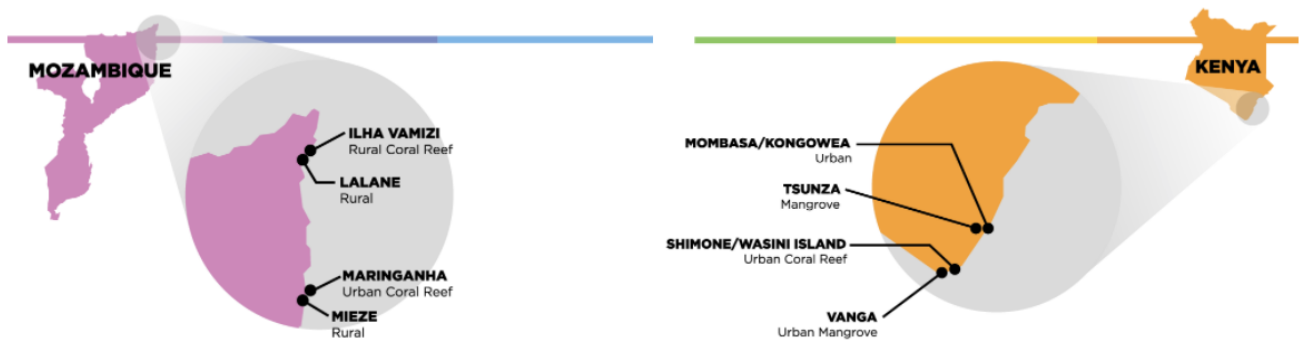



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## SUSTAINABLE POVERTY ALLEVIATION FROM COASTAL ECOSYSTEM SERVICES



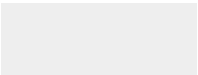
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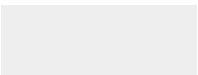
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**NEW PUBLICATION DRAWING ON SPACES DATA SHOWS EAST AFRICAN REEFS PARTICULARLY SUSCEPTIBLE TO CORAL BLEACHING**

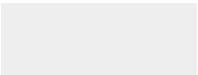


**HOW DO COASTAL ECOSYSTEMS SUPPORT HUMAN WELLBEING? NEW SPACES PUBLICATION ON THE MANY MECHANISMS**





**SPACES PUBLICATION: MEN AND WOMEN  
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**NEW PUBLICATION: ASSESSING BASIC  
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**NEW PUBLICATION: KENYAN AND MOZAMBIKAN CORAL REEF  
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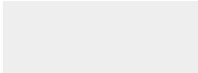
**NEW SPACES PUBLICATION ON THE  
IMPORTANCE OF STORIES IN FACILITATING  
TRANSFORMATIVE WORKSHOPS**

**NEW MOOC ON 'TRANSFORMING DEVELOPMENT' LAUNCHED BY  
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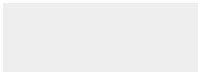




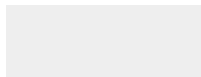
## UNCOVERING THE AMAZING BEHIND THE SCENES ACHIEVEMENTS BY TZUNZA COMMUNITY TO BUILD ON SPACES KNOWLEDGE AND DIALOGUES.



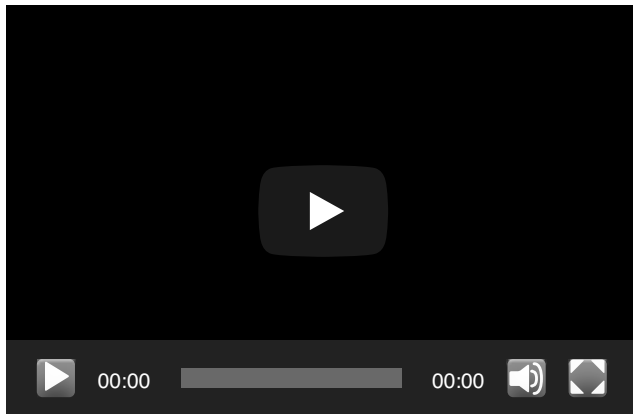
## A LOOK BACK AT SPACES IN 2017



## SPACES DATA EXPLORER



## THIS VIDEO IS ABOUT SPACES



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## NEWS

### NEW PUBLICATION DRAWING ON SPACES DATA SHOWS EAST AFRICAN REEFS PARTICULARLY SUSCEPTIBLE TO CORAL BLEACHING

By [Tim Daw](#)

SPACES team members, Tim McClanahan and Nyawira Muthiga have used SPACES coral reef survey data in an analysis of the factors affecting coral's susceptibility to coral bleaching in the face of warmer climates.

The analysis based on surveys from E. Africa to Fiji during the 2016 El Nino event showed that bleaching is caused by a range of stressors on reefs.

In terms of geography, the researchers found that bleaching depended greatly on where the corals lived along the longitudinal gradient from East Africa to Fiji. Worryingly for E. African coastal states, their reefs appeared to show the strongest bleaching response to heat stress.

A longer write up of the article can be found here:

<https://www.sciencedaily.com/releases/2019/10/191002165228.htm>

And the full reference for the study, in Nature Climate Change is here:

Tim R. McClanahan, Emily S. Darling, Joseph M. Maina, Nyawira A. Muthiga, Stéphanie D 'agata, Stacy D. Jupiter, Rohan Arthur, Shaun K. Wilson, Sangeeta Mangubhai, [...]

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 **12 NOVEMBER 2019**

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# HOW DO COASTAL ECOSYSTEMS SUPPORT HUMAN WELLBEING? NEW SPACES PUBLICATION ON THE MANY MECHANISMS

By Tim Daw



A new paper based on SPACES research reports the diverse ways people reported that ecosystem services support different aspects of wellbeing.

The paper discusses these using the capability approach and theory of human needs. The the diverse mechanisms to contribute to wellbeing can be categorised as money, use or experience. Considering all of these mechanisms can inform the development of interventions that aim to protect or improve flows of benefits to people.

See Kate Brown's reflections on the paper on her blog:

<http://katrinabrown.org/complex-social-factors-mediate-the-links-between-ecosystem-services-wellbeing-and-resilience/>

Complete citation:

Chaigneau T, Brown K, Coulthard S, Daw TM, Szaboova L. 2019. Money, use and experience: Identifying the mechanisms through which ecosystem services contribute to wellbeing in coastal Kenya and Mozambique. *Ecosystem Services* **38**:100957.

Link to the paper (open access): <https://doi.org/10.1016/j.ecoser.2019.100957>

Abstract:

Despite extensive recent research elucidating the complex relationship between ecosystem services and human



wellbeing, little work has sought to understand

ecosystem services [...]

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 **14 JULY 2019**

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## **SPACES PUBLICATION: MEN AND WOMEN USE, EXPERIENCE AND VALUE COASTAL ECOSYSTEM SERVICES DIFFERENTLY**

By [Tim Daw](#)





In this latest publication, Matt Fortnam and coauthors from the SPACES team compiled evidence from across the SPACES datasets to illustrate how people's engagement with ecosystem services are fundamentally gendered...

<https://www.sciencedirect.com/science/article/pii/S0921800918301836>

See this Stockholm Resilience Centre news item for a summary of the paper:

<https://stockholmresilience.org/research/research-news/2019-03-17-ecosystem-services-for-men-ecosystem-services-for-women.html>

and in the blog below Kate Brown discusses the paper in the context of the emerging literature on the structures that determine who can benefit from ecosystem services, and how:

<http://katrinabrown.org/inequality-and-ecosystem-services-social-structures-and-processes-determining-who-benefits-from-ecosystems-and-how/>

Abstract:

This article assesses the extent to which our conceptualisation, understanding and [empirical analysis](#) of [ecosystem services](#) are inherently gendered; in other words, how they might be biased and unbalanced in terms of their [...]

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 **12 APRIL 2019**

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## PROJECT SUMMARY

### ABOUT SPACES

SPACES core objective is to contribute to poverty alleviation by combining scientific research and knowledge, with local expertise and coastal people's own experiences and knowledge.

The SPACES team has (1) uncovered scientific knowledge on the relationship between ecosystem services (ES), poverty, and human wellbeing (WB). The researchers have found that different kinds of ecosystem services and wellbeing are linked in monetary and non-monetary ways. The practice of engaging in an ecosystem service and the use of an ecosystem service contributes to wellbeing as does the money gained from it. For example, the practice of cooking fish together fosters relationships, using fish for school lunch supports education, and selling fish for income contributes to economic security.

SPACES researchers also found that who is poor depends on how poverty is measured. In coastal Kenya, the people who are the wealthiest are not always better off in terms of meeting their basic needs or living in a better quality house. The team found that there is a difference between income and assets, and that income does not translate to assets.

When comparing sites in Kenya and Mozambique, the contribution of an ecosystem service to wellbeing is not necessarily related to the condition of the ecosystem. A high quality ecosystem does not benefit or contribute more to wellbeing than a low quality ecosystem. SPACES has found that access to ecosystem services contributes more to wellbeing than quality of the ecosystem. Access effects poverty more in the short term than a degraded ecosystem.

### A GUIDE TO SPACES DATA AND ACTIVITIES:

#### WHAT IS THE STATE OF THE ECOSYSTEM?

[MANGROVE DATA](#)[ECOLOGICAL UNDERWATER  
SURVEYS](#)[LANDINGS DATA](#)[ECOPATH AND ECOISM  
MODELING](#)

#### WHO BENEFITS?

[VALUE CHAIN ANALYSIS](#)[HOUSEHOLD SURVEY ON  
WELLBEING, LIVELIHOODS,  
AND BENEFITS OF ECOSYSTEM](#)

For example, people who get the most money from reef fish are fishing in quite degraded sites like, while those who are fishing in the most pristine sites like Vamizi are the poorest. One reason for this is that the fishers in the pristine sites do not have access to a market to sell their fish.

SPACES researchers have also found that if you want to increase a fishers' wellbeing it is not necessary to catch more fish. It is instead important to look at how the money is distributed along the value chain and to look at how the money is being used.

SPACES has (2) built capacity between researchers at all levels. The project was an ongoing interaction between 39 academic researchers and 28 research staff, interns, and master's students. SPACES ran team trainings on facilitation, fuzzy cognitive mapping, agent based modelling, and data collection and checking. Johnstone Omukoto from KMFRI visited UBC for training on modelling. The project also created jobs opportunities for the field teams in Kenya and Mozambique.

The project has (3) developed and applied novel methodologies and processes. The team has pushed the thinking and conceptualization on ecosystem services. SPACES introduced the question of ecosystem service elasticity, applied the reef budget methodology to the Western Indian Ocean, developed a basic needs methodology, and linked VCA to fisheries in the African context for the first time. The team also ran two innovative workshops with stakeholders that brought together fuzzy cognitive maps, scenarios, stress testing, and the seeds approach. In addition, SPACES has lead in depth community dialogues and 1-1 meetings to discuss key findings. Lastly, the team has developed the [SPACES Data Explorer](#), which allows stakeholders to explore data on basic needs, ecosystem services, and access that can be used when planning development interventions.

SPACES (4) engaged with tens of stakeholders in both countries. SPACES had a focus on impact throughout the project. This has made the project less abstract and allowed it become more embedded in society, which has been one of its strengths. The team visited 16 organizations in Kenya and 6 in Mozambique in 1-1 meetings with stakeholders. SPACES facilitated discussions on the relationship between ecosystem service and wellbeing on multiple levels, facilitated networking between the levels, and the flow information between them as well.

The team's data on mangroves has also be used in two projects that will continue past SPACES. In Tsunza, the local organization, Community Touch, used the data to apply for and receive funding for a community conservation project on mangroves. In Vanga, the successful project Mikiko Pamoja for offsetting carbon emission will be upscaled. SPACES baseline mangrove data was used in the Project Idea Note (PIN).

SERVICES



ACCESS TO ECOSYSTEM  
SERVICES (focus groups)



TOURISM DATA (Kenya only)



## HOW DO ECOSYSTEM SERVICES SUPPORT WELLBEING?

WELLBEING DATA



CULTURE & THE COAST (Kenya  
only)



IMPACTS OF EL NINO ON  
WELLBEING



## WHAT ARE POLICY AND INTERVENTIONS FOR THE FUTURE?

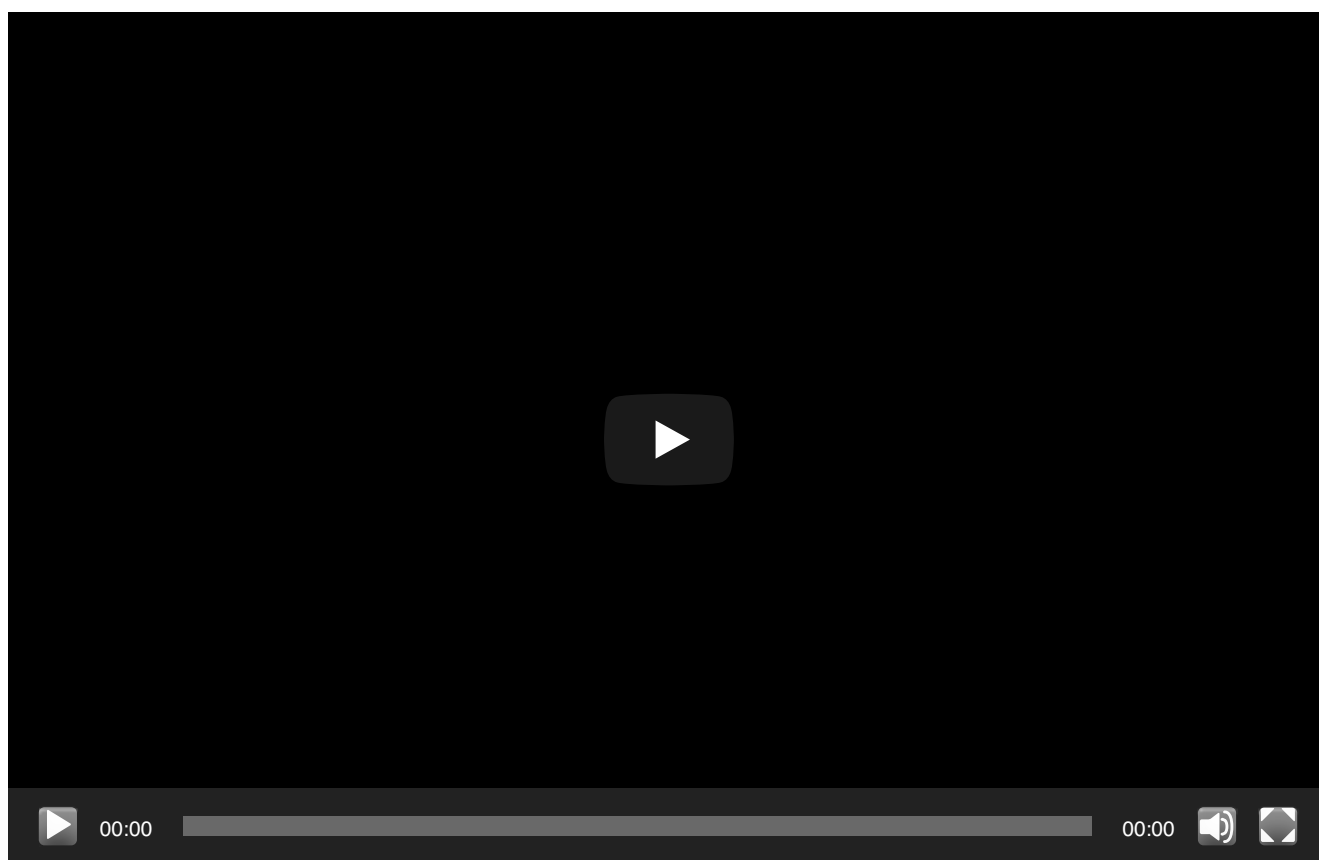
POLICY & INTERVENTIONS FOR  
THE FUTURE



SPACES ran an evolutionary project in which the team was able to follow-up on ideas and expand on them through the addition of El Nino research, a repeat household survey to understand how the terrorism attack in Kenya in 2013 effected tourism, the community dialogues, and finally the development of [SPACES Data Explorer](#).

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**IN THE VIDEO, PROFESSOR KATE BROWN INTRODUCES THE SPACES AIMS AND FRAMEWORK.**



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## STUDY SITES

SPACES is currently working in eight communities along the East African coast, four in Kenya and four in Mozambique. Within each country we have selected communities that are urban/peri-urban or rural, and are primarily associated with either coral reef or mangrove ecosystems, although communities may access services from both ecosystems. The community profiles of the 8 sites were completed in 2013.



### RURAL MANGROVES

In the dry season mangroves are an important source of shade as well as a means to make money through selling poles. They also serve as a reference point for fishers and boat captains out at sea.



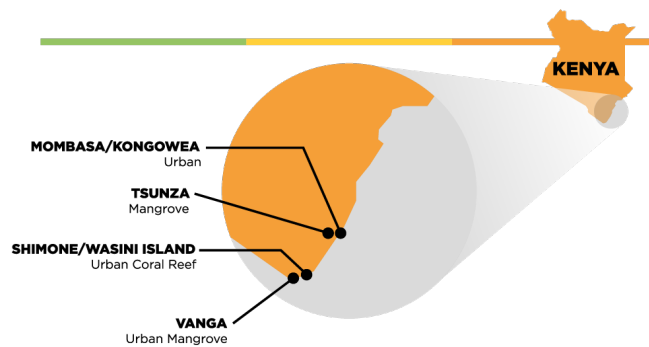
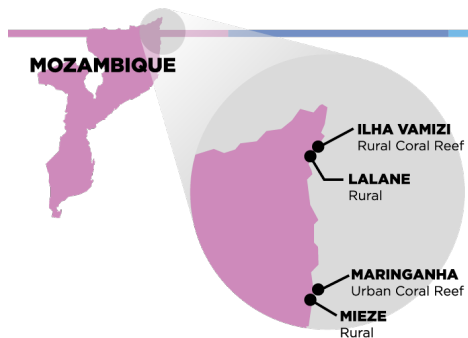
### URBAN CORAL REEFS

Fishers and tourists often share the use of coral reefs near urban areas. With high density populations, coral reefs often show signs of degradation.



### RURAL CORAL REEFS

In rural areas, coral reefs can be an integral part of daily life, providing a sense of place in addition to food and sometimes building materials. As with urban reefs, tourists and fishers often share the use of reefs, with sometimes conflicting priorities.



ILHA VAMIZI COMMUNITY PROFILE

LALANE COMMUNITY PROFILE

MARINGANHA COMMUNITY PROFILE

MIEZE COMMUNITY PROFILE

MOMBASA/KONGOWEA COMMUNITY PROFILE

TSUNZA COMMUNITY PROFILE

SHIMONE/WASINI ISLAND COMMUNITY PROFILE

VANGA COMMUNITY PROFILE



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## MOZAMBIQUE

Ilha Vamizi

Lalane

Maringanha

Mieze



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# ILHA VAMIZI COMMUNITY PROFILE

## DATA SOURCES

Information for this community profile predominantly came from Key Informant Interviews.

The following references were also used as secondary sources:

"GARNIER, JULIE, et al. "Co-management of the reef at Vamizi Island, northern Mozambique." TenYears after Bleaching —Facing the Consequences of Climate Change in the Indian Ocean (2008): 121-128."

"Hill, Nicholas. "Livelihoods in an artisanal fishing community and the effect of ecotourism." University College of London, London (2005)."

Our entry to Vamizi was facilitated by WWF employees who are in association with the Vamizi lodge. One employee lives in the "old village" of Vamizi and is only a casual worker for WWF, he was therefore able to help with introducing us to the village leader and to invite participants to focus groups, to sort out venues for us to carry out our work.

## LOCATION

Vamizi island lies in the far north section of the Querimbas archipelago just below the Tanzanian border. It falls under the Cabo Delgado province, and similarly to Lalane, belongs to the Olumbi administrative Post in Palma District.

Shape

Fig.1. Location of Vamizi Island

Shape

Figure 2: Village and lodge locations (line indicates lodge delineation area)

## DEMOGRAPHICS

The estimated total number of people was 533 in 1999 [1]. However these numbers fluctuate greatly. There is an increasing number of people coming to Vamizi Island mainly for the purposes of fishing. The fishing camps of Kivuri and Golance, based to either side of Aldeia/Vamizi village, are now bigger than Vamizi village itself. There are 94 houses in Golance. In Kivuri there are 99 houses registered with the Kivuri chief. Of these, about 40 of the houses are now

permanent throughout the year in Golance (interview with Golance chief's assistant), and about 70 are permanent throughout the year in Kivuri (interview with Kivuri chief). The remaining fishermen come for periods of a few months or weeks before returning with their catches [2].

## CHARACTERISTICS

Vamizi is one of the largest islands (12 kms long and 0.5-2 kms wide) of the Querimbas and one of the four islands which has always had a resident community since Arabic times. Early settlers settled in the western section of the island for its easier access to the mainland. The resident population was estimated at 533 people in 1999, the majority being of Kimwani and Swahili origin with a livelihood based on subsistence fishing. Since the end of the war, an increasing number of itinerant fishermen from Tanzania and other provinces in Mozambique have established a presence on Vamizi, the total population of the island fluctuates depending on the monsoon. There are also regular movements of fishers between the island and coastal villages on the continent, which further contribute to this high flux of people [1].

About two-thirds of the island is now in the concession of CDBTP, and one-third belongs to the local communities. Much of the area set aside for the communities is still uncultivated and forested. However, since it is a coralline island, it is difficult to tell how much more space could be used for agriculture [2].

Kivuri started as a community in 2002 when some itinerant fishermen were removed from the area now under concession of CDBTP and established a camp there. It has grown rapidly since then. Golance has been established a little longer, but started growing rapidly to its present size in about 2002. People are now marrying locally and settling in these communities, or find they do not have the resources to return to where they came from. The people in both communities come mostly from Nacala, a Province south of Cabo Delgado, although a few come from as far away as Ilha de Moçambique and others from closer by cities Moçimboa da Praia and Pemba. The men interviewed in these villages stated the reason they came was because there was nothing left to fish where they came from, so they came to Vamizi for "*vida*" (life 0.22). The antecedents of some of today's villagers came to the island sometime in the 1950s mainly to grow crops and to fish. Initially, there were very few families, and the land where the village stands today was used for cultivation. In the 1960s, many families came to the island to flee from the Independence war. At that time, there was also a Portuguese settlement on the island in the form of a fish processing plant that used to buy fish from the locals, and with whom there was a good relationship. This settlement had a cistern for water that the villagers could use. After Independence in 1975, many people left the island to return to their hometowns. The fish processing plant ran for a few years under State rule before becoming a ruin. Since the exodus of people after the war, the village slowly grew to the village it is today. People arrived to fishing, marry, and settle. This means there are people from many different locations from Ilha de Moçambique in the south up to Mtwara in southern Tanzania making up the present population [2].

## LIVELIHOODS

Aside from the ecotourism development on Vamizi Island, only two other formally employed positions exist: the teacher and the *infirmeiro* (village nurse) employed by the state. Casual employment is also found on fishing and transport *dhows* [2]. Fishing is again the main source of income for most on the island with other sources of income or food used as secondary activities (see fig. below from [2]).

Image

## FISHERIES

On returning from fishing, if there are enough fish, a portion is taken as food of the fishermen and boat and fishing

gear owners and the rest is sold. Of the part that is sold, a fifth of the value received is given to the boat and fishing gear owners, and the rest is divided up between whoever was fishing, including the boat and/or fishing gear owners if appropriate. Of the fish that is kept for food (*caril*), equal sized piles are made for each member of the crew plus the boat and fishing gear owners. Again, if the boat and/or fishing gear owners are fishing on the boat, they get two piles; one for being part of the crew, the other for owning the boat and/or fishing gear used. Vamizi is isolated from markets by distance and sea. In line with development strategies for artisanal fisheries in Mozambique (Ministry of Fisheries, 1994) which aim to reduce post-harvest losses and increase catch volumes, new fish processing plants have been developed in Palma and Moçimboa da Praia which can handle fresh goods. However, these are not accessible to fishermen on Vamizi due to the distance involved and lack of facilities to maintain fresh fish. Many traders come to the area to buy dried fish to sell in Moçimboa da Praia or Nampula or inland on the continent. Many traders will buy fresh fish and then dry it on the island before taking it to market. Normally, the goods go by *dhow* from Vamizi to Moçimboa da Praia (a distance of about 50 nautical miles) and then onward by road. Given good conditions, this journey can take one, two or possibly more days. Traders also come from Tanzania to buy fresh lobster and octopus, using cool boxes and ice to keep them fresh. They only come during the spring tides (*somana*) when octopus fishing occurs (see section 4.1.3), and may only spend a few days on the island.

There are several people from Vamizi village who regularly buy fish for drying and then take it to Moçimboa da Praia or beyond for sale. These include all the shop owners. The amount they buy varies on the amount of money they have available. Generally, they will take fish to sell every two or three months, and (those who own shops) buy goods for their shops and return to Vamizi. There is no market place or system on the island. Instead fish is sold at the landing sites or even between fishing boats returning from fishing grounds. Fishermen have their normal traders who are based at their specific landing sites where they keep the craft they fish from or the equipment they use, or they sell within the village to villagers who are looking for *caril*. Dried fish has a higher value than fresh fish, and where possible fishermen will keep excess catch to dry and then take to Moçimboa da Praia to sell themselves or sell to traders on the island. Prices are agreed between fishermen and their traders, and can be seen for fresh fish, shark meat, shark fins, fresh octopus, dried fish and octopus, and lobster in table 4.1. Prices vary on the island depending on the number of traders present. Traders buy octopus for Met 7,000 to 8,000 (US\$0.31 to 0.36) per kilogram, except for the traders who come from Tanzania with cool boxes who will pay Met 10,000 (US\$0.44) per kilogram. They will buy as much octopus as they can, but only come for a few days each spring tide. No-one reported problems in selling fish or other marine products when they wanted to, although the price could vary.

It becomes difficult to sell dried or fresh fish in the rainy season as few fish trader get the chance to buy the fish (IDPPE employee). The number of fishermen also increase from March to June as fishermen from Nacala arrive to fish. The low season is between August and October.

## TOURISM

In 1999, the Cabo Delgado Biodiversity and Tourism Project (CDBTP) was created by a handful of foreign investors with the intention of developing an upmarket tourism lodge on Vamizi Island that would support and enable community development and conservation [2]. After negotiations with the islanders and the government, and building, the lodge opened up to tourists in 2005.

They are committed to the sustainable development of the local communities and conservation of natural resources (Garnier, 2003). On Vamizi Island, the key focus is the marine resources, being the key attraction for tourists and critical to local livelihoods[2].

Vamizi village is the closest permanent community to CDBTP, being on the same island, and from whom permissions to start the development were originally sought [2].

About two-thirds of the island is now in the concession of CDBTP, and one-third belongs to the local communities. Much of the area set aside for the communities is still uncultivated and forested, although with it being a coralline island, it is difficult to tell how much more space could be available for agriculture [2].

Employment opportunities within CDBTP are brought to resident communities surrounding the tourism area by the CDBTP Community Liaison Officer (CLO). He liaises with village chiefs to source employees who will be reliable and able to work. Rarely is education required for many of the jobs available within CDBTP at present. This method, although necessary, does mean that access to jobs may be restricted to some degree to people in favour with village chiefs and authorities. Not all jobs available are sourced from Vamizi village, as over 100 are involved in the construction process. Only 16 of all the workers on Vamizi Island (of over 150) are from Vamizi village. This has caused some consternation among some of the residents of Vamizi who feel more employment opportunities could be offered to them. However, a number of people from Vamizi have been employed in the past, and have either not been willing to continue to work and preferred to return to their traditional lifestyle, or have been laid-off [2].

There has been some community development since the development of the lodge. It has provided some jobs for the local community, has led to the construction of a health post, a community council of fisheries (CCP) and they have provided motor boats and fishing nets for the fishers. More recently, the lodge is also providing food for the children in school that the lodge built (WWF employee). However, nearly all people interviewed or as part of focus groups expressed their discontent with the lodge. They argued that many of the promises the owners of the lodge had made have not been respected. For example, most people don't work within the lodge and they employ people from outside the island. Furthermore, the marine protected area that has been put in place has displaced fishing effort and reduce the size of the fishing grounds, many believe this is unfair.

## MANGROVES

Other markets on the island are also limited by distance and sea, but still people come to Vamizi from nearby coastal areas to buy or cut sticks and building materials. One large log (*staka*) can be sold for Met 2,500 (US\$0.11); three or four thinner building sticks (*lenha*) can be sold for Met 1,000 (US\$0.04); 50 of the thinnest sticks (*nenga*) can be sold for Met 15,000 (US\$0.67). Some respondents express worry at the amount of wood that is taken from the island, and large amounts were observed on the beach ready for transportation, particularly in Kivuri [2].

[1] GARNIER J, SILVA I, Davidson J, Hill N, Muaves L, Mucaves S, et al. Co-management of the reef at Vamizi Island, northern Mozambique. Ten Years after Bleaching—Facing the Consequences of Climate Change in the Indian Ocean. 2008:121-8.

[2] Hill N. Livelihoods in an artisanal fishing community and the effect of ecotourism. University College of London, London. 2005.





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# LALANE COMMUNITY PROFILE

[en]Lalane is a small coastal rural village. The name Lalane was supposedly given to the village by a hunter who stumbled upon the village one night. Despite the hunter wanting to continue his journey looking for animals to hunt, the local community urged him to stay over and sleep. The hunter refused and wanted to continue, yet the residents continued to beg him to stay and sleep. The village then got the name “Lalane”, which means “sleep” in the local Kimwani dialect.

## DATA SOURCES

Our entry to Lalane was facilitated by the Cabo Delgado associação do meio ambiente (AMA – the environmental associate of Cabo Delgado) “extensionalist”. AMA have also begun working in the area and the extensionalist is permanently present in Lalane. Information for this community profile predominantly came from Key Informant Interviews that were conducted in the village

## LOCATION

Lalane is within the Olumbi administrative post in Palma District (both to the North of Lalane) in Cabo Delgado Province. Lalane has three subdivisions: Nsimba, Nfindi and Macambe. Macambe is separated by a considerable distance from the other two subdivisions. There are three other villages relatively close by called Nhungi, Tchukuani and Kissenge.

## DEMOGRAPHICS

Lalane has approximately 1150 inhabitants (information from AMA). More detailed demographic data was not readily available, and will be extracted from the household surveys.



The area where Lalane subdivisions are situated

# CHARACTERISTICS

The village is incredibly remote. Despite its proximity to Mocimboa da Praia, the road which connects the community to the district capital is incredibly bad. It floods regularly during the rainy season and is narrow and bumpy. Consequently, most Lalane residents travel by boat to Olumbi or Mocimboa rather than head back inland to connect to the main road by car. Indeed, no cars were present in the village during the community profile period (one week). There is some movement in and out of the community from other villages to sell agriculture products and trade fish (though this depends on the season). In terms of education there is one school which started in 1976 which originally only supplied only primary education from 1<sup>st</sup> to 5<sup>th</sup> grade, but has recently expanded its teaching to 7<sup>th</sup> grade. To continue to secondary level, the parents must send the children to Mocimboa da Praia or to Olumbi. There are no banks or no formal ways to save money in the area. A very few people save money in tin cans and use it to buy coconut trees, goats and luxury items as a form of investment.

Due to the poor infrastructure and Lalane's remoteness, most people rely on the environment for food and drink. Brands of soda and other forms of "cold drinks" are relatively rare and often run out. There is no electricity in Lalane, and hence it is not possible to refrigerate food. There was a severe lack of vegetables during the SPACES visit, and nutritional deficiency (as noticed in many of the children in particular, with swelling of the abdomen) may be a serious problem. There is a small market in the village ("pandule") where one can find a few huts selling foodstuffs and products for basic needs.

There is no established hospital in the village, but there is one healthcare worker who started work in 1980. He received a kit to help treat local patients but the local health authority stopped sending kits because they want to introduce a new health program (when this will occur is unknown). This health worker is still seeking to educate people and help prevent the spread of diseases especially water borne diseases during the rainy season. The village has four well pumps, but only two of these in Nsimba are currently working properly. There is also no sewer system in the village and hence the inhabitants use the bush and the mangroves. All members of the community are believed to be Muslim and there is a religious education within a school for children called "madrassa". The Muslim leaders are called Imed Abdala and Momade Suali .

There are few formal institutions apart from the Muslim church, a school and the Frelimo and Renamo political parties. There are two local organisations; the OJM (Organisation of Young Mozambicans) and NAP (Community Force Protection) in operation in the area according to the community leader, but their level of presence in Lalane is unknown.



Lalane Village

## LIVELIHOODS

Fishing and fisheries related activities are the most important activities in Cabo Delgado coastal zones and Lalane is no different. Agriculture is second most important followed by small local businesses, artisanal objects, boat transporters and boat repairmen.

The ocean is the most important resource in Lalane as it currently provides the majority of the community needs, such as fish to eat and sell, and transport from Lalane to other locations. The land is also used for agriculture for foods to eat and sell, and there is a coconut plantation for copra.



# FISHERIES

High season for fishing is February and March whilst July to November is the low season. Gears used include hook and line, spear guns and fish traps. However, beach seine nets are also used where 8 to 10 men push the net out slowly from the shore line and they wait long periods of time before hauling the net back in. The boats that are used for fishing are small, ~2 metres in length and typically can hold only one person.



Small emperors (Lethrinus harak) caught in Lalane



Weaving baskets outside a home in Lalane

When our fisher was asked about formal regulations regarding the fisheries in Lalane, he mentioned it was not allowed to fish in MPAs, or to use mosquito nets to fish. He further added that this latter law was decreed by the ministry of fishing and the community is aware of these laws.

The fisher mentions that there were more fish in the past and the current reductions are due to the number of fishermen in the village increasing the pressure on the existing fish. There is also growing concern from this fisher and the FRELIMO secretary that stocks are further reduced by fishermen from Nacala that come in large numbers during the high season.

There are no formal fish landing sites, and few traders due to difficulty in accessing the village. Furthermore there is no electricity and most fishers dry fish to preserve them. The fish is mostly sold to the local Lalane market (Fisherman).

Table 1: Number of fishers and boats at each site (OSOL)

Village	Landing site	Total number of boat (no engine)	Total number of boat with engine	Total number of female fishers	Total number of male fishers
Lalane	Lalane Nsimba	74	0	60	152
Lalane	Enfindi	79	0	6	88

# TOURISM

Lalane experiences little to no tourism. It has had foreign researchers in the area recently, but sees few tourists.

Occasionally Lalane is as a point to access tourist islands in the Quirimbas archipelago (Vamizi, Quifuky or Vumba) but this is very rare.

## MANGROVES

There are very few mangroves in the area, and the community is aware of the national laws and therefore do not cut mangroves. Primary use of mangrove products are for medicine to cure some diseases, for relaxing (shade), use as a toilet and a navigational aid for those trying to locate the village by boat. In Nfindi where most of the mangroves are, the mangrove ecosystem appears to be naturally shrinking, but the area occupied by the mangroves was increasing in Nsimba. The two mangrove species observed are *Avicennia marina* and *Xylocarpus granatum*.  
[width="414" height="355" /> [caption]



Mangroves in Lalane

## DEMOGRAPHICS

Lalane has approximately 1150 inhabitants (information from AMA). More detailed demographic data was not readily available, and will be extracted from the household surveys.

## CHARACTERISTICS

The village is incredibly remote. Despite its proximity to Mocimboa da Praia, the road which connects the community to the district capital is incredibly bad. It floods regularly during the rainy season and is narrow and bumpy. Consequently, most Lalane residents travel by boat to Olumbi or Mocimboa rather than head back inland to connect to the main road by car. Indeed, no cars were present in the village during the community profile period (one week). There is some movement in and out of the community from other villages to sell agriculture products and trade fish (though this depends on the season). In terms of education there is one school which started in 1976 which originally only supplied only primary education from 1<sup>st</sup> to 5<sup>th</sup> grade, but has recently expanded its teaching to 7<sup>th</sup> grade. To continue to secondary level, the parents must send the children to Mocimboa da Praia or to Olumbi. There are no banks or no formal ways to save money in the area. A very few people save money in tin cans and use it to buy coconut trees, goats and luxury items as a form of investment.

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The ocean is the most important resource in Lalane as it currently provides the majority of the community needs, such as fish to eat and sell, and transport from Lalane to other locations. The land is also used for agriculture for foods to eat and sell, and there is a coconut plantation for copra

## FISHERIES

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## TOURISM

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## MANGROVES

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# MARINGANHA COMMUNITY PROFILE

## DATA SOURCES

Information for this community profile predominantly came from Key Informant Interviews.

## LOCATION

Maringanha can be considered a suburb of Pemba and is found close to the main tourist area of Wimbe beach where many foreign workers and investors are based. Despite its proximity to the city of Pemba, the roads are poor and it is not as accessible as one may believe despite the proximity.

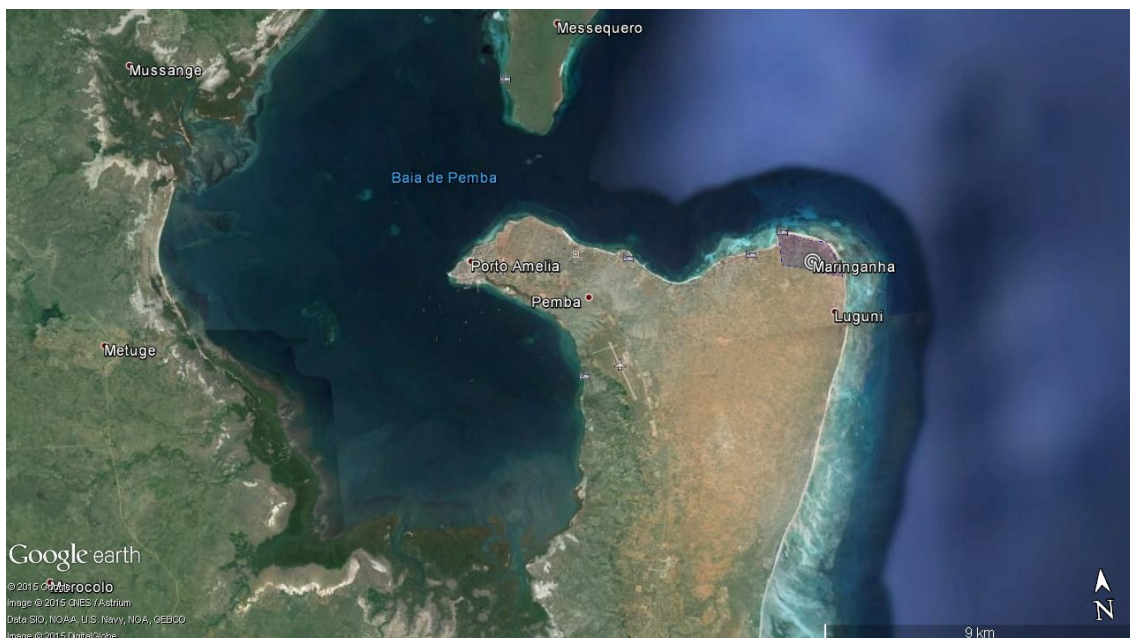


Figure 1: Maringanha

## DEMOGRAPHICS



According to the general population census 2007, there are about 4000 inhabitants of Maringanha, and approximately 142,000 people within the wider Pemba urban area. The predominant ethnicities are Macuas and Kimuani. Many residents are migrants from other coastal districts such as Mecúfi, Macomia and Mocímboa and Nampula province.

## CHARACTERISTICS

In the past Maringanha was a single district of Pemba but recently because of rapid population growth and occupation of spaces was necessary to divide the district into three units: Wimbe, Nanhimbe and Maringanha, and all these units belong to the new neighborhood called Eduardo Mondlane.

## LOCAL INFRASTRUCTURES

### HEALTH

In Maringanha itself there is a local health center for the community. Closer to the Pemba, community members can go to Chuiba. For serious illness or injury the residents have access to the main hospital in Pemba.

### EDUCATION

In Maringanha there are two schools including a Full Primary School level one and a full Primary School level two, there is also a public university Universidade Lúrio.

### DRINKING WATER & SANITATION

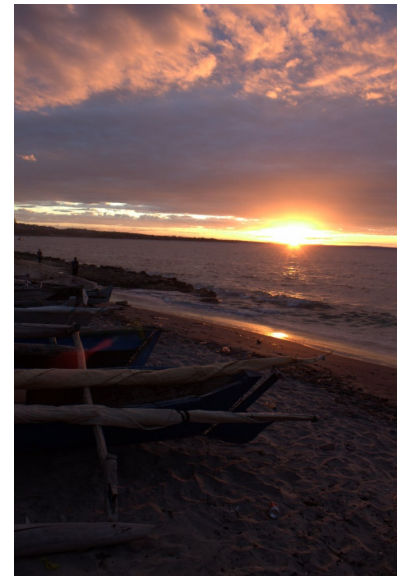
Water is supplied to Maringanha through Pemba urban water system piped to homes and 6 wells with hand pumps. Some houses in Maringanha have a personal sewage system (type of septic tank). Others have conventional and unconventional latrine in the backyard, while some inhabitants use the beach as a toilet or washroom.

### ENERGY

Maringanha is connected to the Mozambican national grid but some inhabitants have difficulties accessing electricity due to financial considerations.

## SOCIAL STRUCTURE AND KEY PLAYERS

There is a local Mozambique woman association (MWO), OJM Community courts and community policing that ensures the safety of the local community. Inhabitants of Maringanha are predominantly Muslim and there are religious schools for children. Existing political parties active in Maringanha are FRELIMO and RENAMO, and more recently MDM.



Beached fishing canoes at the end of the day



Maringanha beachfront from the sea

## FINANCE

There is no bank in Maringanha, and a trip to Pemba is required by any residents wishing to open account or conduct other financial transactions. There is one ATM machine in Maringanha, in the restaurant Kauri that is most often used by tourists, but can also be accessed by residents of Maringanha.

## NATURAL RESOURCES

Beaches are very important here and provide important cultural services for both residents and tourists through swimming, practicing certain rituals and where fish can be landed and traded and invertebrates or weeds collected. There is also small-scale agriculture practiced in Maringanha and some livestock is kept. Much of the population had to sell their farms to tour operators for the construction of hotels and for people to build housing.

## LIVELIHOODS

The main activities undertaken by the community are agriculture, small trade stores (primarily selling food), keeping livestock (goats and chickens), mechanics (for cars), masons, security guards and fishing. Foreign residents are employees of natural gas exploration and those involved in tourism activities for those coming from South Africa and Europe.

## FISHERIES

**Gears:** Spear guns, hook and line, beach seines, fish traps, Gleaning.

**Boat type:** Sail boats and canoes for one-two persons. Some larger dhows are present

**Regulations:** No mosquito nets (most are aware of these rules)

The fisherman must pay the annual taxes for the boats for the Maritime Administration.

**Historical changes and seasonality:** Quantities of fish are thought to be decreasing due to continuous increase in fishing effort and numbers of fishers. Mid July to December is high season whilst January to June, the fish stocks are less.

Fishers do not have a specific place to process fish that is landed; sometimes it is processed on the beach, and the fish traders come to buy fresh fish to sell in the town or along the beach. There is not a specific fish market associated directly with Maringanha.

**Number of traders:** Unknown as some from Maringanha are on the register as fish traders but many come from the



The beach at Wimbe in the evening



Fishermen hauling in a beach seine near Maringanha



city and are not on the register.

**Fishing land facilities:** no constructed facilities, the fish are landed by the lighthouse and the kumbuny and patakhalá (local names)

## MANGROVES

There are no mangroves in Maringanha but mangrove poles are bought from Pemba city and are used to construct houses.

## TOURISM

There are hotels, lodges, guesthouses, restaurants and bars already operating and others are under construction. The crystalline hot water ocean and the tropical temperature in the beautiful beaches are the attractions. High season is towards the end of the year for international tourists. The local community benefits very little from tourism as only few are hired from the community to work as helpers or in the construction of hotels. Many people who work in hotels are contracted in the city of Pemba and others come from outside the province. Only the owner of the restaurant Kauri is considered to have helped the local community. Tourism in Maringanha has improved access to clean water and electricity.



Pemba city

### Demographics

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## CHARACTERISTICS

In the past Maringanha was a single district of Pemba but recently because of rapid population growth and occupation of spaces was necessary to divide the district into three units: Wimbe, Nanhimbe and Maringanha, and all these units belong to the new neighborhood called Eduardo Mondlane.

## LOCAL INFRASTRUCTURES

### HEALTH

In Maringanha itself there is a local health center for the community. Closer to the Pemba, community members can go to Chuiba. For serious illness or injury the residents have access to the main hospital in Pemba.

### EDUCATION

In Maringanha there are two schools including a Full Primary School level one and a full Primary School level two, there

is also a public university Universidade Lúrio.

## **DRINKING WATER & SANITATION**

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## **LIVELIHOODS**

The main activities undertaken by the community are agriculture, small trade stores (primarily selling food), keeping livestock (goats and chickens), mechanics (for cars), masons, security guards and fishing. Foreign residents are employees of natural gas exploration and those involved in tourism activities for those coming from South Africa and Europe.

## **FISHERIES**

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**Number of traders:** Unknown as some from Maringanha are on the register as fish traders but many come from the city and are not on the register.

**Fishing land facilities:** no constructed facilities, the fish are landed by the lighthouse and the kumbuny and patakhalá (local names)

## MANGROVES

There are no mangroves in Maringanha but mangrove poles are bought from Pemba city and are used to construct houses.

## TOURISM

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# MIEZE COMMUNITY PROFILE

## LOCATION AND DATA SOURCES

Information for this community profile was predominantly derived from Key Informant Interviews. Mize is found along the main road north leaving from Pemba to Tanzania (North) and Malawi (West). Mize is located along a busy road.

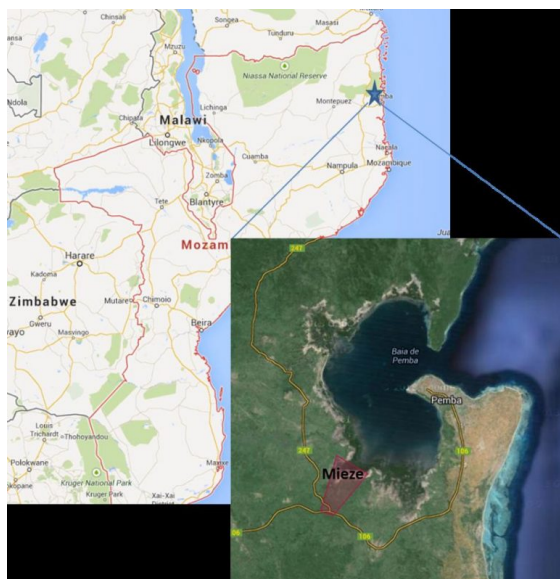


Figure 1: Mize Village

## CHARACTERISTICS

### History

Mize has always experimented the fisheries activities as well as agriculture as the area is conditioned to produce a lot of crops which have ever since supplied Pemba city with vegetables and type of food. Since few year so far this administrative post is experiencing a growth of population due to the industrial growth of Pemba as most of the land is being bought for housing and other services.

### Local Infrastructures

#### **Health**

In the administrative post of Mize there is a medium sized health center, which assists the local community with their

health needs. The community members need to travel to Pemba in case of serious illnesses. The second health center is located a bit far from the headquarters of Mize, in Nanlia, and it is much smaller. There are also two houses for nurses, close to the hospital.

### **Education**

Mize possesses two schools, a secondary school (high school) and a complete primary school. Some of the teachers teaching at the school are locals, while others come from Pemba.

### **Drinking water**

In general the community of Mize has somehow easy access to water for different uses, which is supplied by the national supplying system which is well spread. Some people still use water from a stream linked to a small river crossing it, in which they developed a water treatment technique based on purifying the water with morringa (Moringa olifera). The people doing well may have an "underground concrete structure" which allows them to save the water for moments of crisis, and to help and sell water to others.

### **Energy**

In Mize the energy supply covers the whole administrative post and is provided by Mozambique Electricity Company. However, electricity is not found in all homes, but in general it is available.

### **Sanitation**

The sanitation in Mize is reasonable as all the families have a toilet at home. The people who are better off may have "underground concrete structure" as well, which treats black waters from internal toilets/ latrine.

### **Social structure and key players**

In terms of local organizations there is the Mozambique Woman Organization (OMM), Mozambican Youth Organization, and community courts to help judge local misunderstanding within the community.

### **Religion**

In Mize the community is predominantly Christian and Muslim with the latter being the majority.

### **Politics**

Existing political parties are: FRELIMO, RENAMO and MDM. There aren't any registered conflicts between these political parties. All of the parties have secretariats in Mize.

### **Population**

The ethnicities are: Macua, Mwani and Makonde all of who speak their own language by the same name. Mwani and Makonde are not from this area originally. Their origins are from inland districts. There are a lot of immigrants, mostly coming from Nampula who manage the most of the vegetable agriculture in Mize (which forms the basis of the local economy). In addition, there isn't a bank, an ATM, or any formal ways of saving money.

## **NATURAL RESOURCES**

The natural resources in Mize are: mangroves, the beach, the sand, and some streams. The natural resources are used to make poles, as a way of relaxing, practicing agriculture and fishing. The legislation regarding the protection of these resources exists, but the implementation is weak, only few people are monitoring the harvest of mangroves.

## **LIVELIHOODS**

The population of Mize depends on agriculture, livestock and fishing.

### **Fisheries**

The secretariat of Mize administrative post had little specific information on fisheries; thereby the answers were obtained through probing and informal discussions. The fishing gears used are spears, hook and lines, deep fish nets, fish traps (for fish and crabs). The primary boat type used for fishing is the canoe. There are fishing regulations that exist formally but they are not monitored or evaluated. There are not any fish landing facilities and no facilities for cooling fish.

### **Mangroves**

There is a big portion of mangrove forest in which the community extracts poles for construction of houses, yards and also sells it. Furthermore, the mangrove areas are used to fish for crabs and to build salt pans.

### **Tourism**

There is not any tourism in Mize.



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# MOMBASA / KONGOWEA COMMUNITY PROFILE

## DATA SOURCES

Information for this community profile predominantly came from Key Informant Interviews.

Furthermore, to get an appreciation of which villages may be most suited for SPACES work within the Kongowea location, informal discussions with village elders were conducted to try to prioritise certain villages that harbour sufficient individuals involved in the fishery and the tourism industry.

Our entry to Kongowea was facilitated by a fisherman we found at Nyali Beach landing site who was accommodating, knowledgeable and heavily involved in community level issues. At times information is corroborated with data obtained from the Ecosystem Service Focus Groups.

## LOCATION

Kongowea site is located in Mombasa County, Nyali Constituency, Kisauni Division, Kongowea ward, Kongowea location. Kisauni division is sub-divided into two wards ( Kongowea and Ziwa la Ng'ombe wards). Kongowea location is sub-divided in to two sub-locations namely: Kongowea and Maweni.

Image

Figure 1: Categorisation of Kongowea (administrative divisions)

The constituency-ward system and the administrative system differ slightly. We adopted the administrative system as it corresponds to the 2. Figure 2 below highlights how the administrative system fits into the ward system. Of note, Kongowea and Mkomani both form part of Kongowea sublocation, whilst Maweni is part of Kongowea location. The maps are not accurate and should only be used as a guide. Discussions with key informants within Kongowea location, and focus on specific villages and their boundaries can ensure that we do not stray out of the administrative zone during data collection.

Figure 2: Nyali constituency incorporating Kongowea (yellow shows Kongowea location boundary). Blue shading represents the whole of Nyali constituency.

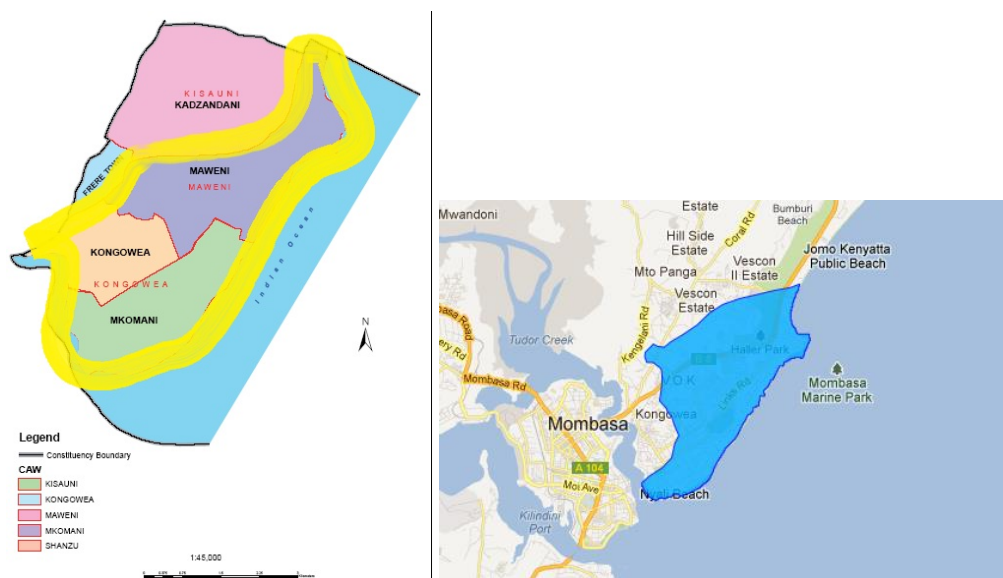


Figure 2: Niyali constituency incorporating Kongowea (yellow shows Kongowea location boundary). Blue shading represents the whole of Niyali constituency.

## DEMOGRAPHICS

District	Location	Sublocation	Male	Female	Total	Households	Area in Sq. Km.	Population Density	Division
MOMBASA	KONGOWEA	MAWENI	22618	19569	42187	12742	6.37	6626.92	KISAUNI
MOMBASA	KONGOWEA	KONGOWEA	34540	29453	63993	19332	8.35	7659.61	KISAUNI

Compared to the other sites in Kenya, there is a very high population density within Kongowea location (Table1). It will prove hard to ensure we have sampled sufficient households. Obviously things may have changed quite considerably since 2009, one key informant suggested there were 600 000 people in Kongowea location, whilst this may be highly inaccurate, it may suggest that there has been some population increase since 2009.

## SPECIFIC VILLAGES

There are thought to be 25 villages and over 30 000 households, it is clear that not all can be sampled, and that we need to narrow our focus. Whilst we could sample from all the villages across the whole area, this may prove time consuming. Discussions with Key Informants may provide us with information on specific villages that have sufficient number of households for our analysis and have a larger proportion of fishers or mangrove users or those involved in tourism than other villages.

We list below the list of villages across the two sub-locations and those that are singled out as being of particular interest to SPACES research. The information on specific villages was obtained via informal interviews and has not been confirmed through secondary sources or via triangulation of methods. The aim was to provide an overview or an indication to help us prioritise certain villages over others rather than provide specific and accurate information (e.g. number of fishermen).

### Mkomani Village

This village is one of the most preferred sites for the intended research by the community profile team. It comprises both high levels, mid-level and low level income groups. There are thought to be over 20 fishermen using two landing sites adjacent to Mkomani show ground and Kenya Marine Fisheries area, and overlooking Fort Jesus museums across the creek. The two landings used are Mkomani and Gwagwara. Gwagwara landing site is used seasonally and mostly when there are no strong winds and ocean currents. Fishermen in these sites are mainly gill net fishers and basket

trap fishers (malema). Tourism is not well expressed though more information is required as the site is right next to Fort Jesus that sees high numbers of tourists every year.

### **Ziwa la Ng'ombe**

The villages are similar to Mkomani but with a high number of middle and very low income earning communities. There are also some rich people with larger (storey) houses. There are about 15 fishermen, all fishing at the Nyali landing site. Tourism is not well expressed at the village but quite famous at the landing site. The fishers mainly practice beach seine and spear gun fishing.

### **Kisimani**

Village is slightly more developed than Ziwa la Ng'ombe, but with mixed income communities (high, mid and low income communities). There are about 8 fishermen practicing beach seine fishing. All fishers use the Nyali landing site

### **Kidogo Basi**

There are about 6 -7 fishermen in the village using the Nyali landing site. Communities fall within mixed income categories (high, mid, low income levels). Tourism is not well expressed at village level. The population is about 8000 people as per 1999 census, 45 % being male and 55 % female.

### **Ratna Square**

Slightly highly developed village with equal population of mid income to higher income earners. There are very few low income earners. Most fishermen live in rented houses. Most of the fishers do their fishing at the Nyali landing site.

## **SITE CHARACTERISTICS**

It was not possible to get detailed characteristics of each village. It was mentioned by our initial guide (fisherman from Kongowea) that it would take days to walk through all villages within Kongowea location. He did mention that there was heterogeneity within villages (for example, different levels of income and poverty), however there was little heterogeneity between villages. This goes against what was said by the chairman of the Agriculture and Fisheries committee. The latter mentioned that the Kongowea location can be divided into three classes. It is important to remember that these classes are relative to each other within Kongowea and not outside the Kongowea location.

Class 1 : Have all amenities, security is good and include areas such as Nyali

Class 2; Moderate and include areas such as Kongowea, Mkomani, Kidogo Basi

Class 3: Very poor infrastructure, no toilets, poor health facilities, water is a problem, no electricity and include areas such as Maweni, Kisumu Ndogo, Shauri Yako.

The villages we walked around with our guide were those in class 2 and indeed, a preliminary walk around Kongowea and between adjacent villages initially seemed to suggest that it was difficult to discern one village from another. We did not however venture to the more "well off" parts of the area within Nyali.

Due to time and monetary constraints some of the information provided here is based on specific villages (most notably site descriptions by the village elder regarding Kidogo Basi) and may not be representative of every village in Kongowea. We would expect that much of the information however will be applicable to most villages within Kongowea.



*Figure 3: Photos of waste disposal site in Kongowea with some vegetation and of a typical Swahili house*

A village elder from Kidogo Basi village provided us with much information regarding site structure, demographics, and amenities. In general, he argued that the infrastructure is generally good and most of Kongowea location has a good road network. However, although the main roads are okay, some of the feeder roads cannot be used during the rainy

season. Drainage was thought to be poor (there are no sewers) and he argued that this could lead to water borne diseases during the rainy season. Conversely the borehole water was perceived as mostly clean, although it is saline with only water vendor shaving access to pipe water (although this may not be the case in the more affluent areas such as Niyali).

Throughout Kongowea he describes there to be very few schools and health services available. However, many people are thought to enjoy the services offered from up market areas such as Niyali. This village elder describes most of Kongowea as predominantly Christian (estimates 70%).

Some of the villages within Kongowea such as Kidigo Basi are relatively new (less than 20 years) and are described as “swelling” due to in-migration from other parts of Kenya.



*Figure 4: Photos of a small road and walking path in Kongowea*

The village elder argued that there seems to be very little government or NGO permanent presence in the area, with very few offices in place. Although there are many NGOs, they are not very active within Kongowea. There are few mosques or churches in the area (none in Kidigo Basi), so meetings take place within schools.

## LIVELIHOODS

The livelihoods appear to be very diverse within Kongowea. We list below those mentioned from various Key Informant Interviews. This is by no means exhaustive and further work would be required to get an understanding of how important each of these are to those within the area. It is clear from the Ecosystem Service focus groups we carried out that fishing and tourism are important ecosystem related jobs.

The BMU secretary mentioned that locals diversify livelihood activities to ensure their survival during different seasons. Seasonality seems to play a big part for both fishing and tourism. For example, the boat operator mentioned that during high season those involved in tourism can meet all their needs from tourism.

Savings are done through self help groups or through M-Pesa but there are very few outlets available, e.g. community organisations such as the BMU can facilitate savings for members through deduction of one shilling for every kilo sold (BMU secretary).

## FISHERIES

It is still unclear as to how many fishers there are within Kongowea location, however fishing is still thought to be an important livelihood (Ecosystem Service Focus Group information). We were supplied with the following information pertaining to fisheries relating to seasonality, historical changes, formal regulations, and what happens once fish are landed. The high season is in November to April and low season from May to October. The price of fish is dependent on the season. It is thought that there has been a reduced income for fishermen over time. This is argued to be due to a reduction in fish catch because of banned gears, and a high cost of recommended fishing gears. The use of wrong type of gear leads to confiscation and their destruction by the KWS.

Other formal regulations included:

- Not allowed to catch immature fish
- Environmental protection e.g. corals
- Turtle not to be harvested
- Only those with licences allowed to fish

The types of fishing gears used include beach seines, spear guns, gill nets, hand lines, and long lines. Once caught, fish have to be sold immediately to dealers as there are no storage facilities. Refrigerated vehicles come to collect the fish once landed. The fish buyers and dealers that often come with ice to help store and transport the fish. As a result, fishing is still controlled by individual businessmen who own gears and agree with the fishermen on the prices. It is mostly the mama karangas that do the trading, other dealers will only come occasionally when there is a big catch that cannot be consumed locally.

## TOURISM

Tourism was also mentioned as an important livelihood within the Kongowea location. At first glance it is clear that a higher number of tourists are received in the more upmarket Nyali area especially during high season. Kongowea location therefore has certain facilities for tourists including hotels in Nyali area, but also beaches, handicrafts, and guides which can be found in other parts of Kongowea. One boat operator argued that tourism has reduced over the years due to insecurity, beach overcrowding, harassment of tourists, and political instability. He also added that there is an important seasonality issue at play and during low season some hotels have to close and send workers home. Whilst we have asked for the dates of low and high seasons we have had completely contrasting answers, which may be due to different tourism activities Key Informants are involved with. The boat owner mentions high season is during September to February whilst the driver and tour guide suggests high season is from July to August. Further work is therefore required to get an understanding of the seasonality of different aspects of tourism. Whilst Tourism was mentioned as being very active in the area, it is thought that the locals are not benefiting much from it. Most hotels do not belong to the locals although some are employed (Agriculture and Fishery Chairman). Furthermore, most locals do not own boats. Nevertheless most boat operators are employees of boat owners and get paid a salary. And a number of locals are employed in the hotel industry (Boat Operator). The boat operator argued that for locals to benefit more, taxes need to be reduced and tourism needs to be boosted by improving political stability, security and reducing taxation of foreigners.



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# SHIMONE / WASINI ISLAND COMMUNITY PROFILE

## LOCATION AND DATA SOURCES

Pongwe/Kidimo is found approximately 75km south of Mombasa in Msambweni district along a relatively good road which leads to Tanzania. Whilst we don't provide an exhaustive list of all the villages within Pongwe, it is clear that there are many and that they are relatively spread out. Informal discussions and observation suggests that Shimoni and Wasini sublocations contain villages which are more accessible, have links to fishing, tourism and to a certain extent mangroves and are more feasible study locations.

We suggest that the focus of the work should occur at both villages on Wasini island (Wasini and Mkwiro) because residents are thought to be more dependent on fishing, and most tourists arriving in the area want to visit Wasini and its neighbouring marine park and reserve. However, many links between Wasini island and Shimoni village are present, as many tourist amenities and tourist buses park and pass through Shimoni to access Wasini and the neighbouring park. Furthermore, many tourist operators work from Shimoni. Finally, many resources (such as medical, water, food) need to be obtained from Shimoni and shipped back to Wasini island. For these reasons, we have provided site descriptions that include Shimoni, as well as the two focus villages on Wasini Island. The turn off from the main road leads to a dirt road which can get tricky to manoeuvre during the rainy season and it is advisable to use a 4 wheel drive. Shimoni is on the coast, whilst to get to Wasini Island, a boat is required to transport you from Shimoni pier.

Focus Groups and most Key Informants were carried out in Shimoni and hence there may be bias in information pertaining to this sublocation. However much of the information is also relevant to Wasini and we have tried to highlight where there are differences between the two sub locations.

## LOCATION





Map showing the location of Shimoni, Wasini, Mkwiro, Vanga and the Kisite Marine Park and Reserve

## DEMOGRAPHICS

Of the approx. 5000 people in Shimoni, 70% of them are thought to be Muslim whilst 30% are Christian. Out of the different ethnic groups the Mijikenda and Digo constitute around 90% of the Shimoni population (Key Informant Interview). The inhabitants of Wasini Island are primarily Vumba.

*Demographic information for Pongwe/Kidimo (Kenya Census 2009)*

Location	Sublocation	Male	Female	Total	Households	Area (km sq)	Population density
Pongwe/Kidimo	Wasini/Mkwiro	794	843	1637	295	4.84	337.89
Pongwe/Kidimo	Shimoni	2077	1992	4069	965	19.63	207.3
Pongwe/Kidimo	Majoreni	3679	3978	7657	1404	58.23	131.5
Pongwe/Kidimo	Mzizima	3999	4178	8177	1598	72.52	112.75

## SHIMONI VILLAGE PROFILE

Starting in the 1750s, Shimoni, along with [Malindi](#), [Mombasa](#) and other coastal cities and towns, was a primary, “slave holding port” for East Africa’s coastal slave trade which reached from South Africa to the Middle East. The slave holding pens were located in the natural cave systems that exist in Shimoni.



Looking across to Wasini Island from Shimoni waterfront

Discussions with the Assistant Chief of Shimoni sublocation provided us with some contextual information of the villages. In terms of infrastructure, the roads serving the area are dirt/mud roads and can be very bad during the rains. A road survey has been done by the government but no road construction has yet started.

Water seems to be less of a problem here than in certain other sites. There is piped water available but most use the > 20 boreholes or 720 wells located around the area. The water is deemed to be relatively safe.

In terms of health facilities, there is only one local dispensary which is relatively short staffed (2 nurses and one 1 lab technician). Difficult cases are referred to the district hospital in Msambweni.

**Institutions operating in the area include:** Kenya Wildlife Services, Kenya Revenue Authority, Navy, National Security Intelligence Service and Military Intelligence.

**Local organisations include:** Friends of Shimoni Forest, Shimoni Slaves Cave, Beach Management Unit, Women and Youth organisations

**Dominant political parties include** Jubilee and CORD

**Community Leaders include:** Village elders, peace committee, disaster management committee, council of elders,

relief food committee and agriculture committee

## LIVELIHOODS

Fishing is the main occupation accounting for about 60 % and is mostly left for old people as the youth venture more into tourism and other related activities. Farming taken up by about 40 %, employment 2 % and those working outside Shimonzi account for about 1 %.

Farming takes place mostly during the long rains, April-July and short rains, Sept-Nov. There is also high and low season for fishing depending on the direction of the monsoon winds which determines the roughness or calmness of the sea. There are mainly 2 seasons in the fishing calendar namely KASKAZI and KUSI (Key Informant Interview).

Savings are very low among the local community and most, especially the elderly don't save much. Savings done mostly by M-PESA, Bank Agents for BTB, Equity, Cooperative and KCB Banks . Credit is accessed mostly by those who are employed. Funds from government can also be accessed through Youth Fund, Women Enterprise Fund, Uwezo Fund and from county government. There are also several micro-finance institutions such as YEHU Micro-finance trust, Kenya Women Finance Trust. There are many default cases handled by the Chiefs office mainly attributed to high interest rates and inability to pay. Livelihoods mentioned include:

- Fishermen
- Tourism
- Loaders
- Businessmen
- Hoteliers
- Kiosks
- Bodaboda
- Vehicle/Boat owners
- Boat operators/crew
- Boat builders/repair
- [Jua Kali](#)
- Cross-border business (e.g., cloves, coconut, charcoal import/export)
- Dealers/middlemen
- Seafood processors
- Mason
- Plumbers
- Electricians
- Technical/radio phones
- Farmers (livestock or crop)
- Cooks
- Mama pima
- Mama karanga (female fish traders)
- Water sellers



Bernard conducting key informant interviews in Shimonzi

## FISHERIES

All the fisheries information below was obtained through two Key Informant interviews.

**Main Species caught:** Goatfish, scavenger fish, parrotfish, rays, rockfish, squid/octopus, lobster, prawns tuna, surgeonfish, barracuda, kingfish, crabs and more.

- Highest value species is Lobster where fisherman gets approx KS 800/kg, dealer gets KS 1150/kg
- High value species is Tuna or Kingfish where fisher gets KS 300/kg and dealer gets KS 350/kg
- Medium value species is rabbit fish or scavengers where fisher gets KS 200/kg and dealers get KS250/kg

**Main Gears:** The poorer fishers use traps, fishing line, reef nets and spear gun whilst those with more capital use gill nets. Most people are using the combination of traps/fishing line/ spear guns and reef nets.

Fishing gears used in Shimoni:

- Gill net
- Reef net
- Traps
- Fishing line
- Monophila net
- Spear gun
- Ring net
- Beach seine
- Fence trap
- Basket traps
- Sail lining
- Scuba diving

There are approximately 400 fishermen within the Shimoni area, of which 198 of them are Beach Management Unit (BMU) members. There are 35 traders for Shimoni and they sell mostly in Mombasa or in Orokunda (Diani Junction). There are also approximately 20 dealers who are involved solely in processing, they collect whole octopus for processing on behalf of bigger companies in Mombasa.

There are a number of different types of registered boats involved in fishing in Shimoni: 69 canoes, 80 ngalawa (double outrigger canoe), 9 motorboats and 4 fibreglass boats.

## **NUMBERS FORMALLY ACKNOWLEDGED (BY BMU) OF INVOLVEMENT IN SHIMONI FISHERIES SECTOR**

Occupation	Number
Fisherman	198
Dealer	33
Processor	2
Mama karanga	35
Loader	33
Boat operators	18
Tour operator	9
Hawkers	30



There are two main seasons that affect the fisheries:

- **Kaskazi: Sep-March**
  - High catch, all types of fish caught and artisan fishing thrives
- **Kusi: March-Sep**
  - Less catch, only specific fish are available such as king fish, barracuda and para mamba, artisan fishermen are restricted
  - "Fish move due to dirty sea"
  - Too dangerous to fish for artisanal fishers. For those who own big boats (mostly from Pemba) they can catch fish whilst nobody else is and catch many fish (benefits are huge as low fishing effort elsewhere, high demand for fish and high value of catch)

There have been perceived changes in the fishery over the last 20 years. There is now thought to be more demand for fish and the value of fish has gone up. The total catch has also gone down, but due to the increasing value some perceive that people are roughly making the same amount of money. It was mentioned however, that despite earning the same, there is much less satisfaction and unhappiness linked to catching less fish than previously. Furthermore due to improvements to fishing gears and an increase in demand, there has been overharvesting. There is now high competition among buyers. The BMU and Fisheries department now enforce the following regulations:

#### Formal Regulations

- Control of fishing to avoid overfishing done by the Fisheries Department
- Spear Guns prohibited
- Do not harvest Lobsters that are laying Eggs
- Fishermen to report to the fisheries office before they go into the sea for fishing activities
- Fishermen to register as members of BMU
- Must have a license
- Ring nets to be used only in deep sea
- payment of registration fees
- Fishermen to use GPS to accurately locate fishing grounds
- Do not fish in conservation areas



Fish drying in Shimoni

## FISH LANDING ACTIVITIES

Fish are sold directly to consumers in Shimoni, and coolers are used to transport the fish to markets and hotels in Ukunda or Mombasa. Dealers provide facilities for long storage and sale to long distance markets. Although there is an ice plant, it has limited storage and hence to preserve fish, many often result to boiling or sun drying. The deep freezers and ice boxes are given to the fish traders by processing companies like Trans-Africa Sea Harvest Crustacean or the Smart Fish company. Whilst the catch may be high, the facilities are limited in terms of storage which can lead to losses as the fish have to be taken to Mombasa or dried. Smoking and drying of fish is done to increase shelf life and this gives time to access other markets.

## TOURISM

Information on tourism was obtained through a Key Informant Interview with a boat operator working in Shimoni. However we corroborated seasonal information with other informal interviews to highlight the inconsistencies in

certain answers.

Shimoni is known for its British colonial ruins and slave caves which generates relatively large amounts of tourism. However it is the Kisite-Mpunguti Marine National Park opposite Wasini island that attracts many thousands of overseas and local tourists (thought to be over 18,000 but no proof of accuracy) per year through Shimoni. The [Kenya Wildlife Service](#) monitors activities and there is a per visitor entry fee. These fees are currently are remitted to Headquarters in Nairobi, and are not directly spent in the Shimoni area. The majority of visitors arrive on prepaid packages organised outside of the Island and outside of Shimoni. The larger operators are foreign owned.

#### **Tourism attractions mentioned in Shimoni:**

- Snorkelling
- Visiting of the marine parks
- Corals
- Dolphins
- Slave Caves
- Historical sites
- Nature Walks
- Forests
- Sundowner cruises
- Diving
- Sailing
- Fishing
- Crocodile Watching

Dolphin trips and snorkelling trips are the most profitable, and cost 6000 KSH per person for residents. These often depart from Mombasa. Indeed, most tourism comes from Mombasa.

There are no dolphins between June and July. Just snorkeling in the park will cost [4000-5000](#) for residents including lunch and park fees. Boats hold approximately 20-25 people

Number of boats participating in tourism activities are now decreasing. The community is facing competition from hotels. These hotels have all the necessary documents, local boats can't afford insurance and other documents. The boats can be very expensive to maintain, and local operators have to push the price down (lower than hotels) to ensure they get some customers. This fierce competition with hotels is thought to arise due to a lower number of tourists due to wider external factors.

**Regular Process for boat trips:** Go to booking office in Mombasa/Diani, this information is passed on to a local agent in Shimoni. Bus arrives in Shimoni, customers go to KWS and buy a ticket, they can then visit the park. Commission by the office is 200KS per client. Each time a boat goes into the park 500KS is also paid to the BMU office. The agent also takes a cut. Some boat operators wait in Shimoni and try to entice people directly and hence don't need to pay the Mombasa agent a cut. Most are thought to be happy that there is tourism, no matter where from. Other benefits apart from to the boat operators include crafts (although we saw very little), fish market (tourists may buy fish). Tour guides working for the big hotels/companies are not liked as they get more money than those operating within the Shimoni area.

## **SEASONALITY**

The most busy tourist period is thought to be in August and the least busy is in September. It is the rain that prevents people from coming. However, others have mentioned that March to July is the low season whilst December and

January is the high season. It may depend on the type of tourist and the activities they take part in.

## **MANGROVES**

Information on Mangroves was obtained from a Key Informant interview with a member of “friends of Shimoni Forest” who are in charge of managing particular patches of mangroves in the area.

There are thought to be 5 different species of mangroves around Shimoni. The mangroves in the area are also believed to be in good condition because very few used them extensively. Since 2001, the mangroves have increased, as people are planting mangroves. They believe that if there are enough mangroves this will form some protection from the high tides and it will boost fish and crab catch. Green Ventures International (GVI) on Wasini Island in particular may have had a role to play as they have improved environmental education and awareness of mangroves.

Within the area there are 4 main (registered) groups in charge of mangroves including friends of Shimoni forest. Each of these groups is in charge of a particular patch of mangroves. Rules often involve the cutting of mangroves, for example, if someone wants to cut 10 pieces, they have to plant 40 and then it is free. This is supervised by a leader of the specific mangrove conservation area. Most are thought to respect these rules, although it is believed that some people from Pemba occasionally come to cut mangroves (but this happened a long time ago).

There is not much interest in mangroves for fuel because there is so much wood available in the forest. It is in the inland forest that there are problems with illegal logging. Outsiders are cutting trees for timber and are often species that take a long time to grow. The forest offer far bigger trees than the mangroves and it is easier, more profitable than illegal cutting of mangroves. There are some people worried about the wood supply for Shimoni in the future because of this illegal logging. Indeed, those cutting mangroves are using this for subsistence rather than for profit.

## **WASINI/MKWIRO VILLAGE PROFILE**

Wasini Island lies off the southern Indian Ocean coast of Kenya next to Shimoni. It is approximately 5 km long and 1 km across. The island is sparsely populated and undeveloped. There are no cars or roads. A site of early Swahili civilization, this coral island is occupied by the Vumba people, an indigenous group of Bantu speaking peoples who have a rich history. They speak Swahili and Kivumba and they number about 1500 (Wikipedia and 2009 Kenya Census). Mkwiro and Wasini are the two villages present on the island – at opposite ends of the island. Their history includes invasion and settlement of Arab influence from the Persian Gulf states, and from the island of Zanzibar, further south.

Wasini island is thought to have a high infant mortality rate relative to other SPACES sites in Kenya. This may be reflective of the higher apparent levels of poverty on the island.

## **LIVELIHOODS**

Many of the livelihoods listed for Shimoni still apply for residents of Wasini, because there is the potential to commute to Shimoni from the island in less than 20 minutes. However this may be costly and often may require the use of a private boat as crossings times may not be convenient.

Informal interviews with a BMU member and observation suggests that there is much less livelihood diversity on the island with an increased dependence on natural resources, in particular fisheries but also to a lesser extent mangroves. Any form of agriculture will be for subsistence on the island. There are a few residents of the island who will be involved in the tourism industry and can act as guides on boats, selling of crafts on the island, or working at the local hotels on the island.

## **FISHERIES**





Houses in Mkwiwi typical of the type found on Wasini Island

Much of the information on fisheries for Shimoni applies here for Mkwiwi such as species targeted, historical changes, seasonality and fish landing. It should be noted however that Mkwiwi has its own particular area that it fishes, just as Shimoni does, and hence there may be some differences in rules and regulations. Within shared fishing grounds, each area will have slight variations in rules.

Mkwiwi has approximately 120 BMU fishermen and 220 fishermen in total. The number of fishermen in Shimoni is decreasing, but it is increasing in Mkwiwi. This is thought to be because of more occupational diversity in Shimoni and so people are going into other sectors (BMU Secretary). There are 7 fish traders currently operating in Mkwiwi.

## **TOURISM**

The tourism situation on Wasini island, although strongly linked to tourism activities and issues in Shimoni, is markedly different. Firstly there are fewer tourism amenities, many tourists go straight from Shimoni to the Marine Park or only spend a limited time on the island. Unless Wasini residents have boats or can afford to cross to the mainland, they may not benefit much from the tourism occurring around them.

Furthermore, on each tourist boat, in order of importance, there is one host, one captain and one crew member. Previously, no certification was required to join a boat at the entry (crew member) level. However, it is now much more difficult because of the need to have a seamanship certificate and a CPR certificate (first aid). These are not expensive but it takes time and involves a trip to Mombasa for up to three days. Most in Wasini, are thought not to want to go to Mombasa because they have things to do on the island and are used to "island life" (Boat Operator).

Nevertheless there are tourism amenities on the island, and an NGO, GVI provides a steady stream of volunteers that occasionally buy crafts on the island and provide other benefits (e.g. beach clean ups or environmental benefits), although there are some complaints about other activities (e.g. noise) (Observation and Informal Interviews).

Although entry fees to the park bypasses Wasini and goes straight to KWS, the Wasini Island BMU also can make some money as some tourists do not want to take a boat trip to snorkel in the park (which is over an hour away by dhow), but snorkel closer to the island in an area regulated by Wasini BMU (Boat Operator).

## MANGROVES

The mangrove information collated was obtained for Shimoni and not Wasini. However, observation and informal interviews suggest that those residents of Wasini Island may be more dependent on the mangroves as there are fewer other forests, and it may be more costly or time consuming to buy coal or timber from the mainland. Subsistence use of mangroves may be more prominent.



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# TSUNZA COMMUNITY PROFILE

## DATA SOURCES

Information for this community profile predominantly came from Key Informant Interviews.

Furthermore, to get an appreciation of which villages may be most suited for SPACES work within Tsunza, informal discussions with village elders were conducted to try to prioritise certain villages which are harbour sufficient individuals involved in the fishery and the tourism industry.

The spaces team was received at Tsunza by officials of a local Community based organization (CBO) named Community Touch Kenya ( Comtouch).The officials included the project Chairman cum founder of Comtouch, Mr. Juma Mashanga (also a Key Informant above), the project manager , Mr. Makiri Makiri, Project Accountant, Mr. Munga Zuma, and a community volunteer, Mr. Dosho Athman.

At times information is corroborated with data obtained from the Ecosystem Service Focus Groups.

## LOCATION

Tsunza peninsula is located in Kwale County, Kinango Su-county, Gandini sublocation, in Gandini location.

Whilst we call this area Tsunza, we should note that Tsunza is one village within Gandini sub-location. This is important to remember, as unlike Kongowea, Shimoni or Vanga which are both villages and sublocations, Tsunza is only a village within a sublocation.

We discuss our proposed villages to sample below, but it is important to highlight that the mangroves are slightly further north, by the river. Across the river is Mwathe, our previous proposed sampling area which is more difficult to get to.



Tsunza village (red/orange dots) and Gandini sublocation (blue shading).

## DEMOGRAPHICS

Despite being a peri-urban area, Gandini sublocation is one of the least densely populated areas, it also however is one of the largest sublocations in terms of area and harbours a large number of households.

Sublocation	Male	Female	Total	Households	Area in Sq. Km.	Population Density	Division
GANDINI	6259	7056	13315	2162	105.03	126.77	KASEMENI

*Demographic information for Gandini location (Kenya Census 2009)*

One village elder mentioned that Gandini has an approximate population of over 19,000 residents. There seems to be a consensus that the population has likely increased considerable since the 2009 census.

The community is thought to be mostly Muslims with fewer Christians.

In terms of ethnic groups, the area is inhabited predominantly by the Duruma with the exception of those employed and working in the area.

## SPECIFIC VILLAGES

There are therefore thought to be 24 villages in Gandini sublocation. It is clear that not all can be sampled, and that we need to narrow our focus. Whilst we could sample from all the villages across the whole area, this may prove time consuming (especially given the large area to cover). Discussions with Key Informants may provide us with information on specific villages that have sufficient number of households for our analysis and have a larger proportion of fishers or mangrove users or those involved in tourism than other villages.

We list below the villages within Gandini sublocation and those that are singled out as being of particular interest to SPACES research. The information on specific villages was obtained via informal interviews and has not been confirmed through secondary sources or via triangulation of methods. The aim was to provide an overview or an indication to help us prioritise certain villages over others rather than provide specific and accurate information (e.g. number of fishermen).

The community profile team has collected informal data on 5 key villages within Gandini sublocation but has gathered little information on the remaining 19 villages or other villages in Kinango sub-location. This can be carried out if we feel that the key villages described are not adequate for the survey.



## TSUNZA CENTRAL VILLAGE

The village is right adjacent to the peninsula with fishing as the main livelihood activity. The village uses mangrove for local building requirement. There are very few mangroves which allow for commercial activities. One source describes Tsunza as having approximately 10000 inhabitants (Children of Africa website – [link](#)). It is interesting to note how it describes Tsunza village:

*“Recently, due to the global warming and its weather impact, rainy seasons are no longer predictable, resulting in poor harvesting. Tsunza has become even poorer than it used to be, as most of the farmers had to change and rely on fishing activities to survive, and the economical benefit of it has been over-exploited.”*

*“It is believed that Tsunza as a village originated and evolved from a married couple who came to settle as farmers in the area long time ago. Since then, families, clans and sub-villages developed. Tsunza is therefore considered to be a huge African family, whose members live deeply rooted in old traditions, and superstitious beliefs based on witchcraft. Traditions make such an influence in their society that they have hardly evolved from their old methods and old life-style.”*

## MKUNGUNI VILLAGE

This community is mainly a fisher community and has very few mangroves, enough however for domestic use.

## MKANJUNI A VILLAGE

The local community is dependent on fishing and uses the mangroves commercially for their livelihood. This village borders Tsunza central. Many of the actual commercial mangrove activities are undertaken in Mombasa. Most of the fishers from Gandini sublocation come from Mkanjuni A and Mkanjuni B and these villages are highly dependent on fishing. If the fishers in these two villages decide to stop fishing, then the entire livelihood of the local community in the location is affected (as well as those traders in Mombasa).

## MKANJUNI B VILLAGE

Mkanjuni B has similar characteristics to Mkanjuni village A. Mkanjuni A and Mkanjuni B villages are adjacent to each other and separated by a local earth road. Mkanjuni B also borders the water and it is to the north of Mkanjuni A.

## CHIDUNGUNI VILLAGE

This village is adjacent to Mkanjuni B and community is also dependent on fishing. Commercial mangrove trading is done at low scale. Mangrove is mostly for domestic use.

## SITE CHARACTERISTICS

It was not possible to get detailed characteristics of each village. However we can get a general picture by key informant discussions with the key informants mentioned above.

Roads throughout the area are mostly earth roads, however these and the bridges are not easily passable during the rains and can lead to the area being cut-off from other parts e.g. Mombasa. Transport to and from the area is mostly by boat.

There has been plans to build a bypass road through the area that will connect the south coast to the mainland which is in turn thought to increase migration to the area.

In terms of health and sanitation; health facilities are very scarce as there is only one dispensary serving the whole

location with little staff, and medicine is always in short supply. Sanitation on the other hand is very poor as most people use bush toilets, there have been awareness campaigns to improve sanitation but this has not been picked up. Gandini area uses mostly shallow wells (which are old and depleted) as there are no boreholes in the area. Whilst piped water is available there are occasional shortages as pipes are old (circa 1969) and burst frequently. In terms of education; there are 5 primary schools, 1 secondary school and 25 nursery schools in the area. The illiteracy level is particularly high among adults (approx. 70%) and a high school drop-out rate with few children going up to college level, especially the case for girls.

The only strong government institution is the provincial administration and there are no other offices for government departments as most services are provided from Kinango which is 26 Km away and about one hour ride by motor bike. All other institutions operate from outside the area: Kinango. Active NGOs are PLAN(child education), PSI(malaria, capacity building), Aga Khan Foundation(Madrassa Resource Centre). Local organizations include COMTOUCH, Kenya, Lusangani Health Development, Tsunza Youth Development Association, Tsunza Women Finance Trust, Jambo Puppeters, Environmental Groups.

Community leaders include village elders, school management committees, kaya committee, development committees, community policing, women group leaders, Youth Group Leaders, Male representatives. .  
Livelihoods

Similarly to Kongowea there is quite a variety of different livelihoods. Whilst more work is required to elucidate the relative importance of these different livelihoods within the area, it is clear that on the one hand there are relatively local activities (fishing, farming, mangrove or forest use) there is also commuting occurring to Mombasa or other more touristy areas where fish can be sold or they can be employed (tourism/business).

## LIVELIHOODS

- Fishing
- Livestock
- Employment (teachers/hotels/Mombasa))
- Subsistence Farming
- Crab Fishing
- Fish Farming
- Prawn Fishing
- Forestry (poles/firewood)
- Coconut Palm Brewers/Sellers
- Traditional Medicine Men
- Mama Karangas (female fish trader)
- Baba Karangas
- Fish Traders to Hotels

This highlights the fact that Tsunza is a “peri-urban” site with potentially higher livelihood diversity than other sites.

## FISHERIES

Despite being further away from the coast, fishing is still argued to be an important livelihood in the Tsunza area. Although we don't have estimates of fisher numbers for each village, fishing was mentioned as being the second most important livelihood linked to ecosystems in the focus groups carried out at Tsunza (see ES FG report). It seems that although some may go to the coast to fish, many will remain within the creek area and the estuary surrounding the mangroves. In a sense, this is more of a mangrove fishery where there may be an increased dependence on mangrove related fish species, crabs and prawns (as listed in livelihoods above).

The known and registered landing site by the fisheries department is Tsunza central landing site. However there are major landing sites that have recently been established and used by local fishers e.g. Mwadumbo, Guya, Gutu and



Maguzoni (which is rarely used-Village elders).

Despite the high potential fish market in Mombasa, these villages use traditional fishing methods involving local traps (kisoso), gill nets (small and big eye nets-with the majority use small eye nets to catch all fish sizes), seine purse nets (kimia), hook and line and spear guns. The main boats are in the form of 2 and 4 people Dhows (BMU member). There is no ice or processing facilities, it is the dealers that come to buy fish who come with ice and refrigeration facilities. Fishermen sale to any buyers, it is only the prawn fishermen that have specific buyers. However there are so few fish, sometimes there are not even enough for the locals. Furthermore, the price of fish has also increased (BMU member).

High season is October-February

Low season is June-August

## **MANGROVES**

The mangroves were more frequently mentioned as having a diversity of uses throughout the focus groups and key informant interviews in Tsunza than in Vanga.

It seems at first glance, that there is more of an issue of over harvesting and degradation of mangroves in this area. The only groups involved in mangrove management is the "mangrove harvesting group" which is composed of 12 members and their activities include harvesting mangroves and rehabilitation of degraded mangrove sites. However there are still no clear guidelines and procedures for harvesting mangroves in the area. There has been increased awareness and controlled cutting is in place (locals are now required to request to KFS when they need poles for construction) however these are not respected and illegal harvesting/overexploitation of mangroves is occurring. Indeed the local communities have realized that fisheries and crabs have declined due to overharvesting of mangroves.

In the 1960s and 1970s, there used to be controlled harvesting of mangroves and cutters had to get licenses and were given specific dates and areas. However since the 1980s this changed and overexploitation took place. Most people cut mangroves for firewood, fences and poles for house construction. Now however, technology for construction is changing and there is a shift from use of mangroves but the low incomes of many mean they cannot use stones and have to revert back to mangroves. (Member of the Mangrove Harvesting Group).

## **TOURISM**

Very few tourist facilities on site. Whilst there are a few homestays (10) this may be more for those visiting family or working nearby.

Tourism attractions could include historical sites such as kaya forests and sacred forests, Mwache Creek, Caves, Culture, Tsunza Island, Handicrafts and Artifacts.

Marketing is hoped to be done to improve tourism in the area.

Currently low season is from February-June and high season from August-December (although it is unsure as to whether this is for those working in tourism sector or if this is related to tourists visiting Tsunza, the former is more likely).



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# VANGA COMMUNITY PROFILE

## DATA SOURCES

Information for this community profile predominantly came from Key Informant Interviews. The spaces team was received at Tsunza by members of the Vanga BMU.

## LOCATION

Rather confusingly, when considering the administrative divisions, Vanga can be referred to as a location, a sublocation, or a village. These are all found south of Mombasa (and of Shimonzi) adjacent to the Tanzanian border.

Image

Figure 1: Categorisation of Vanga Location (administrative divisions)

Image

Figure 2: Map showing Vanga village (red), border between Tanzania and Kenya (grey) and Shimonzi village (orange)

## DEMOGRAPHICS

Within Vanga location, one can see in the table below that Vanga is by far the smallest in terms of area and has the highest population density with over 800 households. However this census was done in 2009 and one Key Informant suggests that Vanga sublocation has about 7000 people.

<i>Sublocation</i>	<i>Male</i>	<i>Female</i>	<i>Total</i>	<i>Households</i>	<i>Area in Sq. Km.</i>	<i>Population Density</i>
<b>KIWEGU</b>	4546	4866	9412	1586	80.76	116.54
<b>JEGO</b>	3131	3406	6537	1161	41.11	159.03
<b>VANGA</b>	1973	2161	4134	832	6.35	650.66

Table 1: Demographic information for Vanga location (Kenya Census 2009)

The three main ethnicities include Digo (35%), Duruma (30%), and Kamba (20%). Within Vanga location, 50% are thought to be Christian and 50% Muslim. In Vanga sub-location, on the other hand, the population is 98% Muslim. In terms of migration, there are thought to be approximately 1000 immigrants in Vanga town, pull factors are more than the push factors with increasing numbers of Tanzanians coming to settle in Vanga.

## SPECIFIC VILLAGES

A recent report by Cordio (Mainer et al 2012) which was carried out in Vanga, reported that the Vanga sub-location comprises 4 villages; Jasini, Jimbo, Mgombani and Vanga villages. The whole of Vanga location is comprised of 29 villages. For logistical reasons, and because we need a relatively large sample size, we propose Vanga Town village (as seen on the map above) as our study site. This report also clarified that the population within Vanga village was approximately 6500 people which would be suitable for our work.

## SITE CHARACTERISTICS

Vanga is the southernmost town in Kenya. It is a coastal fishing settlement that remains untouched by tourism. The town itself is only accessible from the Kenya/Tanzania border post at Lungalunga, via a 17 km mud road through plantations, groves and forest. Vanga itself is built within the mangroves and has to be approached through the swamp which is often flooded at high tide. It is an area relatively rich in natural resources with two rivers that flow all year round, the ocean, mangroves, forests, available land for agriculture and opportunities for sand harvesting. There are two main access earth roads that require 4 wheel drive preferably, and get flooded. They are therefore difficult to access during heavy rains. In terms of local facilities, there are 2 health facilities in the area, 4 chemists, 8 primary schools and 2 secondary schools in the surrounding area. The enrollment rates for primary schools is 90% and 40% for secondary.



Figure 2: Main road in Vanga village and Vanga waterfront

About 30% of the area is connected with electricity, however the power is not regular. It is supplied from Tanzania and there are many power cuts. The Kenya power lines are in construction and there is 1 km left until this connection is complete. There are two major boreholes that supply water to the area, some use shallow wells, pans, and water from the River Uмба and Mwena. 40% of people are estimated to have access to clean/safe water. Due to rising

sea levels the boreholes are thought to get salt water influxes and making the water salinity levels increase. There are a number of local institutions and organisations within the area. There is however, going to be a re-organization of the departments as most departments operate in wards and some operate in the administrative location divisions.

A number of local organizations also exist: CBOs-jimba environmental group, Vanga environmental group, Mbiweji women group NGOs- Kenya Red Cross, ACT-Kenya

There are diverse political divisions due to the diverse ethnic communities (more of a mix than other sites). There is support for many different political parties and the community is very mixed. Community leaders will include the village head or chief. Each community has their elders (e.g. Digo) but all work under the chief. There are also special committees which have representatives from various groups e.g. peace groups, disaster groups and community policing. There is also a new Nyuma Kumi Committee which is part of a new government initiative to enhance security.

#### Livelihoods

The main livelihoods activities for Vanga village includes fishing, farming, casual labour, small scale business, employment and artisan work. A recent report in Vanga (Mainer et al 2012) indicated that fishing activities (as a livelihood) account for 45% of the in Vanga village; this was contested by the local fisheries officer and some participants. The participants said fishing activities accounts for > 70% of livelihood in the village followed by small-scale activities and farming. It was suggested that fishing and fishing related activities be combined into one category of "fishing activities" to avoid mis-reporting. The specific activities within farming include; rice, maize and coconut farming in that order. Most immigrants to Vanga engage in agriculture of fishing.

#### Seasonality

Farming is predominantly carried out during the rainy seasons. Fishing is also seasonal but takes places all year round, the catch however varies in different months of the year. Fishermen may have to move to other parts with their boats e.g. Malindi, Lamu, Tanzania etc....

#### Fisheries

As highlighted above, fishing is one of the most important livelihoods in the area. Some of the most commonly used gears mentioned by Key Informants are highlighted in the table below.

A number of registered boats are also mentioned, with an estimated 100 canoes, 40 out riggers, 15 Dhows, and 10 Motor Boats in the area .



*Figure 3: Vanga Fishing Net and fishermen*

Throughout different Key Informant interviews, we got mixed responses as to exactly when the high and low seasons occur which may be dependent on experience, fishing gears used and fish species targeted however, in general there are two main fishing seasons; Kusi and Kaskazi. Kusi is the low season with strong SE monsoon winds . April to June is particularly stormy. However this leads to better prices for fish. Kaskazy on the other hand is high season and is experienced from August to March.

Certain formal regulations surrounding the fishery were mentioned by the EX Fisheries Department and current BMU vice secretary and are included in the table below. We did not however get access to secondary sources and hence these represent perceived views as to what rules and regulations are in place rather than an exhaustive list that may be obtained from various secondary sources.

Once fish are landed, fish are auctioned. Traders will grade the fish and prices will differ depending on season, type and size of fish. There are various fish landing facilities such as cool boxes, cemented floor for processing fish and an ice plant which is not operational. The ice storage facility was constructed but was never made to work. The ice supply

therefore comes from Mombasa in a large supply which can last for 3-4 days. There are 7 ice supplies (5 small scale and 2 large scale). There are thought to be over 100 fish traders in different categories: Mama Karangas (approx. 40), bicycle traders, motor bike traders and large scale traders.

The Ex Fisheries Department Officer provided some interesting historical perspectives as to how fishing has evolved in the last 10 years: Motorised boats started recently Ring nets more frequently used Better market facilities means fish can be preserved for longer Declines of fish Overcrowding of fishermen (many are due to have left traditional activities to join fishing, however they have no experience and are involved in illegal beach seine fishing as crew members) Flooding more frequent leading to post harvest losses as fish can't be transported out of Vanga Speargun fishing is thought to be on the rise (due to its high CPUE) Infrastructure improvements has expanded market destinations New Fishery management is hampered as there is a belief that availability and reproduction of fish is

controlled by supernatural powers (some believe fish is not a finite resource).

### **Savings**

Most fishers are not familiar with the "saving" culture. A village bank was started in 2008 but was not well managed. It has since undergone a "revival" but the idea of "saving" is still not one which is familiar to many fishers. They believe they will "always go to sea and get fish so they are not worried about tomorrow". Nevertheless, savings can be done through MPesa and microfinance institutions such as KWFT, K-REP and the Women/Youth fund.

### **Mangroves**

The mangroves in Vanga are under the Kenya Forestry Service (KFS) management. Only licensees harvest and there is apparently very little illegal cutting as there are alternative building materials. Honey is harvested in the mangroves three times a year and mangroves also allow for aquaculture which is harvested every 6 months.

After the 2006 tsunami the mangroves were damaged but had provided good protection. Programmes were consequently started to rehabilitate and conserve these mangrove forests. 200,000 seedlings have recently been planted to reduce pressure of mangrove harvesting.

Mangroves are partly managed by the VAJIKI forest association which has mangrove activities covering Vanga, Koma, Jimbo and Kiwegu villages. KFS holds information where mangroves have been mapped and potential ecotourism sites have been identified.

The VAJIKI forest association member also provided some historical aspects of mangrove conservation and described recent changes:

There has been an increase in community awareness towards mangroves and this has helped in their conservation. Funding has been received from various NGOs (EAWS, WWF, GET, UNDP) to implement mangrove conservation activities. Over time, mangrove cutting has reduced, and the use of mangrove charcoal has also diminished. Charcoal from Tanzania is now being used instead. Mangrove poles are less frequently used as housing is more modernised (use of stones). Many people using mangroves come from outside Vanga.

### **Tourism**

There is thought to be very little tourism occurs in Vanga. Whilst there may be some local tourists, such as those on educational tours and research students from different schools, the area has no developed tourism facilities. NGOs are being encouraged to market the area for tourism, but to no avail.



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## PEER-REVIEWED PUBLICATIONS



Temperature patterns and mechanisms influencing coral bleaching during the 2016 El Niño. *Nature Climate Change* 2019

Money, use and experience: Identifying the mechanisms through which ecosystem services contribute to wellbeing. *Ecosystem Services*. 2019 (Open Access)

The gendered nature of ecosystem services *Ecological Economics*. 2019 (Open Access)

Incorporating basic needs to reconcile poverty and ecosystem services. *Conservation Biology*. 2018 (Open Access)

Stories in social-ecological knowledge cocreation. *Ecology and Society*. 2018 (Open Access)

Loss of coral reef growth capacity to track future increases in sea level. *Nature* 2018

Drivers and predictions of coral reef budget trajectories. *Proceedings Of The Royal Society B-biological Sciences* 2017 (Open Access)

Environmental variability indicates a climate-adaptive center under threat in northern Mozambique coral reefs. *Ecosphere* 2017 (Open Access)

Elasticity in ecosystem services: exploring the variable relationship between ecosystems and human well-being. *Ecology and Society* 2016 (Open Access)

Similar impacts of fishing and environmental stress on calcifying organisms in Indian Ocean coral reefs. *Marine Ecology Progress Series* 2016 (Open Access)

Remote coral reefs can sustain high growth potential and may match future sea-level trends. *Nature Scientific Reports* 2015 (Open Access)

Linking reef ecology to island building: Parrotfish identified as major producers of island-building sediment

in the Maldives. *Geology* 2015 (Open Access)

Connecting Marine Ecosystem Services to Human Well-being: Insights from Participatory Well-being Assessment in Kenya. *AMBIO* 2013

Applying the ecosystem services concept to poverty alleviation: the need to disaggregate human well-being. *Environmental Conservation* 2011

WORKING PAPERS



CONFERENCE PRESENTATIONS



PROJECT REPORTS



GUIDELINES FOR TEAM



BACKGROUND DOCUMENTS



OTHER PUBLICATIONS BY THE TEAM



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## NEWS

New publication drawing on SPACES data shows East African reefs particularly susceptible to coral bleaching

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Mombasa / Kongowea  
Tsunza  
Shimone / Wasini Island

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How DO coastal ecosystems support human wellbeing?  
New SPACES publication on the many mechanisms

SPACES publication: Men and women use, experience and value coastal ecosystem services differently

New Publication: Assessing Basic Human Needs to prevent serious harm

**VIEW ALL**

Vanga

**MOZAMBIQUE**

Ilha Vamizi

Lalane

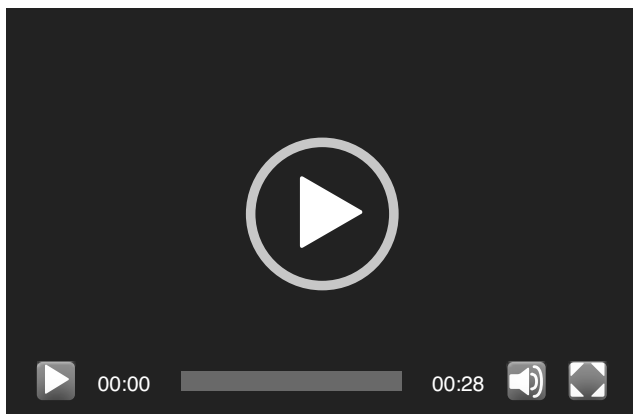
Maringanha

Mieze

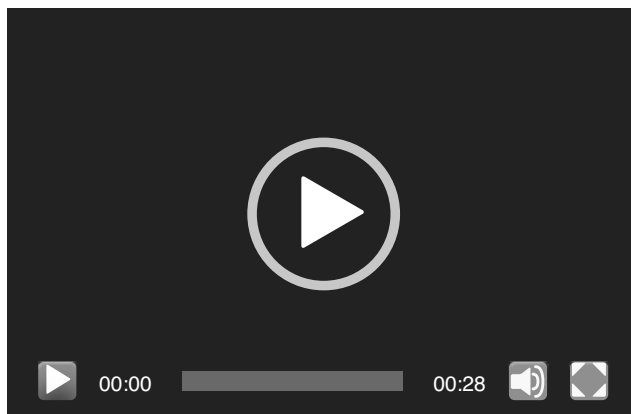
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## VIDEOS

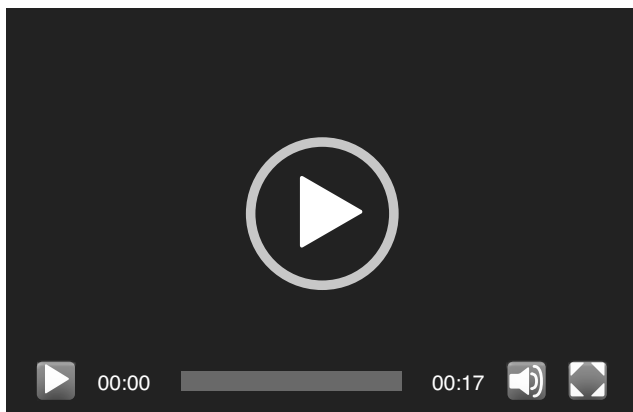
### VIDEO ABOUT SPACES



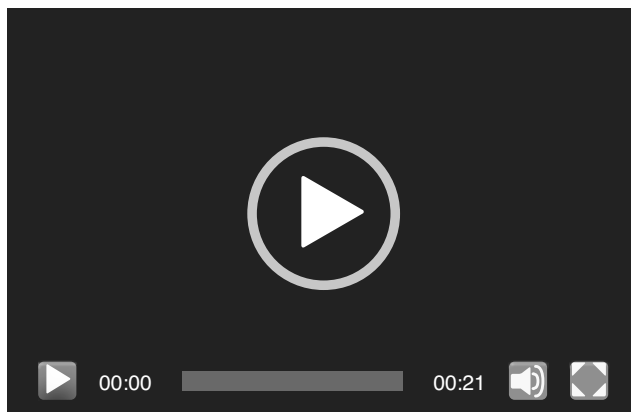
### ECOSYSTEM SERVICES ARE IMPORTANT BEYOND THE DOLLAR AMOUNT



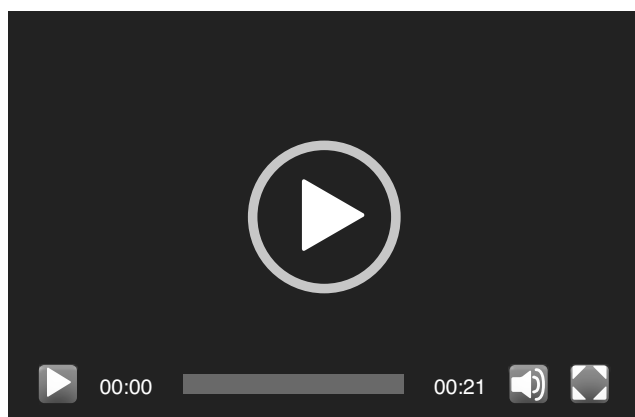
### WOMEN AND MEN BENEFIT FROM AND ACCESS DIFFERENT ECOSYSTEMS



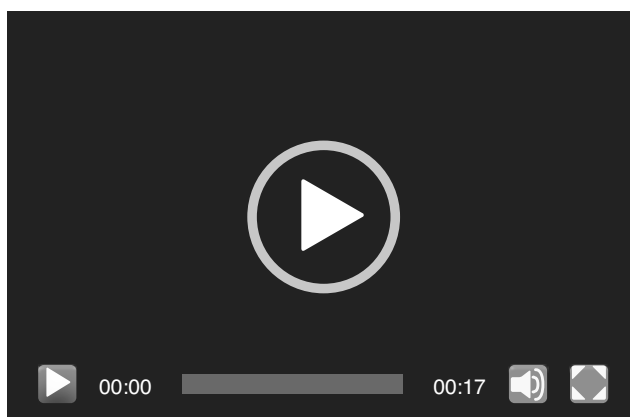
### SPACES HAS CONDUCTED WORKSHOPS GATHERING POLICY MAKERS, ORGANIZATIONS AND COMMUNITIES IN KENYA AND MOZAMBIQUE.



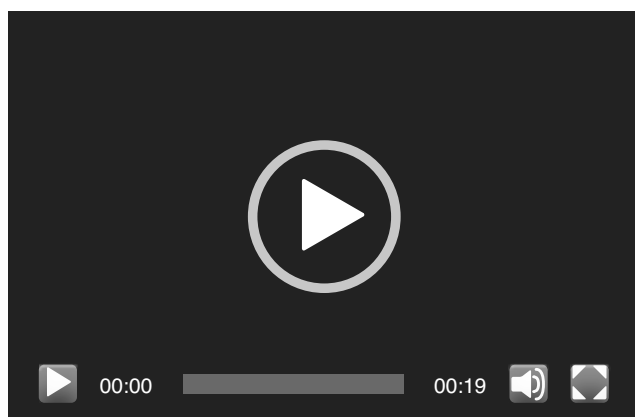
**HAVING MONEY DOES NOT ALWAYS  
TRANSLATE TO BEING “NOT POOR”.**



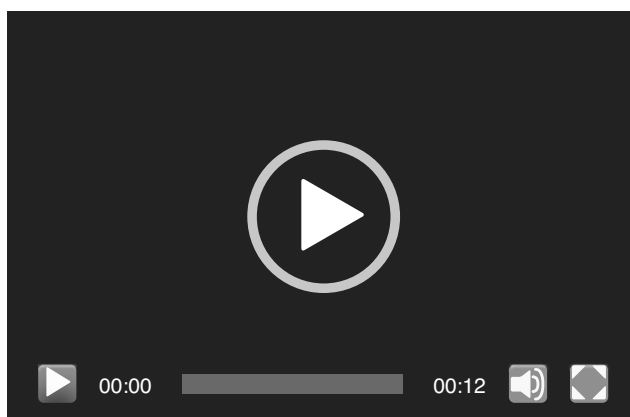
**SPACES RESEARCHERS HAVE  
DOCUMENTED THAT BENEFITS FROM  
FISHERIES ARE UNEQUALLY  
DISTRIBUTED.**



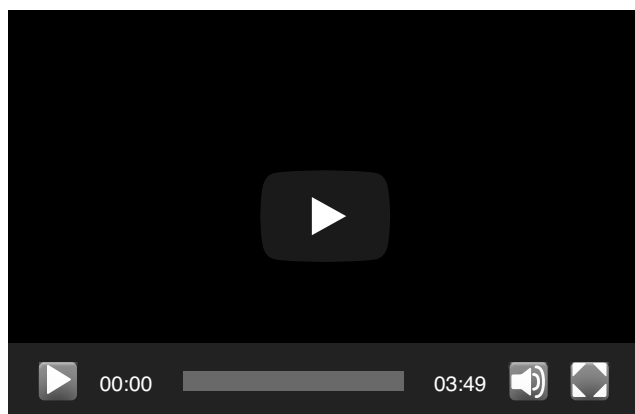
**SPACES FACILITATED DISCUSSIONS  
AND NETWORKING BETWEEN  
ORGANIZATIONS AT MULTIPLE LEVELS.**



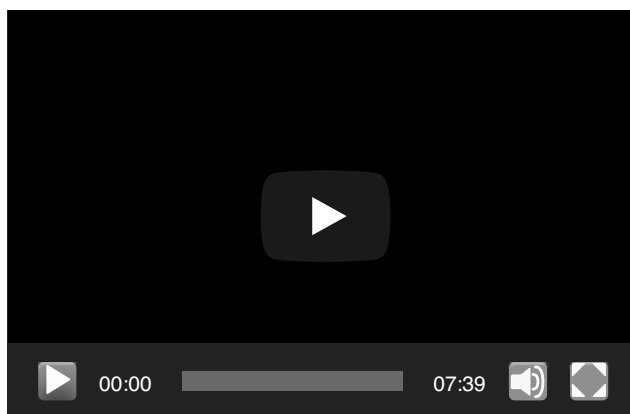
**SPACES ECOLOGICAL MODELLING  
HIGHLIGHTS THE SPECIFIC WAYS IN  
WHICH ECOSYSTEM CHANGE AFFECTS  
DIFFERENT ASPECTS OF HUMAN  
WELLBEING.**



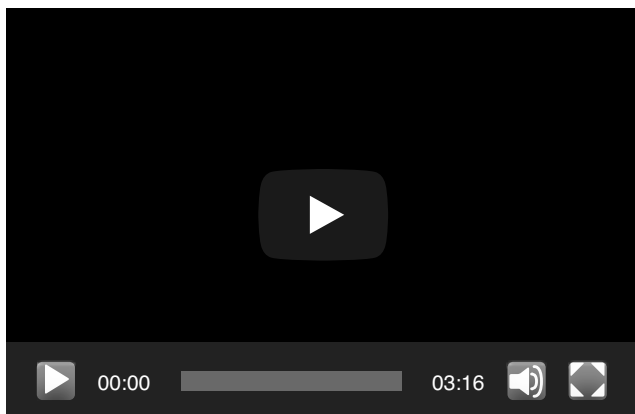
**TIM DAW INTRODUCES ECOSYSTEMS  
SERVICES ELASTICITY**



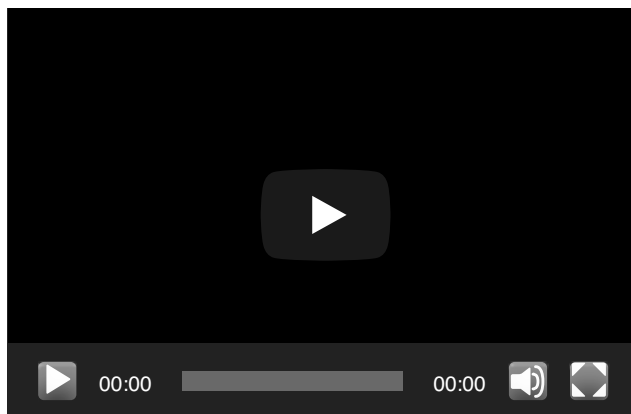
**EXPLORING TRADEOFFS IN  
WELLBEING IN COASTAL SYSTEMS IN  
KENYA**



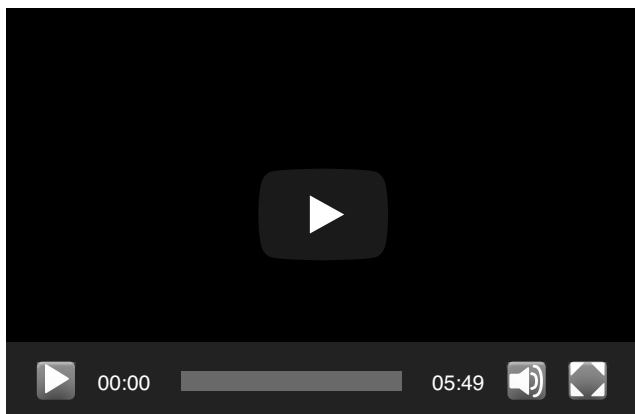
## TIM DAW PRESENTS FISH PRODUCTION AND SOCIAL TRADEOFFS IN MOMBASA



## DOMINIQUE D'EMILLE, A RESEARCH ASSISTANT AT UNIVERSIDADE EDUARDO MONDLANE SUMMARIZES THE SPACES PROJECT



## TIM DAW UNPACKS THE CONNECTIONS BETWEEN ECOSYSTEM SERVICES AND HUMAN WELLBEING



## HOW DOES SCENARIO CREATION HAPPEN? TIME-LAPSE VIDEO BY DIEGO GALAFASSI

Anmelden

Registriere



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susceptible  
to coral  
bleaching

How DO  
coastal  
ecosystems  
support  
human  
wellbeing?  
New  
SPACES  
publication  
on the  
many  
mechanisms

SPACES  
publication:  
Men and  
women use,  
experience  
and value  
coastal  
ecosystem  
services  
differently

New  
Publication:  
Assessing  
Basic  
Human  
Needs to  
prevent  
serious  
harm

**VIEW  
ALL**

Shimone /  
Wasini Island

Vanga

## **MOZAMBIQUE**

Ilha Vamizi

Lalane

Maringanha

Mieze

Photos



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## WELCOME TO SPACES DATA EXPLORER

This tool can be used to explore the contribution of ecosystem services to different aspects of wellbeing. Including whether or not people are meeting their basic needs and who has access to the ecosystem services. The method for generating these data is described in this paper [www.espa-spaces.org/basic-human-needs-publication/](http://www.espa-spaces.org/basic-human-needs-publication/)

The data for this tool was collected in 2014 in 8 coastal communities in Kenya and Mozambique. To begin, select a site or sites from the home tab and then click go to charts. For more information, go to the information page.

Here is the application for the offline version: [spaces\\_dataexplorer\\_setup](#)

Happy Exploring!

[GO TO DATA EXPLORER »](#)

**Warning:** Use of undefined constant 'post' - assumed "post" (this will throw an Error in a future version of PHP) in [/home/customer/www/espa-spaces.org/public\\_html/wp2/wp-content/themes/SPACES/page.php](/home/customer/www/espa-spaces.org/public_html/wp2/wp-content/themes/SPACES/page.php) on line 41

**Warning:** Use of undefined constant 'page' - assumed "page" (this will throw an Error in a future version of PHP) in [/home/customer/www/espa-spaces.org/public\\_html/wp2/wp-content/themes/SPACES/page.php](/home/customer/www/espa-spaces.org/public_html/wp2/wp-content/themes/SPACES/page.php) on line 41



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## TEAM

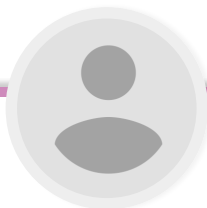


SPACES is a collaboration between [Stockholm Resilience Centre](#), [Exeter University](#), [Kenya Marine and Fisheries Research Institute \(KMFRI\)](#), [Wildlife Conservation Society \(WCS\)](#), [Kenya Forestry Institute \(KEFRI\)](#), [Eduardo Mondlane University](#), and a number of other institutions in Kenya, Mozambique, UK and North America. In Kenya SPACES will collaborate with KCDP, Kenya Fisheries Department, UNDP, UNEP, local beach management units (BMUs) and community forestry associations (CFAs) and local and regional government.

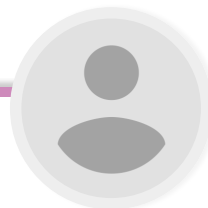
## STOCKHOLM RESILIENCE CENTRE, SWEDEN



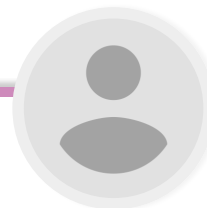
**Dr. Tim Daw**  
Principal



**Dr. Beatrice  
Crona**



**Dr. Björn  
Schulte-**



**Dr. Matilda  
Thyresson**

Investigator



Co-Investigator

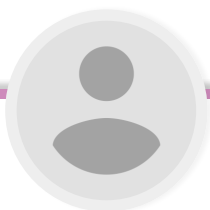


Herbrüggen

Postdoctoral  
Researcher

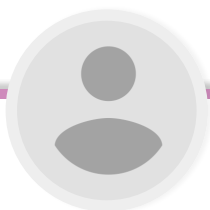


Postdoctoral  
Researcher



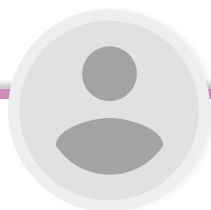
Diego Galaffasi

PhD Student



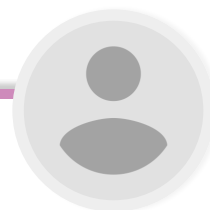
Liz Drury  
O'Neil

PhD Student



Therese La  
Monde

Administrator



Wenche  
Wenche  
Starck-  
Wistrand

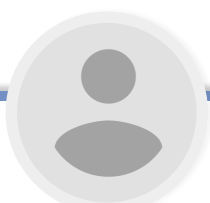
Project Controller

## EXETER UNIVERSITY, UK



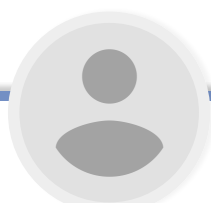
Prof. Katrina  
Brown

Co-Principal  
Investigator



Prof. Chris  
Perry

Co-Investigator



Dr. Tomas  
Chaigneau

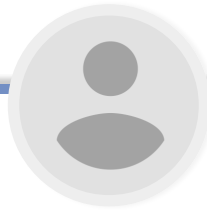
Researcher



Dr. Fraser  
Januchowski-  
Hartley

Researcher



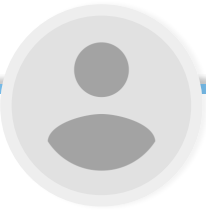


Michalis  
Revmatas

PhD Student

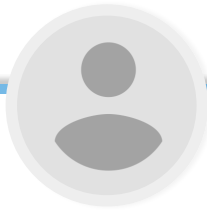


## **KENYA MARINE AND FISHERIES RESEARCH INSTITUTE (KMFRI), KENYA**



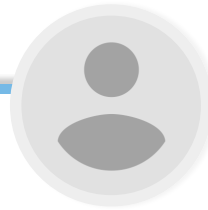
James Kairo

Co-Investigator



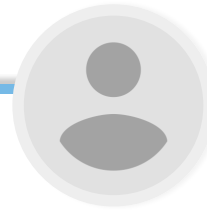
Jacob  
Ochiewo

Co-Investigator



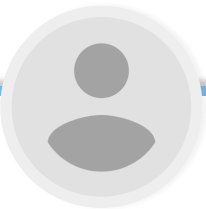
Lilian Mwihaki  
Mugi

Researcher



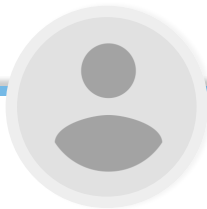
Omukoto  
Omuhaya

Researcher



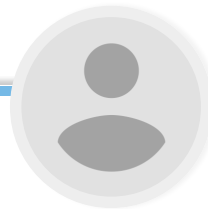
Boniface  
Mutisya

Co-Investigator



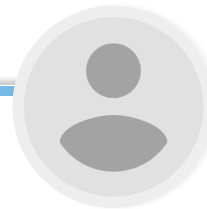
Caroline  
Wanjiru

PhD Student



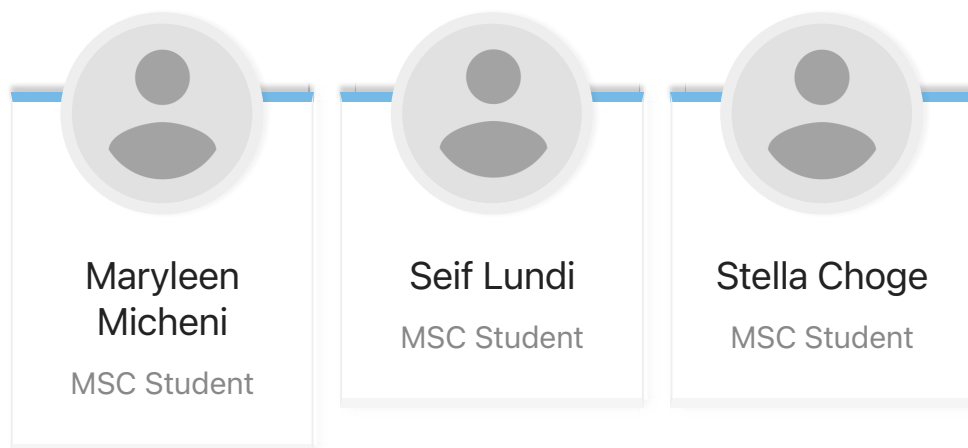
Jared Bosire

Co-Investigator

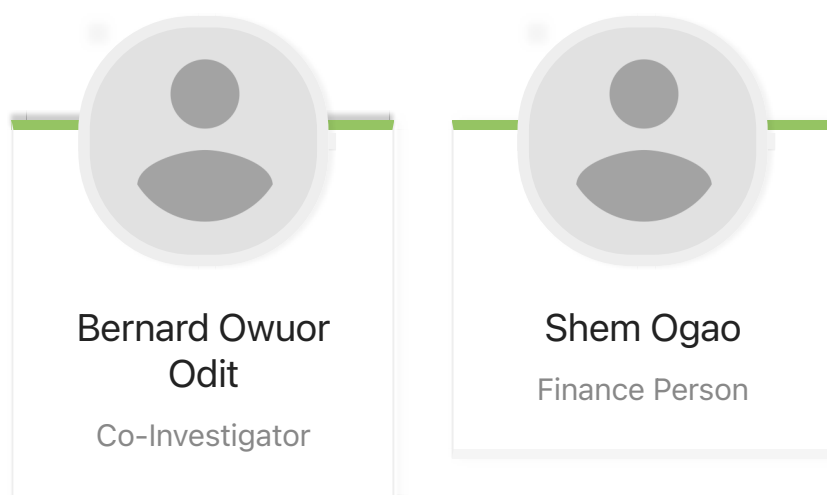


Lemmy Nyale

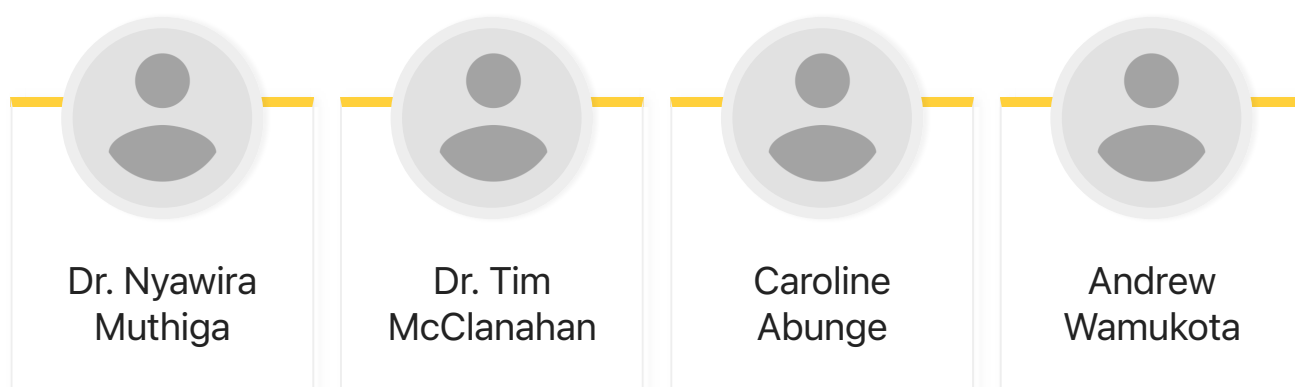
Project Intern



## **KENYA FORESTRY RESEARCH INSTITUTE (KEFRI), KENYA**



## **WILDLIFE CONSERVATION SOCIETY, KENYA**



Co-Investigator



Co-Investigator



Researcher

Postdoctoral  
Researcher



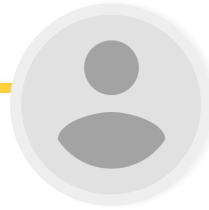
Lilian Nyaga

ESPA SPACES  
Project  
Administrator



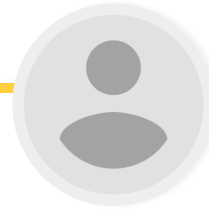
Caroline  
Kiriinya

Finance Person



Christopher  
Cheupe

Research  
Assistant



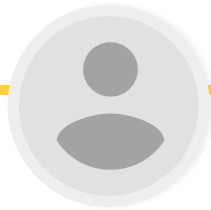
Innocent  
Mulwodo

Research  
Assistant



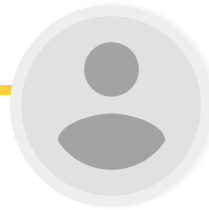
Jane  
Nyanapah

Research  
Assistant



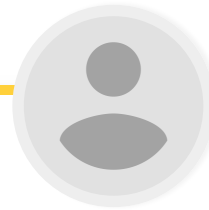
Joaquim  
Cheupe

Research  
Assistant



Rosebella  
Apamo

Research  
Assistant

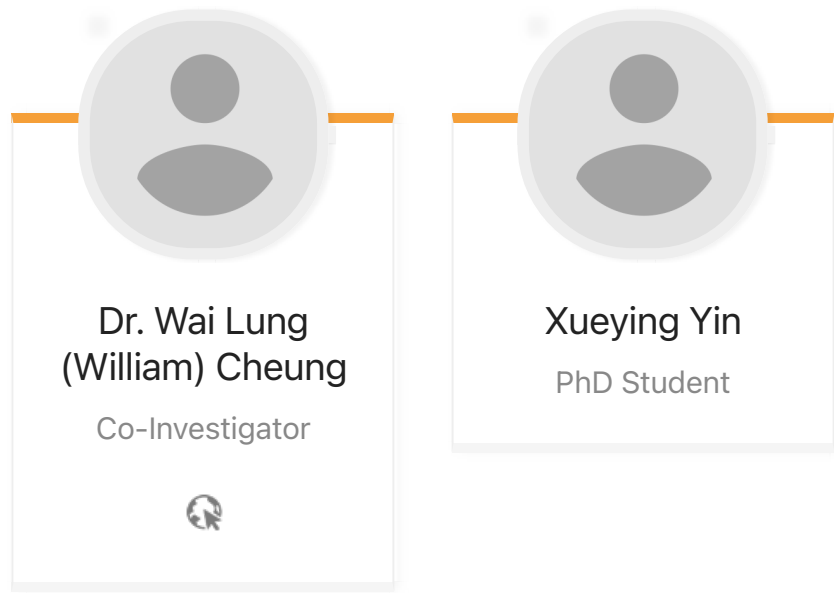


Stephen  
Wanyonyi

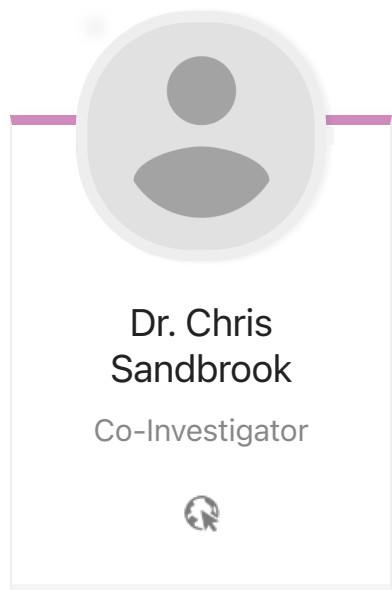
Research  
Assistant

**UNIVERSITY OF BRITISH COLUMBIA, CANADA**

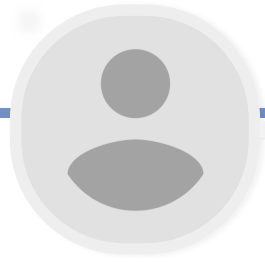




## **CAMBRIDGE UNIVERSITY, UK**



## **NORTHUMBRIA UNIVERSITY, UK**



**Dr. Sarah Coulthard**

Co-Investigator

## **UNIVERSITY OF EAST ANGLIA, UK**



**Dr. Sérgio Rosendo**

Co-Investigator

## **UNIVERSITY EDUARDO MONDLANE, MOZAMBIQUE**



**Prof. Salomão  
Bandeira**

Co-Investigator



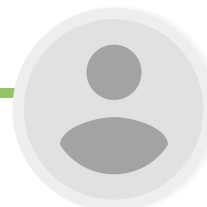
**Dr. Almeida  
Tomas  
Guissamulo**

Co-Investigator



**Celia Macamo**

Researcher



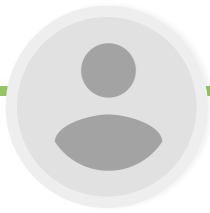
**Eunice Ribeiro**

Researcher



**Dominique  
D'emille**

Research  
Assistant



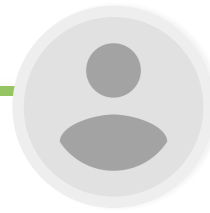
**Vera Julien**

Research  
Assistant



**Vilma Machava**

Research  
Assistant



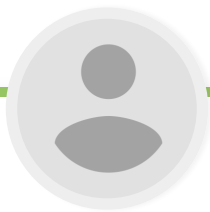
**Raul Lima**

Research  
Assistant



**Abel Amisse**

Research  
Assistant



**Acácio Cumbe  
Cumbe**

Finance Person



**Hugo  
Mabiliana**

Trainee Assistant  
Lecturer

**UNIVERSIDADE LURIO, MOZAMBIQUE**



Isabel de Silva

Sub-Contractor  
(Through UEM)

## **CENTRE OF MARINE AND COASTAL ENVIRONMENT RESEARCH (CEPAM), MOZAMBIQUE**



Ezidio Cuamba

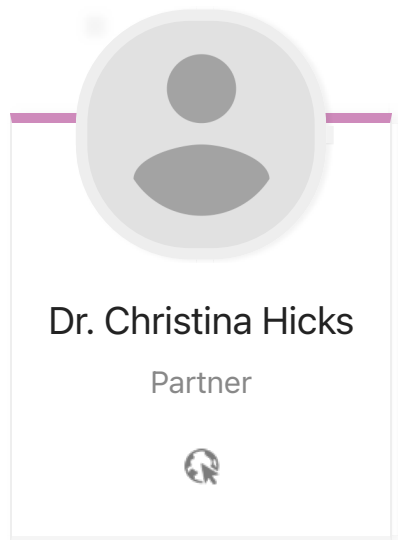
Partner



Siran Offman

Partner

## **STANFORD UNIVERSITY, USA**



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many  
mechanisms

SPACES  
publication:  
Men and  
women use,  
experience  
and value  
coastal  
ecosystem  
services  
differently

New  
Publication:  
Assessing  
Basic  
Human  
Needs to  
prevent  
serious  
harm

**VIEW  
ALL**

Mieze