

Introduction

While COVID-19's impact has been global, its negative effects have been felt most acutely within countries and communities whose states of social and economic well-being were already poor prior to the pandemic. During and after this difficult period, unique planning and interventions are required. More importantly, attention should be geared towards the vulnerable part of the economy — the small enterprises and the informal sector which accommodate a large percentage of the poor yet contribute a significant share to countries' gross domestic product (GDP).

Though many communities along the lakes and the Indian Ocean depend on it for their livelihoods, the fisheries sector is among the most vulnerable in Eastern Africa. Lake Victoria, which is transboundary to Kenya, Tanzania and Uganda, has long been a source of livelihood for the communities living along its shores. The lake is dominated by the informal micro and small enterprises linked to the fisheries value chain. Consequently, the fisheries sector's contribution to the Sustainable Development Goals (SDGs) in this region is of great importance. Specifically, SDG 1 (no poverty) where communities along the lake shores earn a living and sustain their families; SDG 2 (zero hunger) where communities secure their food and nutrition by consuming protein from fish; and SDG 8 (decent work and economic growth) where employment is generated, and the sector contributes to these countries' GDPs.

Despite the important role that fishers play in the economy, their typical living conditions do not reflect their substantial contribution to the economy and to food security sustainability, and they remain vulnerable to disasters and disease outbreaks. Since the outbreak of the COVID-19 pandemic, it is especially the Standard Operating Procedures (SOPs) and regulations — which were enforced to contain the spread of the disease — that have had devastating impacts on fishers. These restrictive guidelines have not only disrupted the sector but have also distorted the communal social fabric of those depending on it. For instance, fish trading activities have experienced a disruption in the supply chain due to COVID-19 (Boney, 2020). Fishers' inability to transport and sell fish at their strategic sites or spots has livelihood and nutrition security implications (America et al., 2020).

While several studies have investigated the impact of the COVID-19 pandemic in different sectors, studies assessing the complete value chain by comparing countries with lockdown policies in place to those that don't are limited. By comparing Uganda (with lockdown) and Tanzania (no lockdown), this research will look at the fisheries sector value chain and analyse the pandemic's impacts at different value chain nodes.

Although the effects of the pandemic have varied widely based on the individuals, communities and countries experiencing them, both the challenges faced and interventions applied offer opportunities for learning. The objective of this study is to gain insight into COVID-19's impact within a country under total lockdown versus one under no such policy. In doing so, we hope to determine effective methods by which to minimize the effects of the pandemic along the key nodes

of the fisheries sector value chain, sustain production and income, and reduce the vulnerability of fisheries-dependent communities. Specifically, the study intends to: (i) compare the challenges that COVID-19 has posed to key fisheries value chain nodes in Uganda, which imposed a lockdown, and Tanzania, which did not; (ii) identify how COVID-19 interventions affected fishing activities and communities; and (iii) examine the role that information and communications technology (ICT) has played in ensuring sustainable fisheries continuity amidst the pandemic.

The paper is divided into four sections. The first section, Introduction, addresses the background of the study and its objectives. The second section, Methodology, covers the study approach and data collection methods. The research findings are outlined and discussed in the third section while the fourth section provides the conclusions and policy implications of the study.

Literature review and conceptual framework

Fishing communities often live in high-risk environments that are not only associated with floods, heavy winds and drought, but also economic instability which can disrupt their livelihoods. During the 2005 Hurricane Katrina, for example, Mississippi saw the destruction of 95% of seafood dealers' businesses, preventing commercial fisher folk from selling their catch or buying fuel or ice from the dealers (Buck, 2005). In southern Sri Lanka, the 2004 Asian Tsunami almost paralysed the industry and the livelihoods of the dependent communities. This was because the fishing communities were dependent on the fishing fleet in operation which had been destroyed by the tsunami (de Silva & Yamao, 2007).

The COVID-19 pandemic, like many other disastrous situations, has tremendously affected the fisheries sector. Through changes in consumer behaviour, disruption in trading activities, and difficulties in transportation and border restrictions, the pandemic has an overall negative impact on the fisheries sector (Food and Agriculture Organization, 2020a). A study in India indicated that if the disruption of the demand and supply chain of the agricultural sector's commodities — such as fish and fish products — continues for a prolonged period of time, it will directly affect 15 million people, depending on the sector (Purkait et al., 2020). In another study analysing the pandemic's impact, curfews and lockdowns in major Kenyan cities — which act as hubs for fish markets — were cited as the main factors influencing fishing and fish trade trends (Aura et al., 2020). Additionally, a study by the Food and Agriculture Organization (FAO) indicated that the fisheries sectors of developing nations like those in African and Southeast Asian countries are most vulnerable to disasters (Badjeck et al., 2013).

In Tanzania and Uganda, fishing has long been a source of livelihood for certain communities; the sector's GDP share is 2.4% in Tanzania and 1.2% in Uganda (Ministry of Agriculture, Animal Industry and Fisheries, 2016). While the fisheries business in both countries is dominated by small enterprises, its direct and indirect contribution to job creation cannot be understated. In Tanzania, the sector provides direct employment to an estimated 183,800 fishers and indirect employment to

more than 4 million people, while in Uganda, the sector employs around 1.3 million people (Ministry of Agriculture, Animal Industry and Fisheries, 2016).

The impacts of a lockdown policy on economic activities vary depending on the strength of the economy and the nature of the sector. Certain differences between developed and developing nations also come into play when considering policy responses to address the impacts of COVID-19. For instance, Uganda and Tanzania have younger populations and larger informal sectors as opposed to countries like Italy — the latter having had a higher number of COVID-19 cases. Furthermore, impact can be differentiated according to the nature of activities taking place within different stages of value addition within the same sector. For the fisheries sector, these include production where fishing takes place, processing of fish, trade and marketing, and consumption. These factors indicate the need to have interventions that are context-specific.

The serious impacts of the pandemic and the attendant intervention measures on the fishing supply chain have already been discussed in several studies. The Sustainable Fisheries Partnership (2020) highlighted that the enforcement of social distancing measures has resulted in reduced processing capacity and that potential domestic fish markets such as hotels and restaurants have closed. Given that the sector employs a significant number of informal workers — the majority of whom are women — many of those employed in the supply chain, such as fish vendors, processors, suppliers, and transport workers, are likely to have lost their jobs (Johnstone et al., 2020).

Each node of the fisheries value chain is susceptible to the impacts of the pandemic. There has been a reduction in fishing time and in the number of fishing trips because of curfew (Aura et al., 2020), especially in developing countries. For example, all fishing activities on Lake Albert were suspended for 32 days (Insingoma, 2020). On the processing and trade nodes, fish processing and export capacities were reduced (Sustainable Fisheries Partnership, 2020), and vulnerable fishing communities were unable to find markets for their fish and fish products and adequate storage facilities to secure excess catch (Food and Agriculture Organization, 2020a). This increased fish post-harvest activities during the lockdown as bulky buyers found it costly to move products to reach the different market destinations.