

NEPSUS Working Paper 2017/5

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NEPSUS is a research and capacity building project based at the Department of Business and Politics, Copenhagen Business School, Denmark and the Department of Geography, University of Dar es Salaam, Tanzania. Other participating partners are the Department of Social Sciences and Business, Roskilde University, and the Sheffield Institute for International Development, University of Sheffield.

The project is funded by the Consultative Committee for Development Research, Royal Danish Ministry of Foreign Affairs (Grant 01-15-CBS).

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NEPSUS WORKING PAPER 2017/5
NEPSUS: New Partnerships for Sustainability
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www.cbs.dk/dbp www.nepsus.info

ISBN 978-87-93571-04-4 (pdf)

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Sustainability Partnerships for the Governance of Coastal Resources in Tanzania

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Abstract

The paper examines the experience of sustainability partnerships for the management of coastal resources in Tanzania. It identifies key actors and governance dynamics, with focus on decentralization processes, legitimacy-building and participation of local communities. The paper first provides a brief status of coastal resources in Tanzania and a historical overview of the evolution of co-management practices. Then, it examines actors and processes at the national and local levels in relation to two types of co-management: Marine Parks (MPAs) and Beach Management Units (BMUs). In view of ongoing research under the New Partnerships for Sustainability project (NEPSUS), it provides guidance on research gaps in specific relation to the Mnazi Bay Ruvuma Estuary Marine Park (MBREMP) and selected BMUs in Mtwara region, Southern Tanzania.

Key words: Sustainability, Partnerships, Co-management, Coastal Resources, Fisheries, Marine Parks, Beach Management Units, Mnazi Bay Ruvuma Estuary Marine Park (MBREMP), Mtwara, Tanzania

1. Introduction

Important coastal resources in Tanzania include fisheries, mangrove and coral. Although fisheries are the most exploited coastal resource, mangrove and coral are equally important as they provide important habitat and source of food for fish and other aquatic resources. Fisheries is a key sector and main source of livelihood and food security for coastal populations in Tanzania. The sector contributes to 1.6% of GDP, with a vast share of the catch coming from inland fisheries. Exploitation of marine fisheries is largely restricted to territorial waters (less than 12 miles from shore). Despite having a large Exclusive Economic Zone (EEZ), Tanzanian fishers have not had access to an adequate fishing fleet for deep sea exploitation in the EEZ.

The Tanzanian coastline extends for approximately 1,400 km from 4° 49' North at the border with Kenya to 10° 28' South at the border with Mozambique. The coastal¹ plain is narrow, occupying the Eastern seaboard of the Indian Ocean. Five administrative regions are found along the mainland coastal strip: Tanga, Pwani, Dar es Salaam, Lindi and Mtwara. The islands of Zanzibar consist of three regions in Unguja and two regions in Pemba. The marine territorial sea constitutes an area of 64,000 km² and the EEZ² is approximately 223,000 km². Several permanent and seasonal rivers, and numerous creeks traverse the coastal plains. The permanent rivers discharging into the Indian Ocean are the Pangani, Wami, Ruvu, Rufiji, Matandu, Mbemkuru, Lukuledi and Ruvuma (Nhnyete and Mahongo, 2017). The continental shelf is narrow and steep, covering a total surface area of about 17,900 km². It is characterised by fringing coral reefs, seagrass and island habitats. The coastline is affected by the monsoon regime, with two typical seasons: the southeast monsoon (*kusi*) from May to early September, and the northeast monsoon (*kaskazi*) from November to March.

Marine fisheries in Tanzania include artisanal multi-species gear fisheries and coastal shrimp trawl - both targeting fisheries resources within mostly territorial waters. Some foreign fishing fleets operate in the EEZ which extends up to 200 nm from the shoreline. A shoreline is defined as the interface between the land and the sea (Moore, 2000). In Tanzania, as in other countries of the Western Indian Ocean (WIO) region, the shoreline and its adjoining coastal areas constitute valuable a resource. Accordingly, its management requires a thorough understanding of the dynamic of shoreline change, particularly the processes and implications of coastal erosion (Cooper and McKenna, 2008). Fishing activities that could yield substantial catch in water depths of less than 500 m on coastal areas are limited.

Marine fisheries contribute to about 10-15% of the total fishing production in Tanzania (Lee and Namisi, 2016). Contributions from aquaculture, with the exception of seaweed farming, is minimal. Fishery catches in Tanzania are dominated by inland fisheries, with an average of 85% of the national fish catch, mainly from Lake Victoria and to a lesser extent Lake Tanganyika

¹ Morphologically, the coastline is straight and bounded by sandy, open beaches and cliff out-cropping in the south. There are extensive mangrove forests in the riverine estuaries and deltas especially along Rufiji, Pangani and Ruvuma rivers.

² In 2012, the United Republic of Tanzania applied to the Commission on the Limits of Continental Shelf under UNCLOS to extend its EEZ by 61,000 km².

(Breuil and Grima, 2014). Several studies show that coastal marine resources of special significance are composed of small and medium pelagics, demersal fish in deep water and coral reef areas, and lagoons and intertidal species. Small pelagics include scads, herring and anchovy. Medium pelagics include Spanish mackerel, bonito, barracuda, mackerel and wolf herring (Jiddawi and Öhman, 2002; Muhando and Rumisha, 2008). Demersal species include different species of shark, ray, skate, sole, catfish, and shrimp. Coral reef fish species include emperor, snapper, sweetlips, parrotfish, surgeonfish, rabbitfish, grouper and goatfish. The lagoon and intertidal pond species include octopus, squid, crabs and a variety of bivalves. There is also an artisanal fishery targeting tuna and tuna-like species within Tanzanian EEZ (Breuil and Grima, 2014; Division of Fisheries, 2012).

Current fish catches are estimated at approximately 340,000 MT per year, excluding catches of tuna and tuna-like species by Distant Water Fleet Nations (DWFN) in the EEZ. The development of the fishery sector is advanced, especially in inland waters. Marine fishing is limited to the near shore due to lack of a domestic fleet of deep sea fishing vessels. The status of marine resources is unclear due to lack of data. Nonetheless, national authorities have often reported that the potential of marine fishery in inshore waters is around 100,000 MT per annum. However, this is based on stock assessments conducted in the early 1980s. There are no estimates of the fish potential in the EEZ (Breuil and Girma, 2014). Frame surveys which are undertaken to provide official statistics on fisheries are not carried out regularly, due to lack of funding. Official statistics rely on a few surveys which have been successfully performed: the 2009 frame survey reports 36,320 fishers on the coastline of Tanzania, of which 7,000 were operating without vessels ('foot fishers'). Other surveys reported 36,323 fishers in 2014, and 48,529 in 2016 (URT, 2016). It is not clear how reliable these assessments are. Catch statistics suggest that they have been declining in volume, but increasing in value due to supply shortages arising from destructive fishing activities and environmental change. Figure 1 provides a snapshot catch statistics in marine waters in Tanzania in the past 40 years.

In a companion paper (Kweka et al. 2017), we highlighted that there are two main forms of co-management in the governance of coastal resources: Marine Parks (MPAs) and Beach Management Units (BMUs). There are three MPAs in Tanzania: the Mafia Island Marine Park (MIMP), established in 1995; the Mnazi Bay Ruvuma Estuary Marine Park (MBREMP), established in 2000; and the Tanga Coelacanth Marine Park (TCMP), established in 2009. In this paper, we provide a brief background on MIMP and TCMP, but focus especially on MBREMP. BMUs have been established in Tanzania in the past two decades, first in inland waters and then in coastal areas with fishing activities. In the past few years, WWF has started to facilitate the formation of Cooperative Fishery Management Areas (CFMA), which combine several BMUs. This paper is mainly informed by a review of empirical and background information on these initiatives in Tanzania, and preliminary fieldwork including interviews with key informants and main stakeholders in Dar es Salaam and Mtwara in January-March 2017. Further fieldwork and a survey will provide additional results as the project progresses.

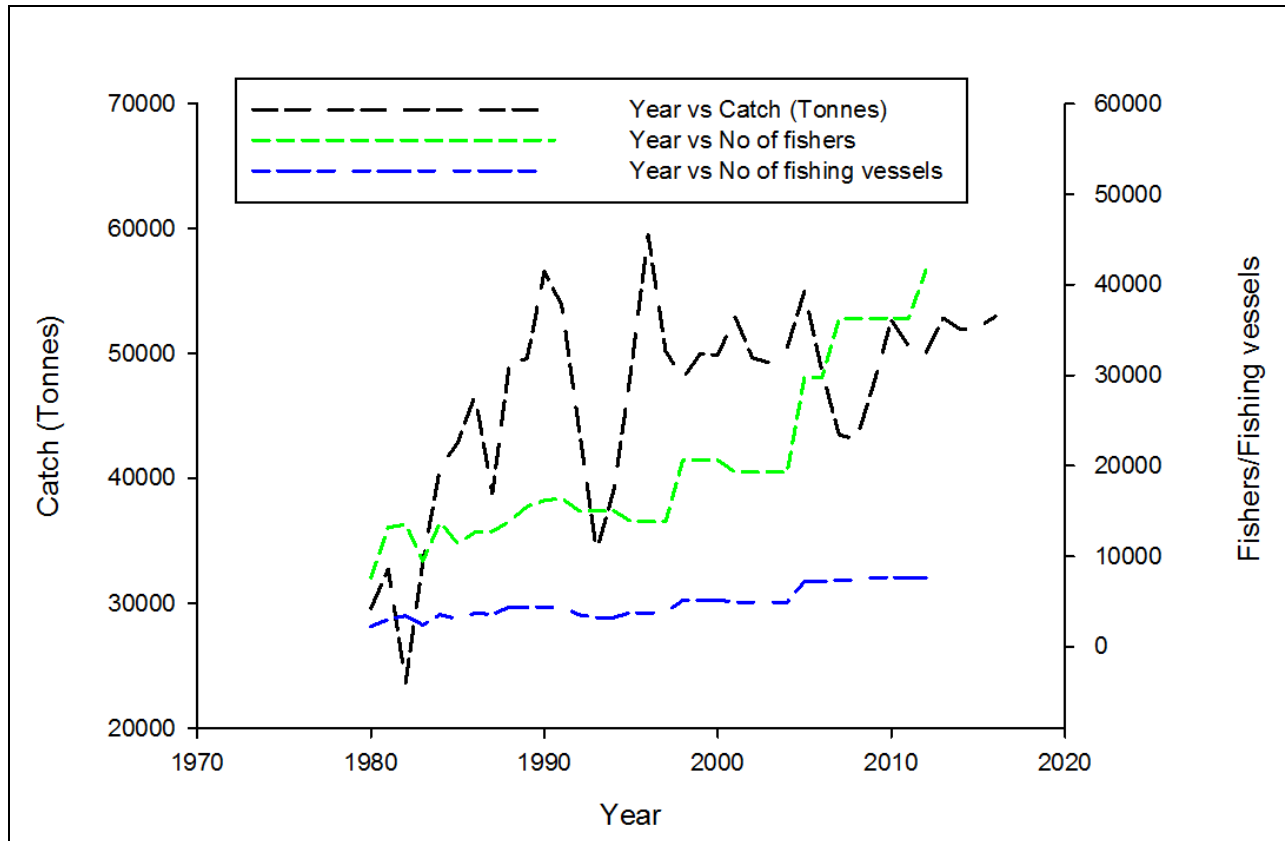


Fig. 1 Production trends for marine fisheries (1980-2016). Source: Fisheries statistics (MALF) for various years

The next section discusses the historical evolution of management of coastal resources from the colonial era. The third section describes the institutions and policies guiding the management of coastal resources in the country. The fourth and fifth sections provides some background information on MBREMP and selected BMUs in Mtwara rural district. The final section highlights the existing research gaps and informs the future activities of NEPSUS in this realm.

2. The Institutional and Regulatory Framework for the Management of Coastal Resources in Tanzania

Unlike terrestrial resources, coastal resources in Tanzania began to receive significant attention only in the past three decades. Management of terrestrial resources—wildlife and forests—were addressed with considerable attention and rules during the colonial era. In the immediate post-independence period, Tanzania continued to apply colonial laws and regulations on natural resources. Since no concerted efforts were undertaken on coastal resources, they were particularly exposed to overexploitation and degradation, leading to adverse effects on livelihoods (Ruitenbeek et al., 2005). The fisheries legislation that existed

during the early independence period was not sufficient to fend off the quick growth of catches in the fishing sector. Although in the 1970s the government had established the first marine reserve, it was not until 1994 when the government enacted the Marine Parks and Reserves Act, followed by the establishment in 1995 of the first MPA, the Mafia Island Marine Park. Numerous other efforts also began in the early 1990s, when the government with assistance from donors started to tackle coastal and marine resources problems using the Integrated Coastal Zone Management (ICZM) approach (TCMP, 1999), coupled with its National Integrated Coastal Management Policy of 2003. In tandem with ICZM, various government initiatives were undertaken by the National Environment Management Council (NEMC) under a programme known as Tanzania Coastal Management Partnership (TCMP).

The institutional framework for management of coastal resources in Tanzania comprises many actors and institutions, leading to conflicting interests and unnecessary overlap (Gustavson et al., 2009). Different line ministries have applied their powers towards coastal resources, such as the Division of the Environment of the Vice President's Office, the National Environmental Management Council (NEMC), which is largely a watchdog for compliance, sectorial ministries such as the Ministry of Livestock and Fisheries, the Ministry of Natural Resources and Tourism, the Ministry of Energy, as well as local government authorities. Currently, at the national level, two ministries are responsible for overall management and coordination of this sector: the Ministry of Agriculture, Livestock and Fisheries (MALF) through the Department of Fisheries Development, as concerns the management of inland and marine fisheries within the territorial waters of Mainland Tanzania; and the Ministry of Natural Resources, Agriculture, Livestock and Fisheries (MNALF) for the management of the territorial waters of Zanzibar.

Mangroves represent an ecosystem of ecological and economical significance for Tanzania. For years, mangroves were managed as forest, but this did not prevent their over-exploitation by coastal communities (Semesi, 1992, 1988). Although the Tanzanian government has maintained the protected status of mangroves as territorial reserves, evidence shows that it has failed to manage them as well as it has managed terrestrial forest reserves. Placing the management of mangroves under forestry makes it difficult to handle coastal resources holistically. Unlike mangroves, coral reefs which support diverse marine ecosystems in Tanzanian waters, including over 500 species of commercially important fish and invertebrates, are regulated through fisheries regulations, and especially the Fisheries Act of 2003 and the Marine Parks and Reserves Act of 1994.

The National Fisheries Policy (2015)

The legal and regulatory framework that governs the fisheries sector consists of a number of laws and regulations. An important one is the *National Fisheries Policy* of 2015, which sets out to transform fisheries into a sector contributing significantly to socio-economic development. As stated in its vision, 'the overall objective of the National Policy is to develop a robust, competitive and efficient fisheries sector that contributes to food security and nutrition, growth

of the national economy, and improvement of the wellbeing of fisheries stakeholders while conserving the environment'³.

The National Environmental Policy (NEP, 1997)

This policy is relevant because it places emphasis on the adoption of management practices to ensure the environmentally sustainable use of natural resources. In a way, it echoes the spirit of provision 9(1)(c) of the United Republic of Tanzania (URT) constitution, which states the need to ensure the harnessing and preservation of natural resources for the common good. Another important piece of legislation that supports the implementation of NEP (1997) is the *Environment Management Act* (EMA, 2004), which 'provides a legal and institutional framework for the sustainable management of the environment' (Kuboja, 2013).

The Fisheries Act No. 22 (2003)

This Act, which repealed and replaced the *Fisheries Act of 1970*, applies to Mainland Tanzania. Besides providing general provisions, the Act imposes sovereignty over biological resources belonging to the Government as follows: 'all biological resources and their intangible products whether naturally occurring or naturalized within fisheries including genetic resources belonging to the Government in accordance with Article 27 of the Constitution, shall be conserved and utilized for the people of this country in accordance with the provisions of this Act and any other written law on biological resources.'⁴ Other areas of focus include emphasis on the need to carry out Environmental Impact Assessment (EIA), define research priority areas and facilitation, and penalties for offences. The Act also makes provisions for sustainable development, protection, conservation, aquaculture development, regulation and control of fish, fish products, aquatic flora and its products. Plans are underway to prepare new regulations for implementing the Fisheries Act. No. 22 of 2003. The MALF has also kick-started the process of establishing a National Fisheries Cooperation to oversee the envisaged National Fleet.⁵

The Marine Parks and Reserve Act (No. 29 of 1994)

This Act and the *Marine Parks Reserves (Declaration) Regulations of 1999*⁶ are the main legal instruments that provide guidelines on the operation of Marine Parks (MPAs) in Mainland Tanzania. Furthermore, they outline roles and responsibilities of stakeholders and community members involved in the fisheries sector. The Act has recently been reviewed and recommendations have been forwarded to the Government for consideration. The MPAs operate under the Marine Parks and Reserve Unit (MPRU) within the Department of Fisheries Development of the MALF. MPAs are a relatively new concept in Tanzania. Before their establishment, there were only terrestrial parks targeting forest, wildlife and wetland

³ Section 2.1 of the National Fisheries Policy, 2015.

⁴ The Fisheries Act. No. 22 of 2003, section 51 (1)).

⁵ Budget Speech by the Minister of Agriculture, Livestock and Fisheries, May 2016.

⁶ See Government Notice No. 85 of 1999.

conservation. Currently, there are three marine parks in Mafia (gazetted in 1995), Mtwara (2002) and Tanga (2009), and about 15 Marine Reserve Units. Reserve units are designated as 'no-take-zones', while MPAs have three different zones: a 'core zone' (no-take-zone), a 'specific zone', and a 'general use zone'. Generally, no activities are allowed in the core zone. Core zones are critical areas rich in biodiversity and they are protected to ensure spill-over effect. In specific zones, resource use is set aside exclusively for people living within the MPA, whereas general use zones are also open (under permission) to people living outside the park.

The Tanzania Fisheries Research Institute (Act. No. 11, 2016)

Another key institution is the Tanzania Fisheries Research Institute (TAFIRI). TAFIRI is a parastatal organization established in 1980 by the *Tanzania Fisheries Institute Act Cap. 280*. In 2016, the Parliament passed the *Tanzania Fisheries Research Institute Act No. 11 (Commencement Date Notice)*, which was gazetted in a government notice No. 128 of 2017. Headquartered in Dar es Salaam, and with offices in Mwanza, Kigoma and Kyela, the institute undertakes research in various areas of interest to the sector, including fresh water and marine capture fisheries, aquaculture and mariculture technologies, stock and catch assessment, fish processing and quality as well as socio-economic studies (URT 2016). TAFIRI is currently engaged in a physio-chemical parameters project which employs satellite data. Two satellite dishes are being piloted in Mafia.

The Deep-Sea Fishing Authority (Amendment Act No. 17 of 2007)

This Act is an amendment to the *Deep-Sea Fishing Authority Act Cap 388 of 2009*, which guides the activities and operations of the Deep Sea Fishing Authority (DSFA). The DSFA, which is a joint creation of MALF and MNALF, has been entrusted with the responsibility of managing fisheries resources and related activities in the Exclusive Economic Zone (EEZ) of the URT. The DSFA is located in Zanzibar. Among the important amendments inserted in the Act No. 17 of 2007 are: the introduction of a Secretariat of the Executive Committee to be headed by the Director-General;⁷ the sharing of the posts of Director-General and Deputy-Director General between Tanzania Mainland and Tanzania Zanzibar,⁸ with tenure of office of the two officials to be limited to three years. These were among the contentious issues that had previously beleaguered the DSFA. It is also important to note that the MALF has reviewed the *Deep-Sea Fishing Authority Regulations*, which were gazetted in Government Notice No. 323 of 2016⁹.

⁷ Section 5A (1) of Act 17, 2007.

⁸ Section 7(d) (4).

⁹ See Hotuba ya Waziri wa Kilimo, Mifugo na Uvuvi, Mh. Eng. Dr. Charles John Tizeba (MB.) Kuhusu Makadirio ya Mapato na Matumizi ya Fedha ya Wizara ya Kilimo, Mifugo na Uvuvi kwa Mwaka 2017/2018.

3. The Mnazi Bay Ruvuma Estuary Marine Park (MBREMP)

3.1 General background and brief history

Mnazi Bay and the Ruvuma Estuary were identified as priority areas for the conservation of global marine biodiversity in 1995. The Mnazi Bay Ruvuma Estuary Marine Park (MBREMP) was gazetted in 2000 by the Tanzanian government as the second marine park established in Tanzania after Mafia Island Marine Park (MIMP) (Government Notice No. 285, published on 4/8/2000). It began operations in 2002, with support by UNDP/GEF and the Fonds Francais Pour l'Environnement Mondial (FFEM).

MBREMP is a multi-use MPA situated in Mtwara rural district, on Tanzania's southern border with Mozambique. MBREMP is at the center of the East Africa Marine Ecoregion and where the South Equatorial Current meets the East African mainland (Obura, 2004). Coral reefs in MBREMP extend for some 62 km from the Ruvuma estuary to Msangamkuu Point, enclosing a bay that varies in size from 67 to 150 km² at low and high tides, respectively. The bay is enclosed by sandy shores to the west and the Ruvula-Msimbati spit and a string of rock islands and reefs to the east, with only major deep channel, the Ruvula channel in the south, and a smaller reef gap in the northern part of Mnazi Bay. Due to its high degree of closure and geometry, the bay experiences very high tidal currents (up to 6 knots) and a complex range of coral reef and other habitats. The Ruvula channel itself is an unusual feature for East African reefs, as there are few locations in the region with such a large bay fed by a narrow, deep channel.

Human population density around the park is high. The project document for MBREMP in 2000 highlighted that there were 17 villages within the boundary of the protected area, with a population of 30,000 people and an average per capita income of under \$100 per year (UNDP 2000). This population imposes significant pressures on MBREMP and its biological resources, principally through fishing, coral mining and other forms of extraction. In addition, the town of Mtwara is located just north of the park, and is a significant port and provincial urban center, with additional threats coming from shipping and other economic activities to marine environments. The existence of natural gas in the sedimentary sands beneath Mnazi Bay are the focus of current investments to extract the gas and pipe it to Mtwara, with potential future threats to the marine environments in the bay (Ministry of Natural Resources and Tourism, 2005).

Reports show that Mtwara region was chosen for the development of a Marine Park for a number of reasons (Ministry of Natural Resources and Tourism, 2005): the area contains good representative examples of all the marine habitats found along the shores of Eastern Africa; it has highly productive and diverse fisheries under threat, which are important for local residents; and it holds promise for coastal tourism. The presence of natural gas reserves within this area further justified the need for instituting sustainable management of marine resources which an MPA could offer. A snapshot of the steps that resulted into the establishment of MBREMP is highlighted in Table 1.

Table 1: Summary events in the establishment of the MBREMP (adapted from Katikiro et al., 2015)

Date	Event	Major milestone
1994	Initiation of the first marine environment protection programme (MEPP) following a meeting in Sudi village to discuss problems related to the marine environment. The meeting is attended by 40 fishermen from 12 villages, four local government officials, police from Kilwa, Lindi and Mtwara districts and two consultants from RIPS.	Formation of the Sudi committee (which gave rise to SHIRIKISHO). Establishment of patrols to monitor dynamite fishing. Introduction of seaweed farming with financial support from RIPS.
1994-1999	Studies carried out by the University of Dar es Salaam (Institute of Marine Science), in collaboration with Frontier-Tanzania to provide baseline information for the development of an MPA in Mtwara district	Biophysical and socio-economic data collected.
1996	A second workshop with 80 participants is held in Msimbati village to review developments since the Sudi workshop. Three members of Parliament, in addition to district councilors and senior police officers attend.	Decision to expand the MEPP and aim to formulate and implement community-based coastal zone management in Kilwa, Lindi and Mtwara districts. MEPP is facilitated by RIPS, with technical support from Frontier-Tanzania.
1998-1999	A series of discussions in Mtwara district are held, concerning the need to protect marine habitats and improve fisheries management.	Promotion of the need to accelerate the establishment of an MPA.
1998	Drafting of a constitution and conditions for membership for SHIRIKISHO (which started as a committee of 12 people).	Formal registration of SHIRIKISHO as an NGO, becoming 'The Southern Zone Confederation for Protection of the Marine Environment'. District authorities at both government and civil society level agree to the creation of a Marine National Park in the Mnazi Bay area.
1999	Mtwara Declaration signed.	

	An agreement is approved by the regional and then central government under the Marine Parks and Reserves legislation framework.	MBREMP is recognized for its biodiversity value and is gazetted as Tanzania's second MPA.
2000	Management structure of MBREMP is put in place and the Park starts full operations under the financial grant of GEF/UNDP project.	<p>Appointment of a Park Warden and members of staff.</p> <p>A technical advisor is hired by IUCN EARO.</p> <p>Village liaison committees are set up in each village, except in Mkubiru and Nalingu.</p> <p>Opposition against the marine park started to manifest.</p> <p>Park managers assure that community participation will be legally mandated within the marine park and park will facilitate job creation through tourism and loans to improve fishing activities.</p> <p>Local communities become formally involved in deliberations over MBREMP through their representatives in the Advisory Committee.</p>
2002	MBREMP initiates a series of meetings, conservation forums and workshops in villages to raise awareness and makes plans for the enactment of marine park committees in villages.	<p>Draft Village Environmental Plans (VEMPs) developed for all villages, except in Nalingu and Mkubiru.</p> <p>Resistance spreads to Mkubiru as local community are worried about potential restrictions on their fishing practices. Other villages, especially Msimbati, act in covert ways to increase resistance in other villages.</p>
2003	The first marine park advisory committee is formed.	
2003-4	Institutionalization of community participation by facilitating the development of VEMPs.	Fears spread that MBREMP will prevent local community access to fishing and other marine resources.

2004	Nalingu village resorts to overt forms of resistance against the implementation of MBREMP activities.	Studies published on the knowledge base of marine biodiversity and socio-economic status of MBREMP. A management plan document is produced and is sent to the Ministry for approval.
2003-5	Biophysical and socio-economic assessments are carried out in MBREMP.	The concept of 'Marine Park' is so vague that all park stakeholders ostensibly agree to it.
2005	Workshops are held with stakeholders within the park, including national government officials, representatives of international NGOs, academics, district government officials, and village leaders of several villages to develop management plan of MBREMP.	
2006	MBREMP residents are promised help in fishing activities and alternative income activities.	

MBREMP was established in 2000, after having been identified as an area of biodiversity value at both the national and international level (Kelleher et al. 1996). It encompasses an area of 650 km², of which 220 km² is land. The remaining 430 km² include mangrove forests, islands, and extensive coral reefs. The population living within the MBREMP area is currently estimated at approximately 40,000 people living in 17 villages. MBREMP is bordered by the Indian Ocean to the east, Mozambique to the south, Mtwara municipal to the north, and several hinterland villages of Mtwara district to the west (Katikiro et al., 2015a).

The main official aim of the park is to combine conservation and sustainable development. The resources managed by the park include fish, mangrove, coral reef, seagrass beds and sandbanks. The main identified challenges are: overfishing, rapid population growth, emerging activities vis a vis exploration of natural gas and coastal development, dynamite fishing, collection of shell and sea cucumber, coral harvest, and coastal erosion. The current management plan recognizes the development of gas reserves in the area. The objectives of the park include the protection and promotion of sustainable use of resources through zoning and (at least in theory) the involvement of communities in its management. Through donor funds, several efforts were undertaken to attain a sustainable use of coastal and marine resources. These included an initiative to form a deep-sea fishing fleet under the support of

Coastal and Marine Environment Management Project¹⁰ (MACEMP). MACEMP also targeted the strengthening of co-management activities performed by BMUs and VLCs, and the development of livelihood activities, particularly fish farming (MACEMP, 2013). This was done to align with the goal of conservation with improving livelihoods. MACEMP also played a crucial role by supporting construction of MBREMP's office and staff houses in Ruvula.

3.2 Institutional setup and management system

MBREMP operates under the Marine Parks and Reserves Unit (MPRU). MPRU is a semi-autonomous organization under the Ministry of Agriculture, Livestock and Fisheries (MALF). It is governed by a Board of Trustees, whose members are appointed by the Minister. MPRU was established under the then Ministry of Natural Resources and Tourism (MNRT), but later it moved under MALF. According to the Marine Parks and Reserve Act No 29 of 1994, the management approach inherent in marine parks and reserves should be participatory. MPRU has thus attempted to develop a co-management arrangement with key stakeholders, including local communities, district and government authorities.

At the time when MBREMP was financially supported by donor agencies (from its inception to 2008), a Project Steering Committee oversaw its functioning - it included representatives from the Ministry, the Bank of Tanzania, the Office of the Vice-President, GEF, FFEM, UNDP, IUCN, Mtwara regional secretariat, Mtwara district council authorities, Shirikisho (an NGO), local community representatives, village advisory committee representatives, and local Members of Parliament. The committee is still formally existing, but it is only active when there is funding available for their meetings. The MBREMP Board of Trustees appoints representatives to the MP Advisory Committee for Mnazi Bay (MPAC). MPAC is supposed to include representatives from village councils, local NGOs, district authorities, and local businesses. The day-by-day administration of MBREMP is carried out by the Warden in Charge, assisted by other MPA personnel (including a Community Conservation Warden, Park Rangers and administrative staff). Within the MBREMP area, each village is supposed to have a functioning Village Liaison Committee (VLCs) with eight community members. These are formally separate from the pre-existing Village Environmental Committees (VECs). MBREMP is also supported by village-based voluntary Honorary Rangers. There is no formal business representation in MBREMP.

According to the 2011 MBREMP General Management Plan (GMP), the Marine Park has the following objectives:

- Protect, conserve and restore species and genetic diversity of marine resources and ecosystem processes;
- Promote sustainability of resource use and reclaim/recover those that have been over-exploited;

¹⁰ MACEMP operated between 2005 and 2013 to strengthen the sustainable management and use of Tanzania's Exclusive Economic Zone, territorial seas, and coastal resources.

- Ensure that resource users are involved in planning, development and management of the park, and that they: share the benefits of the park; have priority in resource access; and can draw benefits from other economic opportunities

These objectives, in line with other contemporary approaches to marine protected areas, include conservation, sustainable resource use, and participation and benefit-sharing by local communities. Although the GMP mentions benefit-sharing, it does not include livelihood diversification and the wellbeing of the affected community in its management objectives (MBREMP 2011: viii-ix). These issues are only mentioned in passing elsewhere in the text. And the only benefits explicitly mentioned are those coming from gas exploitation and eco-tourism. These are supposed to compensate for the curbing of existing economic activities (Ibid: ix). Much of the focus of the GMP is on 'education' of local communities (sometimes in fairly patronizing ways). The GMP mentions the existence of a 'tourism investment framework', but no tourism investments have been carried out so far in the MBREMP area. The MBREMP general management plan (GMP) was produced in 2005, with a revised version published in 2011. While the MBREMP mid-term evaluation report (Gawler and Muhando, 2004) submitted to IUCN recommended that enforcement cannot be done without alternative income generating activities, the livelihood component in the GMP has remained vague.

The area governed by MBREMP is characterized by three ecological zones: seafront, mangrove and riverine. It is also divided in three management zones (core, specified use, general use), plus a buffer zone around the land perimeter. The *core zone* is designated to provide the highest level of protection within the park. Within MBREMP, both marine and coastal forest habitats are represented within core zones. The *specified use zone* includes areas of the MPA that warrant primary conservation status, but which are also important to local community members for their own use. Some activities are specifically permitted in this zone, but only for designated beneficiaries, including an area set aside for gas extraction. The *general use zone* is intended to provide for the sustainable resource use by local residents. In such a way, the general user zone is supposed to compensate resource users from loss of access to zones with higher level of protection (Ministry of Natural Resources and Tourism (MNRT), 2005). Only activities that are not destructive and legally recognised are allowed in the general use zone. Additionally, users outside the park are allowed to carry out some activities, but they require permits to be issued at the village level. MBREMP residents have priority access to resources in general-use zones. The *buffer zone* lays outside but adjacent to the MPA: any new economic activity in such area needs to be approved following an environmental impact assessment.

3.3 Participatory elements

Village Liaison Committees (VLCs) in MBREMP have been promoted as community-based mechanisms that include a wide range of resource users, such as fishers, fish traders, mangrove cutters, gleaners, farmers, business, religious and traditional groups. The MBREMP General Management Plan (GMP) states that VLCs include representatives from villages that affect or are affected by the marine protected area. The inherent weakness of VLCs is that, instead of acting as the sole structures for communities to participate in the management of the MPA,

they emerged *after* major decisions had already been made by external agencies (Beaumont, 1997; EcoAfrica Environmental Consultants, 2012).

VLCs serve as primary liaison between communities and MPA management. Members of VLCs are elected by the village, with no more than 12 members selected by a village assembly for an official tenure of three years. Members are eligible for re-election for a second term. Once elected, they are supposed to be trained in basic aspects of marine conservation and in their specific roles in the MPA management. There is no specific requirement for elected members prior to participation in trainings. The training often depends on the availability of funds. The VLCs have the responsibility to oversee the use of marine resources in their villages. The performance of VLCs, however, depends largely on whether they are supported by the MPA authorities. While in the Mafia Island Marine Park (MIMP), the VLCs are responsible for collecting camping and fishing fees from fishers visiting from outside the MIMP area, in MBREMP, they are mostly active in monitoring illegal fishing activities (EcoAfrica Environmental Consultants, 2012).

In recent years, however, VLCs have remained virtually dormant. Evidence from preliminary fieldwork carried out in early 2017 suggests that they lack motivation to fulfil their duties, and that the reality behind family ties and social hierarchy in villages makes the unbiased and proper functioning of VLCs difficult. Ineffective execution of sustainable management of fishery resources by VLCs is also attributed to the limited impact they have had on fisher decisions to abide to regulations. Lack of adequate funding and resources needed for monitoring and control also hinder VLCs from controlling destructive fishing activities and other violations in their areas of jurisdiction.

3.4 Insights on MBREMP from project documents and the existing literature

At least during the period of external funding support (between 2002 and 2010), MBREMP had a functioning GIS unit, and carried out a monitoring program on coral reefs, fisheries, mangrove, whales and turtles. Additionally, a strategic plan (Hardingham 2005) and baseline surveys were available from the early 2000s, including information on biophysical conditions (8 different baseline surveys/assessment) (Julius, 2005), on socio-economic conditions and occupational structure (Harrison, 2005; Malleret, 2004), and on ways of facilitating community contribution to the GMP (Hogan and Bashangi 2005). These studies will be used in future publications of the NEPSUS project to assess change in time in relation to key sustainability indicators.

A mid-term evaluation in 2008 and the terminal evaluation of external support also provide important insights. The mid-term evaluation (Gawler and Muhando, 2004) highlighted that the MBREMP project had attained good success in establishing the knowledge base on biodiversity and that there was a good team in place to implement activities of the MPA. The report however, highlighted the danger of losing goodwill and support in the villages because of promises that had been made and went unfulfilled. As a way forward, the mid-term report recommended a swiftly move that would ensure concrete benefits to local

people from the MPA. It also pointed out the need to amend administrative procedures, including allowing the project team to take full responsibility for implementing project activities instead of other partners. The terminal evaluation, conducted in 2007 (Tortell and Ngatunga, 2007), highlighted that the MBREMP project had carried out virtually all planned activities and made substantial progress towards all the targeted outcomes. Overall, the report argued that the project had attained had been significant and satisfactory.

In addition to these project documents, several studies have examined selected aspects of MBREMP. We summarize their main findings here, in order to highlight the research gaps we intend to address in the NEPSUS project. All the publications covered here are based on fieldwork that was carried out in the first half of the 2010s.

Machumu and Yakupitiyage (2013) provide information on the status of fishery stocks and mangrove in the MBREMP area through perception data, supplemented by fish catch records at four landing sites (onsite collection, twice a week for two months, both in seafront and mangrove areas). The focus of their study is identifying the drivers of ecosystem change. Machumu and Yakupitiyage ran focus four groups in five selected villages (with women, youth, elders, and village leaders). All villages are located inside the marine park (Litembe, Tangazo, Kitunguli, Mahurunga, Mngoji, and Msimbati). They also carried out a household survey (with stratified random sampling by wealth cluster) and key informant interviews. They collected information on whether stakeholders comply with regulations, what benefits they derive from compliance, the effectiveness of management regime in reducing adverse impacts of human activity, and fish catches and incomes. Machumu and Yakupitiyage (2013: 378) find that MBREMP is 'reasonably effective' in managing drivers of ecosystem change, and that local communities have benefited from increased fish catches and income. They find that awareness and compliance with regulations has improved, but that some anthropogenic drivers continue to threaten the sustainability of the MPA.

Mangora et al. (2014) compare three villages located within MBREMP (Msimbati, Litembe, Mahurunga) and two outside (Naumbu, Msijute). Mangora et al. carried out focus groups with women, men and youth in each village, key informant interviews, and a survey covering assets, natural resource use and productive activity, income, expenditure and lifestyle, coping strategies and the role of the MPA. They argue that the MPA limits livelihood choices and activities without offering alternative benefits and safety nets - they show that villages outside the MPA are actually doing better than those inside. They also observe community resistance to MBREMP, highlight lack of community participation, and report accusations by villagers that MBREMP is seizing their user rights and tenure. They see no clear livelihood benefits arising from MBREMP, and no provision of extra social services or improvements that could be attributed to the MPA. They report that three pilot projects on alternative livelihoods had been established, but they were placed in interior villages, where the impact on restricting resource access is less severe than in coastal villages where opposition to MBREMP has been more marked. By the time of their fieldwork, these livelihood diversification projects seemed to have collapsed. Finally, they mention a planned ecotourism investment in Litembe and a general

lack of clarity among the communities living next to the entrance gate on how entry charges are collected and what they are used for.

Mwanjela and Lokina's (2015) research took place in the first half of the 2010s, and targeted five villages, all within MBREMP (three seafront villages, and two interior villages). The focus of their study is on community participation (with data gathered mainly through a survey), which they find lacking. They highlight severe power struggles between the MPA and local communities in managing resources and in terms of distribution of benefits. Mwanjela and Lokina argue that donors had much stronger influence on the creation of MBREMP than the Tanzanian government or local communities. They highlight the severity of fishers' main complaints: (1) dugout canoes cannot reach the fishing grounds further ashore, which are outside of the MBREMP area; and access to modern boats was promised but never materialized; (2) exchange of illegal fishing nets with legal nets never happened; and (3) alternative income activities never took off; some were based on activities that are not customary in the areas, such as beekeeping. Mwanjela and Lokina report conflicts over patrolling and the use of police force instead of park officers. At the community-level, they underline that Msimbati (the largest village within MBREMP) used to be a major trade centre - with important sales to octopus and sea cucumber, which are now protected by the MPA; and that women can no longer collect bivalves for own consumption. They conclude that community participation in MBREMP has been only rhetorical and claim that: village governments are more powerful than VECs; VECs are a loophole for village elites to capture benefits via meeting allowances; and communities are treated simply as recipients of MPA rules.

Similar results are reported in previous studies by Mwanjela (2011), who highlights the negative impacts of restrictions to resource access, the confiscation of fishing gear, and the lack of delivery of promised benefits (gear, motorized boats, alternative livelihood initiatives) and by Kamat (2014), who shows the top down nature of implementation of activities by MBREMP, which led to an increase in structural violence and deepened inequality. Kamat (2014) argues that lack of tangible benefits, lack of consultation with villagers, and restricted access to resources is causing suffering, especially among female-headed households. This is more pronounced in coastal villages than in the interior.

Robinson et al. (2012) take a managerial approach to addressing the limitations of MBREMP. Along with others, they argue that MPAs can only be successful if reliance on marine resources is decreased at the same time as meaningful alternatives emerge. They build a decision-modelling framework to examine the implications of different incentives, the reactions to these incentives, and sustainable management through different enforcement tools, livelihood projects and fishing gear exchange programmes. They argue that offering the same package of incentives and alternative income project to all villages is problematic: most important for fishing villages is to find alternative activities, otherwise even gear confiscation and the enforcement of no fishing zones fail. They also claim that rewarding the more cooperative villages with projects is counter-productive, as more combative villages tend to be the ones where fishing is the main livelihood activity.

A series of studies carried out by Katikiro and colleagues also focused on MBREMP. Katikiro et al., (2015a) examine the limitations of MBREMP in moving from a state-led initiative towards a more 'locally-managed marine area' (LMMA). They argue that LMMAs in Tanzania are hampered by top-down procedures and lack of community involvement in their establishment. Marine park legislation is not clear on how NGOs and private stakeholders can be involved in management (although this is now under review). Katikiro et al. (2015a) focus on perceptions related to promoting local management and participation. In their fieldwork, they covered 17 villages, including two that have recently joined MBREMP (Mtendachi and Namidondi, located in the buffer area) and carried out a total of 193 household interviews and 17 focus groups. They report insufficient participation by 'legitimate community representatives' and strong interference in implementation from MPRU, IUCN Eastern Africa Marine Programme, UNDP/GEF and the French global environmental facility (FFEM). Community participation took place mainly at village-level at public meetings, with little representation at district-level meetings. They conclude that there has been a rapid increase in management of marine resources, but that MBREMP has failed to move from centralized to community based management. In a related study, Katikiro et al., (2015b) focus on the five coastal villages within MBREMP to examine changes in fishing activities and related social and power structures. They highlight how conflict within MBREMP can also be characterized along party lines. Katikiro (2016) examines what happened to alternative livelihood projects initiated by MBREMP in the 2006-2010 period. His respondents report that projects were allocated inappropriately, they did not have clear objectives, and all floundered once donor funding for MBREMP stopped.

Finally, it is worth reflecting upon a study by Benjaminsen and Bryceson (2012). Even though their focus is on the Mafia Island Marine Park, they report several dynamics that parallel those explained above for MBREMP. Benjaminsen and Bryceson characterize MIMP as exercising conservation and centralized control, together with the provision of alternative economic activities to entice villagers away from using marine resources. Similar to MBREMP, they report some community involvement prior to formation of MIMP, and during the initial period after establishment. But later on, participation seems to have been only rhetorical: there are less frequent meetings of VLCs with the marine park administration, and implementation of conservation rules has become more authoritarian - including instances of heavy-handed confiscation of gear. Different from MBREMP, there have been substantial ecotourism investments (including some high-end), but these are run by foreign capital and with only limited benefits for locals. Like in the case of MBREMP, there is no clarity on how income from entry fees is used, and alternative economic activities have not made up for losses in access to resources. Benjaminsen and Bryceson (2012) argue that a narrative of 'overfishing' has been used for 'blue grabbing' and repressive conservation.

4. Beach Management Units

4.1 Background, brief history and main functions of BMUs

BMUs are organizations that seek to facilitate community participation and collaboration in the management of coastal resources. BMUs bring together a group of stakeholders (local government, community representatives, NGOs, researchers, boat owners, fish traders, and money lenders) in a fishing community whose task is to manage, protect and conserve fisheries (Sobo 2012). In a BMU, the community is supposed to be the steward of its own resources. The Tanzania guidelines for BMUs lists the following tasks: enforce the fishing act, prepare by-laws, ensure sanitation and hygiene, collect fish data and information, educate fishers, prepare and implement livelihood projects, ensure the security of people and property.

The establishment of BMUs in Tanzania was first implemented on Lake Victoria starting in 1997 and following the decline in fish catches and stocks (Jentoft and Chuenpagdee, 2015; LVFO, 2007). The government realized the need to involve local communities in the management of fisheries with a view to curb the use of destructive fishing gears, which had led to the depletion of fish stocks. Starting in 2006, the implementation of BMUs was extended to the marine coastline (Cinner et al., 2012). Coastal BMUs started as pilot projects in Kilwa, Rufiji and Mafia Districts under Ministry of Livestock and Fishery Development (currently ministry of Agriculture, Livestock and Fisheries) and the MACEP program, in collaboration with WWF Tanzania. The formation of BMUs was also emphasized in the Fisheries Act number 22 of 2003. According to fisheries regulations, Tanzania is supposed to have 739 Beach Management Units (BMUs) and 13 Collaborative Fisheries Management Areas.

The fisheries regulations require every person in a village who engages in fishing activities such as fishers, fish processors, gear repairers and suppliers, and boat builders to register as members of the BMU (URT, 2003). However, as noted from fieldwork visits thus far, there are members of BMUs who are actually not engaged in fishing activities. BMU members form their own management committees, which usually are composed of thirty people. The BMU committee includes five BMU leaders (chairperson, secretary, store-keeper, opinion leader and one female representative). The executive committee is made up of fifteen members - five are the BMU leaders and the others are ordinary members. BMUs have three other committees: the statistics and information committee, consisting of five members; the patrol committee with five members; and finance committee with five members. Ideally, every BMU is supposed to hold a general assembly quarterly, while BMU committees are supposed to meet once a month.

According to section 104 of the Fisheries regulations (URT, 2009), BMUs have the following functions:

- i. develop a BMU fisheries management and landing station development plan;
- ii. develop annual and quarterly work plans and budgets to implement the management and development plans;

- iii. collaborate in the collection of fisheries catch, effort and value information;
- iv. engage in monitoring, control and surveillance in such a way to reduce the incidence of illegal gears, fishing and fish trading practices within the BMU area;
- v. ensure hygienic, health and safe conditions at the landing stations within the BMU area, in accordance with standards set by the Government;
- vi. resolve conflicts;
- vii. participate in selection processes for the issue of fishing vessels license and fishing permits within the BMU jurisdictional area to ensure equitable access to resources by BMU members;
- viii. ensure timely payment of fisheries licenses and permits fees by members; and
- ix. arbitrate to settle fishery disputes amongst BMU members, between BMUs and between the BMU and other institutions.

BMUs are established at the village level and are entrusted with the management of local fishing activities - including issuing of licences, collecting landing fees and granting access to local marine resources. They are tasked with the management of marine fisheries and operate outside of marine protected areas, in parallel to local government institutions. BMUs are a form of co-management partnership because communities and all kinds of stakeholders are supposed to be the stewards of the resources they exploit.

The BMU system emphasizes community responsibility and accountability for managing resources (Ogwang et al., 2009). Like many other community-based systems for managing natural resources, BMUs are supposed to empower local fishing communities to develop and enforce locally appropriate rules within village boundaries to improve the management of a fishery that has historically suffered from weak management and enforcement (Nunan et al. 2015).

Different from the Village Liaison Committees within MPAs, the primary responsibility of BMU is to assist fishery officers in law enforcement, landing station development and sanitation, collection of fisheries data, conflict resolution and welfare matters (Ogwang et al., 2009). However, BMUs are facing challenges in collecting revenue, and are marred by conflicting interests between and among members and law enforcement agencies. While BMUs can raise revenue, this task is often conflicting with the mandate of the fisheries division. This in turn creates conditions for competition and conflict (Nunan et al., 2015). During our preliminary fieldwork in coastal areas, we observed that some BMUs have been affected by elites occupying more powerful positions within the BMU committees and creating conflict within them. Like the VLCs, BMUs are also reported to be affected in terms of gender composition, with women often lacking decision-making powers.

The process of establishing BMUs is ongoing in coastal areas of Tanzania, and is taking place mostly in areas where there is active donor support. Considerable progress in forming BMUs has been seen in areas outside marine protected areas, for example in areas around Rufiji-

Mafia-Kilwa (RUMAKI) seascape.¹¹ One of the barriers to BMUs being established in other areas is the condition of being registered with the national fisheries department (Nunan et al., 2015), which leads some communities to perceive them as an arm of government, thereby hampering local active involvement. The emergence of BMUs is also creating tension and conflicts between community-based structures such as the Village Environment Management Committees (VEMCs), which have substantial overlap of functions and activities.

4.2 Collaborative Fisheries Management Areas (CFMAs)

Collaborative Management Areas (CMAs) were first established by the Tanga Coastal Zone Conservation and Development Programme (TCZCDP) in 1996. The aim of TCZCDP was to address the increasingly unsustainable use of coastal resources (Wells et al., 2010). The TCZCDP established six Collaborative Management Areas in Tanga to address the needs of resource users. CMAs are based on areas of resource use rather than administrative political boundaries, such as villages in relation to BMUs. Under CMAs, management of resources is by users accessing fishing grounds shared by a group of villages (Wells et al, 2007). However, the CFMAs in Tanga did not prosper, and when the fisheries Act was revised in 2003 the concept of BMU was introduced and CMAs shelved (Samoilys and Kayange, 2008). In recent years, however, WWF has introduced a different form of CMA in Mtwara, under the term Collaborative Fisheries Management Areas (CFMAs), which are managed by a group of contiguous BMUs. The condition for establishing CFMAs is that a village should have an established BMU, and that the members of BMU committee form a Central Coordinating Committee (CCC) for a CFMA. CFMA activities include: carrying out of fish surveys, marking of fishing grounds, mapping the water area that belongs to the CFMA, help managing the fish camps, and facilitate patrols. There are three operating CFMAs in Mtwara Rural District, all set up with WWF support: MNASI (Msanga mkuu, Namela, and Sinde Villages), MKINAI (Mgao, Kisiwa, Namgogoli and Imekuwa villages) and MANA (Majengo, Naumbu villages). MNASI borders with MBREMP. As a matter of fact, part of the water area demarcated for MNASI is also part of the MPA, something that the two organizations will have to resolve, as the rules of fishery operation are quite different in the two institutional setups.

CFMAs are established at ward level and ward executive officers are their guardian. They have been established so that BMUs can support each other in management issues through sharing experiences and skills when they carry out their regular meetings. Each BMU is represented in a CFMA by five members. These representatives include the village chairperson, the BMU chairperson, the BMU secretary, the Patrol chairperson and a general BMU member. They hold meetings every three months.

¹¹ RUMAKI includes non-protected areas covering these three coastal districts. It is a globally outstanding priority site in the Eastern African Marine Ecoregion.
http://awsassets.wwf.no/downloads/wwf_tan_rumaki_proposal_011005_main_text.pdf [Accessed on 16 September 2017]

4.3 Insights on coastal BMUs from project documents and the existing literature

There is little evidence that can be used so far to assess the success of coastal BMU in Tanzania. On the one hand, Kuboja (2013) argues that BMUs have been relatively successful as community-based marine management structures, and Onyango (2014) claims that they improved the registration of fishers and facilitated collection of revenues through licensing. On the other hand, Okoth (2015) reports poor performance of BMU in protecting mangrove in Bagamoyo district, due to weak by-laws, the importance of social ties in limiting the enforcement of rules, community dependence over the resource, and large investments by business with permission from higher government authority.

As for BMUs in inland waters, a study by Luomba (2013) on Lake Victoria indicates that BMUs are constrained by insufficient or lack of working tools/equipment and inadequate capacities to enforce measures. For example one of the roles of BMU is to reduce resource dependence by introducing other income generating activities, but this has not been effectively achieved due to inadequate skills and expertise on facilitating these alternative livelihood projects (Luomba, 2013). Other activities, however, have been more successful, with fishing operators (especially women) establishing revolving funds.

In general, however, the empirical evidence on the performance of BMUs in Tanzania, and especially in coastal areas, is scant. The only study that thoroughly reviews the experience of BMUs in coastal marine fisheries in Tanzania is Kanyange et al. (2014), which examined 37 out of 204 officially registered BMUs in coastal Tanzania. The stated objectives of this study are: (1) to assess the organizational performance of BMUs; (2) verify critical success conditions; (3) provide a SWOT analysis; and (4) assess performance of lead government institutions in the overall governance of coastal fisheries.

Kanyange et al. presents results (from interviews and a survey) in highly aggregate terms – at the national or regional levels. Their study includes six BMUs in Mtwara region: Senta, Namtibwili, Majengo, Mtepwezi and Madaba (Mtwara-Mikindani) and Mgao (Mtwara rural), but does not disaggregate results by individual BMU. Yet, several interesting aspects emerge in relation the performance of BMUs in Mtwara on aggregate. On processes, they score over the average in relation to the proportion of registered executive committees, on quality of communication and transparency, on democratic practices, and on ease of conflict resolution. They score under the average on quality of BMU institutional structure, number of participants in committees, and on level of conflict (higher). On performance, BMUs in Mtwara report a perception of decline in fisheries since BMU formation – measured by quantity of fish caught per unit, size of fish, total catches, stock and number of fishers.

It should also be noted that in the past two-three years a perplexing trend has been observed in Uganda, where BMUs were first established in the region, following a presidential decree¹² that dissolves BMUs on all the lakes in the country. While it is too early to ascertain the impact

¹² <http://chimpreports.com/museveni-dissolves-beach-management-units/> [Accessed on 29 November 2017]

of this ban, speculation is that Uganda is turning back to the past era, where fisheries management relied heavily on a centralized command-and-control and paramilitary approach. This will have important effects on group dynamics and community participation for the 700 BMUs that had been established on Ugandan landing sites.

4.4 Brief profile of BMUs in Mtwara rural district

In Mtwara region, BMU formation was supported under the Marine and Coastal Environmental Management Plan (MACEMP) from 2008 to 2011. This project was funded by the World Bank and WWF. The MACEMP project had four main components: training, support to MPRU, alternative livelihoods, and conservation. During the formation of BMUs, village meetings were held to discuss their needs and objectives. The introduction of BMUs was not welcome by all villagers, with most fishers being resistant to their establishment. Later on, following MACEMP's promises of support to assist fishers with fishing gear and boats, as well as the support of alternative income generating activities, villagers eventually accepted their establishment. MACEMP supported the establishment of alternative livelihoods projects, such as goat breeding, poultry rearing, and fish farms. Unfortunately, a considerable number of BMUs were not effective in implementing the management guidelines and hence have become inactive. In 2014, WWF started a process of re-vamping BMUs, especially those established by MACEMP, and is carrying out training sessions with both villagers and BMU leaders to build their capacities in managing BMUs. WWF also facilitated the formation of new BMUs in 2016.

Other NGOs such as KIMWAM, AFRICARE and Aghakhan Foundation also implement activities in BMU areas, aiming to reduce overdependence on fishery resources. They provide trainings on alternative income generating activities such as chicken and goats keeping, also raise awareness on sustainable use of fishery resources. These NGOs also assisted in the establishment of some Village Community Banks (VICOBAs).

In our preliminary fieldwork, we observed that one of the main challenges facing BMUs in their operations is low capability in terms of equipment, such as patrol boats, materials and security personnel to enable them to conduct routine patrols. Support from the district council has not been forthcoming as initially envisaged. Moreover, there is mistrust between villagers/fishers and district officials and this hugely affects the effectiveness of BMU patrols. Villagers are not comfortable to call district fishery officers in case of observed breaches of fishing regulations.

The relationship between leaders and illegal fishers also is a challenge in implementing BMU objectives. This is because when illegal fishers are found or caught by BMU leaders, they are supposed to be taken to the village government office, but because of social ties they are rarely punished.

5. Knowledge gaps and next steps

5.1 Knowledge gaps

In this NEPSUS working paper, we have shown that MPAs and BMUs are important instruments of co-management of coastal resources in Tanzania. Although they were designed with community participation in mind, they face serious challenges. One of the most important is that they limit or regulate access to resources without having been able to facilitate meaningful livelihood alternatives, thus undermining the initial trust-building efforts that had been carried out through donor and NGO support. As in many other instances of natural resource partnerships, local community participation is embedded in local power structures, with little meaningful participation by local communities and instances of elite capture. We have also observed how little is known about how BMUs have functioned in practice in coastal Tanzania, while more baseline information is available for MPAs, including MBREMP. Finally, there has been no attempt so far to systematically assess the functioning and impacts of MPAs and BMUs and to compare these two substantially different partnership structures.

In future activities of the NEPSUS project, as concerns coastal resources, we pick up these challenges. As explained in our overall conceptual paper (Ponte et al., 2017), we focus in particular on different configurations of partnership *complexity* and how it affects the ability to deliver sustainability outcomes. We have shown how the literature on natural resource management is mostly silent on this issue. Some knowledge on complexity is available in terms of the problems to be tackled, showing the importance of the interconnectedness of natural and social components of systems that partnerships are targeting. At the same time, we have reported literature arguing that the complex nature of conservation problems enables powerful actors to pit policies against each other in order to elbow out groups that fight against the appropriation of natural resources for the benefit of political and business elites. Therefore, it is relevant to examine how different representations of complexity influence how partnerships work and to what end.

Another form of complexity that has been highlighted in the literature relates to the structure of partnerships - in terms of form of interaction between actors and type of organizational membership. Some actors have daily interactions, while others are involved only in specific meetings. Actors are involved differently over time and at different levels of the partnership process. Some members are involved as individuals, while others represent organizations. Actors come and go, and policies and strategies change over time (see review in Ponte et al. 2017).

What is missing in these literatures is an understanding of complexity in its constituent elements - in terms of numbers of institutions and partners involved, their diverse background (for profit, social enterprise, not for profit, government, network), the multiple scales they operate at, and their different core interests. Many contributions examine participation, transparency, accountability, power relations, resource flows - but we still lack a better understanding of the connections between these factors and how different kinds of complexity

may affect actual sustainability outcomes. Network complexity is also seldom examined locates partnerships in broader structures of ties that not only channel resources but also shape power asymmetries and outcomes.

5.2 Research questions

NEPSUS research activities will address these gaps by unpacking complexity in and around sustainability partnerships on coastal resources and by linking its constitutive elements to sustainability outcomes. Research will also unpack participation by focusing on critical examination of factors that influence the legitimacy of different forms of partnerships, and examine whether the rhetoric supporting the presence of many actors in sustainability partnerships pans out in terms of results, given that actors may be of very different nature and pursue different objectives.

The relevant research questions guiding this effort are the following (see Ponte et al., 2017):

RQs1: Complexity

- What factors account for different degrees of complexity in partnerships for natural resource governance?
- In what local, national and international contexts have these partnerships arisen?
- What kinds of social networks are woven around them?

RQs2: Processes

- How do different kinds of partnerships develop, gain and manage legitimacy among different audiences and stakeholders?
- What kinds of legitimacy (input, process, output) do they seek and how? And which forms of legitimacy, if any, provide most power to local communities?
- How does the history of relations between state, local communities, private and international actors influence participatory processes and interactions and power relations among actors?
- What processes, if any, are successful in preventing powerful actors (public or private) from capturing the partnership process to suit their own interests?
- What learning processes (if any) are taking place that may allow late-comers to leverage positive lessons and/or avoid the pitfalls of previous experiences?

RQs3: Sustainability outcomes

- What are the environmental, socio-economic/livelihood outcomes in partnerships with different configurations of complexity, and in different resource systems? How are these effects distributed among different groups of actors?
- What are the synergies and/or trade-offs between socio-economic and environmental outcomes? What features minimize trade-offs and maximize synergies between them?

- What instances of conflict and cooperation have emerged as a result of these partnerships? In which cases have relations of domination between state administrations and local communities been transformed?

5.3 Research design and site selection

The research design to assess sustainability partnerships in coastal resources is built upon two layers of comparison: (1) between ‘simpler partnerships’ (SP), ‘more complex partnerships’ (CP), and ‘control’ (C) sites – selected in contiguous areas that are as agro-ecologically and socio-economically similar as possible; and (2) between ‘early-mover’ (EM) and ‘latecomer’ (**L**) sites (see Table 2). The logic of comparing EM and L sites is to assess whether the latter were able address some of the challenges (but also learn from successes) previously experienced in EM sites. Finally, secondary databases and results from previous and current research projects and community baseline surveys will be used, when available, to build ‘before-after’ comparisons. We selected eight sites in Mtwara rural district (see Table 3): MBREMP is a case of ‘simpler partnership’ because it is more top-down in nature (even though it has elements of community participation) and has a relatively simpler configuration of actors. We selected BMUs as examples of more complex partnerships and inactive BMUs as control sites.

Table 2: Complexity scoring for NEPSUS case studies

Institutional setup	Forestry			Wildlife			Coastal Resources		
	Forest reserves	CBFM + FSC certification	None	Game reserves	WMAs	None	Marine parks	BMUs + CFMAs	None
<i>Complexity factors</i>									
Number of actors	medium	high		medium	high		medium	high	
Number of actor categories	low	high		low	high		medium	high	
Complexity of the decision making system	low	high		low	high		medium	high	
Degree of sharing among different actor categories in access rights to the resource	low	high		low	high		medium	medium	
Complexity scoring	simpler	more complex	control	simpler	more complex	control	simpler	more complex	control

Source: Ponte et al. (2017)

We selected four villages within MBREMP to be able to cover all three main agro-ecological areas (seafront, mangrove and riverine), and to include experiences from villages that had joined the marine park early in its establishment (in 2002) and in a second wave of expansion (in 2005-07). For coastal resources, the comparison across SP, CP and control sites is carried out only for the coastal villages, given that the other two MBREMP villages have significantly different livelihood portfolios and resource use patterns (see Table 3).

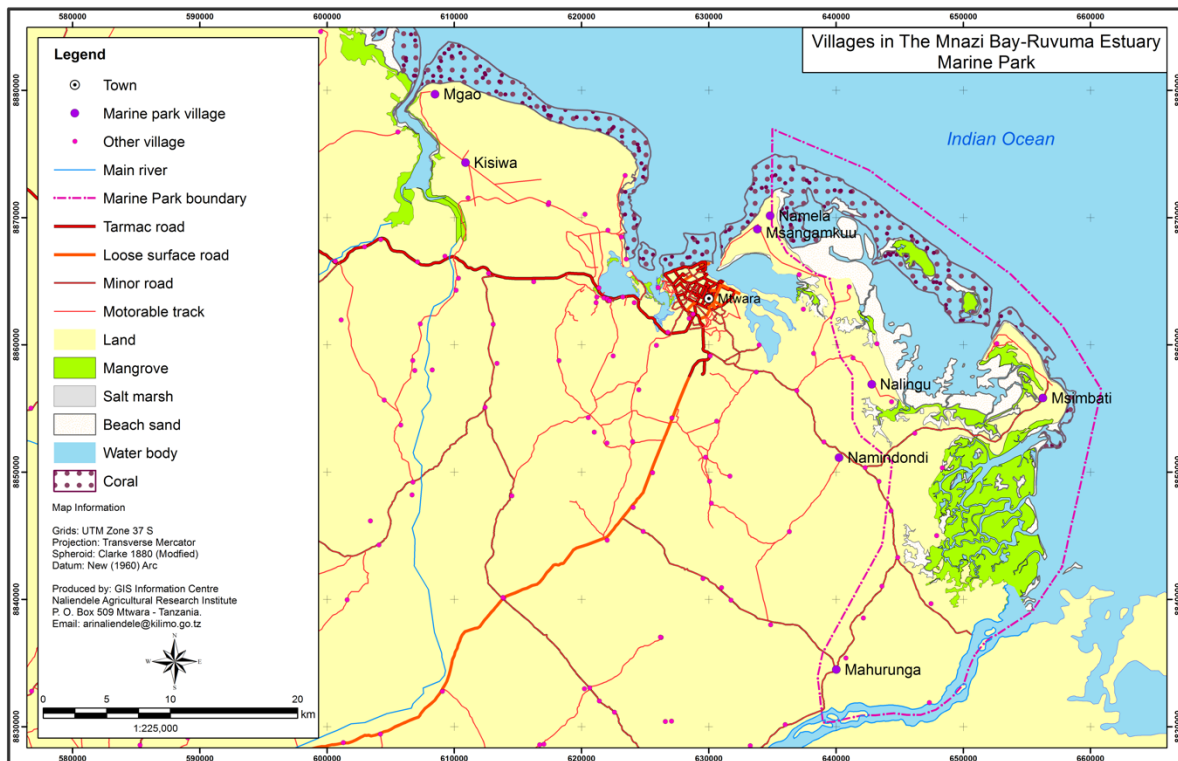
The two selected BMUs are located near the MPA and that have similar agro-ecological conditions to the coastal villages within MBREMP: Msanga Mkuu and Namela. Together with a third BMU (Sinde, not selected), they constitute the MNASI Collaborative Fishery Management Area (CFMA). These villages established their BMUs more or less at the same time, thus we do not differentiate between early-movers and latecomers (we do so in relation to villages within MBREMP). The two sites selected as control (Kisiwa and Mgao) are coastal

villages which do not have an active BMU, and are located in areas of similar agro-ecological conditions to the two BMU sites and the two coastal villages within MBREMP.

Table 3: Site selection

Simpler partnership (SP)	More complex partnership (CP)	Control sites
4 sites within MBREMP	2 active BMUs and their CFMA	2 inactive BMU
Msimbati (coastal/early-mover) Mkubiru (coastal/latecomer) Namidondi (mangrove) Muhuranga (riverine)	Namela, Msanga Mkuu (MNASI CFMA)	Kisiwa, Mgao
4	2	2

Figure 1: Location of selected sites in Mtwara rural district



Source: modified from Harding (2005)

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