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# Blue Entrepreneurship and Sea Cucumbers as Marine Gold

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**Abstract**

As part of the Blue Economy development paradigm, sea cucumber farming is now encouraged by the government and international partners, to improve livelihoods while protecting the ocean. Sea cucumbers have featured in lucrative trade for decades, being collected for export to China. But demand has been so great that this ocean creature has become endangered globally. Aquaculture is now hyped as a sustainable solution to the problems of overexploitation, enacted through bordered enclosures in the ocean, and an optimistic rhetoric of sea cucumbers as marine gold. This article argues that farmed sea cucumbers are embedded in blue entrepreneurship, a moral economy of neoliberal commodification. But while enacting blue capitalism, sea cucumber aquaculture may actually counteract social and environmental sustainability. Ocean grabbing and elite capture exacerbate socioeconomic vulnerability in coastal communities; while sea cucumbers risk dying in captivity, unable to protect themselves from extreme weather and other climate changes. This ethnographic study builds on multi-sited fieldwork in Mainland Tanzania and Zanzibar, using multimodal and sensory research methods.

**Keywords:** *anthropology, blue growth, elite capture, multispecies, ocean grabbing*

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## 1. Introduction

On our very first day of fieldwork in Kaole, we met with Rashid, one of the leaders of the association of sea cucumber farming.[1] We had walked to the beach to see what was going on, and to chat with fishers. Rashid had passed us, and he was quite upset, so we talked.

> *In the beginning of the conversation, we learned that there had been an incident of theft on their farm. The theft was done by a few members of the association. [Rashid] told us it was about three people involved; and one of them was the guy he was with when we walked to the beach a few minutes earlier. [Rashid] spoke in a rather agitated voice.*
>
> *He said the guys had stolen fourteen cucumbers and sold them to a trader based in Kaole, for TZS90,000 [USD 36], which is below the market price.[2] He reported the matter to the police and the three guys were arrested for sabotaging the economic activity, which is considered a serious crime by the law in Tanzania. However, they had to ask the police to close the case, as the matter had the interest of many in the community, and within the association. The suspects have family ties to many people in Kaole and several members of the association. They all agreed to settle the matter out of the police and court.*

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[1] To anonymise interlocutors their names have been changed in this article.
[2] The exchange rate used in this article is 1USD= TZS2,500.

*[Rashid] told us the association has 71 members, both males and females. According to him, they estimated to have sea cucumbers worth TZS70,000,000 [USD 28,000] by the time they will harvest later this year. Since he had to prepare for a meeting, we had to say goodbye and set an appointment for an interview.*

*The next day we managed to have an interview with Abdul, a member of the sea cucumber association. Now in his early 40s, he had worked with fishing all his life, having learned the craft from his father. Initially he was involved in fishing, using different techniques and diving. But for the last decade he had mainly worked as a trader, buying and selling fish. Before the government banned sea cucumber collection, he had been involved in the sea cucumber business, both as a diver and a trader. But nowadays, he was involved only in sea cucumber farming.*

*Abdul was also very optimistic about the potential earnings from sea cucumber farming. He told us the market price ranged from TZS150,000/kilogram for raw sea cucumber (*kuuza wabichi*), to TZS400,000/kilogram for dry sea cucumber (*jongoo kavu*). Selling them raw generated quick money, but lesser amounts, since traders would have to do the drying. He said most customers were Chinese; buying for export to China. With such prices, farming sea cucumbers would be a very lucrative business. The Kaole association had planted some 70,000 fingerlings, which were collected in the area. He estimated they could harvest every 6 months, and each members could earn up to TZS5m (USD2,000), each time.*

***Community, conflict and cash**—sea cucumber farming was clearly worth attention. As I typed in my field notes: "After the interview I felt like we had struck gold in our fieldwork: JONGOO. The [sea cucumber] project tries to balance environmental and social sustainability, which is at the heart of our [research] project." It took a few days before I realized that I had to be more specific with my language: it was* jongoo bahari, *not just* jongoo *(millipede). Over time, I also realized that my sense of striking gold was not unlike how sea cucumber farmers saw them—as wealth lying in the ocean. Or **marine gold**, as a government-employed tutor of aquaculture called it (Kaiza, 2024). No wonder there was a problem with theft, along with other social tensions.*

***(Fieldnotes by the Author, in a fieldwork in Kaole, 22 June 2022)***

This article discusses sea cucumber farming as a form of blue entrepreneurship, with problematic effects of ocean grabbing and elite capture in coastal communities, alongside ecological deterioration. Contrary to the rhetoric of blue growth, sea cucumber farming places coastal communities at the lowest rungs in global value chains. While enacting blue capitalism, these communities shoulder most of the risks, but gain very little in return. Meanwhile, as much as aquaculture is touted as a sustainable alternative to overexploitation, the ecological impact of sea cucumber farming is worrisome; even resulting in further depletion of endangered species. This article draws on critical post-development theory, as well as multispecies and environmental anthropology in its analysis of empirical data and discussion of earlier studies.

## 2. Multi-sited and Multimodal Fieldwork

The ethnography for this article is drawn from multi-sited fieldwork in Mainland Tanzania (Pwani, Mtwara and Lindi regions), and Zanzibar (Pemba and Unguja islands). The fieldwork was carried out in several periods: from June 2022 to July 2024. Kaole has been a recurring field site from the outset, where I have usually been assisted by Hussein Masimbi (Uimonen & Masimbi, 2021). As indicated by the opening ethnographic vignette, the sea cucumber farm in Kaole caught our attention early on, and redirected our research focus from artisanal fishing to aquaculture. Over time, I have visited other sea cucumber farms in Tanzania, assisted by Hussein Masimbi and/or Mary Khatib from Zanzibar, thus gaining a comparative appreciation of the opportunities and challenges that sea cucumber farming entails. We have also worked with different filmmakers to document these practices.[3]

**Photos 1 & 2: Field Working with Sea Cucumbers in the Ocean**
**Source:** Author

Our research has relied on multimodal and sensory research methods, including underwater filming, to gain a more oceanic perspective. We have visited the sea cucumber farm in Kaole on many occasions, walking on the seafloor at low tide, following the watery path alongside the mangroves to the muddy area near the pens. Instead of *rubber boots methods* (Andersen et al., 2023), we have relied on *barefoot methods*: to touch and feel the seafloor and the ocean, sometimes wearing dive shoes or plastic sandals to protect our feet. When visiting other farms on the Mainland or Zanzibar, we have walked or been taken by boat. We have taken lots of photographs as visual field notes, also underwater with a GoPro camera. We have also enlisted the help of sea cucumber farmers to film underwater; free-diving with the GoPro

[3] Films are available on our YouTube channel: https://www.youtube.com/@swahilioceanworlds7658

camera. Sensory immersion has enhanced our embodied knowledge of oceanic environments and lifeforms, providing epistemic insights on aquaculture that we would not have gained through more traditional research methods (Pink, 2015).

We have combined these sensory and multimodal methods with interviews; conducted in the farms or nearby locations. The interviews were in Swahili, and have been translated into English by research assistants, and also recorded with permission from the interlocutors. The assistants have transcribed or summarized the interviews, and I have typed notes from the interviews and reflections in more extensive field notes.

## 3. Some Background on Transnational Trade in Sea Cucumbers

Sea cucumbers have been a lucrative export trade in Tanzania for many years, being targeted at the Chinese market. Sea cucumber fishery in the Western Indian Ocean has been dated back to the 18th century, in trade facilitated by Chinese merchants (Mmbaga & Mgaya, 2004; Mmbaga & Mgaya, 2007; Baker-Médard & Kroger, 2024). Traditionally, sea cucumber fishery in Tanzania was done by older men, women and children while gleaning in shallow waters, but with rising demand and greater income opportunities, younger men have become involved (Mmbaga, 2015: 663). Collection methods have been small-scale and low-tech, typically through hand-picking or free diving from boats, or by swimming out from the seashore; and in some cases also through scuba diving. Similar to Madagascar (Muttenzer, 2015), the collection of sea cucumbers has provided considerable cash earnings to fishers and traders. The sea cucumber is not eaten locally, but produced as *bêche-de-mer* for export, a process that includes cleaning, boiling and drying; and also involves middlemen, traders and exporters. The main export market is China, where sea cucumber is called *sea ginseng* (*hǎishēn* 海参), and has been valued for its medicinal and aphrodisiac qualities for thousands of years (Yang et al., 2015).

In 2006, Mainland Tanzania banned the fishing of sea cucumbers, following reports on depleted stocks due to overexploitation (Sobo, 2013). A survey of 17 countries in East Africa and the Indian Ocean showed that 10 countries had depleted or overexploited stocks (Eriksson et al., 2015). The problem of overfishing was a global dilemma, leading to the categorization of some species as endangered (Hamel et al., 2022). With its growing middle class, it was the rising demand from China since the 1990s that wreaked havoc on sea cucumber stocks around the world (Eriksson & Clarke, 2015).

### *3.1 Farming Holothuria Scabra*

Sea cucumber farming in Tanzania started in Zanzibar, which has been a major hub for exports to China. It was spearheaded by the Food and Agricultural Organization (FAO), along with other donor agencies, and together with the government. A regional workshop in Zanzibar in 2012 was a milestone in this development (FAO, 2013); and so was the launch of a multi-species mariculture hatchery in Zanzibar in 2018, supported by FAO and Korean aid.

In Tanzania, sea cucumber farming is promoted by the government as part of its Blue Economy (BE) paradigm. In the Zanzibar Blue Economy policy, fisheries and aquaculture is heralded as a priority area, and while most attention is paid to seaweed, sea cucumber is mentioned in conjunction with farming of various mariculture species (RGoZ, 2020: 9). Tanzania Mainland's BE policy also mentions sea cucumbers as a lucrative source of financial profit from aquaculture (GoT, 2024).

Focusing on the broader social-ecological context of sea cucumber farming, scholars have documented a range of risks and uncertainties—from genetic risk, pathogens and diseases, to community involvement, theft and big promises—and urged for a precautionary approach (Eriksson et al., 2012: 109). Even though many challenges remain unresolved, sea cucumber farming continues to be promoted in Tanzania. For example, a recent study noted that although aquaculture is known to negatively impact the ocean environment if not well designed and implemented, the potential for production is still considered very high (Fabiani et al., 2023: 133–134). This optimistic logic is also evident in the government's promotion of sea cucumber aquaculture, with big promises of marine gold.

Aquaculture in the BE can be appreciated as a continuation of modernist (mal)development ideology, with its disastrous impact on people and our planet, as stressed by post-development critiques (Kothari et al. 2019). Concealed in a rhetoric of sustainable development, we can appreciate how major global players like FAO downplay the negative impacts and uncertainties of blue growth, thus assuring the continued expansion of global capitalism (Barbesgaard, 2018). Similar to how Agenda 2030 reiterates economic growth as well as science and technology as the one and only path for global development (Kothari et al. 2019), in sea cucumber farming, the very rationale for trade and commerce through aquaculture is beyond questioning, despite (un)known risks and negative impacts.

**4. Sea Cucumber Enclosures in Artisanal Aquaculture**

With its robust watch tower in the ocean, equipped with CCTV cameras, the sea cucumber farm in Muwanda, Zanzibar North, is impressive. It is only reachable by boat, a short ride from the coastline, yet far enough to keep most people away. Unlike Kaole, the farm is not run by a community association, but by a private company. The farm was set up in 2022, and covers a large area of 300 × 200 meters. In return for the ocean space, the company has agreed to pay some part of its profits to the municipality to support the needs of the local community, such as water and education. The company's investment has been substantial, amounting to over USD20,000. The main investor—who is based in Dar es Salaam for other business purposes—originates from Zanzibar North. He sometimes monitors the farm from a distance, watching CCTV footage online, and communicating by mobile phone. But for everyday management, he relies on his colleagues in Muwanda, and two onsite workers who live in the oceanic watchtower while attending to the farm.

By contrast, most farms in Pemba are run by cooperatives, with a simpler technical infrastructure. In July 2023 we visited the Women Empowerment Cooperative Society (WECOSO) farm in Makombeni, in the southern Mkoani district. On the way to the farm, we passed fields of rice and vegetables in the flatlands near the ocean. The farm was within a walking distance from the shore, guarded from a *banda* (simple wooden house) on the beach.

> *The farm was started 3 years ago [2020], to restore sea cucumbers in the area, for environmental conservation. They had noticed that they were getting smaller and fewer, so they wanted to start a farm to get bigger ones. They organized themselves into a cooperative, with 12 members (8 women and 4 men). The plan was to restore sea cucumbers for at least 2 years without harvesting. They had received some on-site training from the Department of Fisheries, and also YouTube.*
>
> *They used to make* doria *(patrol), with 2 men sleeping in the* banda*. At the time, they had so many* jongoo*. But it (patrol) was no longer done, since they didn't have so many* jongoo *anymore. They had sold off some to pay off their loan for the* banda*. They could not recall how much they had sold, but they had reduced the debt from TZ2.5m to TZS700,000.*
>
> ***(Fieldnotes by the Author, fieldwork in Pemba on 20 July 2023)***

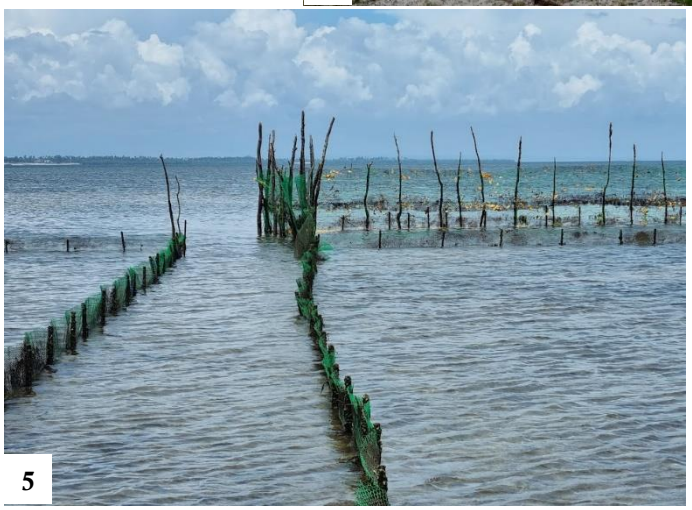
In comparison, the farm in Kaole is run by a local association with some 70 members, as noted above. It was initiated by a Beach Management Unit (BMU), a local government-appointed community-based authority, which is tasked with protecting the ocean environment.

### *4.1 Organizational Diversity and Gendered Labour*

The farms in Muwanda, Makombeni and Kaole exemplify the diversity of types in artisanal aquaculture: from community-based associations and cooperatives, to privately owned companies. Larger farms with more sophisticated infrastructure are usually owned by companies. The lower the investment, the simpler the infrastructure. Regardless of size, enclosures consist of ocean pens fenced off with green plastic mesh; fastened on iron or wooden poles. The farms are patrolled from the shore, or in the ocean; sometimes by boats or from watch towers. Maintenance is hands-on, mostly focused on the enclosure itself, with recurring tasks like cleaning and repairing the fences, as well as security patrols.

A gendered division of labour is discernible. In community farms that are reachable from the shore, the labour is often done by both men and women. But in the privately owned Muwanda farm that requires boats and swimming, management is done by men. The gendered division of labour is influenced by various factors, such as swimming skills (most women cannot swim), physical effort and water depths (women pick fingerlings in shallow waters, men can dive into deeper water, while both can clean fences at low tide), and notions of security (only men patrol at night). Constituting a culturally shaped gendered work space, as discussed by Mwaipopo & Ndaluka (2023), the ocean is considered dangerous for women to immerse in (to swim or dive), to traverse (by boat), or to visit at night (for patrol). But women are involved in all other kinds of aquaculture activities: from daytime patrols and cleaning of fences, to post-harvest processing and sales.






**Photos 3–5: Sea Cucumber Farms in Muwanda, Makombeni and Kaole**
**Source:** Author

The source of capital ranges from business investment to collectively acquired loans. While the Muwanda farm stands out with over USD20,000 invested by its owners, most farms start out with a couple of thousand dollars. The capital is raised by the farmers themselves; through a small bank loan, or with the help of local sponsors. To access loans, the farmers have to start an organization, often a cooperative. The initial capital is used for building materials, as well as for acquiring fingerlings. In most cases fingerlings are collected in nearby waters. Apart from the capital for infrastructure, farmers use their own labour. Their time and effort are usually not calculated in monetary terms, yet they form a substantial part of their investment.

## 5. Blue Entrepreneurship and Ocean Grabbing

Sea cucumber farms operate in an entrepreneurial manner, aiming for monetary profit. It is the notion of earning unrivalled amounts of cash that motivates people: imaginaries of future wealth. This is exemplified by Abdul's statement above:

envisaging members in Kaole earning thousands of dollars each year; or by the substantial investments in the Muwanda farm, in expectation of future earnings. Even the WECOSO farm in Pemba, which was set up for environmental conservation, has become less active due to smaller earnings than expected. In official rhetoric, farming is encouraged to protect sea cucumbers from overexploitation. But similar to how earlier conservation efforts in Tanzania have resulted in green or blue grabbing (Benjaminsen & Bryceson, 2012), the discourse of protection conceals power dynamics that secure ocean spaces and marine resources for exploitation by more powerful, external actors; while dispossessing members of local communities. Over the last few years the government has used public funds and encouraged investors to take control over large tracts of land, thus continuing colonial forms of conservation (Mantz, 2025); along with donor-supported large scale agribusiness or carbon credit schemes (Grain & Via Campesina, 2024).

I would argue that by moulding people into *blue entrepreneurs,* artisanal aquaculture enacts the BE paradigm. Aquaculture constitutes a form of blue entrepreneurship that usurps entrepreneurial farmers as *vectors,* since they enact *qualitative* changes in relations of production that are integral to *systemic agency* (Reichman, 2013). Sea cucumber *farming* brings about a qualitative change in relations of production through the institutionalization of blue entrepreneurship. In comparison, sea cucumber *fishery* is loosely structured, with a work flow that involves of collectors (gleaners, fishermen, divers), processors, middlemen, traders, and exporters. But in sea cucumber aquaculture, collectors and processors are organized into more formal social constellations – as associations, cooperatives or companies. It is through such organizations that communities or groups can acquire the required licenses, and access financial resources.

This organizational transformation materializes in the spatial rearrangement of the ocean, whereby blue entrepreneurs enact the *ocean grabbing* of the BE. One of the most distinguishing characteristics of sea cucumber aquaculture is how parts of the ocean are enclosed, limiting access to what has typically been common fishing areas. These commercial enclosures exemplify the ocean grabbing of the blue growth paradigm; an antipolitical form of power-grab that affects small scale fishers in particular (Barbesgaard, 2018). As noted in sea cucumber aquaculture in nearby Madagascar, such *blue grabbing* constitutes a form of *acquisition by dispossession*: from the commodification of sea beds and expulsion of artisanal fishers, to neo-colonial forms of financialization through powerful donor agencies (Baker-Médard & Kroger, 2024). Indeed, critical scholars have decried how aquaculture in coastal seas results in the loss of blue commons (Standing, 2023: 339), as seascapes are transformed into spaces reserved for entrepreneurs and aquaculture businesses (Campbell et al., 2021: 2).

While privately-owned sea cucumber farms in Tanzania exemplify the practice of ocean grabbing, community-owned farms have a more complex social dynamic.

Here, the aim is not only to keep other community members away, but also to transform organized members into blue entrepreneurs who adopt and implement the blue growth development paradigm. Local members of various cooperatives and associations are expected to enact the Blue Economy model, abiding by the government's regulatory framework and guarding the allocated ocean space for aquaculture, while keeping other people and practices at bay. In so doing, they also gloss over one of the main sources of conflict in aquaculture: access to ocean space.

Sea cucumber aquaculture leads to conflicts over ocean space. The intertidal zones used for aquaculture are also used by fishers and gleaners. The whole idea of fencing off parts of this open space and turning it into enclosed property, guarded by fellow members of the community or by hired guards, is not something that everyone accepts. Since oceanic enclosures interfere with peoples' livelihoods, they become highly contested spaces. In light of the struggles that many artisanal fishers face in everyday life, these conflicts need to be understood in a broader context: as struggles for survival in highly unequal social settings.

## 6. Knowledge Hierarchies and Social Inequalities in Global Seafood Trade

Sea cucumber aquaculture requires new skills that entrench the BE paradigm through embodied practices and cultural reorientation. These skills range from understanding the needs of sea cucumbers and managing them in enclosed spaces, to post-harvest processing and sales. Fishers and traders who have been involved in sea cucumber fishery already have a considerable knowledge of what is required. Even so, farming demands some adaptations, which are often learnt through training provided by internal and external development actors. Initial training is often rudimentary: typically done by government affiliated trainers who have some knowledge. Through this training, sea cucumber farmers acquire new skills, not least an entrepreneurial mindset oriented towards the global market. If anything, while knowledge of sea cucumber farming may be rudimentary, even among the actors providing training, the reorientation toward blue entrepreneurship constitutes a significant outcome, reproducing the power dynamics of the BE through knowledge claims.

### *6.1 Training and Hierarchical Ordering of Knowledge*

Training programs in sea cucumber farming draw on different sources, involving transnational exchanges as well as online resources. These training programs have usually been developed by international organizations, government agencies, and NGOs. Some Tanzanians have been sent to China for training; and experts from Madagascar and other countries have also been brought to Tanzania to conduct training.

The FAO workshop on sea cucumber fisheries, held in Zanzibar on 12–16 November 2012, exemplifies how aquaculture is driven by global power relations and expert knowledge (FAO, 2013). The workshop was organized by FAO from Rome, and the WIOMSA (Western Indian Ocean Marine Science Association) in Zanzibar. The facilitators were scholars from universities in France (Réunion),

Sweden and Australia; and a conservation expert from Kenya. The 15 participants were drawn from 13 countries around the Indian Ocean (Comoros, Egypt, India, Kenya, Madagascar, Maldives, Mauritius, Mayotte (France), Oman, Seychelles, Sri Lanka, Tanzania, and Yemen). These were mostly senior representatives from government fisheries agencies and fisheries/marine research institutes.

Some of this expertise has made its way into training materials. Various government authorities have developed training materials based on workshops, as well as online resources, which they have used in training of local communities, alongside local NGOs. Some younger farmers have also used YouTube videos to learn the practice. The training materials that I have come across reflect this transnational and multimodal hybridity, with references to sandfish (a common term in the Pacific), as well as texts and photographs downloaded from online sources. There are also quite a few educational and promotional videos online, much of it publicly available on YouTube. More recently, tutors at the Fisheries Education and Training Agency (FETA), Mtwara Campus, have developed a syllabus for short courses in sea cucumber farming, which combines theory and practice.

In this domain of expertise, there is a distinct knowledge hierarchy, privileging expert knowledge over experiential knowledge. A clash between knowledge regimes—especially between expert and experiential knowledge—has been recognized in relation to environmental work in general (Eriksen & Schobe, 2017; Sjölander-Lindqvist, 2024). It is also common in development contexts, such as the BE. Similar to other development interventions, knowledge of aquaculture in Tanzania relies on the expertise of a technical elite to transform the mindsets of supposedly passive beneficiaries (Crewe & Axelby, 2012: 133). In these hierarchies of knowledge, we find modern/western knowledge situated at the top, and local knowledge at the base. In other words, scientific expert knowledge is valued, while local experiential knowledge is devalued. Although various power relations are inherent in this knowledge hierarchy, development initiatives tend to depoliticize inequality through a discourse of technocratic governance and scientific capitalism (Ferguson, 2006), in the racial vernacular of development through capacity building (Pierre, 2020).

This hierarchical ordering of knowledge can lead to social tensions and frustrations. It generates a social dynamic that is similar to how local communities have been marginalized by experts in the establishment and management of marine parks (Walley, 2002; Mwaipopo et al., 2010; Ishengoma, 2023). This is reflected by Hashimi, a sea cucumber farmer we interviewed in Pemba:

> *We started interviewing [Hashimi] shortly after [visiting his sea cucumber farm] and I got the impression that he knows so much. However, he is disappointed by the government experts who do not listen and ignore his advice especially, after the 'Blue Economy' policy and projects were introduced. To begin with, he is not happy with the farm placements (locations), and also the materials used in constructing the farms. He thinks they should have used ordinary fishing nets, which he thinks are more appropriate than the nets they use [green plastic mesh], because they are easy to get in the ground, and hence having not to worry about jongoo passing through the bottom.*
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> ***(Fieldnotes by the Author, from fieldwork in Pemba on 25 May 2024)***

### *6.2 Entrepreneurial Sea Cucumber Farmers in Transnational Trade*

While overriding local knowledge, formal training reiterates the BE model espoused by the government and its development partners. This model is strongly influenced by aquaculture in Madagascar (Baker-Médard & Kroger, 2024), which serves as a role model in the region. For example, although different species are collected in the wild, in both places aquaculture focuses on one single species, *Holothuria scabra*. The material infrastructure of oceanic pens is also comparable, down to the green plastic mesh used for the fences, which is imported from China. The international actors involved are also alike, from multilateral organizations (FAO, World Bank) to NGOs (Blue Venture, Nature Conservation).

As is often the case in global development, a model developed in one place is implemented in other places; with only minor adjustments according to the local context. In the case of sea cucumber aquaculture, this means the transnational distribution and adaptation of the BE model, with financial scaffolding by international development actors. Some central features include the development of an oceanic monoculture centred on a single species that is selected for its export market value; and enclosures bordered by a mix of local and imported materials, and guarded by members of local communities.

Through this model, artisanal farmers are incorporated into the global sea cucumber value chain as blue entrepreneurs struggling at the bottom level of transnational trade. Located on its lowest rungs, the farmers carry out the most labour-intensive part of the trade: managing the growth of sea cucumbers in oceanic pens over an extended period of time. Yet, they reap the lowest financial benefits in this global trade. Not only is the local market price suppressed by middlemen and a very small number of licensed exporters, but it is also incommensurate with their time and effort. By contrast, sea cucumber fishery offers quick cash for relatively little effort: a few hours of free-diving can generate quite a few dollars. Some years ago, diving for sea cucumbers even evolved into a primary source of cash for the acquisition of status objects in Madagascar (Muttenzer, 2015). Artisanal aquaculture requires much more time and effort, with little return for months of unpaid labour.

Serving as entrepreneurial vectors for the global BE, artisanal farmers are not only exploited, but they are also kept back in vicious circles of poverty. Tasked with enacting the blue growth paradigm, they secure the privatization of ocean space, thus actively participating in ocean grabbing. But unlike the wealthy property owners that are associated with ocean grabbing, communal entrepreneurs are not benefitting from new frontiers of rentier capitalism (Standing, 2023). Instead, they serve as vectors of blue entrepreneurship, shouldering most of the risks involved, while earning very little for their efforts. In more equitable development models, benefits for local communities could be assured through mechanisms—such as market regulation, value addition, and prioritized access—thus helping to minimize their risks, while assuring livelihood improvement.

**7. Global Imaginaries in the Blue Peripheries**

With enough luck, I manage to meet with an agent in Unguja for an interview. The connection is made through local contacts. We have tried to meet for several days and I have almost given up hope when he agrees to meet with me, just before my flight to Pemba. The agent is very friendly and forthcoming, a young Zanzibari man in his early thirties. He works as a company agent in cargo: import and export. Sometimes he deals with sea cucumbers, which are exported by plane. The quantities vary, from 300kg to 1 ton. So does the time: it can take 4, 6 or 8 months between supplies. The weather is everything, he reflects. When the rain is coming, there are no big quantities; but when the weather is good, they get large quantities. They sell the sea cucumbers to China, mostly through Hong Kong.

The agent recounts that prices vary from USD80 to USD300 per kilogram, depending on the grade. Grade A is priced at USD300/kg, grade B is USD180–200/kg, and grade C sells for about USD80–130/kg. The grade refers to size: the larger the sea cucumber, the higher the grade. The prices are based on fully dried sea cucumbers, which weigh much less than raw ones. He explains that it takes 9 to 11 pieces to make up 1 kilogram of grade A; for grade B it takes 18 to 25 pieces, and for grade C it takes 49 to 50 pieces. He says that grade A is very rare, since it takes up to two—and even three years—to grow to that size; and people do not have enough money to wait for so long. Mostly they get grade B and C; about half of each.

While the kilo prices may come across as high, it is worth calculating the price per piece. Grade A would then be priced at USD27–33/piece, grade B at USD7–11/piece, while grade C is only USD1.6–2.6/piece. By comparison, divers can sell raw grades B/C sea cucumber for USD2–4/piece to traders, right after collecting them in the ocean. So, the price for sea cucumbers can be higher in the informal market, especially when measured in terms of time and labour input. But when farming sea cucumbers, the quantities are much higher, which perhaps makes up for the lower price; not to mention that it is the only legal source of sea cucumbers.

The price for sea cucumbers at the point of export helps put the domestic market in perspective. Having spoken with sea cucumber farmers in Mainland Tanzania and Zanzibar islands, I was told that the prices most have received upon selling their sea cucumbers have been not more than TZS30,000–35,000/kg (USD12–14/kg), for grades B and C. The post-harvest processing was not optimal, and can best be described as semi-processing; involving cleaning, boiling, and drying. But the drying process would typically not last long enough; it takes only a few days in the sun. After this, the cucumbers would appear to be dry, but not quite dry enough for traders, who would complete the process before exporting them. People involved in the trade explained that prices were often lower than people expected because they did not process the sea cucumbers well enough: either they did not seem to know how, or they did not take the time needed to do it right. This may well be the case, but it is also a buyers' market. In addition to relying on middlemen who benefit from their intermediate position, sellers are at the mercy of a small number of buyers, since only a few companies have export licences.

### *7.1 Temporal Strategizing and Imaginary Riches*

To navigate unjust market structures and the lack of support for value-addition, farmers use different strategies. Some strategize with time, delaying sales for better prices. This means that they have to keep their harvested sea cucumbers in a good condition, while waiting for more favourable prices. A farm operated by a BMU in southern Tanzania decided to store some sea cucumbers they had harvested in September 2023. Theirs was a sad story:

> *They had not yet sold their harvest, instead they stored them in salt, waiting for a better price than they had been offered by various traders. They had been offered TZS40,000–60,000/kilo. But they expected to fetch at least TZS70,000–80,000. After the interviews they took us to the place where they stored some of the sea cucumbers. It was in a family compound. The sea cucumbers were stored in a large plastic bucket, with some 40kg of salt. It stank, a rancid smell of rotting meat. The sea cucumbers had shrivelled into smaller balls. The stinking liquid was what they had released when they had laid in salt.*
>
> ***(Fieldnotes by the Author, fieldwork in Mtwara on 14 November 2023)***

The idea of keeping them in salt was to maintain them in a good condition, for later sales. The salt was expected to preserve the sea cucumbers, and would also keep more of their weight, compared to drying them. However, the strategy had failed, and the sea cucumbers had gone to waste. Research at a small R&D hatchery at SUZA has also shown that storing sea cucumbers in salt for extended periods can lead to decay (***Khatib, personal communication, 15 November 2024***).

The commercially operated Muwanda farm used a different strategy: drying the sea cucumbers while waiting for a better price. Their first harvest had been after eight months of growth; totalling some 2,000 sea cucumbers, amounting to 150kg. They had sold them raw, for TZS35,000/kg. It was a small trial sale, and they needed money to invest in the farm. They did not manage to give anything to the community, which created some conflict. But the company owner seemed more disturbed by the actions of the community. "They do not understand well," he complained, "… sometimes they even enter into the buffer zone around the farm pens." The second time they harvested 6,000 sea cucumbers, which they dried. They were stored in a place near Stone Town, which we visited after the interviews in the farm.

> *The place where the dried sea cucumbers were stored was off-road, in a compound that seemed to serve various purposes, including brick making. The* jongoo *were kept in a house that was locked, scattered on a mat on the floor. They stank: a pungent smell of salty fish. It was the salt that made them stink, someone said. I told the owner that they smelled, he responded 'money smells bad'. To the Chinese, he said, they smell good.*
>
> ***(Fieldnotes by the Author, fieldwork in Unguja on 17 May 2024)***

Another strategy is to acquire an export licence and sell directly to China. Although I have not yet come across a sea cucumber farm that has managed to do so, several of them aim to obtain an export licence. To get an export licence, you need to sell large quantities. This is something that larger operations, such as the Muwanda

farm in Zanzibar, aim for. But even smaller farms have stated that they aim to acquire licenses, and thereby increase their profits. It is unclear how they would manage to do so, but they remain hopeful.


**Photos 6–7: Raw and Dried Sea Cucumbers.**
**Source:** Author

No matter how they strategize to improve their profits, the expectation of enormous earnings continues to inspire sea cucumber farmers. It is not uncommon that they refer to the price for sea cucumbers in Hong Kong as hundreds of dollars per kilo. Or that sea cucumbers fetch a minimum of TZS100,000–150,000/kg in Tanzania, which is so much more than other seafoods. Men and women alike become visibly excited when citing such figures, their eyes glittering in anticipation of future riches. These are small fortunes compared to other earnings. And a great deal more than the international poverty threshold of USD2.15/day. Although they are quite unrealistic, these expectations tend to linger on for years, even among farmers who have harvested and sold at lower prices, who yet remain hopeful.

### *7.2 Post-harvest Frustrations and Community Ruptures*

Someone in Kaole sent me photos of their harvest on WhatsApp on 20 September 2022, and a forwarded message detailing how many sea cucumbers had been collected daily from 13 to 17 September, totalling 29,622. The forwarded photographs depicted the harvest in detail: women walking on the seafloor while carrying buckets of sea cucumbers on their heads; and others in groups sitting on the ground while cutting, cleaning and boiling them. The post-harvest processing was mainly done by women, but some male members participated as well. The sender added a short message "*Tumeanza kuvuna*" ('We have started harvesting'). I was taken by surprise. They had planned to harvest in November, some eight months after planting the fingerlings in April. Why did they rush to harvest prematurely?

The decision to harvest early was taken in response to complaints and rumours of theft among members of the association. When I spoke with a member later on, I told him I had heard they harvested early because people were hungry and needed money. *"Honestly, we harvested because of accusations of stealing,"* he responded. He said they had failed because of the leadership: *"They are stealing, benefitting themselves."*

As accusations grew, they decided to harvest: then at least everyone would get something, even if small, he reflected. One of the leaders recounted how an inside group had tried to shake up and change the leadership. They used a witchdoctor who claimed that leaders had stolen sea cucumbers. But they had no evidence to back up their accusations. They called an emergency meeting, where the leaders were called to answer. After that they took the decision to harvest. It was not the right decision, he reflected, it was done in panic, which led to a loss in the project.

The problem was that they had lots of harvest; but where to sell? The association processed some 550kg of sea cucumbers, which they sold in Zanzibar. Since the harvest was done so hastily, they did not have a buyer lined up. But when they started processing, they received some offers. One trader offered TZS45,000/kg for Grade B and TZS25,000/kg for Grade C/D. But they considered the offer too low. A government official in Zanzibar told them they could get TZS100–150,000/kg for grade C/D-B. So, they decided to go and sell there, and a small group took the semi-processed harvest by boat to Zanzibar. Upon arrival, they met another trader who offered even lower prices: TZS25,000/kg for grade B, and TZS18,000/kg for grade C/D. According to one of the members who travelled to Zanzibar, their yield consisted of approximately 300kg of grade B, and 250kg of grade C. Stuck for alternatives, they sold the whole lot for TZS12.3m (about USD 5,000), instead of the expected TZS55–80m (about USD22,000–32,000). The proceedings from the sales were divided among members, and each one received TZS158,000 (about USD63), a lot less than the expected millions.

This harvest failure brings attention to conflicts and tensions within communities. With so many members, the Kaole association has broad representation from the community, which makes for an inclusive organization. But it also means that the association is entangled in webs of social relations; rife with distrust, gossip, and speculation, as well as crosscutting loyalties, kinship and marital ties: all of which generate different insider groupings. There is also a considerable inequality between members—with some being very poor, and others somewhat better-off—which affects their ability to deal with various challenges. Add to this an organizational structure that attempts to mould members into blue entrepreneurs who ought to adopt a business logic that overrides communal norms and values: this indeed breeds a social challenge.

More importantly, this is not just a community failure: it is also a market and state failure, which exacerbate community ruptures. In their insightful discussion of the fallacies of demonising privatization and romanticising communities in

environmental resource management, MacCay and Jentoft (1998) underline the complexities involved. In some cases, the external forces of the state and/or market may erode the capacity of communities to act collectively; but in other cases the failure may be explained by existing shortcomings at the community level, including the lack of knowledge, disorganization, conflicts of interest and rivalries (MacCay & Jentoft, 1998: 27). This means that community failure can be both the cause and effect of government initiatives, not to mention unregulated markets. Either way, aquaculture tends to worsen rather than reduce local inequalities and tensions.

### *7.3 Theft, Power and Dispossession*

There is clearly a considerable gap between fantasies of wealth and a reality of socioeconomic struggle, which points to contradictions integral to the BE model. Like other forms of capitalism, far from being an opportunity for social improvement, it privileges wealth accumulation among a privileged few. While less well-to-do sea cucumber farmers may maintain a hopeful attitude towards future riches, others may act on their own, using alternative means to earn some badly needed cash.

The idiom of theft reveals some of the cracks in the BE model. Suspicions of theft, directed at the leadership of the association, was the main reason for the premature harvest in Kaole. As we may recall, this article started with another incident of theft; with three members caught stealing. In the case of the suspected theft by leaders, a witchdoctor was enlisted for evidence. In the earlier case of members stealing, leaders turned to the police. Witchdoctors and police can be viewed as two ends of a moral/legal spectrum: the former representing a traditional institution, the latter a modern one. While the BE model draws on modern institutions of governance—such as policy, law and regulatory frameworks—at the community level these coexist with traditional institutions.

In this social context, theft is entangled in the contradictory claims of the BE paradigm, which dispossesses communities and lures them with fantasies of wealth, while concealing the fragility of livelihoods in the peripheries of global capitalism. People who used to dive for sea cucumbers may be tempted to collect some, especially near the farm. After all, this area is not inside the farm, as one of the members who was accused of the earlier theft asserted. He thought it was *unfair* of the association to accuse him of stealing.

Meanwhile, in the case of suspicions of theft by leaders, they were considered greedy and selfish. Such attitudes convey communal values of collective sharing, which some members thought were lacking. The critique of selfish greed can also be related to how many people perceive leadership in a country with systemic corruption. To the leaders, theft was a baseless accusation that conveyed an internal power struggle, along with a lack of understanding among members. As far as the leaders were concerned, they were doing the right thing: following government directives for development, rather than backward superstitions.

## 8. The Tragic Fate of Farmed Sea Cucumbers

Let us now turn to the sea cucumber, appreciating it as an ocean creature. Writing about aquaculture in Madagascar, environmental scholars have referred to the sea cucumber as an *unassuming creature* (Baker-Médard & Kroger, 2024); while an anthropologist has referred to it as an *obscure commodity* (Reichman, 2013). No matter how obscure and unassuming it may come across, the sea cucumber is a surprisingly important ocean creature. Adapting a more multispecies approach that recognises the sea cucumber as a fellow creature (Andersen et al., 2023; Lien, 2015), we can appreciate its significance to marine life, and how aquaculture may interfere with the ongoing worlding of its ocean environment. From a critical multispecies and post-development perspective, we can explore how sea cucumber farming constitutes yet another reiteration of human efforts to control nature in anthropocentric modernity, leading to our current planetary crisis (Kothari et al., 2019). The ethical implications of the commodification and objectification of this sentient ocean creature reflects the environmental costs of the Capitalocene (Uimonen, 2026).

The sea cucumber is quite an expert in its marine environment, with all the requisite skills and knowledge to live its life on the seafloor (Ingold, 2022). Although it is known to live in rather shallow waters, some species are also found at 8,000m depth, i.e., it is also a deep-sea creature. The sea cucumber has no brain, but it knows through its senses. A sentient being like fish and other ocean creatures (Lien, 2015), it senses what is going on, and reacts accordingly. As Abdul explained when we talked to him in that first week of fieldwork:

> *There is no need for additional food, sea cucumbers are intelligent enough to look for their food. They feed on mud and other stuffs in the mud. They are usually very protective, smart enough to sense threat – usually they disappear in the mud/sand when you approach them while diving [pushing back his back, Abdul shows with his body how the sea cucumber retracts]. They look like they have no senses, but you would be amazed how smart they are. Paula: "Do you respect them"? Abdul: "Yes, you have to."* ***(Interview with Abdul, 23 June 2022).***

The sea cucumber enacts the environmental claims of the BE paradigm, albeit unknowingly; and presumably unwillingly. Unknowingly, because *humans have not figured out how to communicate with sea cucumbers, and have not asked them for permission to enclose them in farms*. Unwillingly, because the sea cucumber does not seem to enjoy such captivity. I have observed that sea cucumbers sometimes congregate along the fences in farm pens, looking like they are urging to get out. And sometimes they use their burying skills to escape underneath the fences of plastic mesh. Recall what the experienced sea cucumber fisher-now-farmer in Pemba said about the material used for fences (fishing nets would be better, they are easier to dig into the seafloor). Far from being passive, sea cucumbers can obviously be quite unruly.

### *8.1 Ecological Failures of the Blue Economy*

The BE model is not really delivering its environmental promises, a failure that the sea cucumber pays dearly for. As much as the motivation for aquaculture is to

protect the sea cucumber from overfishing, while providing alternative incomes to fishing communities, many of the socioecological challenges involved have yet to be overcome (Erikson et al., 2015; Hamel et al., 2022; Fabiani et al., 2023). Instead, the BE model exacerbates ecological deterioration, putting short-terms profits before the planet's needs. Tragically, thousands of sea cucumbers have died unintentionally as a consequence (Uimonen, 2025).

One critical challenge is the reproduction of sea cucumbers. Most fingerlings are caught in the wild and grown in farms, which reduces the overall stock. The hatchery in Zanzibar was supposed to supply juveniles, but it has not really managed to do so. In January 2024, it was reorganized and is now operated as a public-private partnership between the RGoZ and a local company. It has started distributing large quantities of fingerlings to Pemba (Khatib, personal communication, 15 November 2024). But even if it manages to solve the problem of restocking, hatcheries create new risks: from disease to genetic alteration, which equally affect domesticated and wild stocks (Eriksson et al., 2015; Fabiani et al., 2023).

Another challenge is that farmers often cannot wait long enough to sell their sea cucumbers, so they may not reach the age of reproductive maturity before they are harvested, which also reduces overall stocks. As we may recall, a member of the Kaole farm suggested harvests twice a year, after six months. But I was told that sea cucumbers need at least eight to ten months to reach reproductive age. Scholars have estimated that the *Holothuria scabra* reaches sexual maturity at 140–230mm length, which can require up to 18 months of growth (Hamel et al., 2022: 158). This suggests a much longer timeframe than what is practiced in sea cucumber aquaculture.

In some areas, sea cucumber stocks have declined since farming was initiated. When the KuuKuu farm was established in Pemba in 2019, it got fingerlings from three different sources, including the Zanzibar hatchery. The farmers recalled that two of the species looked quite different: one was short and thick, and another long and thin; similar to what they had in the area. They may have been different sub-species, pointing to the risk of taxonomic uncertainty (Eriksson et al., 2012: 113). They lost most of their sea cucumbers to theft, so the farm was a failure. More worrisome, while there used to be plenty of white sea cucumber (*Holothuria scabra*) in the area, nowadays very few remain. No one understands why.

Add to this the challenges of weather conditions, such as storms and heavy rains, which are becoming more common with climate change. Changing weather conditions influence salination and temperature; all of which sea cucumbers are very sensitive to. In the wild, sea cucumbers would probably move in anticipation of adverse weather conditions, but when enclosed in pens, they are stuck. Sadly, thousands of sea cucumbers have died due to harsh weather conditions, and farmers have lost their whole stocks (Uimonen, 2025).

## 9. Concluding Remarks

The tragic fate of sea cucumbers is instructive of the fallacies of the BE model, with its imaginaries of infinite marine resources. As an emerging entrepreneurial practice, sea cucumber aquaculture is a complex undertaking, which takes place in a largely unknown field, riddled with uncertainties. Despite cautionary notes from some scholars, the government and various development actors, alongside various scholarly experts, are enthusiastically encouraging it. Offering the so-called alternative income to coastal communities, sea cucumber aquaculture is promoted for its financial and environmental benefits: marine gold for blue entrepreneurs.

However, so far the effect of sea cucumber aquaculture on social and environmental sustainability has been questionable at best. On the one hand, the impact on livelihoods is disappointing. As vectors of the BE, local communities are turned into blue entrepreneurs to safeguard the ocean enclosures of blue grabbing. Yet, they earn very little in return for their investment and labour over extended periods of time. Meanwhile, the change in relations of production risks exacerbating conflicts and tensions within communities, not least in relation to access to ocean space, which is critical for local livelihoods. On the other hand, the negative impact on ocean creatures is alarming. Aquaculture is not living up to the promise of protecting sea cucumbers: instead, it seems to put these endangered species at a greater risk of depletion, while objectifying them into marine gold. The ecological effects of this emergent practice are not yet fully known, which makes artisanal aquaculture something of a trial and error practice. Here, entrepreneurship resembles the bricolage of everyday life in the peripheries of global capitalism, as people try out whatever means they can to make a living. Unfortunately, ocean creatures and the ocean environment pay dearly for this precarious situation, which is further aggravated by climate change.

A more equitable and truly sustainable model for sea cucumber aquaculture should be pursued, addressing the shortcomings of the current BE model, conceptually as well as practically. This study has shown that much more attention needs to be paid to the socioeconomic needs of coastal communities, not least equitable access to ocean space, fair market prices for marine products, and prioritization of local livelihoods. Similarly, the ecological functions and needs of sea cucumbers need to be better understood and safeguarded, even if such ecological considerations negate commercial exploitation.

The findings of this study suggest that unless more environmentally and socially sustainable forms of sea cucumber farming can be developed, it should be discouraged—if not abandoned altogether—to avoid further exploitation of vulnerable coastal inhabitants; while assuring the long-term health of the marine environment and its various creatures.

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