Food and Agriculture Organization of the United Nations

World Food Programme

S P E C I A L R E P O R T

THE 2018 FAO/WFP AGRICULTURE AND FOOD SECURITY MISSION TO RAKHINE STATE, MYANMAR

12 July 2019



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FOOD AND AGRICULTURE ORGANIZATION OF THE UNITED NATIONS
WORLD FOOD PROGRAMME
Rome, 2019

Required citation:
FAO. 2019. *Special Report – The 2018 FAO/WFP agriculture and food security mission to Rakhine State, Myanmar, 2018.* Rome.
Licence: CC BY-NC-SA 3.0 IGO.

ISBN 978-92-5-131628-3 (FAO)

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Acronyms and abbreviations

ACF	Action Contre La Faim
BTCC	Border Trade Chamber of Commerce
CFSAM	Crop and Food Security Assessment Mission
CNPC	China National Petroleum Company
CSO	Central Statistical Organization
DoA	Department of Agriculture
DFID	Department for International Development of United Kingdom
DHS	Demographic and Health Survey
EU-ECHO	European Civil Protection and Humanitarian Aid Operations
FAO	Food and Agriculture Organization of the United Nations
FCS	Food Consumption Score
FEWSNET	Famine Early Warning Systems Network
FSPS	Food Security and Poverty Survey (WFP)
GAM	Global Acute Malnutrition
GIEWS	Global Information and Early Warning System on Food and Agriculture
HDDS	Household Dietary Diversity Score
IDP	Internally-Displaced Persons
IHLCA	Integrated Household Living Conditions Assessment
ICRC	International Committee of the Red Cross
KCI	Potash
LBVD	Livestock Breeding and Veterinary Department
LIFT	Livelihoods and Food Security Trust Fund
MADB	Myanmar Agricultural Development Bank
MoALI	Ministry of Agriculture, Livestock and Irrigation
MMK	Myanmar Kyat (currency)
NDVI	Normalized Difference Vegetation Index
NGO	Non-Governmental Organization
NVC	National Verification Card
UN-OCHA	United Nations Office for the Coordination of Humanitarian Affairs
SAM	Severe Acute Malnutrition
SME	Small and medium enterprise
TSP	Triple Super Phosphate
UEHRD	Union Enterprise for Humanitarian Assistance, Resettlement and Development in Rakhine
UNDP	United Nations Development Programme
UNHCR	United Nations Refugee Agency
UNICEF	United Nations Children's Emergency Fund
UNOPS	United Nations Office for Project Services
USAID	United States Agency for International Development
USD	US dollar
WFP	World Food Programme
WHO	World Health Organization

Disclaimer: The names shown and the boundaries used on this map do not imply official endorsement or acceptance by the United Nations.

Highlights

Agriculture and fisheries

- Agricultural production throughout Rakhine State is generally constrained by a number of structural issues, such as inadequate access to land, low productivity, shortages of casual labour, limited credit availability and general lack of systematic, timely and efficient training and extension services to farmers. Continuous exposure to natural disasters and socio-political conditions further impair opportunities in agriculture.
- The 2017/18 harvest of monsoon paddy, harvested by December 2017, was reported to be average to slightly above average in the southern (Kyaukphyu and Thandwe) and central (Sittwe and Mrauk-U) districts. In Maungdaw District, vast tracks of rice fields were deemed not to be harvested. Given that the Mission took place well after the harvest and before planting, it was unable to verify the situation on the ground but farmers interviewed confirmed the claim. No economically significant outbreaks of pests or diseases were reported in the season.
- Production of winter crops (mostly groundnuts and vegetables) in the 2017/18 season in the southern and central parts was reported to be average. In Maungdaw District, production remained low as many fields were not sown.
- Due to lack of precipitation or fresh water storage, summer (dry season) paddy production in the State is limited.
- Possible scenarios for the 2018 main monsoon paddy season varied by location. In the southern districts, assuming normal weather conditions, the rice production was likely to resemble the previous years. In the central part, planting intentions reported by farmers were similar to the previous years, although labour shortages were likely to constrain overall production. In the north, areas planted were likely to be well below average due to reduced population, constrained access to field and limited availability of labour, draft animals and agricultural inputs, in particular seeds and fertilizers.
- Small-scale household livestock rearing and poultry production prevail across the State, with the exception of a small number of commercial poultry farms in the southern part. Better-off households usually keep a couple of cows or buffalos as draught animals. Most households raise pigs to sell and poultry for their own consumption. In the northern part, the numbers of livestock and poultry have been severely reduced as a consequence of displacement and recent violence.
- In Rakhine State, most of the farming households sell their excess products to intermediaries immediately following the harvest or livestock maturity to monetize production and repay their loans. A few store their rice crop while waiting for better marketing opportunities during the lean season. Restrictions on movement in Northern Rakhine State further constrain marketing and income earning opportunities.
- Many farmers rely on small-scale fishing for their own consumption, mostly in ponds and creeks. In coastal areas, the presence of large commercial fisheries is reported to limit the availability of fish stocks. In inland areas, some fishermen reported the use of fraudulent fishing methods. The restrictions on movements limit fishing livelihood opportunities.
- In many parts of the State, small-scale artisanal aquaculture is present. Natural conditions for a larger deployment of commercial aquaculture are favourable in the central and northern parts. At the moment, the potential has not been fully exploited.

Food security and livelihoods

- In **Southern districts,** food is generally available throughout the year and yet part of the population faces problems accessing food during the monsoon season. Landless households and those dependent on casual labour with unreliable income are more exposed to seasonal and chronic food insecurity. The main livelihoods are mixed, including agriculture, small-scale fishing and collection of forest products, as jobs in the formal sector are limited. The improved water supply is cited as the main problem.
- In **Central districts,** food is generally available in the market. Some increases in food prices were noted, particularly for meat. Households spend, on average, 50 percent of their income on food, while casual labourers spend nearly all their income on food and often must resort to borrowing money. Casual labourers are thus the most vulnerable due to unreliable income and seasonal shortages of livelihood opportunities amplified by restrictions on movements. The Mission observed a greater exposure to seasonal food insecurity due to the reduced profitability in farming activities. With almost no access to formal consumption credit, most households partially rely on informal credit to purchase food. Access to clean water was also reported as a problem.

- For people living in **IDP sites,** food assistance was an essential component of people's food intake at the time of the Mission. The food supply was also partially supplemented by the limited local food production although agricultural inputs were scarce with labour provided by the household members. Limited work opportunities for causal labourers existed in the nearby villages.
- In the **Northern District of Maungdaw**, the food security situation remained precarious at the time of the Mission due to the limited livelihood and income opportunities. Food assistance was a crucial addition to low household stocks. Many markets were burnt down and others closed during the violence in late 2017 and have not resumed. The Mission observed fewer supplies than normal and higher prices, especially in the rural markets. Lack of firewood due to restricted movement was affecting cooking and many women reported using rice husk for cooking fuel. There was a high demand for casual labour with a marked increase in daily rates offered, but, due to movement restrictions, few are able to make use of these opportunities. Diets were more restricted, increasing the risk of nutritional deterioration in pregnant, nursing women and young children as pre-crisis Global Acute Malnutrition levels were already "critical[1/]" for children 6-59 months and stunting rates as high at 37.5 percent (DHS 2015/2016).
- In **Rakhine State**, a high number of vulnerable populations with weak resilience and low agricultural productivity prevail. The recurring population displacement and acute limitations to movements for those not displaced caused the breakdown of value chains, losses in food production and destruction of assets. Natural events along with the violence have displaced many households over the years. Those who remain in their villages face similar risks, with limited attention and support services.
- **Food prices** have been increasing faster than in the rest of the country. Since 2013, Rakhine State sustained an average yearly inflation rate of 12.9 percent against 7.7 percent registered at Union level. Food prices increased cumulatively by 44 percent with an increase of 16.9 percent between 2016 and 2017. In Maungdaw District, many markets were closed or operating with limited supplies, while food prices increased by 20 percent compared to June 2017.

Recommendations

The recommendations have been divided into urgent or immediate activities, which focus on life-saving actions, while the medium to long-term recommendations are focused on the structural and root causes of the issues identified. Immediate recommendations were also divided on the basis of the main actors involved (food security sector or national authorities), although in some cases coordinated actions were required by both.

Immediate (life-saving actions)

- Continue food assistance at least until the end of 2019 in the northern districts and IDP sites.
- Conduct food security assessments at household level to determine the severity of the needs and profile immediate and short-term needs of vulnerable households beyond December 2018.
- Continue livelihood support and agricultural input interventions for the monsoon and winter seasons of 2019 for the most vulnerable farmers.
- Further mechanization would assist in timely planting and reduction of losses in the field, especially at the time of harvesting, but the majority of farmers who can afford mechanization depend on being able to hire machinery. The creation of micro-finance opportunities for the acquisition of equipment, such as power-tillers and hand-operated reapers, should be considered.
- The promotion of integrated watershed management and irrigation can reduce flood risk, increase the supply of fresh water and reduce salinization, documented challenges that are stopping farmers from increasing yields and harvests.
- Community asset creation would represent a possible cash and voucher-related strategy to support the livelihood activities of landless households, whilst improving basic infrastructure.
- Villages with better symbiotic agriculture relationships between Rakhine State and Muslim communities offer opportunities to strengthen inter-community collaboration by building on lessons from successful conflict sensitive activities conducted in Rakhine State.
- Increase women's consumption of nutritious, vitamin-rich foods, through the provision of vegetable seeds coupled with trainings on nutrition good practices and the establishment of home gardens.

1/ WHO classification.

To National Authorities

- Enable population movement to allow rapid livelihood recovery for all (see Advisory Commission on Rakhine State recommendations).
- Ensure health and nutrition services to all, particularly for those already malnourished and those at high risk of becoming malnourished.
- Provide essential health and nutrition education, counselling and training on appropriate diets and infant and young child feeding practices to improve nutrition outcomes and reduce childhood stunting.

Medium to long-term (structural causes)

- Support the agricultural sector through measures that improve farm productivity and at the same time reduce climate-related disaster risks.
- Input distribution conducted during the recovery phase should be combined with the transfer of improved technologies, such as registered or quality-declared seeds, education on cropping patterns and improved water management.
- Support to rural infrastructure and value chains development.
- Target assistance from the national social protection system to households with limited income-generating capacity.
- Strengthening and expanding existing information systems and improving the capacities of the Ministry of Agriculture, Livestock and Irrigation, the Department of Meteorology and Hydrology and the Central Statistical Organization to: (a) collect information; (b) improve the accuracy of agricultural and food security information; (c) foster the capacity to perform risk analysis and; (d) disseminate and use the resulting analysis to inform agriculture production planning.
- Explore the potential for expanded micro-finance market across Rakhine State (as limited savings and access to finance remain significant barriers to alternative livelihood development, such as vegetables production or aquaculture).
- Explore active labour market policies aimed at increasing the employability of the most vulnerable groups (young people, older workers, long-term unemployed, female workers) and reduce the seasonality of labour demand.
- Address inadequate access to land and improve land distribution.
- Carry out a comprehensive risk and vulnerability analysis/profiling across the main agriculture sub-sectors (crops, fisheries, livestock, irrigation and others) to better understand the complexities related to multi-hazard interactions and how these affect community tensions over increasingly scarce natural resources. The results from these analyses will guide the promotion of disaster risk reduction and risk-sensitive development approaches throughout the various streams of humanitarian and development assistance work.

INTRODUCTION

Following an official request from the Ministry of Agriculture, Livestock and Irrigation (MoALI) of the Republic of the Union of Myanmar on 4 December 2017, a joint FAO/WFP Agriculture and Food Security Mission visited Yangon, Nay Pyi Taw and Rakhine State between 23 April and 15 May 2018. The Mission gathered impressions on the 2017/18 cropping season and the overall food security situation as well as observed preparations and conditions for the 2018/19 season.

Upon arrival in the country, the Mission spent six days in Yangon and Nay Pyi Taw prior to embarking on a field visit to Rakhine State. During this period, The Mission held an initial inter-agency meeting (FAO and WFP) to discuss the strategy and itinerary for the Mission as well as a number of meetings with the representatives of the Government of the Republic of the Union of Myanmar, international organizations as well as the food security and nutrition sectors members. Following 11 days (including six days of field visits) in Rakhine State, the team returned to Yangon for a debriefing session, which brought together various Mission teams to exchange findings.

The Mission included FAO and WFP international and national staff members. The Mission was accompanied by an Observer from the Famine Early Warning Systems Network (FEWS NET) as well as representatives from MoALI.

The Mission recognizes the importance of MoALI's participation throughout the process in line with FAO and WFP objectives of improving institutional capacity to coordinate national policy dialogue and to implement and monitor the national food security and agriculture strategy.

OBJECTIVES

The general purpose of the Mission was to provide accurate, timely and credible information on agricultural production and the food security situation in Rakhine State so that appropriate actions could be taken by the State and Union governments and the international community to minimize the impact of adverse events on the local population. In addition, evidence and impressions were gathered to support the development of projects, programmes and strategies, which address immediate as well as long-term agriculture and food security needs in Rakhine State.

Three specific food security related objectives were formulated by an inception team in early 2018:

1. Current status of food security and the resulting food consumption needs.
2. Likely food security needs in 2018 in the context of different population return scenarios.
3. Major underlying causes of food insecurity and how these can be addressed in an integrated and sustainable manner.

Due to the general situation in the Northern District of Rakhine State during the field visit in May, it was deemed premature to formulate return scenarios, as the conditions for any return were not found to be conducive. Therefore, the Mission could not meet objective 2.

METHODOLOGY

Prior to leaving for the field, the core Mission team consulted with UNDP, ICRC, UNICEF, UNHCR, UN-OCHA, UNOPS, LIFT, EU-ECHO, DFID, USAID, World Bank, Nordic House (Danish Representation), Canadian Embassy and NGO consortium. Meetings in the capital, Nay Pyi Taw, were held with the Ministry of Agriculture, Livestock and Irrigation, Ministry of Health and Sports, Ministry of Commerce and Central Statistical Organization.

To ensure an impartial and independent observation of the agricultural production and the food security situation in Rakhine State, information provided by the Government institutions and other sources was examined, triangulated and cross-checked with direct field observations, where possible, and compared with the information gathered from other sources. These sources included interviews with staff of the Department of Agriculture (DoA) in the townships visited, traders, farmers, livestock owners, fishermen, displaced people, resident households and other key informants, as well as satellite imagery and rainfall records.

To ensure a broad geographical coverage, given the limited available time for visits and conversations, the Mission team was divided into three groups, each consisting of at least two international Mission members accompanied by local staff, who also served as translators. Together, the three Mission teams visited 14 out of the 17 townships in Rakhine State. The "southern" team visited eight villages in six townships in Thandwe

and Kyaukpyu districts. The “central” team visited nine villages and one IDP site in six townships in Sittwe and Mrauk-U districts. The “northern” team visited 12 villages and three markets in two townships in Maungdaw District. The map showing the randomly selected locations visited is in Annex 1.

At each township and village (as per itinerary in Annex 2), the team first met the chief administrator for introductions and to convey the purpose of the visit (presented in Annex 3). The aim, as explained during the field visit, was to learn more about individuals’ experiences and thoughts on the current living situation, including how this might have changed in recent years and what challenges people faced. It was also conveyed that the information collected would be used for programme planning, particularly the type and level of needs, although the visit should not be taken as a guarantee that a programme would be implemented in any particular village. It was stressed that the villages were randomly selected.

With the assistance of township and village heads, knowledgeable people (such as farmers, traders, health workers, labourers) were identified for conversations around the agriculture and food security situation. The teams made an effort to ensure that both men and women participated in the discussions. Where possible, teams held separate meetings with DoA district and township officers to get the baseline for the conversations about agricultural production. In the field, views were exchanged with farmers to understand the circumstances surrounding crop production in 2017 and to obtain an estimate of yield. Conversations with knowledgeable groups of persons (women and farmers), covered, *inter alia*, the topics of the previous season’s outcomes, seed and fertilizer availability and cost; irrigation; labour availability and cost; access to mechanization; grain storage; the availability and cost of fuel; market access; food availability and prices; changes in food consumption; cooking conditions and constraints; child care practices and exposure to shocks and coping behaviour.

When possible, retail food and livestock markets were visited where the teams observed the exchanges to gauge the amount of agricultural produce coming to the market compared with the reports for previous years, and carried out limited market surveys to understand the price trends.

As the Mission visited Rakhine State in the period between harvest and planting, there were no standing annual field crops to follow standard crop cutting technique to determine the level of production. When possible, the Mission visually inspected perennial crops, tree crops (rubber, cashew, etc.) and livestock. In the case of annual crops, the Mission relied on the recollection of farmers, estimates provided by local DoA officials and other informed persons. Thus, only limited opportunities emerged to audit Government figures on planted areas and yields. Nevertheless, the timing allowed to capture a forward-looking picture describing preparations and expectations for the 2018 monsoon season. No household food security assessment had been authorized prior to the Mission, therefore, no updated evidence on the needs was available. The Mission had to resort to recent historic data and compare with observations.

In addition to observations, the Mission had access to satellite imagery (in particular NDVI and soil-moisture stress indices) and rainfall records information to appreciate the developments in the previous season. Programme monitoring data was also used to triangulate information gathered during the visits on food security trends.

As the lack of reliable information was deemed to prevail, details that would be comparable across townships, relative availability and cost of labour, farm machinery, fertilizers and other inputs, were gauged solely on the recollection of farmers. Account was also taken of the amount of seed that was made available to farmers by the Government at planting time as well as the average seed rates used by farmers. This, however, can only be regarded as a rough indicator as many farmers tend to use seeds safeguarded from the 2017 harvest or seeds given by neighbours or eventually purchased in the market. Taking all these factors into consideration, the team concluded that its impressions reflected the actual situation in Rakhine State at the time of the Mission.

With regard to livestock, the team discussed the current situation with the Livestock Breeding and Veterinary Department (LBVD). Although in countries in similar circumstances, the number of vaccinations administered during the last 12 months normally serves as a proxy both for animal heads as well as general wellbeing of animals, the measure did not turn out to be practical in the current setting in Rakhine State as vaccination campaigns do not appear to be widespread. In the field, livestock owners were interviewed and, where possible, animals were assessed for their condition.

The fishery sector was reckoned to be an integral part of the Rakhine State economic landscape. Therefore, similar to other sectors, discussions were held with Government’s officials, fishermen as well as households relying on mixed livelihoods to assess the impact of the crisis on the sector as well as to gather basic

information on its current situation and its importance towards household food consumption and general food security.

Impressions were gathered throughout on food security and vulnerability at the household level, taking into account recurring issues, such as the impact of the current crisis, natural hazards as well as underlying causes of poverty and chronic food insecurity. While Central Rakhine State hosts the majority of IDP sites, the Mission was able to visit only one. As such, the report details the situation specific to the IDP site visited.

The price data came from WFP's regular food price monitoring (established in 2012), where the price of 33 commodities (25 food items and eight non-food items) and the daily wages for unskilled labour for male and female workers in eight markets in Maungdaw District (Taung Bazzar, Nyaung Chaung, Buthidaung, Inn Din, Kha Maung Siek, Maungdaw, Taung Pyo Let Wai, Kyein Chaung), are monitored.

Price monitoring was, however, suspended between August and November 2017 and could only resume in December 2017 in only three out of the eight previously monitored markets (Buthidaung, Maungdaw and Nyaung Chaung). Market price monitoring is also conducted in 15 markets in the central districts under the operational areas of the WFP Field Office in Sittwe.

In Southern and Central districts, a study conducted in June and July 2015 by WFP, in collaboration with the Department of Rural Development of the Ministry of Agriculture, was used to complement the Mission's observation. In addition, the report uses data from the most recent round (April 2017) of WFP regular food security monitoring conducted since 2012 in partnership with Food Security Information Network Partners under then LIFT-funded Project: "Improved Food Security and Market Price Information System". The monitoring was conducted in four southern townships (Munaung, Thandwe, Toungup, and Gwa).

BACKGROUND AND CONTEXT

Rakhine State, located approximately between latitudes 17°30' north and 21°30' north and longitudes 92°10' east and 94°50' east, is situated on the western coast of Myanmar, bordered by Chin State to the north, Magway Region, Bago Region and Ayeyarwady Region to the east, the Bay of Bengal to the west and the Chittagong Division of Bangladesh to the northwest. It is separated from the rest of Myanmar by a chain of mountains. Rakhine State is divided in five districts, 17 townships, 1 042 village tracts and 4 185 villages (MIMU, 2017). Agriculture, fisheries and aquaculture are the main sources of livelihoods. People mostly practice coastal fishing in low lands with limited access to agricultural land. The main source of livelihoods inland is crop production, casual labour and, to a lesser extent, animal production.

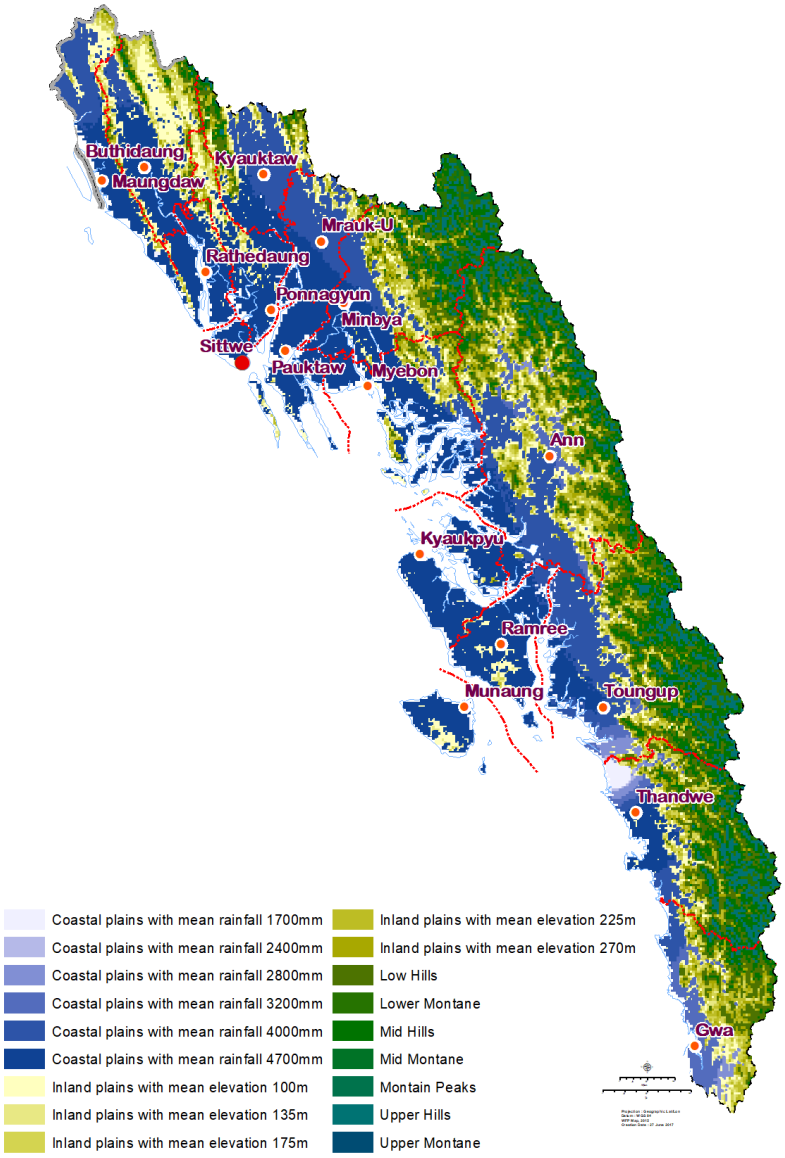
Before the 25 August 2017 events, the population in Rakhine State was estimated at 3.3 million, of which 1.6 million male and 1.7 million female[1]. It is the second poorest State in Myanmar. Based on 2009-2010 data, the World Bank estimated that some 78 percent of the population are considered poor compared with 37.5 percent nationally. The same report indicated that Rakhine State accounts for almost 15 percent of Myanmar's poor. Reflecting new data and updated methodology, the 2015 World Bank study revised the national poverty figure down to 26.1 percent in 2015. The prevalence of poverty in Rakhine State is likely to remain double that of the national average. Based on Demographic and Health Survey data from 2015, Rakhine State had the second highest percentage of people in the lowest wealth group after Ayeyarwady Region.

The average household size is six people against the national average of 4.2 people[2]. Kyauktaw, Myebon, Mrauk-U, Pauktaw, Ponnagyun, Rathedaung and Sittwe are the densest townships in the northern half of Rakhine State. These townships have a rural population of over 80 percent except for Sittwe (FAO, 2017)[3]. Per capita income in Rakhine State is less than half the national average.

Rakhine State belongs to the Coastal Region zone. Figure 1 illustrates the agro-ecological zones, average rainfall and elevation of the State. The Rakhine State is characterized by low or below the sea level elevations and intense precipitations during the monsoon season (2 800-4 700 mm/year). Much of this falls during the monsoon season between June and August.

[1] HNO 2018.
[2] DHS 2015/16.
[3] http://www.fao.org/3/I8564EN/i8564en.pdf

Figure 1: Rakhine State - Agro-ecological zones and average rainfall and elevation



Source: Fischer, G., H. van Velthuizen, M. Shah and F. Nachtergaele, 2002. Global Agro-ecological Assessment for Agriculture in the 21st Century: Methodology and Results. IIASA, Austria and FAO, Rome.

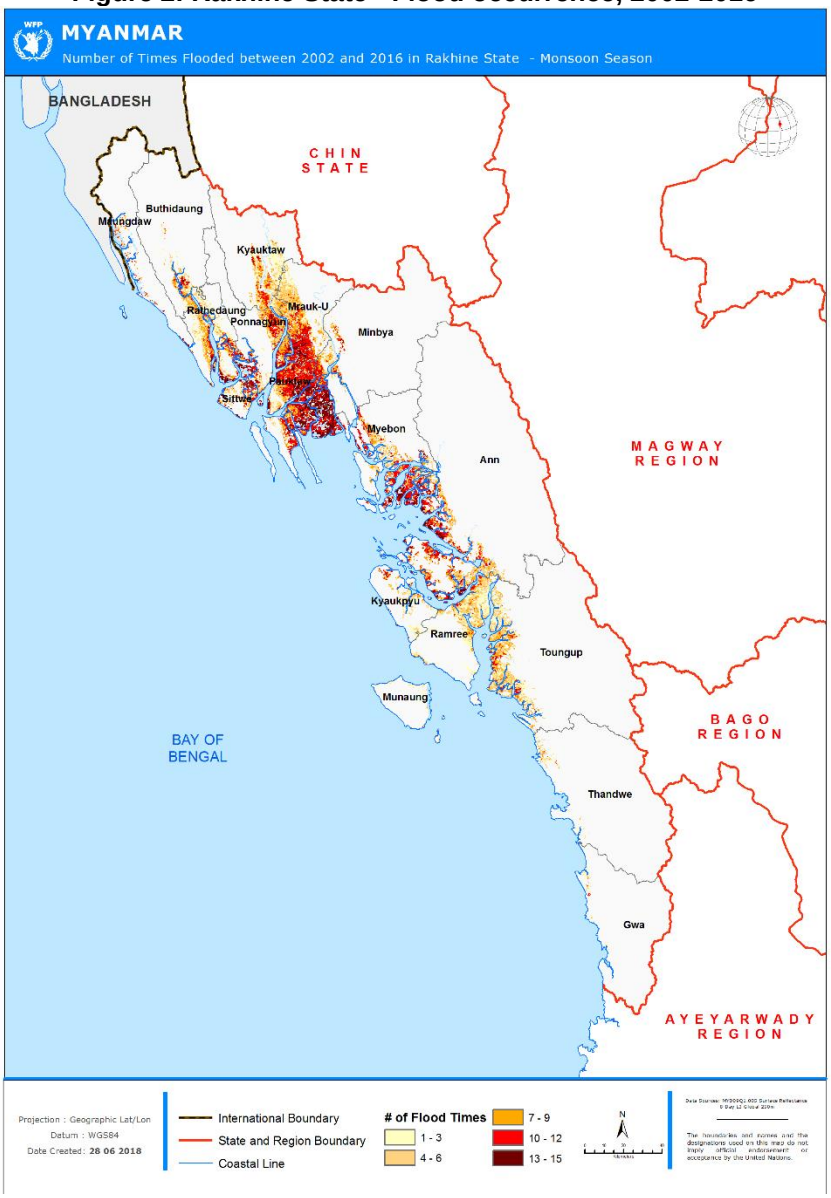
Exposure to natural disasters

According to the DoA officials met in Sittwe, the capital of Rakhine State, the State faces two main challenges: disaster preparedness and conflict resolution. The first one stems from a continuing exposure to natural shocks, while the need for conflict resolution stems from inter-community conflict and economic underdevelopment in the State.

Rakhine State is at high risk of extreme weather events such as cyclones, storms, floods and mudslides. These lead to regular blockages of roads and damage to a weak infrastructure that further exacerbate the already poor physical access conditions. Sea level rise has resulted in gradual loss in vegetation coverage, particularly along the coastal areas.

Figure 2 shows flood occurrence in Rakhine State from 2002 to 2016. The map combines the total area flooded since 2002 and the number of times a flood happened. Vast areas of Central Rakhine State, including Pauktaw, Mrauk-U and Ponnyagun have been repeatedly flooded in the last 15 years. Sittwe, Rathedaung and south Buthidaung townships have also experienced multiple episodes of flooding. The coastal area of the Southern districts is also prone to yearly flooding. A total of 246 600 people are estimated to be at risk of flooding with about 63 000 people residing in high exposure zones.

Figure 2: Rakhine State - Flood occurrence, 2002-2016



Source: WFP elaboration based on historical floods data retrieved from https://global-surface-water.appspot.com/ courtesy of the NASA EOSDIS Land Processes Distributed Active Archive Centre (LP DAAC), USGS/Earth Resources Observation and Science (EROS) Centre, Sioux Falls, South Dakota.

Rakhine State, with its long coastline, is highly vulnerable to unexpected weather extremes as well as longer-term climate change. Given the general state of underdevelopment in the State, much of the State's farmland is poorly adapted to the new challenges, including flooding and tidal waterways with high levels of salinity. Cyclones, such as Nargis (2008), Giri (2010) and Komen (2015), exposed the State's agricultural areas to salt water intrusion that brought widespread devastation. The State's vulnerability also includes increased unsustainable land and water management practices: construction of dykes too far out on the tidal flats and adding shrimp ponds and rice fields in a manner that weakens the fragile ecosystem. Without additional sustained efforts to increase the State's disaster preparedness and to strengthen any sort of mitigation and adaptation measures, potential economic gains in some sectors may quickly be cancelled out by the adverse effects of climate change as a result of other human interventions.

The above-mentioned recurrent national disasters often lead to loss of livelihoods, economic losses and eventual displacement, occurring in an environment of chronic poverty with limited resilience reserves and coping capacity.

Political context

Many townships, particularly in Central and Northern Rakhine State, have experienced several waves of inter-community violence worsening an already fragile food security situation. Two waves of episodes of communal

violence leading to destruction and displacement in Rakhine State took place in 2012. In June 2012, a skirmish in Ramree Township was followed by clashes in Maungdaw and Sittwe. By the end of June, Government figures estimated that 98 people were killed and 123 injured, both Rohingya and Rakhine. More than 5 000 homes were destroyed and 75 000 people were displaced[4]. Additional violence erupted in October 2012 leading to displacement of around 32 000 people[5]. Smaller clashes were reported in Thandwe Township in October 2013 and in Maungdaw in January 2014[6]. Many displaced in the 2012 clashes reportedly still reside in camp settings.

In the northern part of Rakhine State, attacks on police posts in October 2016 and subsequent security operations saw 93 600 people displaced into Bangladesh by July 2017. On 24 August 2017, the Advisory Commission on Rakhine State, led by former UN Secretary-General, Kofi Annan, released its final report: "Towards a Peaceful, Fair and Prosperous Future for the People of Rakhine State". The day after, on 25 August, the situation in Northern Rakhine State deteriorated dramatically when armed attacks on police posts and subsequent security operations resulted in a mass exodus of people from their homes and hundreds of villages being burned to the ground. Following the 25 August incident, an estimated 708 400-727 000 refugees are reported to have crossed the border into Bangladesh, mostly Muslims and from the *Rohingya* ethnic group, with the majority crossing the border in September and October 2017. Over 25 000 Rakhine State Buddhists and people from other ethnic minority groups were also displaced, but most of these people had returned by November 2017, with the exception of approximately 2 000 people who have not yet been able to return to their place of origin (HNP, 2018). As of October 2018, there were 920 900-921 000 refugees in Cox's Bazar from Rakhine State. The number of refugees arriving in Bangladesh has decreased over the past months, but some 12 900 individuals entered Bangladesh through different entry points during the period between 1 January and 15 August 2018.

In Rakhine State's Northern District, public service provisions have been severely interrupted by the violence in late 2017 and subsequent access restrictions, exacerbating the existing needs and potentially creating new ones. Service provision in Rakhine State, where most of those in need of assistance in Myanmar reside, remains unequal, largely as a result of inter-communal tensions and movement restrictions. This puts many people at risk, particularly elderly, female-headed households and disabled people, as well as those in need of urgent life-saving medical attention or treatment for severe malnutrition.

In Rakhine State, as a result of the above-mentioned constraints, a high concentration of vulnerable populations with poor resilience and low agricultural productivity prevails. The recurring population displacement and acute limitations of movement for those not displaced caused the breakdown of value chains, losses in food production and destruction of assets (FAO, 2017)[7]. Natural shocks, along with the outbreaks of violence have displaced many households over the years. Those who remain in their villages face similar risks, with limited attention and support services. With restrictions on movement and lack of access to livelihoods, many affected populations rely on external assistance to survive.

AGRICULTURE

Land

Rakhine State covers an area of 3 677 808 hectares. Out of this figure, some 14 percent is currently cultivated land, 1 percent unused agricultural land, 3 percent fallow land (together making 18 percent of net agricultural land defined as total area with crops and orchards), 39 percent forest and 25 percent other land. The rest is reserved forest. Table 1 summarises area classified by type of land in 2016/17.

[4] The Republic of the Union of Myanmar. "Final Report of Inquiry Commission on Sectarian Violence in Rakhine State" 8 July 2013, p.19-20. Web; International Crisis Group. "Myanmar: The Politics of Rakhine State." Yangon, Brussels: ICG. 22 October 2014, p.8-9. Web.
[5] Ibid.
[6] Centre for Diversity and National Harmony. "Rakhine State Needs Assessment." Myanmar: CDNH. September 2015, p.5. Web.
[7] Adapted from http://www.fao.org/3/I8564EN/i8564en.pdf

Table 1: Rakhine State - Area classified by type of land, 2016/17 (hectares)

Reserved forest	Current fallows	Net area sown	Occupied area	Cultivable waste other than fallows	Other wood land	Other	Total area
690 252	27 412	498 291	525 704	109 658	1 426 033	926 161	3 677 808

Source: Myanmar Agricultural Statistics (2007-2008 to 2016-2017).

Some 28 600 hectares of lowland rice farming areas in Rakhine State[8] are affected by salinity. Salinity is at highest levels in the dry season. Although shrimp farmers in the State sustained large losses in the 2015 floods, some farmers complained about increased salt water intrusion from shrimp farming into paddy fields.

Farm sizes in Rakhine State tend to be small with almost 50 percent being less than 1 hectare. A farm with more than 10 hectares holding could be considered commercial. Farm size distribution is illustrated in Table 2.

Table 2: Rakhine State - Farm size distribution, 2016/17

	Less than 0.5 hectares	0.5 to 1 hectare	More than 1 hectare	Total
Myanmar	1 999 625	1 510 388	3 724 717	7 234 730
Rakhine State	95 497	77 977	184 593	358 067
Share of various farm sizes across Rakhine State (percent)	27	22	51	

Source: Myanmar Agricultural Statistics (2007/08 to 2016/17).

According to the 2010 Integrated Households Living Condition Assessment-2 (IHLCA 2), the landless rate in agriculture in Rakhine State was high, accounting for 24.6 percent of the total population. The proportion of landless increases from the southern to the northern part of the State although southern townships face controversial issues related to land tenure, access to land and fishing grounds[9]. According to DoA officials, in Northern Rakhine State about 60 percent of the households are characterized as part of the landless population. Box 1 describes land tenure practices in Myanmar.

Box 1: Land Tenure in Myanmar

In Myanmar, there is a need to reduce landlessness, have equitable land allocation and support services to smallholder farmers. Most of the disputes on land tenure are related to smallholder farmers. Many farmers cannot register their land under the current law and are considered as “squatters”; in some instance their land is classified as forest land (Namati, 2015). A limited number of women own land, while they contribute heavily to agriculture. An estimated 500 000 acres have been taken over between 1980-early 2000, mainly for large-scale agriculture projects (Namati, 2016).

The insecurity due to issues related to land tenure and land grabbing means that smallholder farmers are unlikely to make investment in their land. The main classifications of land in Myanmar include, freehold land, grant land, reserved forest land, farm land, grazing land and religious land. The land registration system is not efficient in ensuring ownership as it is managed by several ministries and based on old land laws, while land reforms are underway such as the 2012 Farmland Law and Vacant, Fallow and Virgin Land Law. While the 2012 land law includes sections on land grab disputes, it does not include ways to deal with them. The system is opaque to most people, which render it difficult to be used by most people. On average, in Myanmar, 42 percent of the rural households are landless, with more landless in the delta (56 percent), the coastal zone (52 percent), the dry zone (38 percent) followed by the hills zone (21 percent)[10]. Landless rates in Rakhine State are among the highest in the country.

[8] http://cure.irri.org/events/myanmarpartnersproducehigh-yieldingsalinity-tolerantricevarieties
[9] http://www.fao.org/3/I8564EN/i8564en.pdf
[10] World Bank 2014 systematic country diagnostic.

In Rakhine State, 60 percent of the rural population is landless[11]. The figures increase for the Muslim population, most of which does not own a piece of land and with only 10 percent of the returnees from Bangladesh being able to access agricultural land. This is a consequence of long-standing practices of land confiscation by the Tatmadaw, aimed to provide additional space for military settlements and to establish Tatmadaw farms and businesses[12].

Land in Northern Rakhine State has also been confiscated to accommodate new "model villages", constructed by the Ministry for the Progress of Border Areas and National Races (today's Ministry of Border Affairs), to host relocated Burman and Arakan people. These villages, mostly concentrated around Maungdaw Township, were part of a scheme to remodel the demographics of Northern Rakhine State.

The issue of landlessness is not only present in Rakhine State, but has also been affecting the whole country for many decades. Under the Land Nationalization Act of 1953, all land is technically owned by the State. Although legal practice today recognises private ownership of land, this law has greatly facilitated land confiscation. Since the 1990s, the military have been confiscating vast areas of land from smallholders across the country, including in Rakhine State. The reasons for these confiscations include, anchoring military presence in contested areas through the construction of new outposts and training sites, paving the way for infrastructure development projects and facilitating natural resources extraction[13].

In the past decade, this trend has increased to facilitate the entrance of large corporations into Myanmar's market[14]. In March 2012, the Parliament revised two land laws: the Farmland Law and the Vacant Land Law. These reforms paved the way to the introduction of a new Foreign Investment Law in 2016, which allows 100 percent foreign capital and lease periods of up to 70 years (Woods, 2015). Between 2010 and 2013, land allocated to large projects increased by 170 percent.

Following these reforms, numerous infrastructure projects implemented in Rakhine State have led to further land confiscation and forced relocation. A prominent example is the Shwe Natural Gas Project, a transnational pipeline built by the China National Petroleum Company (CNPC), connecting Sittwe to Kunming in China, which became operational in 2013. This Project has led to numerous cases of land confiscation without or with compensation in Rakhine State[15].

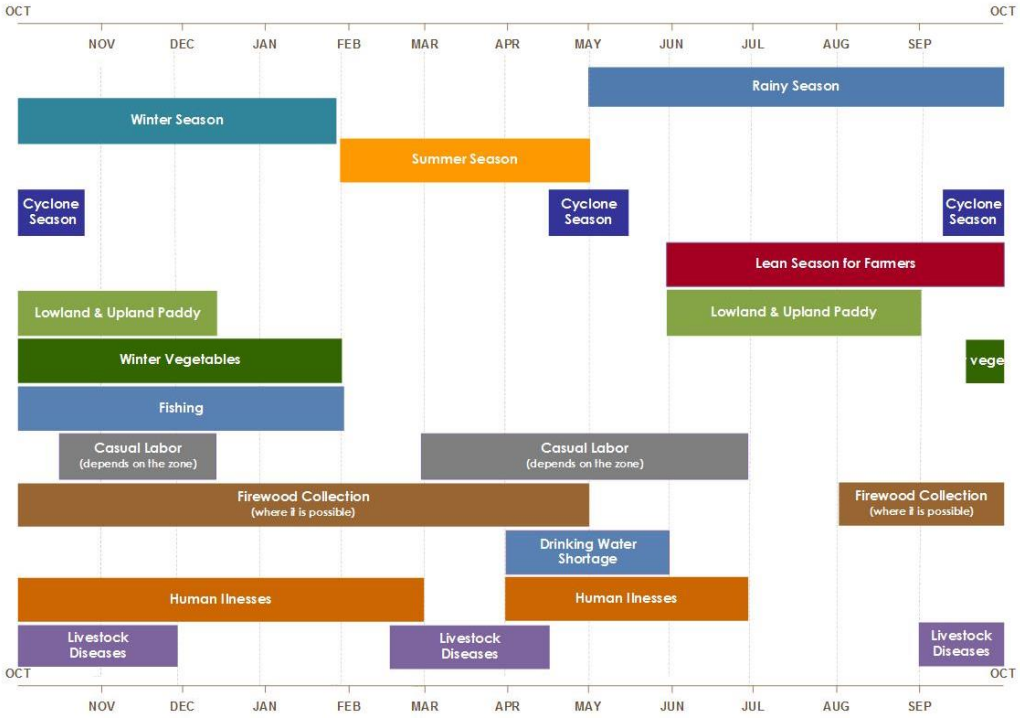
Full bibliography in Annex 4.

[11] Advisory Commission on Rakhine State, 2017.
[12] South, 2007.
[13] UNGA, 2006.
[14] Woods, 2015.
[15] Sassen, 2017.

Crops

Figure 3 illustrates a seasonal calendar for a broader range of activities including overlap with rainy and lean seasons for central part of Rakhine State. Minor regional differences can prevail.

Figure 3: Rakhine State (Centre) - Seasonal calendar



Source: FEWS NET.

Rice

Around 85 percent of the cultivated agricultural land in Rakhine State is used for rice paddy. The rice crop calendar for Sittwe is presented in Table 3. Paddy can be potentially grown twice a year in the areas where irrigation is available, nevertheless the lack of fresh water storage and consequently irrigation infrastructure restrict summer (dry season) paddy production in Rakhine State.

Table 3: Rakhine State (Centre) - Rice crop calendar (Sittwe)

Crop	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.	Oct.	Nov.	Dec.
Monsoon paddy (rainy season)												
Summer paddy (dry season)												

Source: FAO/GIEWS.

The irrigated area is very small (5 percent of the cropped area) so the monsoon (rainfed) season is far more important than the summer (dry season) one. In the 2017/18 crop year, about 4 000 hectares were planted in the State with summer paddy, compared to 447 000 hectares planted with monsoon paddy. Approximately only 2 percent of total Rakhine State's rice production comes from the summer season. In the whole of Myanmar, this percentage reaches 15 percent with crop yields that are usually higher because of better soil moisture control under irrigation. In some low coastal areas, however, salinity of irrigation water becomes a problem, because seawater penetrates deeper in rivers and streams, also infiltrating in underground water layers. The quality of irrigation water is variable and salt contents tend to be high.

Despite reaching 150 percent of rice self-sufficiency in the 2016/17 period (Myanmar Agricultural Statistics, 2007/08-2016/17), monsoon rice productivity in Rakhine State is still below the high producing areas of Myanmar and well below the Thai and Vietnamese standards. This is mainly due to high costs of farm inputs such as fertilizers, lack of quality certified seeds, inadequate access to markets and credit, poor irrigation and water management infrastructures and poorly developed research, training and extension services.

Paddy is mostly seeded directly (broadcasted), although some transplanting also occurs. Due to exact spacing, transplanting requires less seed but more labour compared to broadcasting. Prior to transplanting, seedlings are raised in nurseries supported by fertilizer application. Transplanted crops take longer to mature due to transplanting shock[16].

Other crops

As elsewhere in the report, information presented in this section originates from conversations with farmers. No surveys on a specific contribution to the household budget were performed.

Some crops are grown in both summer and winter. Farmers encountered reported summer crops to include maize, pulses (black gram), oilseeds (groundnut and sunflower), spices (sesame, turmeric, ginger and chilli), sugar cane and vegetables (eggplants, peas, black gram, pigeon peas, water spinach, long beans). Winter crops include maize, oilseeds (groundnut and sunflower), spices (sesame, chilli, turmeric and ginger), tapioca, and pigeon pea. Coconut, cashew, mango, banana, rubber and nipa palm plantations also have some relevance, although fruit tends to be for local consumption.

The most economically significant cash crops were reported to be betel leaves, cashew nuts, groundnuts and pulses. Rubber prices were deemed to be low and not covering the cost of production. Other crops are produced mainly for household consumption with surplus market or village sales. Vegetable production is more significant in the area around Sittwe where fresh water availability is higher and production has some commercial importance.

Good quality betel leaves for urban markets (via intermediaries) can be sold for MMK 800 per 100 leaves and locally fetched around MMK 400-500 per 100 leaves. Leaves can be harvested one and half months after planting. Farmers reported that from 1 000 plants, they can obtain 5-8 viss[17] of leaves twice a month, with an average price of MMK 3 000/viss.

Cashew nuts are usually harvested in April before the arrival of the rainy season. Farmers reported no specific problems in the season harvested in April 2017. Prices offered by the intermediary for cashew nuts were regarded as fair (MMK 3 700/viss for sun-dried nuts, with 300 viss yielded in 25 acres). The selling price in Yangon (approximately 24-hour drive away) was reported to be MMK 4 200/viss. Most of the production seems to be destined for exports. Cashew producers start receiving income when the trees are about six years old, with good income for three years. A significantly lower production, about half of the 2017 crop, was expected to be harvested in 2018 due to a prevailing aphid problem.

Groundnut production relies on own seeds. Many villages visited reported to have small oil presses available, although the main bulk is sold to intermediaries. The range of prices given by the farmers varied from MMK 4 500 to MMK 12 000/basket, mostly based on the location and ease of access. Farmers reported yields of about 30 baskets/acre. Prices either remained stable or increased compared to 2017.

Decreasing producer prices were reported for pulses: in 2017 one basket fetched MMK 30 000 down from MMK 50 000 two years earlier. The average gram per yield is about 7-8 baskets/acre.

Irrigation

Although Rakhine State receives very heavy seasonal rainfall, water storage facilities are limited and shortages of agriculture and drinking water constitute a significant problem in the dry season. Mayu River, Kalatan River and Lay Myo River are flowing through the State but there is limited infrastructure which constraints the capacity to use them for irrigation of farmland. Even in the areas with water available close to rivers and other sources, lack of pumping technology prevents broader utilization of irrigation. Table 4 illustrates the irrigated areas and multiple cropping in 2016/17 in Myanmar and Rakhine State.

[16] http://www.knowledgebank.irri.org/step-by-step-production/growth/planting/transplanting

[17] 1 viss = 1.63 kg.

Table 4: Irrigated area and multiple cropping, 2016/17

	Net area sown (hectares)	Irrigated area (hectares)	Multiple crop irrigated area (hectares)	Irrigated area (percent)	Multiple crop in irrigated area (percent)
Myanmar	13 374 468	2 150 501	549 968	16	26
Rakhine State	539 446	28 394	-	5	-

Source: Myanmar Agricultural Statistics (2007/08-2016/17).

Credit and other agricultural support policies

The Myanmar Agricultural Development Bank (MADB), a Government enterprise, provides limited seasonal crop production loans to rice farmers, totalling more than MMK 730 billion (equivalent to USD 594 million). The MADB provides credit for rice farmers of up to MMK 150 000 (USD 115) for a maximum of 10 acres with an 8 percent interest rate. Farmers can also access credit from other sources such as cooperatives, the Myanmar Rice Federation or NGOs (FAS, 2018)[18].

Farmers in Rakhine State take out only about 5 percent of total agricultural loans in Myanmar. Interviewed farmers in the central and southern townships reported a general availability of credit for rice farming based upon the presentation of land ownership certificates. Some of the claimed amount is sufficient, some not. Stateless people, more concentrated in the northern townships, are especially disadvantaged from this mechanism. The loan is usually disbursed in July, after the land preparation already took place and planting is likely to be underway. Some farmers reported that the timing of the loan distribution does not coincide with the requirements of the field work and that they are often forced to borrow from money lenders at high rates (sometimes quoted to exceed 10 percent) to ensure a proper cash flow. It appears that other commodities or livestock producers do not receive any form of Government support, or at least farmers were not aware of it.

The Government announced that it would provide more than MMK 60 billion (equivalent to USD 45 million) in January 2018 for agricultural related SMEs and the distribution of loans for the rice sector (FAS, 2018). In addition to SME loans, the Myanmar Rice Federation announced the reference price for certain quality paddy of MMK 250 000/tonne (USD 189/tonne) on 6 March 2018 during the Myanmar Rice Stakeholder Forum in Nay Pyi Taw. It was not yet clear how this reference price would be enforced or supported by the Government, if at all (FAS, 2018).

Fertilizers and pesticides

The use of fertilizers is relatively widespread and fertilizers are generally available but application rates in the field frequently differ from those recommended by the DoA, constrained by high purchasing costs. Only model villages, which include out-growers for seed multiplication, qualify for assistance with fertilizer and plant protection material from the Government. Recommendations typically include urea, Triple Super Phosphate (TSP), Potash (KCl) and a compound fertilizer. Farmers interviewed reported, however, to use only urea as it is generally more available. Given the high prices, farmers tend to apply fertilizer only to nurseries to produce rice seedlings. Myanmar produces urea but not in sufficient quantities to satisfy national demand, therefore, the rest has to be imported. Reflecting the cost of importing, distribution and exchange rate, price increases of urea have been reported almost everywhere as a major problem. Typically, a 50-kg bag of urea cost up to MMK 30 000 in 2018, a 10 percent increase compared to 2017. The cost of compound fertilizer was reported at MMK 20 000-MMK 30 000/50 kg bag.

At least in the Southern and Central districts of the State, pesticides are generally available, although farmers cited high costs and often lack of interaction with DoA officials on extension. While no assistance is given to purchase plant protection material, upon notification, DoA can provide a scouting Mission to diagnose the problem and provide recommendations on the treatment. Farmers felt that the agricultural supplies centres close to them were providing the same service but in a shorter timeframe. Many resort to mechanical or traditional biological cost control methods, with application of rice bran mixed with chemical products.

Burning of the fields before the arrival of the monsoon rains is frequent: farmers claim fires are set to prepare for ploughing because of the presence of pests, or practiced by those who do not have enough cattle to graze the weeds.

[18] https://gain.fas.usda.gov/Recent%20GAIN%20Publications/Grain%20and%20Feed%20Annual_Rangoon_Burma%20-%20Union%20of_4-6-2018.pdf

Seeds

Myanmar's current seed sector relies on three different seed systems: (1) farmers reproducing their own seeds of both improved and local varieties; (2) individual seed growers and small-scale national seed companies multiplying improved varieties; and (3) private companies where improved varieties are produced, imported and/or marketed.

Most of the interviewed rice-producing farmers said they were using seeds retained from the previous season as the certified ones were normally not available or were deemed expensive. Many farmers also have a preference for local variety due to its resistance to salinity as well as a preferred taste. A DoA official reckoned that there is room for improvement in the general quality of rice, which could be partially remedied by a broader use of quality seeds. MoALI had focused on providing hybrid rice seeds although the Mission was not provided with any information on certification systems or process. Research and development are not centralized in the State.

In the 2017/18 season, in Rakhine State, the DoA distributed seeds from 400 acres, a quantity sufficient to produce 20 000 baskets of rice. The plan for the 2018/19 season called for a seed production on 500 acres. Currently, there is only one seed farm in the State plus some contract farmers (out-growers). Out-growers are provided with fertilizer as well as training and extension services. The system of seed model villages and contract farmers has difficulties in delivering sufficient quality and quantity of seed. According to the DoA officials, the plan in Rakhine State is to move soon from five-model villages in the whole State to one per township to better satisfy local demand.

Among the farmers, some hesitance was detected to use improved varieties as farmers believed they are more prone to pests and more susceptible to weather conditions. The local variety is deemed more resilient, albeit lower yielding. Some farmers who received seeds from the Government reported low germination rates for these seeds, while the DoA claimed producers did not follow the instructions given when distributing the hybrid seeds.

To produce seedlings, farmers reported using two baskets of seed per acre, with a one-time application of compound fertilizer of 15 kg per acre.

Labour availability

Farmers across Rakhine State brought up the issue of labour availability, labour shortages and increasing costs. Up to 3 acres, farmers seemed to be able to cultivate their fields themselves or with family labour. For holdings larger than 3 acres, casual labour needs to be hired to comply with the crop calendar and timings of the necessary field operations. The vast majority of farmers rely on casual labour for transplanting, weeding and harvesting activities. As the demand for casual labour is cyclical responding to the needs, demand for casual labour increases in waves, while the supply of causal labour remains stable, putting an upward pressure on wages.

According to farmers' recollection, labour shortages began in 2010, following an extensive movement of labour away from farms to urban areas, to other countries and to more remunerative work opportunities at local level such as construction or infrastructure. Labour shortages were further aggravated by the conflict in 2012 and post-2012 restrictions on freedom of movement. The 2017 large-scale migration flows from Maungdaw District were likely to have negative implications for the agricultural sector and food security conditions, including lack of labour for agricultural production further reducing man-power and increasing costs.

Mechanization

The use of farm mechanization, including handheld tractors is slowly increasing but most farmers still depend on animal draught and manual labour for their farm operations. The Government rents farm machinery to farmers for a nominal fee, although there is only one agriculture mechanization station in the State. Its staffing is very low and the station is reportedly poorly equipped.

Replacing labour with mechanization could address part of the labour shortage problem although high purchasing costs, limited supporting infrastructures for maintenance and repair as well as small size of agricultural holdings constrain this approach. The farmers interviewed have frequently mentioned the lack or inadequacy of mechanization as a major problem.

Despite the Government plans to allocate one combined harvester for each township, the majority of townships did not have access to one when the assessment was carried out. Some DoA officials mentioned the

distribution of machinery such as handheld tractors to villages, raising concerns among villagers about future maintenance and who would technically own them.

Farmers mentioned the high costs of hiring machinery, generally paid in cash. Machinery is generally hired only for paddy fields. Total land preparation by handheld tractors was estimated at MMK 40 000-MMK 75 000/acre, with a cost of MMK 15 000-MMK 25 000/acre for one cycle of ploughing. Cattle ploughing could generally be paid in kind, accepting about 10-15 baskets of rice/acre. The cost of a combine harvester, where available, was estimated at MMK 35 000/acre.

Marketing of agricultural products

Due to financial constraints and need to repay the MADB and other loans, farmers tend to sell the bulk of their agricultural products shortly after the harvest, mostly to intermediaries or local mills, where available. In some areas, several intermediaries come to a village, although they offer the same prices. Smaller quantities of products are also sold on the local or village markets. Markets in IDP areas might not be available or villagers can access the market only on a limited basis. In a buyers' market, farmers are obliged to accept the low prices since they have to sell.

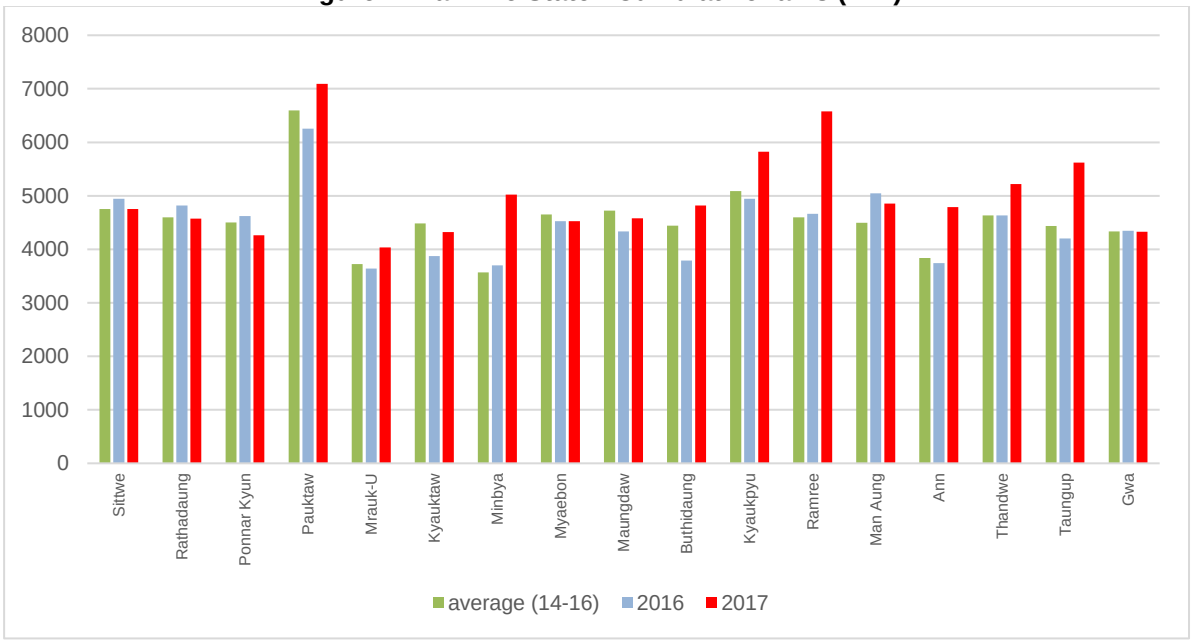
The price of rice is generally the lowest after the monsoon harvest in December and it reaches the highest in September and October, the leanest months of the year before the main harvest begins in November. The broader use of storage facilities and more generous repayment conditions would allow farmers to benefit from higher prices. Restrictions on movement are believed to further constrain marketing and income-earning opportunities for producers.

Agricultural campaign, 2017/18

Weather conditions

In 2017/18, farmers continued planting the safeguarded seeds from the previous season, with limited application of fertilizers and other constraints as described previously. With no significant irrigation in the State and water management system, seasonal precipitations are *de facto* the most important factor for crop development. The onset of the 2017 monsoon rains was normal in most parts of Rakhine State with average to above average cumulative precipitations and rains being well distributed. Interviewed farmers confirmed the favourable weather conditions. Figure 4 illustrates cumulative rains in 2017, 2016 and the 2014-2016 average in Rakhine State per township.

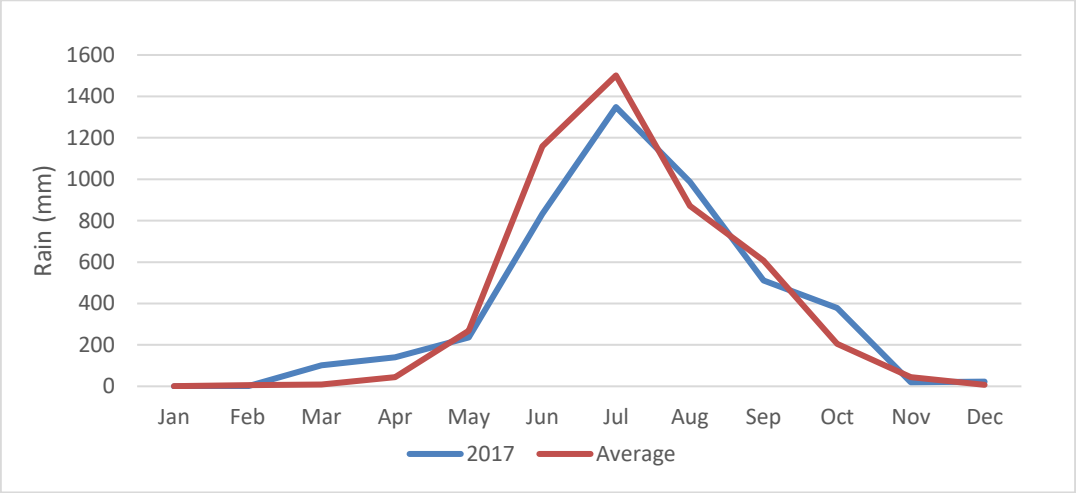
Figure 4: Rakhine State - Cumulative rains (mm)



Source: DoA, Rakhine State.

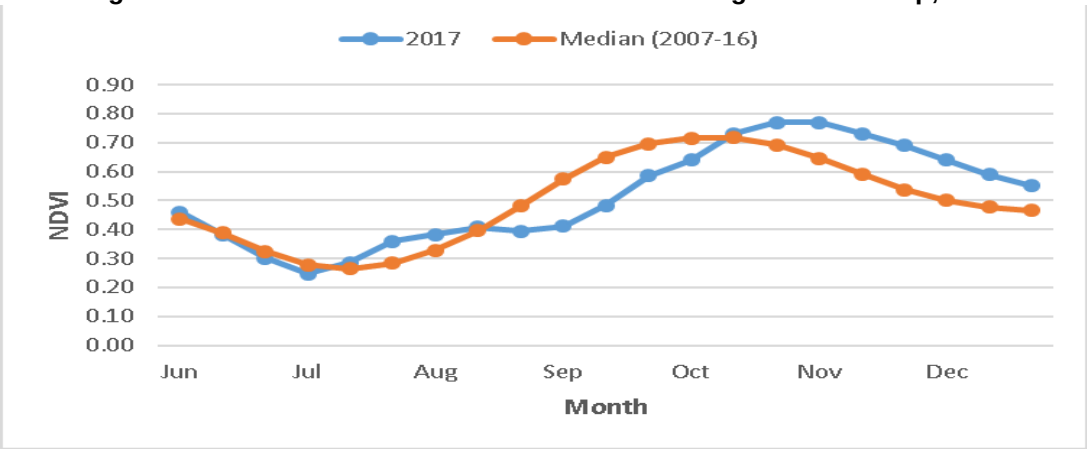
Rainfall distribution in the areas affected by the conflict showed no particular irregularity in rain patterns and cumulative NDVI data was above normal in 2017. Only in Maungdaw Township, precipitations were below normal in June and July, but normal in August and September (figures 5 and 6).

Figure 5: Rakhine State - Rainfall distribution in Maungdaw Township, 2017



Source: DoA, Rakhine State.

Figure 6: Rakhine State - NDVI distribution in Maungdaw Township, 2017



Source: FAO/GIEWS.

Given that there were no major changes in land availability or an economically significant pest outbreak (discussed in the next section), the only variable influencing production in rainfed agriculture was the amount of rainfall. Therefore, from the rainfall analysis, in all districts of Rakhine State, including north, the 2017 crop performance had a potential, in all likelihood, to be average to better than the average. The data did not provide any indication regarding harvest activities, but it is possible to say that growing conditions and crop performance were not a problem in the 2017/18 season. However, violence-related events might have restricted agricultural activities in Northern Rakhine State.

Pests and diseases

No economically significant outbreaks of pests and diseases were reported during the 2017/18 monsoon paddy season. Farmers reported inefficient extension services, some rodent problems and localized pest outbreaks in the southern townships. Some localized losses were reported on vegetables, such as in Kyauk Tan Gyi Village in Sittwe Township, where the Eggplant Fruit and Shoot Borer (EFSB) severely affected total production. Given that the Mission took place after the harvest, it was not possible to make any estimates of the loss in the harvest or the affected surface.

Paddy production, 2017/18

As the Mission conducted field visits in-between the major festivals in the region, it was unable to properly assess the crop condition on the ground as it took place much after the harvest time. However, the DoA provided agriculture statistics and in each visited village, the Mission confirmed these figures with a number of farmers selected by the local authorities.

The total **paddy area harvested** in Rakhine State in 2017 decreased by 7 percent compared to the previous year's level (Table 5). This was a consequence mainly of the reduction in the harvested area of the monsoon paddy in Maungdaw District, the area hit hardest by the violence of August 2017, where less than one-quarter of the total area planted with paddy rice was harvested. As the area has been emptied of most of its residents, vast tracks of rice fields were abandoned. Although the Government claimed to have harvested some of the abandoned fields, official statistics show that in Maungdaw Township, 77 percent of the paddy fields remained unharvested. The situation was significantly better in neighbouring Buthidaung Township where, according to Government data, less than 20 percent of the fields were unharvested. Elsewhere in Rakhine State, the harvested area remained on par with previous year and four-year average.

Table 5: Rakhine State - Paddy area harvested by District and Township

District/Township	Area harvested (hectares)				
	Average (2013/14-2016/17)	Average 2016/17	Average 2017/18	2017/18 as percent of 2016/17	2017/18 as percent of the four-year average
Sittwe District	**111 314**	**111 655**	**110 840**	**99**	**100**
Sittwe	9 339	9 440	9 406	100	101
Rathadaung	35 750	35 693	34 916	98	98
Ponnar Kyun	25 171	25 070	25 070	100	100
Pauktaw	41 054	41 452	41 449	100	101
Mrauk-U District	**151 112**	**153 317**	**155 604**	**101**	**103**
Mrauk-U	53 705	53 374	53 374	100	99
Kyauktaw	37 459	37 671	37 624	100	100
Minbya	37 480	37 988	38 198	101	102
Myebon	22 467	24 285	26 407	109	118
Maungdaw District	**67 267**	**65 023**	**35 523**	**55**	**53**
Maungdaw	31 568	30 920	7 073	23	22
Buthidaung	35 699	34 102	28 450	83	80
Kyaukpyu District	**67 976**	**66 023**	**66 104**	**100**	**97**
Kyaukpyu	18 783	18 524	18 607	100	99
Ramree	19 710	18 564	18 564	100	94
Man Aung	11 104	11 105	11 106	100	100
Ann	18 378	17 830	17 828	100	97
Thandwe District	**53 904**	**54 473**	**53 005**	**97**	**98**
Thandwe	15 816	15 811	15 750	100	100
Taungup	28 444	28 915	27 907	97	98
Gwa	9 644	9 747	9 348	96	97
Total	**451 573**	**450 490**	**421 076**	**93**	**93**

Source: DoA, Rakhine State.

In terms of actual production (Table 6), total production in Rakhine State in 2017, as reflected in the official production data, provided by the DoA was about 15 percent lower than in the previous year and the four-year average. With the exception of Myebon Township, where production increased by 15 percent compared to the previous year and 12 percent compared to the average. Total paddy production elsewhere did not reach the levels harvested in previous years. While in many townships production registered some 10-15 percent decline, larger declines were registered in Maungdaw District, particularly in Maungdaw Township, where paddy production reached only 15 percent of the previous year production and the average.

Table 6: Rakhine State - Paddy production by District and Township

District/Township	Total production (tonnes)				
	Average (2013/14-2016/17)	Average 2016/17	Average 2017/18	2017/18 as percent of 2016/17	2017/18 as percent of the four-year average
Sittwe District	**370 492**	**370 895**	**341 846**	**92**	**92**
Sittwe	33 768	33 892	30 012	89	89
Rathadaung	115 767	114 966	104 068	91	90
Ponnar Kyun	88 215	88 316	81 864	93	93
Pauktaw	132 742	133 721	127 545	95	96
Mrauk-U District	**537 706**	**531 912**	**510 674**	**96**	**95**
Mrauk-U	194 580	191 527	178 424	93	92
Kyauktaw	136 819	135 512	126 710	94	93
Minbya	135 315	135 577	126 129	93	93
Myebon	70 993	69 297	79 411	115	112
Maungdaw District	**233 351**	**235 071**	**106 317**	**45**	**46**
Maungdaw	106 865	107 485	16 311	15	15
Buthidaung	126 486	127 586	90 006	71	71
Kyaukpyu District	**218 339**	**212 158**	**191 276**	**90**	**88**
Kyaukpyu	59 556	58 157	53 630	92	90
Ramree	65 234	62 367	54 966	88	84
Man Aung	35 823	36 095	32 820	91	92
Ann	57 727	55 539	49 858	90	86
Thandwe District	**190 696**	**193 216**	**165 988**	**86**	**87**
Thandwe	56 478	57 063	48 879	86	87
Taungup	98 924	100 562	88 424	88	89
Gwa	35 295	35 591	28 795	81	82
Total	**1 550 585**	**1 543 252**	**1 316 101**	**85**	**85**

Source: DoA, Rakhine State.

However, farmers interviewed by the Mission in the Central and Southern districts reported average (or even above average) rice outputs mostly due to the abundant and well-distributed seasonal rainfall. Since the overall rains were deemed satisfactory, farmers reported the same use of seeds and fertilizers as well as the same production techniques. A potential reason for slightly lower-than-average production could be due to a reduction in labour availability although additional insights would be needed to verify whether this was actually the case.

Average paddy yields in Myanmar, generally between 3.8 and 4.7 tonnes/hectare[19], are higher than those achieved in Thailand (3.1 tonnes/hectare) but are significantly lower than in Viet Nam (5.8 tonnes/hectare) and China (6.9 tonnes/hectare). While across most of Rakhine State yields in 2018 (Table 7) registered close to above 90 percent of the previous year and the average yields in Maungdaw reached about two-thirds of their previous levels.

[19] CFSAM 2015, http://www.fao.org/3/a-i5460e.pdf

Table 7: Rakhine State - Paddy yields by District and Township

District/Township	Yields (tonne/hectare)				
	Average (2013/14-2016/17)	Average 2016/17	Average 2017/18	2017/18 as percent of 2016/17	2017/18 as percent of the four-year average
Sittwe District	**3.33**	**3.19**	**3.08**	**97**	**93**
Sittwe	3.62	3.48	3.19	92	88
Rathadaung	3.24	3.11	2.98	96	92
Ponnar Kyun	3.50	3.37	3.27	97	93
Pauktaw	3.23	3.10	3.08	99	95
Mrauk-U District	**3.56**	**3.43**	**3.28**	**96**	**92**
Mrauk-U	3.62	3.52	3.34	95	92
Kyauktaw	3.65	3.54	3.37	95	92
Minbya	3.61	3.46	3.30	95	91
Myebon	3.16	3.05	3.01	99	95
Maungdaw District	**3.47**	**3.41**	**2.99**	**88**	**86**
Maungdaw	3.39	3.36	2.31	69	68
Buthidaung	3.54	3.44	3.16	92	89
Kyaukpyu District	**3.21**	**3.07**	**2.89**	**94**	**90**
Kyaukpyu	3.17	2.96	2.88	98	91
Ramree	3.31	3.15	2.96	94	90
Man Aung	3.23	3.16	2.96	94	92
Ann	3.14	3.03	2.80	92	89
Thandwe District	**3.54**	**3.44**	**3.13**	**91**	**89**
Thandwe	3.57	3.48	3.10	89	87
Taungup	3.48	3.40	3.17	93	91
Gwa	3.66	3.50	3.08	88	84
Total	**3.43**	**3.32**	**3.13**	**94**	**91**

Source: DoA, Rakhine State.

Winter crops

Production of winter crops (mostly groundnuts and vegetables) in the 2017/18 season in Southern and Central districts was reported to be average. In the northern part, production remained extremely low as the peak of the violence occurred during the planting season. The majority of farmers the Mission met with grew winter crops for household consumption, making any evidence purely anecdotal.

Box 2: Agricultural activities when displaced

According to UNHCR and other humanitarian organizations, as of April 2018, there were an estimated 127 680 IDPs in Rakhine State located in 27 camps/sites as result of the violence which started in 2012.

The Mission visited Nget Chaung Camp in Pauktaw Tonwship where more than 4 500 people lived at the time of the visit. The inhabitants of this Camp faced poor living conditions and were fully relying on humanitarian assistance, as their freedom of movement was severely restricted. Few farmers of the original village practised rice production but the specific situation (movement, inputs unavailability) forced them to adopt low yielding agricultural techniques. Labour was provided by the household members and production was purely for own consumption. Some people engaged in fishing but used very rudimentary gear and equipment. Almost no livestock was present except for some cattle and no aquaculture was practised.

Upcoming monsoon paddy season, 2018/19

Land preparation for monsoon paddy usually starts in June and planting to follow in July. At the time of the visit in May 2018, in Central and Southern districts, planting intentions reported by farmers were similar to the previous years, although structural problems such as labour shortages, limited availability of machinery, high cost of fertilizer and, in some areas, restrictions on movements, were likely to constrain the overall production.

The area planted and production in the northern townships was likely to be well below average due to reduced population, constrained access to fields, lack of labour and draft animals and reduced access to agricultural inputs.

The 2018 monsoon season started on time during the third decade of May. The early monsoon season (up to end-June) brought moderate to strong rains, with above-average precipitation in Rakhine State. The forecast for mid-monsoon season (July-August) foresaw close to normal precipitation in Rakhine State (Myanmar Department of Meteorology and Hydrology).

Livestock

In Rakhine State, rural and landless households practise subsistence livestock rearing. There are a few small-scale commercial livestock farms in suburban areas of larger settlements. Small-scale household level livestock rearing and poultry production, therefore, prevail across the State and rearing is mainly for household consumption with excess to be sold to an intermediary or directly on the market. Livestock rearing is also used as a way to save money for emergencies. Households usually keep cattle or buffalos as draught animals. Poultry and goats are mainly for own consumption as there is no need for a slaughtering licence. Table 8 provides a snapshot of animal numbers across townships and districts as of March 2018.

Table 8: Rakhine State - Live animals, March 2018

District/ Township	Cow	Buffalo	Goat	Pig	Chicken	Duck	Muscovy Duck
Sittwe District	**89 738**	**65 876**	**31 260**	**46 217**	**316 699**	**24 294**	**7 675**
Sittwe	14 408	5 545	6 162	4 133	139 657	4 094	1 164
Rathadaung	16 100	13 366	2 890	22 250	126 287	8 200	22
Ponnar Kyun	15 976	18 685	8 672	8 703	47 255	7 000	1 000
Pauktaw	43 254	28 280	13 536	11 131	3 500	5 000	5 489
Mrauk-U District	**205 383**	**80 567**	**79 486**	**130 202**	**5 032 580**	**96 246**	**12 758**
Mrauk-U	32 836	22 395	5 656	9 786	163 190	16 971	1 114
Kyauktaw	11 897	35 099	41 095	64 156	510 896	26 448	4 299
Minbya	23 688	12 458	7 332	13 268	120 203	17 956	
Myebon	33 962	10 615	25 403	42 992	4 238 291	34 871	7 345
Maungdaw District	**110 610**	**14 900**	**97 730**	**7 431**	**215 400**	**25 953**	**9 153**
Maungdaw	65 380	8 520	72 430	2 120	112 100	13 212	5 021
Buthidaung	45 230	6 380	25 300	5 311	103 300	12 741	4 132
Kyaukpyu District	**246 200**	**22 655**	**24 322**	**89 873**	**1 371 246**	**44 553**	**9 927**
Kyaukpyu	126 266	10 674	12 301	36 727	786 623	23 477	8 957
Ramree	55 818	3 502	650	25 250	388 950	2 054	500
Man Aung	29 718	374	4 836	9 080	163 293	13 655	470
Ann	34 398	8 105	6 535	18 816	32 380	5 367	
Thandwe District	**102 718**	**6 763**	**13 164**	**88 945**	**1 094 456**	**78 866**	**11 421**
Thandwe	65 756	3 056	8 430	24 219	116 079	26 867	
Taungup	13 918	1 389	1 703	7 306	45 217	4 800	1 506
Gwa	23 044	2 318	3 031	57 420	933 160	47 199	9 915
Total	**754 649**	**190 761**	**245 962**	**362 668**	**8 030 381**	**269 912**	**50 934**

Source: Livestock Breeding and Veterinary Department, Rakhine State.

Some commercial feed for cattle, buffalos, pigs and poultry is available, although at a high cost reflecting high transportation costs corresponding to remoteness of the State and relative lack of transportation links. Generally, given the proximity to Yangon, feed is the cheapest in Thandwe District, and the price increases to the north. Animal manure is used as fertilizer replacing chemical fertilizers. Application rates depend on household availability.

Women and children in households usually take care of animals. Kitchen scraps and agriculture by-products are used as animal feed. Feed for cattle, sheep and goats come from grass, straw and vegetation. For pigs, supplementary feeding of market purchased broken rice (at MMK 15 000/bag) or rice bran (MMK 5 000/bag) is often applied. One bag of bran lasts about 20 days for one pig. It takes about 1.5 years to reach the weight of 55 viss. Intermediaries prefer to buy pigs at 55-60 viss. The price paid to farmers was reported to be MMK 5 000-5 500/viss, while the reselling price further along the food chain to processors or consumers was reported to be MMK 8 000/viss. If a household does not have access to piglets from their own production for fattening, 45-day old piglets weighing between 3-5 viss, can be purchased at MMK 50 000.

In the Northern District, as a consequence of violence, the households reported heavy losses in particular of draught animals. Large livestock losses were expected to reduce the availability of farm power at household level resulting in the need to spend more resources for animal power or machinery rental in the upcoming agricultural season.

Although farmers have reported no major outbreak of diseases, the main challenges in the livestock subsector are communicable animal diseases, which result in loss of livestock. Some farmers lamented the untimely assistance and difficulties to identify the causes of livestock deaths. At the time of the Mission, the general health situation of livestock was deemed satisfactory and the observed livestock conditions corresponded to the end of dry season in which animals mostly rely on crop residues and limited pasture to feed on.

The LBVD has limited staffing and cannot provide sufficient veterinary services. A veterinary officer is stationed in each township. Even with the assistance, farmers cover the cost of vaccination. A lack of purebred breeding animals was also reported by LBVD officials. Some programmes to expand pure breed are underway in the State by loaning pure breed animals (cows, goats and pigs) to farmers for a period of three years. Apart from farmers in model villages (one in each township), farmers are not eligible for assistance from the LBVD with feed, vaccination, veterinary medicines, etc. Some extension services and diagnosis are provided, although there appears to be a lack of systematic, timely and efficient delivery of training and extension services to farmers and limited availability of veterinary services. It was perceived by the LBVD that the demand for meat exceeds the supply, putting an upward pressure on prices.

Fishery and aquaculture

With a coastline of 3 000 km and inland water areas covering 3.3 million hectares, the Myanmar fishing sector provides an enormous potential for economic growth and development. As Rakhine State is a coastal area with extensive mangrove forests, these forests can provide rich breeding grounds for fish and shrimp. Fishing is a major industry, with most of the total products transported to Yangon. In addition, many farmers rely on small-scale fishing mostly in ponds and creeks for their own consumption. Credit is generally not available for fishing operations.

As of March 2018, the total number of inshore (up to 5 miles from the shore) boats licenced were 10 323 (including 4 356 mechanized and 5 967 non-mechanized boats), while the offshore (more than 10 miles from the shore) fishing vessels were 304 of which only nine belonging to Rakhine State residents, with the rest residing elsewhere. Commercial offshore fisheries are concentrated around Thandwe. The State Government provides a licence that can be revoked if illegal fishing methods are used. There is no wholesale market in Rakhine State. There are eight fishery product-processing factories with a total capacity of 800 tonnes in operation in Sittwe, Kyauk Phyu and Thandwe townships where fish/shrimp/crabs are frozen and fish paste and dried fish are produced. Half of the factories are in Sittwe Township, processing 550 tonnes. In addition, fish not consumed immediately or not sold by small fishermen is dried, or smaller species are made into fish paste. The total catch in Rakhine State is estimated at 270 000 tonnes/year.

The fisheries sector in the State employs about 20 000 people on a full-time and 15 000 people on a part-time basis. Most of them, about 13 000 full-time and 11 500 part-time, rely on inland fisheries for their livelihoods, with the biggest numbers in Thandwe (3 000 full-time), Myaebon and Maungdaw (each 1 500).

Fishermen interviewed by the Mission said that, compared to previous years, the catch appeared to have dropped in both coastal and in-land areas. In coastal areas, the presence of large commercial fisheries was reported to limit the availability of fish stocks resulting in overfishing, due to gear that fails to discriminate

between mature fish and small fry. Concerns about the lack of acceptable quality fishing inputs were also raised, particularly in the central districts. In in-land areas, some fishermen complained about the use of fraudulent fishing methods, such as poisoning fish or using explosives. In some areas, restrictions on movement are limiting fishing livelihood opportunities.

There is a commercial scale aquaculture in Rakhine State. In the early 2000s, some 9 600 owners practised tiger shrimp farming on over 155 000 acres, mostly in a traditional way with no additional feed or fingerlings. By 2011, the figure decreased to 6 000 owners on about 110 000 acres, mostly in central and northern Rakhine State due to the decreasing price of shrimp, recurring natural disasters, lack of resources for repairs and the general lack of profitability of operations. They often lack any management and serve only as an income supplement and a way to diversify diets. Natural conditions for a larger deployment of commercial aquaculture are favourable in the central and northern part of the State, as the southern part is too sandy. At the moment, the potential has not been fully exploited. In 2016/17 (last data available), shrimp farming was practised on around 6 800 ponds with a total area of 110 000 acres. The highest number of shrimp ponds was in Sittwe (2 700 ponds) and Maungdaw districts (2 600 ponds). The largest area under shrimp ponds was in Sittwe (53 000 acres).

Information from the Department of Fisheries estimates that about 5 000 tonnes of fish are exported to other parts of Myanmar. Of this amount, slightly over 40 percent is mud crab, 20 percent marine shrimp and 10 percent marine fish.

Wild crab collection is widespread to supplement households' income and diversity diets. Small-scale artisanal aquaculture is present and the conditions for development of commercial aquaculture (shrimp farms) are favourable but not fully exploited.

FOOD SECURITY SITUATION AND TRENDS

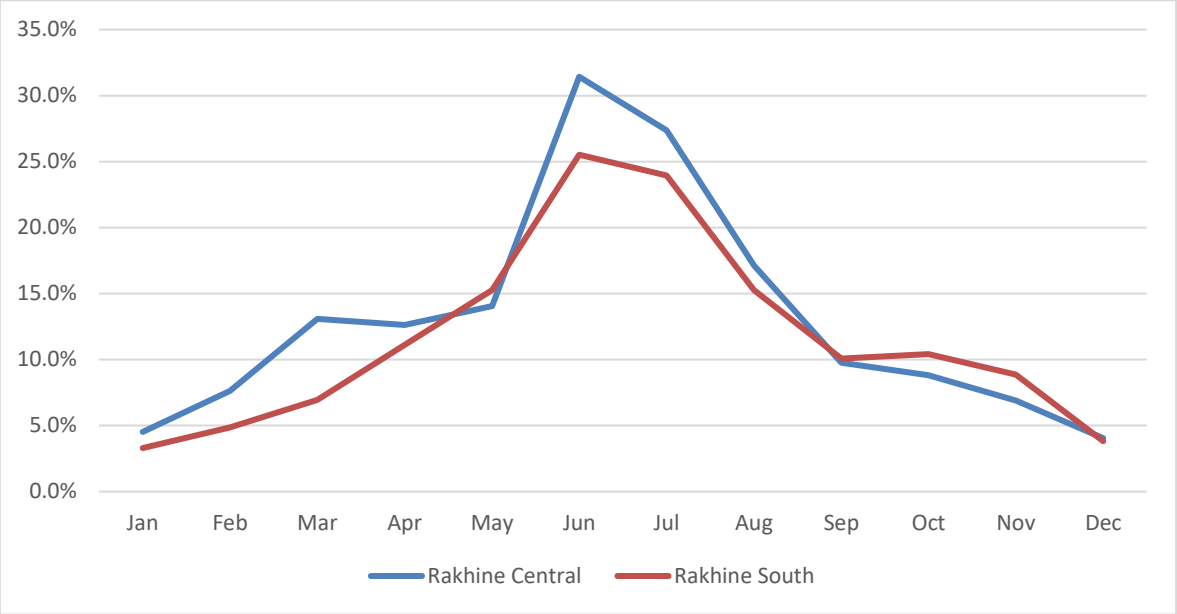
Historically, food availability has not been a barrier to food security in Rakhine State, which is one of Myanmar´s food baskets with its extensive areas of paddy fields and a robust fishing and aquaculture sector. Fluctuations in food supply/availability are mainly seasonal, reducing during the lean period in the months leading up to the main harvest in December. On the other hand, access to adequate and nutritionally-balanced food is a challenge for the poorest and most vulnerable communities, especially in the areas affected by inter-communal tensions and violence. As observed by the Mission, the food security situation and the underlying causes of food insecurity in Rakhine State vary greatly across its different livelihoods and agro-ecological zones.

In the Central and Southern districts household food insecurity primarily stems from the inability to access sufficient food throughout the year. Economic access to a nutritious diet varies by a household's socio-economic status, livelihood profile and access to credit. In a regular year, no more than 30 percent of the households in the Central and Southern districts self-reported having difficulties accessing food and only for two months per year compared to four months on average at national level[20]. However, coping mechanisms are frequently employed, especially during the lean season. The most food insecure groups in these districts are landless households, which rely on casual labour and are thus more vulnerable to seasonal and chronic food insecurity. Food insecurity is also particularly widespread among the internally displaced people living in the Central districts, which heavily rely on food assistance.

The Mission observed a precarious food security situation in the northern part of the State, which has been greatly impacted by the recent violence. Historically, this district has been one of the most vulnerable and chronically food-insecure areas in Myanmar and thus the situation was further exacerbated. There, food assistance remains an essential component of the people's diet due to their limited capacity to access sufficient food. Most households in the Northern District were facing serious difficulties due to high and rising food prices, severely constrained livelihoods by movement restrictions and impeded access to agricultural land, forest and fishing grounds as well as shrinking food stocks. The vegetable harvest was also greatly reduced as almost no winter crops were planted. Accessing the forest was more difficult at the time of the visit, affecting households' consumption of wild that otherwise were commonly used to diversify the intake of vegetables. Collection of firewood was equally affected and impacted on cooking and food preparation. Households either relied on remaining firewood stocks, purchases or burning of rice husks for food preparations.

[20] WFP, FSPS 2015.

Figure 7: Rakhine State - Share of households' self-reporting difficulties to get access to food by month



Source: WFP, FSPS 2015.

Food consumption

Food consumption among households in Rakhine State commonly comprises of rice, vegetables and condiments such as chilli, garlic and fish paste and, to a varying degree, potatoes, pulses and proteins (fish, meat and eggs). Dairy is not commonly consumed. Fruits are rarely consumed by adults and are usually kept for children. Two meals per day is the standard.

In **Central districts**, consumption of proteins (meat, fish and eggs) varies greatly, depending on a household's socio-economic status. On average, meat is seldom consumed or never by the poor and several times per month by the better-off. Fish is more accessible (available in markets and cheaper) and, therefore, tends to be consumed more regularly than meat, on average one to several times per week. Eggs are the most commonly consumed protein, mainly as a cheaper and more readily available substitute for meat and fish.

In **Southern districts**, in addition to the above, oils are also consumed (rarely groundnuts but instead cheaper palm oil). Meat (chicken and pork) is kept for festivities. Eggs and pulses (chickpeas) are rarely eaten but used as substitutes when fish is not available. Differences are found between townships, particularly the variety of vegetables available in the village or in the forest.

Food consumption in the **northern Maungdaw District** was more restricted in 2018 compared to the same time in 2017. Households relied largely on food assistance that complements what was left of their rice stocks. The variety of consumed vegetables was very limited as hardly any winter crops were planted in 2017. Households collected wild green leaves and consumed small quantities of fish or shrimp a few times per week when caught in the nearby creek. Consumption of meat or eggs was extremely limited. Pulses, which are part of WFP's standard food basket, were the main source of protein, while fish was the most frequently consumed animal product. Children and elderly were prioritized when facing food shortages.

Feedback received from WFP's beneficiaries during distribution monitoring in May 2018 showed that 65 percent of the households receiving food assistance had an acceptable Food Consumption Score (FCS[21]) in the seven days prior to the interview. Only 4 percent had a poor food consumption score, while 31 percent had a borderline score.

[21]The FCS classifies households into different groups based on the adequacy of the foods consumed in the week prior to being surveyed. The FCS is a composite calculation that combines dietary diversity (the number of food groups consumed by a household over a seven-day period), food frequency (the number of days a particular food group is consumed) and the relative nutritional importance of different food groups. Food consumption scores are divided into poor, borderline and acceptable food consumption groups. In Myanmar, households with a FCS less than 24 are considered to have poor consumption, while those with a score between 24.5 and 38.5 are considered to have a borderline diet.

More female-headed households (41 percent) had a low dietary diversity than male-headed households (30 percent).

In **Southern and Central districts**, food consumption was observed as generally good at the time of the Mission, which coincided with the peak of the summer when the availability of food and livelihoods are the highest. The Food Security Monitoring conducted in the three southern townships and two central townships in April 2017 (at the same period of the year as the Mission), showed that only 1 percent of the households had a poor FCS, 4 percent had borderline and 95 percent has an acceptable Food Consumption Score[22].

However, difficulties in accessing food during the lean season were widely reported during the field visits. Historical data collected by WFP in July 2015, during the lean season, showed acceptable FCS was lower with some 77 percent of the households in Southern Rakhine State and 73 percent in the Central districts; 23-24 percent had borderline and 2-3 percent had a poor FCS.

The comparison of the two sources suggested seasonal food consumption patterns in Southern and Central districts, with many households restricting their diets during the lean season.

At the time of the visit, the Central districts of Rakhine State hosted the majority of **Internally Displaced Persons** camps; an estimated 121 000 people displaced by the 2012 wave of inter-communal violence reside in 23 camps or camp-like settings. While the movement between the camps and villages in the Sittwe rural area was not restricted, severe movement restrictions remained in place for those travelling and residing outside of this area.

Between December 2016 and March 2017, the Camp Coordination and Camp Management Cluster (CCCM), the Danish Refugee Council (DRC) and the United Nations High Commissioner for Refugees (UNHCR), carried out a profiling exercise on IDPs in Sittwe, with the support of the Rakhine State Government. Most of the households (62 percent) relied on food distributions but also mentioned using other sources to obtain food such as own production, purchases, or bartering and borrowing. Concerning food consumption, the data collected through a seven-day recall survey revealed that 31 percent of the households had a borderline food consumption and 2 percent had poor food consumption[23].

The Mission visited the Nget Chaung 2 IDP camp in Pauktaw Township, where WFP has been providing a General Food Distribution package since 2012 comprising of rice, pulses, oil and salt as well as Wheat Soya Blend for pregnant and lactating women and children under the age of five. Many relied exclusively on food assistance; a few residents (about 25 households) produced limited rice paddy to complement WFP's ration and a few households were able to fish within the vicinity of the camp. Some additional food and non-food items were brought to the camp by Rakhine State's traders, as such food supply was reported to be sufficient.

Quality of the diet and the long-term impact on nutrition and health

In 2015, the average Household Dietary Diversity Score[24] (HDDS, 24-hour recall) in **Central and South Rakhine State districts** was 4, indicating that, on average, four food groups were consumed daily. The households that consume three or less food groups are considered to have a low dietary diversity and six food groups are considered good[25]. Some 36 percent of the households in Southern Rakhine State had a low dietary diversity score and 25 percent in the Central districts[26].

The main water source throughout Rakhine State is open water ponds for both drinking and other usage. Water is often filtered through a cloth. Clay filters have been distributed by ICRC to many households in the Maungdaw District. In Central districts, many reported to boil drinking water for additional purification during the summer/dry season. Despite the water source being unsafe, very few reported diarrhoeal diseases being a problem. The Myanmar 2017 Living Condition Survey showed that only 17 percent of the population in Rakhine State had access to a safe water source during the dry season. It was the lowest registered in the country, about half of Ayeyarwady (35 percent) the second worst ranking region.

[22] WFP, FSIN 2017.
[23] DRC and UNCHR (2017). Sittwe Camp Profiling Report. Danish Refugee Council and the United Nations High Commissioner for Refugees.
[24]The HDDS capture the number of food groups consumed during the 24 hours prior to the survey. A low dietary diversity score reflects a poor quality of the diet and a high risk of micro-nutrient deficiency. Food items collected are grouped into seven main food groups: 1) Cereals and tubers (staples); 2) pulses and nuts; 3) vegetables; 4) fruits; 5) meat and fish; 6) milk and other dairy products; 7) oil and fats.
[25] IFPRI.
[26] WFP, FSPS 2015.

For cooking fuel, the households residing in **Central and Southern districts** rely mainly on firewood, which is either collected or purchased from the local vendors. No variation in availability or price of firewood was noted during the field visits.

At the time of the visit in the **Nget Chaung 2 IDP camp** in Pauktaw Township, households received monthly rations of fuel (compressed wood) from ICRC. Residents reported a general insufficiency of fuel, especially for larger families. Collecting firewood was not possible due to the barren nature of the camp location, as such – some made additional fuel when needed from mud or obtained firewood from Rakhine State traders, when possible.

In **Southern District**, despite many households being connected to the electrical network, the households reported preferring firewood as it is less expensive than an electric stove. Only a small number of households use gas.

In the **Northern District,** using firewood for cooking has diminished as households have avoided going to the forest areas for firewood collection since August 2017. No firewood for sale was observed in the visited markets and many households resorted to cooking on rice husks instead, which require longer cooking time. One village also mentioned using cow dung, which they would not normally use.

The above-mentioned constraints contribute to the high levels of malnutrition in Rakhine State. The Ministry of Health and Sports' Demographic and Health Survey (DHS) 2015-2016 results show a critical nutrition situation in Rakhine State with Global Acute Malnutrition (GAM) and Severe Acute Malnutrition (SAM) rates (wasting) reaching 13.9 percent and 3.7 percent, respectively, even before the latest crisis. In addition to wasting, Rakhine State has the third highest stunting prevalence (chronic malnutrition) among children in the country, reported at 37.5 percent. Birth registration was also the lowest in Myanmar as less than half of the children (45.5 percent) had a birth certificate (DHS 2015/16).

According to the same study, Rakhine State had the highest anaemia rate in Myanmar among women between 15 to 49 years old at 57.2 percent against 46.6 percent national average with nearly 12.8 percent of them suffering from either moderate or severe anaemia. In children under five years old, the prevalence was above 60 percent.

There is no recent nutrition survey in Rakhine State, therefore, the closest data source available to understanding the nutritional situation is the Emergency Nutrition Assessment that was conducted in Cox's Bazar (Bangladesh) in October 2017[27] on the refugees recently arriving from Rakhine State. The prevalence of GAM in children 6-59 months were above the 15 percent World Health Organization (WHO) emergency threshold, stunting was above the 40 percent critical threshold and anaemia in children 6-59 months was also above the 40 percent threshold for high public health significance. This could indicate a deterioration compared with the DHS data published approximately two years ago and might reflect the situation among the remaining population in the Northern District. During the Mission, all nutritional treatment centres were closed and had not been given the permission to open by the Government. We, therefore, could not use admission rates to evaluate the situation.

The health system in Myanmar is consistently classified by WHO as one of the poorest in the world. Public hospitals lack basic facilities, equipment and human resources. The situation is particularly grim in remote areas such Rakhine State. Access to health services in Rakhine State is thus a structural problem and low for the total population and not just for some ethnic groups.

WHO has recommended that the minimum number of health workers to maintain a functional health system is 22 health workers per 10 000 inhabitants. Before the crisis, there were only five health workers per 10 000 people in Rakhine State, compared to the national average of 16 per 10 000 people. Rakhine State also has a higher child mortality rate than the national average and only 19 percent of women give birth in professional health facilities (compared with 37 percent nationally). The immunization coverage is among the lowest in the country and there have been multiple outbreaks of vaccine-preventable diseases over recent years, predominantly in the northern part of the State. For instance, Rakhine State was hit by an outbreak of vaccine-derived poliovirus (cVDPV) in 2015, although the country was certified polio-free in 2014 (WHO, 2016)[28]. In a 2016 state-wide study, 52 percent of the respondents reported that they did not have access to adequate health care[29].

[27] Emergency Nutrition Assessment, ACF, November 2017.
[28] htttp://www.searo.who.int/immunization/documents/epi-vpd-surveillance-review-report-myanmar-2016.pdf?ua=1
[29] The Ministry of Health and Sports: Demographic and Health Survey (DHS), 2015-2016.

During the field visits, none of the villages in the Northern District had a functioning health facility and, therefore, households rely on traditional healers or they self-medicate by buying medicine from the market.

Coping strategies

When faced by food shortages, the households across Rakhine State first borrow money or food before switching to lower quality and ultimately purchase less quantity. In **Central districts**, purchasing food on credit is a common practice and most borrow through informal channels, shops, family and neighbours. No severe coping strategies were mentioned during the field visits. However, shortages among vulnerable households, particularly those that dependant on casual labour, are more prone in the rainy and lean seasons.

In the **Northern districts**, the feedback received from the WFP beneficiaries during the monitoring visits in May 2018 highlighted that 69 percent of the households used some coping strategies. About half of the beneficiaries reported consuming less preferred foods, purchasing food on credit and borrowing food from relatives. This was also confirmed by the female focus groups during the field visits and regarded as a "normal way of life".

In **Southern districts**, coping mechanisms were also frequently employed, particularly during the rainy season. The monsoon season is when farmers normally have exhausted their stocks and job opportunities are scarce. Only planting and weeding activities are available, which are mostly carried out by women who earn lower wages. The construction and fishing sectors slow down during the monsoon. Nearly every village visited by the Mission reported borrowing food, reducing expenditures on non-essential items and relying on less preferred foods as main coping mechanisms. Some also withdraw older children from school if transportation costs are necessary.

Indebtedness is a common coping strategy in Rakhine State. WFP data from 2015 showed that nearly 90 percent of the households in **Central and Southern districts** had contracted debts in the year prior to the interview. Only some 15 percent were able to get a loan from a formal source of credit such as banks (public or private) or micro-credit institutions. Almost all the households who contracted a debt (94 percent) were able to borrow from an informal source. Family or friends were the most important source of credit with 54.4 percent followed by shopkeepers (49 percent) and moneylenders (28 percent).

Farmers and wage labourers could access formal sources of credits more easily than others, with 40 and 57 percent of them, respectively, getting loans from the formal credit system. Landless households were excluded from the formal credit system, as they were unable to provide collaterals for the loan.

Geographically, the formal credit system is most developed in Southern districts with nearly one-quarter of the households able to borrow from banks, micro-finance institutions or private companies, as compared to less than 10 percent in the Central districts.

During the Mission visits in Southern District, it emerged that, while finding credit was not a problem, obtaining the whole amount needed was with the consequence of having to reduce their investment/expenditures.

Data in 2015 also showed that nearly 18 percent of the households in **Central and Southern districts** were contracting new debts to reimburse outstanding debts. This was the fourth most common reason for contracting new debts after purchasing food (90 percent), covering health expenditures (50 percent) and house maintenance (21 percent).

A report from the World Bank[30] suggests that the financial implications of these different sources of loans are quite different. Over half of the loans given by family and friends do not charge interest, while the vast majority of other informal sources do. The burden of interest repayment of loans from moneylenders and pawnshops can be substantial. In Southern districts, loans that could be repaid monthly had an interest rate between of 5 and 8 percent. For daily loans, the rates were up to 10 percent. Many households reported paying back the debts through daily work at a reduced labour rate to cover for the interest rate.

[30]MOFP and World Bank (2017b). An analysis of poverty in Myanmar. Poverty profile. Part 2. December 2017. Ministry of Planning and Finance and World Bank, Nay Pyi Taw.

Box 3: Credit system

Myanmar's formal rural financial sector is under-developed, with great difficulties in getting access to credit, especially for small-scale farmers (MSU-MDRI, 2013). Landless households are practically excluded from this source of credit (MSU-MDRI, 2013). The Myanmar Agriculture Development Bank (MADB) is the only major financial institution operating in rural areas. MADB is the second largest financial institution in Myanmar by number of branches and the largest by assets and loans. MADB has a threshold for loans and credits related to acreage and household assets to be used as collateral. It only covers 30-50 percent of the overall financing needs per acre and farmers' need to complement the remaining financial needs through informal loans or informal networks. MADB in 2015 only provided loans to annual crop production of farmers with land.

Profile of the most vulnerable groups

A small number of households in **Southern districts** are vulnerable throughout the year and are highly food insecure. These are commonly landless households with unstable incomes. Their demographic profile includes unskilled women as the main income earners, elderly who face problems in finding jobs and households with many children and thus a high dependency ratio.

WFP data, in line with Mission observations, showed that food insecurity was more prevalent among specific sub-groups of the population who had certain demographic characteristics or livelihood profiles.

Landless households who relied exclusively on occasional daily work during the 12 months prior to the interview, had poor or borderline FCS nearly double that of the average, 43 percent against the average 25 percent. Landless casual workers faced higher stress and were more prone to use coping mechanisms as 45 percent of them were employing coping mechanisms compared to 22 percent of the State's average. Food insecurity was more common among households with a higher number of dependents and families with children under the age of five, averaging 9 and 11 percent[31], respectively.

In the **Central districts**, those dependent on casual labour rely entirely on the market to source their food and spend most of their income to purchase adequate amounts to feed their families as well as getting additional credit. Accumulating debt, particularly during the lean and monsoon seasons, makes these households the most vulnerable to food insecurity and highly sensitive to changes in food availability and access as well as changes in the labour markets.

In the **Northern District,** the profile of the most vulnerable people has in the past, and still is, the stateless population, particularly female-headed households. Social and cultural constraints, such as gender inequality, demographic pressure or unequal access to natural resources, further enhance these determinants.

However, since August 2017, the violence and the current situation were affecting all people regardless of ethnicity and legal status though not at the same level. Food availability and access with increased food prices, limited supply and lack of labour have affected all population groups. Additionally, the lack of health services, including malnutrition treatment programmes, affected the well-being of the population.

Livelihood activities

Rakhine State is mostly an agrarian society with nearly three quarters of the households engaged in livelihoods are connected to the agrarian sector, including farming, fishing and fish processing, and livestock rearing.

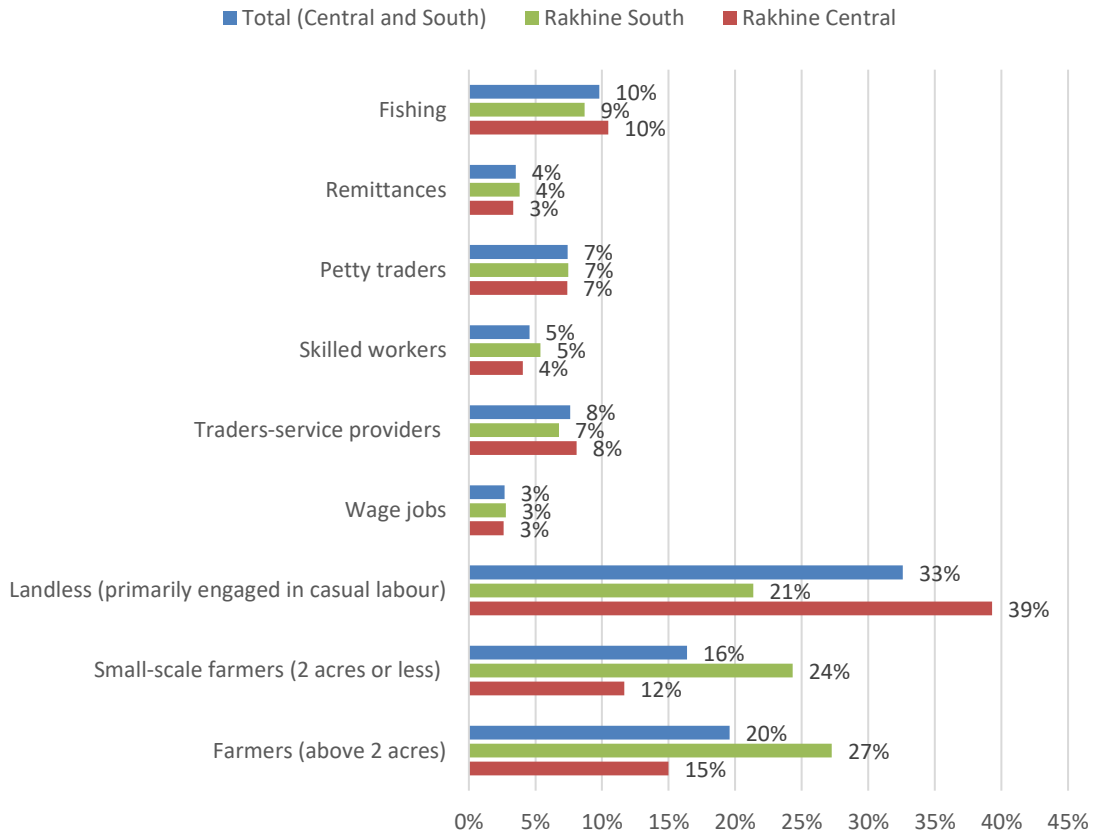
However, according to WFP data[32], the most numerous livelihood groups in Central and Southern districts in Rakhine State are landless households primarily engaged in casual labour. This is also the same in the Northern District. Demand for casual labour is seasonal and it is the highest during the winter season driven by the construction, fishing and agricultural sectors. Demand for casual labour slows down during the monsoon season when the jobs available are those connected to paddy cultivation, mostly transplanting and weeding, which often pay lower wages.

During the Mission, the households reported that job availability in Northern Rakhine State was scarce, primarily due to movement restrictions. Employment for casual work was reported, on average, four days per week in urban areas, while households in rural areas could find work only two days per week. At the same

[31] WFP, FSPS 2015.
[32] FSPS, 2015.

time, although fishing grounds were accessible beyond curfew period, village administrators' recommendation or National Verification Card (NVC) was necessary. The new slightly relaxed curfew period has not contributed to an improvement in fish production for households, as they are reluctant to go out after dark.

Figure 8: Rakhine State - Main livelihoods in Central and Southern districts



Source: WFP, FSPS 2015 (Central and Southern districts).

Petty trade, skilled labour and remittances were also common as well as livelihoods connected to forest such as selling of non-timber forest products, firewood and bamboo collection.

As previously mentioned, most of the households in **Southern and Central districts** have a mixed livelihood profile comprised mainly of occasional/daily work (casual labour) and crop production and, to a lesser extent, fishing. Some households are also engaged in the collection of firewood and bamboo and livestock rearing.

In **Central districts**, farming and fishing households reported to increasingly engage also in casual labour to diversify their income, as they deemed agriculture as less profitable. In Htu Che, a coastal village in Myebon Township where fishing is the dominant livelihood, community members reported facing a notable reduction in catch due to an influx of non-local commercial fishing boats. They were concerned for their future, if the situation persists, as alternative livelihood opportunities are very limited.

In **Southern districts**, fishing was one of the main livelihoods during the field visits. In southern areas, fishing was mostly carried out on a small scale, with many households unable to fish at sea due to the high investment costs required in terms of both equipment and fishing licenses. The catch is usually sold but many households mentioned that they keep the smaller fish for their own consumption and sell bigger ones. Crab finding was also a popular activity as it could be highly profitable when catching large crabs. In Gwa Township, many households reported being employed by the fishing industry and thus working on boats for medium and large-scale fishermen during the fishing season. They reported being paid a monthly salary of around MMK 120 000 and an allowance of MMK 100 000 during the rainy season.

The feedback received from WFP's beneficiaries during distribution monitoring in May 2018 shows that occasional/daily work was the main source of income in Maungdaw District. Other livelihoods noted include petty trade (6 percent of surveyed households), service providers (4 percent), craft/skilled labour (3 percent), firewood collection (3 percent) and selling of non-timber forest products (2 percent). Access to fishing has been affected and most households only fish in the nearby creek for their own consumption instead of going to the

river. There were three reasons for this: monthly fees to use nets (MMK 150 000, equivalent to USD 110/month for big nets), curfew and lack of general safety.

With regard to **gender**, based on WFP data, women were less involved in income-generating activities and 48 percent of the households had at least one female income-earner against the 78 percent with at least one male earner. Women were paid less than men, on average, earning 25 percent less than their male peers. (WFP, FSPS 2015, Mission observations).

Female workers are mostly engaged in monsoon paddy activities and men are more engaged in harvesting and land clearing activities in the agricultural sector. Construction work and fishing are also mainly carried out by men. Many women also rely on petty trade of wild foods.

Incomes, food sources, prices and purchasing power

Food prices

Since 2015, prices, particularly food, have been increasing faster in Rakhine State than in the rest of the country. Since 2013, Rakhine State sustained an average yearly inflation rate of 12.9 percent against 7.7 percent registered at Union level. During this time, food prices increased cumulatively by 44 percent with an increase of 16.9 percent between 2016 and 2017 alone (CSO, 2017).

Food prices in Rakhine State not only increased faster, but also more compared to the national average. An increasing divide between Union level and Rakhine State food prices has been observed over the last three years. In 2015, the price of the food basket used to calculate the inflation rate was like the national average, while in 2017 the overall cost for the food basket was 16.9 percent higher in Rakhine State than in the rest of the country (CSO, 2017).

In Maungdaw District, inflation was above the average rate recorded at State level. In fact, the food price index[33] in the three markets monitored by WFP showed that, during the first four months of 2018, food prices have increased overall by 26 percent with respect to the same period in 2017 and by 44 percent if compared to same period of 2016.

Incomes

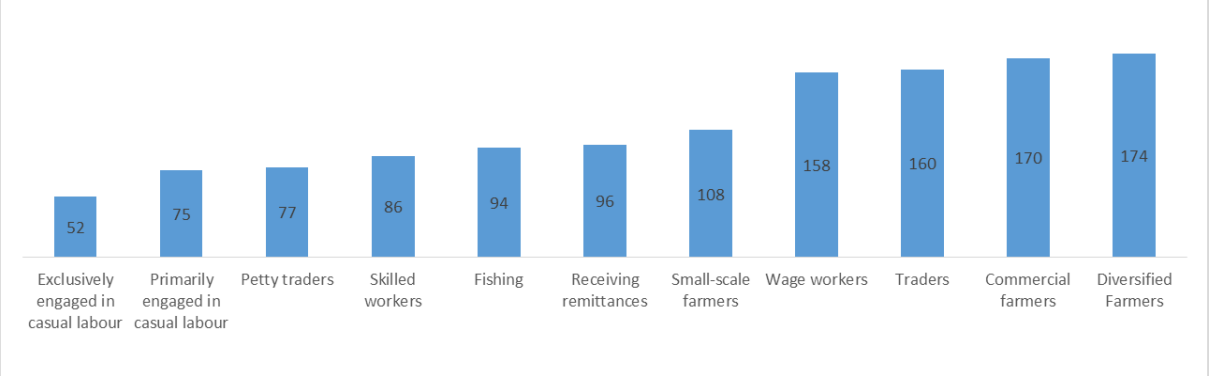
In Central and Southern districts, WFP data showed that the average nominal income was below the national average (MMK 124 000); with average earnings being 43 percent lower in the Central districts (MMK 71 000) and 27 percent lower in Southern districts (MMK 90 000). This was in line with the Labour Force Survey conducted by the Ministry of Labour, Immigration and Population in March 2015 which estimated the average monthly income from main job in MMK 124 100 at Union level (WFP, FSPS 2015; ILO 2015).

Income disparities were also observed by the Mission across the livelihood groups. Data confirms the Mission's observations and shows that the households relying primarily on casual labour, petty trade and small-scale farming are at the bottom of the income distribution, while the households relying on regular incomes from wage employment, traders, commercial, medium and large-scale farmers, are at the top of the distribution.

In Central and Southern districts, self-reported income for landless casual labourers was almost half the average for Central and Southern districts and three times less than the top-ranked livelihoods (wages, trade and medium/large scale commercial farming). Petty traders, diversified labourers and skilled occasional labour groups were making around half than the top-ranked livelihoods (Figure 9).

[33] This estimation is based on WFP's price monitoring of 33 commodities (25 food items and 8 non-food items) in three markets in Maungdaw District. The food price index was calculated as follows according to the guidance from FEWS NET "Adjusting Prices for Inflation and Creating Price Indices FEWS NET Markets Guidance, No 3 May 2009".

Figure 9. Rakhine State - Average rural incomes in Southern and Central districts



Source: WFP, FSPS 2015.

The Mission observed that in **Southern districts,** casual labour opportunities and payment methods varied across villages, tasks and sector of employment. Women were paid MMK 3 500-MMK 5 000/day for transplanting seedlings in the field, while men received a compensation of MMK 4 000-MMK 6 000/day for carrying seedlings from nurseries to the fields for transplanting. For harvesting activities, casual labourers received MMK 3 500-MMK 5 000/day. Local road construction work paid MMK 8 000/day.

Regular price monitoring in three markets in urban areas in the **Northern districts** indicated that daily wages fluctuated between MMK 8 000 and MMK 10 000/day for men and between MMK 4 000 and MMK 5 000/day for women from January to May 2018. Wages for casual labour opportunities in rural villages were on average MMK 6 000 for men and MMK 2 700 for women. However, despite the high demand for labour, the households reported to have worked between one and three days per week only and made an average of MMK 14 000/week. This was also confirmed during the field visits.

Purchasing power

In **Central and Southern districts,** the Mission observed that a large proportion of vulnerable households, particularly casual labourers, purchased food on credit (formal or informal) to cover their needs. In line with the Mission's observations, data highlighted that food purchased on credit accounts, on average, for 20 percent of the total food consumed. The share of food purchased on credit was much higher among casual labourers, accounting for 36 percent of the total food consumed.

Lower incomes were also reflected in lower expenditures per capita. For example, although landless casual labourers devoted about 65 percent of their expenditures on food, their per capita food expenditure was one-third less than the households receiving a regular income from a permanent job. For the households with a livelihood connected to the agricultural sector, both the average per capita expenditure on food and the share of food expenditure was lower than non-agriculture livelihoods, as they consumed a high proportion from their own production. On average, the households involved in farming and fishing noted spending about half of their income on food (WFP, FSPS 2015).

In **Maungdaw District,** recent events have had a considerable impact on people's ability to purchase preferred food items. During the first half of 2018, the purchasing power of the population was at its lowest due to limited availability of easily accessible jobs and spiking food prices.

The average cost of a traditional food basket[34], including items usually preferred by the most vulnerable households and providing 2 100 calories, increased by 20 percent over the last 12 months. An average household of six people, with one income male earner engaged in casual labour, would have to work between 2.2 and 3.7 days every week just to purchase the minimum dietary requirements for their family. For the households with exclusively female income earners, it would be impossible to cover the basic food needs only relying on their income. They would have to work more than seven days a week just to purchase the minimum food basket needed for the wellbeing of their household.

In WFP operational areas, where the organization provides its standard food basket[35], the households reported to devote part of their income to complement their ration with fresh foods and a limited amount of animal

[34] It includes cereals, dried-fish, green vegetables and salt which provides 2 100 Kcal.
[35] WFP food basket includes cereals, legumes, oil and condiments.

proteins, which could only be accessed for one or two days per week by most of the households. The Mission also learnt that populations were increasingly accessing food through alternative sources.

For example, gathering was an important source for vegetables, mostly of greens and leaves, as it was unaffordable for many households to purchase a sufficient amount of fresh vegetables. The purchase of food on credit, although it was a common method to access food before the crisis, emerged now as a secondary source of food. This may reflect households' difficulties to borrow money or traders facing lower demand unwilling to concede credit for their products.

The unstable situation has caused a fall in food stocks for the majority of the farmers, which were unable to stock a sufficient amount of food due to the 2017 limited paddy production and almost non-existent winter harvest. At the time of the Mission, many farmers were already rice-deficient and relying on humanitarian assistance.

Market access

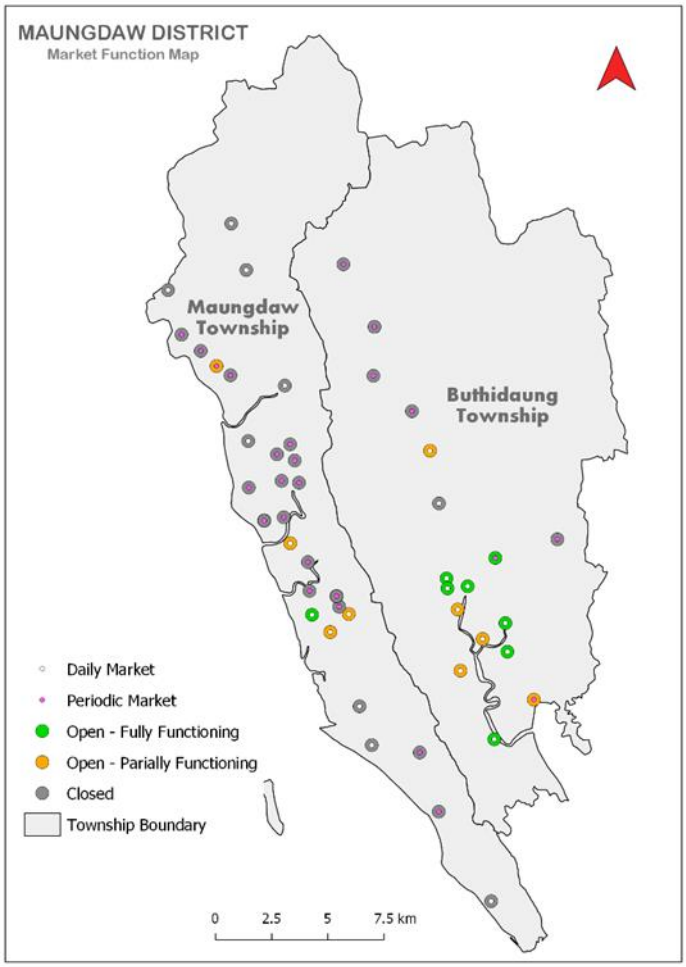
Market access throughout **Southern and Central districts** is generally good. The daily markets function and are present at village tracts, while some villages have their own markets. Food availability in the markets is broadly meeting the demands, apart from meat in some markets in the Central districts. Farmers sell their harvest either directly at the village level or at the closest village tract market. In the Central districts, farmers living in villages far away from a market reported that they instead have traders coming to them to buy their produce.

The picture was very different in Maungdaw District, which has been greatly impacted by the recent violence. Some 63 percent of the markets were still closed at the time of the Mission. The commerce in the fully or partially functioning markets have greatly reduced due to the loss of costumers but also due to reduced supply. The availability of vegetables and fish was particularly affected by a reduced supply in the markets and the variety of vegetables was very limited as no winter crops were planted last season, which coincided with the height of the crisis in August/September 2017.

Markets in Northern Rakhine State

As a result of the August 2017 violence in Maungdaw District, many markets were either damaged or closed. There were 17 main markets (daily) and 31 small markets (periodically) that existed before the crisis in both townships. Due to the mass exodus of people to Bangladesh and inaccessibility to the previous markets, two new informal markets were established after the crisis.

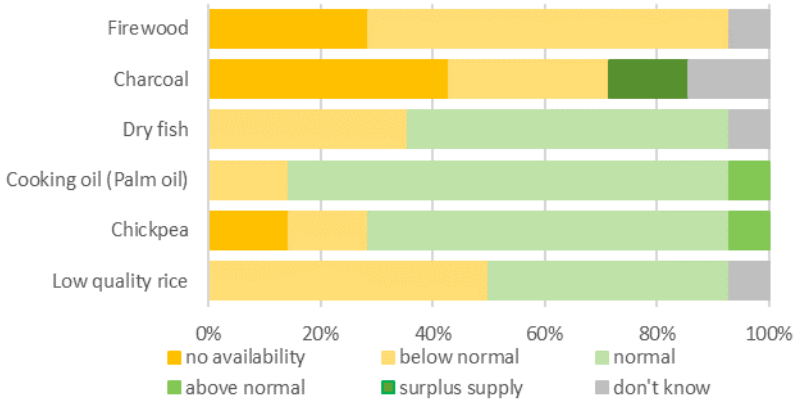
Figure 10: Rakhine State – Market Function Map, Maungdaw District



Only a limited number of previously existing markets reopened and only a few restored to full functionality since then. Sales have decreased to approximately one-third, according to traders. The reason was a great reduction in customers and reduced income and increasing prices among the households remaining in the area. More than half of all rural markets were burnt/destroyed or are otherwise closed, limiting greatly the access to food for all households regardless of ethic belonging.

During the field visits to different markets, one in five traders reported supply shortages of basic food commodities. The shortage was mostly in locally produced commodities such as dry chillies, beans and betel nut. There was no supply of local chickens and eggs, not even in the main district town markets in Maungdaw and Buthidaung. The scarcity in locally produced commodities was due to the massive reduction in the 2017/18 winter crop cultivation where the planting in September coincided with the peak of the crisis in 2017. There was also a significant loss of livestock during the same period as reported in the livestock section of this report.

Figure 11: Rakhine State - Availability of selected commodities in Northern markets



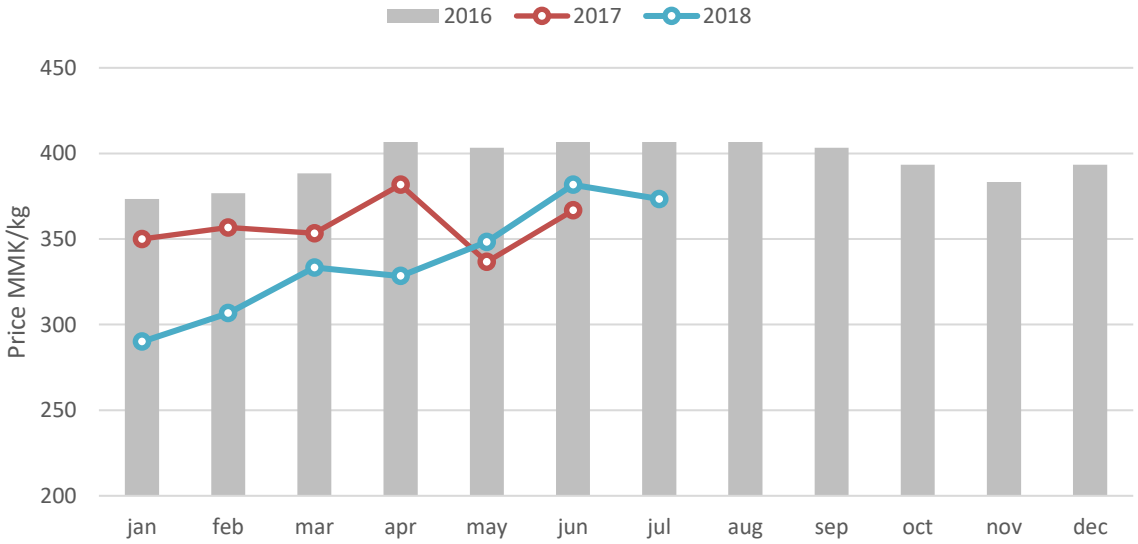
The shortages have been transmitted across the markets, indicating how well the markets normally were integrated. The traders have brought supplies from outside the district but those rice and vegetables varieties are not preferred by the buyers. The overall demand was below average as reported by 93 percent of traders. Furthermore, some traders showed challenges in getting supplies from farm gate and main markets out of the district where goods are available. While a few traders noted no significant changes on the food supply, they did face more and longer delays compared to the same period in 2017.

Half of the traders reported a below-normal availability of rice compared to 2017. One of the main traders stated that the fluctuation occurred mainly due to the large quantities of local rice exported to Bangladesh in 2018. The same trader estimated, an average of 2 000 tonnes of mostly local rice was exported to Bangladesh only by him in March 2018 and even more in April 2018.

Food prices in the Northern District have increased in the rural markets, especially for vegetables and fish where the prices have doubled in some areas.

The President of the Maungdaw Border Trade Chamber of Commerce (BTCC), reported that rice exports to Bangladesh had reduced in May 2018, in both quantity and price; however, there was still a demand from Bangladesh. The mean price of low quality rice during the reporting period was MMK 340/kg, which was 7 percent lower than the same period of 2017 and 20 percent lower than the same period of 2016, despite a much lower quantity harvested (Figure 12). This points to decreased demand resulting from the exodus of over 700 000 people from the district as being the main driver for the drop in rice prices.

Figure 12: Rakhine State - Average price of rice in Maungdaw District, 2016-2018

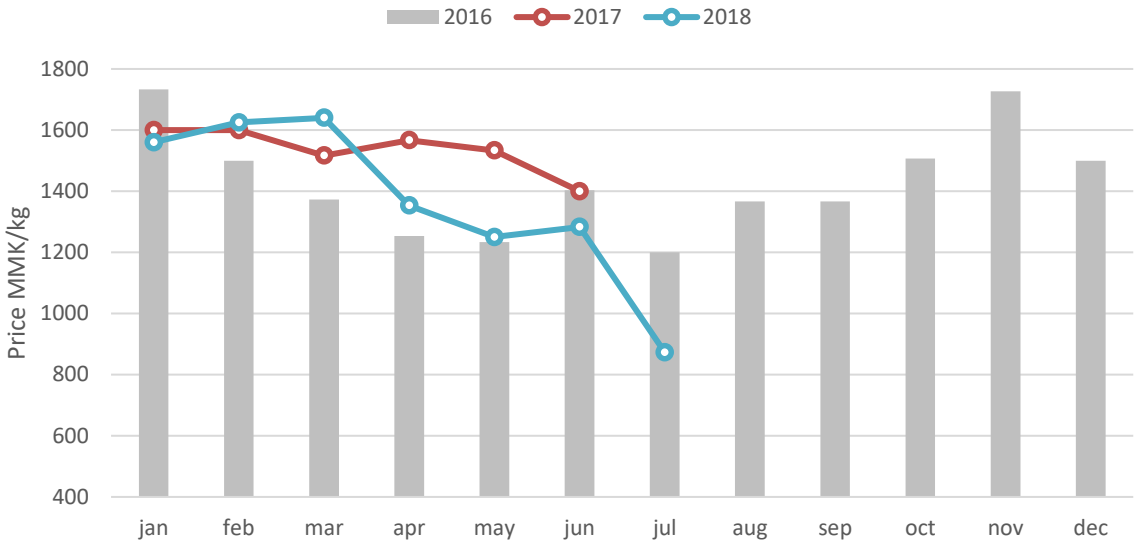


Source: WFP, monthly market monitoring.

Chickpeas

Chickpeas in Myanmar are grown mostly in the central dry zone and none are produced locally in Rakhine State. Nine out of the 14 traders that we spoke to during the field visits replied that the availability of chickpeas is normal, while the other five said that it was below normal to absent. The variation of availability was also linked to the significant loss of consumers. The price was significantly lower compared to the same period in previous years (Figure 13) as many of the remaining households have reduced income opportunities and can no longer afford to purchase this commodity.

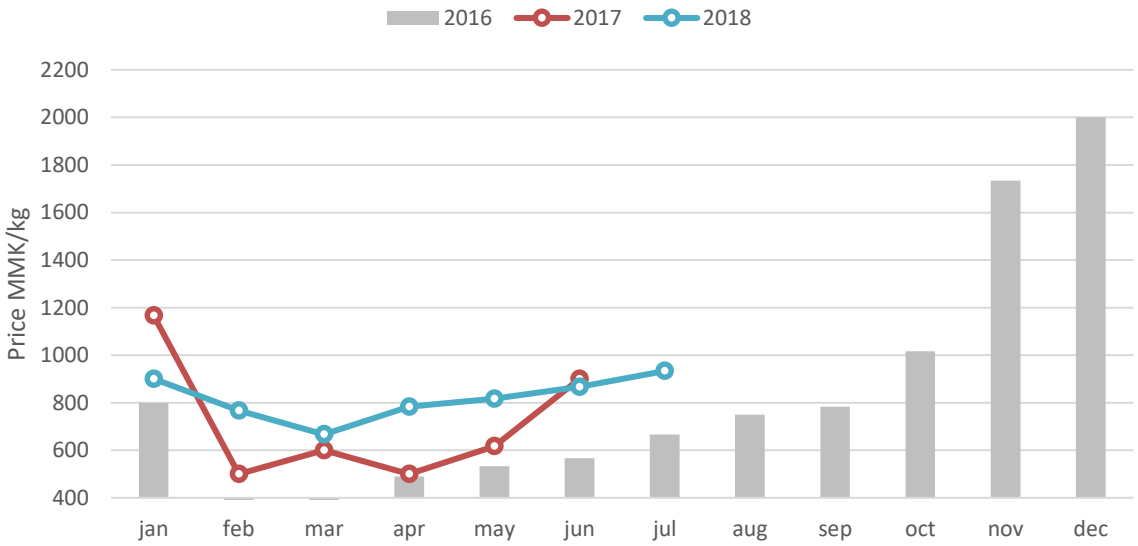
Figure 13: Rakhine State - Average price of chickpeas in Maungdaw District, 2016-2018



Source: WFP, monthly market monitoring.

Potatoes, which are regarded as a vegetable and commonly consumed in Myanmar, have increased in price due to the absence of winter cropping. Potatoes are not grown locally in Rakhine State. Most of the potatoes consumed in Rakhine State are produced in Southern Shan State and Shan State.

Figure 14: Rakhine State - Average price of local potatoes in Maungdaw District, 2016-2018

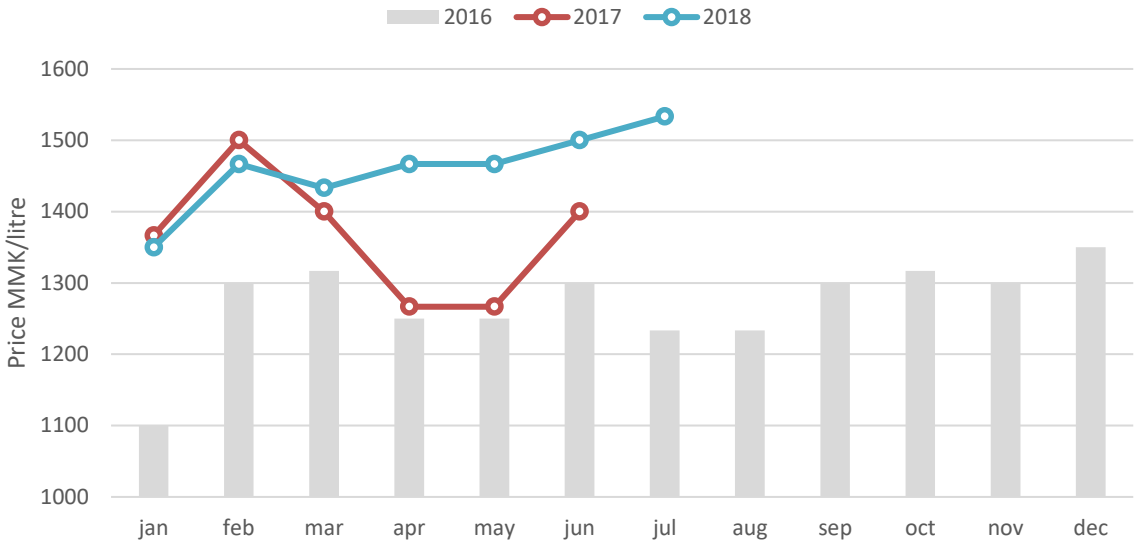


Source: WFP, monthly market monitoring.

Cooking oil (palm oil)

Palm oil is the most preferred variety among the cooking oils in the markets. The majority of the traders reported that the availability is normal whereas two traders reported below normal. The price was significantly higher compared to the same period in 2016. The variation may be driven by higher demand in the production area of central Myanmar.

Figure 15: Rakhine State - Average price of palm oil in Maungdaw District, 2016-2018

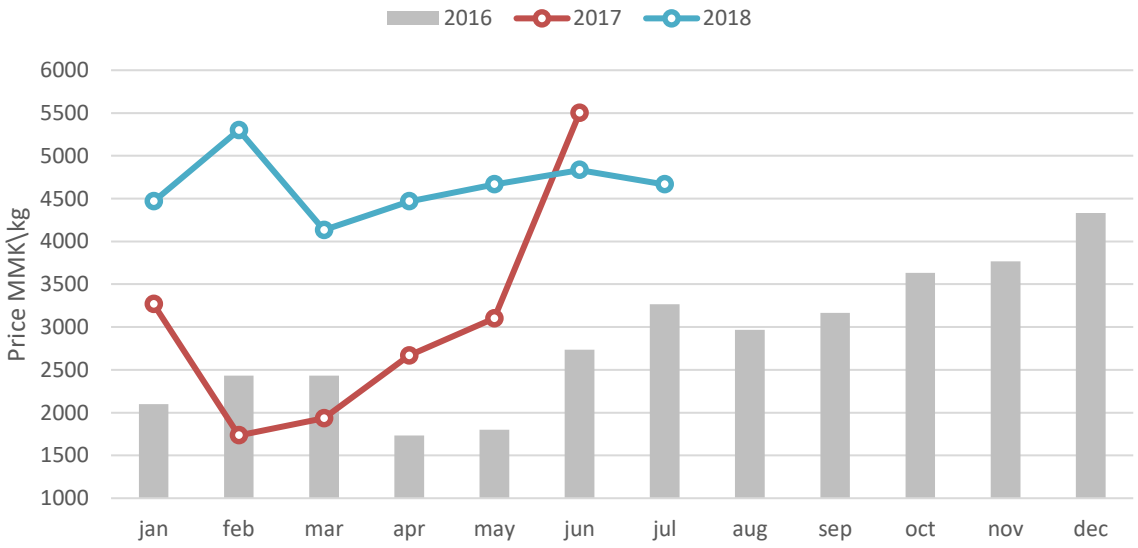


Source: WFP monthly market monitoring.

Dry fish (most commonly consumed kind)

The majority of the households consume small fish (Kaung Nyo), which is widespread in all the markets. Eight out of 14 traders reported normal supply, while the remaining six showed below normal. The overall demand was significantly lower compared to the same period in 2017. A main trader reported that dry fish exportation to Bangladesh in 2018 has doubled compared to 2017. Furthermore, a single trader exported an average of 300-600 tonnes/month since February 2018. BTCC also noted that dry fish export was ongoing but the quantity decreased since the start of May 2018.

Figure 16: Rakhine State - Average price of dry fish in Maungdaw District, 2016-2018

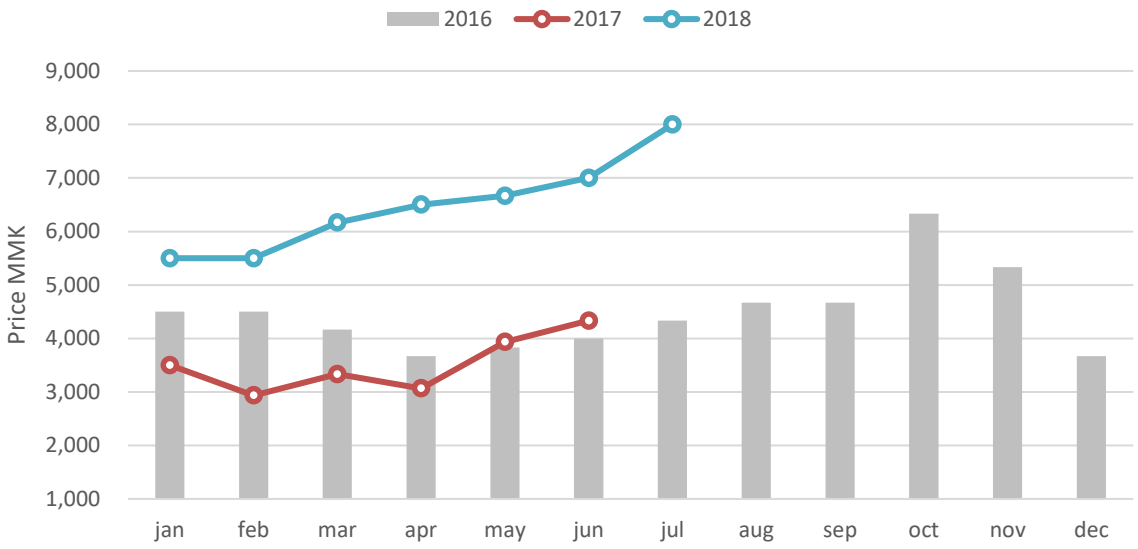


Source: WFP monthly market monitoring.

Firewood

Firewood is the main cooking fuel used by households. The availability at the time of the visit was below normal as responded by nine out of 14 traders due to limited access to the forests. In a few specific areas, people have been using paddy-husk as cooking fuel, traders noted. The price has increased by nine times.

Figure 17: Rakhine State - Average bundle price of firewood in Maungdaw District, 2016-2018



Source: WFP monthly market monitoring.

Food assistance and estimated assistance requirements

The 2018 Humanitarian Needs Overview for Myanmar estimated that 633 580 people were in need of food security support in Rakhine State. Of these, 599 100 people were targeted under an interim Humanitarian Response Plan (HRP) for a total requirement of about USD 42 million. As no Needs Assessment has been authorized, these estimates are the best that are available and form the basis for providing assistance during 2018.

During the first half of 2018, 338 600 people were reached in Northern and Central districts with food and cash, thus reaching some 54 percent of the target. The bulk of the assistance was provided by ICRC and WFP through its partners. The largest caseload is in Northern Rakhine State and 118 600 IDPs and conflict affected populations in Sittwe District.

Table 9: Rakhine State - Relief assistance and asset creation provided, January-June 2018

	WFP/ICRC/ partners	FAO/livelihood partners	Total
Central Rakhine State	118 600	no information	118 600
Northern Rakhine State	220 000	13 746	220 000
Total			**338 600**

Source: Food Security Sector, Humanitarian Response Plan.

Some 22 800 vulnerable people were reached through asset creation activities, 41 377 children 6-59 months and 10 397 pregnant and lactating women received supplementary feeding rations in the form of fortified blended foods. FAO supported close to 3 000 targeted households with livelihood support, for example with goats.

In Northern districts, the coordination in providing lifesaving food assistance was working well between ICRC, WFP and other actors, and this should continue. Based on available but limited data, the current number of people assisted seems adequate. However, as the food security conditions have changed drastically in some villages due to the violence, a re-evaluation of the previously “less vulnerable” locations is recommended to ensure that those most in need receive the level of assistance required. Monthly rations have in the past been provided to the most vulnerable locations, while the less vulnerable receive assistance less frequently. In order to do no harm, it was observed, during the Mission, that the frequency of assistance might not be sufficient as the lean season was starting earlier in 2018 due to lack of stocks and the food security situation would only get worse until the rice harvest in November/December 2018.

Displaced, relocated and other conflict-affected populations in other parts of Rakhine State remained in need of lifesaving assistance to address the food access constraints due to the continued restrictions on movements and limited livelihood opportunities.

The Government, through the UEHRD, assisted about 14 000 people in the northern part of the State.

Efforts to reach the estimated people in need, as per HNO estimates, should be reinforced.

RECOMMENDATIONS

Agricultural production in Rakhine State is constrained by a number of structural issues, including inability to access land due to lack of security, affordable credit, agricultural inputs and machinery as well as post-harvest storage facilities. In addition, violence in north Rakhine State and inter-communal tensions in the central part of Rakhine State further impacted farmers' ability to produce. The recommendations have been divided into urgent or immediate activities, which focus on lifesaving actions, while the medium to long term recommendations are focused on the structural and root causes of the issues identified. Immediate recommendations were also divided on the basis of the main actors involved (the food security sector or the national authorities), although in some cases coordinated actions are required to be done by both. The implementation of some medium to long term recommendations is likely to fall beyond the immediate capacity of the Rakhine State Government, but those measures would benefit farmers, in general, throughout Myanmar.

A large proportion of the households in the Northern District and IDPs depend on food assistance. The reliance on food assistance will continue until they regain unfettered access to their land and their livelihoods. While the number of people reached in the Northern Rakhine State District is currently high, many of these people do not receive assistance on a monthly basis. Due to the current increasingly difficult situation, it is highly recommended to re-evaluate the level of geographical vulnerability. Some villages, due to the violence they suffered, might have moved from Less Vulnerable to Most vulnerable and, therefore, require monthly food assistance instead of less frequent.

Immediate

Food security cluster (in coordination with national authorities):

- Continue food assistance at least until the end of 2019 in the Northern districts and IDP sites.
- Conduct food security assessments at the household level to determine the level of needs and profile immediate and short term needs of the vulnerable households that would allow for targeting those most in need. Regular risk monitoring related to paddy production should be carried out to anticipate possible production shocks and facilitate timely action.
- Conduct a nutrition survey to determine the nutritional status of young children, pregnant and lactating/nursing women in all townships to inform prioritization of areas of interventions for nutrition services to be scaled-up where needed.
- Continue livelihood supports and agricultural inputs for the monsoon and winter seasons of 2019 for the most vulnerable farmers.
- Labour shortages caused by the extensive movement of labour away from farms to urban areas has been aggravated by the massive flow of people into Bangladesh in 2017 and by restrictions on the freedom of movement. Mechanization would assist in timely planting and reduction of losses in the field, especially at the time of harvesting, but the majority of farmers who can afford mechanization depend on being able to hire machinery. Creation of micro-financing opportunities for the acquisition of equipment, such as power-tillers and hand-operated reapers, should be considered.
- The promotion of integrated watershed management and irrigation can reduce flood risks, increase the supply of fresh water and reduce salinization, documented challenges that are stopping farmers from increasing yields and harvests. Many areas could benefit from the construction of micro-dams and micro-irrigation systems to reduce flooding and provide irrigation. These systems would also be suitable for the production of aquaculture and vegetables, particularly during the dry season.
- Community asset creation would represent a possible cash and voucher-related strategy for supporting livelihood activities of landless households, whilst improving basic infrastructure. This approach would increase cash availability during the lean seasons and rebuild/rehabilitate the community and household assets that have been damaged.
- Villages with better symbiotic agriculture relationships between Rakhine State and Muslim communities offer opportunities to strengthen inter-community collaboration building on lessons from the successful conflict sensitive activities conducted in Rakhine State. A second step building on this would be to consider using members of one community to provide education on good practices that are known in their community to other communities where this information is lacking.
- Women could increase their access and consumption to nutritious, vitamin-rich foods through the provision of vegetable seeds coupled with trainings on food-based nutrition good practices and establishing home gardens.

National authorities:

- Enable population movements to allow a rapid livelihood recovery for all (Advisory Commission on Rakhine State recommendations).
- Increase the number of health staff to meet the WHO recommendation on minimum number of health workers to maintain a functional health system (22 health workers per 10 000 inhabitants), or at least to meet the national average (16 per 10 000 people).
- (Re)Open health facilities (particularly in the Northern Districts) and promote access to adequate healthcare for all.
- Scale up vaccine campaigns for the most prevalent diseases (e.g. Polio) in 2019, with a particular focus on the North.
- Provide essential health and nutrition education, counselling and training targeting women of reproductive age, in particular those pregnant and nursing mothers, on appropriate diets as well as infant and young child feeding practices to improve nutrition outcomes and reduce childhood stunting.

Medium to long term

- Support to the agricultural sector through measures that improve farm productivity and at the same time reduce climate and disaster risks.
- Inputs distribution conducted during the recovery phase should be combined with the transfer of improved technologies such as registered or quality-declared seeds, education on cropping patterns and improved water management. This would be particularly important in disaster-prone areas and in the context of the very limited Government extension system. Community-based organizations, such as FFS, seeds groups and others would help developing a network of key resources for farmers at the local level, transferring techniques to others and at the same time offering the opportunity for a more effective extension service and associated support. Since quality seed access following a major hazard or disaster is considered as one of the major challenges that farmers in these villages face, efforts could also be exerted to promote community-based seed production and baking through CBOs, FFS and seed groups.
- Support to rural infrastructure and value chains development. The agriculture value chain can be strengthened and made risk-sensitive through trainings on harvest and post-harvest management coupled with the introduction of improved technologies.
- The multi-donor funded LIFT livestock programme under implementation in the dry zone represents a good example of a comprehensive livestock development project that generates positive sustainable outcomes for the small holding livestock sector. A similar approach could be used in Rakhine State to improve animal health conditions (through community animal health workers) and livestock production and productivity at the household level.
- Support integrated watershed management, irrigation and drainage systems to reduce the risk of flooding, increase the supply of fresh water and reduce salinization.
- Increase micro-financing opportunities for the agriculture, livestock and fishing sectors.
- Target assistance from the national social protection system to the households with limited income-generating capacity.
- Data on food production, access and utilization, when available, are not always consistent among different institutions and organizations. Strengthening and expanding existing information systems and improving the capacities of the personnel of the MoALI, the Department of Meteorology and Hydrology and the Central Statistical Organization to collect information, would improve: a) the accuracy of agricultural and food security information, b) the capacity to perform advanced production and risk analysis; and c) the dissemination and use of the resulting analysis to inform agriculture production planning as well as disaster preparedness and response mechanisms and interventions. This should include alerts on food security at all levels so that timely, appropriate and coordinated mitigating actions can be taken to safeguard production and to improve the livelihood of the vulnerable population.
- Conduct regular food security monitoring to monitor changes in the food and nutrition situation.
- Advocate for access to education for all children and provide nutritious food in schools.
- Explore the potential for expanded micro-finance markets across Rakhine State, as limited savings and access to finance remain significant barriers to alternative livelihoods development, such as vegetables production and aquaculture.
- Explore active labour market policies aimed at increasing the employability of the most vulnerable groups (young people, older workers, long term unemployed, female workers) and reduce the seasonality of labour demand. This would reduce the impact of seasonal food insecurity on the general population by providing more reliable incomes.
- Address the inadequate access to land and improve land distribution.
- Carry out a comprehensive risk and vulnerability analysis/profiling across the main agriculture sub-sectors (crops, fisheries, livestock, irrigation and others) to better understand the complexities related to multi-

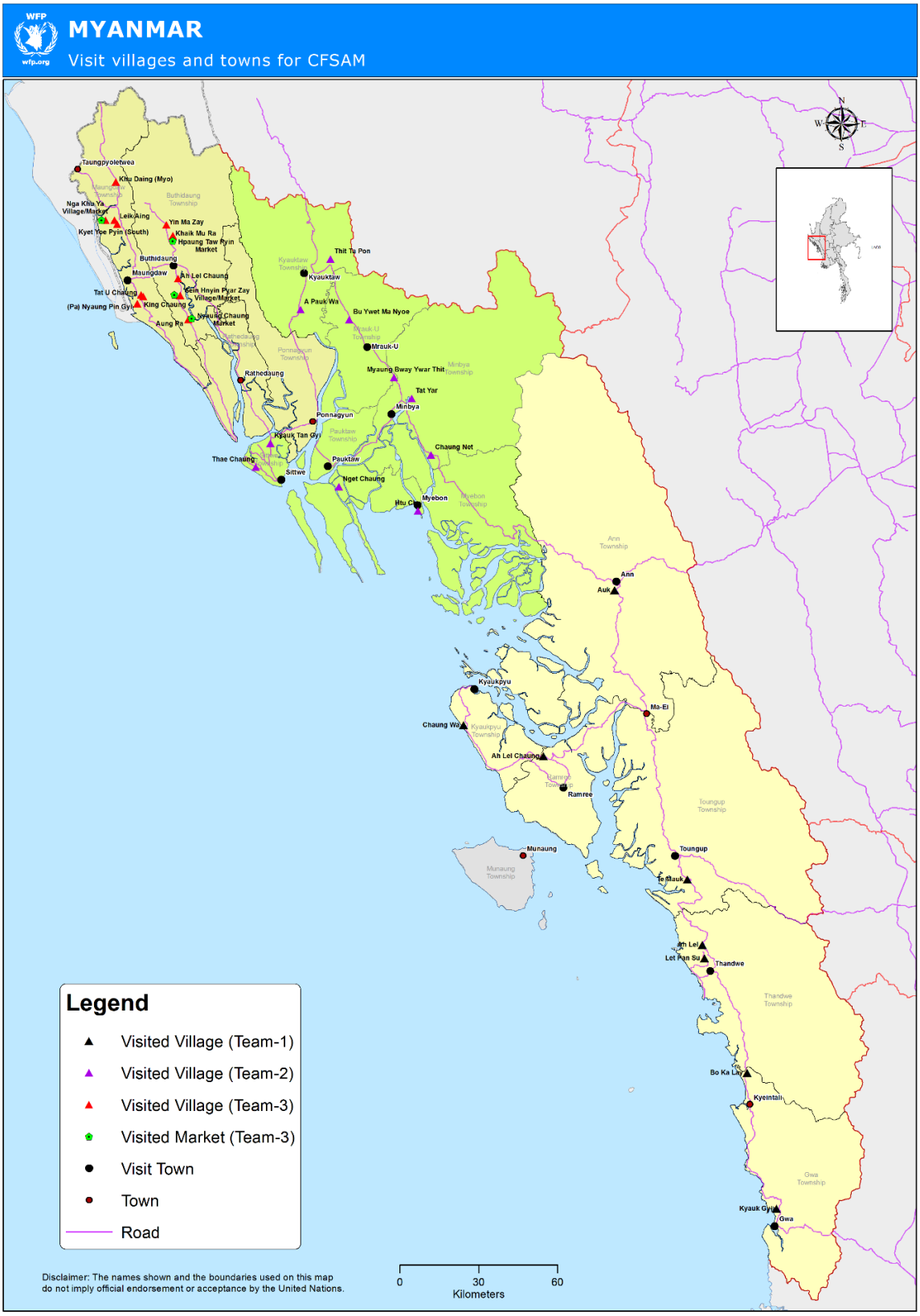
hazard interactions and how these affect community tensions over increasingly scarce natural resources. Results from these analyses will guide the promotion of DRR and risk-sensitive development approaches throughout the various streams of humanitarian and development assistance work.

ANNEXES

Annex 1: Map of locations visited within Rakhine State
Annex 2: Itinerary within Rakhine State
Annex 3: Note presented to Township and Village officials
Annex 4: Data sources
Annex 5: Displacement of the population

Annex 1

Map of locations visited within Rakhine State



Annex 2

Itinerary within Rakhine State

Team 1: Southern Rakhine State

4 May 2018	Ann Township	Meeting Township authorities
	Auk Village (Ann Township)	Field visit
5 May 2018	Ale Chaung Village (Ramree Township)	Field visit
	Kyaukpyu	Meeting Township authorities
	Chaung Wa Village (Kyaukpyu Township)	Field visit
6 May 2018	Taungup	Meeting Township authorities
	Te Mauk (Taungup Township)	Field visit
7 May 2018	Thandwe	Meeting Township authorities
	Let Pan Su (Thandwe Township)	Field visit
	Ale Village (Thandwe Township)	Field visit
8 May 2018	Bo ka lay (Thandwe Township)	Field visit
	Gwa	Meeting Township authorities
	Kyauk Gyi (Gwa Township)	Field visit

Team 2: Central Rakhine State

4 May 2018	Ah Pauk Wa Village	Field visit
	Thit Tapon Village	Field visit
5 May 2018	Bu Ywet Ma Nyoe Village	Field visit
	Myaung Bway Ywar Thit Village	Field visit
6 May 2018	Tar Yar Village	Field visit
	Chaung Net Village	Field visit
7 May 2018	GAD Township	Meeting Township authorities
	Htu Che Village	Field visit
8 May 2018	Pauktaw	Field visit
	Nget Chaung Village	Field visit
9 May 2018	Kyauk Tan Gyi Village	Field visit
	Thae Chaung Village	Field visit

Team 3: Northern Rakhine State

4 May 2018	Buthidaung	Meeting Township authorities
	Aung Pa Village	Field visit
	Nyaung Chaung VillageMarket	Field visit
5 May 2018	Leik Aing Village	Field visit
	Kyet Yoe Pyin (South) Village	Field visit
	Ku Daing (Myo) Village	Field visit
	Nga Khu Ya village	Field visit
	Kin Chaung	Field visit
6 May 2018	Nyaung Pin Gyi Village	Field visit
	Kin Chaung, Tat U Chaung (Wet) Village	Field visit
7 May 2018	Sein Nyin Pyaw Zay Village, Buthidaung Market	Field visit
	Ah Lel Chaung Village	Field visit
8 May 2018	Yin Ma Zay Village, Buthidaung	Field visit
	Khaik Mu Ra Village	Field visit
	Chin Tha Ma Viallge and Paung Daw Pyin Market	Field visit
	Maungdaw downtown Market	Field visit

Annex 3

Note presented to Township and Village officials

Methodology and Topics for Discussion

METHODOLOGY

1. At each township and village (as per itinerary in Annex 1), the team will meet the administrator for introduction and to convey the purpose of the visit (see message below).

   "The aim of this visit is to learn more about your experiences and thoughts on your current living situation, including how this has changed in recent years and what challenges you face.

   Your village was randomly selected amongst all other villages.

   We will gather information on agriculture activities and food security situation in the whole of Rakhine State, which can be used by stakeholders for programme decisions both at short and long term. However, this does not mean that this survey will create projects in your village".

2. With the assistance of the township and village heads, knowledgeable people (such as farmer, trader, health worker, labourer), will be identified for conversation on the agriculture and food security situation.
3. The information collected will be used for programme planning, particularly the type and level of needs.

TOPICS TO BE COVERED

LIVELIHOOD
- Describe the main livelihoods in the village.
- What proportion of households are getting an income from these.

CROP PRODUCTION
- Key difficulties facing farmers in this region.
- Any major problems affecting the 2017 production? Inputs availability, pests and diseases, weather, irrigation, salinity.
- How do you see the upcoming agricultural season? Such as availability of seeds, fertilizers, credit, labour, mechanization.

LIVESTOCK
- Key difficulties facing livestock breeders and farmers in this region.
- Type (cattle/pigs/goats/poultry), numbers, condition, veterinary support, feed availability, market access.

FISHING OR AQUACULTURE ACTIVITIES
- Key difficulties facing fisher folks in this region.

MARKETS FOR PRODUCTS AND INFRASTRUCTURE
- Access to markets.
- Prices for farm produce.
- State of general infrastructure (roads, storages, markets, etc.).

MARKET
- How far is it to the market where you buy most of your food?
- Have prices for fish, vegetables and potatoes changed compared to the same time in 2017?

EXPENDITURE
- What proportion of income is spent on food?
- Are there goods/services that people have stopped buying?
- New things people are buying instead?

FOOD CONSUMPTION
- What are the main food items consumed by most people?
- What are the main sources of those items?
- What kind of cooking fuel is most commonly used? Any change lately?
- Has this affected preparations of meals to the family and what measures have you taken?

HEALTH SERVICES
- What do you do if a child gets sick?
- How far is it to the closest health clinic?
- Water sources.

Annex 4

Data sources

Bibliography for box 1

Advisory Commission on Rakhine State (2017). Towards a Peaceful, fair and prosperous future for the people of Rakhine State. Final Report of the Advisory Commission on Rakhine State. Retrieved from http://www.rakhinecommission.org/app/uploads/2017/08/FinalReport_Eng.pdf

Earth Rights International (2013). There is no benefit, they destroyed our farmland. Retrieved from https://earthrights.org/publication/there-is-no-benefit-they-destroyed-our-farmland-2/

Sassen, S. (January 4, 2017). Is Rohingya persecution caused by business interests rather than religion? The Guardian, seen on 20/09/2018, retrieved from https://www.theguardian.com/global-development-professionals-network/2017/jan/04/is-rohingya-persecution-caused-by-business-interests-rather-than-religion

South, A. (2007). Displacement and Dispossession: Forced Migration and Land Rights in Burma. The Centre on Housing Rights and Evictions (COHRE), Geneva, Switzerland. Retrieved from http://www.ashleysouth.co.uk/files/COHRE_November_2007.pdf

UNGA (2006). Situation of Human Rights in Myanmar. UNGA Sixty-first Session, 21 September 2006

Woods, K. (2015). Commercial Agriculture Expansion in Myanmar: Links to Deforestation, Conversion Timber, and Land Conflicts. Forest Trends Report Series, Forest Trade and Finance. Retrieved from https://forest-trends.org//wp-content/uploads/2018/04/Conversion_Timber_in_Myanmar.pdf

Source: Information in the box adapted from “Recommendations for Implementation of Pro-Poor Land Policy and Land Law in Myanmar: National Data and Regional Practices (Namati)” available at https://namati.org/wp-content/uploads/2015/10/Recommendations-for-Land-Policy-and-Law-in-Myanmar-English-10.7.15.pdf

Annex 5

Displacement of population

Estimated Rakhine State Population as of July 2017 (Source: OCHA, UNHCR, 2017)

District	Township	Total		Non Displaced		Displaced		Total
		Non-stateless	Stateless	Non-stateless	Stateless	Non-stateless	Stateless	
Sittwe	Sittwe	150,879	178,478	150,879	78,735	-	99,743	329,357
Sittwe	Ponnagyun	132,368	5,063	132,368	5,063	-	-	137,431
Sittwe	Pauktaw	148,898	60,987	148,898	38,748	-	22,239	209,885
Sittwe	Rathedaung	119,150	40,468	119,150	40,468	-	-	159,618
Mrauk-U	Mrauk-U	193,451	38,711	193,451	38,711	-	-	232,162
Mrauk-U	Kyauktaw	176,588	41,483	176,588	40,937	-	546	218,071
Mrauk-U	Minbya	172,618	24,598	172,618	24,598	-	-	197,216
Mrauk-U	Myebon	139,958	2,606	139,958	-	-	2,606	142,564
Maungdaw	Maungdaw	32,644	491,742	32,644	491,742	-	-	524,386
Maungdaw	Buthidaung	35,510	248,919	35,510	248,919	-	-	284,429
Kyaukpyu	Kyaukpyu	168,684	1,274	168,684		-	1,274	169,958
Kyaukpyu	Munaung	60,910	-	60,910		-	-	60,910
Kyaukpyu	Ramree	98,234	-	98,234		-	-	98,234
Kyaukpyu	Ann	115,826	-	115,826		-	-	115,826
Thandwe	Thandwe	116,230	-	116,230		-	-	116,230
Thandwe	Toungup	149,332	-	149,332		-	-	149,332
Thandwe	Gwa	61,015	-	61,015		-	-	61,015
Total		**2,072,294**	**1,134,329**	**2,072,294**	**1,007,921**	**-**	**126,408**	**3,206,623**

Estimated Rakhine State Population post August 25 2017 (Source: OCHA, UNHCR, 2017)

District	Township	Total		Non Displaced		Displaced		Total
		Non-stateless	Stateless	Non-stateless	Stateless	Non-stateless	Stateless	
Sittwe	Sittwe	152,088	178,478	150,879	78,735	1,209	99,743	330,566
Sittwe	Ponnagyun	132,396	5,063	132,368	5,063	28	-	137,459
Sittwe	Pauktaw	148,898	60,987	148,898	38,748		22,239	209,885
Sittwe	Rathedaung	119,150	9,333	119,150	9,333		-	128,483
Mrauk-U	Mrauk-U	193,495	38,711	193,451	38,711	44	-	232,206
Mrauk-U	Kyauktaw	176,636	41,483	176,588	40,937	48	546	218,119
Mrauk-U	Minbya	172,749	24,598	172,618	24,598	131	-	197,347
Mrauk-U	Myebon	139,958	2,606	139,958	-		2,606	142,564
Maungdaw	Maungdaw	32,644	60,613	32,644	61,343		-	93,257
Maungdaw	Buthidaung	35,510	104,723	35,510	105,453		-	140,233
Kyaukpyu	Kyaukpyu	168,684	1,274	168,684	-		1,274	169,958
Kyaukpyu	Munaung	60,910	-	60,910	-		-	60,910
Kyaukpyu	Ramree	98,234	-	98,234	-		-	98,234
Kyaukpyu	Ann	115,826	-	115,826	-		-	115,826
Thandwe	Thandwe	116,230	-	116,230	-		-	116,230
Thandwe	Toungup	149,332	-	149,332	-		-	149,332
Thandwe	Gwa	61,015	-	61,015	-		-	61,015
Total		**2,073,754**	**527,869**	**2,072,294**	**402,921**	**1,460**	**126,408**	**2,601,623**

ISBN 978-92-5-131628-3

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CA5330EN/1/07.19