

THE CASE FOR SUPPORTING SMALL-SCALE FISHERIES GOVERNANCE THROUGH ICT

MARKO PETRIK & DR SERGE RAEMAEEKERS¹

EXECUTIVE SUMMARY

Small-scale fisheries (SSFs) are an indispensable component of the fisheries sector, especially in developing nations. These fisheries face a variety of challenges, however, which have serious environmental, social and economic effects. This is often compounded by a lack of data required for governance decisions, the disempowerment and exclusion of fishery workers, and poor communication between actors in the value chain. Advances in information and communications technology (ICT) offer a variety of new tools for intervention, particularly in terms of data collection, validation and analysis, as well as present opportunities to connect separated actors. It is recommended that using ICT tools for SSF interventions allows for a process of inclusive, bottom-up co-development with fishery workers to be followed in order to utilise their knowledge and local presence for data enhancement; provide them with tailored and valuable solutions; include them in decision-making and management; and empower them in market transactions.

AFRICAN SMALL-SCALE FISHERIES

While no definitive statistics exist, SSFs are estimated to employ around 50 million people worldwide, mostly the rural poor in developing nations.² In Africa, it is estimated that SSFs employ around 10 million people directly, 90 million indirectly, and are tied to the food security of 200 million.³ While a particularly important contributor to livelihoods at

RECOMMENDATIONS

- 1** Interventions should be co-developed from the ground up in partnership with fishers in order to meet their unique needs and challenges, as well as understand their impact and role from a systemic perspective.
- 2** Interventions should contain clear, desirable and useful value propositions for fishers in order to incentivise adoption.
- 3** In small-scale fisheries with disconnected actors in the value chain, ICT interventions should bear in mind the need to connect both horizontal (operational: harvest, landing, processing, sale) and vertical (managerial and strategic) components.

the national level, SSFs face similar sets of challenges that present unique difficulties in their governance. Fisheries are often characterised by informality, have low amounts of capital, and use a broad assortment of gear and vessels for harvest. Other features of SSFs include high labour intensity, seasonal and migrant workers, dangerous work conditions, remote work and landing sites (making data collection difficult), and low-quality infrastructure. SSFs are often subject to complex and conflictual relationships among fleets, as well as with the industrial and recreational fishing sectors and government. Workers in SSF often suffer from low bargaining power and receive low wages, and may complement their income with work in other sectors. The fishery resources themselves are increasingly faced with overexploitation, and the effects of climate change.⁴

The challenges in SSF are frequently compounded by the issue of data quality and quantity. That is, available data is often incomplete, missing altogether, dated, or has been extrapolated from small data sets or other fisheries altogether. Research has also tended to focus on ecological impacts, with less attention given to the socio-economic aspects of SSFs. Data collected tends to ignore gender dimensions and may thus exclude key steps in the production value chain. Data on catches is weak, particularly in multi-species fisheries. The result is that decision makers and managers are often operating in the dark when they produce policy and regulations governing SSFs. This means that, while most countries do provide regulatory frameworks and controls on fisheries, these have had mixed success.⁵

A possible reason for this is the absence of fishers and workers (particularly those involved in basic operations) in research and governance. They often have in-depth local knowledge of fisheries, and thus represent a valuable resource for data collection and monitoring owing to their continuous presence in the geographical areas researchers wish to understand. Omitting them from consideration has resulted in gaps in fisheries data, ignorance of socio-economic effects, and the compounding of existing challenges in the fisheries sector.

From a policy perspective, two notable attempts to address these problems have been the UN Food and Agriculture Organization's (UN-FAO) [Voluntary Guidelines for Securing Sustainable Small-Scale Fisheries](#), and the African Union Commission's (AUC) [Policy Framework and Reform Strategy for Fisheries and Aquaculture in Africa](#). Both documents take the approach

that technology should be used, not only to augment data and information completeness, but also as a means to include and empower workers in fisheries.

THE POTENTIAL OF TECHNOLOGY IN SSF

The challenge is therefore to consider how technology can address some of the challenges that SSFs face. Advances in ICT have led to expanding Internet connectivity, increasingly affordable devices, and concomitant software and applications (apps). These are increasingly being used to develop sophisticated solutions to address pressing environmental, social and economic problems. In development projects ICT solutions have been created to assist communities in dealing with issues such as climate change, disaster risk, natural resource use and water quality, as well as to empower them with marketing and management tools.⁶ The genius of ICT is twofold: firstly, it facilitates the collection, dissemination and analysis of data and, secondly, it radically transforms the ability of people to connect with each other.

ICT is particularly well suited to fisheries, given the sector's need for understanding data at a large geographic scale, monitoring transnational stocks, and connecting different sets of knowledge and data. With ICT, data collection is no longer reliant on surveyors travelling to sometimes remote locations to gather information; instead, data can now be collected by anyone with a mobile phone and minimal training. Improved data means better evidence on which to base decisions, resulting in considerable gains for managers and policymakers. This enables information relating to markets, weather, or fish location to be shared with fishers. It also makes traceability much easier to achieve.

Perhaps the fundamental issue with SSF governance is the question of systemic fragmentation: activities in the horizontal value chain (such as harvest, landing, processing and sale) are often handed over from one discrete actor to another, and do not take place within a single overarching institutional framework. Actors (particularly those involved in basic fishery operations) also frequently lack vertical ties with managerial and governance actors higher up the value chain, meaning access to strategic enablement or guidance does not exist, and fishers' voices are omitted from decision-making processes.⁷

In this regard, ICT can play a very important role in creating real-time connections between actors who

might be separated spatially. For managers, this can mean integrating operations and aligning them with strategic intent. For fishers, this translates into improved bargaining power and support.

ICT (particularly mobile phone technology) is helping organisations across the developing world improve fishers' access to markets and information, enhance fish traceability, and monitor fisheries. There are various examples of these technologies. Enhanced Fish Market Information Service Kenya (EFMIS-Ke), which was developed for parts of the west coast of Africa, and is a virtual marketplace app that aims to empower fishers and reduce poverty by making prices more transparent.⁸ In the Solomon Islands, Hapi Fis, a mobile phone app, was developed to enable the logging of marketing and biological data at local fish markets.⁹ Esoko, developed in Ghana, is an ICT platform for data collection, market information, and payments that, while not specifically designed for fisheries, can be customised for them.¹⁰

ABALOBİ: ICT IN SOUTH AFRICAN SSF GOVERNANCE

In 2012, the South Africa government adopted and began the roll-out of a new [Small-Scale Fisheries Policy](#),¹¹ seeking to improve the traditional rights of fishers, and involve them in co-management of fishing resources. This led to meetings between researchers at the University of Cape Town, national fishery authority officials, and SSF community representatives in order to consider innovative approaches to SSF governance. In 2015, the [ABALOBİ Initiative](#) was born out of this collaboration. Developed from readily available open-source software, it is a free suite of apps aimed at improving the monitoring, traceability and transparency of SSF data, while also including fishers in governance decision-making, and in the development of their businesses. After a successful trial period, ABALOBİ was endorsed as the official platform for implementation of the policy.¹²

The ongoing development of the platform is iterative and bottom-up, with close to 100 fishers involved in its testing and development. The aim is to create software that acknowledges fishers as both knowledgeable and having agency within the value chain and goes some way towards empowering them further. ABALOBİ is also designed to reflect the institutional structures of the policy, which calls for fishers to organise in cooperatives, and engage in co-management of the resource with government.¹³ Thus,

the suite consists of five interconnected apps designed for different actors or functions in the SSF system:

- 1 ABALOBİ Fisher is a logbook for recording oceanic, atmospheric and fisheries data, and visualisation dashboards. It also includes a chat platform, the ability to share data, and a personal accounting function. A function for safety at sea and an info hub for regulations and other notices are under development.
- 2 ABALOBİ Monitor facilitates monitoring by the community at landing sites and shorelines, allowing for data capture, chat and analytics.
- 3 ABALOBİ Manager is specifically aimed at government managers and co-management committee members. It is comprised of dashboards that reflect data that fishers share, as well as a chat app. Planned additions include a register of fishers, vessels and cooperatives and an info hub.
- 4 ABALOBİ Co-op has been designed for cooperative members and fleet managers. It aims to provide transparent accounting for collectives and highlight value addition. This tool currently consists of a log where post-harvest fish processors can account for their work and expenses – a function that helps highlight the role and value that these workers (predominantly women) add to SSF. Planned additions include a cooperative accounting package, sales traceability, member management, as well as links to banking and insurance platforms.
- 5 ABALOBİ Marketplace is still mostly in the conceptual phase. This app aims to provide a virtual market to facilitate interchange between fishers and end customers. It allows the posting of catches for sale, transparent prices and trends, cooperative profiles (based on ecological/social criteria), and end-consumer (private persons, restaurants, retail) details and requests.

A central aim in the design of ABALOBİ was to create a value proposition significant enough to get fishers using the app daily. This was provided, firstly, through the accounting function, which helps fishers streamline their businesses and track their finances. Secondly, the fish capture log allows fishers to prove their involvement in fishing activities, an important issue when it comes to obtaining fishery rights, and otherwise receiving formal recognition of their status as fishers and business people. Thirdly, the marketplace app allows fishers to interact directly with end consumers, and have a clear view of prices, demand and trends.

Fishers' use of the app and their sharing of data is voluntary. If they do participate, however, it allows their data to be cross-checked against the data monitors and managers have collected themselves, which assists with validation. The marketplace app particularly helps with the traceability of fish, which has become a concern for many consumers.

One of the most significant successes of ABALOB I is that fishers are not only being incorporated into data collection, but are now also playing an active role in co-management of fishing stocks. The link between horizontal value chain activities (harvest, processing, sales) has been strengthened through the use of a common communication platform, and the clarification and sharing of information (especially market price). The vertical value chain has also been strengthened through the inclusion of fishers in data collection and monitoring, the dissemination of information through the info hub, and the presence of up-to-date catch data at all levels. Most importantly, the link between strategic governance and basic operations has been improved by positioning fishers in a more consultative role alongside decision makers.

CONCLUSION

SSF faces a variety of challenges, compounded by a lack of good data and fragmentation between the various actors in the value chain. ICT presents an excellent opportunity to address these issues, given its ability to collect and integrate data quickly, and connect separated individuals. However, the provision of technological solutions alone is not enough to remedy the situation. Interventions should seek a deep understanding of both the knowledge and needs of fishery workers, and partner with them in co-developing solutions with relevant value propositions. ICT interventions should be cognisant of the need to connect vertical and horizontal components of the value chain.

ENDNOTES

- 1 Marko Petrik is an independent research consultant focussing on innovation, sustainability and urbanism. Dr Serge Raemaekers is the co-founder and Managing Director of ABALOB I, and a fisheries researcher at the University of Cape Town.
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- 5 *Ibid.*
- 6 Raemaekers S & J Sunde, 'Using information and communication technologies (ICTs) to promote equitable and sustainable small-scale fisheries (SSF)', ICT4Fisheries, 16 December 2016, <http://ict4fisheries.org/2016/12/16/using-icts-to-promote-equitable-and-sustainable-ssf/>, accessed 10 June 2018.
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- 8 *Ibid.* p. 26.
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- 13 *Ibid.*

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