



Food and Agriculture
Organization of the
United Nations



FishAdapt

Strengthening the adaptive capacity and resilience of fisheries and
aquaculture-dependent livelihoods in Myanmar

Food and Agriculture Organization of the United Nations
and
Global Environment Facility



Outcome Report

Impact of the Covid-19 Pandemic on Fishing and Aquaculture Communities
Three Phase Survey Outcome Report for FishAdapt

August 2020

Contents

Executive Summary	3
Overview	5
Purpose of Research	5
Methodology	5
Timeline of Covid-19 Restrictions and Initiatives including Survey Phases	7
Comparative Findings from the Three Phase Survey	8
Covid-19 Transmission and Preventative Measures	8
<i>Covid-19 Transmission</i>	8
<i>Covid-19 Preventative Measures</i>	8
Impact on Fishing/Aquaculture Livelihoods	11
<i>Return to Normal Operations</i>	11
<i>Market Prices</i>	13
<i>Food Security and Future Planning</i>	14
External Support for the Community.....	16
Labour Market and Impacts of Unemployment	17
<i>Alternative Sources of Income</i>	20
<i>Social Welfare</i>	21
Analysis of the Three Phase Survey	23
Global Shock.....	23
Myanmar Changes	24
Analysis Directly Related to the FishAdapt Project.....	25
Adaptions by FishAdapt During the Research Period	27
Proposed Intervention Strategies by the FishAdapt Project in Conjunction with the Government of Myanmar	27
Supply Inputs for Freshwater Farming.....	27
Excess production of Freshwater Farming.....	27
Training for Aquaculture Workers	27
Discussion Regarding the Three Phase Survey Format	28
References	29

Executive Summary

As the Covid-19 pandemic spread rapidly around the world in the early months of 2020, Myanmar, situated central in the trading, transport and travel routes of Asia, enacted preparations for the containment of the spread of the pandemic. Operating in the fishing/aquaculture communities of Ayeyarwaddy region, Yangon region and Rakhine State, the Strengthening the Adaptive Capacity and Resilience of Fisheries and Aquaculture-dependent Livelihoods in Myanmar Project (FishAdapt), identified that there would be a significant impact on communities of the pandemic and associated Government of Myanmar restrictions to prevent outbreaks and further spread. The FishAdapt project therefore undertook a three-phase remote research survey in the fishing/aquaculture communities in which it operates, to identify the issues confronting the communities and how the project could be modified to assist the communities.

The research through a three-phase survey has tracked the Covid-19 pandemic from the initial lockdown restrictions and health actions to longer term economic impacts and impacts on community and individual future planning. Phone interviews with known, senior, and respected community leaders and community members in three instances over a period of four months were conducted. These surveys were supplemented by six in-depth discussions after the final survey to gain additional insight into the situation in the communities. It is acknowledged that restrictions in the methodology and findings necessitate that the data and findings are considered indicative of the fishing/aquaculture sectors in Myanmar and the evolving situation and are not conclusive. Of the 120 communities from nine project townships in two regions and one State, survey one engaged 103 community respondents, survey two engaged 111 community respondents and survey three 106 community respondents.

As Myanmar continues to record low numbers of Covid-19 positive cases, the FishAdapt communities reported no positive cases over the duration of the three surveys. Community members continue to enact Covid-19 preventative measures at high rates although the lack of available resources and compliance fatigue has seen a reduction in compliance by the time survey three was undertaken. Public health messaging has reached audiences throughout the pandemic and has introduced many community members to the use of social media, a range of mobile phone based communication platforms, and other forms of electronic communication which provides opportunities for future engagement strategies.

With the lifting of restrictions, especially travel and transport restrictions, fishing/aquaculture livelihood operations which were initially reduced by 50%, have commenced a return to normal operations, although some geographical areas remain challenged by restrictions. Simultaneously, markets which were initially closed during the height of restrictions have re-opened and allowed trade to resume in most areas. The longer-term economic impacts of low and fluctuating market prices, due to decreased demand, and lack of operational export channels, reduced income and cash, increased rates of unemployment and the ability to plan for the future with reasonable certainty have taken longer to rebound and remain tenuous in many of the communities.

Additional factors have compounded upon the Covid-19 impacts, the Government regulated seasonal fishing bans, the return of overseas and interstate workers to the village and the loss of remittances from those workers, the lack of continued Government support and the ability to service loan repayments, due to reduced overall income have all contributed to economic impacts on community members. As families struggle to maintain livelihoods, the vulnerable have suffered further hardships as there less funds for medication, education, support for monasteries, religious and traditional ceremonies, and nutritional food.

Although faced with economic hardships, the resilience and adaptability of community members has been demonstrated with new markets being sought, new methods for generating income developed and increased planning at both the individual and community level have occurred. Community

members are keen to embrace job opportunities, training, skills, new technology and processes and work with partners and organizations in developing a secure common future.

The three-phase research provides a caption of the evolving situation for fishing/aquaculture communities, the hardships faced and the resilience for an improved future including the opportunity to engage with communities that are motivated and capable of embracing change. The FishAdapt project has been identifying specific vulnerabilities related to natural resources status and management, and climate change to identify gaps at the community level to be specifically addressed by integrated community-based plans. The integrated community-based plans are designed to incorporate current good practices related to natural resource management and critical adaptive methodologies to climate change which have been currently identified and implemented by community members. Innovations and ideas of community members that are in the planning stage will be investigated and the outcomes of the assessments undertaken at community level by the FishAdapt project as part of the current research in response to the Covid-19 pandemic will be holistically integrated.

Overview

The Food and Agricultural Organization of the United Nations in partnership with the Government of the Republic of the Union of Myanmar (Government of Myanmar) seeks to provide timely, responsive, and effective assistance in the communities and with the individuals in the projects in which they work. To gain a snapshot of the impact of the rapid changes brought by the Covid-19 pandemic and subsequent actions to prevent the spread of infection, the Strengthening the Adaptive Capacity and Resilience of Fisheries and Aquaculture-dependent Livelihoods in Myanmar Project (FishAdapt) has undertaken a three-phase remote survey in the fishing and aquaculture communities in which it operates. To gain a greater understanding of the evolving situation, the final survey included an additional six in-depth discussions with community representatives. These in-depth discussions will be built up over the life of the project to be longitudinal case studies, that track to effects of the Covid-19 pandemic and consequential impact over time. This paper is a correlation of the results of the three surveys and the qualitative responses from the in-depth discussions.

Following the first survey the findings were drafted into a discussion paper, and from this, a range of strategies were identified to adapt the FishAdapt project delivery implementation format to provide information and training and assist the community members in the changing situation. The second survey sought to identify trends in the information that were indicating community-initiated management strategies, and the FishAdapt project again sought to work with these community strategies. This final report outlines the overall findings and provides discussion points for working with the communities post the initial Covid-19 pandemic and possible learnings for climate change adaptation and natural disaster policy development including survey one, two and three results.

Purpose of Research

The research proposed to undertake a three-phase survey, to track the impact of the Covid-19 pandemic from the viewpoint of the fishing and aquaculture communities through local respondents, from the initial lockdown restrictions and health actions to longer term economic impacts and future planning. The three-phase survey format ensured it complemented the objective of the FishAdapt project to research adaptation methodologies and build the capacity of small-scale fishing and aquaculture farmers and communities to mitigate the effects of climate change on fishing and aquaculture production. In capturing the feedback from the communities over time and tracking changes in the areas of Covid-19 transmission and prevention measures; impact on fishing/aquaculture livelihoods; external support for the community; the labour market and unemployment and alternative sources of income and social welfare, the results provide a snapshot of community life and future challenges. Given the Covid-19 pandemic is the single greatest worldwide event of the 21st century, the Myanmar fishing/aquaculture industry must change and adapt for the future and thus the FishAdapt project is able to provide robust and timely support through the indicative results of the three-phase survey.

Methodology

The methodology of the research was limited to phone interviews with known, senior, and respected community leaders and community members, due to the movement and operating restrictions implemented by the Government of Myanmar in response to the Covid-19 pandemic. Due to the restrictions on the methodology the findings should be considered indicative of the fishing and aquaculture sectors in Myanmar and the evolving situation not conclusive. The questions used in the three-phase survey format were adapted over the period of the research in reaction to the responses to ensure the information was of the greatest informative value rather than only for statistical congruence. To complement and provide further context to the survey, six community representatives were engaged in in-depth discussions regarding the major survey themes and provided perspective

on the community changes. Feedback was sought from Government of Myanmar representatives to the finding of survey one, and FAO colleagues and team members to both surveys one and two. This resulted in additional questions and the in-depth discussions being added to survey three, in addition to more question enquiring into the impact on gender and vulnerable society members.

Of the 120 communities from nine project townships in Yangon South and Yangon North in Yangon Region, Pyapon, Labutta and Pathein in Ayeyarwaddy Region and Kyaukpyu, Mrauk-U, Sittwe and Thandwe in Rakhine State, survey one engaged 103 community respondents, survey two engaged 111 community respondents and survey three 106 community respondents (Table 1). The participation of the community respondents which averaged 89% demonstrates the willingness and enthusiasm of communities to engage and report the ‘on the ground’ impact of the Covid-19 pandemic and related restrictions and the strength of the relationship with the FishAdapt project representatives. Simultaneously with survey three, six in-depth discussion questionnaires were conducted with six community representatives, two in each region. The in-depth discussions sought to provide greater context and extract expert knowledge of regional and community differences and commonalities experienced due to the Covid-19 pandemic and restrictions. It should be noted in all analysis, the responses are to build an overall caption of the impact on communities, rather than a rigid comparative criterion.

Three Phase	Dates 2020	Ayeyarwaddy	Yangon	Rakhine	Total
Survey One	23 Apr to 6 May	30	33	40	103
Survey Two	15 May to 12 June	34	37	40	111
Survey Three	21 July to 31 July	34	33	39	106
In-depth Discussion	29 July to 8 August	2	2	2	6

Table 1. Breakdown of Three Phase Survey Respondent Numbers

Timeline of Covid-19 Restrictions and Initiatives including Survey Phases

Date	Event
11 March 2020	Covid-19 declared pandemic by WHO
13 March 2020	Government of Myanmar form the Covid-19 Control and Emergency Response Committee and restrict gatherings of greater than five people
23 March 2020	1 st Covid-19 Case in Myanmar
31 March 2020	1 st Covid-19 Related Death in Myanmar
6 to 7 April 2020	Government of Myanmar announce lockdowns, travel restrictions and curfews
12 to 16 April 2020	Government of Myanmar distribute to 4 million households 50 billion kyats (USD 36 million) worth of basic food staples in one off assistance package.
23 April to 6 May 2020	Survey One FishAdapt: Assessing the Impact of Covid-19 on the Communities Working with the FishAdapt Project
27 April 2020	Government of Myanmar releases the Covid-19 Economic Relief Plan (CERP)
27 April 2020	K100 billion loan fund from Government of Myanmar targeting garment manufacturing, hotel and tourism and small business
4 May 2020	Government of Myanmar permits transportation of goods and movement of trucks and passenger vehicles
15 May to 12 June 2020	Survey Two FishAdapt: Assessing the Impact of Covid-19 on the Communities Working with the FishAdapt Project
01 June 2020	Many businesses, including factories, hotels and restaurants are permitted to reopen after passing Government of Myanmar inspections
22 June 2020	Government of Myanmar General Administration Department resolution for K20,000 per household for 5.4 million households Covid-19 stimulus payments
21 July to 31 July 2020	Survey Three FishAdapt: Assessing the Impact of Covid-19 on the Communities Working with the FishAdapt Project
29 July to 6 August 2020	In-depth Discussions FishAdapt: Assessing the Impact of Covid-19 on the Communities Working with the FishAdapt Project
21 July 2020	Schools commence staged return to full re-opening
28 July 2020	Additional K100 billion loan fund from Government of Myanmar targeting agriculture and livestock businesses, export/import, manufacturing, supply chain, food and beverage, foreign job agencies and vocational schools
31 July 2020	Domestic travel to most destinations permitted
1 August 2020	Outdoor gatherings of less than 15 people permitted
16 August 2020	Outdoor gatherings of less than 30 people permitted
20 August 2020	Stay at home programme introduced Sittway Township, Rakhine State

Comparative Findings from the Three Phase Survey

Covid-19 Transmission and Preventative Measures

Covid-19 Transmission

In survey three, no Covid-19 cases have been recorded in the FishAdapt communities. The previous two surveys recorded no cases of Covid-19 in any of the communities. This correlates with the official Myanmar Ministry of Health and Sports reports of continued low rates of spread in rural and remote communities, attributing the majority of cases identified to return overseas travellers who are in mandatory quarantine in the larger cities¹. As of 20 August 2020, the Ministry of Health and Sports reported 399 Covid-19 positive cases and six deaths².

Covid-19 Preventative Measures

The comparison of the findings from survey one, two and three indicated a trending drop in the community approach of Covid-19 preventative measures overall, from 99% to 94%, to 92% in survey three with most of the reduction in Yangon region which fell from 100% to 82% compliance (Figure 1). It should be noted that the community engagement in preventative measures compliance is still extremely high. Additionally, there has been Covid-19 preventative measures compliance fatigue, which may have contributed to overall decline is being experienced throughout the world³ and therefore is not unique to Myanmar.

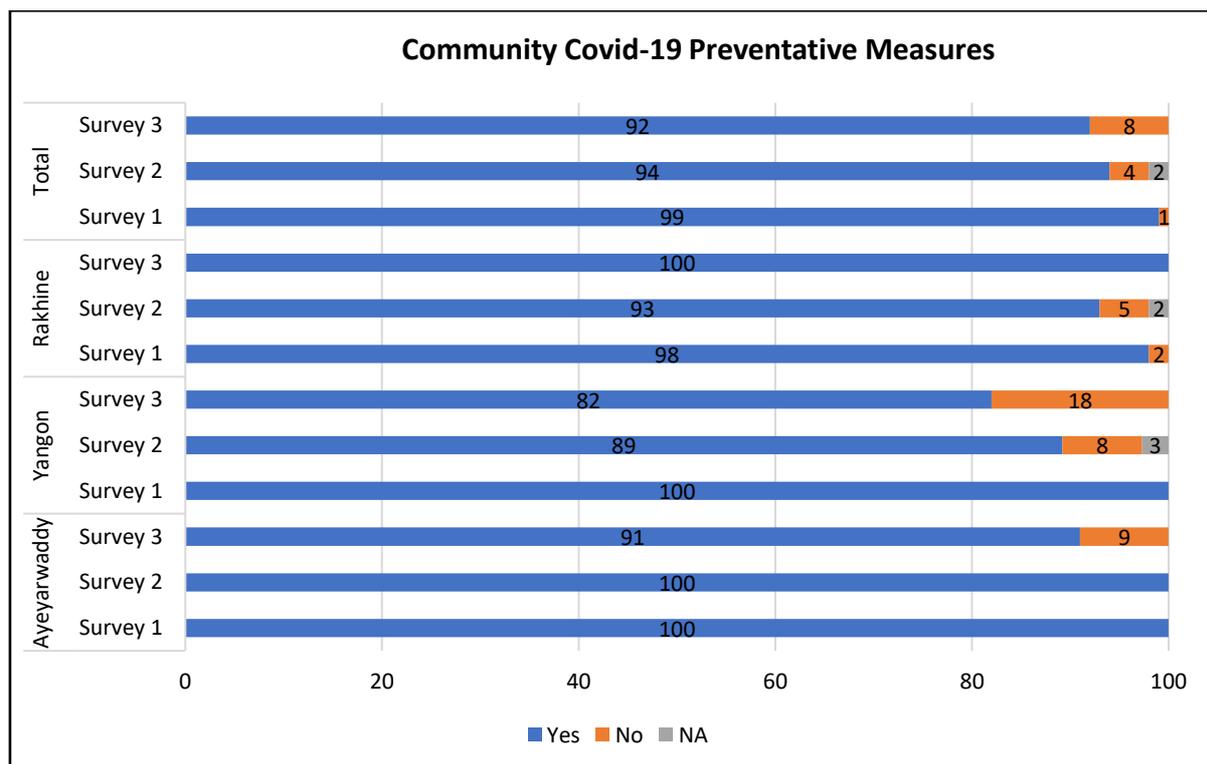


Figure 1. Community Covid-19 Preventative Measures by Percentage

¹ <https://www.mohs.gov.mm/> provides commentary and updates to the Covid-19 cases in Myanmar

² <https://mohs.gov.mm/Main/content/publication/2019-ncov> Myanmar Covid19 Surveillance Dashboard

³ <https://www.who.int/news-room/detail/22-06-2020-the-world-health-organization-reminds-public-to-remain-vigilant-through-mr-bean-s-essential-covid-19-checklist>

The use of preventative tools such as face masks, sanitisers and viral sprays also fell during the survey period. In survey one, 89% of communities advised the use of preventative tools, survey two was 85% and survey three recorded a large drop to 43% (Figure 2). The highest fall was Rakhine State from 83% of communities in survey one to just 18% of communities in survey three recording the use of preventative tools. Further investigation through the in-depth discussions advises that communities have no preventative supplies or resources either from public health sources or purchased individually. Additionally, in-depth discussions conclude that the urgency and danger of Covid-19 in the thoughts of community members has now passed and community members believe Covid-19 is unlikely to impact community members in the foreseeable future.

There is not enough to use mask, hand sanitizer. Even we have health department in the villages, we do not have even temperature test and no materials for mask, hand sanitizer etc.

(Ayeyarwaddy representative)

Community members still [have] concerns for Covid-19 disease, but they have positive opinion for future since local transmission are less in common in these days. Somehow, people from other areas need to follow the prevention measure. (Rakhine representative)

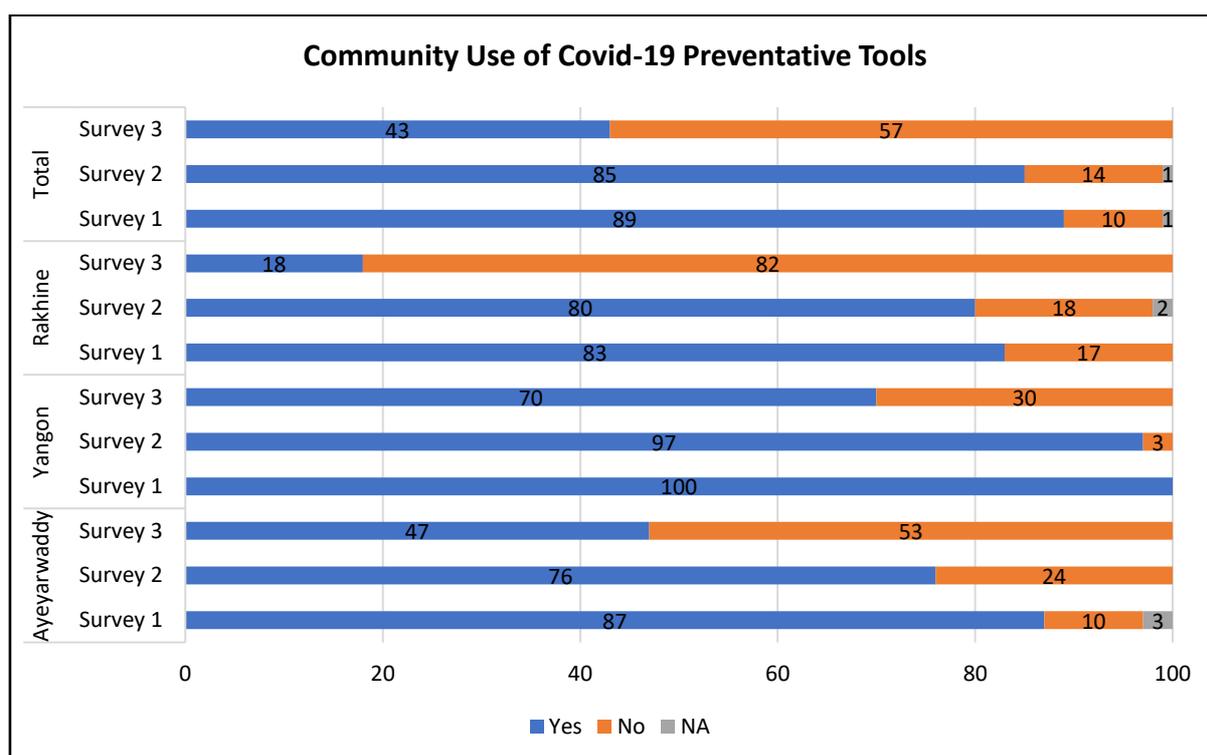


Figure 2. Community Use of Covid-19 Preventative Tools by Percentage

As the Covid-19 restrictions in Myanmar require the use of a face covering when in public, several observers have questioned if community members are correctly using face covering, hence this was included in the survey three questions. The respondents advised that 79% of communities correctly use face covering with Yangon recording the highest correct usage at 91%.

Reiterating the drop in instances of preventative measures, home quarantining within the communities reduced from 90% to 74% to 38% over the period of the three surveys. The largest drop recorded was in Ayeyarwaddy region which fell from 100% at the time survey one to 21% by survey

three. The use of a dedicated quarantine facility was only in 40% of the communities at the time of survey three. As the Government of Myanmar continues to prioritise the quarantining of returned overseas travellers in centralised urban areas, as expected, precautionary quarantine measures in communities will continue to fall, especially for rural communities in States and Regions that do not share land borders with neighbouring countries. Additionally, as the Government communicates information regarding the low rates of infection and community spread, community representatives report that community members are reducing efforts and resources towards the Covid-19 prevention and have less fear of widespread infection⁴.

At the time of survey three 71% of the communities were recording new entrants into the community, the lowest rate was in Rakhine at 56% but it should be noted that travel restrictions remain for many parts of Rakhine which were prevalent prior to the Covid-19 outbreak and there has been no change in restrictions.

The public health messaging of Covid-19 was initially strong with 91% of communities advising of Covid-19 public health awareness in survey one and 82% in survey two (Figure 3). At the time of survey three 81% of communities were knowledgeable of Covid-19 and what to do is someone in the community has Covid-19. In-depth discussion representatives provided information regarding the most effective medium that was used to communicate correct health messages. Facebook, Viber and television all featured as means of conveying information to those with a means of receiving it by these mediums. The use of community announcements through loudspeakers, and by phone, were undertaken by community leaders to inform ensure consistency of information and ensure all residents were informed.

Community members mainly rely on Facebook and Myanmar Radio to know the correct information about Covid-19. Sometimes, village authority uses loudspeaker to announce the update of Covid-19 and restriction for Covid-19 prevention. (Rakhine representative)

⁴ Ministry of Health and Sports have warned recent disenchantment and reluctance to change behaviours may result in a second wave. <https://www.mmtimes.com/news/govt-worries-about-second-wave-cases-myanmar.html>

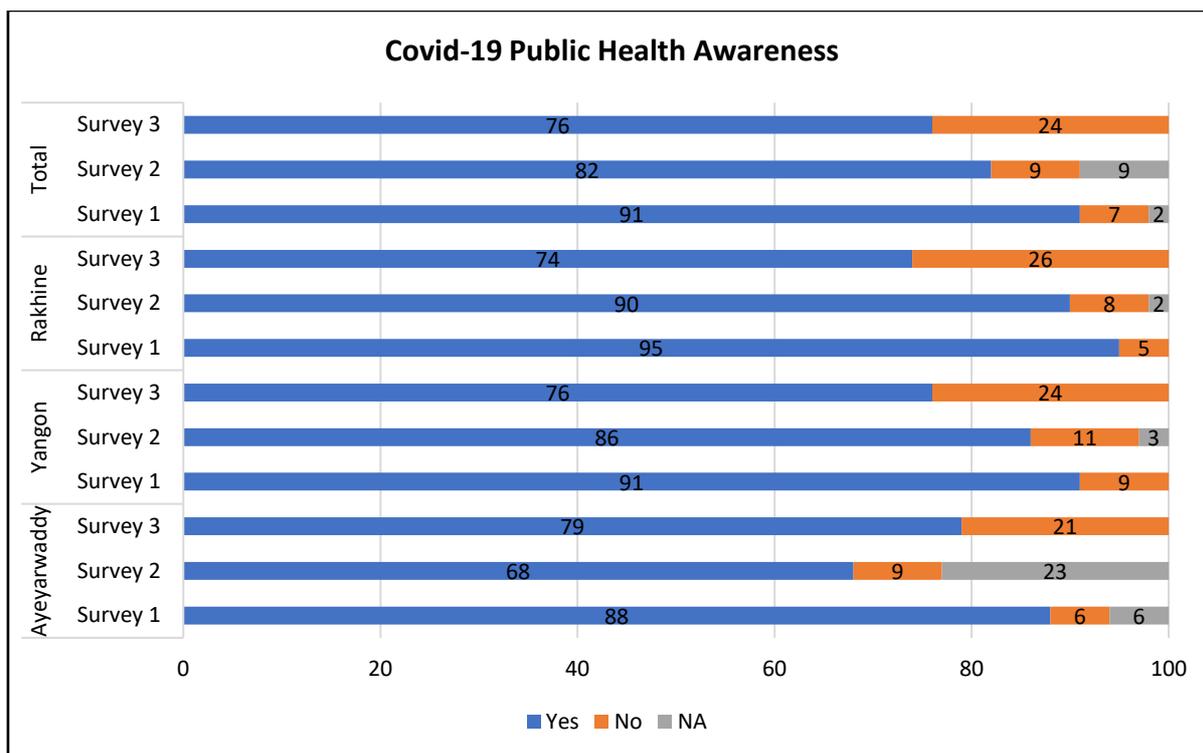


Figure3. Covid-19 Public Health Awareness by Percentage

Eighty two percent of communities advised that the health of men and women has been equally impacted by Covid-19 restrictions. In 13% of communities a greater impact on women was reported, and in 5% of communities a greater impact on men was reported. Yangon region communities experienced the greatest impact on women with 24% of women affected more by Covid-19 restrictions.

Impact on Fishing/Aquaculture Livelihoods

Return to Normal Operations

The impact of Covid-19 restrictions on the normal operations of the fishing/aquaculture communities has reduced significantly since survey one was conducted in April 2020. Initially, 47% of communities experienced impacts on normal operations whereas the most recent survey three in July 2020 revealed that the impact had reduced to 14% (Figure 4). In Rakhine State survey three found that only 5% of communities are currently impacted⁵ compared to 24% of communities in Ayeyarwaddy region. Within the in-depth discussions, all communities identified a reduction in the impact due to increased work opportunities, increased demand for products, increased availability of labour and improving market price but it is evident the differing restrictions of the regions is affecting the return to normal operations in different ways.

There is some impact on aquaculture business because of Covid-19 restrictions. Labourers are not able to come for work because of restriction. Fish farming business could not be able to start because of lack of labourers coming and Covid-19 comes a time of pound and dike preparation season for aquaculture farmers so most farmers could not able to dig and prepare pound preparation for fish farming. (Ayeyarwaddy representative)

⁵ In Rakhine State the restrictions on community food production in the fishing sector has been less severe and lengthy, local demand has resumed and the small scale nature of the industry in Rakhine State, which is not as reliant on export or wholesalers are other areas has allowed a quicker return to pre Covid-19 operating conditions.

The impact of Covid-19 is decreasing compared to the starting time. Before, fishing areas were limited. Transportation town to town was also limited. Now, the transportation limitation became reduce and can travel to the other townships. Our product can be sold out but fish price at the market is not back as normal. We still cannot sell fish with the normal price. (Rakhine representative)

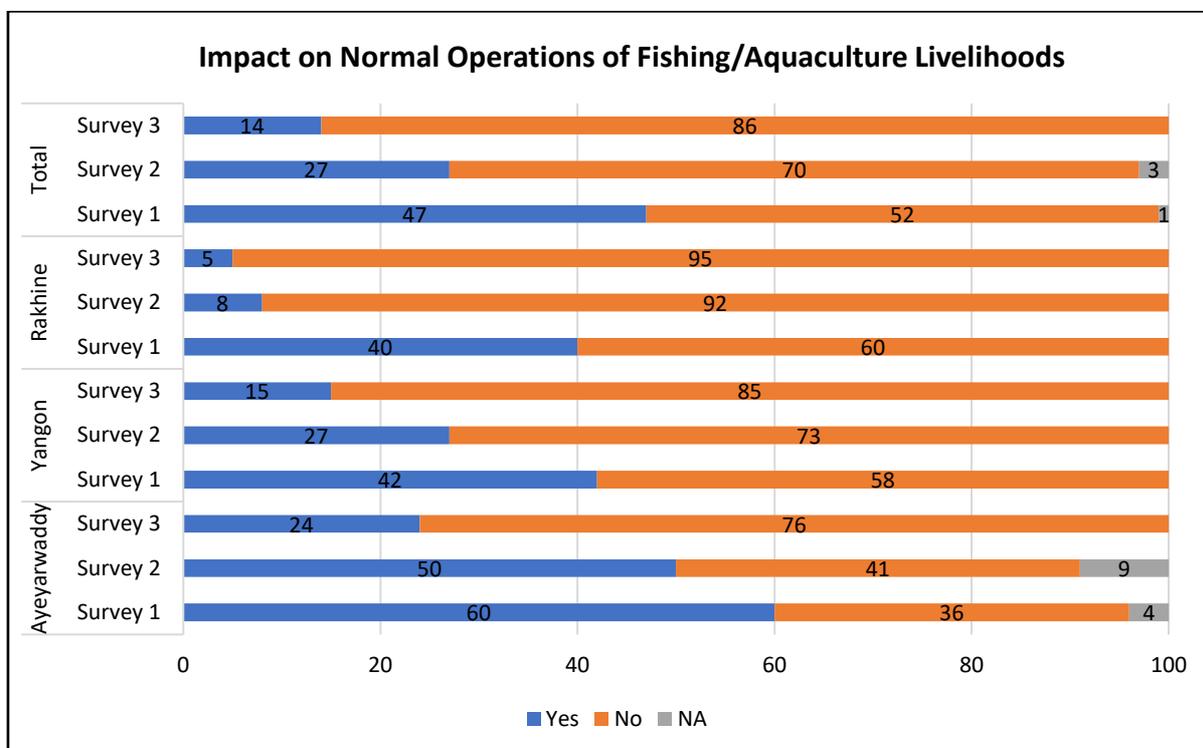


Figure 4. Impact (of Covid-19 pandemic) on Normal Operations of Fishing/Aquaculture Livelihoods by Percentage

Although community respondents have generally identified that fishing/aquaculture livelihoods are returning to normality, the overall identification of restrictions currently limiting food production increased from 11% of communities in survey one to 15% of communities in survey three. No communities identified restrictions in Rakhine State but 32% of communities in Ayeyarwaddy region identified restrictions in survey three (up from 20% in survey one). As many workers in the Ayeyarwaddy region leave town centres to travel for work and the monitoring of travel restrictions by authorities has been enforced, restrictions have impacted this region more than others.

Survey three identified that usual market access for selling of fishing/aquaculture products is accessible to 96% of the communities compared to 79% of communities in survey one. Rakhine State and Ayeyarwaddy region report a 100% return to usual market access and Yangon region 88% of communities can now access usual markets. Within the Yangon region, the opening of markets has been staggered, with some markets remaining closed and other partially opened plus the enforcement of curfews in the Yangon region has impacted the operation of markets⁶. Although usual market access has returned to the majority of communities, overall, 8% of communities sought out new markets during the period when restrictions were in place and 6% of communities have new contacts according to survey three. Predominately this has occurred in Yangon region, where 24% of

⁶ As Yangon region is identified as a hotspot only a partial market reopening has been permitted. <https://www.irrawaddy.com/specials/myanmar-covid-19/yangon-extends-lockdown-measures-myanmars-covid-19-hotspots.html>

communities found new markets and 12% initiated new contacts, none recorded in Ayeyarwaddy region. Survey three identifies that 90% of communities were able to sell everything that is produced, although the in-depth discussions revealed that this is due to fishers limiting their catch to what they can sell, and this is why there is an overall drop in income. Ayeyarwaddy region recorded the lowest rate at 82% of communities able to sell all that is produced.

Market Prices

Market prices have fluctuated over time and between geographical regions. Overall, across the regions the majority of communities have seen market prices decrease, from 64% of communities experiencing a decrease in survey one to 59% in survey three (Figure 5). Of significance, only 3% of communities have experienced an increase in market prices in survey three, leaving 97% unchanged or decreased since the time survey two was conducted. In-depth discussions advise that market prices remain decreased for cumulative reasons of limited transport options, decreased demand from wholesalers and purchasers, limited export opportunities, more rules and decreased demand for auxiliary resources such as diesel fuel for trucks and machinery⁷.

There are some changes at the market price. Market price is not regular because of limited and restricted travelling and transportation, fishing wholesale owners' shop are closed and do buying and selling in a very limited time with limited rules. (Ayeyarwaddy representative)

The reasons for market prices changing is fish collectors and wholesalers are not confident to buy big amount of fish that there is no demand for wholesale, but they only can sell the fish as retail. (Yangon representative)

The market prices are not yet to come as normal. The price is still going down almost half price. Example, before the Covid-19, shrimp/prawn we got 12000 MMK a viss⁸, but now only 6000 MMK we got for shrimp/prawn a viss. Also frog and crab 8000 or 7000 MMK we received per viss before Covid-19, but now only 2500/3000 MMK per viss of frog and crab. The market price is going down and changing because of Covid-19 prevention restriction especially for travelling and transportation limitation. Most seller could not be able to go and sell at the market. (Rakhine representative)

⁷ The fall of prices during the period of survey one reflected the immediate impact of the Covid-19 restrictions: transportation ceased, access to markets was limited and movement restrictions prevented traders collecting fresh fish for outside markets along with fish wholesalers closing businesses and transport routes. The cumulative effect was a reduction in trade, a decrease in demand resulting in only small local market consumption at reduced prices (as this is the normal situation in Rakhine state, that is why the affect was less). As market forces set the price of products, market prices are now reflecting the generally decreased demand, which is down due to lack of export opportunities.

⁸ One viss is equal to 1.6 kilograms or 3.6 pounds.

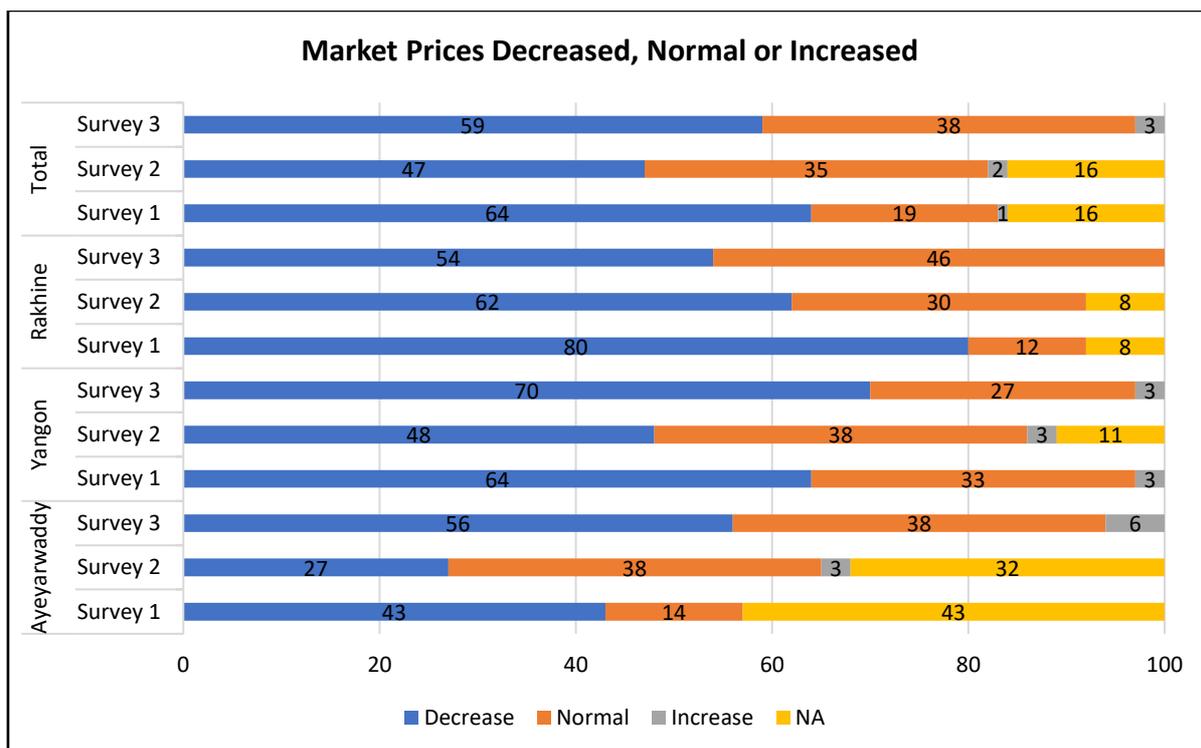


Figure 5. Market Prices Decreased, Normal or Increased by Percentage

In survey three, 86% of communities identified income for community members was less than before the Covid-19 pandemic. Ayeyarwaddy region reported the largest drop in income with 94% of communities identifying they had less income. The in-depth discussions advised the impact of market prices decreasing, decreased trade, fishing season limits, bans and moratoriums have decreased demand and therefore market prices. Also relevant is there has been some increases in production costs, but no reduction in the cost of general living, combined this has significantly reduced the amount of cash available for daily living expenses.

Food Security and Future Planning

Communities provided varied responses regarding sufficient food availability for all residents. In survey one the vast majority of communities (at 95%) indicated sufficient food availability but at the time of survey three this had to decreased to 83%. The overall drop was predominately due to the Ayeyarwaddy region identifying that 44% of communities did not have sufficient food for all residents. In-depth discussion advised some communities do not have sufficient food in any normal year and this year, due to the Covid-19 impacts there will not be sufficient food mainly due to reduced market forces leading to a lack of income. The in-depth discussions revealed that although no one reporting anyone going hungry, meals have been reduced from the usual three meals a day and there is less quantity, variety and quality in the meals being consumed.

One third of households could not be able to eat three times a day as Myanmar people usually eat breakfast, lunch and dinner because they are struggle with even daily income. The rest third households could eat three time a day for meal. Most of them are eating fish, crab fishing from the small streams and rivers within villages and the vegetables planning from their farm. (Ayeyarwaddy representative)

All have meal regularly breakfast, lunch and dinner. Mostly, fish curry is common curry the village family eat, sometime chicken and pork. After Covid-19, eating fish and meat became decreased compared to before Covid-19. Example, in our

breakfast, before the villagers eat snacks or food bought from outside but these days, only fried rice with left over curry for the kids instead of buying food from outside with cost. (Rakhine representative)

In survey one community respondents identified 11% of communities had intentions to store product to sell when prices were more favourable, in survey two this fell to 5% but rose again to 23% in survey three. The Ayeyarwaddy region recorded a zero percent intention of storing produce in survey one and survey two but a 29% intention in survey three. Twenty two percent of the storage plans are by the individual (not community plans) across the communities in survey three and in both Ayeyarwaddy and Yangon regions, 24% of communities identified individuals having storage plans. In-depth discussions advise the storage of food including fishing product is difficult due to lack of income, lack of ability to have excess (such as a bigger catch per day), lack of storage facilities and/or processing facilities and lack of need due to the availability of retail stores (in Yangon region)⁹.

There is not plan for food storage or food security because most of the villagers are daily workers and they do not have big business which make money a lot. Not enough to buy or to store for food. (Ayeyarwaddy representative)

There is no technical equipment or materials which can apply for storing food in the village and no technical knowledge for storing food with good quality. Therefore, we do not store food. Lack of money or income will make us not to store food too. (Rakhine representative)

Community management plans for fishing/aquaculture livelihoods for the future have risen with 6% of communities having plans in survey one, 20% in survey two and 24% in survey three. Whilst Ayeyarwaddy region and Rakhine State have increased in the number of communities with plans from survey one to survey three, Yangon region has contracted from the high rate of 57% in survey two to 30% in survey three. In-depth discussions with community representatives regarding barriers to community management plans (including WASH, health and fishing/aquaculture), advise a lack of power, leadership and planning knowledge in the community and preoccupation with the provision of daily needs has prevented the formulation of community management plans. Communities are eager to engage and all would welcome external assistance to provide training and the formulation of plans.

On behalf of the village, we are willing to have help from organization. Yes. We are willing to cooperate and give time when the organization come and give help for the village. We have some youth to work with. (Ayeyarwaddy representative)

We truly need the help for our village such as training and workshop, awareness training, knowledge and sharing training related to natural disasters, health issues and preventions etc. We are willing to cooperate and participants if some organization will come and share or deliver trainings. Most of our villagers has lack of educations, knowledge because all of them are struggling with daily food from

⁹ As the fishing industry is encountering the fish spawning/breeding season in which the Government of Myanmar impose sustainability management in select areas through bans and moratoriums from June to August, community members usually seek out alternative sources of revenue and food sources. The impact of Covid-19 restrictions highlights that the communities reliant on the fishing industry is likely to have increased and more severe food shortages in the period June to August than during the initial Covid-19 lockdown in April (when the Government provided food packages). The need for community and fishing management plans in all communities has been heightened by the Covid-19 impacts and remains core to sustainable futures and the capacity of communities to adapt to changing circumstances, including climate change.

daily works so. One important and necessary thing we need as a key is job opportunities. We need this so much. (Ayeyarwaddy representative)

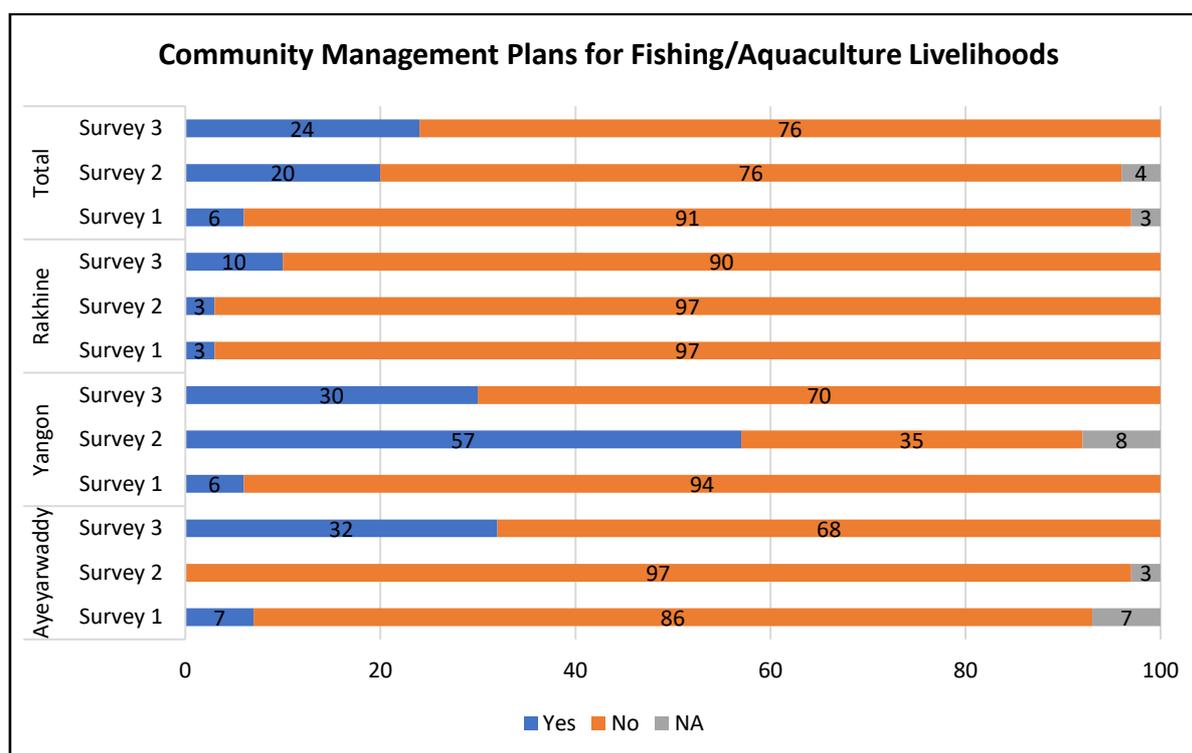


Figure 6. Community Management Plans for Fishing/Aquaculture Livelihoods by Percentage

External Support for the Community

Survey three recorded 26% of communities were currently receiving external food assistance from the Government of Myanmar or other organisations, this had fallen from 93% at the time of survey one, when the Government of Myanmar food ration which was distributed over the New Year (Thingyan Period) between 12-16 April 2020 to 4 million households with low incomes (Figure 7). Ayeyarwaddy region and Rakhine State communities both experienced a large fall in assistance (from 97% to 18%) and (from 92% to 15%) respectively whilst Yangon region communities fell from 91% in survey one to 30% in survey two and rose again to 47% in survey three, due to the cash payments received in Yangon. The in-depth discussions with Ayeyarwaddy and Rakhine representatives advised of one-time food packages received in communities, whilst the Yangon representatives advised of food and cash support from the Government of Myanmar.

One-time support from Government are the following items for 39 % of the village households. Including: 8 viss of rice; oil 50 tickles; 1 viss onion; 1 viss bean; salt 50 tickles. (Ayeyarwaddy representative)

We have been provided Government ration (food and cash-20000 per HH) during Covid-19. (Yangon representative)

During the first month of Covid-19 restriction, Government provide 5 items (rice, cooking oil, onion, bean and salt) in their villages. But they do not receive other support in this period. (Rakhine representative)

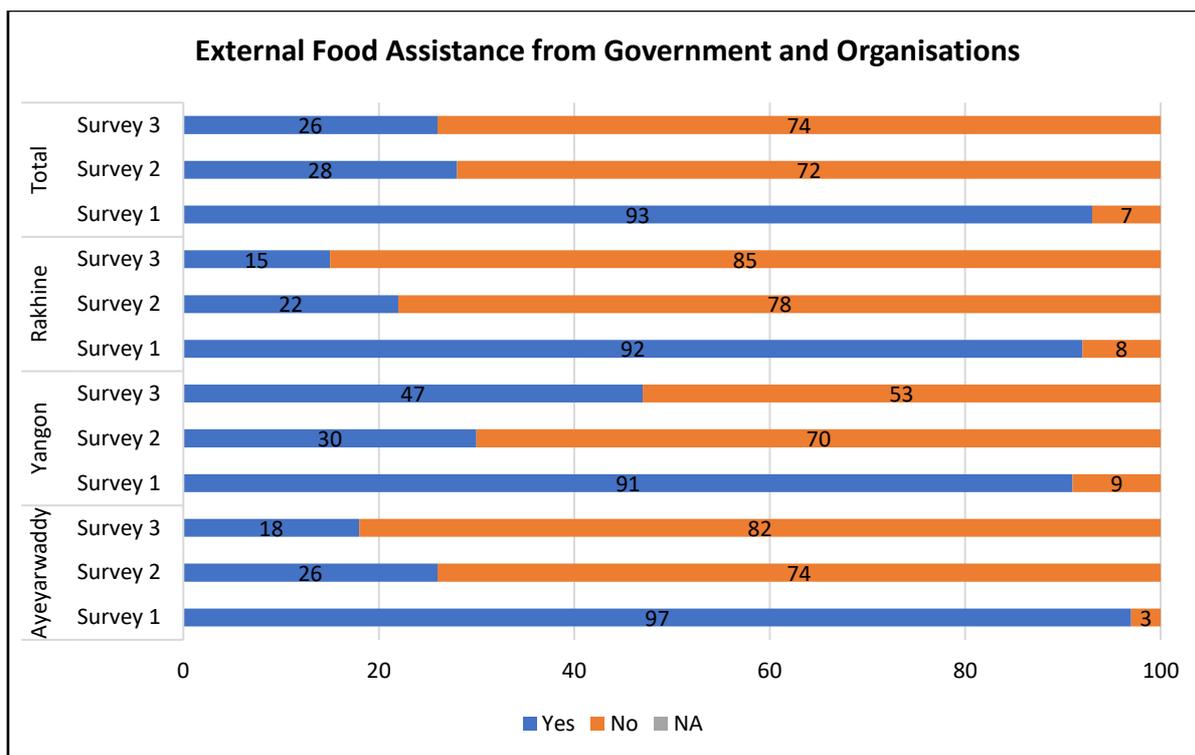


Figure 7. External Food Assistance from Government and Organisations by Percentage

Community representatives were asked what support the community would need once Covid-19 restrictions were lifted. A recurring theme amongst responses included job opportunities; cash stimulus; improved health equipment, materials and knowledge; disaster prevention training and improved technical knowledge; and equipment and materials for fishing and aquaculture livelihoods. Community representatives also provided insight to new skills the community had acquired during the Covid-19 restrictions. Some communities had taken the opportunity to diversify to other small-scale income generating projects, whilst others had gained a greater appreciation of transport and trade operations. Others stated skills in social media and health and hygiene practices had been gained.

As all cannot do big investment, some looks for some news small scale works during Covid-19 restriction. Doing homemade food etc. Planting vegetables e.g. beans for sell. As we have land, some do more planting for income. (Ayeyarwaddy representative)

We have learnt using phone/online for learning, getting information about transports and trade. (Yangon representative)

There is no new experiences or training for Covid-19. Just how to apply mask systematically and how to wash hand carefully. (Rakhine representative)

Labour Market and Impacts of Unemployment

When asked if there had been any unemployment due to Covid-19, 70% of communities in survey one advised there had been an increase in unemployment, 63% in survey two, and 46% in survey three (Figure 8). The most significant drop in unemployment occurred in Rakhine State with a drop from 60% in survey one to 36% in survey two. Reflecting the ongoing restrictions and curfews in Yangon region the unemployment rate has fallen less, from 76% survey one to 58% in survey three. Feedback from community representatives indicates the ongoing slump in market demand and subsequent

lowering of prices continues to impact employment of both the wage earner and the self-employed fisher.

Paid employment in the community and fishing industry have been impacted during Covid-19 restrictions, industries stop their business so that most of employees have reduced their salary and became unemployment but it has returned to normal because unemployment have returned to their work at places. (Yangon representative)

The overall situation is still not normal but better than last month. Somehow, less demand in the market and decrease of market price effected to livelihoods of local fishermen and their families. (Rakhine representative)

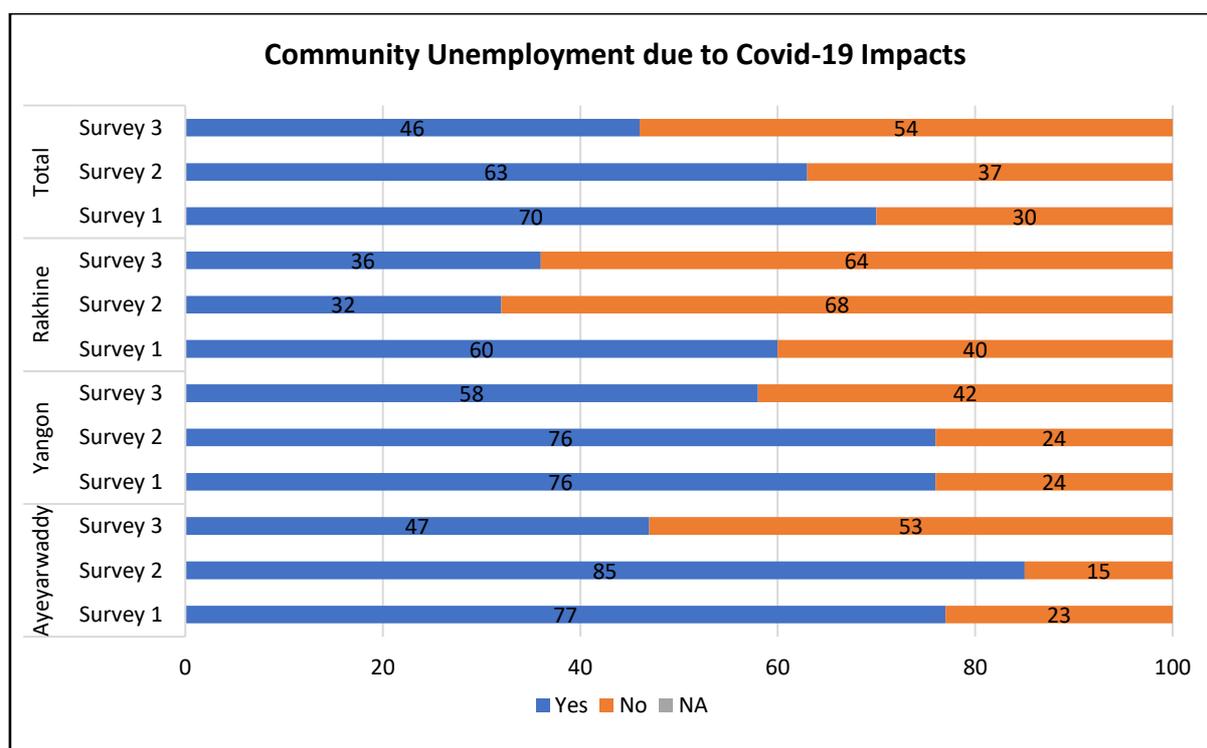


Figure 8. Community Unemployment due to Covid-19 Impacts by Percentage

In survey three, 64% of communities have experienced a decrease in the amount of available paid work with Ayeyarwaddy region recording the highest impact at 79%. Along with the decrease in the amount of paid work, communities have also experienced skilled labour shortages required to efficiently operate fishing/aquaculture business with 11% of communities advising lack of skilled labour in survey three. Although this is a significant decrease from 68% in survey one, likely due to the easing of travel and transport restrictions, the need for training of specialised and skilled fishing/aquaculture workers remains a community issue (apart from Rakhine State that recorded nil shortages).

A contributing factor to community unemployment has been the steady return of overseas and interstate workers to community due to Covid-19 restrictions and lockdowns in foreign countries and within Myanmar. In survey three 31% of communities, advise that returned community members from abroad and other areas of Myanmar to their home communities are now unemployed. Ayeyarwaddy region experienced the highest impact of returnees being unemployed, with 44% of communities

reporting a high impact. In-depth discussions advised that the loss of income (remittances) that were generated by community members working outside the community has significantly impacted community members, and the amount of cash circulating in the community.

There are some working back from overseas. For households which fully rely on overseas workers experience great impact and hardships. They sell their possession for food because of no income from their reliable family member. (Ayeyarwaddy representative)

Families whose rely on someone who were working overseas faces financial crisis and this forces them to look for part time jobs and returnees are currently lack of jobs on these days. (Rakhine representative)

There are some jobless people who are working at Malaysia. Almost 50 persons or workers from our village are facing jobless condition. Example now working at Malay, Singapore, and America. Even the family living at the village needs to support or send money for them. (Rakhine representative)

Nearly 40 households didn't receive money transfer from their family members who are working overseas, and they forced them to work for their survival (Rakhine representative)

In survey three, 77% of communities advised members have less cash available than prior to Covid-19 pandemic. Ayeyarwaddy region advised the highest impact of 91% and Rakhine State the lowest at 69%. This coincides with salaries/wages dropping in 61% of communities since the Covid-19 pandemic. In-depth discussions reiterated that wages have decreased or at best stayed the same, predominately due to reduced economic activity and higher unemployment, creating competition or available work.

Daily wages became decreased, there have more jobless people in the village. Before one daily worker received 7000 MMK/8000mm per day. Now, only 4000/5000 the daily worker received. Many daily workers want to work even in their daily wages is going down. (Ayeyarwaddy representative)

Wages for paid employment are less as prior Covid-19. Owners could not pay full salary because lost their income and less benefits even businesspersons. (Yangon representative)

There has not been any significant impact on gender difference reported, 40% of communities reported females were more commonly unemployed but this was closely followed by 39% of communities advising males were more commonly unemployed, whilst 21% found the impact on employment equal. Rakhine State communities recorded the highest impact on females at 51% being more adversely affected, but this was the reverse in Yangon region, where it was reported that in 61% of the communities, males were more adversely affected.

Alternative Sources of Income and Social Welfare

Alternative Sources of Income

Community responses in survey one identified 17% of communities had alternative ways to generate income (Figure 9). In survey two this increased to 32% but fell back down to 10% in survey three. Yangon region registering the greatest increase from 15% in survey one to 46% in survey two then falling back to the original level of 15% in survey three. As the Covid-19 restrictions have lifted the need for alternative sources of income have decreased but also according to the in-depth discussions, some communities have no opportunity to engage in alternative income generation especially those away from the urban centres such as Yangon.

The changes over the period of the three surveys indicate that people are able and willing to seek out alternative sources of income when it is required, and this can provide opportunities for innovative or new practices. From the responses it appears that most people will only seek alternative sources of income when it is required and will only continue the alternative for the period it is required. This is most likely due to limitations on time.

There are no new ways to find for income opportunities. (Ayeayarwaddy representative)

As other ways to get income are motorcycle rental services and work outside of the village. (Yangon representative)

Most of the community members cannot find the external income source rather than their normal works. (Rakhine representative)

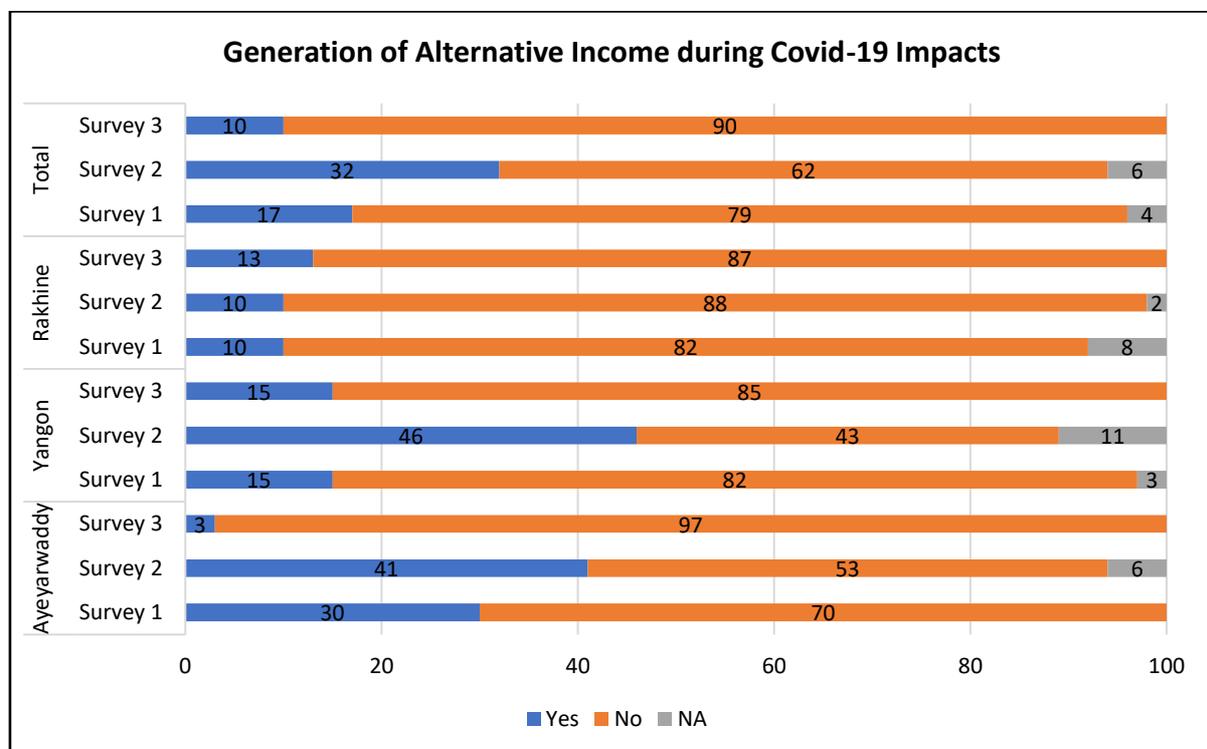


Figure 9. Generation of Alternative Income during Covid-19 Impacts by Percentage

In survey three, 79% of communities reported community members have access to loans, but 72% of communities advise community members are also encountering difficulties making regular loan repayments on existing loans. Additionally, 73% of communities report community members do not have sufficient income to meet all household needs including food, housing, medical and education costs. In-depth discussions advise community members will require loans for next year although the difficulties they are currently encountering meeting current loan repayments, may exclude them from obtaining additional finance.

All are considering back again to borrow money now. However, they will reduce to get loan because they worry that they will not pay back interest and loan on time as their income is not becoming regularly. Example, if we borrow 50 lakhs (5,000,000 MMK) the interest rate for monthly is 450,000 MMK. We can pay when we have regular income. (Ayeyarwaddy representative)

They have a hard time to pay back for interest and loan which they took because of their business were not operated well, some are jobless and do not have income to pay back. (Ayeyarwaddy representative)

Community members considering loans for future plans, but they have serious concerns for interest rate. Pact Myanmar offers loans for community members, but they have to pay interest every 15 days, and this is challenging for them. Moreover, some of the community members cannot look loans from agriculture bank since they cannot meet the criteria of the bank. Somehow, they urgently need loans to restart their business and they capital already lost during Covid-19 periods. (Rakhine representative)

Now, we have difficulties to pay loan because of unsteady market price, not receiving good price for the products and lack of monthly income. (Rakhine representative)

Social Welfare

In survey three only 9% of communities identified their community members have sufficient cash reserves for future shocks such as a similar event to the Covid-19 pandemic. The vulnerable in society have also been greatly impacted by the Covid-19 pandemic, the elderly, disabled, ill and children in the community have encountered lack of enough nutritious food, medication and attendance at school.

There is some impact on elder people e.g. before they had enough food, vitamin and nutritious food, pocket money supported by their children. Now, they do not have enough vitamin, nutritious food as their children have a hard to for enough income. For kids, especially for children who are ready to go for middle and high school to another township or village (only basic school from grade 1 to grade 5 has in the village level, middle school from grade 6-8 , high school from grade 9-11 need to send to other townships and places). Because of lack of income, parents could not be able to send their children to school. (Ayeyarwaddy representative)

There is some impact on elder peoples and kids. For older people, reducing to provide daily nutritious food and medicine (vitamin). For children, school starting is late for them to join the school. (Rakhine representative)

Survey three found that 61% of communities observed negative impacts of some type on women and children, including 22% of communities reporting an increase in child labour during Covid-19 measures. This was enquired into more deeply during in-depth discussions, and it was clarified that apart from children working in family businesses whilst schools were closed some children were engaged in cash work such as carrying baskets or leaving the area to work in shops in Yangon. Some children had replaced paid day labourers in family fishing/aquaculture business whilst school was closed but were returning to studies as schools commence a staged re-opening¹⁰

Overall, 68% of communities advised the loss of income in community households impacted men and women equally, whilst 23% of communities reported a greater impact on women. Yangon region communities reported the highest percentage of impact on women at 39%. The in-depth discussions advised that impacts included income, health concerns, increased child raising responsibilities and greater financial management.

There is some impact on women and kids. As a woman, and a parent, there have many worries for their kids especially for health issues and going to clinic for Covid-19 to be affected to their kids. They are so much worry to go to clinic when their kids are sick because of Covid-19. (Ayeyarwaddy representative)

There have not been impacted women and girls by the Covid-19 restrictions. (Yangon representative)

The women are as key manager to manage for family food and need arrangement. So, when their husband income is decreased, they have a hard time to manage for family. (Rakhine representative)

The ongoing economic toll of the Covid-19 impacts extends to all aspects of life including community life. In-depth discussions advised that funds for local schools, clinics and festivals will not be sufficient to enable normal operations until next year.

No fund for the community to do such events (Ayeyarwaddy representative)

Community members do not have enough money to celebrate seasonal festivals and they have enough fund only for village health centre. (Rakhine representative)

Monasteries, temples, and churches have been closed during Covid-19 restrictions and prevented community gatherings and rituals.

There are no religious activities during Covid-19 time. Especially for water festival time, all religious, traditional annual activities or events were not allowed to do. Monasteries do not accept any offering or any celebrations. Churches were not allowed to attend for Christian people. (Ayeyarwaddy representative)

They cannot celebrate seasonal religious gatherings and they faced challenges even for fasting. (Rakhine representative)

¹⁰ Reopening measures are explained at <https://www.myanmaritv.com/news/schools-reopening-discussions-preparation-measures>

Analysis of the Three Phase Survey

As the Covid-19 pandemic and associated restrictions becomes integrated to the new normal of societies across the world, Myanmar is also adjusting to the new normality of living, working, and surviving in a new environment. The three-phase survey over the four months from April to July 2020, provides an insight to the adjustments and trends within the 120 FishAdapt communities and provides direction for plans and projects that assist and enable communities as the world around changes. In providing analysis of the three phase survey findings, the scope has been categorised into global shock (worldwide changes), Myanmar changes and specific analysis to the FishAdapt project.

Global Shock

G1. The economic impact of the Covid-19 pandemic has been passed to all economic and financial levels including small village markets in Myanmar fishing/aquaculture communities. The World Bank predicts the world economy to contract by 5.2% in 2020¹¹ and the Myanmar Gross Domestic Product (GDP) to fall from a 6.8% increase FY2018/19 to 0.5% FY2019/20 due to the Covid-19 pandemic and associated containment measures¹². Demand for goods and services has decreased, prices have fallen, unemployment has increased, standards of living have fallen, and financial hardship has increased. The findings from the three phase survey show that 59% of communities are encountering market price decrease, 46% of communities are experiencing continuing higher unemployment, 61% of communities have experienced a drop in wages/salaries paid and 86% of communities have less overall income than before the Covid-19 pandemic.

G2. With a population of 54,459,323 people, equivalent to 0.7% of the world's population¹³, Myanmar remains one of the few large population countries with very small rates of Covid-19 positive cases. The prevalence of no cases until July in the 120 surveyed communities and then only three communities recording cases from 106 communities during the July survey three period reflects the low rate of infection and spread in Myanmar. Undoubtedly many years of research in the future will be undertaken to establish the reasons for such low infection rates, the current survey does provide the communities have quickly understood and complied with Government of Myanmar health directions and engaged hygiene and safety practices quickly and effectively.

G3. Along with most countries, the Government of Myanmar implemented immediate disaster response actions to ameliorate the spread of the Covid-19 virus and provide a structure for the economy to bounce back to strong economic growth¹⁴. As time as moved forward from the outbreak of Covid-19 in December 2019, the world is now aware that crisis management has ended and long-term, living with Covid-19 is now the new normal. The ongoing, prolonged Covid-19 pandemic has now encountered a population fatigued, individuals with a lack of urgency Covid-19 and diminished resources and response capacity.

The FishAdapt communities are also fatigued and lack available resources with a decrease in Covid-19 preventative tools from available in 85% of communities in survey one to 43% of communities in survey three. Most concerning for Myanmar is the uncharted nature of the Covid-19 pandemic and the possible future dramatic increase in spread within Myanmar and surrounding countries. Situated between India (currently the 3rd highest numbers of cases of

¹¹ The World Bank 2020, *Myanmar Economic Monitor: Myanmar in the time of Covid-19*. p.12

¹² Ibid. p.16

¹³ <https://www.worldometers.info/world-population/myanmar-population/>

¹⁴ Government of the Republic of the Union of Myanmar 2020, *Overcoming as One: Covid-19 Economic Relief Plan*

Covid-19 in the world and rising) and China (currently 34th highest number of cases but experiencing hot spot outbreaks)¹⁵, Myanmar remains tenuously close to active, large populations that could quickly overcome the health services and spread throughout the country.

Myanmar Changes

M1. Communication of the Covid-19 pandemic, both the consequences and the preventative measures to rural and remote populations has been successful. Additionally, upon receiving the message, community members and community groups have been highly compliant and worked together to rapidly establish the required measures. In a geographically diverse and ethnically complex country the ability to ensure coverage of communication through loudspeakers, phone, Facebook, Viber, television and radio has ensured that by July 2020, 92% of communities had instigated Covid-19 preventative measures.

M2. Market prices for fishing and aquaculture produce have fluctuated over the survey period. Whilst the trend has been an overall significant decrease in prices, changes in geographical areas and the timeline of the impacts of the restrictions has resulted in the need to continually adjust to changing demand and prices. Not only does this impact sale prices but the income within the home to meet living expenses is adversely impacted. With 77% of communities with less cash than before Covid-19 primarily due to the market fluctuations the impact has had an immediate affect but also alters longer-term plans for the future. Initially, 11% of communities reported intention to store produce until market prices were more favourable, this fell in the second survey to 5% and rose again to 23% of communities in survey three. The community members who have sufficient excess of resources are attempting to balance the market fluctuations but many lack the resources and storage capabilities for future planning.

M3. Rates of unemployment have fallen from the high of 70% of communities advising of increased unemployment in survey one to 46% in survey three but remains a significant impact on community finances with 64% of communities recording a decrease in available paid work. The additional burden of unemployed returned workers from overseas and interstate, and the cessation of associated remittances in 31% of communities, further contributes to reduced family and community finances. Community representatives identified job opportunities and job diversification as the most pressing priority for a sustainable Covid-19 recovery.

M4. The early food assistance by the Government of Myanmar reached 93% of communities in April 2020 during initial Covid-19 restrictions, since then, support has reduced to 26% of communities in July 2020, with Yangon region reporting the highest incidence of 47% receiving assistance, predominately cash from the Government of Myanmar (Ayeyarwaddy region reported 18% and Rakhine State 15%). Assistance from NGOs or other large organisations has been negligible, but a notable number of local organisations and business have assisted their local communities. The distribution of support and assistance has been sporadic, geographically limited and criteria for receiving assistance confusing. It is widely acknowledged by all community representatives that there is a need for increased assistance and ongoing support especially for the vulnerable and incapacitated from both the Government of Myanmar and the NGOs that advise they are operating in the community.

¹⁵ As at 20 August 2020 at <https://www.worldometers.info/coronavirus/>

M5. The servicing of financial loans has challenged many community members during the Covid-19 period with 72% of communities reporting members encountering difficulties in meeting loan repayments in survey three. Many community members, without regular and steady incomes cannot make loan repayment schedules and are now faced with seeking out regular seasonal and additional loans but will almost certainly not have the income in the foreseeable future for repayments.

M6. The vulnerable of the community continue to shoulder the burden of the slowing economy, the increased unemployment and lack of sufficient resources for basic needs. The elderly, the young, women and girls, and the culturally, linguistically, and religiously diverse remain disadvantaged. Survey three found 61% of communities observed a negative impact on women and children. Community representatives report no health resources, lack of sufficient nutritious food and reduced educational opportunities impacting on the young, the elderly and the disabled.

M7. The economic impacts of the Covid-19 pandemic and subsequent restrictions will continue to impact communities and livelihoods for many years. Although the Covid-19 pandemic has been approached by all countries as a non-natural disaster and regular disaster response methods were engaged, it is not a sharp, short disaster, it is a long term drastic reduction in world consumption, travel, and interaction. The forth coming Myanmar general elections on 8 November 2020 brings additional uncertainty for the future. Those relying on fishing/aquaculture for their livelihood will continue to experience uncertain market demand, fluctuating employment, and unstable incomes for years to come.

Analysis Directly Related to the FishAdapt Project

F1. Communities are adaptive and are embracing rapid and unknown change. The Covid-19 pandemic has led to a rise in community members using previously unknown communication methods across several social media and business communication platforms. Community members have demonstrated trust in the information received and compliance with requirements specified. The ability to reach a large, diverse and remote audience is available and currently the audience is attentive and willing to accept change and engage in new concepts. The opening of communication has also ignited greater knowledge of the world beyond the community for many individuals who are now seeking more knowledge and input.

F2. Communities are able to identify their collective and individual needs and report what they need rather than being assessed externally. Communities are organised and wanting to plan to the future as they have identified ongoing consequences of the Covid-19 pandemic at the local level. They are seeking assistance with planning, training, job opportunities, risk reduction and management and future shock prevention.

F3. The research clearly established that fishing and aquaculture communities are resourceful, quick to adapt to changing circumstances, and are willing and able to implement unfamiliar strategies if they receive the appropriate information and support. This was evident in the almost universal implementation of a range health and bio-security measures in their communities based on Government health advice and information, that would have been unfamiliar to the great majority of communities. This has implications for methodologies that the FishAdapt project may implement to encourage fishers and fish farmers to change their methods of operations to adapt to the changing climate.

F4. Overall, the research across the three regional areas of Ayeyarwaddy region, Yangon region and Rakhine State has highlighted the diversity of the project scope. The types of fishing/aquaculture livelihoods are vastly different in need and approaches as is the community attitudes and views to the future. The FishAdapt project has the opportunity to provide a tailored approach to suit the needs of the communities rather than implementing what a single model. Through the ongoing relationships between the project, local agents, and community members the project can adapt to the post-Covid-19 society.

F5. Whilst there is some confusion regarding what a 'plan' is and how this is articulated to the individual, in the community and especially NGOs, there has been an increase in community management plans for fishing/aquaculture from 6% of communities in survey one to 24% of communities in survey three. All community representatives are open and eager to engage and promote the organisation of plans. An opportunity exists to establish community wide plans, incorporating what is already being done (although probably not written down) and use simple structures not solely affiliated with the specific goals of individual NGOs and organisations. As a lead in fishing/aquaculture community plans and climate change adaptation, FishAdapt is able to assist through the project parameters.

F6. The communities have embraced new methods of communication most importantly social media. Opportunities exist for FishAdapt to capitalise on the increased uptake of social media especially Facebook and Viber by community members. With appreciation to the audience, the education levels, and the messages to be conveyed, the use of social media can present economical and hygiene safe options for information, training and skill sharing within the project.

F7. The research received overwhelming feedback requesting training and skills development in the community in all areas to address unemployment, food storage, health issues, disaster risk management, pandemics, climate change adaptation and leadership. The ability of FishAdapt to provide tele-training programs and engage communication focal points (local influencers) during the Covid-19 restrictions and subsequent impacts provides much needed assistance to communities. Given the proven ability of communities to quickly adapt to the use of higher WASH standards of hygiene, home gardens and alternative sources of income and the use of banking facilities such as phone and online banking, the time is prime for the introduction of new ideas, methods and planning for the future.

F8. An unintentional consequence of the Covid-19 restrictions has been the reduction in the ability to practice faith, to attend worship and celebrate festivals. With the majority¹⁶ of Myanmar citizens practicing the belief of Buddhism the inability to attend the temple and to celebrate festivals has deflated the community unity and individual wellbeing. Fishing/aquaculture livelihoods and the roles of the fisher have been entwined with ceremony and ritual over the centuries and woven into the social fabric of the communities. An opportunity exists to work alongside communities, their celebrations and festivals and integrate the work of the FishAdapt project in promoting climate change adaptation and the appreciation of the resources provided by the waterways.

F9. The research surveys have highlighted the differing roles of men and women throughout the fishing/aquaculture communities depending on geographic, cultural and livelihood parameters. Yangon region recorded greater Covid-19 related impacts on women including health impacts

¹⁶ 89.8% of the population identify as followers of Buddhism according to the Central Statistical Organisation <https://www.csostat.gov.mm/>

(24% of communities) and loss of income (39% of communities) whilst Rakhine State identified that 51% of communities advised there are more women unemployed than men. Taking into consideration with dedicated Covid-19 gender analysis reports¹⁷ the results provide guidance for gender inclusive programming in the FishAdapt project.

Adaptions by FishAdapt During the Research Period

The FishAdapt project has been identifying specific vulnerabilities related to natural resources status and management, and climate change, to detect gaps at the community level. These gaps will be specifically addressed through updated and new integrated community-based plans. The plans are designed to incorporate current good practices related to natural resource management and critical adaptive methodologies to climate change that are currently identified and implemented by community members. Innovations and new ideas of community members that are in the planning stage that have developed during Covid-19 restrictions and the outcomes of the assessments undertaken at community level by the FishAdapt project will be unified in the adapted integrated community-based plans.

Proposed Intervention Strategies by the FishAdapt Project in Conjunction with the Government of Myanmar¹⁸

Supply Inputs for Freshwater Farming

- Provision of fish seeds should contain key nutritional and Covid-19 health messages.
- Support should include fishmeal for feeding in aquaculture.
- Provision of subsidies and loans for fingerlings for aquaculture farm producers and for smallholder farmers to get inputs ready for aquaculture production and enable fish production at household level therefore assuring availability of protein source.
- Include healthy fingerlings for aquaculture communities to supply protein.

Excess production of Freshwater Farming

- The Government should consider purchasing and storing existing fish products (from small scale fisheries and aquaculture producers) in communities where marketing possibilities or prices have been impacted by Covid-19 (intervention pricing) and encourage safe storage of produce at community level to ensure food availability in the future.
- Fish not purchased by the Government should be converted to fishmeal which is returned to the community for feeding aquaculture. The Government will need to ensure there are adequate infrastructure storage facilities in the communities.

Training for Aquaculture Workers

- Development of aquaculture production technology production training, communication materials and communication campaigns with integrated key nutrition and WASH messages. (Department of Fisheries (DoF) and FishAdapt).
- Training in aquaculture production systems, water management and postharvest (DoF and FishAdapt).

¹⁷ The CARE Rapid Gender Analysis of Covid-19 in Myanmar provides analysis of 82 people regarding Covid-19 impacts on women and girls.

¹⁸ These strategies were presented to the Ministry of Agriculture, Livestock, and Irrigation on 23 June 2020 for impactful interventions based on the findings of survey one, following surveys two and three, the strategies are still relevant and appropriate to the evolving situation.

- Integrate key nutrition and Water, Sanitation and Hygiene (WASH) messages in training, delivered by the FishAdapt project.
- Continue to develop regional information systems for aquatic diseases and updating the biosecurity framework for aquaculture in collaboration with the University of Yangon. (FishAdapt in collaboration with the University of Yangon for Ayeyarwaddy, Yangon and Rakhine).
- Fisheries and aquaculture production related educational activities for employment generation to include key nutrition and WASH messages.
- Identify causes and develop responsive recommendations on fish and aquaculture communities for improving markets connectivity.
- Support to get fisheries and aquaculture market connectivity restored.
- Promote production technology and develop training for aquaculture farmers.
- Development of household aquaculture (or common ponds for groups of houses) for assuring availability of protein in the FishAdapt communities.
- Government supported Cash for Work for fishers and aquaculture farmers to facilitate the maintenance of the small-scale fishery sector.
- Maintenance of flood protection embankments and saltwater prevention embankments (work on mangroves, community and Government plans in communities not covered by FishAdapt).
- Manufacturing and village infrastructure activities including freezers and other preserving techniques such as eco-smoking and salting infrastructure to be developed through Government impetus.
- Supply aqua-farm machinery and equipment to aquaculture farmers and/or communities to enable implementation of aquaculture production systems (DoF and FishAdapt). Prioritize machinery assistance to females and the most vulnerable.

Discussion Regarding the Three Phase Survey Format

The three-phase survey provides an indicative study over a four-month period of the impacts of the Covid-19 pandemic and subsequent actions in selected fishing/aquaculture communities. As the Covid-19 pandemic has not dissipated nor does a vaccine or reliable widespread treatment appear likely for some time, a follow-up survey in six months is recommended to review the ongoing impacts, changing situations and evaluate assistance measures implemented by the FishAdapt project. Furthermore, the six in depth discussions representatives will continue to remain core contacts of the FishAdapt team and they will be developed into longitudinal case studies for both the assessment of the project and ongoing impacts of the Covid-19 pandemic.

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