



# Annual Report 2020

## Development and Food Security Through Blue Economy

Aqua-Farms Organization

February 2021





**Mr. Cretus Mtonga**  
*Executive Secretary*

### ***Message from the Executive Secretary***

Last year we did wonders in implementing the mission of Aqua-Farms Organization. We are so delighted for what we have achieved with a minimum working force, great output from a team of volunteers and collaboration with governmental and non-governmental actors. This year we performed varieties of activities in our flagship areas covering aspects of training in fish farming, supporting fisheries, improving coastal community health, supporting women and youth in sustainable utilization of aquatic resources.

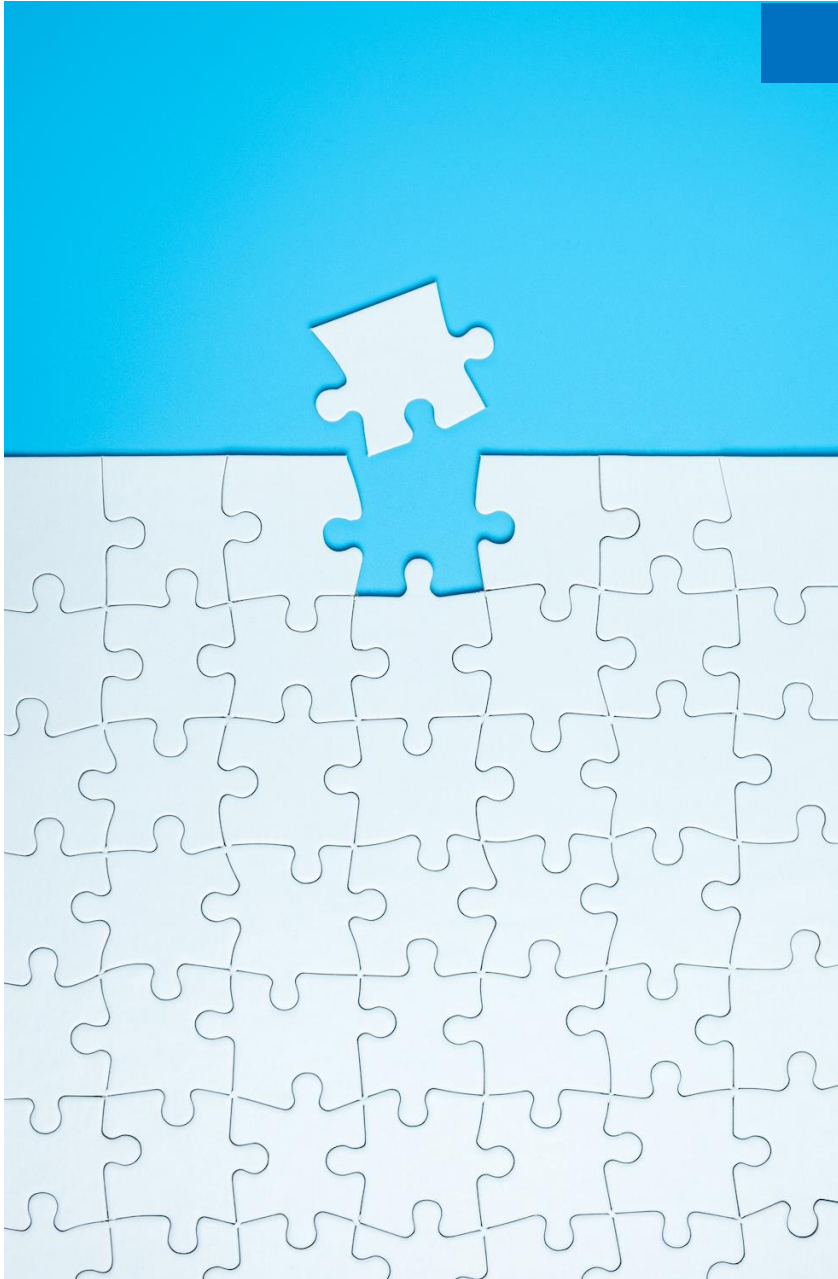
In this year 112 people received training on fish farming. Since the year 2018 we have now trained more than 2000 people contributing to an improved fish production for an improved community health. This was accomplished with efforts and dedication from our team, who gave themselves to make change in the community. In this year, women at Zanzibar were supported through the seapower project to expand their marketing platforms, provide them with the tubular net technology, provide them with skills and resources (a boat) to enable them farm seaweed at a depth of about 5m.

We provided fisheries education to fishermen through our outreach programs and our participation in various fisheries stakeholder meetings. We contributed significantly during the meeting with FAO in developing and validating the small scale fisheries guidelines, essential guides for the sustainable fisheries in Tanzania. Coastal community health started to improve through our target project with FAO and the ministry of Livestock and Fisheries of Tanzania. In this project we managed to establish automated hand washing facilities that aimed at improving sanitation and response against the COVID-19. This market was in our key target for 2020. The market is being accessed by more than 500 people per day, their health is of vital priority in reducing transmission of diseases and infections. We have been pioneering research through capacity building of our staff in the Masters programs at various esteemed universities. We believed research is key in driving innovation, sustainable fish farming and aquaculture. This year we conducted research in aquaculture, about octopus, Tuna, the causative agency of ice ice disease in seaweed and fishermen perception. We will continue supporting research and innovation in conservation, fisheries and aquaculture.

Last year, four of our staff graduated from the Masters program. They continue to add more Human Resources in grant writing, resource mobilization and production of quality technical reports. We have been supporting and encouraging capacity building initiatives by staff and members to make sure they contribute to the mission and reaching of the vision of Aqua-Farms Organization.

On behalf of Aqua-Farms I would like to thank all stakeholders who played a great role last year in executing our mission and achieving our vision. All government agencies, non-governmental organizations, local fishermen, fish farmers and stakeholders who in one way or another contributed in implementation of our activities. We are kindly looking for more cooperation and involvement of stakeholders in this year, to make sure we reach our expected milestone. Thank you all again for your contribution, time and efforts.





# VISION, MISSION AND CORE VALUES

## Mission

We enhance food access and income generation to the community through research, training, workshops and collaboration in Aquaculture and Fisheries

## Vision

AFO- envisions to be an excellent Organization in replenishing aquatic resources with community-based conservation and sustainable aquaculture.

## Values



Transparent



Equality



Integrity



Accountability



Team work



Creative & Innovative



A man in a blue uniform is standing next to a large, circular concrete pond. He is holding a red plastic bowl and pouring brown feed into the water. The pond is filled with many small, dark fish. In the background, there is a concrete wall and some palm trees. The scene is outdoors, and the pond is covered by a black net.

# Flagship Areas

## 1. Economic competitive aquaculture



# Projects

Economic competitive aquaculture



## **Economic Empowerment : Sustainable Blue Shop**

Where : Unguja Zanzibar

Duration : On going

Impact : 2 Seaweed farmers groups, 50 members , increased income for \$1 to \$3

Seaweed farming is among the life changing ocean activities to the communities at the coast of Tanzania, especially, in Zanzibar. While seaweed demand is growing at global scale due to a recent growth and realization on its potential in human health, in Zanzibar unfair prices, limited local market and poor distribution channels for both local and export market and on the other end the push of climate change on Seaweed industry has resulted to a huge decrease in production and a give up for farming to some of the farmers. Seaweed farmers who are more than 80% women took steps to add value to seaweed, so as to increase their income as well as diversify uses of seaweed. The seaweeds are used to make products such as bathing soaps, skin oil, hair food, but also used as an ingredient in baking, salad and other local foods. The principal market for the products buyers are tourists. In 2018, Aqua-Farms began working with seaweed farmers to understand in depth challenges. AFO realised that the value added products had a stagnant market and AFO took a step to diversify the local produce through its susblue shop that will enable to enhance the sales of the value added products to far and beyond the small stagnant markets.

SusBlue Shop aims to enhance community responsibility in the conservation and protection of marine resources. Through supporting local market products from the aquatic environment, and push towards Industrialization.





In early 2019, Aqua-Farms Organization established an Instagram page named susblueshop and a website page that the value-added seaweed products are shared and sold, beyond Zanzibar, and placed our office as a collection centre for seaweed products, in this case, were soaps, hair food and seaweed powder. SusBlue shop was established for value addition and market expansion of the seaweed products made by women in Zanzibar Island to improve their livelihood and income, by September 2020, the project has been able to work with 2 seaweed farmers groups with 50 members in total of Zanzibar and Improve their livelihood from \$1 a day to \$ 3, through online platforms sales, and the financial literacy knowledge is given to them.

In late 2020, AFO partnered with Sea Power sisters to bring a solution to climate change issues as well as addressing the challenges of marketing the value added products. For the coming year we are looking forward to providing the outward-facing marketing and communication platform enabling seaweed farmers to learn how to promote and sell their products and tell their story to a world-wide audience and enhance the local market and bring their strong connections with women seaweed producers to the final consumer of seaweed.



# Projects

Economic competitive aquaculture



## **Establishment of a sister company Aqua-Farms Hatcheries**

**Where :** Kibaha, Pwani Tanzania

**Duration :** On going

**Impact :** Capacity to produce 2 Million tilapia finhgerlings



With three years of understanding the need of the lean protein supply in Tanzania and the nutritional consequences that the people and especially children were by more than 50% are malnourished and stunted, due to a per capita consumption of fish is 9Kg in stark contrast to the 20 Kg per capita consumption globally, there have been efforts to boost aquaculture production in Tanzania as it has 35% of its land arable for fish farming, three great lakes, and 1,400 km of a long coastline that can support aqua-farming to supplement the deficit of 480,000 tons of fish per year in Tanzania, That is a result of decreased wild-catch and increased in population.

Aquaculture (fish farming) has a great potential to replace the needed demand, but it faces several constraints such as fish seeds (fish fingerlings), fish feed and technology. According to the recent Inception Study of Aquaculture Tanzania reported that with the rapid growth of the number of tilapia farmers reaching 18,000 in Tanzania, the demand of quality and reliable tilapia fish seeds, across the country is 30 million seeds a year and the current supply is limited to 5 million resulting in to 83% deficiency of fish seeds for small farmers to do fish farming.



To meet the need, a separate company named AquaEco e-Fish was formed with a trade Name <sup>TM</sup>Aqua-Farms Hatcheries in collaboration with American company Heliponix and support from United State African Development Foundation (USADF), through forming a commercial tilapia hatchery that will incorporate modern aquaponics tilapia brooding system, that will combine the profitable tilapia hatchery operation with the hydroponic farm design by Heliponix this creates a high output, organic brooding aquaponic farm. The aim is reduce the on-site fish fingerling supply, and employment opportunity by leveraging this symbiotic relationship between plant and fish independent of external supply chains vulnerable for exploitation. Aqua-Farms hatcheries will be in a position to supply 2 million fingerlings per annum and decrease the demand by 7% cutting down the deficiency to 76% equivalent to 1,200 more fish farmers supplied with quality fish seeds in one year. This design and operation could be licensed to 30 fish farmers in every year, and is expected to continue reducing deficiency at a rate of 7% a year giving an opportunity to half the current demand by 50% by 2026.

Currently, the production has begun and the monthly capacity of production is 150,000 fingerlings, and focus of Dar es Salaam and Pwani Region, the hatchery supports farmers who are in groups by supplying good quality fingerlings at 50% discount on the market price. We then encourage fish farmers groups across the nation to register and apply for fingerling supply for the reliable tilapia production center.





# Projects

Economic competitive aquaculture



## Understanding Ice-Ice disease in seaweed of Zanzibar project

**Where :** Unguja and Pemba

**Duration :** 12 Months

**Impact :** The project will help to address the effects of the changing climates to seaweed farmers

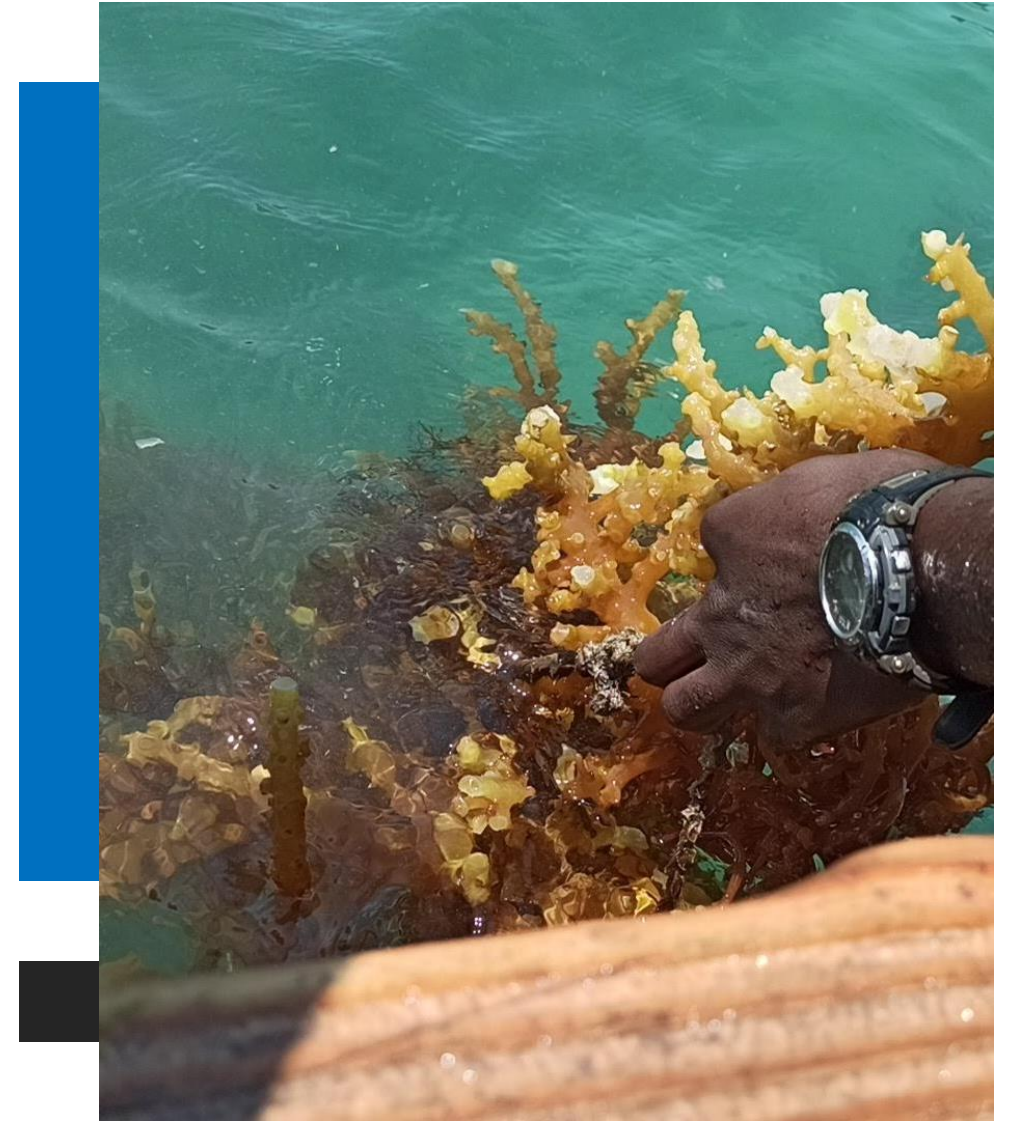
Tanzania is a home to more than 400 algal species, but only two are of economic potential (*Eucheuma spinosum* and *Kappaphycus alvarezii*) and go by the trade names Spinosum and Cottonii, respectively. Seaweed farming in Tanzania started back in the 1980's, since then the growth and productivity has been increasing until recent years where seaweed production is rapidly declining due to changes in climatic conditions. Tanzania is the lead producer of seaweed. The country is home to more than 400 algal species, but only two are of economic potential (*Eucheuma spinosum* and *Kappaphycus alvarezii*) and go by the trade names Spinosum and Cottonii, respectively. Among the two, Cottonii has a higher market value but its productivity has plummeted from more than 1048 tonnes in early 2001 to nearly 16.5 tonnes per annum in 2008 (Msuya 2011), due to increasing sea temperature, infestation of by epiphytes and ice-ice disease, followed by die-off. Ice-ice is the most common, and amongst the most severe diseases in seaweed culture; ice-ice hit the seaweed industry in the early Millennium, causing significant loss of production between 25-40% of production loss globally, and up to 100% locally.





Seaweed die-off had a knock on impact, leading to a decrease in seaweed production and the number of farmers, switching to the cultivated species from Cottonii to Spinosum, as well as a change of cultivation sites as seaweed farming supports livelihoods of people in Zanzibar, and plays a huge role in clearing the gender gap in utilization of the ocean resources as farming is more than 80% done by women. The increase in die off and closures of Cottonni farms has affected the lives of many farmers as Cottonnii is the seaweed that has high demand, price as well as higher profitability compared to spinosum.

Realizing the Ice Ice Disease challenges, Aqua-Farms Organization in collaborations with Scottish Association of Marine Science (SAMS) and support from Western Indian Ocean Marine Science Association (WIOMSA) and Global Seaweed Star, UK. The collaboration aims to assess the causative bacteria pathogens of ice ice disease and assess potential remedies from sea sponges in Tanzania. The project is taking place in Unguja and Pemba Island of Zanzibar and its looks forward to providing information on the causative agents of Ice Ice disease in the seaweed of Zanzibar and eventually a solution from sea sponges.





## Aquaculture Empowerment

**Where :** Online and Dar es Salaam  
**Duration :** 6 Months  
**Impact :** Online reach: 91 Physical: 21



AFO has been involved in training fish farmers on economic competitive Aquaculture, and over the past years we have been able to reach over 2500 aqua-farmers through physical training and workshops, extension services and office visits alongside launching 16 ventures in Aquaculture. However, The Global pandemic made us to rethink our ways of delivering these trainings, and we made a shift to making use of online platforms; Since then we have been able to offer 3 trainings on untapped potential of aquaculture , Ocean farming feasibility in Tanzania, and potential and status of sea cucumber farming which were offered via Instagram Live a platform which can be accessed by diverse of our targeted audiences; and we have been able to train 112 aqua-farmers, 91(online) and 21 (physical) and produced articles and YouTube videos that have gone on to train more people in the online space. To deliver these trainings we used facilitators from the Aquaculture Association in Tanzania, Institute of Marine Sciences and Zanzibar Municipal Council.



➤ <https://afo.or.tz/6-business-opportunities-in-aquaculture-tanzania/>

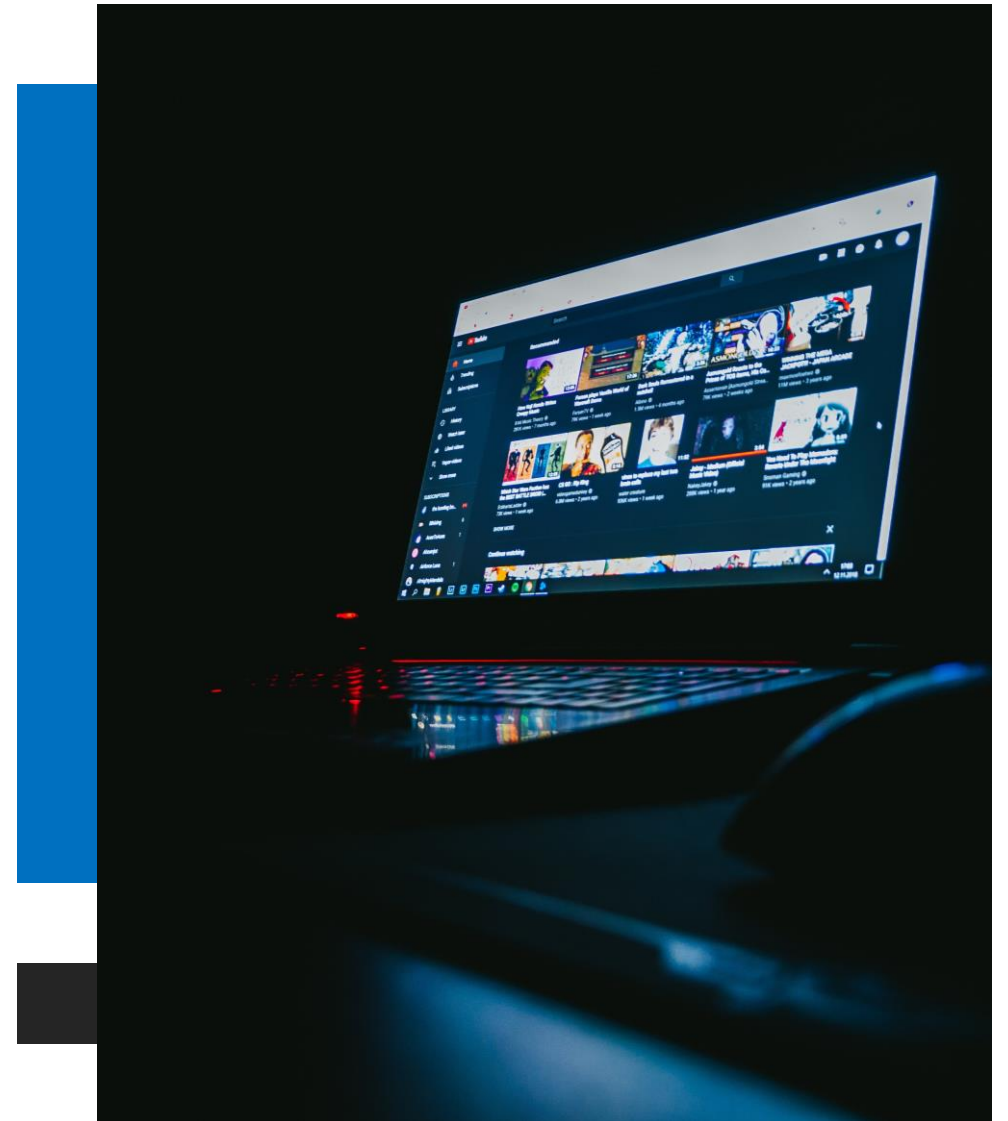
Full webinar: <https://www.youtube.com/watch?v=jA-x8wYqJaM>

### **Sea cucumber farming in Tanzania:**

<https://www.youtube.com/watch?v=el1NgDNmc-A&t=1007s>

Featured on the Guardian Newspaper on Tanzania Untapped Potential of Aquaculture, calling in for more investors

<https://www.ippmedia.com/en/features/tanzania%E2%80%99s-untapped-potential-aquaculture-calls-more-investment>





# Capacity Building

Economic competitive aquaculture



## Marine Biology Summer School

Two Aqua-Farms Staff attended the summer school of The 4th Daniel Jouvance - SU International Marine Biology School (EIBM DJ-SU), University of Namibia January 26- Feb 1 2020 -that was a collaboration between the Daniel Jouvance Foundation, the Sorbonne University Foundation and the University of Namibia (UNAM), the main aim was to address the current issues in marine biology, including Marine Biotechnology and novel approaches such as Genomics, Post-genomics and Bioinformatics, and illustrations on the power of these techniques, in seaweeds, marine invertebrates and fisheries.

The Summer school covered a Regional context: Marine biodiversity and blue bio-economy in Namibia and in the SADC countries, with focus on three modules

- Module 1 - Issues in Marine Biology: Marine bio-resources and blue biotechnology, climate change and impact on coastal ecosystems.
- Module 2 - Overview of methods: Basic concepts and approaches in bioinformatics, genomics and postgenomics, genetic and metabolic engineering in marine organisms,
- Module 3 - Case studies: Cultivation of seaweeds and seaweed industry, aquaculture of marine invertebrates, Integrated farming.

With practicals on seaweed cultivation and case studies on Tanzania seaweed farming as well as seaweed industry in Southern Africa Development Countries. Our staffs, learned and through this workshop created a collaboration with Dr. Claire Gachon from SAMS and now working on Ice Ice diseases project in Zanzibar.





## Training Aqua-Feeds extrusion



Earlier in 2020 Aqua-Farms Organization was administered as a strategic partner of World Initiative Soybean for Human Health (WISHH) 3 Aqua-Farms Staff, participated in a one week August 31 – September 4, 2020 online short course. titled “Aquaculture Feed Extrusion, Nutrition & Feed Management” , offered by Texas A&M University with support from WISHH. The training aimed Training fish feed production personnel in principles and characteristics of extruders and support systems for effective selection and operation, reviewing current practices for preparation of aquaculture feeds, familiarize attendees with practical aspects of fish feed extrusion and reviewing aquaculture nutrition and feed management practices. From this training Aqua-Farms staffs can now assess the pellet size and appearance variation between two different food stocks we use at our farms and support farmers with the skills; understand the how to and use of The International Aquaculture Feed Formulation Database (IAFFD) webpage to see the comparison between the feedstocks and the benchmarks in the platform, and enhance our local feed formulation practices.

"The training was of its kind, the arrangement of content, skill and level of detailing from facilitators was sufficient. this basics we have attained has opened up our huge understanding on the technology, and biology of making best fish feeds, and this training has just ignited us to speed up the establishment industrial-scale first production unit in Tanzania, and build up our long-lasting collaboration with WISHH." Jerry Mang'ena



## Workshop on seaweed value addition

On 16-17th December, the Agriculture Council of Tanzania conducted a training on value addition of food products, bringing together stakeholders from Agriculture, Livestock and Fisheries sectors, the training aimed at capacity building the trainers with up to date skills in making market-competitive products that meets the nation, regional and globe standards. This workshop has equipped our staff with skills necessary to enhance value addition of seaweed to fit in international trades



# Conferences

Economic competitive aquaculture





### **PANEL SPEAKER:**

The 6th Annual Agricultural policy and planning

**Organizer:** Policy Analysis Group; Feed the Future USAID

**Where:** Dodoma, Tanzania

The 6th Annual Agricultural Policy Conference (AAPC) supports the efforts by the government of Tanzania including the recently launched Agricultural Sector Development Programme (ASDP-2). The 6th AAPC's theme was "*Public and Private Sector Investment for Agricultural Transformation in Tanzania: Tackling Agribusiness Drivers and Enablers in Crops, Livestock, Fisheries and Agro-processing*" and was organized by the Policy Analysis Group (PAG) in collaboration with the Agricultural Sector Lead Ministries (ASLMs) in Tanzania. The AAPC brought together over 250 participants from academia, research institutions, policy-makers, advocacy groups and development practitioners from Tanzania and in the region where Aqua-Farms Organization Director Mr. Jerry Mang'ena was among the participants and a panelist of thematic area of Land, Natural Resources and Environment, As the 6th AAPC will address value chain specific policies to deepen the impact on food security, nutrition and job creation in Tanzania, Mr Mang'ena Addressed the component of Fisheries as a Aquaculture as a resource, as well as the opportunities and challenges. The discussion also evolved around drivers of growth which include macro and micro economic policies and enablers of sector growth, particularly supporting infrastructure, finance and human resource.

The background image shows a fisherman in a small boat on a body of water at sunset. The sky is a mix of blue, orange, and pink. A large, curved fishing net is visible in the upper part of the image. The fisherman is silhouetted against the bright sunset. The water reflects the colors of the sky.

# Flagship Areas

## 2. Sustainable fisheries



## **Genetic population structure; Diversity and Connectivity of the commercially important cephalopod octopus cyanea (Grey 1849) in Tanzania and Mozambique**

**Where:** Tanzania and Mozambique

**Duration:** 2 years

**Impact:** The project recommendations will ensure sustainability of Octopus fisheries and enhancing food security and livelihood to coastal communities.





This is a collaborative project between Aqua-Farms Organization and Vrije Universiteit Brussel (VUB) started January 2020 to date. The project covers coastal waters of Tanzania (Tanga; Dar es Salaam; Kilwa; Mtwara and Zanzibar) and Mozambique (Pemba; Quelimane; Vilankulo and Maputo) in the Western Indian Ocean region.

*Octopus cyanea* continues to be an important resource for artisanal fisheries and coastal livelihoods of communities in Tanzania and Mozambique. Substantial growth in international market demand worldwide causes a strong increase in artisanal fishing. This is leading to a high exploitation pressure; raising concerns regarding the sustainability of the fishery. Marine Protected Areas (MPAs) has been suggested as the essential tools for conservation and sustainable management of octopus and other marine species. However, for proper design of a fully functioning network of Marine Protected Areas (MPAs); information about connectivity among populations and larval dispersal need to be taken into consideration.

The study is very important in providing recommendations for fishery management and a proper design of a fully-functioning network of MPAs. It also aims to reveal whether the species should be managed as one management unit or separate units in the two countries. As both Tanzania and Mozambique are signatories of the Convention on Biological Diversity (CBD) that aim to increase the protected areas by 10 % of their territorial waters.

When data analysis is complete the findings from this study will be critical for the designation process for the management of *Octopus* stock in Tanzania and overall in the WIO region. The project is on going to the end of the year 2021.



## **Revealing the Appropriate Management Units to Strengthen Management of the Sandfish in Tanzania (RAMUS)**

**Where :** Mtwara, Tanga and Zanzibar (Unguja)

**Duration :** On going

**Impact :** The project will generate valuable new insights for the design management strategies for Sandfish sustainability and later community benefits through fishing and the mariculture industry in Tanzania.





RAMUS project was funded by Western Indian Ocean Marine Science Association (WIOMSA) through Marine Research Grant I (MARG1) started August 2020 and continues to the end of year 2021. The project aims at improving management of the Sand fish fishery to allow the recovery of the stock through a national fishery ban and increasing the number of Marine Protected Areas. The project covers the coastal communities of Tanga, Mtwara and Zanzibar (Unguja).

Sandfish (*Holothuria scabra*) is an economically important sea cucumber that has been over-exploited along its distribution range in the Western Indian Ocean regions including Tanzania. Due to the significant population decline the species is included in the IUCN Red List of Endangered species. This has raised interest in improving its management. The government of Tanzania has been making efforts to improve management of the fishery to allow the recovery of the stock through a national fishery ban and increasing the number of Marine Protected Areas, but the progress is hampered by the lack of data on the genetic stock structures and the patterns of genetic connectivity between spawning and fishing grounds. Project applying microsatellite markers to reveal the appropriate management units for the sandfish *H. Scabra* along the Tanzanian coast.

When the project is completed it will result in policy briefs, management recommendations, and reports on the stock structure, the priority areas for MPAs, and the critical areas for strengthened management, increased awareness of the stakeholders regarding the patterns of gene flow and the priority areas for MPAs.





### **Assessment of consumption patterns and factors associated to under consumption of Tuna and tuna like species in Tanzania**

**Where :** Mtwara, Tanga and Zanzibar (Unguja)

**Duration :** On going

**Impact :** Increased consumption patterns that will solve the problem of malnutrition, food security, fortification, increased market value of tuna and tuna-like species and enhanced livelihood to coastal communities in Tanzania.



The project was funded by Deep Sea Fishing Authority (DSFA) April 2020 to be conducted for a duration of 1 year. It's a collaborative project with Tanzania Fisheries Research Institute (TAFIRI), Tanzania Food and Nutrition Centre (TFN) and Ministry of Livestock and Fisheries, Fisheries Division (MLF). The project intends to explore the consumption patterns and reasons behind underconsumption of commonly caught tuna and tuna-like species (that is Kawakawa, Skipjack tuna and Yellowfin tuna) in coastal communities of Tanga, Mtwara and Zanzibar (Unguja) along with the micronutrient levels (such as calcium, iron, iodine, zinc, omega-3-fatty acids and vitamin A) of the fish relative to other species of primary interest.

Tuna and tuna-like fisheries are crucial for the livelihoods of coastal communities in the Western Indian Ocean (WIO) region countries including Tanzania. The most commonly caught tuna and tuna-like species from Tanzania's territorial and Exclusive Economic Zone (EEZ) waters include Kawakawa, Skipjack tuna, Yellowfin tuna and Bigeye tuna, where together they contribute about 18 % of the annual marine capture fisheries biomass. This catch has a potential contribution towards addressing poverty, improving living standards and social welfare of the people of Tanzania.

Despite significant contribution in terms of marine catches, domestic consumption of the tuna and tuna-like species still remains low compared to other fish species of primary interest such as groupers, rabbit fishes, snappers, and emperors. Reasons associated with underconsumption of tuna and tuna-like species in the country are unknown, however, preference for consumption of fish species has been associated with lack of understanding on the health benefits of the fish as well as socio-economic and cultural factors including traditional habits, behaviours, attitudes, fish species preferences, income, and socioeconomic classes.



Underconsumption of the fish has been blamed to cause large financial losses in the tuna fishery sector originating from the lack of a stable local market. Unstable market discourages local investors to venture in the tuna fishery sector. Therefore, improving our understanding of the consumption patterns and factors associated to underconsumption of tuna and tuna-like species in the country as well as generating scientific evidence (that is source of micronutrients) on the health benefits of the fish is vital, because will provide necessary conditions needed for changing consumer's perceptions, attitudes and beliefs on the fish and consequently, can lead to increased consumption of tuna and tuna-like species in the country. The implementation approach follows collaborative work of several stakeholders including fishers, processors, consumers, small and medium entrepreneurs (SMEs), Fisheries and Nutritional officers and researchers from AFO, TAFIRI, TFNC and MLF.

Project is ongoing and the preliminary results indicated that: (1) There is generally a low level of consumption of tuna and tuna-like fishes among the residents of Tanga area. However, consumption increases during the peak fishing season. (2) The large quantity of locally caught tuna and tuna-like species is being exported outside the landing sites to other regions within the country such as Dar es Salaam, Arusha, Dodoma and Morogoro. (3) Beliefs do not affect tuna consumption among the residents of Tanga area. (4) Consumers like the taste, smell, colour and texture of the tuna and tuna-like species. (5) Most residents are unaware of the nutritional & health benefits associated with consumption of tuna and tuna-like species. (6) Seasonality and knowledge on health benefits associated with fish consumption are the main factors associated with underconsumption of tuna and tuna-like species among residents of Tanga area as they affect price and availability of tuna and tuna-like.

At the end of the project, the findings and results especially on health benefits associated with consumption of Tuna and tuna-like species will be disseminated to various stakeholders including radios, television, websites and social media such as Facebook, Instagram and Twitter. This will result in raised awareness on consumption of tuna patterns and increased market value of tuna in Tanzania.







### **Delineation of the genetic stock structure of the Queen mackerel to enhance fisheries management in Tanzania (DGS-Fish)**

**Where :** Tanga, Mtwara and Zanzibar (Unguja)

**Duration :** On going

**Impact :** The project impacts tuna and tuna like species stakeholders management and conservation of the mackerel fisheries for sustainable community livelihood benefits and food security in Tanzania.



The DGS-Fish project's ongoing project funded by the Deep Sea Fishing Authority (DSFA) April 2020 to be conducted for a duration of 1 year covers coastal waters of Tanga, Mtwara, Dar es salaam and Zanzibar (Unguja) in the WIO region. It's a collaborative project between Aqua-Farm Organization and Sokoine University of Agriculture (SUA). The project aims to improve management and productivity of the mackerel fishery in Tanzania through genetic delineation of the stock structure which will inform authorities of the appropriate units for effective management, the critical areas for strengthened management, and the priority areas for MPAs.

At the end the project is expected to benefit all actors in the Tuna-like Industry as it will provide information to enhance the management and productivity of the mackerel fisheries in Tanzania. Our future plan is to Reduction of post-harvest loss of tuna and tuna-like species through value addition to improve food security in Tanzania Communicate findings to the Ministry of Livestock and Fisheries, Fisheries Division, the Marine Park and Reserve Unit, the Local Government Authorities, Local Communities, and other actors in the supply chain for the management ation.



### **Reduction of post-harvest loss of tuna and tuna-like species through value addition to improve food security in Tanzania**

**Where:** Dar es Salaam and Mtwara

**Duration:** On going

**Impact:** Reduction of post-harvest loss, improved quality of fish and fish products and standards, maximize the resource utilization while improving household income and food security.





The project is an ongoing collaboration between Tanzania Fisheries Research Institute (TAFIRI), Sokoine University Of Agriculture (SUA) and Aqua-Farms Organization (AFO) funded by the Deep Sea Fishing Authority (DSFA) April 2020. The aim of this project is to assess and come up with suitable methods and techniques in reducing the current post-harvest loss of tuna and tuna-like species as well as production of value added products from the harvested tuna and tuna-like species.

Tanzania is a coastal state on the western Indian Ocean situated in the Eastern part of Africa. It is richly endowed with natural water bodies and the fisheries sector plays an important role for subsistence and commercial livelihood. The Tanzania marine water is blessed with numerous commercially important fish species. The sustainable utilization of these resources significantly contributes to the national economy and improves community livelihoods. However, despite their importance, some of the marine resources including fish reported to experience high post-harvest losses (PHL) due to poor storage, handling, processing and safety control measures taken for the harvested fish. Tuna and tuna-like species are among the fish species reported to experience high PHL ranging from 25-50% thus affecting fish quality, assurance and food insecurity. Among the major causes of high losses are inadequate handling (poor fishing and on-board handling, storage, processing and distribution) across the fish value chain.



The implementation approach follows collaborative work of several stakeholders including fishers, processors, consumers, small and medium entrepreneurs (SMEs) and researchers from Aqua-Farm, TAFIRI and SUA. Quality and standard improvement will be done on-board the vessel immediately after each hauling. This will involve draining of blood to reduce deterioration and improve the quality of tuna flesh. Research team working with fishers on-board the vessel will conduct a bleeding process immediately after hauling the fish followed by washing and ice storage for nutritional quality assurance. After landing the fish some tuna will be selected for production of various value added products. This processing exercise will be done through applied research and product development and innovation activities involving the local community. Some products including fresh tuna skinned fillets, fresh unskinned fillets, tuna sausage, fried spiced skinned and unskinned fillets and many more products will be produced for direct consumption and market purposes using KinoSol orenda. The expected outcome is higher quality, attractive, safe and desirable products for internal market and external markets. Moreover, the blood from the bled fish will be collected and sent for proximate analysis to determine chemical nutrition of this by-product for animal feed production.







The preliminary results indicate that: 1) There is generally less loss experienced by fishers, 96% and 93% of the fishers in Dar es Salaam and Mtwara respectively. This observation may be attributed by a number of factors including that most fishers do not stay longer with the fish, immediately after fishing, the fish sold to traders through an open auction. High loss was experienced by traders in Mtwara than in Dar es Salaam

2) Market loss was the main loss that was experienced by fishers both in Dar es Salaam and Mtwara, however, higher in Dar es salaam than Mtwara. High quality losses were observed in Mtwara than Dar es salaam. For physical loss, the survey was higher in Dar es salaam than in Mtwara.

3) For traders, the survey observed equal market losses in Mtwara and Dar es salaam. But quality losses were higher in Darkrp es salaam than Mtwara. Generally physical loss in both sites was relatively low.

Through this project improved quality of fish and fish products and standards, will lead into reduced PH, maximize the resource utilization while improving household income and food security. This aligns with the MKUKUTA goals number 1, 2, 8, and 14 of 2030 for poverty alleviation, food security and improved nutrition. Moreover, the outcomes align with environmental conservation, sustainable resource utilization, economic growth and employment. The project is expected to last for 12 months.





### **Larval Fish production and Dispersal in critical habitats of coastal East Africa (FLAPSEA)**

**Where :** Tanzania and Kenya

**Duration :** On going

**Impact :** The project provides insights on how fish larval production is threatened by habitat degradation and fragmentation, and how production of this natural resource is related to climate change and development in the coastal WIO region. This will help to plan management strategies in the future to ensure sustainability of fisheries resources.



The project funded by Western Indian Ocean Marine Science Association (WIOMSA) through Marine and Coastal Science for Management (MASMA) collaborators are; Kenya Marine and Fisheries Research Institute (KMFRI) as lead institution, UDSM through Institute of Marine Sciences (IMS), Stockholm University (Sweden), Tanzania Fisheries Research Institute (TAFIRI) and Aqua-Farms Organization (AFO). The project aims to understand to what extent fish larval production is threatened by habitat degradation and fragmentation, and how production of this natural resource is related to climate change and development in the coastal WIO region.

Some preliminary findings from the project are; seagrass status and fish larvae dispersal; Fish larvae and Food availability

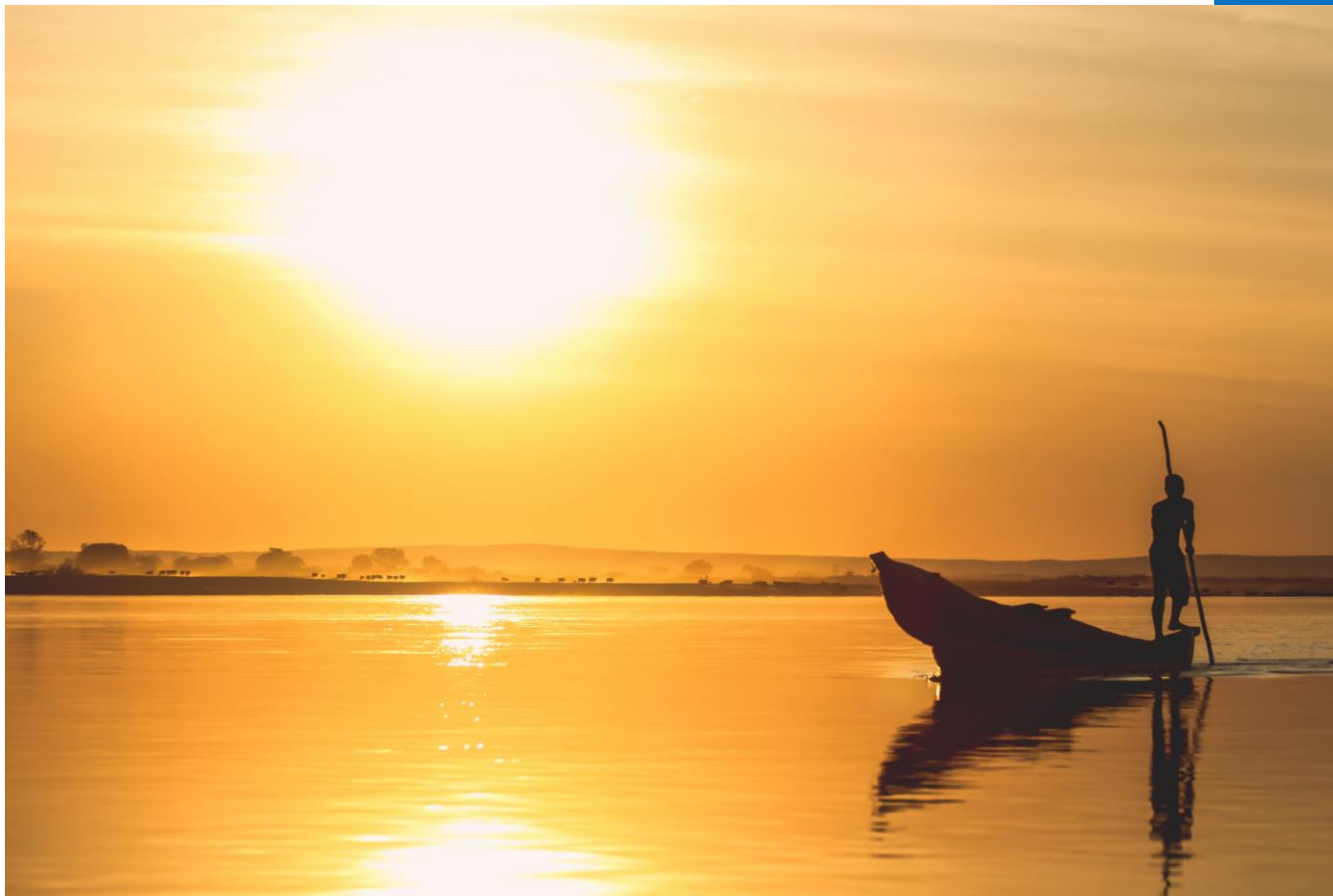
Seagrass percentage cover was higher in the healthy sites than in the degraded seagrass meadows.

Shoot density of seagrass habitats was higher in the healthy sites compared to the degraded seagrass meadows. Total biomass, above-ground biomass and below-ground biomass were higher in the healthy than in the degraded seagrass meadows. Epiphyte biomass was higher in the degraded than in the healthy seagrass meadows. Other water quality variables such as Water transparency in the water column was better in the healthy sites relative to the degraded seagrass meadows water column. Phytoplankton (Chlorophyll "a") was higher in the degraded than in the healthy seagrass meadows. Nutrient levels were higher in the degraded than in the healthy seagrass meadows. For Zooplankton and fish larvae, there was no clear consistent trend in abundance based on degraded or healthy sites. Besides the seagrass condition in degraded and healthy sites, other factors such as physicochemical variables, food availability (phytoplankton and zooplankton) appeared to drive fish larvae abundance and dispersal. The abundance of plankton is an indicator of food availability to fish larvae abundance. Fish larvae abundance impacts fish productivity and livelihoods because only 1-2% of fish larvae are recruited to juvenile/adults while 98-99% die due to various environmental and biological factors in the wild environments. So, increased survival of fish larvae will directly affect the amount of adult fish available to fishermen and their livelihood.





# Capacity Building



Sustainable fishing

# Marine Spatial Planning (MSP) Workshop

**Organizer :** Intergovernmental Oceanographic Commission UNESCO

**Where :** Dodoma, Tanzania

A staff from AFO attended a workshop on National training on Marine Spatial Planning and Sustainable Blue Economy including transboundary aspects and opportunities Tanzania. The workshop was conducted on 21 st October 2020 in Dodoma to give insights on the Marine Spatial Planning and Blue Economy in Tanzania. This was due to the increased concern about MSP in the global and in some countries in the Western Indian Ocean region. Therefore, this was the Road Map towards the implementation of Marine Spatial Planning in Tanzania for the sustainable blue economy. The workshop was hosted by Maria Pentzel (IOC-UNESCO National Consultant) from Tanzania and attended by multi-sectoral stakeholders from Government and Non-government organizations. The meeting aimed at implementing capacity development activities on MSP and sustainable Blue Economy in Tanzania. It's two main objectives were to strengthen national institutional capacities in relation to MSP and the sustainable Blue Economy and to strengthen national institutional coordination for the adoption of the MSP roadmap. On 21 October 2020 at Nashera Hotel in Dodoma, Tanzania, the IOC-UNESCO conducted a training course on MSP and the sustainable blue economy which was co-financed by the Kingdom of Sweden and the European Fund for Maritime Affairs and the Fisheries of the European Union.

The main Objectives of the workshop was; to strengthen national institutional capacities in relation to marine spatial planning (MSP) and the sustainable blue economy and to strengthen national institutional coordination for the adoption of the MSP roadmap.

“The workshop was very informative and interactive, it allowed learning hands-on how to successfully plan for our coastal and marine resources for the sustainable ocean” [Valel Joseph](#)





# Conferences and Consultative meeting

Sustainable fishing



**Consultative meeting on ecosystem approach to fisheries, implementation monitoring tool and development of operational plan for small and medium pelagic fisheries 2013 (11-17 January)**

AFO staff attended the Consultative meeting on ecosystem approach to fisheries aiming at developing Operational plan for Small and Medium Pelagic fisheries Management plan held at Mvuvi House in Dar es Salaam, Tanzania.



**Stakeholders Meeting on Certification of Octopus Fisheries in Tanzania organized by WWF, TAFIRI and MLF**

On 16th March 2020, we participated in a stakeholders meeting on Octopus certification with purposes of promoting stakeholders awareness on octopus value added business opportunity as result of MSC certification and promoting octopus stakeholders synergizes to realize an enhanced export business opportunity. The stakeholders meeting was organized by WWF, TAFIRI and MLF.



## Stakeholders Dialogue of Tuna Fisheries

**Organizer:** Ministry of Livestock and Fisheries (MLF)

**Where:** Morogoro, Tanzania

**Aim:** The meeting evaluated the progress made in implementing tuna fisheries management strategy.

Some of the agreements to be done in the future: To development of Tuna identification key using smart technology; Tanzania needs to adapt the blue justice practice to safeguard the rights of the small-scale fisheries toward the blue economy, because 90% of our fishermen are artisanal; There was a suggestion to have one stop centre for fisheries Information system and Applied research should be emphasized and given high priority for resources sustainability

## Bahari yetu, Urithi wetu stakeholders meeting participation and poster presentation

**Organizers:** University of Dar es Salaam (UDSM), College of Humanities (CoHu) and Aqua-Farms Organization (AFO)

**Where:** Dar es Salaam, Tanzania

On 30th November to 6th December, AFO collaborated with college of Humanities (CoHu) of University of Dar es Salaam in a conference and exhibitions on ways we can preserve our oceans for the future generation to come, AFO presented a poster on Mangroves Ecosystem in relation to supporting livelihoods of women at the coast of Bagamoyo, UWAUTO (Umoja wa wakulima wa Tondo) and why it is important to conserve them via community-based approach.



## Participation on development of fisheries master plan II 2021-2030

**Organizer:** Ministry of Livestock and Fisheries

**Where:** Singida, Tanzania

AFO participated in the review of the Inception report of the Fisheries Master Plan II organized by the Ministry of Livestock and Fisheries in Singida, Tanzania with support from FAO Tanzania for 3 days from 25<sup>th</sup> to 29<sup>th</sup> November 2020. The fisheries stakeholders meeting is a key representative of stakeholder groups for verification and consolidation of issues and operational objectives and development of strategic interventions/actions for the fisheries master plan II from the already developed inception report as well as baseline report.





An underwater photograph showing a sea turtle swimming towards the surface. The turtle is positioned in the center-right of the frame, with its head and front flippers visible. The water is clear and blue, with sunlight filtering down from the surface, creating a bright, shimmering effect. In the foreground, there is a large, dark, textured coral reef structure. The overall scene conveys a sense of marine life and conservation.

# Flagship Areas

3. **Conservation of aquatic ecosystem and marine critical habitats**

# Projects

Conservation of aquatic ecosystem and marine  
critical habitats



## **Mikoko na Jamii Peri-Urban Mangrove Restoration**

**Impact:** 10,000 Mangroves Restored and Alternative  
Livelihood Support

**Where:** Mbweni And Kunduchi, Dar es Salaam

**Duration:** Ongoing





“Mikoko na Jamii Project” commenced in 2016 with the purpose of restoring peri-urban Mangroves along the Tanzanian coastline affected by Natural and Human-made activities. Our first venture was restoring mangroves at Kunduchi creek in Dar es Salaam, followed by the three next attempts that took place at Mbweni Dar es Salaam. The project uses Community based approach where by the community are the key drivers in championing the Mangrove restoration from the preparation stage of collecting seedlings to execution; The project supported a group of 20 women known as “Wanawake na Mazingira Mwbeni” who have spent over a decade championing for Mangrove conservation with 4 modern beehives as a way to their alternative source of income obtained through fundraising from different local environmental partners , Furthermore handed over hard gloves, Gun boots and protection gears against bees. The project had been able to bring together more than 200 volunteers from different parts of Dar es Salaam to participate in the quarterly restoration phases.

Alongside with that, the project have had a greater expansion in media outreach where through different television and radio programs, [YouTube documentary](#) with 141 views, poster presentations to national and international conferences i.e ZMT and WWF and over 10,000 reaches in Social Media . Our partners include: Tanzania Forest Service Agency (TFS) Tanzania, Rotary club of Dar es Salaam Mlimani, Fisheries Development and Conservation Organization (FIDEC), YoungShip Tanzania, Wanawake Mazingira Mbweni (Residents), Beach Management Unit Mbweni.

Through this project, we have been able to gain recognition beyond borders, as our Executive Director had been featured in prestigious Africa Leadership University at School wildlife conservation in Rwanda, an initiative that highlights conservation works of young people in Africa in order to inspire the next generation of Wildlife conservationists.



## Way Forward

The project is looking forward to incorporating more partners in training the “women with Environment” group at Mbweni with economic Beekeeping Techniques and Financial Literacy Knowledge; while Expanding the community-based approach to other peri-urban mangroves along the coast of Tanzania.

## Has The Restoration Worked?

Aqua-Farms Organization in collaboration with Vrije Universiteit-Belgium conducted an assessment to investigate the success of the mangrove restoration and percentage of survival of the restored mangroves; Comparison was made between the sites with a history of mangroves (restored sites) compared to the novel sites (site with no history of mangroves).

The success rate after two years of monitoring in percentage ranged from 0 to 109% depicting the importance of natural regeneration; The study recommended that survey and preselection of the site (s) following the depicted factors should guide replantation of mangroves in the area. If the factors are not met, another measure of mangroves restoration apart from replanting such as hydrological repair should be taken into consideration

## Future Projects

In our future project we foresee to expand to a community based voluntary carbon market. In this system the community will benefit from carbon trading while conserving mangroves. The funds generated will be used to support education at the villages. This is inspired by one of our staff visits at Gaza Mangroves in Mombasa, we are looking forward to forge partnerships for the development on Carbon credits with Mikoko na Jamii



# Projects

Conservation of aquatic ecosystem and marine  
critical habitats



## Convening World Ocean Day Celebration in Tanzania in collaboration with the WIO Region

**Where :** Online  
**Impact :** 40 people from different parts of WIO region attended the event, from Tanzania, Comores, Mauritius, South Africa and Kenya  
**Duration :** Ongoing





## Theme: Innovation for the sustainable blue ocean: Are we there yet?



NANCY IRABA  
CO FOUNDER - AFO



Dr. NADJIM AHMED  
LECTURER -  
UNIVERSITY OF COMOROS



Dr. MATHIAS IGULU  
MASMA COORDINATOR -  
WIOMSA



HELLEN SILAS  
Founder  
ARENA RECYCLING



**June 7th 2020**  
**19:00 -20:00 EAT**

Register at

<https://tinyurl.com/aquafarms>

Since 2018, Aqua-Farms organization has been pioneering celebration of World Oceans Day in Tanzania through hosting of social events that brings people together to discuss crucial issues facing our oceans and their solutions; However, this year due to COVID\_19 pandemic, we were forced to rethink our normal way and hosted the “2020 World Oceans Day” online under the theme of “Innovation for sustainable blue ocean” this gave an opportunity of diverse attendance beyond the country level, the Event attracted 40 attendees from different geographical areas that includes Kenya,, South Africa, Comores, Mauritius and Tanzania. The event was graced by Mr. Mika Odido from Intergovernmental Oceanographic Commission (ioc\_unesco), President of the Western Indian Ocean Marine Scientists Association, Dr. Jacqueline Uku, Delegates from the Kenya Marine and Fisheries Research Institution, Western Indian Ocean Early Career Scientists etc.. and we had diverse panelists from different parts of the geography, which includes; Dr. Mathias Igulu (MASMA coordinator, WIOMSA); Dr. Nadjim Ahed (Lecturer-University of Comore); Ms. Hellen Sailas (frioDirector, Arena Recycling Company) and Ms. Nancy Iraba (Science Communicator and co-founder Aqua-Farms Organization)

WIOMSA has over 20 years operating better ways in managing resources in the region, supporting young and emerging scientists to turn their ideas into practical solutions, recently announced “Innovative Sustainability Grants”, during the panel, Dr. Igulu elaborated on types of innovations they are looking for,, emphasizing on *sustainability* to be taken into account “*The ideas we are looking for, it is not a must to be entirely new, can be solutions/ideas practiced in another place that can apply to Western Indian Ocean Regions*” furthermore pinpointing turning into more digital ways of doing things i.e Data collection





As our oceans are currently experiencing threats from Ocean Acidification, Climate Change, Overexploitation to Pollution etc, the panellists elaborated some of their innovative works done by their entities; Miss Hellen Sails with her recycling venture of turning plastic wastes into Eco-bricks, is among few women globally recognized by the Economic Group World Ocean Initiative for her innovative work, she explained her venture that was inspired after seeing our beaches are polluted with high number of plastic wastes, she champions innovation by protecting life below water (SDG 14) through organizing beach cleanups to collect plastics, sorting and melting them using Eco-bricks formula., “ *This venture is very profitable as the Eco-bricks are in demand for construction of house, toilets and offices*” says Ms. Hellen

Dr. Nadjim Ahmed from Comore took us from how he is taking initiatives in working with his team to bring innovative solutions in the area of benthic biodiversity which is lagging behind in his country “ *There is little information on benthic invertebrate in my country but we are using little resources we have to conduct molecular techniques and monitoring of benthic communities and Ecosystems in Comoros.*” Dr. Nadjim is currently building equipment to work on coastal areas and deep-sea, approach inspired by the SA Agulhas research expedition that he used innovative tools to sample underwater benthic organisms

In a closing Question, the panellists assessed how far we have gone with innovating our western Indian ocean, and the types of innovations needed to achieve healthy and productive oceans by 2030







***“ Nature of human development is on progress all the time, even in our oceans there is a significant improvement compared to before,”*** says Dr. Igulu, adding on by wanting each one of us to ask ourselves if we are prepared to deal with challenges coming beyond 2030 ***“ Will we be in a position to tackle?, will the tools be there to address the challenging issues?”*** pointing out areas that need special attention ***Climate change, Managing land-based pollution, Ocean Acidification, Marine Litter, and Threatened Endangered species*** highlighting on how different sectors have embraced ***Artificial intelligence*** and ways to rethink how to make it to work in our fisheries for collecting data and addressing important questions. Furthermore, Dr Igulu emphasized that we need to place ourselves in a good position for Technology and advancement with our oceans as most of the WIO regions are lagging behind, and this should be waking up call for the young and emerging scientists on ways to move forward

***“We still need more innovation related to technology,”*** says Miss. Hellen in which she adds on by recommending youth engagement in accelerating the innovations for achieving sustainable oceans, ***“ Future is technology, and we need technologies that can track marine debris and clean our oceans to be free from plastics, and tackle climate change by reducing the carbon footprints”*** While Dr Nadjim from Comore, explains the lack and low interest of youth to engage in ocean sciences in his country and recommends to learn on technologies and innovations practised by other countries for adoption and institution capacity building

Beyond the main speakers, there was participation and interaction with the attendees on what are challenges and opportunities of innovation in the WIO region

Mika Odido the Africa Coordinator for the Intergovernmental Oceanographic Commission UNESCO pointed on the literacy gap and creation of careers in the field of marine sciences, he demonstrated the gap between students understanding the potential opportunities in the marine sciences as well as the gap our academic programs as they fail to illustrate the possible means of self-employment, he encourages institutions and universities offering oceanographic programs to consider opening opportunities for job creators rather than job seekers. noticing that the IOC UNESCO through the upcoming decade has embedded youth and early-career scientists in the plans so as it can be a decade of change.

Moreover, the President of WIOMSA Dr Jacqueline Uku emphasized on the need to embrace innovation to tackle the challenges of climate change; “we need to promote awareness on aquatic environment so that many people understand what it carries” she utters

The world ocean day commemoration ended by the remarks from the co-founder and Director of Aqua-Farms Organization Mr. Jerry Mang'ena, by pointing out that youth and innovation with support from the senior scientists can solve various ocean problems, he emphasized on the creation of an ocean innovation hub for the Western Indian Ocean region where innovators can get technical, business and administrative aid to break through their technologies for the benefit of the ocean.

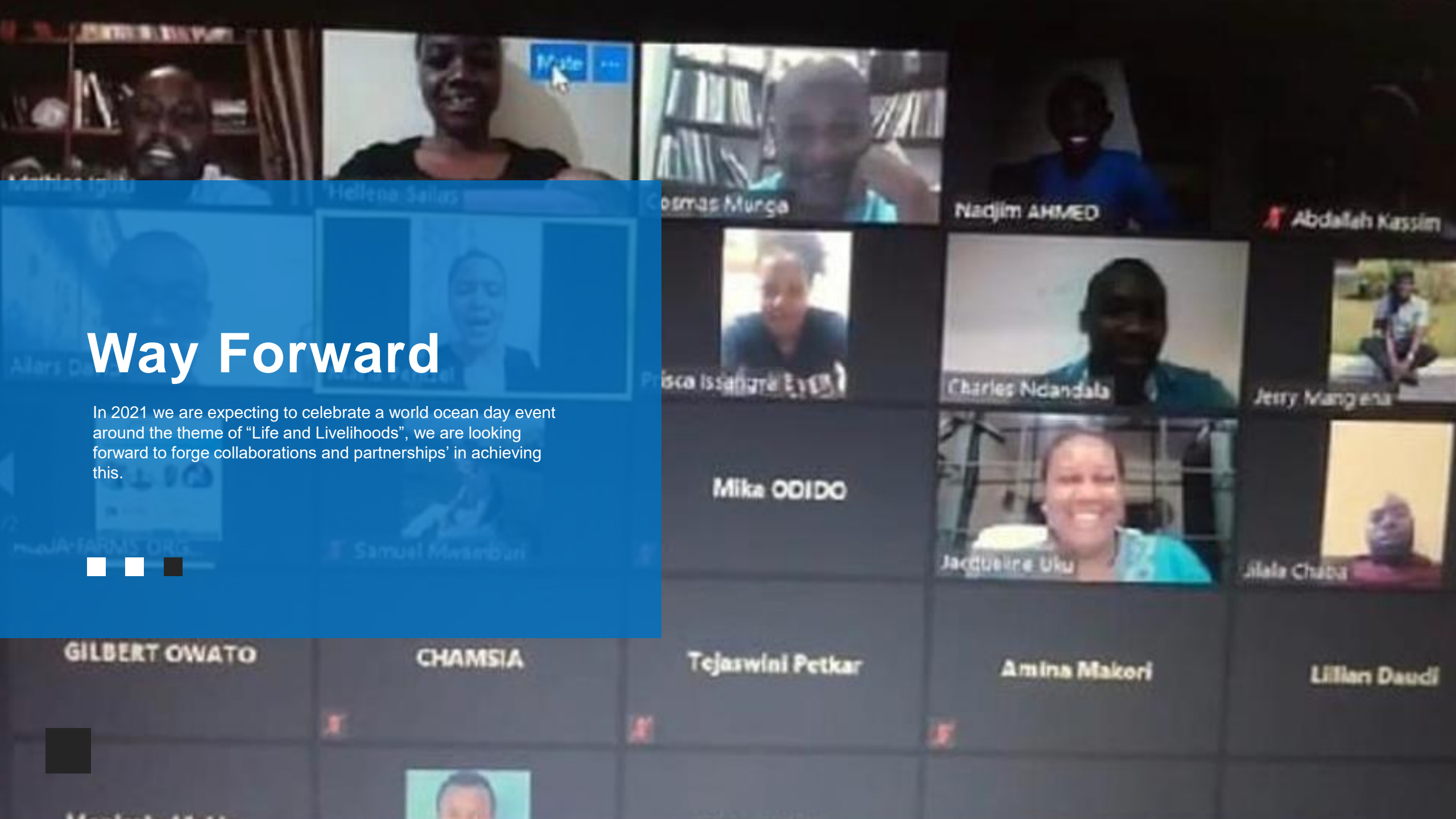
**Our oceans have the potential of becoming a leading driver of our economy, alleviate livelihood and create jobs for the current and the future generation, “if we bring our ideas together we can move forward”**

The event was very successful and produced Deliberations that were shared in one amongst most prominent local magazines in Tanzania for public dissemination which can accessed [here](#) and an output [video](#)



# Way Forward

In 2021 we are expecting to celebrate a world ocean day event around the theme of "Life and Livelihoods", we are looking forward to forge collaborations and partnerships' in achieving this.



## BLUE ECONOMY CAN DO WONDERS

Our Co-founder and Science Communicator Ms. Nancy Iraba was featured in a local Magazine, Daily News Habari leo, where she shone light on how Ocean Science and blue economy can do wonders once we tap into collaborations and Researches to unlock the ocean economic potential

Here are the few of the crucial important points emphasized:



Make no doubt; Tanzania is endowed. And one of the areas not yet utilized is the country's water bodies. Tanzania, with a coastline stretching approximately 1,424 kilometres is considered potentially competitive in the region and the world.



Should Tanzania and neighboring countries sharing the Indian Ocean resources keep their houses in order; a lot can be achieved. However, for this to occur there is a need for a close collaboration among many players including governments, policy makers, private sector and scientists.



In Tanzania alone, the Ocean has directly employed about 200,000 people in the fisheries sector and about 4 Million people indirectly benefit from the sub-sector. and this the essence of blue economy " Reaping Economic benefits from the Ocean while ensuring sustainability of its resources and ecosystems"; Other thematic areas in blue economy includes Aquaculture, coastal tourism, Marine transport, Energy, Oil and Gas; all these, including the emerging sectors are contributing in creating jobs and alleviating livelihoods



“The Ocean is the next frontier for researches and innovation and therefore marine scientists across different disciplines work to unlock the oceans unexplored potentials to unleash the full benefits of blue economy,”



Coastal and marine environments are still suffering from unsustainable human practices including addressing the most urgent issues of our oceans today like Ocean Acidification, Climate Change, Pollution, Overfishing) via conducting research that informs policies, helps in management strategies and induce action.



The Intergovernmental Oceanographic Commission under UNESCO have declared an Ocean Science Decade starting from 2021-2030 of intensive ocean exploration and discovery through research and collaboration.



Collaboration and forming partnerships would develop new technologies that will transform how the ocean is viewed.



“Some medicinal compounds are found in the ocean, others are currently being studied in the laboratory via organisms such as “Sponges” while others are yet to be discovered...there is a lot in the ocean we do not know,”



Communities needs to appreciate the Ocean field for its potential that it has brought and it will bring in the near future as scientists continue to further unlock its economies for the potential of blue economy







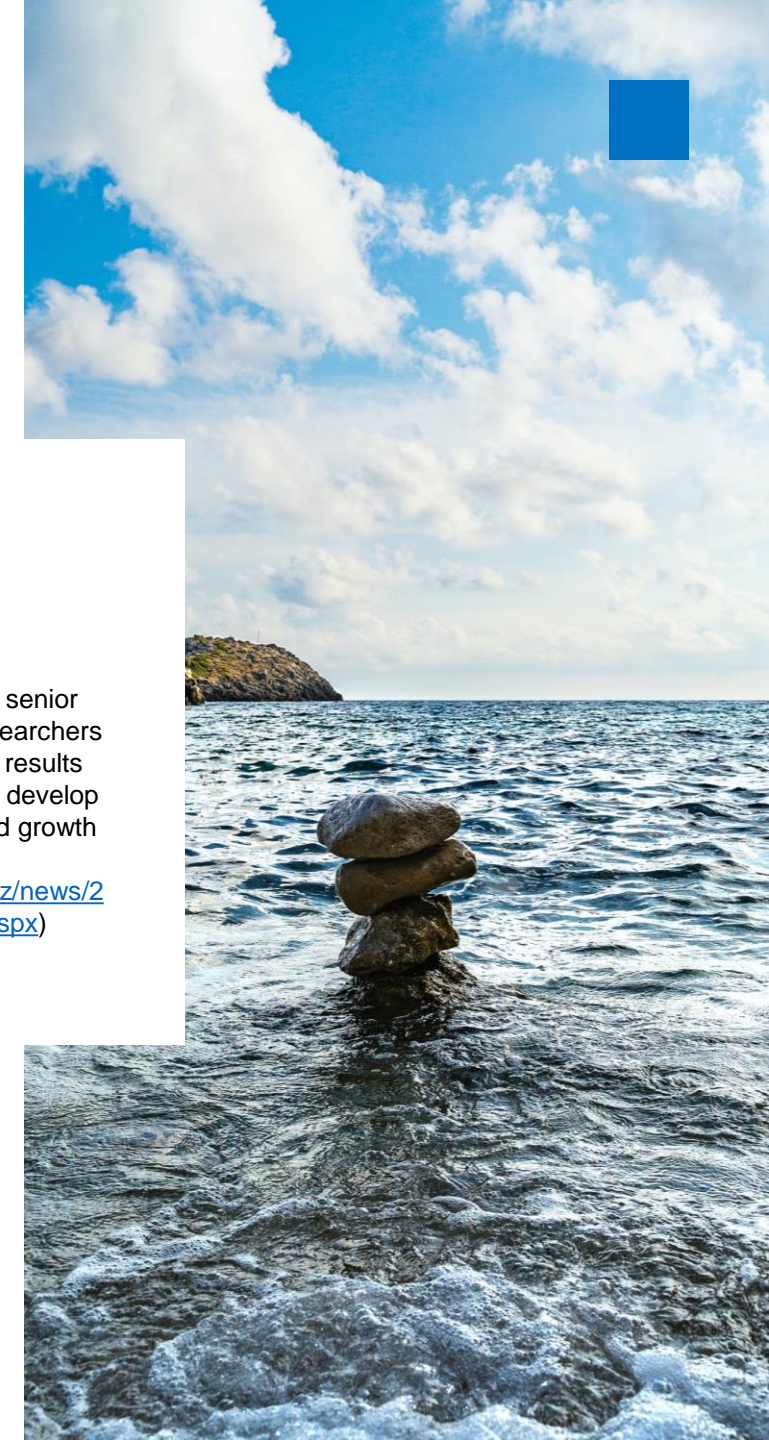
Training and capacity building should be conducted especially to young girls to allow them to take a lead into the field of marine science and more funding to national programs prioritizing and promoting Ocean Sciences Literacy in Tanzania should be enhanced.



More investments in conducting basic research to understand further the most pressing issues facing our oceans today and collaborative research engines across countries and scientific research that informs actions and environmental policies.



Creating different platforms for senior marine scientists and current researchers seeking to share their scientific results with the public is the best way to develop marine science development and growth of the blue economy in Tanzania. (<https://dailynews.co.tz/news/2020-04-095e8f1dd3ec44d.aspx>)







# Flagship Areas

## 4. Coastal community Health



### Response to COVID-19: Sanitation and Hygiene workshop at Kunduchi Fish Market

<b>Impact:</b>	3000 people in fishing community reached who were handed over One hand washing machine double outlet foot-operated & Two multi-point hand washing machines have been installed 65% women, 35% Men ( Fisherfolks)
<b>Number of people attended the Workshop:</b>	30
<b>Where:</b>	Kunduchi Fish Market, Dar es Salaam
<b>Duration:</b>	6 months





The fishing communities are amongst victims facing challenges of lack hygiene and sanitation services in many landing sites and fish markets, limited awareness and capacity building campaigns related to hygiene and sanitation, and poor facilities. This situation keeps their health at risk and reduces their quality of fisheries products while high standards of hygiene and sanitation practices are essential to the control of seafood hazards for public health and safety; This has been revealed by the global pandemic Covid-19 where handwashing with soap was one of the effective approaches to reduce the spread the disease ( WHO report 2020). However, many people still do not have access to safe and clean water and hygiene and sanitation services.

In the light of those challenges , At the beginning of the global Pandemic; With Financial support from FAO, Aqua-Farms organization implemented a project to enhance sanitation and hygiene at Kunduchi Fish market This project focused on promoting and maintaining hygiene and sanitation as well as raising awareness about hygiene and sanitation leading to improved seafood and health for communities. This project focused on improving hygiene and sanitation conditions at Kunduchi fish market which is necessary for quality assurance of fish and fisheries products and public health at large. Furthermore, it explored on the seafood hygiene through raising awareness on the importance of hygiene and sanitation practices to ensure safety and standard quality of the seafood as far as community health is concerned which complement the national and international food safety standards.

As our oceans are currently experiencing threats from Ocean Acidification, Climate Change, Overexploitation to Pollution etc, the panellists elaborated some of their innovative works done by their entities; Miss Hellen Sailas with her recycling venture of turning plastic wastes into Eco-bricks, is among few women globally recognized by the Economic Group World Ocean Initiative for her innovative work, she explained her venture that was inspired after seeing our beaches are polluted with high number of plastic wastes, she champions innovation by protecting life below water (SDG 14) through organizing beach cleanups to collect plastics, sorting and melting them using Eco-bricks formula., “ *This venture is very profitable as the Eco-bricks are in demand for construction of house, toilets and offices*” says Ms. Hellen

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In a closing Question, the panellists assessed how far we have gone with innovating our western Indian ocean, and the types of innovations needed to achieve healthy and productive oceans by 2030





The project benefitted 3000 people including fishers, processors, buyers and sellers, local government authority (BMUs, fisheries officers, market leaders and Ward executive officers), Municipal authority (Municipal Director). Stakeholders were involved in all stages of after the approval of the project, site visit and evaluation, construction and installation of the handwashing facilities and arrangement of the workshop for sensitization The Handwashing facilities included: One hand washing machine double outlet foot-operated & Two uli-point hand washing machines have been installed





## WORKSHOP FOR ENHANCING HYGIENE AND SANITATION AT KUNDUCHI FISH MARKET

A one day workshop was conducted at UDSM campus, bringing together the Kunduchi residents constituting of fishermen and women, where they received training on hygiene and sanitation alongside ways to take care of the facilities so as they become sustainable, presented by Municipal Health Officer, followed by Fisheries officer and the Ministry of Fisheries and Livestock, Guest of Honour was the DAS of Kinondoni; with presence of various media that disseminated the information to the public

- <https://dailynews.co.tz/news/2020-11-225fba810e0f7e2.aspx>  
<https://millardayo.com/arisha-usafi-mazingira-soko-la-samaki-kunduchi/>

- <https://bit.ly/3f5tOqY>

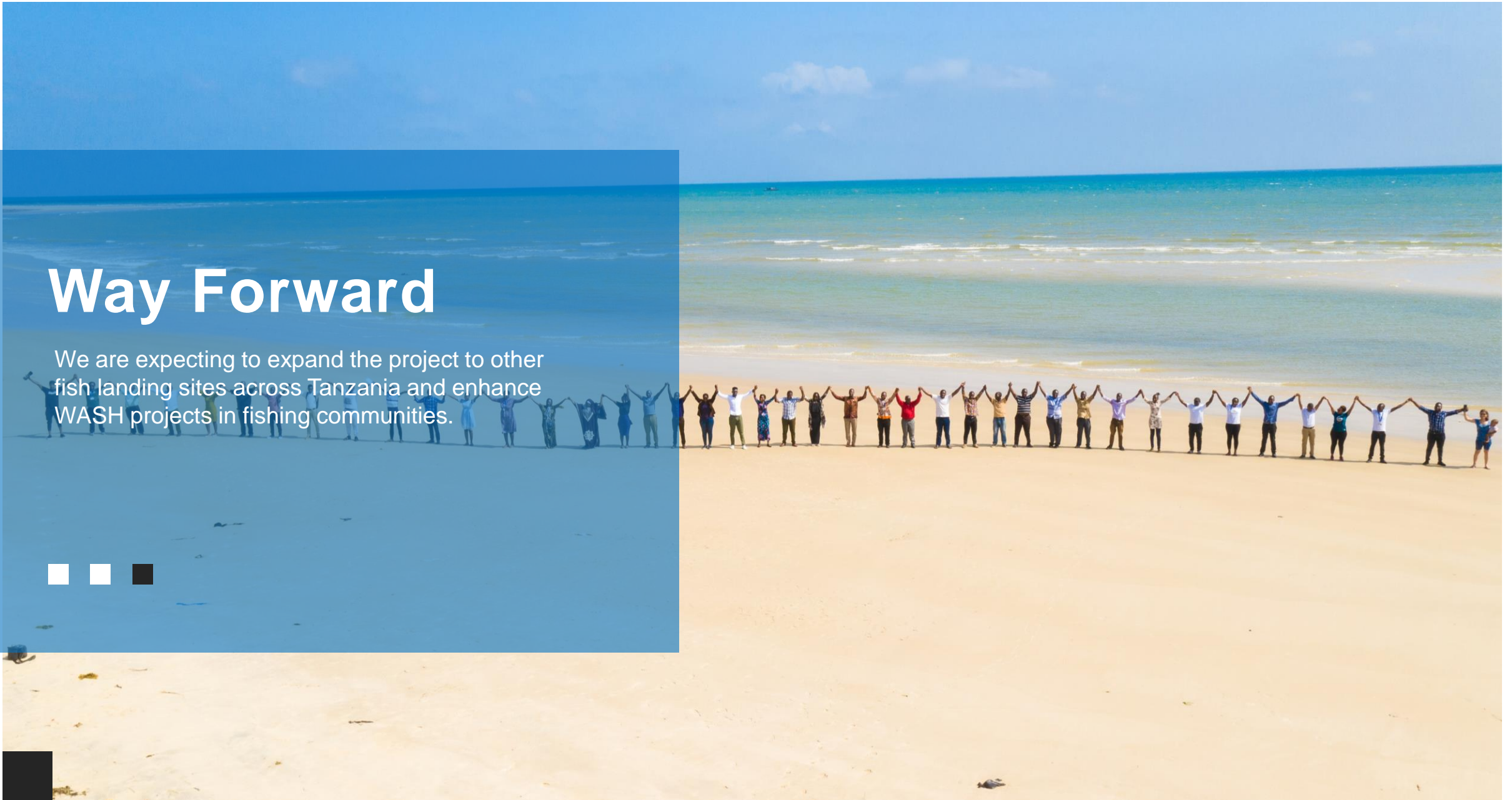
- <https://youtu.be/mQ1VjUOnLTc>

- <http://www.fao.org/voluntary-guidelines-small-scale-fisheries/news-and-events/detail/en/c/1319148/> (Source: <https://www.sightsavers.org/policy-and-advocacy/global-goals/?> accessed on September



# Way Forward

We are expecting to expand the project to other fish landing sites across Tanzania and enhance WASH projects in fishing communities.



# Outside the box

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HAPO ZAMANI ZA KALE PROJECT





The uniqueness of African storytelling is enshrined in its distinctive ability to provide entertainment, to satisfy the curiosities of the African people, and to teach and impact important moral lessons about everyday life (Ngugi wa Thiong'o 1986, Utlely 2008). Growing up in Tanzania, almost every child our age (2-8 years old) would look forward to a session of Hapo Zamani za Kale (Once Upon a Time) as narrated by his/her grandmother.

Hapo Zamani za Kale which in Kiswahili translates 'Once Upon a Time' promotes locally driven solutions for cultural preservation by blending traditional storytelling method with local visual arts for children's books. In any society fighting to preserve its culture, perhaps the most important aspect is the transmission of skills and knowledge passed down from one generation to another. This will be done by village elders from across Tanzania who will narrate stories that have been passed down from generation to generation. From these, a total of 25 stories will be written into Kiswahili and will be compiled into a children's storybook. The children's storybook will be released in several volumes.





To breathe life into these tales, a total 15 emerging visual artists were equipped with the skills necessary to translate these stories into visual art that portrays a near accurate picture of Tanzanian children's reality, culture and identity. The stories were being collected from across regions in Tanga, Bagamoyo, Zanzibar, Arusha, and Moshi. Hapo Zamani za Kale is contributing towards addressing Sustainable Development Goal (SDG) 4 of quality education, SDG 8 of decent work and economic empowerment and SDG 10 of reduced inequalities. After completion, the project will contribute towards enhancing learning materials, literacy rate and promote the culture of reading (SDG 4). Further, involving 15 visual artists as contributors to the book will promote innovation in art and new platforms for artists to earn a living (SDG8). To bridge the diversity and inclusion gap, elders will be part of the solution in narrating traditional tales in Kiswahili, thus preserving culture (SDG 10).

A two days workshop (19th to 20th December 2020; Figure 5), Named Kutoka Canvas kwenda Digitali workshop( From canvas to digital workshop) as part of the project's key activities for December 2020. The workshop was led by Masoud Kipanya, an influential and leading visual artist and media personality in Tanzania and was facilitated by Annastazia Gura, Hapo Zamani za Kale co-Lead.





*A photo taken during the Kutoka Canvas Kwenda Digital workshop facilitated by Mr Masoud Kipanya*

The workshop aimed at empowering Tanzanian visual artists with digital skills through live practical sessions from an industry expert and exposing them to new opportunities for creating, showcasing and marketing their artistic work including through the Hapo Zamani za Kale project. The workshop brought together a total of 16 participants including Tanzanian visual artists, Hapo Zamani za Kale and Aqua Farms Organization team members and a sign language expert from Tanzania Association of Sign Language Interpreters (TASLI). The selection was based on a competitive call for artists with 63.6% male applicants and 36.4% female applicants. The cohort of six visual artists out of ten that applied was from Arusha, Dar es Salaam, Iringa and Tanga regions including three male artists, George Emmanuel, Mustafa Sumaya, Albano Sylvester who is a visual artist living with a disability and three female artists Shija Masele, Jennifer Msekwa and Brenda Kibakaya.

Aligned to the Hapo Zamani za Kale project, the workshop covered storytelling sessions and practical live sessions ranging from the creation of storyboards, characters and live illustrations using digital softwares for drawing and painting. Upon Masoud Kipanya's practical session and mentorship, the visual artists were put to test using story tales collected through the Hapo Zamani za Kale project in Tanga region called "Kima na Mamba" as narrated by the Hapo Zamani za Kale team.



Aligned to the Hapo Zamani za Kale project, the workshop covered storytelling sessions and practical live sessions ranging from the creation of storyboards, characters and live illustrations using digital softwares for drawing and painting. Upon Masoud Kipanya's practical session and mentorship, the visual artists were put to test using story tales collected through the Hapo Zamani za Kale project in Tanga region called "Kima na Mamba" as narrated by the Hapo Zamani za Kale team.

26th December 2020, the Citizen newspaper: "From Canvas to Digital: The Future of Art as we know it" on page 13 reported by Salome Gregory

23rd December 2020, the Guardian "Embrace new tech to attain development, visual artists urged"

<https://www.ippmedia.com/en/features/embrace-new-tech-attain-development-visual-artists-urged>

24th December 2020, Michuzi Blog: "Wasanii wa sanaa za uoni watakiwa kutumia teknolojia kuwa washindani, kuendeleza nchi

<https://issamichuzi.blogspot.com/2020/12/wachoraji-wa-sanaa-za-uoni-watakiwa.html>

Issa

Michuzi

Instagram

post:

<https://www.instagram.com/p/CJLkmmZHJhp/?igshid=1oamcc43ry1j0>

21st December 2020, Millard Ayo: "Wasanii watakiwa kujifunza mbinu za kisasa ili kushindana ulimwenguni", reported by Pascal Mwakyoma

<https://millardayo.com/wasanii-watakiwa-kujifunza-mbinu-za-kisasa-ili-kushindana-ulimwenguni/>





Albano Sylvester, an artist living with disability commented, *“Having a disability and challenges of being unable to communicate verbally I often go to training and I am forced to use pen and paper in order to communicate. I am impressed to have found a sign language expert at this Kutoka Kanvasi Kwenda Digitali workshop which has allowed me to learn, participate fully and enjoy sessions like the rest of my fellow participants.”*

To date, we have covered Arusha, Moshi, Bagamoyo, Tanga and Zanzibar regions and reached **over 500** stakeholders through field visits including three (Maasai, Hadzabe and Datoga) out of four indigenous tribes recognized by UNESCO were covered during our field survey

*We were able to collect, record and store a total of 34 stories from 15 storytellers*

*250 stories*

*150 storytellers (5 female 10 male)*

*500 total persons engaged ( (17)17% elderly, (52)*

*52% youth and (31)31% children)*

*3 regions (Unguja Kusini, Unguja South-west, Unguja South-east)*

*33 villages*







# HIGHLIGHTS

A modern workspace setup on a white desk. A silver laptop is open, with a white keyboard in front of it. To the right, a tablet is propped up, displaying a desert landscape. A white lamp is visible in the background, and a white chair is partially visible on the left. A large white rectangular overlay is positioned in the center, featuring the word "HIGHLIGHTS" in bold black capital letters, underlined with a blue line.





## **Nancy Cyprian Iraba**

Science Communication Officer, AFO

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“Through the works i have done with Aqua-Farms Organization, i have been selected for the 2021 Mandela Washington Fellowship; One of the most prestigious fellowship for young African Leaders to sharpen their skills; Upon completion of the Fellowship, I am expecting to use the Leadership skills, Knowledge and partnerships gained to continue leveraging on coastal community empowerment and engagement”

**Nancy Cyprian Iraba**



## **Debora Mussa**

Volunteer, AFO

“I am currently pursuing an Inter-university Master program in Marine and Lacustrine Science and Management (Oceans & Lakes) at Vrije Universiteit Brussel (VUB), Ghent University, and Antwerp University, in Belgium. I joined Aqua-Farms Organization (AFO) as a volunteer in 2019. I had the opportunity to participate in various projects such as mangrove restoration and creating awareness to the community. The experience was invaluable and provided me with the platform to gain knowledge and skills which is still helping me in my career journey. I enjoyed working with an amazing team full of enthusiasm and inspiration” **Debora Mussa**





## **Recruitment of new staffs**



## **Elizabeth Mwambulukutu**

Project leader, AFO Hapo zamani za Kale

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Elizabeth is a communications professional specialized in development projects in Africa and a creative at heart. She works full time in the East Africa region and Ethiopia to facilitate water, sanitation and hygiene projects including COVID-19 response and recovery plans as the Regional Communications Manager. Prior to that, she worked with ASPIRES, a USAID funded project in agriculture and the Investment Climate Facility for Africa. Elizabeth is a firm believer of the power of the creative industry as an instrument for bridging the inclusion and diversity gap, job creation and shaping the African narrative. She is also an award-winning visual artist. She is the co-founder and co-author of Hapo Zamani za Kale, a project that is restoring and preserving the culture of traditional storytelling in Africa, passed down from generation to generation. She serves as the Vice Curator for Arusha Shapers, an initiative of the World Economic Forum. Elizabeth is an alumnus of the Mandela Washington Fellowship, the Young Emerging Leaders Project and the University of Sussex.





## Annastazia Nyakahoza Gura

### Project officer, AFO Hapo Zamani za Kale

Annastazia holds a BA in Mass Communication from University of Dar es Salaam. Her passion is empowering women and youths in her community. She realizes this with commitment to serve and give back to her community through numerous engagements with organizations like Nafasi Art Space, Youths of United Nations - Tanzania and TAI Tanzania to build her community. She has worked and volunteered across industries including media, PR, advertising, arts and culture, tourism and hospitality with prestigious institutions like Precision Air and Tanzania Standard Newspaper.

A strong advocate for women supporting women, in 2015 Annastazia teamed up with female creatives Elle Emmanuel and Kahvarah in a photo-shoot that was featured in Ogojiii Magazine, an international bi-quarterly print magazine focusing on African innovation and design. She has also authored an article titled 'GBV: An Enemy in Disguise' which was nominated by GenderLinks and presented at Tanzania SADC Gender Protocol Summit and Awards alongside 20 other participants. Her presentation focused on the various forms of gender-based violence in Tanzania following the shortcomings and bias found while reporting such cases in the media. The article called to attention on women as among the perpetrators who are expected to be front liners in the fight against GBV. **Annastazia** has represented Tanzania in the space of the arts and culture internationally including the Top Model Worldwide Competition in the UK as well as the Mercedes Benz Fashion Week and Ice Model Management, both in South Africa. She now does modelling as a part-time hobby – as they say once a model always a model!



## **Simone Phorè**

### **Grant Writing Associate**

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**Simone Phorè** is a South African native, with a background in urban planning and maritime spatial planning (MSP). She has experience working as a housing research fellow focusing on best practices in the affordable housing space to eradicate poverty and homelessness. Additionally, she has experience in marine research and conservation, using MSP and blue growth to search for the balance between diverse maritime sectors and the conservation of the marine environment. Simone's future ambitions are to build a world where people live and prosper in harmony with nature.





**Maria Twalib**  
Office Attendant

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**Maria Twalib** is a 23 years old female who joined AFO in June 2019 as an office attendant, “ It has been a delightful journey working with the AFO team as they are very humble and hardworking team, am learning a lot from them” she says



## **Marcela Herrera**

### **Grant Writing Associate**

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**Marcela Herrera** She is originally from Barcelona, Spain, but she grew up in Costa Rica, a small country known for its beautiful rainforests and coral reefs. Being passionate about science and the environment, I embarked on a long journey to study the impacts of rising temperatures and ocean acidification in coral reefs –one of the most biodiverse and productive ecosystems on Earth and from which half a billion people worldwide depend on. Briefly, I started my academic career in Costa Rica and after graduating I was lucky to participate in a field course in Singapore and two research fellowships in the Smithsonian Tropical Research Institute in Panama. These experiences reinforced my love for research and so I decided to pursue a master's and PhD degree in Saudi Arabia. While I greatly enjoy doing research, I also found that I prefer to spend my time writing papers and helping others edit and write their manuscripts. Thus, I am thrilled to join AFO as a grant writer!





## **Jamal Malongwe**

Website Designer, Volunteer AFO

Jamali M. Malongwe is the second child among of four children of Mr. Malongwe family. He was born in Singida central part of Tanzania in October, 1998 and accomplished his primary education at Utaho Primary School. He was shifted to the busiest and capital city of Dar es Salaam and joined his ordinary education at Pugu High School, accomplished in 2015 and then joined Advanced Education at Kigonsera High School, ended in 2018. Finally, he was admitted to the IT specialized College at Unique Academy for pursuing an undergraduate degree in which he is in his last year of study.

He is a successful digital content creation and social media enthusiast. His strength is based on pursuing digital work and managing to develop online and social media contents.

Through this visionary perspective earned him a chance to work with the local owned travel company as an online and content creator, operating internationally that deals with adventure wildlife safaris, culture tours, beach holidays and mountainous. His work motivated people to travel and explore the best places found in Tanzania through creating attractive online contents.

Malongwe is still enthusiastic to explore and discover digital knowledge in international platforms and also, he is the happiest to be involved in different projects that develop his professional career development.



## Cretus Joseph Mtonga, Executive secretary, AFO

“I had an opportunity to attend the ‘Interuniversity Master In Marine and Lacustrine Science and Management’ abbreviated as ‘Oceans & Lakes’. This Masters program is jointly organized by three universities; Vrije Universiteit Brussel (VUB), Ghent University and Universiteit Antwerpen. The three universities combined their expertise to enable students choose a track of specialization based on the interests of the students. Biodiversity conservation and Ecosystem management, Ecotoxicology and Ecophysiology, and Environmental Impact and Remediation. During the Master program I learnt about marine and Lacustrine resources conservation and ecosystem management, project development and research. The Masters program was very interdisciplinary cross cutting into social and governance fields as well. Spending some time as well in the European Parliament at Brussels, learning in practice how marine policies are formed, and the consequences of the policies in societies and livelihood.

I took the specialization track of ‘Conservation and Ecosystem management’ where my focus was on factors that lead to biodiversity loss and habitat restoration. My Master thesis was on connectivity of Octopus in Tanzania and Mozambique. Additionally, during my Masters program I had opportunity to attend several summer schools and Monsoon schools where I participated in cruises, research training and report writing in Wimereux France, Sieperda Skor Netherlands, University of Lucerne of Switzerland, Stockholm University in Sweden, University College Dublin of Ireland, Xiamen university in China, and Kenya Marine and Fisheries Institute (KMFRI). I tried new foods, interacted with new culture and explored innovation in the best possible ways. This learning stimulating environment enabled me to network and learn about project writing, ethics in research and communication. These kind of knowledge and experience are vital for development of our Organization, AFO" **Cretus Joseph Mtonga**





**Edwin Superius,**  
Researcher and Aqua-Farm Hatcheries Manager

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“My time in school as a master’s student had a lot of experiences, good and bad moments and I had a lot to learn academically as well as in social life. The best and good thing I learnt was to be flexible at any time as we always have our plans in life be in or out of school but due to some factors our plans may change at any time. As an expert of Marine ecology and fish nutrition , it is my pleasure that I will be a resource to my Organization in performing any projects and research related to this field”  
**Edwin Superius**



## **John Praygod Kimaro**

Researcher and Programme Manager, AFO

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“I am happy to receive my MSc in Marine Biology at ZJOU in China. Studying in China has widened my network and built my research capacity. I will work hard under the Aqua-Farms Organization trying to develop some research projects for the betterment of coastal communities' livelihood while sustainably conserving our ocean environment” **John Kimaro**



# Statutory information



**1.** About AFO

**2.** Organogram

**2.** Risk management

# 1. ABOUT AFO

Aqua-Farms Organization (AFO) was founded in 2016 and became legally registered in July 2017 under the NGO Act No. 24 of 2002 with registration number ooNGO/009297. 13 founding members came together to ensure the development and food security is achieved through environmentally friendly aquaculture and the rebuilding of fisheries. The Core value of “**AFO**” is to provide Tanzania’s coastal and inland communities with an alternative source of income allowing improved access to food, alleviation of poverty while protecting the aquatic biodiversity from harmful fishing activities through sustainable, equitable and viable aquaculture. AFO has implemented more than 15 projects since 2016 through collaboration with community, academic, research institutions and other stakeholders. Once projects have been implemented, AFO releases quarterly reports indicating the project progress and its successful way forward. . Additionally, AFO produces annual reports as part of the NGO Act No. 24 of 2002 of the United Republic of Tanzania.





AFO promotes environmentally friendly and economically competitive aquaculture; conserving the aquatic environment and fisheries stock enhancement; supporting research on sustainable exploitation of aquatic resources and aquaculture; improving community health of the Lacustrine and coastal communities; and empowering the youth and women in the utilization of aquatic resources and aquaculture. AFO has a vision to be an excellent organization in replenishing aquatic resources with community-based conservation and sustainable aquaculture. Its mission is to enhance food access and income generation to communities through sustainable utilization of aquatic resources.

Aqua-Farms Organization's structure consists of the Chairperson, Executive Secretary and the Treasurer. The chairperson presents and leads the organization as the director. The executive secretary keeps all records of the organization, convenes all meetings in collaboration with the Director and is a signatory to the organization's bank account. The Treasury is the signatory to the organization's bank account and other financial documents. Additional responsibilities consist of preparing the annual budget of the organization and ensuring the annual statement of the account is correctly audited. Aqua-Farms has 5 paid staff and 9 Volunteers.

## 2. RISK MANAGEMENT

AFO's approach to risk management is proactive and fully integrated into the day-to-day operations. The main risks to AFO work as identified are as follows;

*Field risk:* AFO plans to have field operation protocols and policies for all flagship areas project operations to comply with any risk that could arise.

*Political risk and instability.* AFO does and maintains close communications and strong relations with government authorities in partner countries, as well as with technical staff and operatives within government agencies. These relationships are key to maintaining momentum with partnership initiatives, ensuring the AFO operations are not interrupted by short term political changes with government authorities in partner countries where appropriate.

*Fraud risk.* AFO has a fraud policy in place, as well as robust financial and manual and procedures to reduce this risk.





## 2. Organogram

### Aqua–Farms Organization structure

General assembly

***Board Members***

Advisory and Mentors

**Chair Person**

**General Secretary**

**Executive Director**

**Treasurer**

***Administrator***

***Communication and  
Dissemination officer***

***Research and program  
development officer***

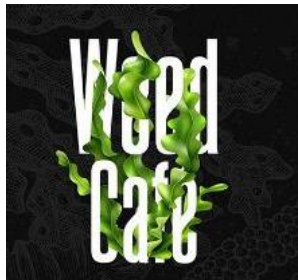
***Finance officer***

***Technical Staff***



# Partners





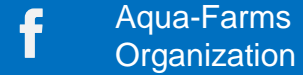
The Association  
of Commonwealth  
Universities



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Aqua Farms  
Organization AFO





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