SECURING ARTISANAL TUNA FISHERIES IN COASTAL EAST AFRICA

IMPROVING SUSTAINABILITY, FOOD SECURITY AND LIVELIHOODS

TANZANIA CASE STUDY
In Somanga, southern Tanzania, it’s the afternoon and the tide is out. Mangrove roots, jutting out from the drying salty mudflat, are surrounded by small scurrying ghost crabs. Fisheries officer Ramadhani Mvugilije walks out to a collection of houses built on stilts to visit two women who monitor fish catches and collect data for both the community and the government through the community-based beach management unit (BMU).

The BMU system was set up through a partnership between WWF, the Tanzanian government and fishers community. Units provide training and empower coastal communities to manage the fishing resources they rely on for their livelihoods. The project started in 2009 under the Tanzanian government’s fisheries management act. Then, between 2012 and 2017, it was rolled out under the WWF FISHCOM project, during which time WWF supported the establishment of 67 BMUs in five coastal districts across the country.

Ramadhani is joined by Jumanne Mohamed, a field officer for WWF. They use a traditional small row-boat for the last half kilometre of the trip, then walk through the village, greeting people as they go. They stop in front of a large takeaway set up on poles below the tide line. The smell of frying calamari fills the air, and people are cleaning fresh-caught fish in big tubs. Two women in traditional flowing clothes are sitting with them, collecting fish data at this busy landing site and entering it into a smartphone. Sijali Kipuli and Asha Kopakopa were appointed by the BMU as part of a pilot project, funded by WWF and supported by local and national government. The project has provided bespoke smartphone technology and training for local data collectors at five test sites on Tanzania’s coast.

According to its 2017 report, the BMU in Somanga has 920 registered fishers who use this village as a landing site. Their wooden boats bob gently in a small bay sheltered by a bend in the mangrove swamp. The data the BMU collects is uploaded directly using the local 3G network and within hours the information is integrated into the national database using an application built by Tanzania’s Ministry of Fisheries.

Sijali Kipuli, sitting on a log next to the takeaway explains what sort of data they collect: “Using the app, we ask the fishers where they fish, how long they were out, how many people were in the boat, what kind of fishing gear they were using, what type of boat it is, and the number and what kind of fish they caught.”

She explains that this collaboration between the BMU and fishers is important because it helps cut down on illegal fishing, which in time helps fish stocks recover. “Catches have gone up since we started this. Also fishers are more open and happy to share information about their catches with us because they can see that the data collection and BMU are helping them.”

Each BMU is made up of all the licensed fishers from within each community. They hold an annual meeting and elect a board who in turn appoint the fish catch monitors. The BMU system places control over fishing directly in the hands of the local community, and according to Jumanne Mohamed from WWF it creates a mechanism of accountability while giving people incentives to stop illegal fishing in their area.

Haji Haji, funded by WWF, collecting data on fish for sale for the beach management unit and WWF-Tanzania. Mafia Island, Tanzania.
Sijali explains that new systems for selling fish have also helped create better markets directly for the fishers: “Now there are public auctions on the beach organised by the BMU. This makes the fishers more money because people bid against one another, and the extra money goes to the fishers. Another big change is that before, the women fish buyers in Somanga had to wade in water up to their necks to buy fish from the boats. Now they buy them at the auction on the beach and it is safer.”

From a fish catch data collection standpoint, the organised sales also create a central place to count the fish and interact with the fishers who have just returned from the sea. “It makes our job of collecting data easier because we can do it from the beach where we can see the whole catch,” Sijali adds.

The work of the BMU relies on the smartphone-based fish catch assessment. Sijali’s fellow monitor Asha Kopakopa explains how the data also enables them to plan when the auctions should take place: “Through the data we can see when we get a lot of fish. Also we now know what fish we are getting, and how many, which makes it possible for us at the BMU to better plan and make decisions collectively about when our members should fish.”

Somanga is one of 16 sites in Tanzania where fish catch data collection using smartphones is being piloted. However, most sites still use paper-based data collection forms, which have to be uploaded manually by district fisheries officers. Somanga is in Tanzania’s southern Kilwa district; it is one of three landing sites in the district piloting the smartphone-based system. The Kilwa district fisheries officer Ahmad Mkali believes the smartphone system is much better than the paper-based assessment forms: “The mobile system is the best because on the paper form people seem to make more errors.”

The app also geographically locates the data collector and therefore gives evidence that the collector was at the site. The mobile app system is instant and once the data is collected, it is uploaded to the central database as soon as internet connection is available. With the paper forms, as the data must be entered manually, it can remain without being uploaded into the database for more than a year.
Ahmad is in an airy office in the southern beach town of Kilwa Masoko. It looks out onto a yard littered with seized illegal fishing boats. A particularly expensive boat is locked to a nearby mango tree with a large chain. He is serious about getting the programme rolled out across the district: “Right now we only have three points in this district where we are collecting data with smartphones, so we need more phones and we need to make sure this data is coming in from all of our landing sites.”

But even at the current scale Ahmad can see the benefits: “In our area this project with WWF has really raised the capacity for local communities to take better care of the resources they depend upon.”

Ahmad notes that WWF has been a vital partner in the whole process: “WWF started this programme by providing training, phones and airtime to use them, and that is when we really saw a great improvement in the data we use to make our management decisions.” WWF has also helped to steer the creation and implementation of the national database system.

According to Ahmad, the biggest difference with the new system has been an improvement in recorded fish catches, which he believes is directly related to using the system to monitor illegal fishing activities such as dynamite fishing. Dynamite, or blast fishing, involves illegal explosives being thrown into the water to stun or kill all the nearby fish, which are then picked out of the water. This kills everything within the blast radius indiscriminately, and damages reef habitats that are crucial spawning grounds.

Until last year, it was such a common practice that local fish monitors were recording three to five blasts a day. But, Ahmad explains, a crackdown by the army and concerted efforts through the BMUs has made a real difference: “Using smartphone data and thanks to the organisation of the BMUs we are getting updates about these illegal activities, particularly dynamite fishing. We went from quite a number of blasts per week to nothing now for more than six months, so that has been a great improvement.”

Thanks to increased environmental and resource stewardship by the BMUs and the government, there has also been an improvement in mangrove regeneration along the coastal fringe of Somanga. The collected data shows not only are fish catches increasing and fishermen getting better paid for them, but fish species that haven’t been seen here for a generation are coming back.
The support for the artisanal fishery data collection project has come jointly from WWF’s South Western Indian Ocean (SWIO) sustainable fisheries programme and WWF-Tanzania’s marine programme. The main goal of these programmes is that ‘by 2025, the health and productivity of key fisheries stocks in the SWIO region are improved and/or maintained and are contributing to the wellbeing of local communities and economies of the target countries’.

One aim of the project is to assist Kenya, Tanzania and Mozambique to gain a stronger position at the collective bargaining table of the Indian Ocean Tuna Commission (IOTC). Without reliable data the three coastal states are unable to effectively engage in regional fishery management decisions. WWF hopes to change this for Tanzania, starting here in Somanga.

Sijali and Asha – Somanga’s fish monitors – are excited to talk about the new fish species they have seen being landed since the new management systems were introduced: “Our fisheries management in the last two years has gotten a lot better, and not only are the fishers getting more fish but we are starting to see new species of fish which we had not seen before, including some tuna species.”

Both women agree that seeing such a big improvement is exciting for this fishing community: “Some days during the last tuna season [August-October] we were getting as many as 1,000 tuna a day. A few years ago we had none at all.” WWF field officer Jumanne believes early successes like this are vital to the long-term sustainability of the overall SWIO regional fisheries programme.

Once the fish catch data is logged into the smartphone app and uploaded, it ends up in the national database and on the desk of Owen Kibona, a senior fisheries officer whose responsibilities include fisheries data management at the Ministry of Livestock and Fisheries Development in Tanzania. Owen says good fisheries management is vital because the number of people making a living from the sea is increasing all the time: “In 2009 we had 7,000 fishing vessels in Tanzania. In 2016, the last year we did a frame survey, we had 9,650 fishing vessels.”

Owen says fishing vessels are also changing, from traditional oars and sails to large capacity motors to get them into richer fishing grounds further off the coast. Knowing what their fish catch is every single day is a vital planning tool, says Owen: “With digital data gathering, because you can see data come in daily, you can start planning faster. Maybe you see a big change in the data so you have to make a follow-up site visit or a phone call to find out what the cause of the change is. Then you can investigate, take action and adjust the management system.”

He says the long-term, good and strategic working partnership with WWF has helped to develop initiatives such as establishing and strengthening BMUs and using smartphones to collect fish catch data. The initiatives have reported to the IOTC, in line with the requirements for participating coastal states.

“Working with WWF has been very advantageous for us,” Owen says. “They have a vision that is a bit ahead of us but it is attainable. The data collection through the smartphones was an initiative from WWF, and we got some computers and the phones that are used for data collection from them. We have long-term plans together to create a sustainable fishing future, so all in all it has been a great collaboration.”
At dawn, Kilindoni beach on Tanzania’s Mafia Island is filled with hundreds of people. The fisherfolk have been out all night with lights in their boats fishing beyond the far reef, attracting millions of tiny fish that they sweep up in their nets. This is Mafia Island’s biggest export and by 9am, people are surrounding a loud and animated man running a beach-based auction where heaps of fish are bought then either processed and dried locally or taken away for immediate onward sale. The auctioneer jumps, shouts and gesticulates as pile after heaping pile of fish go to the highest bidder.

It looks like something that has happened for years, but this is new. According to the local Kilindoni BMU secretary Liberatus Mokaki it is wildly popular: “The auction is better because now everything is transparent, it is happening in front of everyone. And that auctioneer? He is the head of the BMU, elected by the fishermen.” Liberatus sits next to one of Kilindoni beach’s fish catch data collectors on an upturned canoe. As in Somanga, the auctions bring better prices and the fish are moved off the beach quickly, making them more valuable because they are fresher.

Mafia Island is another of the pilot sites for the smartphone app-based fisheries data collection. As with Somanga, the data collectors not only collect fishing data but also record dynamite fishing incidents that they hear. The last dynamite fishing incident was seven months ago.

Paul Kugopya is WWF’s fisheries co-management officer for Mafia Island. He feels the BMU system and the rollout of the smartphone system have empowered people to protect their own fishery resources: “The community is now fully involved in the conservation of their fisheries resource. They are now reporting who is out on the sea, who is using illegal fishing gear, and sometimes they are even catching the culprits and taking them to court.”

Ramadhani Nguyu Juma, the chairperson of Chunguruma BMU in the north of Mafia Island agrees: “The two biggest changes we have seen since this BMU was established four years ago were the end of illegal fishing and better prices for the 650 fishers who work here.”
THE WAY FORWARD

It’s encouraging to see such positive results so soon after rolling out a pilot of the smartphone fish catch data collection project in three districts. Of course many challenges remain. From the site visits it’s clear the programme has been highly successful in getting local communities to take control and ownership of their communal marine resources. But some challenges remain. These need to be addressed if the smartphone system is to be rolled out nationally or even regionally.

Smartphones and data plans in Africa are expensive, and there are instances where the phones provided by WWF were dropped in the sea and ruined. Activation of airtime packages for fish catch data collectors were behind in some places by four months, which meant people were using their own money to continue to do a job that was already unpaid.

The fish catch data collectors are expected to collect data from identified sites approximately 10 days a month, and they are not given any working funds to cover this time commitment. That potentially means impoverished families are losing some of their monthly income if the breadwinner decides to take on this unpaid role. This is not sustainable in the long term.

When local people were asked what is needed to drive this project forward, they suggested the following:

1. **A monthly allowance** to cover the days when the monitors collect fish catch data. This could be covered by a donor such as WWF. Or it could come from a small percentage of the total money brought in at the BMU-organised fish auctions. Alternatively, it could be funded from the money that’s given to fisheries from the US$20 fee paid by every tourist who visits a Marine National Park such as on Mafia Island. Currently none of this money compensates the communities who traditionally fished in these protected areas.

2. **Additional smartphones** are needed that are waterproof and have a good battery life.

3. **Sufficient airtime** is needed to enable fisheries data to be fully uploaded.

4. **Rugged power packs** are required to ensure smartphones are always sufficiently recharged.

5. **Protective clothes** such as raincoats are needed to enable data collectors to do their work in all seasons.

6. **Feedback information** is needed for the communities and decision-makers. Regular feedback is vital – it helps reflection and identification of what needs to be improved. Feedback at different levels also helps to raise awareness about the status of a fishery and its fish stocks.
BUILDING ON SUCCESS

WWF’s efforts on the ground in Tanzania have been driving the artisanal fishery data collection project. They have reached a number of milestones. For instance, they have developed a training manual on artisanal fisheries data collection in Kiswahili, the local language. This will make it easier to train additional fish catch data collectors in future. This is important since the government wants to roll out the programme at a national level.

They have provided training for government officials on IOTC data requirements. There have also been five training sessions for BMU data collectors, where 97 people were trained to use the smartphone app. So far, 24 data collectors have been provided with smartphones. The analysis of national fisheries catch data is being done by WWF together with the Tanzanian government. It will then be reported to the IOTC. Nationally fish catch data is now more reliable and suggests the country has been significantly under-reporting catches historically. There is a willingness from all parties to drive this project further.

ACKNOWLEDGEMENTS

The WWF artisanal tuna fishery improvement project is a sub-component of the WWF SWIO Regional Fisheries Programme. We are very grateful for the support provided principally through the partnership between WWF and John West/Thai Union in Europe, as well as through funds provided by the Norwegian Agency for Development Cooperation (NORAD) and the Swedish International Development Cooperation Agency (SIDA).