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Food systems security, resilience and emerging risks in the Indo-Pacific in the context of COVID-19: a rapid assessment



95

ACIAR TECHNICAL REPORTS

Food systems security, resilience and emerging risks in the Indo-Pacific in the context of COVID-19: a rapid assessment

Todd Sanderson, George Chapman, Daniel Walker and Peter Horne



ACIAR

2020

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Sanderson T., Chapman G., Walker D., Horne P. 2020. Food systems security, resilience and emerging risks in the Indo-Pacific in the context of COVID-19: a rapid assessment. ACIAR Technical Reports Series, No. 95, Australian Centre for International Agricultural Research, Canberra, pp. 18.

ACIAR Technical Reports No. 95 (TR095)

ISBN 978-1-922345-22-6 (print)

ISBN 978-1-922345-19-6 (pdf)

ISSN 1031-8194 (print)

ISSN 1447-0918 (pdf)

Cover photo: ACIAR, Connor Ashleigh 2019



Foreword

The COVID-19 pandemic is a global health and economic crisis that will have impacts for years to come, disrupting the lives and livelihoods of diverse communities around the world. This includes almost 500 million smallholder farmers who produce food for half of the world's population, many of whom are among the 2.7 billion people globally living on less than \$2 per day. At this early stage in the evolution of the pandemic, the global health crisis has yet to precipitate a global food crisis, but many international experts and agencies have highlighted that risk.

The Australian Centre for International Agricultural Research (ACIAR) was mandated, as set out in the ACIAR Act (1982), to work with partners across the Indo-Pacific region to generate the knowledge and technologies that underpin improvements in agricultural productivity, sustainability and food systems resilience. We do this by funding, brokering and managing research partnerships for the benefit of partner countries and Australia.

As with many other sectors and organisations, the current pandemic is likely to change both what we seek to do and how we do it. ACIAR, like many of our partners, faces important decisions about how best to respond, not just in this immediate, reactive phase, but over coming years.

As an evidence-based organisation, one of our responses has been to conduct a rapid assessment of impacts of the COVID-19 pandemic, and the responses to it, on smallholders and food systems in our region. We are doing this so that we and our partners can better understand intervention opportunities and priorities.

This report presents Stage 1 of a three-stage assessment process. The rapid assessment was conducted over a few weeks in April and May of 2020, and provides the foundation for a more systematic, integrated assessment that will be conducted over the next three months. It will be followed by 'deeper dive' assessments around key emerging issues and risk hotspots, that will be increasingly focused on solutions, to be completed by the end of 2020.

This rapid assessment was informed by consultations across the ACIAR network, including our staff in Australia and overseas, our partners in research, our Policy Advisory Council and the Commission for International Agricultural Research. Thank you to everyone who has so readily contributed expert insights.

As a first-pass, this rapid assessment is largely a qualitative analysis to help frame and challenge our thinking, for the subsequent phases of this work. This assessment is a work in progress, and we expect its component documents to be dynamic. Accordingly, feedback is very welcome.

This initial compilation of COVID-19 impacts from across ACIAR partner countries is a sobering reminder of the very human face of this tragedy. It introduces 10 intersecting challenges that we need to understand and manage carefully if we are to avoid this global health crisis precipitating a much deeper and wider hunger, nutrition and poverty crisis. Such a crisis would be a major threat to the security, stability and economic recovery of our region.



Andrew Campbell

Chief Executive Officer, ACIAR



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Preface

This rapid assessment was undertaken during the period 20 April–8 May, 2020. During this time the team of authors consulted widely across the ACIAR network. Discussions were had with ACIAR staff in Australia and our 10 country offices across the Indo-Pacific, our project leaders and partner organisations in Australia and partner countries, eminent experts on the Policy Advisory Council and the Commission for International Agricultural Research, and reviews of reports and media for other agencies.

While we do not report on the specifics of these consultations in this document, we gratefully acknowledge the contributions that particular individuals made to this work. Given the uncertainties associated with much of the information we encountered in this process, we have chosen only to report findings which could be triangulated with other sources. This means that not all the information provided to us was reported at this stage, but it may be in forthcoming stages as additional information becomes available.

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ACIAR is established by the *Australian Centre for International Agricultural Research Act 1982* (the ACIAR Act), as amended. ACIAR is part of the Foreign Affairs and Trade portfolio. The CEO of ACIAR reports directly to the Minister for Foreign Affairs.

Also established under the ACIAR Act are two advisory groups. The Commission for International Agricultural Research provides decision-making and expert strategic advice to the Minister for Foreign Affairs on the operations of ACIAR. The Policy Advisory Council reports to the Minister for Foreign Affairs, the Commission for International Agricultural Research and ACIAR on issues, programs and policies affecting agriculture in developing countries.



Introduction

Governments and other food systems stakeholders in the Indo-Pacific region are concerned about emerging risks to food systems security that are a direct consequence of public and private sector responses to the COVID-19 virus pandemic.

As responses to the pandemic continue to develop, they are revealing vulnerabilities in food systems at local, national and regional levels. Identifying and examining the nature of these vulnerabilities will provide directions to help mitigate future disruptions to food systems across the Indo-Pacific region.

ACIAR is responding through a multi-stage assessment of COVID-19 impacts on food systems across the Indo-Pacific region. Initially, this has taken the form of a rapid assessment of the current and emerging impacts of COVID-19 on food systems security. The purpose of this rapid assessment is to:

- provide a synopsis of emerging risks to food systems across the region to our Australian and international partners
- identify and prioritise focal areas for a rigorous integrated assessment
- identify immediate 'no regrets' intervention options (if any) for ACIAR investment
- inform discussion with our development partners on possible immediate joint action.

This rapid assessment process draws upon the insight of the ACIAR network of partners, researchers and advisors, to develop a picture of food systems vulnerabilities resulting from COVID-19 and their current and emerging impacts across the Indo-Pacific region.

Through our consultation process to date, we have identified 10 significant areas in which COVID-19 responses are impacting food systems security across the Indo-Pacific. For some countries within the Indo-Pacific, these impacts are being felt now, while for others, they are just starting to emerge.

There are many uncertainties as to how these impacts may evolve within food systems over time, and many are not mutually exclusive. Some impacts vary considerably along geographic and temporal lines, reflecting the diversity of social, economic and biophysical contexts within which food systems operate across the region. While other impacts share broad similarities within countries, reflecting in part the high degree of connectivity among food systems across the region.

The 10 impact areas¹ discussed individually in the following sections of this report are:

1. large-scale migration of displaced people is placing pressure on local food and resource systems
2. transport suspensions and movement restrictions are disrupting the delivery of food and essential agricultural inputs
3. government interventions in food markets are placing strain on domestic and international food markets
4. rising un- and under-employment is reducing incomes of low-income households and their ability to acquire nutritious food
5. movement restrictions are leading to labour shortages for production and marketing activities within food systems
6. existing threats to food systems are amplified by COVID-19 disruption
7. impacts are not evenly distributed across social and economic strata
8. impacts on food systems are gendered and have particular implications for women and girls
9. accessing credit is becoming more difficult throughout food systems
10. human health implications of food systems remain prevalent and may be amplified amid COVID-19 disruptions.

¹ These 10 impact areas are not presented in order of importance

1 Large-scale migration of displaced people is placing pressure on local food and resource systems

Significant movement of people from urban to rural areas has been observed in many countries during the COVID-19 pandemic. This movement is placing strain on local food systems (fisheries and agriculture) and other natural resources; and in some cases, the strain is exacerbated by supply chain interruptions, due to movement restrictions, export suspensions and labour handling shortages.

In some Pacific island countries, movement of people from urban to rural areas has been encouraged by governments (e.g. Solomon Islands).

In India, movement of people from urban to rural areas was a mass response immediately before the implementation of strict movement restrictions and the sudden increase in unemployment among domestic migrant labour.

In Indonesia, the movement of people from urban to rural areas was reported at the start of the COVID-19 pandemic. However, the Indonesian Government has since implemented broad restrictions on the movement of people throughout the country.

Many countries across the Indo-Pacific region rely on the availability of migrant labour to practice agriculture across all stages of the value chain, from planting to harvesting and processing. The COVID-19 pandemic has seen work opportunities disappear and labour migrants seek to return to their home countries (e.g. Nepal, Cambodia, Bangladesh and Myanmar).

In Nepal, it is anticipated that some 3–4 million returning labour migrants will place a significant strain on the capacity of local food and resource systems. Nepal relies upon imports of food and fuel from neighbouring countries, and the food security situation could substantially worsen if export restrictions in those countries remain for an extended period.

In the Greater Mekong Subregion, throughout April and May 2020 approximately 224,000 labour migrants working in Thailand returned to Cambodia, Laos and Myanmar². In Myanmar, displaced migrant workers are facing difficulties accessing food, particularly in Kachin, Rakhine, Northern Shand and Chin states.

² International Organization for Migration – Asia Pacific COVID-19 response, Situation Report 6 (27 April, 2020) <https://www.iom.int/sitreps/iom-asia-pacific-covid-19-response-situation-report-6-27-april-2020>

Before the disruption of the COVID-19 pandemic, some countries (e.g. Myanmar and Bangladesh³) were experiencing agricultural labour shortages in some regions at critical harvest and planting times. In these cases, additional labour in rural areas may alleviate labour constraints and improve the productive potential of agricultural systems. In other cases, such as the Philippines, an influx of returning labour migrants is creating a surplus of labour in rural areas, which is particularly exacerbated by rigid restrictions on the movement of people. In either case, the additional supply of labour seeking to draw an income from agricultural work will likely exert downward pressure of labour wage rates. This will have consequences for household incomes and their associated purchasing power in food markets.

3 ACIAR-SDIP – Ensuring food security in Bangladesh during COVID-19 (24 April, 2020) <https://aciarsdip.com/latest-news/2020/4/24/ensuring-food-security-in-bangladesh-during-covid-19>

2 Transport suspensions and movement restrictions are disrupting the delivery of food and essential agricultural inputs

The COVID-19 pandemic and associated transport and movement restrictions are placing substantial stress on logistic and supply chain networks. For countries dependent on imported foods, transport suspensions and movement restrictions have disrupted supply chains, and shortages have been observed in many countries.

Pacific island countries, which are highly dependent on food imports, are under high stress (e.g. Nauru). Many countries have only a few weeks of staple food stocks in reserve, and the unavailability of some food items has been reported in some areas. In many cases, this has been exacerbated by movement restrictions within country borders, preventing fresh foods from being delivered by rural producers to urban markets.

Movement restrictions between villages, provinces and countries are also preventing delivery of essential agricultural inputs. Road closures, blockages and checks are preventing smallholder farmers from selling products or buying inputs, resulting in loss of perishable produce and income. The availability of seed and planting material, fertilisers and agricultural chemicals is critically low in some areas.

In East Africa and South Asia, there are ongoing problems with incursions of locust and fall armyworm in key food crops. Immediate action to protect crops is by use of pesticides, but disruption to transport networks has resulted in an acute shortage of these in East Africa and some parts of South Asia.

In India, restrictions on transportation services have made it difficult for farmers to access essential machinery. These difficulties, combined with widespread labour shortages, are making the harvest of the winter 'Rabi' crop before the arrival of adverse weather conditions a challenge.

In the Philippines and India, farmers have had to dump their produce or feed it to livestock due to the inability to access transport to urban markets⁴. In the Philippines, farmers rarely have access to local storage facilities for rice and rely on the ability to harvest and quickly move unprocessed rice to mills. Delays in accessing mills are leading to increased post-harvest losses, with consequences for farm-household incomes.

In Indonesia, the transport of agricultural products from rural areas to urban markets has been substantially disrupted. This has been worsened by limited capacity in cold storage facilities in production areas, leading to losses of perishable foods.

4 CIMMYT – Don't forget about the impact of COVID-19 on the rural poor and on food security (13 April, 2020) <https://www.cimmyt.org/blogs/dont-forget-about-the-impact-of-covid-19-on-the-rural-poor-and-on-food-security/>

In Myanmar, closure of transport routes to China and Thailand has seen exports of vegetables and other food commodities (e.g. maize) decrease significantly. This has resulted in widespread decreases in prices received by farmers and the dumping of unsaleable produce. This has been further complicated by difficulties in accessing transport services, which have been slowed due to night-time movement curfews. Combined with higher prices for fertiliser (which is also in short supply), farmers are likely to purchase and apply less fertiliser in the short-medium term, which will have longer-term implications for production volumes.

Supply chains are showing signs of adapting to constraints with innovative marketing arrangements.

In West Bengal, the agricultural company 'Satmile Satish Club O Pathagar' (SSCOP) has started purchasing vegetables from farmers for direct delivery to consumers in the urban areas of Cooch Behar municipality, through online or phone booking⁵.

In Indonesia, e-commerce mechanisms have developed to supply urban households with fresh agricultural products. However, there are concerns about the limited regulation through this supply chain, particularly related to food safety.

5 ACIAR-SDIP - Mitigating the impacts of COVID-19 on farmers and markets in West Bengal (20 April, 2020) <https://aciarsdip.com/latest-news/2020/4/20/mitigating-the-impacts-of-covid-19-on-farmers-and-markets-in-west-bengal>

3 Government interventions are placing strain on domestic and international food markets

Global markets for food staples (rice, wheat and maize) over the months preceding the COVID-19 pandemic were generally stable, supported by production levels approaching record highs⁶. Notwithstanding, some important exporting countries have placed restrictions on exports of food staples to ensure adequate domestic stocks. Collectively these actions have seen some global food market prices increase modestly over recent weeks, with impacts on import reliant countries across the Indo-Pacific region.

East African countries are experiencing difficulties acquiring sufficient volumes of food staples to meet domestic demand at reasonable prices, and food shortages are anticipated from May 2020 onwards⁷. This situation is being exacerbated by stocks of vital agricultural inputs (e.g. fertiliser and pesticide) being well below normal levels due to COVID-19 disruption to transport systems, and the impacts of an intensifying locust plague.

While many Pacific island countries produce reasonable volumes of fruit and vegetables for domestic consumption, most that import staple foods (primarily rice and wheat) are vulnerable to adverse developments on international food markets.

Nepal is reliant on food imports from India to meet domestic needs. Suspension of food exports from India could combine with reduced incomes from remittance payments and the sizable return of migrant labour to produce a significant food security issue.

Timor-Leste relies on imports of food, which represent approximately 30% of all inbound trade⁸. Revenues from oil exports are a crucial source of income to support the acquisition of food on the international market. However, revenues are currently low following the substantial decline in oil prices.⁹ Monetary and other support mechanisms have been implemented to support household access to food staples. If in the longer term, international market prices for food increase, while oil revenues remain low, the ability to support households may weaken.

In Indonesia, the government has relaxed import quotas on some food commodities to ensure sufficient stocks are available to minimise price volatility.

6 World Bank – Briefing: Food Security and COVID-19 (23 April, 2020) <https://www.worldbank.org/en/topic/agriculture/brief/food-security-and-covid-19>

7 World Economic Forum – COVID-19 is exacerbating food shortages in Africa (27 April, 2020) <https://www.weforum.org/agenda/2020/04/africa-coronavirus-covid19-imports-exports-food-supply-chains>

8 Food and Agriculture Organization (2020) COVID-19: Channels of transmission to food and agriculture. <http://www.fao.org/3/ca8430en/CA8430EN.pdf>

9 The Lowy Institute – A COVID-19 wake-up call to reshape Timor-Leste's economy (28 April, 2020) <https://www.loyyinstitute.org/the-interpretor/covid-19-wake-call-reshape-timor-leste-s-economy>

In the Philippines, the liberalisation of some markets for agricultural imports (mainly rice) over recent years is likely to be reversed to protect local producers. Under current policy settings, the Philippines has emerged as a significant importer of rice and other foods, reflecting the relatively high-cost of local production. A move to greater reliance on domestic production will likely see higher prices of food staples, which may benefit farmers. Although, low-income food-insecure households will likely face difficulties without compensating support.

Domestic price and quantity controls have been imposed in some countries to manage the consequences of imbalances in supply and demand caused by transport disruptions and movement restrictions¹⁰. In the medium to long term, this may have consequences for on-farm production incentives and decisions.

In Indonesia and the Philippines, rationing has been introduced for some staple foods.

Countries across East Africa (Rwanda, Ethiopia, Malawi) have implemented price controls on staple foods, and some have accessed strategic reserves to minimise disruption to food markets (Kenya, Rwanda, Uganda).

¹⁰ Food and Agriculture Organization – Food Price Monitoring and Analysis (9 April, 2020) <http://www.fao.org/giews/food-prices/food-policies/detail/en/c/1270543/>

4 Rising un- and under-employment is reducing incomes of low-income households and their ability to acquire nutritious food

The collapse of tourism and some export markets (e.g. flowers and fresh vegetables) has led to substantial reductions in household incomes with consequences for the ability to acquire nutritious foods.

In the Pacific region, tourism is a significant employer and contributor to GDP¹¹ (e.g. Vanuatu 46% and Fiji 39%). The imposition of travel restrictions through Pacific island countries has seen a sharp reduction in tourist numbers and a substantial increase in unemployment in tourist and related sectors. A significant source of tourist income for many of these countries was tied to leisure cruise ships—an industry that may take some years to recover.

The Philippines and Cambodia are similarly invested in the tourism sector, with 21% and 31% of GDP respectively attributable to tourist and related income sources. In both countries, temporary suspension of entry by foreign nationals has been in place in various forms since March 2020, which has significantly curtailed income from tourism.

In Papua New Guinea, reduced rural incomes due to closures of local and regional markets are likely to affect the ability of households to purchase tinned rice and fish. These purchased foods play an essential role in the nutrition of rural households, supplementing predominantly starchy locally-produced foods.

For some countries, decreased household income will have more acute consequences on the ability to acquire food because the share of household income devoted to food expenditure is already high. For example, in 2016, food expenditures by share of average household income were 52% in Kenya, 42% in Pakistan, 42% in the Philippines, 39% in Vietnam, and 31% in Indonesia¹². Income shocks will likely have impacts on household wellbeing and change food consumption patterns. As incomes decline, staple demands usually remain high, but higher-value foods (dairy, meat, fish, eggs, fruit and vegetables) are likely to experience declining demand.

Rising unemployment of labour migrants has seen a substantial decline in remittance payments to home countries. Where labour migrants have returned to their home countries, there are often limited opportunities to generate incomes or to access support services. It is anticipated that remittance flows to low to middle income countries will decline by 20% or more due to COVID-19 disruption to employment conditions during 2020¹³.

11 The World Bank – Tcdata360. <https://tcdata360.worldbank.org/indicators/tot.direct.gdp>

12 The World Bank – Data Catalog. <https://datacatalog.worldbank.org/>

13 World Bank – COVID-19 crisis through a migration lens (April 2020) https://www.knomad.org/sites/default/files/2020-04/Migration%20and%20Development%20Brief%2032_0.pdf

Remittance payments are an essential source of household disposable income for many Pacific island countries¹⁴ (e.g. as a percentage of GDP, Tonga 38%, Samoa 16%, Fiji 5%, Vanuatu 4%).

In Nepal, remittances account for approximately 27% of GDP. The decrease in remittance payments is reflected in the shift of household purchasing behaviour away from higher-priced, but more nutritious foods.

In Cambodia and the Philippines, 6% and 10% of GDP¹⁵ respectively, is contributed from remittance payments. For Cambodia, there has been a substantial return of labour migrants in recent weeks, particularly from Thailand. There is concern about the ability of returned labour to support themselves and their families. In both countries, the labour migrant income disruption is likely to be amplified by related disruption to income through the tourism sector.

Travel bans, the suspension of transport services and lockdowns have meant that many labour migrants are unable to return to their home countries. Perhaps recognising the value of labour migrants to agriculture and some other critical aspects of economic activity, some host countries have accommodated displaced labour migrants through cash, food and shelter support.

14 KNOMAD – Remittances data. <https://www.knomad.org/data/remittances>

15 KNOMAD – Remittances data. <https://www.knomad.org/data/remittances>

5 Movement restrictions are leading to labour shortages for production and marketing activities within food systems

Food supply chains across the Indo-Pacific region are dominated by labour-intensive operations. In South-East Asia, 50–70% of food system operations are still highly labour intensive, while South Asia and Africa are closer to 80%¹⁶. These supply chains are more vulnerable to movement restrictions on labour than comparable capital-intensive food supply chains. At the production level, agriculture across the Indo-Pacific region is mostly labour intensive, although labour demands tend to fluctuate reflecting seasonal requirements (e.g. planting, harvesting, processing and transporting to market). In the short term, labour movement restrictions are constraining agricultural production and processing activities and contributing to increased rates of food wastage.

In India, the harvest of the winter ‘Rabi’ crop was interrupted by shortages of agricultural labourers. The biggest concern is damage and loss of produce as crops remain unharvested and are impacted by weather events.

In Papua New Guinea, labour shortages caused by the State of Emergency declaration have impacted tuna processing operations based in Wewak, East Sepik Province¹⁷.

In the Philippines, restrictions on the movement of people are having significant impacts on the provision of farm labour to support harvest and planting activities. The planting window for the forthcoming rice cropping-cycle is narrow, due to the need to harvest before the high likelihood of crop damage with the onset of typhoon season. Difficulties in accessing labour, seed and fertiliser, will likely see planting areas well down on usual years.

In the medium to longer term, disruption to the scheduling of planting and difficulties in accessing labour for harvesting and other processing activities throughout food systems creates conditions conducive to increased food prices. This eventuality, in combination with other impacts across food systems, will further increase food insecurity for many already vulnerable people.

16 International Food Policy Research Institute Blog – How COVID-19 may disrupt food supply chains in developing countries (2 April, 2020) <https://www.ifpri.org/blog/how-covid-19-may-disrupt-food-supply-chains-developing-countries>

17 DEVPOLICY Blog – COVID-19 and its likely impact on the tuna industry in the Pacific Islands (27 April, 2020) <https://devpolicy.org/covid-19-and-its-likely-impact-on-the-tuna-industry-in-the-pacific-islands-20200427-1/>

6 Existing threats to food systems are amplified by COVID-19 disruption

Before the COVID-19 disruption, food systems in many countries were under stress from a range of natural disasters, emergency animal diseases, and pest outbreaks.

In April 2020, Cyclone Harold significantly impacted Solomon Islands, Fiji, Vanuatu and Tonga, damaging local agricultural production and transport systems. The added complications of COVID-19 have substantially slowed the ability of local governments to deliver food aid and will delay the re-establishment of agricultural and transport systems.

African swine fever has maintained a steady advance across South-East Asia in recent months, with Papua New Guinea confirming outbreaks in April 2020. The high mortality rates of this disease have led to substantially reduced supplies and higher prices for pork in impacted countries. For example, in Timor-Leste, 72% of households keep pigs, and in 2015 the average household herd was 2.86 head¹⁸. In this context, losses of household pigs have led to significant increases in food and nutritional insecurity. COVID-19 disruption to transport networks may further complicate access to affordable and high-quality protein across affected countries in South-East Asia and Pacific island countries.

Intensifying locust plagues in East Africa (Kenya, Somalia, Ethiopia) and South Asia (Pakistan) are starting to have sizable impacts in important agricultural regions, which is exerting significant pressure on food systems¹⁹. Transport disruptions related to COVID-19 have made access to pesticides difficult and are currently worsening the situation.

In Indonesia, recent volcanic eruptions (e.g. Mount Merapi in central Java in March 2020, and Anak Krakatau in Lampung in April 2020) and earthquakes continue to disrupt food systems in some parts of the country.

18 Smith, D., et al. (2019) Counting the cost: the potential impact of African Swine Fever on smallholders in Timor-Leste. <https://doi.org/10.1016/j.onehlt.2019.100109>

19 Food and Agriculture Organization – Desert locust situation update (28 April, 2020) <http://www.fao.org/ag/locusts/en/info/info/index.html>

7 Impacts are not evenly distributed across social and economic strata

Poor and marginalised groups in many countries are facing sharply increased food insecurity. Previous food crises can provide clues as to the potential impact on marginalised groups. For example, during the food prices crisis of 2007–08, the significant growth in world food prices increased the number of undernourished people in the world by 14% in 2 years (from 848 million people to 963 million)²⁰.

In the Eastern Gangetic Plains, a longstanding assumption was that the rural poor were worse off than the urban poor. With the impacts of COVID-19 on labour and food markets, this situation may have inverted. The urban poor is particularly impacted by the effects of lower incomes, higher food prices, and limited alternative means through which to produce or access food.

Groups who were already experiencing poorer health outcomes, food insecurity, and uncertain incomes are likely to be proportionally more impacted. Impacted households are likely to employ negative coping strategies, which will have long-term impacts on their livelihoods and wellbeing. Responses like reducing the number of meals, decreased school attendance and selling off productive assets are common but impair the ability of households to recover.

In Indonesia, the government has launched six social safety net programs, which include distribution of cash support and staple foods for marginal and low-income households.

In Timor-Leste, the government is providing monthly payments of US\$100 to low-income households who regularly earn less than US\$500 per month.

²⁰ Food and Agriculture Organization (2008) The State of Food Insecurity in the World 2008. High food prices and food security – threats and opportunities.

8 Impacts on food systems are gendered and have particular implications for women and girls

Gendered inequity across agricultural value chains and food systems are being exacerbated through the COVID-19 disruption. In many countries across the Indo-Pacific region, women play prominent roles in food marketing, particularly through wet markets, which will see them significantly impacted by closures of markets and by transport and movement restrictions.

In Myanmar, women dominate agricultural value chains in vegetables and flowers, which have seen significant price decreases with the closure of international export routes. The closure of markets in some areas has particularly impacted women, who are frequently the majority group among stallholders. Sizable reductions in incomes have seen many stallholder women in border regions turn to casual labour roles, which can carry significant personal risk.

In Papua New Guinea, women account for more than 80% of sellers in fresh food markets, and income generated through these activities is often their primary source of income. Restrictions on market activity across Papua New Guinea have had significant impacts on women's incomes. This will have negative implications for household nutritional security, as income from marketing activities is typically used to purchase foods with higher protein and nutritive values²¹.

Evidence from previous significant disruptions to food systems indicates that women and girls are disproportionately impacted in several ways, including adverse effects on their education, food security and nutrition, health, livelihoods and physical safety. Even after food systems return to a state of normality, women and girls may continue to suffer from ill-effects for years to come. The risk of heightened food insecurity and malnourishment during food system disruptions is particularly significant for women and girls because social norms in some contexts dictate that they eat last and least. When food becomes scarce, women and girls, who are already more likely to be more malnourished than men and boys, often face additional health complications (e.g. anaemia).

As household incomes come under stress through diminished remittance payments, farm earnings, and casual labour wages, women and girls are experiencing particularly complex challenges. An increase in domestic violence has been reported in many countries across the Indo-Pacific region. Lower household incomes and supply chain disruptions have limited access by women and girls to sexual and reproductive health resources.

21 Koczberski, G., et al. (2019) Strengthening livelihoods for food security amongst cocoa and oil palm farming communities in Papua New Guinea: Final Report. ACIAR <https://aciarc.gov.au/project/ASEM-2012-072>

9 Accessing credit is becoming more difficult throughout food systems

Many smallholder production systems rely on small or micro-loans to acquire inputs for crop establishment. Similarly, operators in processing, trade and transport also need access to credit. Considerable uncertainty about the likely length of the disruption and the ability of economic functions to recover to pre-COVID-19 levels is promoting pessimism among lenders and financial markets.

In India, widespread credit freezes have been reported in both formal and informal lending. Lenders have become risk-averse, amid rapidly declining repayment rates in the micro-finance sector. Agricultural stocks are often used as collateral for loans, but lenders are finding it challenging to verify stocks due to travel restrictions.

In Indonesia, the government has reduced interest rates of a key agricultural lender, Kredit Usaha Rakyat, to support smallholder farmers.

In the Philippines, farmers regularly access credit to support crop establishment. With the disruption to market chains created by movement restrictions, many farm households are entering a new cropping cycle with more limited cash reserves than usual years. This will likely see demand on credit facilities increase with consequences for farm-household indebtedness. If access to credit remains challenging, a reduction in the scale of planting areas is foreseeable, which will have consequences for domestic production volumes in the coming months.

In many contexts, women are facing more significant challenges accessing credit than their male counterparts. While this inequity existed before the COVID-19 disruption, the situation has worsened. This will particularly impact the ability of women smallholders to acquire seed and fertiliser to establish forthcoming crops.

10 Human health implications of food systems remain prevalent and may be amplified amid COVID-19 disruptions

Pre-existing human health implications of food systems, including the promotion of communicable and non-communicable disease, remain significant through many countries throughout the COVID-19 pandemic, and may in fact be amplified. In the short term, disruption to fresh/wet market systems (particularly highly perishable foods) and increased strain on local food and natural resources, like fresh water, could translate into higher rates of food and water-borne illness. In the medium to longer term, decreases in incomes which lead to changes in the composition of diets will likely increase rates of non-communicable disease (e.g. diabetes, heart disease, childhood stunting, anaemia).

In Pacific island countries, the burden of infectious disease such as measles, dengue and leptospirosis has been increasing in recent years and continues in the background of the COVID-19 pandemic. The burden of non-communicable disease, particularly cardiovascular disease, diabetes and hypertension, is high across the region. Micronutrient, vitamin A and iodine deficiencies are also widespread, and anaemia affects more than 20% of children and pregnant women in the region. Disruption to the supply of fresh foods is likely to further add to this disease burden, particularly if conditions extend into the medium to long term.

In the Eastern Gangetic Plains, malnutrition and micro-nutrient deficiency are widespread. Decreased incomes and higher fresh food prices will exacerbate more limited and less nutritious diets.

Indonesia faces a 'triple burden' on food and nutrition security, with stunting, undernutrition and micro-deficiency commonplace. Programs aimed at supporting nutrition of children in rural areas, through milk and food provision, have suffered from the closure of schools.



Conclusion

Through this rapid assessment, ACIAR identified 10 significant areas in which responses to the COVID-19 pandemic are impacting food systems security across the Indo-Pacific region.

Some impacts of these responses have similarities to previous disruptions to food systems at local, national and regional levels across the Indo-Pacific, although many are particular to this set of circumstances. Unlike previous disruptions, restrictions on the movement of people and their ability to provide labour into food systems have been a catalytic factor in many of the cascading impacts we have identified. The high reliance on labour throughout food systems (e.g. agricultural production, processing, transport and marketing) across the region will continue to amplify these impacts for some time.

COVID-19 has brought into sharp focus some of the vulnerabilities of food systems across the Indo-Pacific region. This rapid assessment is the first step in considering how ACIAR, as Australia's specialist international agricultural research for development agency, might address new issues or work differently with our partners across the Indo-Pacific in response to the disruptions we have identified.

As this report goes to press we are commissioning further assessments that will focus particularly on the Pacific island countries, Papua New Guinea, Timor-Leste, Indonesia and the Philippines. This further and more integrated assessment (Stage 2) will be finalised in August 2020. Like the rapid assessment reported here, the Stage 2 assessment will be conducted by teams comprising Australian researchers with partners in the broad ACIAR network in our focal countries and regions. The overarching integrated assessment will be led by a team from the Australian National University and Australia's CSIRO and will allow us to focus more particularly on response options based on research and innovation than the rapid assessment reported here. Overall it will inform possible actions that could be taken by governments and other food systems stakeholders to increase food systems resilience in the face of different kinds of shocks to food systems in the future.



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