of science-policy interface in the WIO region and highlighted regional challenges, such as weak uptake of scientific information in ocean governance. Julius Francis, the Executive Secretary of WIOMSA, spoke about the processes, structures, opportunities and lessons learned from the WIO region and the evolution of science-policy in the context of the Nairobi Convention. David Obura, the Director, Coastal Oceans Research and Development – Indian Ocean East Africa, highlighted the significant regional variations, not only in terms of environmental impacts but also regarding means of implementation, and noted the value of participatory scenario exercises in identifying a common vision among stakeholders at the regional level.

On the second day, the theme of which was “developing solutions”, David Obura presented the SDGs as a narrative for identifying synergies across scales. Using coral reefs as an example, he drew attention to the links between most SDGs, and pointed to the opportunities for integrating ocean issues into national agendas. Dixon Waruinge presented the development of a WIO Governance Strategy, including acknowledging ocean contributions to poverty alleviation and livelihoods, and a mandate to create a mechanism for regional ocean governance dialogue on transboundary issues.

On the last day of the Forum, the theme of which was “accelerating progress and creating new pathways”, two regional representatives made presentations and participated in a panel discussion. Yvonne Waweru, from the Women in Marine Sciences Network (WiMS), presented the outcomes from the Youth Ocean Professionals debriefings. Angelique Pouponneau, the Chief Executive Officer of Seychelles’ Conservation and Climate Adaptation Trust, featured in a panel discussion held during the final session of the event. Ms Pouponneau recommended addressing the obstacles to achieving the 2030 Agenda, including lack of resources and capacity, and working in silos. She gave an example of small-scale fishers piloting and managing a voluntary no-take area in the Seychelles, as a bottom-up approach to achieving sustainable development targets. She also cautioned that making finance available is not automatically the answer, since sustainability requires awareness.

The strong presence of the WIO region at the Forum is an indication of the recognition of the efforts to advance regional ocean governance under the framework of the Nairobi Convention. In other words, the region has a good story to tell.
The Western Indian Ocean Governance Exchange Network (WIOGEN) conference, co-hosted by WIOMSA, was attended by 40 delegates from South Africa, Madagascar, Tanzania, Kenya, Seychelles, Mauritius, Germany and Australia.

In keeping with the design of WIOGEN, the conference encouraged active participation from those in attendance. The WIOGEN project aims to be inclusive and design all activities based on the needs of the region and the members who participate in its activities. To this end, there were only a few keynote presentations – highlighting the need for collaborative, trans-disciplinary work that complements the activities in the region – and plenty of time for discussion and break away groups.

Julius Francis of WIOMSA, was able to place WIOGEN in the context of the other networks, platforms and work being done in the WIO region. He highlighted the importance of WIOGEN being able to add meaningfully to the region and create a legacy that lasts beyond the funding period of the project.

Narnia Bohler-Muller from the Human Sciences Research Council is also Chair of the Indian Ocean Rim Association (IORA) Academic Group. She highlighted the importance of looking holistically at ocean governance – the blue economy is one of the priorities of IORA and it is important to incorporate inclusive development for job creation, environmental protection and sustainability, social justice and human well-being with considering the blue economy. A panel
discussion looked into the challenges faced in getting science effectively into policy for improved governance. This discussion provided some insight into how WIOGEN can operate effectively in the region. Jared Bosire, Nairobi Convention, emphasised that we cannot continue with business as usual and we need to bend the downward curve of ecosystem health with large scale interventions. He reminded everyone that this will require a lot of effort and a lot of work and asked if our current work is at a scale that matters – that can make a meaningful difference. This large-scale work requires collaboration and working together across all sectors, including the private sector.

Adnan Awad highlighted how the working groups would be a communication platform amongst members within thematic areas and would identify areas of focus, capacity and networking needs. The working groups would be responsible for producing output in support of the gaps and needs that they identify and in turn be supported by WIOGEN through training workshops and scientific exchanges, as well as a science to policy event and closing conference.

WIOGEN welcomes anyone who would like to shape ocean governance in the WIO region to join by completing the survey: https://www.surveymonkey.com/r/BLQ95Q3.

The link and all presentations from the Kick-Off Conference can also be found on www.wiogen.org.

We welcome input and suggestions from all WIOGEN members and all those active in the Western Indian Ocean region.
A COLLABORATIVE TRAINING COURSE ON MARINE EARTH OBSERVATION  
By Marie Smith

The GMES&Africa and Copernicus Marine Earth Observation Training Course – with the theme *Earth Observation to services across the value chain* – took place in November 2019 in Stone Town, Tanzania. The course was designed to support the development of GMES&Africa activities and Copernicus marine data use around the African continent. It was co-organised by the Marine and Coastal Service Development for Southern Africa (MarCOSouth) consortium and EUMETSAT, in collaboration with other GMES&Africa partners and guest lecturers.

The goal of the workshop was to strengthen capacities to develop earth observation products, services and tools that promote sustainable management of marine resources, improve marine governance and stimulate the growth of the blue economy in Africa.

This technical training event was open to applicants from any African nation who wished to use satellite data for research and/or operational marine applications. Candidates affiliated with academic, commercial or governance organisations were encouraged to apply. However, only 21 out of 134 applicants were selected and fully funded by GMES&Africa and EUMETSAT to attend the workshop. Attendees consisted of professionals and students from various research institutes and universities around Africa, and included participants from Tanzania, Kenya, South Africa, Mozambique, Mauritius, Nigeria, Ghana, Cameroon and Egypt.

The trainers included Hayley Evers-King from EUMETSAT, Marie Smith from CSIR South Africa, as well as Lauren Bierman and Oliver Clements from Plymouth Marine Laboratory. Invited lecturers included Kwame Adu Agyekum from University of Ghana, who provided presentations and practical applications on potential fishing zones and vessel tracking, and Quinten Vanhellemont from the Royal Belgian Institute of Natural Sciences, who provided training on the use of high resolution

Sentinel 2 data for marine applications using the ACOLITE software.

**THE COURSE CONSISTED OF AN ONLINE PHASE,** which ran from 23 October to 8 November, and a classroom phase hosted at the Maru Maru Hotel in Stone Town from 12 to 20 November 2019. The online phase was hosted on EUMETSAT’s interactive training platform and provided participants with the opportunity to meet the trainers and familiarize themselves with the background training material and tools before embarking on the classroom phase of the training. Participants were introduced to the Copernicus Marine Data Stream (CMDS) from EUMETSAT, and provided with background knowledge on the Copernicus programme, satellites and instrumentation, data access and formats, as well as the tools and software necessary to begin working with marine applications. **All participants were encouraged to make use of the online discussion forums to introduce themselves, ask questions and share their expectations for the course.**

**THE CLASSROOM PHASE** continued with the interactive format, providing lectures and presentations only as background material to practical applications. There was a strong emphasis on group tasks, e.g. developing value-chains for specific marine applications, and selecting the appropriate satellite data types and products for specific scenarios. Towards the aims of GMES&Africa and Earth Observation service development, participants were encouraged to consider who their target audience/users are (e.g. artisanal fishers, government, scientists, etc.), the type of information needs (e.g. greatest value in data quality or data latency) and the potential value that could be added to standard satellite products. Practical applications made use of free and open source software such as the Sentinel Applications Platform (SNAP), ACOLITE, and python, and participants were provided with example workflows applicable to a variety of data types and marine applications.

Workshop attendees were asked to present a mini project proposal early on in the classroom phase; this enabled participants to identify other people with similar research interests, allowing them to work together on problems. The mini-projects formed the core focus of the classroom phase, giving the participants the opportunity to apply their newly gained skills to relevant data from Sentinel-1, 2 and 3 and the Copernicus services in ways aligned with their own research interests and planned future uses of the data.
A collaborative training course on marine earth observation.

These mini-projects were attempted with the support of expert trainers who were available to provide feedback and assist with questions about the data and software. The focus areas for the mini-projects included potential fishing zone and aquaculture site identification for fisheries management, monitoring suspended matter and turbidity from rivers in coastal waters, and oil spill detection, to name a few.

The response to the workshop has been positive, with all participants enjoying the balance between theory and practical exercises, and finding the content engaging and useful for their own work or research. There has been an overwhelming request for additional training events of this nature in Africa.

The next collaborative GMES&Africa Marine and EUMETSAT training event will be held in Ghana in November 2020.

However, more regional and specialized training events will also be organized in 2020 and beyond.


Acknowledgements: MarCoSouth wishes to thank GMES&Africa, EUMETSAT and the Copernicus programme for funding and support; Regina Hoefenmayer for organizing flights and per diems for participants; Lilian Omolo and WIOMSA for logistical support in Tanzania; and the staff of the Maru Maru Hotel for their hospitality and for providing a wonderful workshop venue.

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CITES LISTING OF TEATFISH SEA CUCUMBERS

By Chantal Conand, Marie Di Simone and Arnaud Horellou

Sea cucumbers have long been traded as dried product for the Asian markets (Lovatelli et al., 2004; Conand, 2018). Recently, with increasing demand and prices, the overexploitation of sea cucumbers has been questioned (Toral-Granda et al., 2008, Purcell et al., 2013, Conand, 2017).

The holothurians, via their sediment-feeding nutrition and the numerous symbionts and parasites they host, have an important ecological role to play in benthic marine ecosystems (Purcell et al., 2016). These resources are also of major importance for artisanal small-scale fishers in less developed tropical countries. Their conservation became an issue of global concern and was brought to the attention of the Convention on International Trade in Endangered Species of Wild Fauna and Flora (CITES) – an interna-tional legal mechanism for regulating trade in overexploited species. An important workshop was organised in 2004 to discuss and propose means for the conservation of sea cucumbers, in particular the possibility of a CITES listing (Bruckner ed., 2006).

In Johannesburg in September 2015, the United States intended to propose 36 species for the CITES Conference of Parties (CoP17), but finally postponed their project after consultation with the range states. In 2017, the French CITES SA
drafted a proposal on the listing of the teatfish species [black teatfish (H. nobilis – Indian Ocean species and Holothuria whitmaei – Pacific Ocean species) and white teatfish (H. fuscogilva)], which was well received by other European Union states and then presented at the CITES Animal Committee in July 2018 (Di Simone et al., 2019). It was shown as a poster at the eleventh WIOMSA symposium in Mauritius in 2019. Then, the Food and Agriculture Organization of the United Nations (FAO) was tasked with determining the status of sea cucumber fisheries and trade in beche-de-mer products globally. The sixth FAO Expert Panel Meeting was convened at FAO headquarters in Rome in January 2019. It analysed the situation of the three species and reported that given the population data (low reproductive rates, slow growth, density thresholds for successful reproduction and decline in population size) H. whitmaei met the CITES criteria. The criteria were not met for H. fuscogilva and there were insufficient data to make an assessment on H. nobilis. However, because of the high likelihood of confusion in distinguishing between dried H. fuscogilva, H. nobilis and H. whitmaei in trade, a “look-alike” provision was included and all three species met the CITES criteria (FAO, 1919).

In August 2019, at the CITES CoP18 in Geneva, France and other countries proposed to list the three teatfish species. The proposal was accepted with a 12-month deferral, by a majority of votes.

The deferral time is to allow the Parties countries to establish NDF (Non-Detriment-Finding) on the levels of export quotas to guarantee the survival of the species. The CITES listing of these stocks of sea cucumbers should result in a collective improvement in their management.
A PIONEERING GLOBAL STUDY REVEALS **CHALLENGES IN LEGAL AND INSTITUTIONAL FRAMEWORKS AFFECTING MANGROVES**  
*By Anouk Neuhaus*

Within the last few decades, scientists have raised the alert on the continuous loss of mangrove forests. It is estimated that between 1980 and 2000, 35% of mangroves worldwide disappeared. This trend has not reversed and mangroves continue to face dramatic losses which is all the more alarming because mangroves provide essential services.

They play a crucial role as coastal protection and carbon sinks in the battle against climate change thanks to their location between land and sea and high carbon storage capacity – three to five times higher than that of upland tropical forests. They also provide habitat to support fisheries, as well as fuel and construction material, fundamental to the livelihoods of over 120 million people living in coastal communities across the globe.

To address these challenges, **Save Our Mangroves Now!**, an initiative of the German Federal Ministry for Economic Cooperation and Development (BMZ), WWF and IUCN, through the IUCN Environmental Law Centre, worked with lawyers from seven countries to develop a comprehensive study detailing the legal and institutional frameworks affecting mangroves, and their impact on stakeholders’ behaviour and the natural environment. The study draws on detailed governance assessments in Costa Rica, Vietnam, Madagascar, Pakistan, Kenya, Tanzania and Mozambique, as well as legislative reviews in Mexico and India and a global desk study.

*Mangroves are at the intersection of ecosystems and legal frameworks. Coordination and co-management are essential to protect an ecosystem at the intersection of laws.*
It goes beyond legal analysis to include social, political, economic and scientific information from surveys and interviews with government officials, community members, scientists, lawyers and civil society. Additionally, the study was enriched by workshops conducted in four countries of the Western Indian Ocean region: Kenya, Tanzania, Mozambique and Madagascar.

Due to the position of mangroves at the intersection of land and water, the legal framework governing mangroves is highly fragmented. It is only on rare occasions that legislation specially dedicated to mangrove management exists. In most cases, mangroves are indirectly defined and governed by forest, fisheries, wetlands laws or other legal tools focused on specific areas. These provisions can be adequate but the study shows they must be harmonized and their application to mangroves clarified for the legal framework to be effective. This situation can create confusion at the institutional level as several institutions with overlapping mandates may be responsible for mangroves, but lack capacity and coordination, leading to mismanagement and lack of implementation.

In the vast majority of cases, mangroves cannot be privately owned by households or communities, but decisions relating to this ecosystem deeply affects their livelihoods. For example, when local communities rely on the cutting of mangrove trees for fuel or construction poles, a general ban on mangrove logging or use can deprive them of their main source of subsistence, thus, generating conflict. In the absence of alternative livelihoods, such provisions are close to impossible to enforce.

It is therefore important to consult and engage local communities.

Numerous studies and experiences demonstrate the potential of co-management mechanisms where local communities are involved in management activities and benefit from the sustainable use of natural resources, such as mangroves. However, setting up these mechanisms requires certain enabling conditions to be in place.

The results of this study generated ten recommendations for policymakers to improve mangrove management and governance and suggests tools to implement these proposals. The study found that successful mangrove governance depends on:

- Institutional capacity to ensure legal enforcement;
- Proper communication and coordination between the different agencies in charge;
- The level of engagement and involvement of other stakeholders such as local communities, the private sector and the general public;
- Ensuring accountability and public participation in decision making on investment, development, resource management and conservation; and
- Decisions based on science and accurate data.

These findings will be disseminated to decision makers and the public in order to enlighten decisions, strategies and actions. Meanwhile, Save Our Mangroves Now! will continue to promote and support ambitious and effective policies and commitments at the national and international levels to enable conservation of mangroves, one of our planet’s most valuable and threatened resources.

Download the executive summary and full study.
The first marine protected area (MPA) practitioner’s meeting for the Western Indian Ocean (WIO) was held in Mombasa, Kenya from 1 to 2 December 2019, with support from WIOMSA and the Kenya Wildlife Service (KWS).

Globally, social networks of MPA practitioners are being established to facilitate learning and coordination of MPA networks by linking the people and institutions involved in MPAs into a coordinated and holistic initiative. In this spirit, Kenya hosted the first meeting of MPA practitioners for the WIO.

The objectives of the first WIO-MPA network meeting were to: discuss the institutional framework of the MPA network and develop its terms of reference. There were 11 participants drawn from Kenya, Madagascar, Tanzania, Mozambique, La Réunion, South Africa and Mauritius. The meeting took place against the backdrop of a survey that was conducted in 2018 which asked 37 MPA practitioners across the WIO about the need for a network and the purpose such a network would serve.

The survey reported strong approval for the formation of a network that would provide an open space for dialogue and information exchange; access to systematized documentation and professional advice from peers, besides other benefits, to members and MPA sites. An organization-led network (by WIOMSA) where members played an active role was the preferred model for the network.

The KWS Coast Area Director, Mr Arthur Tuda, welcomed participants to the first MPA network meeting. In his opening remarks he expressed his thanks to WIOMSA for all the support for the network survey and for hosting the meeting. He noted that this was the first time MPA practitioners across WIO had their own much-needed forum through which they could discuss, communicate and take action to improve MPA management in the WIO.
The meeting kicked off with presentations of the institutional models and structures of existing networks of MPAs such as the Mediterranean MPA managers network, the Caribbean MPA Network and Forum and the Regional Network of MPAs in West Africa. Existing models in the WIO were also discussed, including the MPA Forum in South Africa and the MIHARI network in Madagascar, among others. Vatosoa Rakotondrazafy, the coordinator of the MIHARI network in Madagascar discussed the seven-year success story of the MIHARI network. It has succeeded in defending the rights of small-scale fishers in Madagascar and established peer-to-peer learning exchange activities between locally managed marine areas (LMMA) communities. Robin Adams, the South African MPA Forum Coordinator, highlighted the activities of the South African MPA Forum and the various initiatives that the Forum is undertaking in partnership with the South African government to build the capacity of MPA staff to contribute to the management effectiveness of MPAs in the country.

The meeting deliberated on the following: the draft terms of reference of the network, the role and function of the network, the institutional arrangement, membership criteria, decision making structure, the role and mandate of the network, the mission, vision, objectives and activities of the network, the relationship between the network and WIOMSA and WIO-COMPAS and lastly, the sustainability of the network.

The following issues were agreed on:

- **The network shall be referred to as** the Western Indian Ocean Marine Protected Areas Practitioners Network (WIOMPN).
- **WIOMPN’s secretariat shall be housed at** WIOMSA and an interim Executive Committee will steer the network for a period of a year until the launch and election is held by members.
- **WIOMPN’s vision, mission and objectives** were elaborated and will be finalized at the next meeting of the network.
- **WIOMPN’s strategic pillars will include** creating programs for professional development to prepare members for MPA management success; facilitating exchanges/linkages and mentoring opportunities with experienced MPA professionals and peers; fostering cross MPA collaboration; promoting activities that are innovative and memorable and support member’s learning; and providing members with access to material and resources for effective MPA management.
- **A broad-based membership scheme was discussed to include** MPA managers, LMMA managers, WIO-COMPAS PROs and individuals and organizations associated with MPA in the WIO.
- **The interim Executive Committee will initiate** a membership recruitment and marketing campaign to create visibility for WIOMPN, including the design of a logo and website.

Workshop participants also discussed various action plans and partners that can be approached to support the establishment of WIOMPN. It is expected that WIOMPN will be officially launched in 2020.
NETWORKS AND PARTNERSHIPS

WiMS: IMPLEMENTING GENDER SENSITIVITY IN COASTAL AND MARINE RESOURCE UTILIZATION AND MANAGEMENT IN MAINLAND TANZANIA By Rosemarie Mwaipopo

**Pic 1: Participants at the meeting (left to right): Ignasia Mbatta, Mwanahija Shalli, Batuli Yahya (WiMS Zanzibar), Rosemarie Mwaipopo, Fatma Sobo, Lydia Gaspare (2nd row), Blandina Lugendo and Modesta Medard.**

**Tanzania has realized significant achievements by putting in place instruments for promoting gender equality and women’s rights at many levels of its society.**

These include directives and structures for equal access to basic education, expanding women’s access to reproductive and child healthcare, and placing more emphasis on women’s right to legal support and their participation in political leadership (Tanzania Country Gender Profile, 2016). However, many more issues need to be addressed, including enhancing women’s meaningful engagement in the utilization and management of environmental resources for positive livelihood outcomes and resource health. The coastal and marine environment is one of those areas where gender sensitive interventions are desired, and which will benefit meaningfully from science and research.

On 12 October 2019, representatives of the Women in Marine Science network (WiMS) Tanzania (mainland) chapter met in the coastal town of Bagamoyo, to envision the kind of coastal and marine environment they wanted, and to
strategize for a collective agenda for women and the fisheries in the country.

This chapter, convened after the WiMS inaugural meeting held in Nairobi in December 2018, sought to chart out a participatory process that will mobilize all women natural and social scientists in the country to participate in ensuring the full integration of gender sensitivity for the management of the coastal and marine environment. Individual women and networks of women that make a livelihood from coastal and marine resources in mainland Tanzania will be part of nurturing the chapter’s agenda.

The chapter will reflect the Sustainable Development Goals in its work, making sure to be sensitive to contexts, and the centrality of women and gender in the diverse aspects of the coastal and marine environment.

Specifically, the chapter will aim to strengthen the capacity of marine scientists to live and work towards the achievement of Goal 5 (achieving gender equality and empowering all women and girls); and Goal 14 (conserving and sustainably using the oceans, seas and marine resources for sustainable development) with a gender lens.

As a body of scientists, the chapter will strive to:

- be an active chapter that facilitates state-of-the-art science;
- enhance the capacities of community-based platforms for women and coastal and marine environment management;
- contribute to food security, income and poverty eradication interventions that directly benefit women and their communities;
- raise issues affecting both young girls and boys in the coastal and marine environment;
- celebrate women who have excelled in science in the coastal and marine environment, as well as outstanding women community members in the field.

Some of the immediate issues that members will address is how to translate scientific research for local relevance; how to build stronger alliances between training institutions and local communities; how to enhance the profile of women making a livelihood from coastal and marine resources; and, how to build more awareness and interest in gender in marine sciences at a policy level.

Currently, the chapter has embarked on establishing an in-depth database on gender issues in the coastal and marine environment in Tanzania (mainland) to guide its work.

- Rosemary Mwaipopo is WiMS coordinator for mainland Tanzania.
After a three-year publication hiatus, the WIOMSA Magazine: People and the Environment has returned in a big way with two special editions inspired by the Women in Marine Science Network (WiMS).

The issues feature the stories of women working in the marine and coastal field in the Western Indian Ocean region and beyond who are making a difference in the management of vital coastal and marine resources. *Part I of this series contains 14 articles*. The editor of the issue, Claire Ward, best explains the connection between the women featured in the magazine when she describes it as a golden thread running through the wonderful collection of stories. It is a thread that connects social scientists to natural scientists, managers to policymakers, senior researchers to upcoming ones, science to the community and the WIO region to the globe.

"I love it! Brilliant content and inspiring yet relatable role models! Congratulations to all involved” Nashreen Soogun, WiMS Country Coordinator, Mauritius.

"Great articles and very good initiative!”
Mercy Amai, National Environmental Management Authority, Kenya.
**MARG Grants** support young and upcoming scientists with a reliable and flexible mechanism to turn their ideas into research projects and offer opportunities for presentation of research results at various regional and international. MARG grants are also inclusive of research under the Cities and Coasts theme. [Download the announcement](#).

**MASMA Research Proposals:** The MASMA programme invites the submission of full proposals to conduct original and innovative research that contributes to “Generating the scientific and policy-relevant knowledge for achieving SDG 14 and facilitating implementation of the Paris Agreement in the WIO Region”. MASMA-funded research projects must deliver both excellent science and a clear identification of how the research leads to tangible outcomes for target groups at the policy, technology, environment and community level. The deadline for submissions is 28th February 2020. [Download the announcement](#).

**MASMA Training Courses and Publication of books:** The MASMA Programme invites full proposals to support the organization of training courses and workshops and the publication of books. The deadline for submissions is 28th February 2020. [Download the announcement](#).

**Cities and Coasts Research Proposals and Publication of books:** WIOMSA, through its Cities and Coasts project, is announcing calls for research proposals to conduct research and to support the organization of training courses/workshops. The Cities and Coasts project’s goal is to support innovative research and actions that contribute to “Generating the scientific and policy-relevant knowledge for achieving SDG 14 and facilitating implementation of the Paris Agreement in the WIO Region”. Projects funded under the Cities and Coasts project must generate knowledge and action that is directed at underpinning effective and efficient responses by coastal cities to current and foreseeable challenges they face. The deadline for submission of proposals is 1 March 2020. For detailed instruction on the proposals, [Download the announcement](#).

Clarification questions on these calls should be sent by email to: [secretary@wiomsa.org](mailto:secretary@wiomsa.org)
Merry Christmas & best wishes for 2020

FROM THE BOARD OF TRUSTEES AND STAFF OF WIOMSA

*The early fisherman catches the fish: the start of a new day in Unguja, Tanzania.* © Ewout Knoester