



AQUA-FARMS ORGANIZATION

2021 Annual Report

"Development and Food Security Through Blue Economy"





Vision, mission and core values

Mission

To 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

Transparency: We're an open source NGO. We work in a transparent and collaborative way to share our values, mission approach and success stories and failures from what we learn

Equality: We work in diverse and inclusive teams where all members have a voice and influence.

Integrity: We have high standards of correct information and approach and aren't afraid to be self-critical or externally criticized. If something doesn't work, we change our approach until we're on the right course.

Accountability: We are accountable for the communities we support, for maximum impact as well as accountable for our partners and supporters.



Transparent



Equality



Integrity



Accountability



Team work



Creative &
Innovative





Executive summary

For this Financial Year

Supporting 33 communities in fighting poverty, hunger and conservation of the oceans, lakes and rivers

Reaching more than 1767 people directly

Restored 3,088 square meters of mangroves

2098 mangroves seedling planted



Foreword

The year 2021 was a great year for Aqua-Farms, where new partnerships were created, in particular with the Segal Family Foundation. Furthermore, we worked with local and collaboration partners within and outside the country in implementing activities in fisheries, marine habitat conservation, women empowerment, improving community health, ecosystem restoration and mariculture. These contributed to the efforts of improving the living standards of the coastal communities, and adaptation against the disastrous effects of climate change, and maintaining biodiversity for future generations. Thus, we saw growth in team, development of skills and capacity, and strengthening of the relationships with governmental agencies, and non-governmental organizations.

The highly impactful project for the year 2021 is the SeaPower project. With support from the Blue Climate Initiative the project was able to train two women groups, provide them with a boat to enable deep water farming as an effort to adapt to climate change. This project received the Blue Economy Award, and received attention from the partners across the world. The same project was announced as among winners in the Ocean Resilience Challenge ORIC2 by the Ocean Risk and ResilienceAction Alliance. The effect of climate change is increasingly impacting the seaweed farmers in Zanzibar and Tanzania but increasing innovation through works like these will contribute to stabilizing the negative effects. Regarding habitat restoration, the activities like mangrove restoration revived after periodic cease during the covid-19 pandemic. In the same year we were able to partner with Segal Family Foundation, who supported this program and over 2000 mangroves were replanted. These contribute to coastal protection against erosion, and now we will keep working with more partners toward realizing the carbon credits for community benefits. Kunduchi has been a great learning hotspots where experimental mangrove restoration to investigate factors for the successes take place. The environment, local community especially the women groups, fishery officers and youths were cooperative in these kinds of programs, ensuring our long term partnership continues to revive. The year 2021 collaborated with Tanzania Fisheries Research Institutes (TAFIRI) in two projects on fishery and management of post harvest losses and Sokoine University of Agriculture (SUA) in fishery related projects.

Capacity building has been our all-time desire, our youth team is growing day to day. Some of the key persons include Fadhili Malesa who completed a master in Marine Science from the Institute of marine sciences University of Dar es Salaam, Nancy Iraba who followed diving training and Mandela Washington Fellowship, and John Kimaro gained Advanced masters on Water quality and wastewater treatment. These skills will be integrated in our key flagship areas of conservation, habitat restoration, sustainable fishery and mariculture. They will further use to expand scopes of our activities, increasing partnerships and management.

AFO would like to thank all collaborating partners for their great contributions and efforts. Special thanks to Segal Family Foundation, Blue Climate Initiative and our local partner Tanzania Fisheries Research Institute (TAFIRI) for their strong dedication and continuous support. The work would have not been possible without full participation of the community we served including fishermen, women seaweed farmers, fishery officers, Tanzania Forest Service, governmental departments and non state actors. We are looking forward to strengthening the relationships toward building a sustainable society.



Where we work, Scope and Approach

In the financial year 2021, AFO worked in Arusha, Dar es Salaam, Kilimanjaro, Tanga, Zanzibar (Unguja and Pemba), Lindi, and Mtwara Regions across Tanzania, supporting 33 communities in fighting poverty, hunger and conservation of the oceans, lakes and rivers reaching more than 1767 people directly.

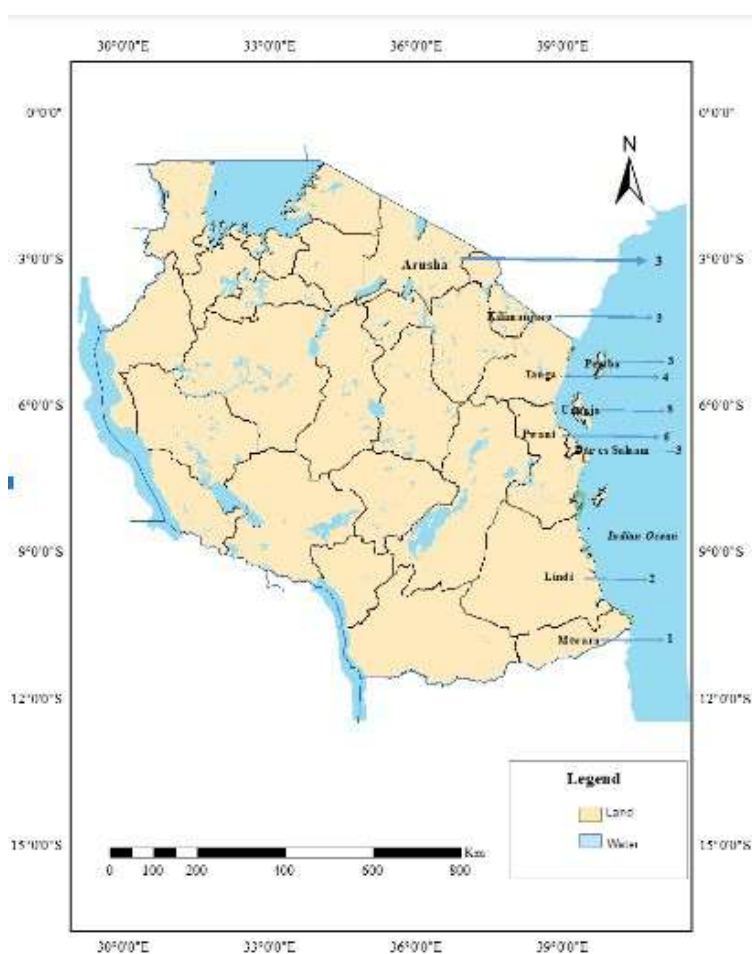


Figure 1: Map of Tanzania Highlighting regions we worked in the financial year 2021.

Our Approach

AFO's approach is centered towards grassroots initiative that creates a meeting point between top down policies and bottom up initiatives.

AFO has five (5) focus objectives

- 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;
- Empowering the youth and women in the utilization of aquatic resources and aquaculture.



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Flagship Areas





Economic competitive aquaculture

A: Sustainable blue shop

Location: Zanzibar

Duration: 2020-2024

Impact: 50 women, from 5 communities increased price of seaweed from 0.25\$ to 1\$ per kilogram and 1\$ of value added product to 3\$

Impact Story

Seaweed farming is among the life changing ocean activities to the communities at the coast of Tanzania, especially, in Zanzibar. Seaweed demand is increasing at global scale due to realization of its potential in human health. In Zanzibar, unfair prices, limited local market and poor distribution channels for both local and export markets, the effect of climate change, abandonment of seaweed farms to some of the farmers has resulted in a huge decrease in seaweed industry production. 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 various products such as bathing soaps, skin oil, and hair food. In 2018 Aqua-Farms began working with seaweed farmers to understand in depth challenges that were faced. We found that the value added products had a stagnant market and AFO took a step to diversify the local market through its sustainable blue shop that enables to improve the sales of the value added products to far and beyond the small stagnant markets.

Sustainable Blue Shop aims to enhance community responsibility in the conservation and protection of marine resources. Through supporting local market products from the aquatic environment, and pushing towards Sustainable blue Economy. In early 2019, Aqua-Farms Organization established an Instagram page named sustainable blue shop and a website page. In September 2021, through co-funding of project Sea Power, AFO and Zanzibar Seaweed Cluster Initiative, through support from Blue Climate Initiative and Segal family Foundation, the online shop obtained an outward facing stall in Stone town Zanzibar. By the end of 2021 the shop has been able to work with 2 seaweed farmers groups with 50 women in total of both Unguja and Pemba and has been able to improve their seaweed prices from \$0.25 to 1\$ and through added value products from 1\$ to \$ 3.



Economic competitive aquaculture

B: Sea Power

In Zanzibar, seaweed farming is a significant economic activity and offers an appealing approach to combine marine protection with aquaculture for better lifestyles, but it is becoming more and more susceptible to the effects of climate change (disease, low yields and quality, low prices). Working conditions are difficult, and financial security is questionable for seaweed growers, 80 percent of whom are women using the traditional off-bottom, peg-and-rope method. Since 2016, two small groups of women seaweed producers in Zanzibar (Unguja Island) have been working with Sea PoWer, an experimental and life-changing initiative, to pilot a deep-water tubular net innovation for improving yields and empowering them. The project has been addressing this through its two main key activities:

- 1 Marketing and Value addition training
Location: Zanzibar
Duration:
Impact: 50 women 4 men from 3 communities

Impact Story

Marketing potential and consumption benefits of seaweed products are under-exploited in Zanzibar and in the WIO region. Seaweed can be transformed into many products with health and nutrition benefits such as cosmetics (soap, shampoo, lotions) and food (juice, jam, seaweed sticks, salads, cakes, noodles), but over 90% of Zanzibar seaweed production is exported untransformed, missing out on opportunities for local value addition and benefits (Brugere et al. 2020). The workshop prepared by Aqua Farms Organization (AFO), in collaboration with Zanzibar Seaweed Cluster Initiative, Healthy Seaweed Cafe, and SeaPower aims to build capacity for women participating in seaweed farming by identifying leverage mechanisms for market penetration and product attractiveness domestically and internationally.

The 3 workshops on marketing, value addition and leadership was attended by three women groups of seaweed farmers called Dimani group from Dimani(13 womens), Flower group from Muungoni(11 womens), Makangale group Wema hauzi (13) and 14 other individual seaweed farmers.

- To assist the women group in learning more about the value of seaweed
- To provide skills about domestic and foreign markets and how to access them through Sus blue shop.
- Learning about value addition of seaweed products and production of different products from seaweed.
- Learning about profitability of a business, setting of prices, advertising of business and how to differentiate products from our competitors.
- Setting marketing plans for each group participating in the workshop.



Economic competitive aquaculture

2 Deep water tubular net farming
Location: Zanzibar
Duration: 2021 -2022
Impact: 1,018 kg of seaweed harvested, 47 kg of fish harvested

Impact Story

Seaweed harvesting

The seaweed was harvested for 2 days. On the first day we harvested 591 kg of seaweed and on day 2 we harvested 427 kg, making a total of 1,018 kg. This means that for our first trial which lasted nine weeks, we harvested 1.018 tonnes of the seaweed cottonii.

Fish catch

With the 5 basket traps that were provided by the project, the farmers obtained 47 kg of fish worth 95,500 TZS.

Seaweed breakage

During the harvesting, we weighed the seaweed that broke off from the ordinary lines and obtained an average of 6kg for each line. This means that if the farmers cannot retrieve this weight, they will lose that amount for each line of seaweed. For the case of tubular nets, no seaweed breakage was not observed-no breakage at all.

From the 12 farmers that were trained during trip 2, the number of farmers who were present during the harvesting was 23. The extra farmers said that they want to participate and they are waiting to be given seed so that they can start their own farms. On concluding the harvesting, we agreed that the 12 will give the new ones seed from the harvest. In this case, the new farmers will plant the seaweed in deep waters during the spring low tides when the water depth is 1m or less while waiting to be assisted to get the training in making tubular nets and assembling basket traps. Also, while waiting to be assisted to get the planting materials.

- Farmers declared that they never thought that they will ever farm seaweed in deep waters, but this project has enabled them
- Some farmers pointed out that they had never been to such a distant site before; they are happy to be able to reach the site.

"I am happy to be involved in this project because it has taught us new skills of seaweed farming which are increasing our income"

"The technique is good but it's somehow costly compared to the off-bottom method but hopefully with time we will be able to adjust through an increase in income?" which brings a need for a sustainable way of financing the upscale of the tubular net technology.



Economic competitive aquaculture

C: Ice Ice Disease

Location: Zanzibar

Duration: 2020-2021

Impact: 4 seaweed farming communities

Impact Story

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 globally, and up to 100% locally (Vairappan 2006). In the Western Indian Ocean, 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 ice-ice disease, followed by die-off. The aim of the project was to assess causative agents in Ice Ice disease in *Kappaphycus Alvarezii* and relevant molecules for the proliferation of Algal Pathogens in Zanzibar Islands. The results showed that 110 isolated were obtained from 10 genus of bacteria namely *Bacillus*, *Vibrio*, *Psychobacteria*, *Paracoccus*, *Cobetia*, *Pseudoalteromonas*, *Halomonas*, *Shewanella*, *Photobacterium* and *Burthilderia* and the causative agents were *Vibrio mytilii*, *Cobetia litoralis*, *Psychrobacter nivimaris*, *Photobacterium angustum*, *Pseudoalteromonas issachenkonii*, *Cobetia Litorallis*, *Paracoccus marcusii*, *Fictibacillus nanhalensis*, *Bacillus Indicus* and *Pseudoalteromonas issachenkonii* were positive causative agents furthermore, *Bacillus velezensis*, *Exiguobacterium mexicanum*, showing epiphytic diseases. There was no activity for antibacterial from *callyspongia* sp. Against pathogenic bacteria. More work is being done to find the solutions.



Sustainable fisheries

A: Revealing the Appropriate Management Units to Strengthen Management of the Sandfish in Tanzania (RAMUS)

Location: Tanga, Dar es Salaam, Pwani, Lindi, Mtwara and Zanzibar (Unguja)

Duration: 15 December 2020 - 30 January 2022

Impact: generated valuable new insights for the design management strategies for Sandfish sustainability and later community benefits through fishing and the mariculture industry in Tanzania.

Impact Story

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.

The project aims at improving management of the Sand fish fishery and to allow the recovery of the stock through a national fishery ban and increasing the number of Marine Protected Areas. Project applying microsatellite markers to reveal the appropriate management units for the sandfish *H. Scabra* along the Tanzanian coast. When the project resulted 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.



Sustainable fisheries

B: Reduction of Post-harvest loss of Tuna and Tuna-like species through value addition to Improve Food security in Tanzania

Location: Dar es Salaam and Mtwara

Duration: 2020-2021

Impact: 130 fishing communities members from 2 communities

Impact Story

In Tanzania, tuna and tuna-like species, among other marine resources, are potential fish for export and significantly contribute to the national economy and improve community livelihoods. Tuna and tuna-like species are an excellent source of high-quality protein and other micronutrients. This contributes to high-postharvest losses. Post-harvest losses are caused by the capture method, handling practices along the value chain processing methods, distribution and storage techniques. The main objective of this project was to promote value addition, reduction of post-harvest loss, and sustainable utilization of tuna and tuna-like species along the product value chain for improved livelihoods. The results show the postharvest losses in the tuna fishery occur in all actors along the fish supply chain. However, the highest loss was recorded in traders followed by fishers. Over 30% of the losses are either physical or quality losses. Several valued added products such as fish ball, fish sausage, fish filet, fish finger and fish castles among others

A total of 130 people were trained in both study areas. Out of these trainees, 70 were trained in Dar es Salaam and 69 in Mtwara. Among those who were trained in Dar es Salaam, 35 people were trained in the area of innovative fishing technology, 15 people were trained in the area of fish processing and value addition. On the other hand, 40 people were trained in Mtwara on innovative fishing technologies, and 29 were trained in fish processing and value addition. It was found that 92% of the trainees were willing to adopt the technologies while 8% were not willing to adopt the introduced technologies.

Policy Recommendations

- (i). Value addition: Promotion of value addition of tuna and tuna-like species to reduce postharvest losses, increased income of local communities and increased product diversity.
- (ii). Knowledge: All stakeholders (fisherman, traders and processors) along the tuna and tuna-like species value chain should be trained with good handling and processing practices
- (iii). Improve storage facilities: Use proper storage facilities to reduce postharvest loss, extend the shelf-life and maintain the freshness quality of tuna and tuna-like species.



Sustainable fisheries

C: Community perception on tuna consumption

Location: Tanga, Zanzibar (Unguja), and Mtwara

Duration: June 2020 to April 2021

Impact: 180 people, 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

Impact Story

Tuna and tuna-like species are important for Tanzania's economy, providing food, income, foreign exchange and employment. However, their consumption in Tanzania coastal communities is considered lower compared to popular marine species. Among the reasons were the high price of commercially valuable species such as yellowfin and bigeye tuna at the landing sites (local fish markets) and lack of understanding on nutritional health benefits (in this case micronutrients content) associated with fish consumption. It was suggested that consumption of tuna and tuna-like species in coastal communities could be improved by increased catches through the use of modern fishing gears that facilitates fishers to access distant waters with more fish, which will consequently reduce price of commercially valuable species at landing sites, and through raising awareness on the nutritional health benefits associated with fish consumption. This study was supported by Deep Sea Fishing Authority (DSFA) and implemented by Tanzania Fisheries Research Institute (TAFIRI), and Aqua-Farms Organization (AFO) in collaboration with Tanzania Food and Nutrition Centre (TFNC), and Ministry of Livestock and Fisheries (MLF).



Sustainable fisheries

D: Delineation of The Genetic Stock Structure of The Queen Mackerel To Enhance Fisheries Management In Tanzania (DGS-fish)

Location: Tanga, Dar es Salaam, Unguja, and Lindi (Kilwa)

Duration: June 2020 to February 2022

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.coastal communities in Tanzania

Impact Story

The queen mackerel fishery has been an important source of dietary animal protein, household income, and employment to communities in Tanzania. Yet, since their market value has increased in recent decades, they are increasingly exploited and their populations are declining. In response, the country enacted measures to control destructive fishing practices and is taking initiatives to expand its Marine Protected Areas (MPAs). The study investigated the population genetic structure of 118 queen mackerel samples collected from four sites along the Tanzania coast namely Tanga, Dar es Salaam, Unguja, and Kilwa was assessed using the partial fragments (647 base pairs) of Cytochrome Oxidase Subunit I gene (COI). The result indicated that the current management approach aligns with the genetic stock structure of the fishery. Hence, spatial management strategies which might be developed in the future should rather consider other ecological and socio-economic factors than the genetic delineation of the stock. Furthermore, Dar es Salaam and Unguja showed low haplotype diversity, nucleotide diversity and effective female population size compared to Tanga and Kilwa. This calls for strengthened enforcement of fisheries regulations to allow the populations in these areas to increase to comparable size. Since the fishery showed extensive gene flow, sites such as Tanga and Kilwa which showed high genetic diversity and high population size could contribute recruits to overfished areas. Hence, the above-mentioned sites should be given priority in spatial planning of future MPAs. Apply a single stock management regime for the queen mackerel fishery along the Tanzanian coast. The study resulted in a policy brief with the following recommendation: First, since the fishery is a single stock, a single management unit is appropriate. Secondly, encourage sustainable fishing practices that protect fish stocks and their ecosystems. Third, measures should be taken to curb unsustainable exploitation in areas such as Dar es Salaam and Nungwi which showed low genetic diversity and low effective population size. Forth, spatial planning for future MPAs should prioritize the coastal ecosystems in Tanga and Kilwa. This study was supported by Deep Sea Fishing Authority (DSFA) and implemented by Sokoine University of Agriculture (SUA), and Aqua-Farms Organization (AFO).





Conservation of aquatic ecosystem and marine critical habitats

A: Voluntary Community Mangrove carbon credit VCMCC

Location: Kunduchi Mangrove Forest, Dar es Salaam

Duration: Ongoing

Impact: 2098 seedling planted, 200 people on Kunduchi community reached, 3,088 square meters area planted

Impact Story

Mangrove forests provide a host of ecosystem services and sequester five to ten times more carbon than terrestrial forests. Yet, mangroves are amongst the most threatened habitats on earth, with climate change and human activities driving their destruction. It is estimated that a fifth of mangrove forests were lost globally between 1980 and 2005. The loss of mangrove forests can have devastating consequences for the communities who depend on them for wellbeing and protection.

In Tanzania, mangroves are routinely cut down for firewood, medicinal purposes, and construction materials, or being trampled to access floodplains used for fishing and to create rice fields. Despite government action and voluntary efforts by communities to stop these practices over the last three decades, mangroves continue to be destroyed or damaged to meet these short-term needs.

Voluntary Community Mangrove Carbon Credit Project (VCMCC) that aims to establish a voluntary carbon market system at Mbweni and Kunduchi Tanzania, in this project we expect to generate income through harvesting and selling carbon from mangrove forest, with increasing awareness of people and demand for sustainable life, this project is of high revenue generating potential. That will give them direct economic benefit which will foster them to protect the Mangroves forests through reintroduction of the project, the AFO conducted two activities which are:

Synergies with Kunduchi community

To reverse this trend and create ways for people to benefit from mangrove conservation rather than their degradation, Aqua-Farms Organization (AFO), an NGO dedicated to supporting a sustainable blue economy, is working with the Mbweni and Kunduchi communities on the outskirts of Dar-es-Salaam to create a Voluntary Community Mangrove Carbon Credit (VCMCC) market. The project's goal is to improve the communities' resilience by generating long-term revenue from their local forests. Early in the project, AFO worked with local women's groups to provide training in replanting mangroves. The team used available academic research on the hydrology and soil of the area, as well as lessons learnt from previous local replantation initiatives, to help local women select the best species and plant them using techniques based on traditional ecological knowledge. introduce the Voluntary Community Mangrove Carbon Credit (VCMCC) Project, to address the activities to be conducted before the starting of the VCMCC project like Site assessment and mapping, collecting mangrove seedlings, planting of mangroves seedlings, establishing community mangrove nursery, support women beekeeping and initiating a program of protecting and conserving mangrove forests.

Reforestation of Degraded mangrove

The four species selected to be restored based on the physical characteristics of our selected sites where by all of the four selected species some are flourishing well in a sandy substrate like *Avicenia marina*, *Ceriops tagal*, and some were flourishing in muddy substrate like *Bruguera gymnorhiza*, and *Rhizophora mucronata* of which both types of substrates were directly available in our selected site.



Conservation of aquatic ecosystem and marine critical habitats

B: AQUATIC RESOURCES EDUCATION PROGRAMME - AREP

Location: Dar es Salaam and Pwani, Tanzania

Duration: Ongoing

Impact: 501 students from three secondary schools reached

Impact Story

Much attention has been given to the terrestrial environment compared to the aquatic ecosystems and its resources, thus the need for awareness and capacity building of the potentiality of the aquatic resources and its environment to the young people and nation. The Aqua-Farms Organization initiated an Aquatic resources education program which aimed at raising awareness and capacity building to young people about the existence and benefits of aquatic resources, concerning opportunities which are being neglected towards utilization of the aquatic resources which includes water resources, as well as animals and plants. People's abilities to know and to act must be built if we are to reinvent and sustain progress in natural resource management, including aquatic resource and fisheries management. Education and training are key tools for building capacity,

In 2021, We have succeeded in collectively reaching secondary school students around the coastal areas in Dar es Salaam. Students from Mbezi High Secondary school, Dunda Secondary School, and Mtakuja Beach Secondary School were delighted with the knowledge about opportunities concerning aquatic life and to take actions in protection and proper utilization of the resources for their self-reliance and career development; and to impose the knowledge of ocean as resources that can sustain human lives.

The pictorial mode of learning enabled students to understand visually the varieties of plant and animal aquatic resources, which increased their interest in learning and understanding. During Mangrove restoration at Kunduchi creek, the knowledge imparted to students from Mtakuja Secondary School eased the direct involvement in community-based Mangrove restoration. AFO is looking forward to establishing clubs in secondary schools to enhance peer learning as well as sustainability and the ripple effect of knowledge spreading.



Conservation of aquatic ecosystem and marine critical habitats

C: World Oceans Day

Location: Msasani Fish market, Dar es Salaam

Duration: 8 June Every Year

Impact: 92 Peoples reached, 7 NGOs participated

Impact Story

Aqua- Farms Organization, organized and celebrated World Ocean Day in collaboration with the theme of Ocean: "life and livelihoods" The purpose of this event was to remind everyone of the roles and importance of the Ocean in life and livelihoods, also, to inform the community on the impact of the unsustainable exploitation of the Ocean resources.

In the event the different topics and activities were conducted, the key topics of the event were What is the world Ocean Day and theme – Ocean: life and livelihoods by responding the Executive Secretary of AFO he encourages the community to participate actively in conserving our ocean, fishermen practice sustainable fishing activities, discourage the dumping of wastes in our ocean, he calls the government that; should incorporate the indigenous people to participate during laws and act formulation. Focused groups discussion of how Ocean changes or is changing life of fishers' perspectives done by all fisher's stakeholders including fishermen, Food sellers, Fisheries Officer and other key stakeholders. Women in fisheries activities and What needs to be improved, so that fishers' benefits more from their fishing activities, the absence of modern fishing gears and tools that can enable them to explore long distance fishing activities presented as major obstacles. The AFO has continued to celebrate since 2018 with different themes such as, "Clean our ocean" in 2018, "Gender with ocean" in 2019 "Innovation for sustainable Ocean" in 2020. In What needs to be improved, so that can fishers' benefits more from their fishing activities, the following activities are needed to be taken into consideration

The absence of modern fishing gears and tools that can enable them to explore long distance fishing activities
The alternative approach on livelihoods to fishermen to prevent illegal fishing activities

The fishermen requested access to financial solutions such as loans so that they can able to purchase modern fishing gears and tool

Waste management and hygiene in the fish markets, behavior change programme is highly needed

Post harvest losses are high and a need of a fish storage (cold room) facility should be improved and equipped



Conservation of aquatic ecosystem and marine critical habitats

D: Perception on Marine litter and what innovation can do

Location: Dar es Salaam, Pwani, and Zanzibar

Duration: January to April 2021

Impact: 328 peoples informed about marine litter

Impact Story

Marine litter is a growing global concern posing threats to marine biodiversity, ecosystems as well as human health. In Tanzania, 23% of the Tanzanian population resides along the coast (2002 Census); Rapid and extreme population growth caused unprecedented production of human-created waste "Marine Litter". This work was designed to disseminate information obtained from the study that assessed perceptions towards marine litter in the selected coastal areas in Tanzania: Case study for Dar es Salaam, Zanzibar and Bagamoyo coast. In the study a total of 266 people participated in the survey, the overall distribution by gender was 66% male, and 34% female. Two dissemination events (Physical and virtual events) were organized with a total of 40 and 22 attendees respectively. The Dissemination also took a step to create media materials for reaching mass audiences such as newspapers, blogs, animations and infographic video.

From the study and stakeholders meetings people think marine litter is a threat to the appearance of the coast, human health and marine biodiversity because there is:-

An increase in awareness regarding the problem of marine litter and their effects to the biodiversity and human health and wellbeing

More observations as seeing is believing, people can now see the changes in the environment and the effect marine litter has on the coastal appearance, and the increased threat to human health

An increased effort and milestones achieved by the government in setups on new policies such as banning plastic bags has increased awareness, as this was a national take of environmental reform

But yet people think marine litter is a problem of the future and not now due to:-

Lack of deep understanding on the present and the lasting effect of marine litter in their daily lives.

They are not well informed with correct information, as the majority of the information comes in technical languages, or English language which is not the mother tongue of the majority.

Furthermore people think marine litter is the problem of people living along the coast, this is because:-

They are not aware of the concept of catchment area, waste flow and how it reaches the ocean.

The values or benefits of the ocean are directly related to the coastal communities hence the people leaving away not involved in fishing and related activities, and forgetting the indirect benefits of the ocean to those who don't use the beach and the ocean on a daily basis.

The following are recommendations on the best ways to address the marine litter issue.

Infrastructures

Infrastructure from household level such as proper waste disposal, integration system of waste management, separation of waste and the R's (Reuse recycle and reduce), using the similar formula on the actions to tackle COVID-19 everyone was responsible to setup hand washing facilities, so the intentional similar urgency on individual efforts to put infrastructure necessary for cleanliness in both accessible areas and those not accessible.



Conservation of aquatic ecosystem and marine critical habitats

D: Perception on Marine litter and what innovation can do

Location: Dar es Salaam, Pwani, and Zanzibar

Duration: January to April 2021

Impact: 328 people informed about marine litter

Impact Story

Governance and Laws

There should be emphasis on the laws governing our marine environment, as well as translation of the legislations into Swahili language as well as easily understandable language in the grassroots communities.

Enforcement of policies that protect the environment by the authorities to the community and establishment of by-laws of specific areas, and community scouting and watch outs for the beach and the areas in the catchment as most of the waste come from upstream areas.

Increase political will of the people in authority, through creating seminars, workshops and more dissemination inputs for them to understand the Oceans, how important it is beyond fisheries and how marine litter can overturn all values. This can be through relevant ministries connecting to the Blue economy and not just the ministry of environment and fisheries.

More education should be given with regards to waste management and disposal as well as environmental conservation

More research should be done on effects of marine litter and their interaction, these researches will put in place knowledge on how the behavior changes can be put in place.

Primary ocean conservation education should be given from primary education level

Awareness from young age through incorporation of the knowledge in education curriculum

There should be more emphasis on the sustainability of ocean conservation and environmental conservation initiatives.

Involvement of local communities in education and awareness of the causes of marine litter and their effect, and enactment of peer learning on best practices on waste management in slums, and poor neighborhoods.

Uses of easy and understandable language on awareness of the community, and relevant examples.

Increased awareness through social media and platforms and better ways to increase awareness and communication

Bring aboard behavior change programmes through National wide campaigns

Accept adoption of new technologies through Global stewardship



Conservation of aquatic ecosystem and marine critical habitats

E: Ocean Decade Project “Low cost real-time monitoring of pollutants and water quality along the coral reefs in Tanzania

Location: Tanzania Coastal waters

Duration: Ongoing 2021-2030

Aim: Monitoring of 3000 sq km of coral reefs in Tanzania

Impact Story

The Reef Protect Project is a project that seeks to deploy water quality monitoring devices in eight coral reef sites along the coast of Tanzania. The devices will help to measure ocean temperature, dissolved oxygen and pH. The devices will be able to log the collected information in real time and made available publicly through the to be designed portal. This information will be collected for 10 years and used in informing the policy makers on possible actions that can be used to safeguard Tanzania coral reefs and the impact of climate change.



Coastal community health

A:World Drowning Prevention Day WDPD

Location: Kunduchi, Dar es Salaam,

Duration: Every 25 of July

Impact: 218 People reached, 9 NGOs participated and Local and central Government

Impact Story

Our country blessed with a lot of water bodies including internal water (64,000 km²), and (EEZ: (223,000 km²), large lakes like lake Victoria (35,088 km²), lake Tanganyika (13,489 km²), lake Nyasa (5,760 km², and other small lakes and numerous dams and rivers, all these account for making wider employments to fishers community. Apart from such fruits and achievements that we get from water bodies activities, these water bodies activities sometimes lead to drowning and cause death to a lot of people, injuries and loss of properties. The initial research by RNLI and statistics indicates in every one hundred thousand (100,000) people, two hundred and thirty one (231) die due to drowning, the one thousand four hundred and sixteen (1416) of people die due to drowning in Tanzania, only lake Victoria in every one hundred thousand (100,000), two hundred and thirty one (231) of people die due to drowning (RNLI 2018). Country wise in Tanzania more than 3,000 of people die due to drowning.

The Aqua Farms Organization and Environmental Management and Economic Development Organization (EMEDO) and other stakeholders organized the first WDPD in Tanzania with the theme of Drowning is preventable and precautionary.

The purpose of this day's event is to remind and encourage everyone to ensure safety at sea and take all necessary measures to prevent drowning. This global advocacy event serves as an opportunity to highlight the tragic and profound impact of drowning on families and communities and offer life – saving solutions to prevent it.

Stakeholders justification on drowning prevention

- The lack of drowning prevention tools like fiber boat, GPS, Life jackets and radio calls.
- The absence of drowning prevention skills and rescue to most of fishermen and community that live around the coastal line and other water bodies.
- The lack of awareness campaign and training on the drowning prevention methods and rescue, The deficiency of statistics data of death and lost properties that associated to drowning,
- The fishermen requested the government and other institutions to initiates the program and Centre specific for drowning rescue.



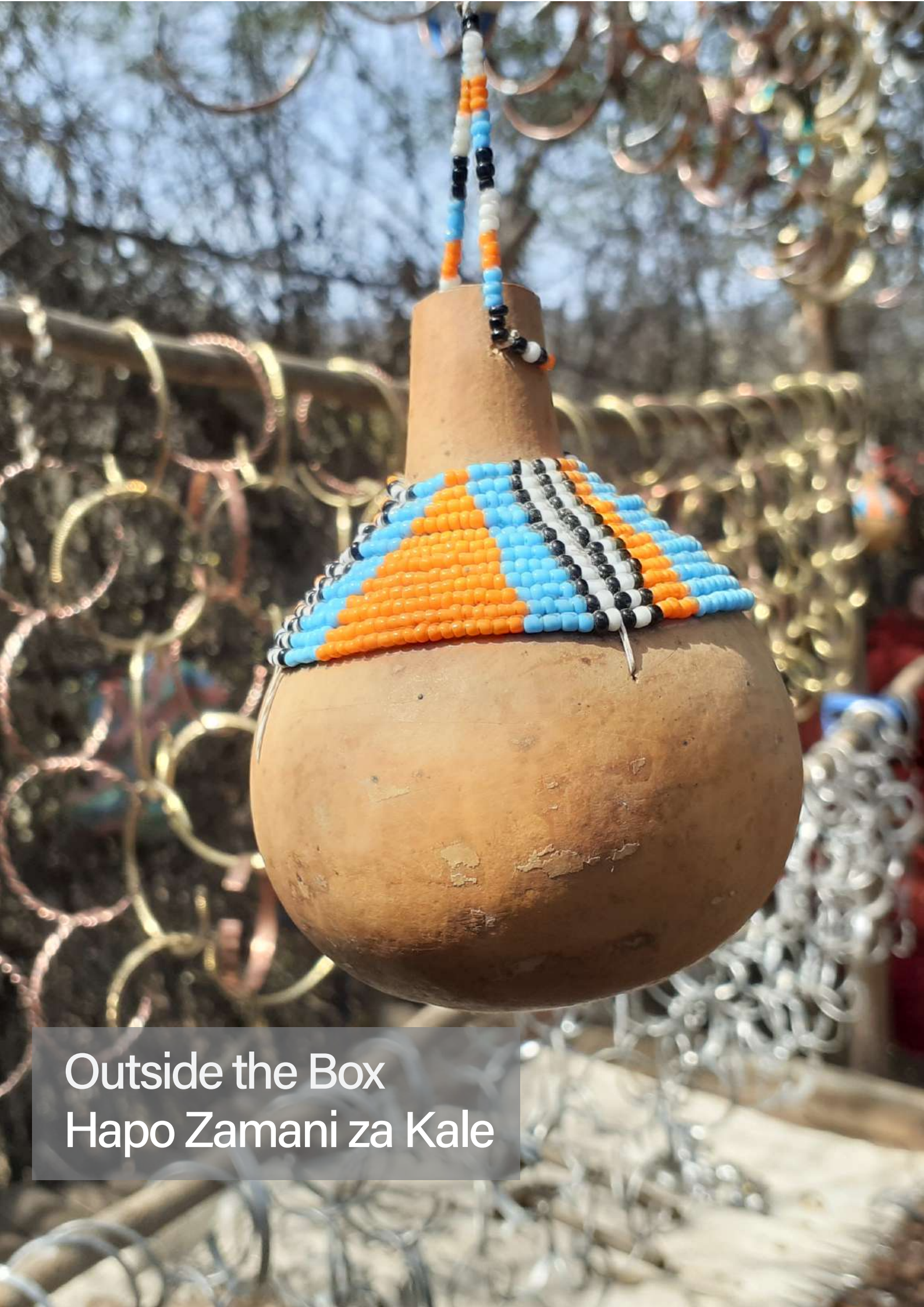
Capacity Building

A: Gaining access to the underwater realm isn't just beautiful and mind-blowing; it can also open up a world of opportunities for a Marine Scientist.

A Majority of early career marine scientists from the WIO region and across Africa have been limited by not being able to dive for research and conservation into the deeper parts of the ocean. Most of them have spent their time on the shore and in shallow waters exploring only what they could see and not what was deep in the ocean realm. Aqua -Farms Organization in partnership with Nature Environment and Wildlife Filmmakers (NEWF) based in South Africa which is dedicated to promoting conservation through film came together and championed the first-ever Tanzania Dive Lab that trained two marine scientists. This partnership, which took place from 15th-18th November 2021, built the capacity of Jerry Mang'ena and Kaitira Benard to be PADI certified open water divers who are now using the underwater skills to craft a "snorkeling for conservation" marine program. The programme aims to develop a young generation of ocean conservationists who can function underwater by exposing them to underwater marine biodiversity in a citizen science module. As Marine Scientists, Mang'ena and Kaitira are now able to dive and explore the ocean floor and use their skills in underwater research and marine conservation.

B: Enhancing your Organization's Financial Management

This workshop was organized for the Segal Family Foundation (SFF) partners on 9th up to 13th August 2022. The purpose was to introduce financial management best practices. The message which underpinned this training was that finance is everyone's responsibility, with the aim being to encourage and support programme and finance teams to work together with a shared language and understanding of their roles and responsibilities. Important topics covered: Key Financial Management principles and concepts, Financial Planning/Budgeting, Accounting Records, Financial Monitoring, Internal Control Systems, and Self-Assessment tool.



Outside the Box
Hapo Zamani za Kale



Outside the box

Hapo Zamani za kale

Location: Tanga, Dar es Salaam, Pwani, Zanzibar, Arusha Kilimanjaro

Duration: 2020-2021

Impact: 1000 book, 312 persons engaged from 17 communities, 15 artists

Impact Story

Growing up in Tanzania, almost every child our age would look forward to a storytelling session which was traditionally narrated by an elder, usually a grandparent. We remember these moments as a special moment to bond with either our siblings/ relatives around an open fire, under a huge mango tree, in an aromatic kitchen, or in a family room. Presently, most families barely find time to enjoy the simple joys of telling and listening to African folktales – we realized that there was more we could! Hapo zamani za kale initiative aims to preserve, restore and promote the culture and art of traditional storytelling and stories in Tanzania.

To many, traditional African folklore served as a fundamental bridge for knowledge and transfer of key life lessons and wisdom from one generation to another, and for fishing communities it is a fundamental way of transferring dos and don'ts for our lakes, rivers and oceans. Through Hapo Zamani za Kale, we work with indigeneous communities, local governments, artists and youth to collectively preserve, restore and promote the culture, art and tradition of storytelling.

- Collection total of 201 stories from 106 storytellers (49 female 57 male) belonging to 9 local ethnic groups (Mtaita, Msambaa, Mmbugu, Msegeju, Mdigo, Mnago, Wazigua, Mkwere, Mdoe, Mzaramo). Also 17 villages were reached in total such as Moa, Mazinde Ngua, Mazinde ngua, Makole and Kidatu, Saadani, Kaole, Mlingotini, Msata, Handogo). As results, the collection of these stories enabled understanding of the norms and stories in these communities consulted. Exchange information and raise awareness of different ethnic groups in Tanzania and the importance of culture preservation.

- 312 total persons engaged (44) 14.1% elderly, (237) 75.96% youth and (31) 10% children) directly and over 500 indirectly)

- 5 regions (Arusha, Kilimanjaro, Tanga, Pwani and Zanzibar) were covered to include diverse indigeneous communities and tribes.

- 18 Tribes in 17 villages were visited in Kilimanjaro, Arusha, Tanga, Pwani and Zanzibar such as in Arusha (Maasai, Datoga, Hadzabe and Iraqw), Kilimanjaro (Chagga, Pare), Tanga (Mtaita, Msambaa, Mmbugu, Msegeju, Mdigo, Mnago, Wazigua), Pwani (Mkwere, Mdoe and Mzaramo, Zanzibar (Wazanzibari).

- 15 Artists trained on the use of digital Canvas Platform as a new way of diversifying employment opportunities.

- 1000 copies of the Hapo Zamani Za Kale book were produced.

- 7 Villages and 4 libraries received the Hapo Zamani Za Kale book.



Highlights

Recruitment of new staffs



Yusufu Kasato is Graphic designer Intern who is so much interested in aquatic system conservation together with helping the community to enjoy the sustainable utilization of aquatic resources for the development and ensuring food security. In October 2021, He graduated with a Bachelor's degree of Food science and Technology from the University of Dar es Salaam.



Halima Mkoma as the Project officer Intern believes that the skills and experience that she will possess from the organization is not only that will add value to the organization, but in return will help her to acquire experience and sharpen her skills amidst organization's professional working culture.

Rutifia Remtula is an Administrative officer Intern at Aqua-Farms Organization, her decision to be at Aqua-Farms Organization was intentionally focused towards administration skills sharpening and be a value imparter to the community. In 2021, She holds her Bachelor degree of Marketing and Public relations, Business, Management, Marketing, and Related Support Services from the National Institute of Transport.

Happy Kisare was so curious (and still she is) about the nature of Aqua-Farms Organization's work, it was the first time she came across the organization dealing with aquaculture. This caught her attention and raised the desire to learn from these great people, work and grow professionally. Happy Kisare is 2021's recruited Finance Officer.

James Manyama decided to join the Aqua-Farms Organization so he can develop a career as aquatic scientist through aquatic research, training and workshop undertaken by AFO, from which He hopes to help the community through enhancing food security and income generation. James is a Project officer Intern and a graduate student from the University of Dar es Salaam (UDSM) Bachelor's degree in Aquatic sciences and Fisheries Technology.

Our 2021 Best



Our 2021 Best



Nancy Iraba

Completed Dive Master and Mandela Washington Fellowship



John Kimaro

Completed Advanced masters Water quality and waste water treatment



Cretus Mtonga

Completed Fish Taxonomy of African Fishes at Royal Museum in Belgium



Yusufu Kasato

Graduated Bsc. Food Science & Technology from the University of Dar es Salaam (UDSM)



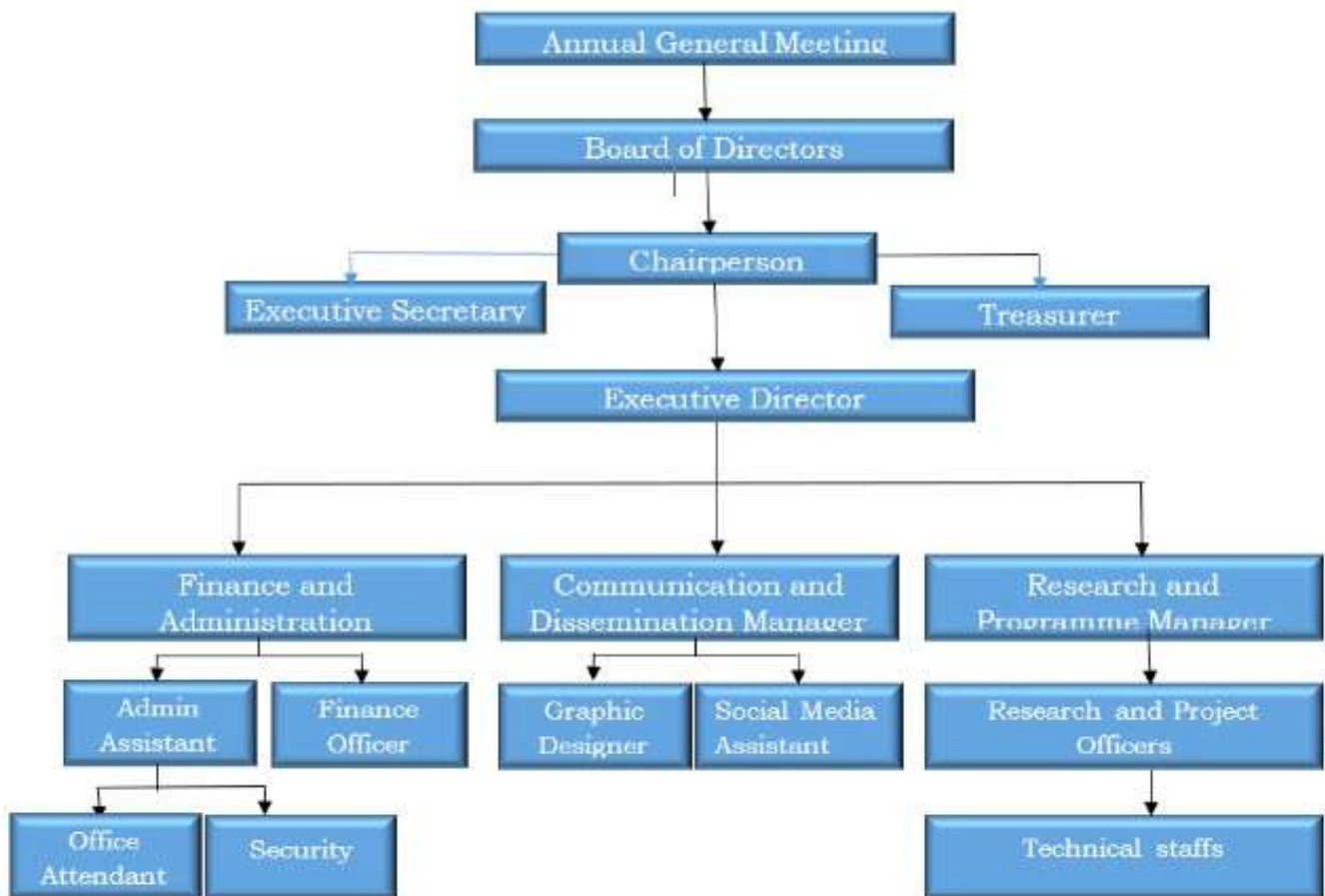


About Aqua-Farms Organization - AFO

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 ooN-GO/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.



Organogram





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 procedures to reduce this risk.



Financial

This part shall include;

- Income,
- Assets,
- Cash flow and
- Description of notes.



Partners



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Contact
Us Now



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Development and Food Security Through Blue Economy