Post-COVID Recovery of Rakhine State's Shrimp Sector

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MARKET ANALYSIS UNIT

MERCY CORPS

Mercy Corps' Market Analysis Unit (MAU)

The Market Analysis Unit provides humanitarian and development practitioners, policymakers and private sector actors in Myanmar with data and analysis to better understand the present and potential impacts of COVID-19, conflict and other crises on:

- Household purchasing power, including coping mechanisms, safety nets and access to basic needs;
- Supply chains, including trade, cross-border dynamics and market functionality (particularly as it relates to food systems);
- Financial services, including financial services providers, household and business access to finance and remittances; and
- Labor markets (formal and informal), with a focus on agricultural labor and low-wage sectors (e.g., construction, food service).

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This report intends to provide guidance to development actors interested in supporting the 'building back better' of labour and businesses in the Rakhine shrimp sector.

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Acronyms and Abbreviations

ALFF	Agriculture, Livestock, Forestry, and Fisheries
B2B	Business to Business
COVID-19	Corona Virus Disease - 2019
DANIDA	Danish International Development Agency
DoF	Department of Fisheries
FAO	Food and Agriculture Organization
GDP	Gross Domestic Product
GIZ	Deutsche Gesellschaft für Internationale Zusammenarbeit
HIV	Human Immunodeficiency Virus
ILO	International Labour Organization
INGO	International Non-Governmental Organization
MMK	Myanmar Kyats (local currency)
MSA	Myanmar Shrimp Association
MSME	Micro, Small and Medium Enterprises
MySAP	Myanmar Sustainable Aquaculture Programme
NGO	Non-Governmental Organization
NRC	National Registration Card
PL	Post Larvae
RSCCI	Rakhine Chamber of Commerce and Industry
SME	Small and Medium Enterprises
UMFCCI	Union of Myanmar Federation of Chamber of Commerce and Industry
UN	United Nations
UNDP	United Nations Development Programme
VFM	VisionFund Myanmar
WB	World Bank
WFP	World Food Programme

Executive Summary

Executive Summary

The COVID-19 pandemic has significantly impacted the global economy, exposing its vulnerabilities despite modern systems and technological advances, and driving unprecedented impacts on businesses and employment. Vulnerable populations (including women, youth, and indigenous groups) were impacted more severely as they are reliant on informal employment for their livelihoods and often lack any form of social protection.

During the first six months of the pandemic, at least 75% of Myanmar households reported losing their means of employment. Rakhine State, the second poorest region in the country and with 80% of its population living below the poverty line, was struggling with several security, humanitarian and economic challenges prior to the pandemic. COVID-19 is believed to have exacerbated the challenges confronting communities in Rakhine on a daily basis.

To support the economy's recovery and 'build back better' from the cascading effects of the pandemic, a clear contextual understanding of the labour market is required, along with recognizing the challenges faced and available livelihood opportunities. More specifically, further analysis of the shrimp sector in Rakhine State is necessary, being the most employment intensive industry in the region, while involving the highest participation of women and widest inter-minority collaboration. Consequently, this study seeks to examine the impact of COVID on the shrimp sector's livelihoods and labour market in Rakhine State, identifying the support measures and opportunities required for productive recovery.

Key Findings

KEY FINDING #1: Due to the low productivity and/or low income earned from a single livelihood activity, it is common practice for most households in Rakhine to engage in multiple livelihood activities.

- Publicly available data show the majority (approximately 500,000) of households in Rakhine State rely on agriculture, livestock, forestry and fisheries livelihood activities as their main source of income. In fact, when combined, these sectors are the highest contributors to GDP after transportation.
- This practice of combining multiple sources of income may indicate a general weakness of the labour market and could be related to several factors such as livelihood seasonality, informal employment or low employability levels.
- However, income source diversification could be an effective, sustainable and environmentally sensitive coping strategy - avoiding undue pressure on limited resources, such as overfishing/over-cultivation and avoids extreme pressure on land or limited marine resources.
- The diverse sources of income can range from wage labour to self-employment to running an MSME (either as an owner or employer).[1]
- The high informality of employment in agriculture, fisheries, livestock, forestry and construction tends to make these industries more inclusive allowing for low barriers-to-entry for the low skilled labour force and/or those who either do not have access to or are deprived of mainstream formal employment.

[1] Wage labourers work for a stipulated hourly wage and/or monthly salary, while self-employed labourers could encompass seasonal or freelance workers and/or small to medium-sized business owners.

KEY FINDING #2: Livelihood activities in the region are highly segregated across and between locations, religion, ethnicity and gender.

- In general, minority groups (i.e. Rohingya, Kaman, Dinet, M'ro) and women were found to engage in less diverse, rural, and low-income generating livelihood activities - involving limited social interaction.
- Meanwhile, their Rakhine Buddhist counterparts' livelihoods are relatively more diverse, comparably better paid, more mobile and entail wider social interactions.
- There is a strong indication this employment divide is directly linked to a history of inequality and discrimination towards certain ethnic/religious groups.
- Nonetheless, some livelihood activities are common to all groups, with over half the region's population (1.6 million) reliant on the fisheries and aquaculture industries as their primary income source.
- Evidence indicates a wider labour force participation rate of diverse ethnic/religious groups linked to the shrimp or prawn industry – with a high potential of generating more jobs.
- Although female workers are found in cold storage, prawn farming and trading ('pre-processing' activities), their participation rates are highest in shrimp drying and shrimp paste production livelihoods.

KEY FINDING #3: Value-added activities across the shrimp value chain have neither been undertaken nor introduced, leaving resources or products in the region unexploited (excepting shrimp drying and shrimp paste production).

- This lack of value-added activities has further exacerbated the impact of COVID across value chain actors and the shrimp sector more broadly.
- Interestingly, no action was taken by entrepreneurs to introduce value-added activities or diversify products - indicating a lack of entrepreneurial prowess in leveraging an abundant surplus of raw material in the market.
- The failure or inability of the Rakhine State Chamber of Commerce and Industry (RSCCI) to convene after the lockdown (one year at the time of writing), in order to plan ways in which challenges confronting businesses could be addressed, would corroborate this observation.

KEY FINDING #4: The onset of the pandemic has significantly affected Rakhine's shrimp sector, resulting in severe disruptions in transportation channels due to border closures – leading to an over-supply of shrimp while making it difficult to obtain the basic inputs required during the production process.

- As Rakhine's shrimp value chain is highly dependent on the Bangladesh and Chinese export markets, the sector experienced a drastic decline of orders from both international and local buyers – subsequently diminishing all marketing channels including the collapse of the export market.

- Value chain actors encountered delays, a shortage of, or inability to procure needed raw materials and supplies (i.e. breeders, fries, salt, feeds, fuel, fertilizer, etc.) particularly those originating from outside the region.[2] This consequently led to price increases of basic inputs.
- Trading and transport activities were considerably impacted, resulting in either closures or suspensions of almost all sector-specific businesses - primarily due to border market closures and transportation lockdowns. These disruptions further translated into increases in transportation costs, flooding local markets with shrimp and prawn products.
- Nearly 75% of livelihoods affiliated with fry collection were lost.
- All other key value chain businesses (i.e. hatchery, farming, paste production, drying and ice plant/cold storage) were forced to scale down production by at least 50% their typical rate.
- These substantial reductions in business operations equated to working capital shortages, leading to an inability to pay loans and/or collect cash advances from suppliers.

KEY FINDING #5: As a result of the pandemic's extreme industry-wide impact, worker's livelihoods and income levels (especially women) have suffered substantially.

- The majority of workers experienced reduced working hours, averaging half their normal rate.
- 25% of workers completely lost their jobs and livelihoods – most of whom were women engaged in either trading and/or hatcheries.
- A quarter experienced reduced earnings (by over 50%), with many earning as low as 2,000MMK (or $1.30USD) per day - again, the majority of which were women.
- The least impacted livelihoods, with the highest female participation rates, were linked to shrimp paste production and shrimp drying, where the majority of products are intended for either local or regional sale.

KEY FINDING #6: The limited availability of support and resources, other employment options and/or skill development opportunities, further exacerbated pre-existing challenges across the sector, forcing value chain actors to adopt sub-optimal coping strategies.

- The prawn industry had pre-existing challenges, making it even more susceptible and vulnerable to pandemic-imposed economic shocks including:
  - Limited infrastructural investment;
  - Limited access to affordable financial services;
  - Poor technology and a lack of access to technical support to manage their enterprises or groups;
  - Limited availability of skilled workers;
  - Weak policies and a poor enabling environment.

[2] Due to the limited supply of post larvae Panaues Monodon (tiger prawn) from hatcheries, prawn farmers rely on matured female tiger prawn collected from the wild – also referred to as 'breeders'. They are then placed in farms to breed and lay eggs.

- Moreover, workers did not receive any aid or relief assistance from governmental or development organizations since the onset of COVID.
- Overall, actors felt unsafe exploring alternative livelihoods due to a fear for their health and safety, further compounded by movement restrictions – resulting in a shortage of workers in the sector.
- However, some sought out freelance jobs, either within or outside their townships if possible.
- All actors resorted to using their savings in order to meet daily required subsistence needs.
- Many also tried to mitigate the pandemic's effects by involving more family members in various production processes to help supplement household income levels.

Recommendations

Each recommendation is intended to inform several actors, including both humanitarian and development agencies and donors, as well as the private sector and market actor.

I. Income source diversification could be an effective coping strategy to diffuse pressure on the use of limited marine resources, and for households to mitigate the impact of low productivity of the shrimp sector.

- Participatory and community-driven approaches are critical in the design of livelihood development programs, especially if sustainable and inclusive impacts are to be achieved in a region where the contextual nature of target groups vary.
- It also suggests the need for an integrated and sectoral approach, combining markets, appropriate technology, skills, social protection, and community and economic development within the framework of shrimp sector labour market development.

II. Challenges and opportunities in the shrimp sector (common to labour across gender and ethnic/religious groups) are potential entry points to stimulate positive intercommunal activities, drive improvement in social cohesion and narrow the gender divide.

- These 'commonalities' are entry points for establishing convergence and improving economic systems, stimulating greater inter-communal interactions and thereby rebuilding trust between these groups.
- For example, rural women from minority groups in Sittwe are involved in shrimp drying and paste production, while urban Rakhine Buddhist women are engaged in vending. Business-to-business (B2B) relations between groups could be supported and created, with the former acting as suppliers, and the latter serving as buyers/retailers.
- Additional support in the form of establishment of shared service facilities (i.e. aggregating stations, cold storage, farm to market transport and formation of self-help groups) among these communities, will facilitate the trust-rebuilding process.

III. Support for establishing networks with local market channels, will help to address issues arising from continued market border closures.

- One potential immediate measure to mitigate the impact of diminishing demand across export markets is for prawn producers in Rakhine to establish networks with local market channels, including the supermarket associations of Myanmar - negotiating arrangements giving preference to regional prawn products.

IV. Support for expanding local supply chains - through technology transfer for the production of basic production inputs - will further scale the resilience of the shrimp sector.

- While it is not economical to produce some equipment locally, other major inputs can be feasibly produced regionally – with the proper training and technology transfer processes including prawn feed, salt, and aerators.
- As presented earlier, the region has an adequate supply of almost all ingredients required to produce quality prawn feed. However, these are all sold to Yangon. As a consequence, local prawn farmers have to import this feed (either from Yangon or elsewhere), typically at a higher price. Localizing prawn feed production can potentially drive down market prices and scale up production. Consequently, this will help generate more jobs in both the upstream and downstream portions of the value chain.
- Salt is a major ingredient for shrimp paste production. Depending on the salinity of available seawater, salt can be locally produced as it requires a very simple and highly adoptable 'know-how' processes.

V. Immediate support for job creation needs to focus on shrimp sector livelihoods which were less severely affected by the pandemic, especially those linked to value-added processes and stimulating local demand.

- The more value-adding activities undertaken, and the more oriented towards local demand, the higher the chance of building the industry's resilience and coping with internal and external shocks.
- For example, value added processes such as shrimp paste processing and shrimp drying can be expanded and marketed domestically, expanding their regional operations.

VI. Expanding livelihoods for shrimp paste production and shrimp drying (critical value-added activities across the value chain) will benefit more women and ethnic/religious minorities, including others in the labour force with less educational qualifications.

- The provision of solar drying facilities will allow producers/dyers to continue production, even during the rainy season. [3] If the users are well organized (i.e. an association or cooperative) and adequately trained, the facility would be more sustainable if managed by the community itself. Support for improved packaging of dried shrimp (i.e. vacuum packed and properly labelled), can also command higher prices. Applying hygiene and safety standards for shrimp paste (using dried shrimp from controlled or enclosed environments) will also command higher prices.
- The provision of mechanical grinding and pounding facility for shrimp paste processing will decrease women's intensive and manual labour, thereby increasing their output. More jobs for women will be generated in production lines, with improved and more efficient grinding systems.
- Support for technology transfer and local production of rock salt, a major ingredient in shrimp paste.

[3] For example, Natural Farm Fresh Myanmar Co., Ltd. in Yangon (with the support of DANIDA), is a successful example of supplying solar drying units in Sittwe. The company is also running their own drying businesses in Thandwe, Southern Rakhine and Mandalay.

VII. The institutional capacity of business associations (which is currently quite weak) needs to be developed and strengthened to establish a strong platform for advocacy, while addressing common needs and building sustainable MSMEs.

- Strengthening business associations as well as forming an overall cohesive business community is required to leverage product diversification, value-added activities and utilize the surplus of raw materials available in local markets.
- This will require a stronger enabling environment, including responsive, effective and relevant institutional structures, infrastructure and political environment. Hence, the institutional capacity of business associations needs to be supported, developed and strengthened, to collectively address common needs across the shrimp sector, establishing strong platforms for advocacy.
- Providing technical support to business associations is also critical if adaptable and sustainable MSMEs are to be developed – requiring proactive and resolute responses from a strong and cohesive business community. This will enhance their resilience to similar economic, external and internal shocks.
- Expanding employment options overall will be contingent upon the recovery of businesses or will require parallel interventions from business operators (i.e. employment generation).

VIII. Higher employability levels through relevant skills development, and robust active labour market policies have to be in place and enforced, enabling the shrimp sector workforce in becoming more resilient to economic shocks.

- Targeted skills development for the shrimp sector labour force (wage and self-employed), supported by calibrated active labour market policies, is imperative to improve resilience.

IX. Training requirements, as outlined by business owners and employers, must be adequately addressed in order to improve the employability and overall productivity of the shrimp sector.

- Sustainability will be greatly increased if a regional technological and training institute focused on the prawn industry is established and managed by the private sector.

X. To ensure successful and sustainable solutions, a comprehensive bundle of shrimp sector-wide support is required, positively engaging all stakeholders, including the private sector and labour force.

- Shrimp sector-wide support is required in order to address the broader and long-term needs of the industry including equitable financing and access to farm areas; policy advocacy; technology and institutional development; and capacity building.
- However, to enable the process, a cohesive organization involving key and integral players across the prawn industry will be required.
- It will also require strong worker relationships and united business organizations in order to address the high informality, social protection gaps and fundamental rights in the workplace.

1. Introduction

Chapter 1. Introduction

1.1 Background of the Study

The COVID-19 pandemic has disrupted global economic and social systems, driving an unprecedented and far-reaching impact on almost all aspects of society and exposing vulnerabilities and fragilities across economies, despite scientific and technological advancements. During the first wave of the pandemic alone, the International Labour Organization (ILO) estimated that full or partial lockdowns affected 2.7 billion workers worldwide, with 1.25 billion workers employed in sectors that are now facing severe declines.[4] It is projected that the pandemic will impact not only the quantity, but the quality of jobs. Furthermore, it is expected that as a result of massive and drastic income losses, inequalities and poverty will further worsen the quality of life of the working poor.

In Myanmar, one study found 75% and 85% of rural and urban households respectively, reported losses of employment and income within the first six months of the pandemic.[5] In Rakhine State, the second poorest region in Myanmar, with 78% of its population living below the poverty line and beset for decades by pre-existing issues of armed conflict and intercommunal violence, it is feared that the severity of the pandemic's impact may be deeper and greater in scope and duration.[6]

Intervention measures aimed at supporting workers need to address these challenges, enabling them to move forward with post-COVID livelihood recovery. These efforts need to be informed by clear understanding of the impact of the pandemic, as well as designed within the context of their communities.

1.2 Objectives of the Study

The overall aim of the study was to obtain a better understanding of the impact of COVID-19 on labourers (wage and self-employed) and on businesses in the shrimp sector in Rakhine State, particularly for women and ethnic/religious minorities, identifying options for livelihood recovery, during and after the pandemic. Wage labourers work for a stipulated hourly wage and/or monthly salary, while self-employed labourers could encompass seasonal or freelance workers and/or small to medium-sized business owners.

The study first offers an overview of industries in Rakhine State, highlighting employment intensive, inclusive livelihoods and sources of income common to the majority of households, especially ethnic/religious minorities and/or vulnerable groups. It then goes into examining the impacts of COVID-19 on the shrimp labour market due to its economic significance regionally – pertaining to high demand, the degree of employment intensiveness and inclusivity of women and minority groups.[7] The main section of the report examines pandemic-related challenges on businesses and labourers engaged in the prawn industry, further exploring intervention measures to support the process of livelihood recovery.

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[4] "The impact of COVID-19 on the world of work is the most severe since the Second World War: ILO assessments and possible responses." European Commission, 2020, https://ec.europa.eu/international-partnerships/stories/impact-covid-19-world-work-most-severe-second-world-war-ilo-assessments-and-possible_en. Accessed March 23 2021.

[5] "Impacts of COVID-19 on Myanmar's agri-food system: Evidence base and policy implications." IFRPI, 2020, https://www.ifpri.org/ publication/impacts-covid-19-myanmars-agri-food-system-evidence-base-and-policy-implications. Accessed March 17 2021.

[6] "The World Bank and Myanmar's Rakhine State." The World Bank, 2019, https://www.worldbank.org/en/news/statement/2019/06/12/the-world-bank-and-myanmars-rakhine-state. Accessed March 23 2021.

[7] The study uses the terms prawn and shrimp interchangeably, although they technically differ and stem from different branches of the crustacean family tree.

1.3 Methodology

The study employed a mixed methodology approach, combining quantitative data collected through a review of research and reports related to the subject matter, and qualitative data obtained through remote key informant interviews (KIIs) of 70 respondents and resource persons - 21 females and 49 males. The respondents included: employees of five INGOs and UN agencies active in economic development programs in the region; representatives from eight business associations; 41 workers and 14 business operators engaged in the prawn industry. All 55 respondents representing workers and business operators were selected from the study area using a snowball sampling technique, while the rest were purposefully selected. KIIs took place from December 2020 to February 2021.

To obtain comprehensive information on the prawn industry, and to fairly represent the regional sector's current situation, the study covered six townships including Sittwe, Ponnagyun, Minbya, Maungdaw, Mrauk U and Myebon. These six sample townships are regionally known for including the highest concentration of individuals involved in prawn industry-related livelihoods.[8]

1.4 Limitations

As is common with reports of this nature, several challenges inherent to remote data collection methodologies were present. Firstly, findings did not undergo a validation process since face-to-face workshops were not permissible. Secondly, due to limited organized and available data from business associations, target quantitative data could not be thoroughly generated. Lastly, data collection was interrupted by the recent political crisis in the country (February 1, 2021). During this time, respondents were overwhelmed by political tensions and were initially hesitant to cooperate and divulge information regarding their businesses - although this was later resolved.

[8] Joffre, O., Aung, M. "Prawn Value Chain Analysis Rakhine State, Myanmar." LIFT, 2012, https://www.lift-fund.org/sites/lift-fund.org/files/publication/Prawn%20Value%20Chain%20Analysis%20Rakhine%202012.pdf. Accessed February 12 2021.

2. Background: Labour Markets in Rakhine State

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2.1 Macro-Level Overview of the Labour Market

Agriculture, Livestock, Forestry and Fisheries (ALFF) - The World Bank's 2017 Myanmar Living Conditions Survey Report indicates Agriculture, Livestock, Forestry and Fisheries (ALFF) as the main source of livelihoods and income for the majority of households in Rakhine State.[9] Additionally, a countrywide ILO-supported 2017 Labour Force Survey reports that 48.8% of Myanmar's labour force generates income through these sectors, followed by wholesale and retail (15.6%).[10] Another study has shown the agricultural sector's contribution to annual GDP at 24.1%, next to services (40.3%) and industry (at 35.6%).[11] The same source reported that 70% of the country's labour force are engaged in agriculture, which by its operational definition, also covers forestry, livestock and fisheries sub-sectors. Moreover, the ILOs Rakhine-focused Labour Market Assessment revealed that ALFF is the largest contributor to the region's GDP at 25.29%, after transportation (27.81%).[12]

Furthermore, owing to the fact that rice cultivation occupies 85% of the total land area, the ILO study showed almost half of total employment is within the agricultural sector. A total of 1,138,506 acres are cultivated, 85% of which are used to cultivate major crops (i.e. rice, green gram, cashew nuts, different oilseed crops) and raising buffalo, cow, chicken and swine. Finally, the study reported that ALFF is the sector (on and off-farm) that will likely continue to absorb most of the labour force within the region, followed by infrastructure (mainly related to agriculture, transportation and tourism).

Table 1: Households and Income sources in Rakhine State (2017).[13]

Source of Income	Households (%)
Farming and allied	70.4
Crop production	43.1
Livestock Rearing	51.7
Fishing	18.7
Non-Farm Business	36.1
Agricultural Labour	**30.3**
Remittances	22.9
Others	40
Rent	7.5
Public/Social transfers	29.7
Miscellaneous	9.1
Agricultural Activities	**78.5**
Non-Agricultural Activities	55.4

[9] Ibid.
[10] "Myanmar Annual Labour Force Survey Report - 2017 (1st Quarter)." ILO, 2017, https://www.ilo.org/yangon/publications/WCMS_622556/lang--en/index.htm. Accessed March 19 2021.
[11] "The World Factbook: Burma." CIA, https://www.cia.gov/the-world-factbook/countries/burma/. Accessed March 19 2021.
[12] Canares, M. "Rakhine State Labour Market: Assessing Assets, Project Demands and Identifying Areas for Intervention." ILO, 2019, https://steupconsultants.com/2019/05/06/step-up-writes-labour-market-assessment-for-the-rakhine-state/. Accessed March 19 2021.
[13] "Myanmar Living Conditions Survey 2017: Socio-economic Report." World Bank Group, 2020, https://documents.worldbank.org/en/publication/documents-reports/documentdetail/151001580754918086/myanmar-living-conditions-survey-2017-socio-economic-report. Accessed March 27 2021.

Rakhine State has the lowest literacy rate among individuals aged 15 years and over (74%M; 63%F) in the country.[14] Moreover, many groups in Rakhine are deprived of a National Registration Card (NRC) - a basic entry requirement to formal wage employment. With a very high level of informal employment in ALFF, these industries provide a safety net for the majority of the labour force who possess low educational qualifications, as well as those who either do not have access to formal sectors, such as women and/or ethnic/religious minorities.

Taking into consideration the differentiated practices and behaviour of the labour market given the particular setting, the majority (78.5%) of households in the region rely on ALFF-linked activities (both on and off-farm) for their livelihoods (Table 1).

2.2 Labour-Intensive Livelihood Activities in Rakhine State

Agriculture, Fisheries and Livestock - Agricultural-related livelihood activities include farm labour-for-hire, subsistence and small-scale growing of seasonal vegetables and beans, rice farming, and some off-farm activities including rice-milling and selling various farm products (common in central township markets). Growing areca and betel nuts were also observed to generate employment. These types of agri-related livelihoods are more prominent in the townships of Sittwe, Ponnagyun, Mrauk-U, Minbya and Maungdaw. Fisheries-related livelihood activities include fish and shrimp capture, as well as shrimp and crab culture. However, unlike the agricultural sector, there are more off-farm and value-added activities within the fisheries value chain. This includes small-scale shrimp and fish paste processing, shrimp drying, and fish and shrimp cracker production (commonly found in Sittwe and Ponnagyun). These marine by-products are sold in the urban areas of almost all townships. Livestock-related livelihood activities include subsistence or small-scale raising of goats, swine, cattle and poultry. None of the study's respondents recorded employment in off-farm value-added activities related to livestock or poultry.

Forestry - Although lower in terms of labour absorptive capacity, forestry, trading and other services, also provide employment in the region. Mainly found in the rural areas of Minbya and Maungdaw, forestry-related livelihoods include bamboo cutting and selling, and wood cutting for firewood purposes.

Construction - Supplementary to ALFF industries is the regional construction sector including construction of farm to market roads, electrification, bridges, jetties, and building construction for manufacturing and processing - particularly in the economic zones of Kyaukphyu, Ponnagyun Industrial Park and Sittwe Kaladan Seaport. The construction sector is seen as the second most employment-intensive sector in Rakhine State.[15] It is also a male-dominated sector, but one where women in the labour force are now participating more significantly, especially in the fields of painting, electrical, interior design and plumbing. Nonetheless, global public works and infrastructure projects are effective in providing short-term emergency employment programs, creating jobs and generating employment for the most vulnerable in the aftermath of crises such as COVID-19.[16]

Based on the data provided by key informants (Table 2), the construction sector has the largest number of enterprises, followed by fisheries and agriculture. However, there was limited information available on the number and type of business establishments within the agriculture, livestock, fisheries, forestry and construction supply

[14] Ibid.
[15] Idem, page 6.
[16] "COVID-19 - Job creation through employment intensive public works programmes." ILO, May 2020, https://www.ilo.org/global/topics/employment-intensive-investment/WCMS_743537/lang--en/index.htm. Accessed April 12 2021.

chains. In general, value-added activities on the abundant natural resources in the region are commercially very limited, except for fish and shrimp processing businesses (which are mostly micro and informal) and rice milling. This suggests an overall weakness and low capacity of the existing market to generate much needed jobs and employment.

Table 2: Estimated Number of Enterprises in Rakhine State (By Township and Sector).[17]

Township	Agriculture	Livestock	Fisheries	Forestry	Construction
Sittwe	• 5 rice milling and trading units.	• 1 chicken sausage production unit.	• 5 fish trading units; • 20 prawn trading units; • 10 crab trading units; • 3 fish and crab agencies; • 20 fishing gear suppliers; • 30 dried fish agencies; • 10 dried shrimp trading units; • 3 fish paste wholesalers; • 5 fish freezing and trading units; • 6 shrimp paste producers.	• Undetermined number of lumber yards.	• 200 construction companies; • 20 construction material traders; • Undetermined number of steel and welding shops.
Ponnagyun	• 30 rice milling and trading units.	• None.	• 10 fish trading units; • 15 fish, prawn and crab agencies.	• Undetermined number of lumber yards.	• 3 construction companies; • 2 quarrying businesses.
Mrauk U	• 3 rice milling units; • 2 rice trading units; • 1 rice noodle factory; • 6 bakeshops.	• Chicken and duck farming; • Swine raising.	• 10 fish trading agencies; • 6 crab trading units.	• Undetermined number of lumber yards.	• 12 construction companies.
Minbya	• 12 rice milling units; • 10 areca nut traders.	• Poultry farming and chicken egg trader.	• At least 30 fish and shrimp pond operators; • 4 shrimp traders.	• 20 lumber yards.	• None.
Maungdaw	• 3 agri-product traders.	• None.	• 2 shrimp and crab agencies.	• 9 bamboo trading units; • Underdetermined number of lumber yards.	• 6 construction companies.

[17] The term 'units' in the following table refers to either the number of establishments or companies within the specified sector.

Diversified Income Sources – Overall and consistent with findings from the Myanmar Living Conditions Survey 2017, income sources of typical households in the region are not confined to a single particular livelihood, but rather are quite diversified depending on the season, potential income, restrictions, safety and other factors (Table 3).[18] For instance, a household in Minbya whose main source of income is rice farming or growing seasonal vegetables, would tend to its cattle or goats in grazing fields first thing in the morning, on their way to the farm. They then return to their home (from the farm) during the hottest part of the day, and switch to peeling the skin off areca nuts. This is similar to many women in Sittwe, whose main source of income may come from shrimp paste processing. They plant vegetables and tend to chicken in their backyard, while waiting for their husbands to return to shore, and then move on to paste processing once stocks arrive. Lastly, within a household, labour market activities are often more diverse as employment can range from wage labour, to self-employed workers, to running an enterprise as an employer or owner.

Table 3: Common Industries and Livelihood Activities in Rakhine State (By Township).

Township	Agriculture	Livestock	Fisheries	Forestry	Construction[19]
Sittwe	• Growing seasonal vegetables; • Planting rice; • Farm labourers.	• Cow, goat and poultry raising.	• Shrimp paste production; • Fishing; • Fish paste production; • Shrimp and fish drying; • trading/vending fish and other sea products.	• Selling forestry products	• Construction labourers; • Brick making; • Trading construction materials; • Welding; • Fabrication of aluminum door frames.
Ponnagyun	• Farm labourers; • Planting rice; • Banana farming; • Vending bananas; • Areca nut farming; • Growing betel leaves.	• Swine and chicken raising.	• Fishing; • Shrimp drying; • Daily labourers in shrimp processing; • Manual crab catching; • Fish vending.	• Cutting and selling firewood.	• Brick hauling; • Construction labourers.
Mrauk U	• Vegetable growing; • Paddy farming; • Farm labourers; • Rice mill labourers.	• Poultry and goat farming.	• Fishing.	• Selling forestry products.	• Construction workers/labourers.

[18] "Myanmar Living Conditions Survey 2017: Socio-economic Report." World Bank Group, 2020, https://documents.worldbank.org/en/publication/documents-reports/documentdetail/151001580754918086/myanmar-living-conditions-survey-2017-socio-economic-report. Accessed March 27 2021.
[19] The term construction labourers typically refers to low skilled and self-employed workers; while construction workers include all (both low to high skilled workers - i.e. engineers) who receive a regular wage.

Township	Agriculture	Livestock	Fisheries	Forestry	Construction[19]
Minbya	• Growing paddy and beans; • Peeling skin off areca nuts; • Areca nut farm workers; • Banana farming; • Tomato farming.	• Goat raising/herding.	• Fish and shrimp drying; • Fishing in boats; • Inland fish farming; • Fish vending.	• Bamboo and firewood cutting.	• Construction labourers.
Maungdaw	• Crops/vegetable farming; • Rice farming; • Farm labourers.	• Cow, goat and chicken raising.	• Fish vending; • Crab and prawn farming; • Pond labourers.	• Bamboo and wood cutting.	• Construction workers.

2.3 Gender and Ethnic/Religious Groups

While less notable in agriculture, the study observed regional labour markets to be significantly segregated across economic sectors, gender, religion, and ethnicity. For instance, the overall participation of the male labour force is higher than females in forestry and fisheries-related livelihood activities, with the focus in the latter being more on off-farm and value-added activities such as shrimp drying and shrimp paste processing. In addition, although the construction sector continues to be male-dominated, a higher rate of female participation has been noted more recently, particularly in Sittwe's urban areas.

Table 4: Main Income Sources of Most Muslim and Rakhine Buddhist Women (By Township).

Township	Main Income Sources of Most Muslim Women		Main Income Sources of Most Rakhine Buddhist Women	
	Rural Areas	Urban Areas	Rural Areas	Urban Areas
Sittwe	• Farming poultry, cattle, goats; • Odd jobs; • Vendors; • Planting rice; • Growing vegetables.	• Vendors; • Work in Yangon.	• Fish paste production; • Fish drying; • Stall keepers.	• Vendors; • Baking; • Sewing; • Waitresses; • Groceries and clothes (retail and wholesale).
Minbya	• Guarding goats; • Drying paddy grains in the sun; • Household chores.	-	• Peeling the skin off areca nuts; • Household chores; • Employees at beauty salons.	• Groceries; • Employees at beauty salons; • Teachers; • Gold and jewelry shop keepers.
Ponnagyun	-	-	• Rice milling; • Daily workers at dried prawn/shrimp processing and production;	• Masonry; • Carrying bricks for buildings; • Teachers; • Government workers;

Township	Main Income Sources of Most Muslim Women		Main Income Sources of Most Rakhine Buddhist Women	
	Rural Areas	Urban Areas	Rural Areas	Urban Areas
			• Daily workers at farms; • Catching crab and fishing; • Sewing.	• Open residence/shops; • Vendors.
Mrauk U	• Poultry and goat farming.	-	-	• Masonry; • Shop keepers.
Maungdaw	• Domestic chores.	• Domestic chores; • Dealers.	• Planting rice; • Growing seasonal crops and vegetables.	• Vegetable and fish vendors; • Traders.

Rakhine Buddhist and Muslim Women – Moreover, the study observed certain types of livelihoods in which Rohingya/Rakhine Muslims and Rakhine Buddhists (the two major ethnic/religious groups in the region) are both generally engaged (Table 4). [20] This 'economic convergence' of both groups is a potential entry point for inter-communal trust building through business to business (B2B) or livelihood networking. However, there are some salient indications pointing at segregation of employment between these groups. For example, male Muslims have a less significant level of participation when compared to Rakhine Buddhists, especially in agriculture and livestock in Ponnagyun; fisheries in Mrauk U and Ponnagyun; construction in Sittwe and Ponnagyun. Similar observations have been made between Muslims and Rakhine Buddhist women. In the rural areas of Sittwe, and as presented in Table 2 for instance, while most Rakhine Buddhist women are involved with some form of value-added activities (i.e. sewing, fish drying and fish paste processing), their Muslim counterparts participate in animal raising, planting rice, and drying paddy. In Minbya, most Muslim women are confined to household chores, while their Rakhine Buddhist counterparts are employed as teachers, or in jewelry shops and beauty salons. Finally, and as presented earlier, while female workers have higher labour participation rates in the construction sector, this only applies mainly to female Rakhine Buddhist workers, not for Muslims or female workers from other groups. According to respondents, it is culturally unacceptable for younger Muslim

Box 1: A Snapshot of Minbya and Mrauk U

Minbya:

- There are 15 villages inhabited by predominantly Muslim communities, who rely upon growing seasonal crops (i.e. tomatoes, aubergine and beans) as their primary income source.
- Due to the relatively vibrant economic activity and stable electricity within urban or township areas, people from Myebon and Pauktaw travel to Minbya (either via land or water routes) for trading.
- However, due to continued scarcity of job opportunities, many youth (especially women), either travel to Yangon for factory-jobs, or to Thailand or Malaysia to seek employment.

Mrauk U:

- Many rural Rakhine Buddhist men and women go abroad to seek employment, while younger women find work locally mostly as shopkeepers.
- In urban areas, they work in building construction as labourers or in selling traditional Rakhine noodles (Mokti).
- More women between 30 and 40 years of age work as vendors in the market, while most men work as motorcycle or taxi drivers.
- Chin ethnic groups, who reside along rivers, farm either vegetables/crops or engage in poultry or swine raising.
- They rarely travel to townships, leading animal traders to purchase products directly from villages.

[20] Muslims in northern and central Rakhine State have been found to refer to themselves as "Rakhine Muslim," even when other members of the same community identified as "Rohingya". See: USIP, "The Religious Landscape in Myanmar's Rakhine State", Melyn McKay, Peaceworks, August 2019.

women (under the age of 40 years old), whether single or married, to make a living away from their home unless they are widowed and/or receive little support from their families.

Rakhine Buddhist and Muslim Men - Parallel observations were made on the livelihoods of both Muslim and Rakhine Buddhist males in the labour force. In the rural areas of Sittwe (Table 5), while most male Muslims are engaged in farming and fishing, their Rakhine Buddhist counterparts participate in off-farm and livelihoods unrelated to agriculture or fisheries (i.e. bus/rickshaw drivers, brick making). In urban areas, while most Rakhine Buddhist males are involved with construction-related activities, their Muslim counterparts repair watches and umbrellas, as well as vending goods. However, it is worth noting that in the rural areas of Maungdaw and Mrauk U, both these groups are engaged in agriculture, again suggesting an entry point for promoting inter-communal trust through livelihood integration. On the other hand, across urban areas in the township, while most male Muslims participate in vending fish and vegetables, their Rakhine Buddhist counterparts are involved with driving and trading dry goods, agricultural and fisheries products.

Other Ethnic/Religious Groups - As reported, other minority groups rely upon the following sectors as their primary income source:

- Chin communities in Mrauk U are involved with agriculture and livestock; whereas in Minbya they are involved with fisheries as well as agriculture.
- M'ro are engaged with agriculture and forestry in Maungdaw;
- Hindus are involved with agriculture and livestock in Maungdaw;
- Dinets in Maungdaw are engaged in agriculture as their main livelihood.

Furthermore, and within certain townships, there is evidence indicating segregation of employment and norms around employment between gender, location and ethnic/religious groups. In urban areas, Muslim men are restricted to wage employment, as opposed to rural areas, where they can make a living by locally selling groceries and/or clothes. Additionally, most Hindus are involved with vending fishing-related supplies such as nets, rods/lines and other fishing gear. Lower caste Hindus make a living by performing services such as hairdressing, digging toilet trenches, bicycle repair, etc. Meanwhile, Rakhine Buddhist men often travel abroad to seek employment.

Table 5: Main Income Sources of Most Muslim and Rakhine Buddhist Males (By Township).

Township	Main Income Sources for Most Muslim Males		Main Income Sources for Most Rakhine Buddhist Males	
	In Rural Areas	In Urban Areas	In Rural Areas	In Urban Areas
Sittwe	• Gardening; • Farming poultry, goats and cattle; • Fishing; • Drying fish; • Selling and vending fish.	• Repairing watches and umbrellas; • Vending; • Masonry.	• Bus drivers; • Auto rickshaw (tuk-tuk) drivers; • Brick making; • Fishing.	• Auto rickshaw (tuk-tuk) drivers; • Casual labourers; • Painting; • Construction; • Welding; • Metal and aluminum door frames.
Minbya	• Planting rice; • Fishing in boats; • Planting rice;	-	• Workers of areca nut farming; • Fish ponds;	• Masonry; • House food stall keepers; • Auto rickshaw drivers.

Township	Main Income Sources for Most Muslim Males		Main Income Sources for Most Rakhine Buddhist Males	
	In Rural Areas	In Urban Areas	In Rural Areas	In Urban Areas
	• Growing aubergines, tomatoes and beans.		• Firewood and bamboo cutting; • Fishing; • Planting rice.	
Ponnagyun	-	-	• Planting rice; • Fishing; • Wood cutting; • Selling firewood • Catching crab and prawn; • Fishing; • Planting rice; • Areca nut farming; • Dried prawn business.	• Daily workers; • Auto rickshaw drivers; • Traders (rice, areca nuts).
Mrauk U	• Growing crops; • Rock road labourers.	-	• Planting rice; • Fishing.	• Car drivers; • Masonry; • Motorcycle taxi driving.
Maungdaw	• Planting rice; • Growing seasonal crops and vegetables; • Fishing.	• Vegetable and fish vendors; • Masonry; • Coolies; • Sewing.	• Planting rice; • Growing seasonal crops, • Fishing; • Vegetable vendors.	• Dealers.

2.4 Overview of Business Associations

Regional business associations bring together business owners and operators across different sectors, in order to address issues and needs affecting their industries or businesses. The Rakhine State Chamber of Commerce and Industry (RSCCI) is considered the largest business association in the region, with an estimated 450 enterprise owner/operator members representing different industries including trading (i.e. domestic and border traders/export, travel and tours, agriculture, livestock, and fisheries). Yet, as the RSCCI is in the process of developing their database, they were not in a position to provide details of members by sector or industry.

The Rakhine Young Entrepreneurs Association (RYEA), has 105 individual and institutional members including: 30 local traders; 7 manufacturers; 4 from the construction sector; and 3 border traders. Micro and small entrepreneurs who do not qualify for RSCCI memberships, instead affiliate themselves with the RYEA.

There are also sectoral business associations including the Myanmar Construction Enterprises Association (MCEA), the Myanmar Hotelier Association Rakhine Zone and the Myanmar Shrimp Association.

Box 2: An Overview from Business Associations: The Impacts of COVID on Key Industries in Rakhine State.

Business associations unanimously report that the pandemic resulted in significant losses across all business/industries. Lockdowns and safety protocols have contributed to workforce shortages (required for production), leading to drastic reductions in aggregate business outputs - as low as 50% below normal output. This consequently resulted in reduced production/turnover, increases in marketing costs, or in many cases, loss or cancellation of job orders - leading to shortages in operating capital and an inability to pay creditors and loans. Some entrepreneurs had to resort to selling and/or mortgaging assets to supplement their business capital and sustain operations. the impact of COVID on key industries in the region.

1. Paddy Farming:
   Prior to COVID-19, paddy farming in the region was already hampered by continued intercommunal conflict, leading farmers to feel unsafe in undertaking farming activities and households fleeing their villages/farms - resulting in extensive production losses. However, the pandemic has further exacerbated these industry-wide problems, resulting in production losses of more than 50%.

2. Trading:
   Pre-COVID, trading businesses (both locally and internationally) were struggling from the ongoing conflict, affecting overall consumer demand and flow of goods. The onset of COVID-imposed lockdowns further amplified these impacts, drastically reducing the aggregate demand for commodities.

3. Transport: Coastal Shipping and Land Transport:
   Cargo shipping is considered the primary transportation modality in Rakhine State, particularly to/from its capital Sittwe. As with the overall transportation sector, travel restrictions limited passengers, and reduced the demand for cargo shipping. For example, the frequency of trips, as well as the volume of cargo and passengers have decreased by at least half its normal rate.

4. Manufacturing and production:
   Prior to the pandemic, the sector was experiencing consistent orders from the Bangladesh market, benefitting many local labourers with jobs. However, border closures resulted in suspending production. Producers had difficulties selling their products to local markets and were forced to scale down production, subsequently leading to more workers losing their jobs.

3. Impact of COVID-19 on the Shrimp Sector

Chapter 3. Impact of COVID-19 on the Shrimp Sector

3.1 Overview of the Shrimp Sector

The World Bank's Fisheries Sector Report indicates that Myanmar's fisheries and aquaculture sectors play a critical role in the country's economy.[21] It contributes 2% to the national GDP and employs 6% of its population (approximately 3.2 million people) – 800,000 and 2.4 million full- and part-time workers respectively. In fact, it was found that when compared to agriculture, aquaculture creates more on-farm employment opportunities.[22] Rakhine State is the sixth largest producer of fish and prawns, contributing 11.82% to the state's GDP. The business community considers the prawn industry Rakhine's main geographically comparative advantage, given its 344 miles of coastline. Aquaculture as a sector, is the main source of income for close to half the state's 3.2 million inhabitants – with an estimated 600,000 individuals involved in capture and/or aquaculture, and 150,000 involved in other stages of the value chain (i.e. processing, wholesale, export), including 489 registered traders.[23] In the ILO's 2019 Labour Market Study in Rakhine State, the fisheries sector was found a priority for skills development, SME and job creation programs, along with infrastructure and construction.[24]

Primary products - The prawn industry in Rakhine State has three main products or outputs including raw/fresh prawn; shrimp paste; prawn crackers. There are 11 segments or major activities in its value chain generating livelihoods in Rakhine State, including shrimp fry collection, fry reselling, hatchery, prawn farming, pond construction, and feed milling. It also includes ice and cold storage, transport and trading. The segments which involve value-adding activities are shrimp paste processing and shrimp drying (see Figure 1 and Sections 3.2.5--3.2.6). Annex I provides a more detailed overview for each of these 11 key activities, as well as actors involved in the value chain.

Inclusive Job Creation - Available data indicates the fisheries sector, particularly the shrimp and prawn sub-sectors, have the widest possibilities for inclusive job creation in Rakhine State. The industry has the highest female labour force participation rate and allows for greater interaction and complementarity between female and male workers - from either the same and/or different ethnic/religious groups. Thus, the prospect for increasing gender inter-communal trust building through livelihoods within the industry is high. For instance, while men lead shrimp capture and culture activities, women take the lead role in onshore and value-added activities including shrimp drying and shrimp paste production. Table 6 provides an overview of the distribution of ethnic/religious groups and their livelihoods. Moreover, amid movement restrictions imposed on certain minority groups (especially Muslims), the prawn industry - whose activities are largely rural - provides these groups with greater access to employment.

21 Fodor, M., Ling, S. "Myanmar Country Environmental Analysis: Fisheries Sector Report." World Bank, 2019, https://openknowledge.worldbank.org/handle/10986/31890. Accessed April 12 2021.
22 "Belton, B., Mateusz, F., Chaoran, H. "Aquaculture in Myanmar: Fish Farm Technology, Production Economics and Management." Michigan State University, 2017, https://www.canr.msu.edu/resources/aquaculture-in-myanmar-fish-farm-technology-production-economics-and-management. Accessed April 17 2021.
23 Joffre, O., Aung, M. "Prawn Value Chain Analysis Rakhine State, Myanmar." LIFT, March 2012, https://www.lift-fund.org/sites/lift-fund.org/files/publication/Prawn%20Value%20Chain%20Analysis%20Rakhine%202012.pdf. Accessed February 12 2021.
24 Canares, M. "Rakhine State Labour Market: Assessing Assets, Project Demands and Identifying Areas for Intervention." ILO, 2019, https://steupconsultants.com/2019/05/06/step-up-writes-labour-market-assessment-for-the-rakhine-state/. Accessed March 19 2021.

Figure 1: The Prawn Industry Value Chain in Rakhine State.

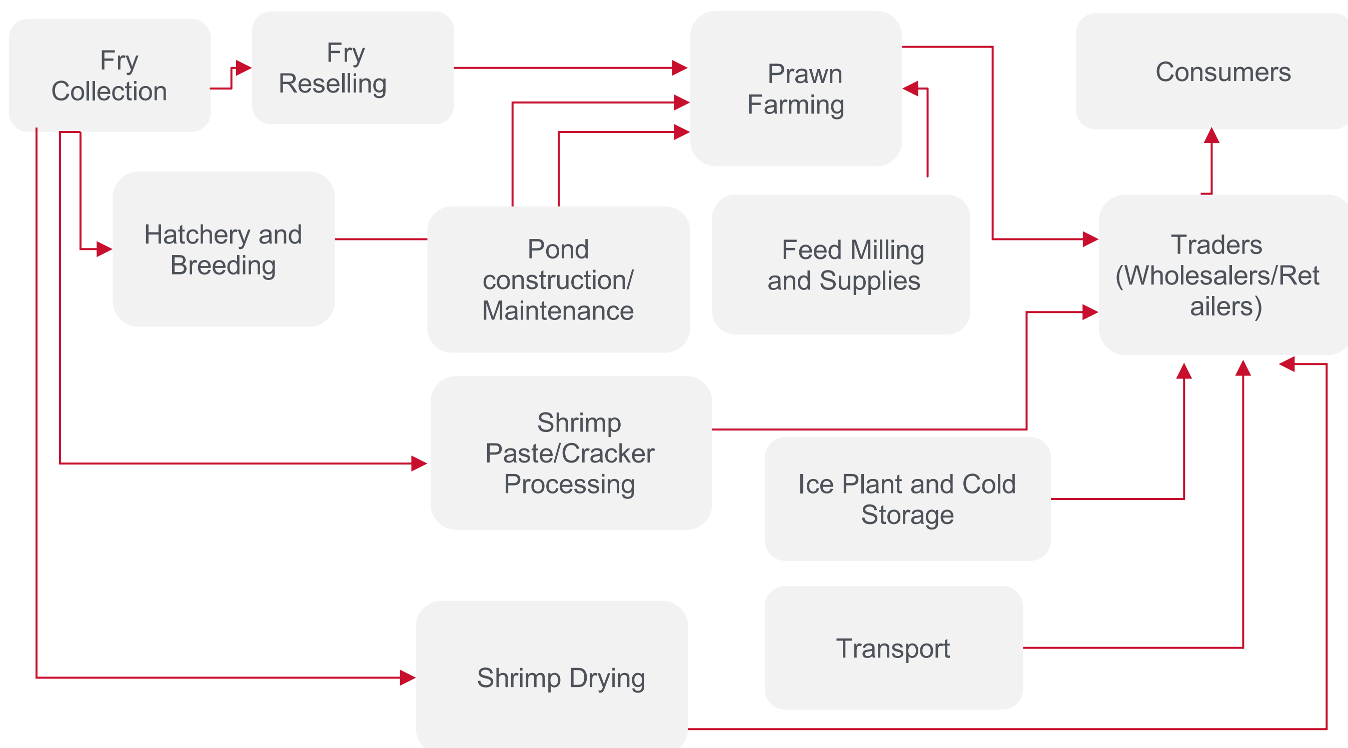


Table 6: Livelihood Activities Across Prawn Industries in Rakhine State (By Township and Ethnic/Religious Group).

Ethnic/ Religious Groups	Townships	Livelihoods within the Prawn Sector
Rohingya	Pauktaw and Ponnagyun	• Shrimp drying; • In-farm fry collection; • Reselling; • Fry collection from wild; • Wholesaler; • Prawn farming; • Pre-processing; • Brokering; • Shrimp paste production; • Fishing boat making; • Pond maintenance; • Fry nursery; • Border trading.
	Maungdaw	• Shrimp drying; • In-farm fry collection; • Reselling; • Fry collection from wild; • Farming; • Pre-processing; • Fish paste production; • Boat building;

Ethnic/ Religious Groups	Townships	Livelihoods within the Prawn Sector
		• Pond maintenance; • Breeder catching.
	Minbya and Myebon	• Shrimp drying; • In-farm fry collection; • Reselling; • Fry collection from wild; • Farming; • Pre-processing; • Fish paste production; • Boat building; • Pond maintenance; • Breeder catching; • Fry nursery.
	Sittwe	• Shrimp drying; • Fry collection; • Reselling; • Fry collection from wild; • Wholesale; • Farming; • Pre-processing; • Brokering; • Shrimp paste production; • Fishing boat making; • Pond maintenance; • Nursery; • Trading/ border trading.
M'ro	Pauktaw, Minbya and Myebon	• Shrimp drying; • In-pond fry collection; • Reselling; • Fry collection from wild; • Wholesale; • Pre-processing; • Pond farmer/operators.
Kaman	Minbya and Myebon	• Shrimp drying; • In-pond fry collection; • Reselling; • Fry collection from the wild; • Fishing boat making; • Fishing pond work; • Prawn farming.
Dinet	Minbya and Minbya	• Shrimp drying; • In-pond fry collection; • Fry collection from wild; • Fishing; • Pond farmer/operator.

Associations - Many business operators in the shrimp and prawn industries are affiliated with the Myanmar Shrimp Association, a union-wide organization of operators and entrepreneurs engaged in the prawn and shrimp value chains. Based on the obtained information, there are 350 shrimp farm- operators in Myanmar, including those in intensive and extensive farming, 120 hatchery operators, 190 cold storage operators, and 180 fish feed milling factories.[25] However, due to limited funds, the association has minimal activities addressing the key issues affecting its members.

Ongoing Issues and Challenges - Persistent issues and challenges continue to stunt the industry's growth, requiring much needed interventions in order to propagate equitable jobs and livelihoods for females, males and minority groups in the region. Firstly, and corroborated by studies from LIFT and the World Bank, is the problematic access or ownership of prawn farms, since most land is owned by the government.[26] Even despite leasing arrangements, it was reported that the government would not allow the conversion of rice paddies into shrimp ponds. The situation presents a disincentive for farmers or entrepreneurs to increase their investment and development of prawn farms. Secondly, and as stated by the majority of business operators - rules and regulations relating to prawn trading are not systematically in place, and at times are unclear and inconsistent. Table 7 below presents specific challenges confronting the prawn industry in relation to key functional business aspects.

Table 7: Prawn Industry Challenges in Rakhine State.

Functional Business Aspect	Specific Challenges
1. Finance	• Limited investment to key infrastructure such as cold storage facilities and hatcheries; • Limited access to financial services at affordable terms in order to: • Acquire higher quantity and quality of raw materials; • Upgrade equipment; • Purchase inputs to enable the shift to intensive farming (more profitable and productive than the current technology - which only allows for extensive farming).
2.Human Resources	• Very limited skilled workers available in the locality; • Low knowledge levels of workers, particularly in hatcheries.
3. Production and Technical Aspects	• Limited volume of quality fries; • Inability to transport key inputs (i.e. fry, feeds, medicine and equipment) in a timely manner; • Limited local supply of quality tools and equipment – heavily reliant on foreign suppliers; • Limited supply of local feed; • Limited post-harvest activities and product development support; • Traditional farming technology is less productive, with no support for modern farming technologies; • Lack of alternative reliable and hygienic shrimp drying methods – sun drying is currently predominantly used, which is prone to predators and seasonal interruptions; • Lack of larger and accessible cold storage facilities to prolong the freshness and shelf life of prawn products; • Bigger and more efficient grinding machines for shrimp paste production;

[25] Extensive farming is a traditional technology using the 'trap and hold' technique, which is dependent on tidal sea waters and does not require commercial feed; while intensive technology is when prawn are placed in ponds, with controlled water levels, higher stocking density, and utilizing commercial pellets as feed.
[26] Joffre, O., Aung, M. "Prawn Value Chain Analysis Rakhine State, Myanmar." LIFT, March 2012, https://www.lift-fund.org/sites/lift-fund.org/files/publication/Prawn%20Value%20Chain%20Analysis%20Rakhine%202012.pdf. Accessed February 12 2021.

Functional Business Aspect	Specific Challenges
	• Larger hatcheries which can produce a greater volume of fries; • Lack of quality control methods and post-harvest handling systems.
4. Marketing	• Limited local Rakhine markets for farm products (shrimp/prawn); • Limited access to reliable buyers – heavy dependence on local buyers and wholesalers who provide very low purchasing prices; • High cost of transportation; • Over dependence on external suppliers for quality feed and equipment; • Ineffective procurement practices for fry, requiring advance payment - yet timely delivery still poses challenges; • Limited marketing skills; • Unsustainable marketing practices (i.e. delayed payment for goods sold via consignment arrangements).[27]
5. Management, information and communication	• Lack of access to information about applied technology in the shrimp industry, intensive technology or hatcheries; • Farming technology is very traditional and extensive.

Limited support - There are a limited number of programs and development actors focused on supporting the development of fisheries and aquaculture. DANIDA, in cooperation with the Department of Fisheries, has supported the 'Sustainable Coastal Fisheries' Project from 2016 to 2020. Additionally, VisionFund Myanmar is providing microlending services to women and minority groups for livelihood and business development, across different sectors/industries, including shrimp and aquaculture related livelihoods (see Section 4.4).

3.2 Impact of COVID on Value Chain Actors in the Shrimp Sector

All respondents concur that pre-COVID, the prawn industry was already suffering from a limited supply of fries from both the wild and hatcheries, one of the main reasons for declining production. However, the industry has been further negatively impacted from the knock-on effects of the pandemic, including local and international border market closures and extensive disruptions, creating a crippling cascading effect across the entire value chain. Respondents also confirmed that fishing boats were unable to depart due to pandemic-related restrictions, with many businesses being grounded due to diminishing demand from other countries and regions. Moreover, the oversupply of fish in local (regional) markets drove prices down to unprecedented lows, even at breakeven prices.

3.2.1 Fry Collection from the Wild

Fry collection from the wild is one of the most important segments of the prawn industry value chain, with a large portion of the rural labour force relying upon it for their livelihoods. During the pandemic, fry collection livelihoods suffered severely due to cancellation of orders and an overall drastic reduction in the demand for fries from resellers, hatchers and prawn farmers. According to respondents, there are about 50 fry collection agents in Sittwe - up to 70% of which (including individuals engaged in these activities) have lost their livelihoods. While in Ponnagyun, nearly half (20) of the interviewed fry collectors have also been economically displaced. Given the largely homogenous market, it can safely be inferred the situation is similar in other townships.

3.2.2 Fry Reselling

Fry resellers depend and purchase stock from collectors and hatcheries. According to respondents, there are about 20 reseller businesses in the study area. Reselling businesses and livelihoods have been significantly affected by

[27] This refers to the prevailing trading arrangement, where the supplier/trader receives payment from consignee/resellers, after the products have been sold.

COVID due to a cancellation of orders, low demand brought about by lockdowns, and closures of markets and borders. In fact, the majority of prawn farmers who could no longer afford high operational costs, or could not obtain the needed stock from hatcheries, have had to either scale down or cease operations completely. An estimated one-third of those employed by resellers lost their jobs during the pandemic.

3.2.3 Hatcheries

Hatcheries play a very important role in the prawn industry value chain, as they are a major source of fingerling stock required by prawn farm operators. They also act as buyers of breeders, caught by collectors from the wild and sold through resellers. According to the study's sources, only labourers who participate in hatchery jobs are almost exclusively Rakhine Buddhist.

At the time of the study, there were two hatcheries operating in the region (located in Pauktaw and Myebon), under the management of the Department of Fisheries (DoF). Prior to the pandemic, hatcheries were already struggling to produce the quality and quantity of fries required by local markets, due to aging equipment and facilities – the main reason for inefficiencies and high operational costs. However, as the supply of fries from the wild is decreasing year after year (due to mangrove deforestation), the market expects hatcheries to fill this growing supply gap. According to sources, the production volume of these hatcheries were 2-3 million fries per batch pre-COVID. However, during the pandemic - when demand for fries decreased and supply of breeders from collectors became very limited - hatchery production scaled down by nearly half the normal volume.

3.2.4 Prawn Farming

The prawn farming segment is the epicenter of the prawn industry value chain. Farm operators drive the demand for fries, both from hatcheries and from the wild - supplied by fry collections and other inputs such as feed and farming equipment.

Prawn farming businesses have been severely affected by the pandemic. Challenges reported by farm operators include:

- Loss or shortage of supply fries and critical inputs to farming;
- Delays, or inability (in some cases) to deliver required supplies and products to buyers due to lockdowns;
- Loss or decline in demand or purchase orders;
- Production disruptions due to a shortage in supplies and workers. Some farmers in Sittwe, Minbya, Myebon, and Pauktaw reported reduced production volumes of 30% to 50% of normal rates (approximately 10-20viss per acre).

These issues have resulted in:

- Loss or drastic decline in income (about 50% less than normal operating income), thereby unable to pay creditors;
- Shortage of capitalization due to an inability to secure small business loans. As a consequence, some farmers in Myebon resorted to paying their workers in-kind (with prawn) in order to retain them.

Borrowing funds and/or receiving cash advances from traders (an issue prior to COVID), has become a more common coping mechanism during the pandemic – due to a lack of affordable access to finance. This often leaves prawn farmers without sufficient bargaining power over the price of their products or harvests.

3.2.4.1 Pond construction and maintenance

Pond construction and maintenance are ancillary and provide services to the prawn farming segment. This segments' livelihoods have also been severely affected by the pandemic. COVID-imposed lockdowns have resulted in:

- An inability to transport fuel and construction equipment;
- A lack of demand for pond construction given the scaling down of pond farming activities.

In Myebon for instance, with around 30 individuals engaged in construction-related livelihoods, it was reported that demand was reduced by almost half the normal rate.

3.2.4.2 Trading and Reselling

Resellers operate as middle-buyers either on their own, or in alliance with traders who may be wholesalers or retailers. According to key informants, excepting micro-resellers and labour-for-hire in the villages, individuals engaged in trading businesses and reselling livelihoods are mostly Rakhine Buddhists.

Due to the limited availability of data, it is difficult to generate statistics on the outflow of prawn products and by-products. Yet, according to respondent estimates, almost three-quarters of prawn/shrimp products from the region were being exported to Bangladesh and China prior to COVID. The remainder were being sold locally to other regions, mainly through Mandalay and Yangon. However, due to market border closures and transportation lockdowns during the pandemic, the prawn export business came to a near halt; more than three-quarters of the volume was re-channeled and sold in Rakhine local markets, and the remainder re-routed to other parts of the country, except for a small volume of prawn, which could be transported across borders through 'lucrative connections'. Consequently, wholesalers/exporters had to stop purchasing product, resulting in an oversupply of prawn and other fisheries products in the state – forcing their stock to be sold at discount or 'give-away' prices.

With this market collapse, some reported that resellers and traders were unable to recover cash advances/loans extended to their clients (i.e. farmers, resellers, collectors), leaving them unable to meet their own debt obligations. Consequently, workers were left jobless. In Minbya for example, an estimated 90% (9) employed in the reselling or trading business have been left economically displaced. Apart from using social media for direct and online sales by some entrepreneurs, the study noted no initiative taken to explore value-added or other significant activities, in order to take advantage of potential opportunities.

3.2.4.3 Transportation

Taking on the main role of moving products and inputs from suppliers/source to buyers (middle or end-buyers), transportation is a vital component of the prawn industry value chain. Excepting cargo loaders in villages (some of whom are Muslim), almost all workers and transport operators are Rakhine Buddhists.

Transportation businesses were the first segment of the prawn value chain hit hardest by COVID-imposed transportation restrictions and lockdowns. Respondents from business associations and business operators cited that transport lockdowns caused prolonged delays of, and drastic shortage in trading supplies. Basic production inputs were also difficult to obtain, including raw materials, equipment and other logistical disruptions, contributing to soaring input prices. Some operators were able to find a way around these restrictions, yet had to pay a 'facilitation fee' to highway checkpoint personnel, in exchange for passage.

3.2.5 Shrimp Paste Processing

Common to the region, shrimp paste processing (ngapi) is the only value-added activity besides shrimp drying, within the prawn industry. According to sources, only Rakhine Buddhists and Muslims are engaged in this livelihood.

Figure 2: Shrimp Paste Production in Sittwe.

Photo credit: Peter Bellen

The pandemic drastically impacted livelihoods linked to shrimp paste production, with respondents stating a nearly 50% decline in production due to the scarcity of raw materials (i.e. shrimp and salt). As workers from neighboring villages could not travel to production sites, producers had to maximize labour from family members. Demand was also drastically affected since ngapi traders faced challenges transporting their product to both townships or markets within and outside the region.

3.2.6 Shrimp Drying

Dried shrimp is a staple and primary cooking ingredient in Myanmar cuisine, and more broadly across Asia. Shrimp drying livelihoods are dominated by women and youth (as workers), with high participation rates from different ethnic/religious groups: Rakhine Buddhists in all studied townships; Rohingya in Sittwe, Maungdaw, Minbya and Myebon; Kaman, M'ro and Dinet in Minbya and Myebon.

Similar to shrimp paste processing, shrimp drying livelihoods were hardest hit by the pandemic. This is predominantly due to low demand, scarcity of shrimp fries (primary raw material), reduction in orders and limited availability of labour. Respondents estimate that dried shrimp production has decreased by at least 50% of normal production volumes. With COVID-imposed school suspensions, it was observed that children's involvement in shrimp drying processes dramatically increased - taking on roles as either helpers or assistants to their parents.

Figure 3: Participation in Selected Shrimp Drying Activities.

Photo credit: Peter Bellen

3.2.7 Ice Plant and Cold Storage

Ice plants and cold storage provide storage services and supply ice products to traders and resellers, to prolong the shelf life and freshness of prawn and other fisheries products until they are sold to markets. There were five cold storage providers in Sittwe pre-COVID. However, the market collapse significantly impacted demand for these services, forcing two units to shut down due to high costs and unprofitable operations. At the time of the study, the remaining three continued operations, although at limited capacity considering the extremely low demand. Similarly, there were five ice plants pre-COVID, however three closed down during the pandemic, with the remaining two reducing production due to low demand. Workers in ice plants and cold storage are mostly Rakhine Buddhist males.

3.2.8 Feed milling and feed supplies

Based on the figures from the Myanmar Shrimp Association, there are 180 fish feed milling factories in Myanmar, none of which operate in Rakhine - one of the main prawn supplying regions. The lack of local feed mill companies is a significant challenge for the regional prawn farming industry. Thus, pond operators and hatcheries rely on feed supplied from outside the region and from natural feeds collected during the tidal exchange. Nonetheless, there are 150 enterprises supplying raw fish feed ingredients in Rakhine, whose primary market is feed companies in Yangon. During COVID, these businesses were equally negatively impacted since transporting products to Yangon became extremely difficult. This scaling down of operations resulted in the displacement of many workers, most of whom were male and Rakhine Buddhist.

3.3 Impact on Workers' Income and Employment

All respondent-workers (waged and self-employed), cited their livelihoods and income have been severely affected during the pandemic, due to transportation lockdowns and movement restrictions. All claimed their livelihoods were disrupted, with over half experiencing working 50% their normal hours, and the remainder encountering work suspensions of over 15 days within a one-month period.

Income – One-third of respondents lost their jobs (the majority of which were women), mostly connected to both trading (i.e. wholesale, border trading, reselling) and hatcheries. Although many were able to shift their income sources – such as sewing and betel nut farming amongst women, and rickshaw driving in the case of males - all respondents cited meager income levels and felt very apprehensive about their income security. This has subsequently prevented them from fully pursuing other, more gainful sources of potential income. As seen in Figure 4 below, all respondents cited their income diminished significantly, driving many deeper into poverty - earning as low as 2,000MMK ($1.30USD) per day. A quarter of respondents have experienced an income reduction between 50% and 75%, most of whom were engaged in prawn trading livelihoods, especially women and youth workers. In fact, women experienced a much more drastic income reduction than men, with nearly all women stating they earned up to 75% less per day.

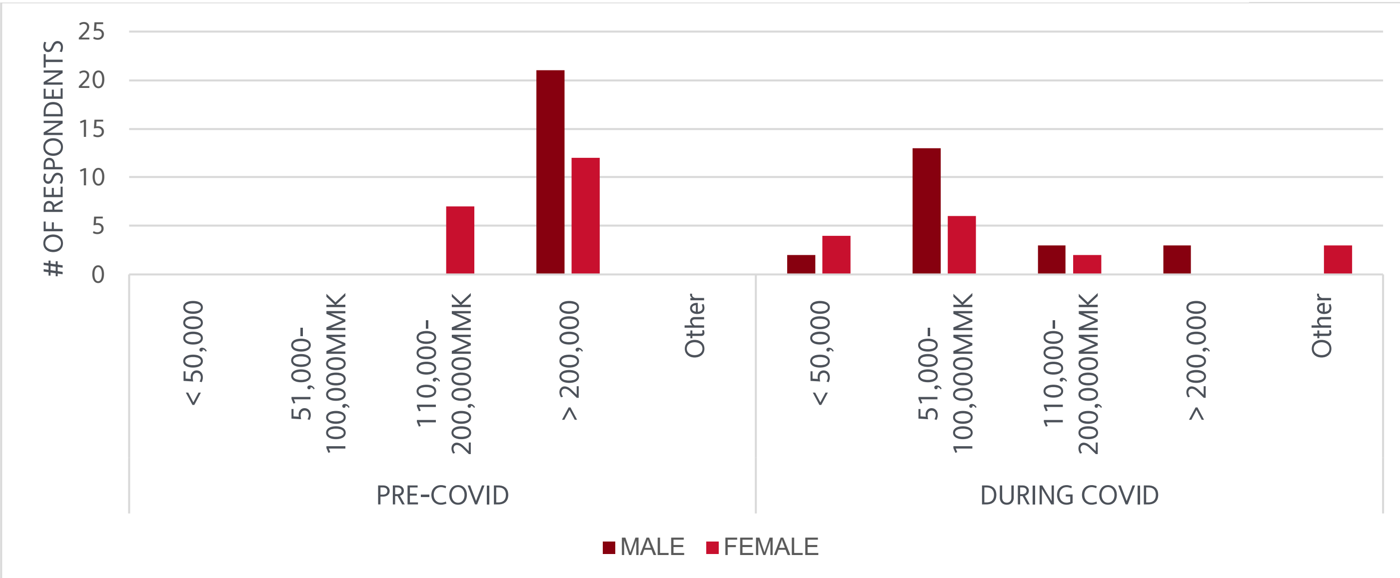
Information gathered from employers revealed that income, salary rates and employment benefits vary across livelihoods in the prawn industry. Prior to COVID:

- Managers received salaries of at least 401,000MMK ($294USD) per month;
- Supervisory positions received between 301,000-400,000MMK ($200-266USD) per month;
- General workers within 201,000-300,000MMK ($134-265USD) a month.

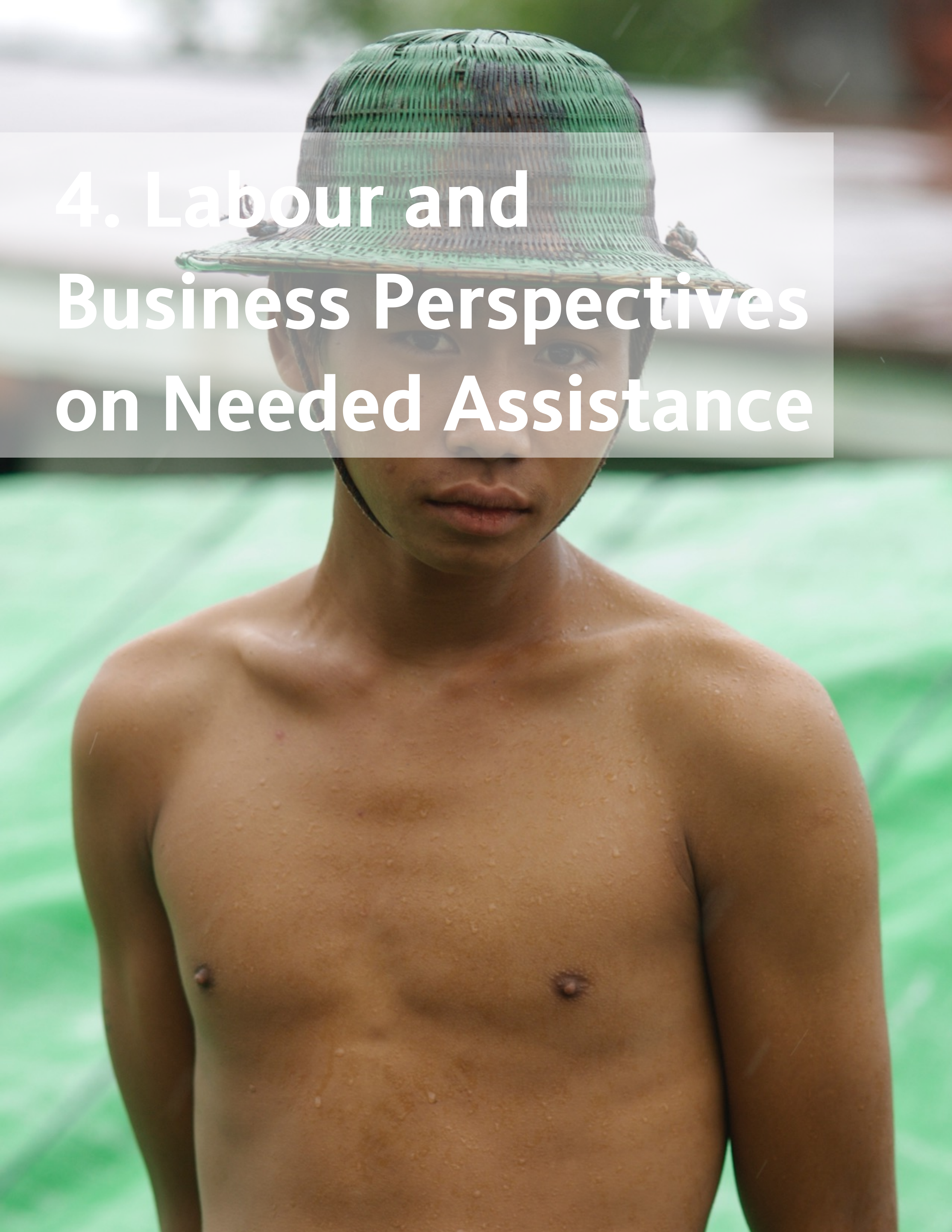
Additionally, salaried or regular staff were provided with sick leave benefits and severance pay. Furthermore, free meals were provided while on duty. This is especially practiced across enterprises which, due to their businesses' nature, need to operate 24 hours per day including hatcheries and prawn farms. However, due to significant business losses, salaries and wages have been reduced to approximately 50% their normal rate, implemented through either a reduction in hours worked and/or salaries. Meanwhile, livelihoods engaging a high proportion of women (i.e. shrimp paste and shrimp drying) were less severely impacted as compared to trading and reselling. This observation suggests that chances of building resilient livelihoods is higher amongst this vulnerable group, and industry-specific segment.

All respondents, especially those who lost their income and livelihoods, claimed they did not receive any form of support (livelihood or aid) from either the government or NGOs during the pandemic. As a result of their diminished income and the increased cost of living, almost all respondents stated they had to resort to using savings, and half were forced to borrow money from other sources in order to meet basic household needs and expenses. Meanwhile, some had to undertake freelance or odd jobs, and/or allowed other household members to contribute towards income generation, even though many admitted employment opportunities became scarcer during this period. In addition, some workers who were displaced from their homes (for reasons pertaining to COVID) attempted traveling to other townships to seek alternative income sources as freelancers. Respondents claim that children never engaged in labour, despite facing these challenges. However, in some instances, children were asked to support their parents in home-based income activities such as watching shrimp during the drying process (to avoid shrimp being consumed by predators). Furthermore, there were no reports of reduced food consumption, sale of household assets, engaging in hazardous work or human trafficking, as a result of the pandemic.

Figure 4: Changes in Workers Income Due to the Pandemic.



4. Labour and Business Perspectives on Needed Assistance



Chapter 4. Labour and Business Perspectives on Needed Assistance

4.1 Business Continuity Needs

Business operators have identified resources and opportunities for business continuity and expanding employment across the prawn industry - focusing on aspects of financing, workforce development, production and technical, marketing, information management, and policy and governance. Table 8 outlines these details, segmented by their key business aspects.

Table 8: Required Resources and Support for Business Continuity.

Business Aspects	Available Opportunities and Resources	Proposed Interventions and Support
Financing	• High export demand for prawn products (outside of COVID); • Investors are keen on bankrolling the prawn industry given the favourable environment.	• Affordable loan packages for the acquisition of equipment and financing new technologies; • Business insurance to protect both owners and their inventory.
Workforce Development	• Abundant pool of trainable workforce; • Skillful workforces can attract investors, especially in hatcheries; • Businesses are generally willing to pay higher wages for skilled workers; • Businesses are open to closer labour-employer cooperation/partnership.	• Subsidies and technical support for skills training of workers in specific competencies including food safety awareness, fish processing methods and post-harvest control; • Microfinancing to support technical skills and management training.
Production/ Technical	• Rakhine has ample land to expand its prawn industry; • High local demand for feed; • Raw materials for feed production are easily available; • Technology to upgrade shrimp paste processing is widely available; • INGOs and international aid programs (i.e. GIZ's MySAP and DANIDA support) are available in Myanmar.	• Financial and technical support for appropriate shrimp feed production technology from foreign countries/companies; • Government to Government (G2G trading agreement; • Cooperation with ASEAN countries on quality inputs and information; • On-the-job training (OJT) and work-based training and technology transfer for intensive farming technologies; • Technical support to access or own modern equipment/technology; • Technical support for local feed manufacturing.
Marketing	• Increasing local and export demand; • Alternative marketing channels are available; • Myanmar has good access to export markets or trading borders;	• Technical support for expanding domestic market particularly in major hubs (i.e. Mandalay, Upper Myanmar); • Direct access to market information; • Technical support in development marketing and trading arrangements with foreign buyers;

Business Aspects	Available Opportunities and Resources	Proposed Interventions and Support
	• Availability of internet, social media and digital marketing technologies. •	• Support for developing cooperation with trading partners; • Require support for introduction of digital technologies and modernization of production and marketing; • Formation or accreditation with regional (ASEAN) shrimp trade organizations.
Management and Information	• Modern management technologies are available in the market; • Available integrated farming technology; • Business Management Trainings are available (i.e. ILO SIYB, UNDP).	• Online technical support from universities or government agencies. • Linking with international fisheries information associations for technical information like diseases and effective production technologies; • Technical support for business management training; • Continuing knowledge development among various stakeholders regarding technical issues (i.e. markets, technologies, diseases etc.); • Establishing cooperation with the government, amongst producers, traders and the UMFCCI.
Policy and Enabling Environment	• Space/farmland is available; • Off-shore capture could be maximized if more advanced equipment and engines were available; • Financial institutions and development partners are willing to support the industry if land use was legally allowed.	• Policy advocacy with governmental agencies (i.e. MoALI) for land access and utilization); • Technical support for expanding and strengthening the Myanmar Shrimp Association.

Macro-Level Proposed Interventions - At the time of the study, regional business associations had not yet had the opportunity to hold a meeting amongst themselves to discuss the pandemic's impact on their businesses and to explore next steps to address priority needs. Nonetheless, respondents identified the following immediate and required sector-wide measures to help businesses recover:

- Coordinate with border-trading countries, particularly Bangladesh, to agree upon which new and additional products can be traded in order to increase cargo traffic. Shipping costs were extremely high during the pandemic (especially considering limited product volumes), leading to unprofitable business operations. Consequently, there is a need to diversify commodities traded across borders; this can be done by organizing business summits involving private sector leaders and key representatives from the governments of both Myanmar and Bangladesh.
- Explore joint ventures with trading counterparts, as well as with local producers and suppliers - to strengthen public private partnerships (PPPs). To do this, support from the government, UNDP, FAO, ILO and MSA will be required.
- Owing to the scarcity and dire need for a stable supply of tiger prawn fries, there is a need to attract hatchery investors and international aquaculture ventures, introducing innovative and modern

technologies, as well as equipment for breeding, hatchery and farming. This will result in increasing the quality and quantity of prawn fries, spurring on further farming activities and therefore generating more jobs to re-employ displaced workers and absorb new labour-force entrants. Increased farm outputs will drive the demand across other segments in the value chain, such as ice plants and cold storage, as well as transport.

- Diversify and improve productivity of other labour intensive sectors including livestock and rice paddy farming, as they complement the prawn industry. For example, rice bran, pea flake and chicken manure are all important ingredients in the fish feed production process.
- Strengthen mangrove and coastal forest development, as well as improved law enforcement on coastal resource management, in order to improve the habitat and supply of wild fries.
- Upscale entrepreneurial competencies and business management skills of business operators.

4.2 Developing Workers Skills

Business operators and associations contacted for this study indicated that improvements in labour force skills and competencies are required (especially life and entrepreneurship skills) to improve overall employability and income, and to contribute to the productivity of the prawn industry more broadly. They argued these skills are essential in navigating ongoing market challenges, such as rapid changes in the labour market and fluctuating industry demand, combined with uncertainties and vulnerabilities across the employment sector. In turn, these skills will also contribute to workers' resilience in adapting to future external and internal shocks. Aside from this, the workforce also requires training in specific competencies, outlined in Table 9 below.

Table 9: Required Skills Development for the Prawn Industry's Labour Force.

Required Supervisory Skills	Required General Worker Skills (Wage-Employed or Casual Workers)
• Food safety awareness skills; • Trading awareness and knowledge; • Fish processing methods; • Border trade market surveys; • Logistical awareness; • Fisheries and intensive farming technology knowledge; • Farm Management skills; • Quality control and post-harvest processing methods/technologies; • Water quality management; • Knowledge on digital skills and marketing; • Knowledge on international fisheries and new technologies; • Communication and English skills to communicate with foreign technicians; • Environmentally friendly 'Do's and Don'ts' practices; • Pedagogic Skills (to train existing and new workers).	• Food safety awareness skills; • Fish processing and post-harvest quality control; • Awareness on Food Safety and Sanitation 'Do's and Don'ts' to ensure quality fish product • Shrimp nursery and feeding methods; • Environmentally friendly 'Do's and Don'ts' practices; • Hatchery work awareness and sustainability 'know how'; • Safety considerations relating to transporting food products; • Technological and Management skills; • Communication skills.

4.3 Expanding Employability for Women and Vulnerable Groups

Key informants from business communities identified certain activities, which could have a higher potential in generating employment for women including:

- Cold storage and post-harvest processing - where the required skills are primarily sorting, sizing and packaging;
- Hatchery operations - requiring feeding and sorting skills; monitoring and checking salinity levels;
- Shrimp drying and packing;
- Processing prawn into finished products such as shrimp paste, shrimp crackers, drying, canning etc.

Outside the prawn industry, sectors and livelihoods identified to have greater female job generation potential include agricultural and food processing (i.e. fruit jam making), and the production of chili powder, palm jam and handicrafts.

Furthermore, for employment in the prawn industry to be more inclusive, livelihood interventions targeting women from various ethnic/religious groups need to be undertaken. These interventions should be developed through participatory processes, ensuring strategies are relevant, contextualized, conflict sensitive, effective and involve high levels of accountability.

4.4 Development Service Providers

Respondents identified UN agencies (i.e. UNDP, FAO, ILO), as well as other INGOs known for their development activities, which can be leveraged to support the labour force's livelihood recovery and businesses within the prawn industry. There are also agencies within the region who actively support the financial needs of women, micro and small entrepreneurs. One of these agencies is Vision Fund Myanmar (VFM), outlined in Box 3 below.

Box 3: A Snapshot on VisionFund Myanmar (VFM).

VFM falls under the VisionFund umbrella - an international microfinance network, working amongst the most vulnerable communities and families in hard-to-reach and impoverished locations; enabling them to create secure futures for their families.

- The products and services offered fall into five broad categories: microloans; savings programmes; microinsurance; training and education.
- In Rakhine, VFM offers business loans, agriculture and livestock loans, and small and growing business loans.
- Among its clients are SMEs - wholesalers and retailers, shrimp drying producers, and prawn and hatchery operators.
- Their services are currently available in several locations across Rakhine including Sittwe, Kyaukphyu, Yan Pyae, Sane, Kyauktaw, and Mrauk U. They were planning to expand their loan services in August 2020 (to Pauktaw, Ponnagryun and Minbya), however this was postponed to 2021 due to the pandemic.
- Benefits include sustainable livelihoods, increased economic well-being, improved community well-being, decreased dependence on outside aid and the overall restoration of hope and dignity.
- VisionFund Myanmar is very receptive to building partnerships with UN agencies and INGOs active in social and economic development, opening several potential development opportunities. See Annex II

Chapter 5: Recommendations

The following table summarizes recommendations generated from the study's findings, aimed to add to the resilience of the shrimp sector in Rakhine, as well as inform several actors, including both humanitarian and development agencies and donors, as well as private sector and market actors. In addition, recommendations have been categorized as either immediate to medium-term (M) effect (four to eight months) or longer-term (L) effect (over nine months) to implement and provide results.

Table 10: Summary of Key Findings, Recommendations, Key Actors and Proposed Timeline.

KEY FINDINGS	RECOMMENDATIONS	M	L
KEY FINDING #1: Due to the low productivity and/or low income earned from a single livelihood activity, it is common practice for most households in Rakhine to engage in multiple livelihood activities.	I. Income source diversification could be an effective coping strategy to diffuse pressure on the use of limited marine resources, and for households to mitigate the impact of low productivity of the shrimp sector. • Participatory and community-driven approaches are critical in the design of livelihood development programs, especially if sustainable and inclusive impacts are to be achieved in a region where the contextual nature of target groups vary. • It also suggests the need for an integrated and sectoral approach, combining markets, appropriate technology, skills, social protection, and community and economic development within the framework of shrimp sector labour market development.	✓	✓
KEY FINDING #2: Livelihood activities in the region are highly segregated across and between locations, religion, ethnicity and gender.	II. Challenges and opportunities in the shrimp sector (common to labour across gender and ethnic/religious groups) are potential entry points to stimulate positive intercommunal activities, drive improvement in social cohesion and narrow the gender divide. • These 'commonalities' are entry points for establishing convergence and improving economic systems, stimulating greater inter-communal interactions and thereby rebuilding trust between these groups. • For example, rural women from minority groups in Sittwe are involved in shrimp drying and paste production, while urban Rakhine Buddhist women are engaged in vending. Business-to-business (B2B) relations between groups could be supported and created, with the former acting as suppliers, and the latter serving as buyers/retailers. • Additional support in the form of establishment of shared service facilities (i.e. aggregating stations, cold storage, farm to market transport and formation of self-help groups) among these communities, will facilitate the trust-rebuilding process.	✓	✓

KEY FINDINGS	RECOMMENDATIONS	M	L
KEY FINDING #3: The onset of the pandemic has significantly affected Rakhine's shrimp sector, resulting in severe disruptions in transportation channels due to border closures – leading to an over-supply of shrimp while making it difficult to obtain the basic inputs required during the production process.	III. Support for establishing networks with local market channels, will help to address issues arising from continued market border closures. • One potential immediate measure to mitigate the impact of diminishing demand across export markets is for prawn producers in Rakhine to establish networks with local market channels, including the supermarket associations of Myanmar - negotiating arrangements giving preference to regional prawn products.	✓	
	IV. Support for expanding local supply chains - through technology transfer for the production of basic production inputs - will further scale the resilience of the shrimp sector. • While it is not economical to produce some equipment locally, other major inputs can be feasibly produced regionally – with the proper training and technology transfer processes including prawn feed, salt, and aerators: • Prawn Feed. As presented earlier, the region has an adequate supply of almost all ingredients required to produce quality prawn feed. However, these are all sold to Yangon. As a consequence, local prawn farmers have to import this feed (either from Yangon or elsewhere), typically at a higher price. Localizing prawn feed production can potentially drive down market prices and scale up production. Consequently, this will help generate more jobs in both the upstream and downstream portions of the value chain. • Salt Production. Salt is a major ingredient for shrimp paste production. Depending on the salinity of available seawater, salt can be locally produced as it requires a very simple and highly adoptable 'know-how' processes.	✓	✓
KEY FINDING #4: Value-added activities in the shrimp value chain have not been undertaken or introduced, leaving resources or products unexploited (excepting shrimp drying and shrimp paste production).	V. Immediate support for job creation needs to focus on shrimp sector livelihoods which were less severely affected by the pandemic, especially those linked to value-added processes and stimulating local demand. • The more value-adding activities undertaken, and the more oriented towards local demand, the higher the chance of building the industry's resilience and coping with internal and external shocks. • For example, value added processes such as shrimp paste processing and shrimp drying can be expanded and marketed domestically, expanding their regional operations.	✓	

KEY FINDINGS	RECOMMENDATIONS	M	L
KEY FINDING #5: As a result of the pandemic's extreme industry-wide impact, worker's livelihoods and income levels (especially women) have suffered substantially.	VI. Expanding livelihoods for shrimp paste production and shrimp drying (critical value-added activities across the value chain) will benefit more women and ethnic/religious minorities, including others in the labour force with less educational qualifications • Top priority measures to support the expansion of shrimp paste production and drying interventions include: • The provision of solar drying facilities.[28] This will allow producers/dyers to continue production, even during the rainy season. If the users are well organized (i.e. an association or cooperative) and adequately trained, the facility would be more sustainable if managed by the community itself. Support for improved packaging of dried shrimp (i.e. vacuum packed and properly labelled), can also command higher prices. Additionally, applying hygiene and safety standards for shrimp paste (using dried shrimp from controlled or enclosed environments) will also command higher prices. • The provision of mechanical grinding and pounding facility for shrimp paste processing. This will decrease women's intensive and manual labour, thereby increasing their output. More jobs for women will be generated in production lines, with improved and more efficient grinding systems. • Support for technology transfer and local production of rock salt – a major ingredient for shrimp paste production.	✓	✓
KEY FINDING #6: The limited availability of support and resources, other employment options and/or skill development opportunities, further exacerbated pre-existing challenges	VII. The institutional capacity of business associations (which is currently quite weak) needs to be developed and strengthened to establish a strong platform for advocacy, while addressing common needs and building sustainable MSMEs. • Strengthening business associations as well as forming an overall cohesive business community is required to leverage product diversification, value-added activities and utilize the surplus of raw materials available in local markets. • This will require a stronger enabling environment, including responsive, effective and relevant institutional structures, infrastructure and political environment. Hence, the institutional capacity of business associations	✓	✓

[28] For example, Natural Farm Fresh Myanmar Co., Ltd. in Yangon (with the support of DANIDA), is a successful example of supplying solar drying units in Sittwe. The company is also running their own drying businesses in Thandwe, Southern Rakhine and Mandalay.

KEY FINDINGS	RECOMMENDATIONS	M	L
across the sector, forcing value chain actors to adopt sub-optimal coping strategies.	needs to be supported, developed and strengthened, to collectively address common needs across the shrimp sector, establishing strong platforms for advocacy. • Providing technical support to business associations is also critical if adaptable and sustainable MSMEs are to be developed – requiring proactive and resolute responses from a strong and cohesive business community. This will enhance their resilience to similar economic, external and internal shocks. • Expanding employment options overall will be contingent upon the recovery of businesses or will require parallel interventions from business operators (i.e. employment generation).		
	VIII. Higher employability levels through relevant skills development, and robust active labour market policies have to be in place and enforced, enabling the shrimp sector workforce in becoming more resilient to economic shocks. • Targeted skills development for the shrimp sector labour force (wage and self-employed), supported by calibrated active labour market policies, is imperative to improve resilience.	✓	✓
	IX. Training requirements, as outlined by business owners and employers, must be adequately addressed in order to improve the employability and overall productivity of the shrimp sector. • Sustainability will be greatly increased if a regional technological and training institute focused on the prawn industry is established and managed by the private sector.	✓	✓
	X. To ensure successful and sustainable solutions, a comprehensive bundle of shrimp sector-wide support is required, positively engaging all stakeholders, including the private sector and labour force. • Shrimp sector-wide support is required in order to address the broader and long-term needs of the industry including equitable financing and access to farm areas; policy advocacy; technology and institutional development; and capacity building. • However, to enable the process, a cohesive organization involving key and integral players across the prawn industry will be required. • It will also require strong worker relationships and united business organizations in order to address the high informality, social protection gaps and fundamental rights in the workplace.		✓

Annexes

Annex I: Micro-level Overview of Shrimp Sector Activities and Actors

I.I Fry Collection from the Wild

Fry collectors supply tiger prawn breeders to hatcheries. This also supplements the limited supply of tiger prawn fries or Penaeusmonodon Post Larvae (PL) produced by hatcheries. Consequently, prawn pond operators (apart from what they can naturally trap in ponds) highly depend on fry collectors for the stock required in their farms. Livelihood activities within this segment include the sale of bamboos needed to assemble, produce push, or seine nets used to catch shrimp fries (usually found along coastlines and mangrove areas). Collectors catch mature, as well as prawn breeders from the wild (in the deep sea), through the use of trawlers. There are essentially three species of shrimps captured by collectors, referred to by locals as: white shrimp; flower shrimp (considered low quality); and tiger shrimp (considered high quality). Low quality fries are either sold through reseller agents, or directly to shrimp paste processors; while tiger shrimp fries are sold to prawn pond operators and larger or breeder tiger shrimp are sold to hatcheries.

Gender, Religion, and Ethnicity - According to an estimate from key informants, there are at least 580 individuals employed as wild fry collectors across the five study areas. A livelihood traditionally associated primarily with men, fry collection nevertheless appears to be more inclusive, given the ease of entry and high participation of different ethnic/religious groups. For instance, Rakhine Buddhists are involved in these activities in all townships across the study area; Rohingya in the townships of Sittwe, Maungdaw, Minbya and Myebon; M'ro in the townships of Minbya, Myebon and Pauktaw; Kaman and Dinet in Minbya and Myebon. Additionally, fry collection livelihoods also engage a younger labour force in rural communities.

Employment - Employment associated with wild fry and prawn collection is highly informal - workers are largely self-employed. They could also be employed but are unsalaried as they are paid by catch or piece work, without any form of social protection. Income from fry collection is highly insecure and unstable since, aside from seasonal fluctuations, their livelihoods are subject to external factors such as changing natural habitat conditions and market competition. For example, Rakhine continues to import fries from Bangladesh at a cheaper price, making it difficult for collectors to compete. Meanwhile, fry traders or resellers only purchase fries regionally during the peak season - from April/May to August/September.[29]

Operations and Income - Individuals or households who depend on fry collection for their livelihood are widely exposed to exploitation. Due to meager income levels and seasonal fluctuations, fry collectors usually obtain cash advances and/or loans from traders or resellers; thereby leaving them with less control over the selling or purchasing price of their catch.

I.II Fry Reselling

Small-scale fry resellers (mostly village based) buy stock from collectors, sell them to larger resellers, who then in turn sell to pond operators, paste processors, or retailers - dependent on the shrimp species. Resellers also buy matured and marketable-sized prawns caught by collectors from the wild. Livelihoods in this segment include trading itself, which is mostly assumed by Rakhine Buddhists. However, some small-scale resellers are either Muslim and/or from other minority groups. Female labourers in this segment particularly engage in sorting the fry species and in packing

29 Joffre, O., Aung, M. "Prawn Value Chain Analysis Rakhine State, Myanmar." LIFT, March 2012, https://www.lift-fund.org/sites/lift-fund.org/files/publication/Prawn%20Value%20Chain%20Analysis%20Rakhine%202012.pdf. Accessed February 12 2021.

matured/large fries for cold storage. Across all surveyed townships, young workers find employment in reselling activities as day labourers.

I.III Hatcheries

Complementary with wild fry collections, hatcheries provide a more stable supply of shrimp fingerlings as they are relatively less vulnerable to seasonal fluctuations, as compared to those originating from the wild. Hatchery businesses are less employment-intensive, only directly generating a small number of jobs (i.e. 30-50) including feeding workers, water maintenance workers, pond repairs, fry sorting, and quality control.

I.IV Prawn Farming

The prawn farming segment is the epicenter of the prawn industry value chain. Prawn farm operators grow shrimp fries and fingerlings to a marketable size in prawn farms/ponds. Based on a 2016 study by the World Bank, there were 119,166 acres of operational pond areas in Myanmar, more than two-thirds of which (almost 80,000 acres) are in central Rakhine. Consistent with earlier findings from a LIFT study, extensive production systems in Rakhine State are still widespread, with almost no inputs used, and more than half of farmers relying on wild fries trapped in ponds. With this farming method, prawn farm output is about 10 kg per acre, and said to be decreasing year after year. As per the aforementioned report, prawn farms are classified into three types based on production systems:

- Small and medium farms (2 to 20 hectares);
- Large local landowners' farms (20 to 81 hectares);
- Large private investors with farmed areas greater than 81 hectares.

Operations and Employment – There is no available data as to how many farms currently exist for each type or farm category, nor how many generate employment through existing farms. Nevertheless, according to key informants, there are about 150 shrimp farms in the three townships of Pauktaw, Myaebon and Minbya, with 200 to 300 estimated workers per township; while individuals engaged in livelihoods connected to farming in the study area are estimated to be around 2,600. Furthermore, the average cost of labour from different types of farming systems is 22%, while the cost for dike maintenance (which is highly labour intensive) is as high as 62% of total operating costs.[30] It can therefore be inferred that prawn farming operations are employment intensive.

Inclusive Job Creation – Apart from various livelihoods indirectly linked to prawn farming – both upstream and downstream – the industry generates multiple jobs for both skilled and unskilled workers, including farm managers/supervisors, technicians, pond maintenance workers, feeding workers, water management helpers, shrimp/fry sorters, etc. As estimated by respondents in Myebon, there are about 300 individuals benefiting from employment in shrimp farming, while in Pauktaw, prawn farm workers are estimated at 200. Women, such as those in Myebon, are employed in farms as shrimp collectors (within ponds), sorters and pre-processors (i.e. removing heads if requested by traders). Rohingya are reportedly employed or involved with livelihoods connected to prawn farming in the selected townships of Sittwe, Maungdaw, Minbya and Myebon; Dinet, Kaman and M'ro in Minbya, Myebon and Pauktaw. Youth workers also benefit from employment in prawn farms, mostly as maintenance labourers. Overall however, there are more Rakhine Buddhist workers than minority groups employed in prawn farming.

In terms of job creation capacity, the World Bank Study found small commercial prawn farms generating larger proportions of indirect labour and purchasing more locally produced inputs than larger farms – with landless households providing most of this labour. This implies that increased farmland for small prawn operators will likely

[30] Ibid.

result in decreased income inequality within the local rural economy, whereas increasing large prawn farmland areas will likely increase income inequality.[31]

Challenges – Access to land is one of the major pre-pandemic challenges faced by prawn farm operators, besides limited technology and supply of quality stock. According to the World Bank Report, most paddy lands which can be converted to ponds are 'government-owned', grabbed from local communities. Land-conversion policies, to be used by prawn farms, are stringent and expensive, making it unaffordable for small farmers. Moreover, the process for local communities reclaiming land ownership from the government becomes more difficult once lands are designated as ponds.

I.IV.i Pond construction and maintenance

Almost all ponds are tidal systems (i.e. the inflow and outflow of water is through tidal flow and therefore does not require pumping). They are also surrounded by embankments, with one or more sluice gates connecting the pond to the river estuary. Sluice gates are made of wood and are operated to allow the exchange of water and capture of juvenile shrimp during high tide. As previously mentioned, dike maintenance is highly manual and labour intensive, comprising the largest farming expense. This further implies that pond construction and maintenance (typically associated with male workers) carries a high potential to generate more employment.

Employment, Gender, Religion and Ethnicity - Construction-related jobs include excavation, dike installation and construction of sluice gates and drainage canals. Rakhine Buddhists find employment in pond construction and maintenance across all studied townships; Rohingya in Sittwe, Minbya, Maungdaw and Myebon. Meanwhile, other groups such as M'ro, Kaman and Dinet are engaged in this livelihood in Minbya, Myebon and Pauktaw.

I.IV.ii Trading and Reselling

Traders and resellers obtain their supply (fry or mature shrimp) from fry collectors and sell them to hatcheries or prawn farm operators. Depending on the prawn species and demand, traders sell their product to local and export buyers, with the origin of stock (prawn) differing by township. In Pauktaw, 80% of prawn originate from the wild - caught by deep sea fishermen or collectors using trawls, with the remaining portion (around 20%) originating from prawn farmers. However, in Minbya, Sittwe, Myebon and Maungdaw most of the supplies (80-90%) come from grow-out ponds while the rest are from the wild.[32]

Operations and Income - Traders and resellers also act as 'financiers' as they provide loans or advance payments to fry collectors, hatchery operators and prawn farm operators. The transaction is usually covered through an informal contract, and the loan or advance payment is typically due upon harvest or delivery of goods. Resellers obtain capital from informal money lenders and/or local banks. With declining yields, resellers take greater risks by providing cash advances, especially when borrowers or farmers cannot meet their repayment obligations.[33] On the other hand, this arrangement leaves farmers and borrowers with little bargaining power or control over their products' final selling price.

[31] Belton, B. et al. "Aquaculture in Transition: Value Chain Transformation, Fish and Food Security in Myanmar." Michigan State University, 2015, https://www.ifpri.org/publication/aquaculture-transition-value-chain-transformation-fish-and-food-security-myanmar-0. Accessed March 27 2021.
[32] Depending on their purpose, different types of ponds are generally used. For example, hatching or breeding ponds are utilized to promote an environment for females to lay eggs; whereas grow-out ponds are used to provide an environment for fingerlings or juvenile shrimp to grow and mature to marketable sizes. Varying levels of stocking density, salinity and feeding are required for each different stage in the shrimp life cycle.
[33] Joffre, O., Aung, M. "Prawn Value Chain Analysis Rakhine State, Myanmar." LIFT, March 2012, https://www.lift-fund.org/sites/lift-fund.org/files/publication/Prawn%20Value%20Chain%20Analysis%20Rakhine%202012.pdf. Accessed February 12 2021.

Gender, Religion and Ethnicity - Traders, particularly wholesalers in the region are predominantly Rakhine Buddhists. Although other townships, including Sittwe, Maungdaw, Myebon and Minbya, engage some Muslims and M'ro whose livelihoods are linked to trading or reselling businesses. Their jobs include office/administrative work, sorting, pre-processing (i.e. cleaning, removing prawn heads), and packaging prawn. A significant proportion of workers employed by traders are women and young workers. Moreover, retailers of fresh, dried and shrimp paste are mostly women.

I.IV.iii Transportation

Either via land or water, shipping and trucking companies transport prawn, ice and other supplies to/from Rakhine, onto other regions and border trading posts. Jobs related to transport include drivers and loaders/helpers, some of which are self-employed youth workers. Therefore, the majority of workers in the transport business are male, excluding office-based administrative roles which employ several females.

I.V Shrimp Paste Processing

Shrimp paste processing (*ngapi*) is a critical value-added activity within the prawn industry. To produce *ngapi*, tiny shrimp are first sundried for several hours and then pounded. Salt at 20–30% of the fresh shrimp weight is added, and the drying and pounding process is carried out up to six times before the product is deemed ready for sale to collectors and traders. The salt used in producing shrimp paste is important - white salt with large crystals from the Delta is said to produce the best shrimp paste. The mashing of shrimp to paste is done using a wooden pole and/or using feet, which poses obvious food safety and quality risks.[34] *Ngapi* is a staple cooking ingredient in Myanmar cuisine, although some consider it either an appetizer or even a dish in itself.

Enjoying high demand in the local market, *ngapi* production is very common in many townships in the region. However, the highly informal nature of the industry and limited available data, makes it difficult to estimate the number of processors operating in the study area/region, as well as production volume. With the industry being largely homebased and rural, the access and participation of both youth and women is wider and highest amongst this particular segment.

Ngapi producers are completely reliant on the local supply of tiny white shrimp, caught by collectors along shorelines and mangroves. Therefore, this livelihood is highly dependent on changing and contextual factors such as habitat (mangroves), tidal and other seasonal changes. During the rainy season, for instance, sun drying is not possible, leading to low *ngapi* production.

I.VI Shrimp Drying

Similar to shrimp paste production, the shrimp drying process is very manual, and therefore highly labour intensive. The process involves sorting shrimp, washing (to remove dirt, unwanted particles, and fish), blanching in sea water, draining, drying, deshelling, grading and packing. Children help their parents within this segment by most commonly driving animals away and looking after shrimp while being dried. It should be noted however that individuals or communities do not consider this child labour, as they are under the direct supervision of their parents.

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[34] "Processed Seafood and Mariculture Value Chain Analysis and Upgrading Strategy." ILO, 2016, https://www.ilo.org/wcmsp5/groups/public/---ed_emp/---emp_ent/documents/publication/wcms_553135.pdf. Accessed March 19, 2021.

Annex II: VisionFund Myanmar – Loan Services and Requirements

Type of Support/Service	Loan Requirements and Qualifications
Business loan and Agri livestock loan (Group Loan)	• Copy of NRC; • Copy of household registration; • Must have been a resident of the current township for at least 12 months; • 18-70 years of age; • Document fees (0.167% on loan amount); • 2.33% loan interest.
Individual Loan	• Copy of NRC; • Copy of household registration; • Must have been a resident of the current township for at least 12 months; • 25-70 years of age; • The business must have been operating for at least 2 years; • One Guarantor; • Business license; • Applicant needs to own their own home; • Current photos of business operation; • Contract with VFM; • Document fees (0.167% on loan amount); • 2.33% loan interest.
SGB loan (Individual Loan only)	• Copy of NRC; • Copy of household registration; • Must have been a resident of the current township for at least 12 months; • 25-70 years of age; • Business must have been operating for at least 2 years; • Two Guarantors (if the client wants to apply for 8,000,000MMK) • Business license; • Applicant needs to own their own home; • Business coaching; • Current photos of business operation; • Contract with VMF; • Document fees (0.167% on loan amount); • 2.33% loan interest.