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**NAVIGATING THE COMPOUND SHOCK:**  
How Cambodian Farmers Coped with Covid-19 and  
the 5Fs Crisis

*A Study of the 2020 - 2023 Period*

Master's Thesis  
*International Development Studies*

By **Tjalling Meijer**

Supervised by **Dr Gery Nijenhuis**

*11 August, 2023*

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*August, 2023*

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## **Abstract**

This study looks into how smallholder farmers in Cambodia reacted to the impact of the compound shock on their livelihoods from 2020 to 2023. The compound shock consists of the COVID-19 pandemic and the 5Fs crisis, comprising further disruptions in the prices for food, feed, fuel, fertilizer, and the accessibility of finance for agriculture. The research is exploratory and built upon livelihood theory, focusing on adaptation and coping strategies. The study gathered data through 25 interviews with smallholder farmer households. The findings show that the impacts of the compound shock are primarily related to price inflations and mobility restrictions. The identified consequences include reduced profitability of farming activities and a worse household financial position. Diversified income sources and the possibility of using their production for consumption did dampen the severity of the impacts for some households. The findings show that most households used savings and the sale of non-productive assets to cope with the impacts. The employed strategies do not per se affect livelihood sustainability, but they do erode the buffer capacity of the households. Based on the findings, the study makes several policy recommendations to strengthen the livelihoods of smallholder farmers, including stimulating diversified income on-farm and off-farm, re-engaging youth, and giving incentives for a switch to organic farming.

**Keywords:** *COVID-19; Smallholder farming; Livelihoods; 5Fs crisis; Coping strategies*

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## List of Abbreviations

<b>CAS</b>	Cambodian Agricultural Survey
<b>Covid</b>	COVID-19
<b>FAO</b>	Food and Agriculture Organization
<b>IFAD</b>	International Fund for Agricultural Development
<b>MAFF</b>	Ministry of Agriculture, Forestry, and Fisheries
<b>MFI</b>	Microfinance Institution
<b>NIS</b>	National Institute of Statistics
<b>SLF</b>	Sustainable Livelihoods Framework
<b>UN</b>	United Nations
<b>UNNC</b>	United Nations Nutrition Cambodia
<b>USDA</b>	United States Department of Agriculture
<b>WHO</b>	World Health Organization

## Chapter 1 – Introduction

The last three years have been characterized by the severe challenges humanity faced caused by the COVID-19 pandemic (Covid henceforth). Through different channels, Covid impacted the lives and livelihoods of people worldwide across all layers of society (United Nations, 2022). While the rich countries were not exempt from the impacts, low and middle-income countries are affected more severely (Levin et al., 2022; Rodela et al., 2020). Since the outbreak of the pandemic in early 2020, research has been conducted to identify how Covid has impacted the livelihoods of different groups of people. A large share of this research focuses on rural or agricultural livelihoods (Dev & Mahendra, 2020; Jaacks et al., 2021; Krauss et al., 2022; Middendorf et al., 2021; Workie et al., 2020). This early research shows that Covid induced impacts imposed a strain on rural livelihoods, not always in terms of health, but mainly through restrictive measures implemented by governments and through market disruptions (Elleby et al., 2020; Stephens et al., 2022).

At the time of writing, a little over three years have passed since the outbreak of Covid. During these three years, successful efforts have been made to contain the virus and mitigate its impacts. Covid is now largely considered an endemic virus, and its acute effects on society are controlled (WHO, 2023b). Consequently, governments have lifted restrictive measures, and the impacts of Covid on livelihoods seem to be decreasing. However, despite the decreasing impacts of the Covid-shock, rural livelihoods have become subject to more challenges in the wake of Covid. In July 2022, the Food and Agriculture Organization (FAO henceforth) alerted the international community about the threats of the so-called 5Fs crisis in the Asia and Pacific Region through the publication of a joint letter with UNICEF and the World Food Program (FAO et al., 2022). According to the FAO, the 5Fs crisis comprises the increase in **food, feed, fuel,** and **fertilizers** prices and reduced access to **finance** for agricultural purposes.

While in the letter, the three organizations express their concerns for food security (FAO et al., 2022), the implications of such a development in the 5Fs, will also affect the livelihoods of the people engaged in agriculture. Increased prices for agricultural inputs like feed, fuel, and fertilizers put pressure on access to these inputs and the profitability of farming. Reduced access to finance worsens the situation for smallholder farmers as they often rely on financing to buy the needed inputs, expand their farming, or improve their practices (Yi et al., 2021).

However, there is currently no research available on how the developments of the 5Fs affect agricultural livelihoods. While there are studies on, for example, how the war in Ukraine has affected food security by inflating global prices for food, energy, and fertilizers (Ben Hassen & El Bilali, 2022a; Ibendahl, 2022; Paulson et al., 2022), their scope does not include the effects on agricultural livelihoods. The lack of research is problematic as the continued stress after Covid is likely to have further affected rural livelihoods and the ability of people to bounce back from the Covid-induced impacts.



Thus, while the acute effects of Covid have been largely contained, the aftermath has left rural livelihoods with new challenges. In the context of these developments, this study focuses on smallholder farmers in Cambodia, investigating how they coped with the initial shocks of Covid and the additional challenges posed by further market disruptions between the start of 2020 and March 2023. The Cambodian setting is interesting as Cambodia is a developing country with around 75 percent of its population living in rural areas, and a similar proportion of farmers are categorized as smallholders (IFAD, 2022). Smallholder farmers in Cambodia are often part of the poorer socioeconomic class and are vulnerable to shocks (Heylen et al., 2020).

There is no knowledge of how Cambodian smallholders have responded to the combination of shocks. Since there are many vulnerable smallholder farmers, it is crucial to shed light on this. Understanding how this group responded to the impacts can provide valuable insights into their vulnerabilities, resilience, and coping strategies. It can be instructive for sharing best practices, identifying needed support, and short- and long-term policy applications.

The central question addressed in this research is: **How did smallholder farmer households respond to the impacts on their livelihoods between 2020 and 2023?** The research explores this question by mapping the respective impacts of Covid and the manifestations of the 5Fs crisis in Cambodia, followed by an inquiry into the household-level impact of the two events. The study effectively treats Covid and the manifestations of the 5Fs crisis as a compound shock to the livelihoods of smallholder farmers in Cambodia. Due to the lack of existing literature on the topic, and the complexity of the disruptive events, livelihoods, and their connections to other themes like food security and agricultural productivity, the study is exploratory; it attempts to get a broad idea of the effects of the combined shock. To this end, the study employs a mixed-methods approach, integrating qualitative and quantitative research methods to gather the needed data.

One of the starting points of this study is a dataset provided by the Cambodian National Institute of Statistics (NIS). In 2019, 2020, and 2021, the NIS held three country-wide agricultural surveys; the Cambodian Agricultural Survey (CAS). The results indicate that smallholder farmers have been under extra stress affecting their agricultural practices during the first year of the pandemic; the data indicates that half of the affected farmers reported a decrease in production and sales (NIS, 2023a). However, while the CAS data does tell something about the impact on agricultural production and income, it does not provide insights into the effects on farmer livelihoods. This study explores the effects on livelihoods to give more substance to the CAS data.

This research fits within the field of development studies for several reasons. Development studies focus on understanding and addressing socioeconomic issues related to development, including poverty, inequality, and sustainable development. These studies aim to improve the well-being and quality of life for individuals and communities, particularly for marginalized or vulnerable populations. Assessing the impacts of recent events on farmer livelihoods falls within this framework of development studies. Firstly, the events studied have significant

socioeconomic consequences, and studying their effects on farmers can shed light on how it affects existing inequalities and poverty levels and identify potential interventions to reduce impacts. Moreover, sustainable economic development is an important aspect of development studies. This study assesses the disruptions caused to agricultural activities, income generation, and overall stability of livelihoods, which can inform ways to make livelihoods more resilient. Finally, this study can provide insights to design development policies to mitigate the (future) negative impacts of shocks to rural livelihoods and enhance resilience.

Following this introductory chapter, the second chapter discusses the theoretical embedding of the study. This chapter is divided into three sections. First, the theoretical lens used in the study is explained, followed by a review of the existing literature on the impacts of shocks on rural livelihoods. The literature review also takes a first dive into how the 5Fs crisis might have affected rural livelihoods and into coping strategies. The second chapter concludes by presenting the conceptual model underpinning this study. Chapter three presents the methodology of this research, including a sample description and methodological limitations. In chapter four, the regional context is discussed. Chapters five and six present the findings. Chapter five is dedicated to the results concerning the impacts on the national level. Chapter six presents the findings of what happened at the household level. The findings chapters are followed by a discussion that puts the findings into context based on the literature and the conceptual framework described in chapter two. The discussion further elaborates on the applications and limitations of the results. The final chapter presents the conclusions of this research.



# Chapter 2 – Theoretical Embedding

This chapter explains the theoretical foundation underpinning this study. It describes the theory with references to relevant literature on theoretical concepts and case studies overlapping with the topic. The chapter is divided into three subsections. In the first section, the theoretical lens – based on elements of the Sustainable Livelihoods Framework – is discussed in connection with the topic. The second section reviews a selection of the available literature on relevant case studies on the shock-livelihood nexus. The third section is dedicated to the conceptual model representing the research rationale and the connection between the concepts used in this study.

## 2.1 Theoretical Lense

### 2.1.1 Sustainable Livelihoods Framework

In the scholarship of development studies, the study of livelihoods holds a prominent place. Chambers and Conway (1992) defined *livelihoods* as the capabilities, material and social assets, and activities necessary for a means of living for an individual, household, or community (Chambers & Conway, 1992). Ellis (2000) expanded this definition by stating that access to these assets and activities, which institutions and social relations can moderate, is important (Ellis, 2000). Livelihoods are not fixed and can change over time through changing circumstances and livelihood decisions (Ellis, 2000).

In analyzing changes to the livelihoods of individuals and communities, the Sustainable Livelihoods Framework (SLF) is a widely used tool (Natarajan et al., 2022). The SLF (see *Figure 2.1*) was first developed by the Department for International Development (DFID, 1999) and is used as a comprehensive instrument to study how people live and to understand why different people make different decisions concerning their livelihoods (Scoones, 1998). It provides a comprehensive description of livelihoods as it connects household assets, livelihood activities, and moderating factors about the access to livelihood assets and activities to livelihood outcomes (Ellis, 2000). Changes in framework elements can affect livelihood outcomes and people’s lives (Levine, 2014).

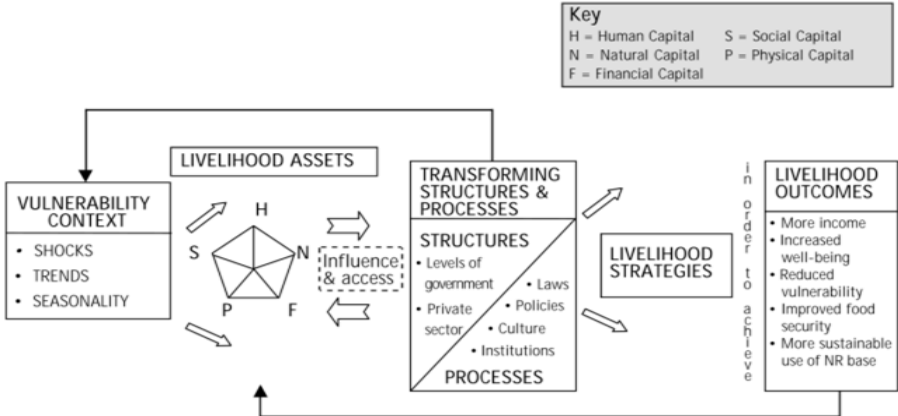


Figure 2.1: Sustainable Livelihoods Framework. Source: Department for International Development (1999).

While widely used, there are critiques on using the SLF to understand livelihood dynamics. One of the main critiques is that, despite its comprehensiveness, the framework still oversimplifies the complexities of the structures affecting livelihoods (Levine, 2014; Mclean, 2015). Still, the framework can guide particular research objectives concerning changes in people's lives (Natarajan et al., 2022). Subsequently, this study uses some elements and connections between the SLF elements while acknowledging the model's limitations.

**2.1.2 Livelihood Assets**

One of the SLF elements that are instructive for assessing the changes in the lives of smallholders in Cambodia is the *livelihood assets*. The livelihood assets are a vital element of the SLF and are defined as the resources people have access to and can be used to maintain a livelihood (Scoones, 2015). The framework divides livelihood assets into five capital categories; natural, human, financial, physical, and social capital (Ashley & Carney, 1999). *Table 2.1* gives definitions of the five livelihood assets categories with examples in the context of agricultural livelihoods adapted from Potter et al. (2012). The general idea is that access to more livelihood assets enhances the opportunity for better livelihood outcomes or well-being (Ellis, 2000). It follows that reduced access to livelihood assets may reduce the opportunities for beneficial livelihood outcomes.

Category	Definition & Examples
<i>Natural Capital</i>	Natural resources and ecosystems that play a role in livelihoods. E.g., rights to land, livestock, water, biodiversity, climate, and weather.
<i>Human Capital</i>	The knowledge, capabilities, and skills of individuals engaged in agriculture. E.g., labor provision, farming skills, level of education, and access to capacity building.
<i>Financial Capital</i>	The financial resources and assets available to support a livelihood. E.g., savings, access to credit, and different sources of income.
<i>Physical Capital</i>	All tangible assets owned or accessible to support a livelihood. E.g., machinery, storage space, agricultural inputs, and infrastructure.
<i>Social Capital</i>	The relationships, networks, and institutions used to support a livelihood. E.g., community, associations, connections, and knowledge exchange possibilities.

*Table 2.1: Livelihood assets in a rural context. Source: based on Potter et al (2012).*

**2.1.3 Vulnerability Context**

One of the factors affecting access to livelihood assets is the *vulnerability context*. The vulnerability context encompasses exogenic trends and shocks affecting livelihood assets and strategies (Ellis, 2000). Examples of trends in the vulnerability context of livelihoods include ongoing demographic changes, economic performance, policies, and technological advancements (Ellis, 2000). In comparison, shocks are sudden, unexpected, and temporal changes in livelihood circumstances like extreme weather events, diseases, or war (Ellis, 2000).

Following this categorization, the Covid pandemic is identified as a shock (Elleby et al., 2020; Rathnayake et al., 2022). The outbreak and impacts came about suddenly, and although the virus is still around, the direct impacts can be considered temporal. It is more difficult to determine which of the two categories the manifestations of the 5Fs crisis belong to. An unexpected sudden increase in price could be considered a shock, as well as a sudden unexpected fall in the supply of financing. However, there is too little research to mark the 5Fs crisis as a shock definitively. Moreover, Covid is one of the drivers of the volatility in commodity goods prices and, therefore, a driver of the 5Fs crisis, further complicating the categorization. Still, in this study, the 5Fs crisis will be cautiously regarded as a second shock to the livelihoods of Cambodian farmers, effectively working with the notion that during the 2020-2023 period, the farmers were subject to two overlapping shocks to their livelihoods; the Covid pandemic and the 5Fs crisis.

Exogenic shocks can impact livelihoods through different channels and affect livelihood assets, strategies, and outcomes (Scoones, 2015). According to Dercon (2002), the severity of a shock's impact depends on its intensity, frequency, and duration (Dercon, 2002). For this study, the combination of the Covid pandemic and the market disruptions, including price volatility of commodities, is considered and investigated as a layered exogenic shock to the livelihoods of smallholder farmers in Cambodia.

#### **2.1.4 Livelihood Strategies**

*Livelihood strategies* are defined as the various activities and approaches individuals or households undertake to secure and maintain their livelihoods (Ellis, 2000). The goals of livelihood strategies are to generate income, meet daily needs, and ideally improve the well-being of an individual or a household (Scoones, 2015).

Livelihood strategies vary depending on different factors, such as access to different capitals, skills, social networks, the specific context in which individuals or households sit, and the opportunities they provide (Scoones, 2015). Livelihood strategies are often dynamic and can evolve in response to changing circumstances, opportunities, and challenges (Ellis, 2000). Two types of changing livelihood strategies can be identified: adapting and coping (Scoones, 1998). Scoones (1998) defined *adaptive strategies* as strategies employed in reaction to either adverse changes to the livelihood context or new opportunities to maintain or improve livelihood outcomes in the long term. In contrast, *coping strategies* are defined as temporary adjustments to sudden, negative changes (shocks) in a reactive manner (Scoones, 1998).

Adaptive changes to livelihood strategies include diversification, accumulation, specialization, and migration (Ellis, 2000). *Table 2.2* gives definitions and examples of these four strategies in the rural context based on Ellis (1998) and Mulwa and Visser (2020).



Strategy	Definition & Examples
<i>Diversification</i>	Spreading risks and opportunities by engaging in multiple income-generating activities. E.g., crop diversification, taking on an additional side job, starting a small business on the side.
<i>Accumulation</i>	Increasing assets and resources over time. E.g., save earnings, invest in productivity growth, and stockpile resources.
<i>Specialization</i>	Becoming highly skilled in a specific occupation or activity with the potential to earn a higher income. E.g., high-yielding crop specialization, quit other activities to work on one job.
<i>Migration</i>	Individuals or a complete household move to another location for better livelihood opportunities. E.g., move to urban areas with better education and employment opportunities.

**Table 2.2:** Adaptive livelihood strategies in a rural context. Source: based on Ellis (1998).

Small (2007) finds that, in contrast to the positive effects of adaptation strategies, the literature couples coping strategies with the harmful effects on the sustainability of livelihoods. Moreover, coping strategies can have lasting adverse effects on livelihoods despite the temporal nature of shocks (Small, 2007). Berchoux et al. (2019) present a threefold distinction between coping strategies regarding their reversibility (Berchoux et al., 2019). *Table 2.3* gives the definitions of the three categories with examples. The distinction indicates to which extent the coping strategies in reaction to shock damage the sustainability of a livelihood.

Strategy	Definition & Examples
<i>Reversible</i>	Temporary shifts in activity that can be reversed once the impacts of a shock fade out. E.g., use of savings, reduced consumption of luxury goods, borrowing money from relatives, temporary employment.
<i>Erosive</i>	Disposal of long-term productive assets to deal with short-term impacts. E.g., selling land or equipment, taking high-interest loans, reduced nutritional intake.
<i>Destitution</i>	Forced strategies due to collapse of livelihood due to impacts. E.g., forced sale of house and land, and migration.

**Table 2.3:** Reversibility of coping strategies in a rural context. Source: based on Berchoux et al., (2019).

Individuals or households that can employ reversible coping strategies in case of a shock are deemed more resilient than households forced to opt for erosive coping strategies (Berchoux et al., 2019). They are considered more resilient because the employment of reversible coping strategies indicates the presence of a buffer. A buffer can be used to maintain livelihood stability when needed without depleting essential resources. Households with a buffer are, therefore, generally more resilient to shocks (Ifejika Speranza et al., 2014).

## **2.2 Literature Review**

This section reviews relevant literature related to various aspects of the topic. It explores previously identified impacts of shocks on rural livelihoods and gathers responses to these challenges. Additionally, it delves into other valuable insights concerning the topic. It delves into the specific impacts and responses to the Covid crisis and the 5Fs crisis manifestations. While there is substantial research on the effects of Covid on rural livelihoods, the academic literature currently lacks coverage of the 5Fs crisis. Therefore, literature on how each of the five elements relates to rural livelihoods is examined.

### **2.2.1 Covid Impacts**

Covid impacted rural livelihoods through different channels. While Covid is a disease, direct health impacts are not prominent in the literature. Carreras et al. (2020) studied the health impacts of Covid on rural livelihoods in sub-Saharan Africa. The study identified the occurrence of the disease but did not further look into the implications of household members falling ill (Carreras et al., 2020). Downs-Tepper et al. (2021), did identify several implications for livelihoods after households had contracted the virus in a case study on poor urban dwellers in India. Contracting the virus and getting sick temporarily prevented household members from participating in income-generating activities, leading to income losses (Downs-Tepper et al., 2021). While the urban setting is significantly different from a rural setting, it can be expected that this consequence is the same in a rural setting. In a more global context, Levin et al. (2022) find that the health impacts of Covid are significantly higher in developing countries due to inadequate access to healthcare (Levin et al., 2022). Following the findings of Strasser et al. (2016), rural households may be even worse off as healthcare access in developing countries is often worse in rural areas (Strasser et al., 2016).

The literature on Covid-shock induced livelihood impacts draws most attention to other impact channels. The main two impact channels discussed are governments' measures to contain and mitigate the spread and effects of Covid, and further market disruptions during the pandemic. Several studies indicate that government interventions most impacted livelihoods (Jaacks et al., 2021; Krauss et al., 2022; Nolte et al., 2022; Rathnayake et al., 2022). For example, in a review of the literature on the impacts of Covid, Rathnayake (2022) highlights that most studies find that governmental mitigatory strategies aimed at stemming the spread of the virus have had a more significant impact on livelihoods than acute health impacts (Rathnayake et al., 2022). For this reason, Krauss et al. (2022) solely focus on the impacts of government interventions (Krauss et al., 2022). The government interventions impacting rural livelihoods include both national and international mobility restrictions, for example lockdowns, border closures, and travel restrictions (Haque et al., 2022), and closure institutions and businesses (Rathnayake et al., 2022).

The research on the effects of Covid on rural livelihoods identifies impacts on various activities and assets. Studies looking into agricultural livelihoods find that farming activities were affected in several ways, including reduced access to agricultural inputs such as fertilizers and pesticides due to inflated prices and availability issues (Balana et al., 2023; Middendorf et al., 2021; Rathnayake et al., 2022; Sitko et al., 2022), disrupted supply chains (Tripathi et al., 2021), reduced availability of labor (Middendorf et al., 2021; Rathnayake et al., 2022), which together led to reduced productivity of the farming operation (Middendorf et al., 2021; Stephens et al., 2022; Tripathi et al., 2021) lower demand for produce and lower sales prices (Haque et al., 2022; Rathnayake et al., 2022; Workie et al., 2020), and disruptions of market places and trade opportunities (Elleby et al., 2020; Sitko et al., 2022). All of these impacts lead to a reduction in the profitability of farming, thereby affecting household income.

In the case of Bangladesh, studied by Haque et al. (2021), farmers lost money on their farming activities due to difficulties selling the products due to mobility restrictions imposed by the government which affected marketing opportunities and caused demand to drop. The study also finds that the price of agricultural products had decreased due to closures of restaurants (Haque et al., 2022). Boughton et al. (2021) find that in Myanmar, the price at which smallholder farmers could sell their produce also decreased. This decrease is in part attributed to reduced access to markets (Boughton et al., 2021). Carreras et al. (2020) find that, in the case of Sub-Saharan Africa, marketing options also reduced due to less traders coming to rural towns to buy the farmers' products (Carreras et al., 2020). Haque et al. (2021) add that because of worse access to markets, some farmers could not sell their perishable produce, which resulted in the products going to waste (Haque et al., 2022).

As several studies (Boughton et al., 2021; Krauss et al., 2022; Swarna et al., 2022) did not specifically focus on households engaged in agriculture but rather on rural households in general, some differences between agricultural and non-agricultural households did emerge. Boughton et al. (2021) and Krauss et al. (2022) find that the impact on access to food was lower for households engaged in agriculture as these households could consume their own crops (Boughton et al., 2021; Krauss et al., 2022). Moreover, Id et al. (2022) find that, in rural China, the negative impact on income was lower for agricultural households than for households that do not have an agricultural income (Id et al., 2022), a finding supported by Swarna et al. (2022), who find that, in Bangladesh, the Covid-shock had a smaller impact on the income of informal laborers engaged in the agriculture than on the income of laborers in other informal occupations (Swarna et al., 2022). Thus, according to these studies, there are benefits to being engaged in farming during the Covid-shock.

Apart from impacts related to farming, other aspects of the livelihoods of rural households were also impacted. Households engaged in farming can have additional sources of income. The research shows that these additional income sources were also affected by the Covid-shock. Mahmud and Riley (2023) find that Ugandan rural households did lose a significant part of their non-farm income mainly due to the closure of businesses (Mahmud & Riley, 2023).

Janssens et al. (2021) identify that the income of rural households in Kenya further decreased due to a reduction in gifts and remittances from family (Janssens et al., 2021). This can be linked to the effects of Covid on migration. Nolte et al. (2022) argue that the restrictions on mobility installed by governments may have led to forced non-migration as borders closed, meaning that individuals could no longer migrate elsewhere to find a better income (Nolte et al., 2022). Moreover, in a study on migration in India, Behera et al. (2021) found that the Covid-shock caused reverse migration towards rural areas. People migrated back from cities to their rural homelands because they had lost their jobs in the city, which impacted the amount of remittances received by rural households (Behera et al., 2021).

The Covid-shock also impacted education. Nolte et al. (2022) state that due to school closures, children who would normally go to school remained home, which sometimes resulted in the children working on the farm instead of following education. They further argue that school closures may cause dropout rates to increase, especially for children in poorer households (Nolte et al., 2022), based on research into the effects of Ebola on education by Smith (2021).

Rural households were also impacted by an increase in food prices (Espino et al., 2021; Middendorf et al., 2021) and a resulting lower level of food security which sometimes led to households having to skip meals (Gatto & Islam, 2021; Stephens et al., 2022).

The impacts of the pandemic are not the same for all households. Several studies highlight the heterogeneity of the impacts among households. Krauss et al. (2022) found that households with unstable livelihoods were impacted more by the Covid-shock than households with stable livelihoods before the pandemic (Krauss et al., 2022). This finding is shared by Workie et al. (2020), who point to pre-existing vulnerability indicators such as landlessness (Workie et al., 2020). Thus, the pre-Covid vulnerability or resilience of households partly explains the difference in impact. In addition, Id et al. (2022) who studied the heterogeneity of Covid-induced impacts among households, find that a main determinant of the household-specific impact is whether the shock had led to the interruption of agricultural production or employment in non-farming jobs. They concluded that the differences were due to the finding that not all agricultural production and non-farming employment were affected similarly (Id et al., 2022).

Next to pre-existing vulnerabilities and inconsistent outcomes of circumstances, the health situation of household members is also found to be a factor explaining the differences in impact. In a study on the case of Bangladesh, Gatto et al. (2021) find that whether or not households were affected by sickness significantly affected the severity of the overall impact of the pandemic. The households that reported Covid contraction also reported more impacts on their livelihood than those that did not contract the virus (Gatto & Islam, 2021). Thus, while the circumstances of the Covid-shock may be similar, the household-level impacts are not.

### 2.2.2 Impacts of 5Fs Crisis

Several recent studies have raised concerns over the rising food prices globally since the start of the Covid pandemic. One part of the research considers the rising food prices driven by Covid (Dasgupta & Robinson, 2022; Janssens et al., 2021), and another part looks into how other global disruptions further pushed the increase of food prices in recent years (Artuc et al., 2022; Ben Hassen & El Bilali, 2022b; Saâdaoui et al., 2022). For example, Saâdaoui et al. (2022) argue that geopolitical factors have significantly affected food prices in the last few years, including the war in Ukraine, and Brexit (Saâdaoui et al., 2022).

The increasing price of food negatively affects food security, both globally and individually (Ben Hassen & El Bilali, 2022b). The increased food prices have led to households skipping meals to save on food expenses, as well as saving on other expenditures like education to afford food (Janssens et al., 2021). A relevant addition in the context of agricultural households is made by Giller et al. (2021), who argue that the impact of rising food prices on households is bigger for households that spend more money on buying food than they earn from selling food because the increased profits from the sale of products will likely not weigh up against their food expenses (Giller et al., 2021).

There is little literature available on the developments in the price of feed. In the case of Ethiopia, Negash (2022) finds that the demand-supply gap opened up in recent years, leading to higher prices for feed. This made it harder for Ethiopian farmers to make a profit out of livestock farming (Negash, 2022). According to Fróna et al. (2019), one of the potential drivers of increasing prices for feed is the competition for arable land between food, fuel, and feed (Fróna et al., 2019).

Increased energy prices driven by the war in Ukraine have increased prices for chemical fertilizers and fuel globally (Arndt et al., 2023; Behnassi & El Haiba, 2022). However, Arndt et al. (2023) state that the effects of rising prices for fuel and fertilizers on countries depend on each country's economic structure and policies. Some countries might be able to subsidize to offset the price increases, while other countries may not (Arndt et al., 2023). An increase in fuel and fertilizer prices affects farmer households similarly; the profitability of farming is affected negatively if the farming activities require these inputs. Higher prices for fuel and fertilizers especially affect vulnerable farmer households that depend on farming for their income. According to Arndt et al. (2023), increasing prices can lead to increased poverty and a decline in local or national food security (Arndt et al., 2023).

Reduced access to finance for agricultural purposes in the last few years has yet to be studied. Access to finance enables smallholder farmers to increase productivity by adopting modern farming techniques (Fadeyi et al., 2022). Smallholder farmers can use loans to acquire modern machinery, advanced agricultural inputs, and install irrigation. The traditional barriers to financing for smallholders include the absence of financing sources, the high cost of borrowing, and high transaction costs (Balana & Oyeyemi, 2022). Lacking access to finance can affect productivity growth, which negatively affects household income and poverty reduction (Cabannes, 2012).



### 2.2.3 Coping Strategies

The literature highlights different responses to the impacts on rural household livelihoods. Several studies find that households diversified their income to deal with the impacts (Boughton et al., 2021; Carreras et al., 2020; Krauss et al., 2022; Middendorf et al., 2021). Middendorf et al. (2021) found that, in the Senegalese case, household members engaged in additional off-farm income-generating activities during the pandemic to supplement the farming income (Middendorf et al., 2021). However, Krauss et al. (2022) found in their case study on Mozambique that this form of income diversification was not always effective because the Covid-shock also impacted the sectors in which household members tried to make an additional income (Krauss et al., 2022).

According to Tripathi et al. (2021), farmers' coping strategies varied based on factors such as the size of the farming operation, their production methods, and their access to capital. The bigger farmers could get money to help them in the short term, whereas smaller farms worked together, started growing food for consumption, and sold assets to cope with the impacts (Tripathi et al., 2021).

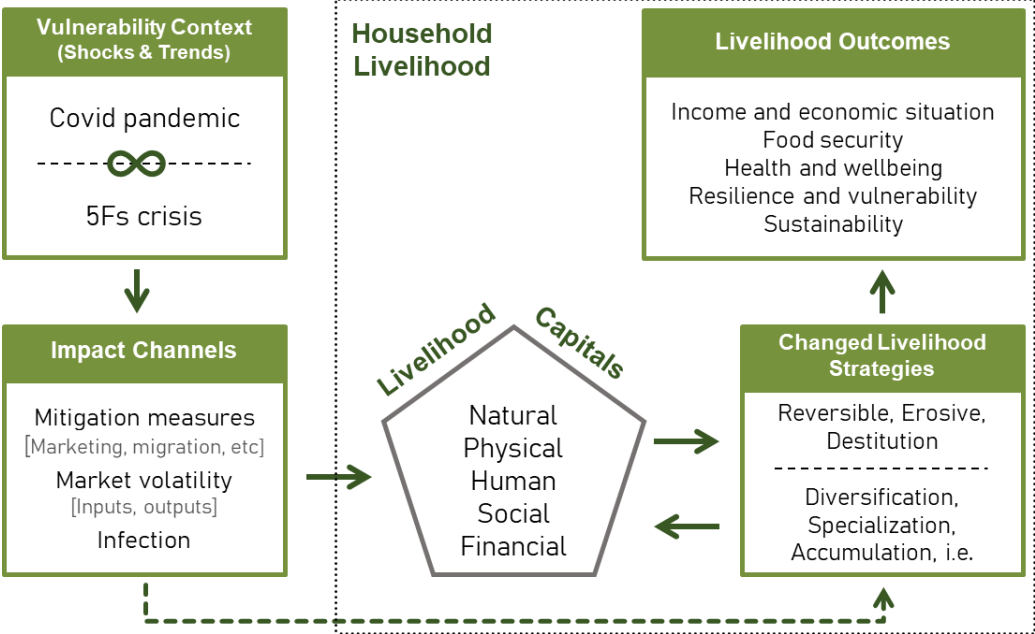
Another observed response strategy involves changes to farming practices (Middendorf et al., 2021). Mulwa and Visser (2020) found examples of on-farm diversification, including changing or increasing crop variety and changing inputs. Opting for different crop varieties and inputs was done to reduce costs and increase profitability by choosing less expensive inputs and higher-yielding crops or crops that can be sold at a better price (Mulwa & Visser, 2020). Hoyweghen et al. (2021) find that due to uncertainty of prices, Senegalese vegetable farmers changed their produce from horticultural crops to staple crops. They made this switch because the price for staple crops is less volatile and staple crops can be stored longer so they do not spoil when they cannot be sold (Van Hoyweghen et al., 2021).

In Uganda, the loss of non-farming jobs meant that the amount of time spent working on the farm increased intending to make more profit from farming (Mahmud & Riley, 2023). Mahmud and Riley (2023) also found that some farmers planted fewer crops and applied less fertilizer (Mahmud & Riley, 2023). Similarly, Senegalese farmers reduced their farming operations in response reduced demand by decreasing the amount of land farmed on (Van Hoyweghen et al., 2021).

In reaction to the rising food prices and reduced income, farmers in Indonesia started to use more of their own produced food, which they would typically sell — in doing so, saving on food expenses (Stöber et al., 2021). Another response was reducing the consumption of food, sometimes skipping meals or reducing the variety of food consumed (Gatto & Islam, 2021; Nguyen et al., 2020; Stephens et al., 2022). More strategies employed to deal with the inflation in prices of necessary expenses identified are the use of emergency savings (Rathnayake et al., 2022; Sitko et al., 2022), sale of assets (Sitko et al., 2022), and borrowing money from family or taking loans to cover expenses (Rathnayake et al., 2022).

### 2.3 Conceptual Model

The conceptual model illustrates the research approach (see *Figure 2.2*). The model visualizes the relationships between the concepts and ideas used to examine the research questions. The model combines several elements of the SLF, including the vulnerability context, livelihoods capitals, livelihood strategies, and livelihood outcomes.



*Figure 2.2: Conceptual model underpinning the study*

As mentioned before, the combination of Covid and the manifestations of the 5Fs crisis is the shock that exerts stress on household livelihoods. The impacts of this layered shock manifest themselves through three different channels, encompassing mitigation measures, market volatilities, and virus infection. The shock touches upon smallholder farmer households' livelihood capitals and livelihood strategies through these different impact channels. Negative impacts are expected to reduce access to the livelihood capitals. The option for changing strategies is also expected to be affected by the shocks. The impact on strategies may be through restrictive measures that, for example, prevent migration.

Nevertheless, households are expected to have changed their livelihood strategies in response to the shock-induced impacts. These changes are classified as adaptive or coping strategies. Depending on this classification, the strategies can be further identified regarding their reversibility, following the work of Berchoux et al. (2019), and as one of the four main livelihood strategies listed in Table 2.2. While this study looks at shock-induced impacts, the conceptual model also considers adaptive strategies as the research period covers over three years.

Finally, the livelihood outcomes and the changes therein are investigated. During the period of interest, households have been subject to the shocks and have reacted to these shocks leading to specific livelihood outcomes. Differences in impacts, strategies, and outcomes are expected due to differences in access to capital and other contextual and endogenous differences between households.

## Chapter 3 – Methodology

This methodology chapter presents the research design and the methods employed to address the research objectives of this thesis. It describes the data collection, the analysis, and the validity and reliability of the study. The data used in the analysis is collected through different channels and consists of both primary and secondary data, in line with the study's exploratory nature. The chapter further highlights methodological decisions and considerations and discusses the researcher's positionality.

### 3.1 Research Questions

The study employs four sub-questions to achieve the objective of the study, namely to find out how Cambodian smallholder farmers have responded to the changes during the 2020-2023 period in light of the stresses induced by the Covid pandemic and the market disruptions connected to the 5Fs crisis. Each of the four questions covers a part of this central question, so the combination of answers to the sub-questions answers the central question. The four sub-questions are:

- 
1. *How did the Covid-pandemic impact Cambodia?*
  2. *Was Cambodia impacted by manifestations of the 5Fs crisis, and in what way?*
  3. *How have the livelihoods of Cambodian farmer households been impacted by the Covid pandemic and manifestations of the 5Fs crisis?*
  4. *What have been the responses of Cambodian farmer households to the impacts?*
- 

The first two sub-questions identify how the two exogenic shocks have impacted Cambodia nationally. Following existing literature, it is assumed that Covid impacted Cambodia. However, since there is yet to be research on the manifestations of the 5Fs crisis, the second sub-question is used to assess if Cambodia was indeed subject to this crisis. Since both questions could be used as main research questions, the answer's scope is limited to the more prominent impact indicators linked to the context of smallholder farmers.

The third and fourth sub-question zoom in on the household level. First, an assessment is made of the impacts to which the households were subject during the period, followed by the response or change in livelihood strategies employed by the household in reaction to the impacts.

### 3.2 Research Methods

Qualitative and basic quantitative research methods were used to answer the research questions. A combination of desk research and informal and formal interviews was used to answer the first two sub-questions. The desk research consisted of reviewing secondary data, informed by formal and informal interviews on the two topics. These methods were chosen because they allowed access to a wide range of data in little time, which was necessary as the

objective underlying these questions is to provide context to sub-questions three and four, which can be considered more the essence of the study. In other words, the complementary character of the first two questions fits well with the chosen research methods.

The third and fourth sub-questions are answered mainly by analyzing the data collected through qualitative semi-structured interviewing, supplemented by secondary quantitative data analysis, field notes, and observations. The proceedings from interviews form the main body of primary data and are at the core of the analysis. These methods for these two questions were selected because they fit well to identify impacts and responses on the household level. Interviews allow us to delve deeply into the respondents’ experiences on how their household livelihoods have changed. Asking open questions allows for gaining comprehensive insights that cannot be accessed through other methods. Using interviews further improves contextual understanding, especially since interviewing allows for flexibility in questioning and opens up the possibility of coming across unexpected answers. Combining interviews with quantitative data analysis, field notes, and observations further enriches the data.

**3.3 Operationalization of Concepts**

The translation of the concepts used in the research question into measurable indicators is presented in *Table 3.1a* and *Table 3.1b*. The formulation of interview questions and search keywords for secondary data is based on these indicators.

Concept	Scope	Observable Indicators
<i>Impacts of Covid on Cambodia</i>	Health impact	Covid infections and deaths, indirect stress on the healthcare system.
	Economic impact	Changes in economic activities and GDP growth paths, sector-specific changes.
	Government interventions	Measures taken in response to the pandemic, restrictions, or support.
<i>Manifestations of the 5Fs crisis</i>	Food security	Increased price of food or indications of reduced availability.
	Feed accessibility	Increased price of feed or indications of reduced availability.
	Fuel accessibility	Increased price of fuel or indications of reduced availability.
	Fertilizers accessibility	Increased price of fertilizers or indications of reduced availability.
	Finance accessibility	Increased price of financing products or indications of reduced availability.

*Table 3.1a: Conceptualization of research concepts.*

Concept	Scope	Observable Indicators
<i>Impacts on household livelihoods</i>	Health impacts	Contracting Covid
	Farming impacts	Changes in accessibility of inputs, changes in demand for produce, productivity loss.
	Income impacts	Changes to different sources of income; farming activities, other employment, remittances.
	Perception of impacts	Severity of impacts, compared situation before Covid with the current situation, between households.
	Food security impacts	Changes in the amount of food consumed, changes in the variety of food consumed.
<i>Responses of households to impacts</i>	Consumption	Changes in the level of consumption, either for personal use or for income-generating activities.
	Income diversification	Changes in income-generating activities, taking up other activities, including migration.
	Disposal of assets	Sale of assets to cover expenditures, either non-productive assets or productive assets.
	Specialization	Reducing income-generating activities
	External assistance	Receiving help from outside the household to deal with impacts.

**Table 3.1b:** Conceptualization of research concepts continued.

### 3.4 Primary Data

Next to field notes, observations, and informal conversations, the primary data was collected by conducting 25 semi-structured interviews with households, five in-depth interviews with village chiefs, and four in-depth interviews with stakeholders<sup>1</sup>. This data was gathered within three months, between February 2023 and May 2023, on different sites in Cambodia. All of the interviews took place in person. The interviews with stakeholders are conducted in English. The interviews with households and the interviews with the village chiefs were held in Khmer<sup>2</sup>, with the help of an interpreter.

The household interviews were structured using a comprehensive interview guide<sup>3</sup> which the interpreter used to ask the questions. In between the questions, the interpreter communicated the answers to the researcher, allowing the researcher to make notes and probe for clarification or elaboration. The same interpreter did help throughout the entire phase of interviews as it is best to work with the same interpreter. By not having multiple interpreters, the interviews were conducted in a similar fashion. Furthermore, the interpreter did learn and improve her understanding of the interview guide and research aim from one interview to the next.

<sup>1</sup> Interviews were held with the teaching staff of the Royal University of Agriculture, a research consultant working in agriculture, an employee of a microfinance institution, and with researchers of ECOLAND, a research center focused on agriculture.

<sup>2</sup> Official language of Cambodia which is not spoken by the researcher.

<sup>3</sup> A survey-like interview guide, an example fragment can be found in *Appendix 1*.



### 3.4.1 Sampling Strategy

The 25 household interviews, held with members of smallholder farmer households, took place in five villages; Trapeang Ang, Trapeang Chouk, Preaek Sbov, Tang Krang, and Anlok Kaong (see *Figure 3.1*). These villages are located in three provinces; Takeo, Kampong Thom, and Battambang. The villages were selected in line with the research objective and within practical constraints. Considering the study's exploratory nature, the aim was to get an idea of different ways in which households were impacted and responded. Therefore, it was decided not to focus on one part of Cambodia but rather to do the interviews in different locations to increase the chance of ending up with a sample of households with heterogeneous livelihoods. Ideally, the interview locations would be spread out more, but due to practical constraints, this was not possible within the time allocated to the fieldwork. Due to the limited availability of the interpreter, the options were limited to rural areas close to easy-to-reach urban centers.



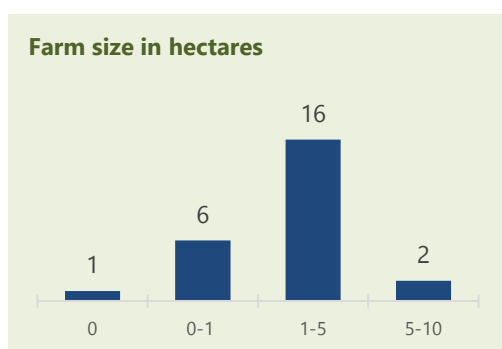
**Figure 3.1:** Map of Cambodia with interview locations. Source: adapted from Nations Online Project ([nationsonline.org](http://nationsonline.org)).

The final selection of villages was made in cooperation with the National Institute of Statistics, which could get in contact with village chiefs. These village chiefs played the gatekeeper role to the villages' households. It is only allowed to go around villages conducting interviews with the consent of village chiefs. Upon arrival to the village, and after informing the village chief about the relevance criteria, the village chief would point out the households he believed fit for participating in the interviews.

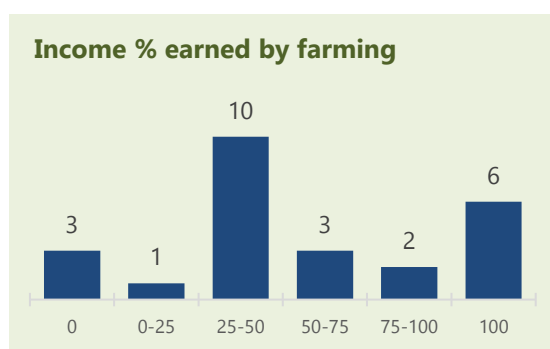
### 3.4.2 Sample Description

This study's population of interest consists of Cambodian smallholder farmer households producing crops, livestock products, or both. Households belong to the category of smallholders if the land used for farming is at most 10 hectares or 100,000 square meters.

The household interviews were held with one member, if present, with the head of the household. In terms of gender, the sample is equally distributed; 12 of the interviewees are female. The average age of the interviewees is 47 years, with the youngest being 20 years old and the oldest 68 years old. Many of the interviewees belonged to the oldest generation within the household. They had children of working age and grandchildren. The average household size is five members. One of the interviewees reported having had no schooling at all, ten had attended primary school, eleven did have secondary education as the highest level, and the other three reported to have been enrolled in higher education. One household reported not owning land besides the parcel on which the household's house stands<sup>4</sup>. Three households rented the land they used for farming activities, and the other 21 reported owning all the land they used. The land owned ranges between 0.2 and 10 hectares (see *Figure 3.2*).



*Figure 3.2:* Sample farm size, N=25.



*Figure 3.3:* Sample income from farming %, N=25.

Four households reported farming only for consumption; the other 21 sold at least a part of their farming produce. *Figure 3.3* depicts the distribution of income from farming as a share of the total household income. Three households did not generate any income through farming as they did not sell any of their produce. Six households relied solely on the income generated through farming activities. Other income sources were remittances and formal jobs such as garment factory workers or teachers. For the 21 producing households, rice was reported as the main crop; the other three households mainly produced vegetables.

### 3.5 Secondary Data

In addition to the primary data, secondary data is used in answering the research questions. Sub-questions one and two, on the national impacts of Covid and the manifestations of the 5Fs crisis in Cambodia, are answered with data obtained through secondary sources. The sources used include academic literature, grey literature, and news articles. This combination

<sup>4</sup> This household was engaged in agriculture through waged labor. Thus, the household did have an income from farming but not through the sale of produce.

was opted for because of the recency of the events studied. There still needs to be more academic literature on either shock in Cambodia, especially considering the period up to March 2023. The grey literature is mainly extracted from renowned institutions like the World Health Organization, The World Bank, and The Asian Development Bank. While these reports lack academic rigor in reporting, the analyses can be trusted to a certain extent and therefore serve the purpose of identifying trends. News articles are also among the sources used in answering the first two research questions. Again, in light of the recency of the events, it was necessary to take on Cambodian news outlets like the Khmer Times and the Phnom Penh Post to get an idea of what happened in the country. Still, due to the nature of these sources, their data is handled with caution.

A significant secondary data source used in answering sub-questions three and four is a set of statistical data provided by Cambodia's National Institute of Statistics (NIS, 2021, 2022b, 2023a). This dataset contains the outcomes of the three Cambodian Agricultural Surveys held in 2019, 2020, and 2021 (see *Box 3.1*). The data provided insights into what happened in the first year after the outbreak of Covid and is used as a supplement to the primary data collected in the household interviews. Unfortunately, due to differences in questioning and the presentation of the data, not all CAS indicators are fit to compare over the three years; for this reason, most of the CAS data is presented in the form of percentages. For example, only in the latest two CASs questions about the impact of Covid are asked.

*Box 3.1*

#### **Cambodian Agricultural Survey (CAS)**

"The Cambodian Agriculture Survey (CAS) is a large-scale household survey conducted with approximately 16,000 households on an annual basis. The survey is carried out by the Cambodian National Institute of Statistics (NIS) in partnership with the Ministry of Agriculture, Forestry and Fisheries (MAFF), and with technical support from the Food and Agriculture Organization of the United Nations (FAO). The survey measures crop cultivation, raising livestock and poultry, and aquaculture and captures fishing operations in the country. The data collected and generated from this survey is used in the formulation of plans, policies and programs for the development and improvement of the agriculture and fisheries sectors in Cambodia." (Food and Agriculture Organization, 2022)

### **3.6 Methodological Limitations**

There are several limitations to the methodological approach, some of which are inherent in the methods employed; other limitations are related to the application of the methods. Also, it discusses the positionality of the researcher. This section gives a brief overview of these limitations.

#### **3.6.1 Sample Size and Selection**

A limiting factor to the representativity of the study is the sample size of the household interviews. While the 25 interviews did provide valuable insights into how the two shocks have impacted the households, a larger sample would be preferred to come closer to data saturation. Moreover, the way in which the villages were selected allows for bias in the sample.

One likely bias that might influence the data validity is the closeness of the villages to urban centers. Also, it should be noted that by interviewing households active in agriculture at the time of the interview, there was no possibility of finding households impacted to the extent of being forced to quit farming.

### **3.6.2 Interpretation Bias**

The use of an interpreter increases the chance of interpretation bias. Despite efforts to instruct the interpreter in the best possible way, there will likely be more interpretation bias in the data than doing interviews without an interpreter. Moreover, using an interpreter makes it harder to confirm that the interviewee completely understands what is asked, further increasing the potential for interpretation misalignment. One question was omitted from the results due to indirect hints that more interviewees needed to understand what was asked of them accurately.

### **3.6.3 Limitations Due to Rapid Assessment**

The recency of the events studied meant less reliable knowledge was available to study the topic. Not all data needed could be sourced from reviewed literature. Moreover, the recency of the events made it harder to validate the findings as there is less similar research.

### **3.6.4 Causality**

The research aims to find the impacts of and responses to Covid and the 5Fs shock, implying a causal relationship between these two shocks and the changes in the livelihoods of the smallholder farmer. While the research does provide insight into the changes in livelihoods, it is impossible to attribute these changes entirely to one of the shocks or both. Other endemic or exogenic factors may have affected the livelihoods in the same period.

### **3.6.4 Positionality of the Researcher**

Researching in a different country with a different culture and customs was challenging — fortunately, the good contact with Cambodians before the interviews did help in getting somewhat accustomed. The excellent relationship with the interpreter also helped me be aware of cultural differences, beliefs, and local manners.

Still, reflecting on the power dynamics between me as the interviewer, the interpreter, and the interviewees is good. Based on our feelings and how the interviewees treated us, they felt comfortable discussing their situations. However, me being a European, coming to the village with the support of a government institution could have caused a perception of an unequal power relation. This might have affected how comfortable the interviewees were to give certain answers that might, for example, be critical of the Cambodian government despite the assured confidentiality.

My personal view on the world and cultural and academic background do affect the initial interpretations of the data as well as the approach of the research. I have discussed the approach and data with several people, including Cambodian experts, to reduce the influence. However, my positionality likely led me to think in directions that may not be the best in the context, perhaps by assigning more importance to things that I find important.

## Chapter 4 – Regional Thematic Framework

### 4.1 Country Characteristics

Cambodia is located in Southeast Asia, bordered by Thailand to the west, Vietnam to the east, Laos to the North, and the Gulf of Thailand to the southwest. It has diverse landscapes, characterized by low-lying plains and fertile river deltas around Asia's largest freshwater lake, the Tonle Sap, and the Mekong River. Cambodia has a tropical climate with wet and dry seasons. Of the approximately 17 million people living in Cambodia, 2,3 million live in the capital city of Phnom Penh (World Population Review, 2023). It is estimated that 75 percent of Cambodia's population lives in rural areas, following a downward trend (World Bank, n.d.-c). The population is relatively young, with an average age of 27 years (Statista, 2019).

Cambodia is a constitutional monarchy. Hun Sen has been the Prime Minister of Cambodia since 1985, making him one of the world's longest-serving prime ministers (Wikipedia, n.d.). The country, once colonized by France, maintains close relations with several countries, including China, Japan, the United States, and the European Union, and receives assistance from these countries in developing the country. Cambodia is a member of the Association of Southeast Asian Nations (ASEAN) and the United Nations.

The dominant religion in Cambodia is Buddhism, which has an important role in the country's culture and people's daily life. The official language of Cambodia is Khmer. Family and community are highly valued in Cambodian society. Cambodians respect elders and have strong family ties, especially in rural areas where generations often live together in the same household. Another factor that still plays a role in Cambodia's society is the national trauma of the Pol Pot regime<sup>5</sup>. The horrific events during the regime continue to affect Cambodian society (Hagai, 2022).

In the years before the pandemic, Cambodia experienced rapid economic growth with an average GDP growth rate of 7 percent per year from 2011 to 2019, driven by sectors including garment production, tourism, and agriculture (World Bank, 2023c). The country depends on trade for its economic performance as it is still strengthening its domestic economy (World Bank, 2022). During this time, poverty rates decreased significantly, from 33.8 percent to 17.8 percent at the end of 2019, mainly through increased wages (Karamba et al., 2022). There is, however, a significant disparity between the rural and urban in Cambodia, with the urban being significantly better off in terms of sanitation, clean water, and income (Asian Development Bank, 2021).

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<sup>5</sup> The Pol Pot regime, or Khmer Rouge, was a brutal communist regime that ruled Cambodia from 1975 to 1979. The regime, led by Pol Pot, wanted to transform Cambodia into an agrarian utopia. The regime was responsible for forced labor, widespread violations, and mass killings. This resulted in the death of an estimated 1.7 million people (Hagai, 2022).

## 4.2 Agriculture

Despite a downward trend in economic contribution, agriculture is still essential to Cambodia's economy, accounting for 20 percent of the total GDP in 2019 (World Bank, 2023a). The sector accounted for approximately 40 percent of total employment in 2019 (World Bank, n.d.-a), with the majority of the people living in rural areas dependent on agriculture (U.S. Agency for International Development, n.d.). Rice is the most cultivated crop in Cambodia (Asian Development Bank, 2021). Other frequently cultivated crops include rubber, cashew nuts, corn, cassava, mangoes, bananas, vegetables, and pepper (NIS, 2022a).

In the years before the pandemic, the government has undertaken successful efforts to enhance the productivity of the agricultural sector. These initiatives involved promoting the adoption of modern technologies, expanding irrigation systems, and utilizing fertilizers and pesticides to improve agricultural practices (Asian Development Bank, 2021). While organic farming is on the rise in Cambodia, most farmers now use pesticides and chemical fertilizers to fight pests and increase their yields (Abhishek et al., 2021; Flor et al., 2019; Matsukawa et al., 2016). In 2021, 91 percent of farming households reported using chemical fertilizer, and 52 percent reported using pesticides (NIS, 2023a). Furthermore, there is an issue of overuse of pesticides in Cambodia (Schreinemachers et al., 2020). Together with labor, pesticides, and fertilizers constitute the main expense for cultivating crops (Chhay et al., 2017), making farmers vulnerable to price fluctuations.

At the same time, the agriculture sector is exposed to serious risks, especially from climate change (Gartrell et al., 2020; Sotha, 2019). Cambodia's agricultural sector experiences floods, droughts, extreme storms, and river bank collapse, leading to failed harvests (Bairagi et al., 2020). In February 2020, Cambodia's government published the Agricultural Sector Master Plan 2030. The goal of the government is to develop the agriculture sector so that it becomes more competitive, inclusive, resilient, and sustainable, which in turn, should increase the income of farmers and the well-being of all Cambodians (MAFF, 2020).

Smallholder agriculture is vital in Cambodia. It employs a large portion of the population and significantly contributes to the national economy. Approximately 75% of farmers in Cambodia are engaged in smallholder agriculture (United Nations Cambodia, 2023). Smallholder agriculture serves as the primary source of livelihood for many rural households. Moreover, smallholders play a vital role in producing food, creating rural employment opportunities, and reducing poverty (Asian Development Bank, 2021). In the years to come, the MAFF expects, however, that small-scale farming will lose ground to larger rural enterprises and that, due to the mechanization of the sector, the amount of labor needed in agriculture will also decrease (MAFF, 2020).

The CAS data shows that of the estimated 2.2 million agricultural holdings in 2021, 49% was smaller than 1 hectare. A further 21% reported to be between 1 and 1.9 hectares, and a further 28% between 2 and 10 hectares. **98%** of household-owned agricultural holdings are estimated to be **smaller than 10 hectares** (NIS, 2023a).



Smallholder agriculture in Cambodia faces several challenges, including limited access to land (Bliss, 2022; Diepart et al., 2019), poor infrastructure (Azam et al., 2012), and the aforementioned weather, and climate change impacts (Parsons, 2017). Limited access to land is one of the underlying reasons for poverty in rural Cambodia which means that many households get their income from daily wage work, or from one or more family members engaged in seasonal work or employment elsewhere (Bliss, 2022).

A relative lack of education in the current generation of smallholder farmers may pose further challenges. Bruns et al. (2022) researched the influence of cognitive performance on the economic performance of smallholder farmers in Cambodia. Their findings suggest that impeded cognitive function can hinder smallholder farmers from escaping poverty (Bruns et al., 2022).

Another challenge to the sustainability of agricultural livelihoods is over-indebtedness. The provision of financing by banks and microfinance institutions (MFIs) plays a vital role in Cambodia’s agriculture (Guermond et al., 2022). Small loans provided by MFIs are used for purposes such as purchasing inputs and equipment. However, loans are also used to cover living costs. Bliss (2022) observes that this leads to over-indebtedness; households take new loans to pay off the former loans (Bliss, 2022).



# Chapter 5 – Impacts on National Level

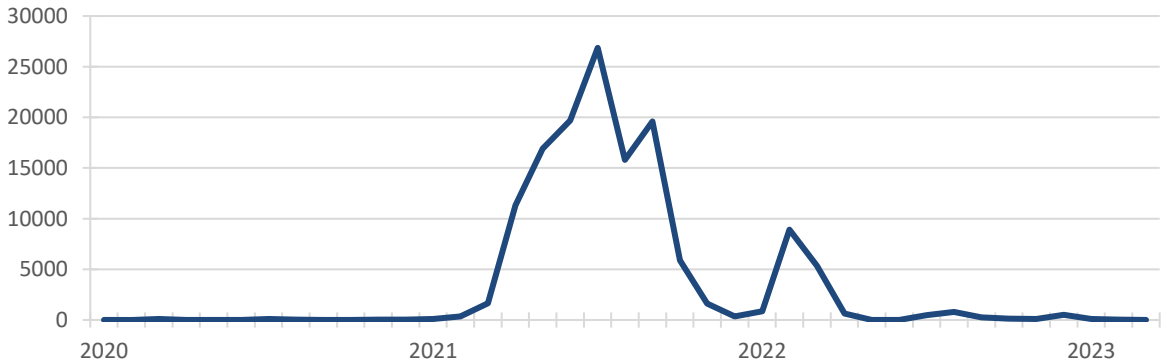
This chapter presents the results of the secondary data analysis on the impacts of Covid and the 5Fs crisis on the national level – corresponding to the first and second sub-questions. The section on Covid consists of three sub-sections dealing with the national impacts in terms of health, the government interventions, and the impacts on the economy. The section on the 5Fs consists of five sub-sections, each discussing one of the 5Fs.

## 5.1 Impacts of Covid on Cambodia

### 5.1.1 Health Impacts

According to the World Health Organization (WHO), between February 27<sup>th</sup>, 2020, when the first confirmed Covid case was registered, and April 2023, there were 138,000 confirmed cases of Covid in Cambodia (WHO, 2023a). Most cases were reported during 2021, almost 150,000 (see *Figure 5.1*), whereas in 2020, only 366 cases were reported. Relative to its population, the total number of reported cases translates into 8,200 cases per million people. This number is significantly lower compared to neighboring countries Thailand, which reported 66,000 Covid infections per million people (WHO, 2023c), and Vietnam which reported 117,000 infections per million people (WHO, 2023d). Moreover, according to the WHO data, the number of deaths attributed to Covid relative to the population is also lower compared to Thailand and Vietnam. For the same period, Cambodia reported 3056 deaths, or 182 per million people, compared to 473 per million in Thailand and 440 per million in Vietnam (WHO, 2023d, 2023c, 2023a). Based on these numbers – assuming they are complete and correct – the direct health impact of Covid has been comparatively low.

#### New Covid cases per month, Cambodia



*Figure 5.1: New Covid cases reported per month in Cambodia. Source: World Health Organization (2023).*

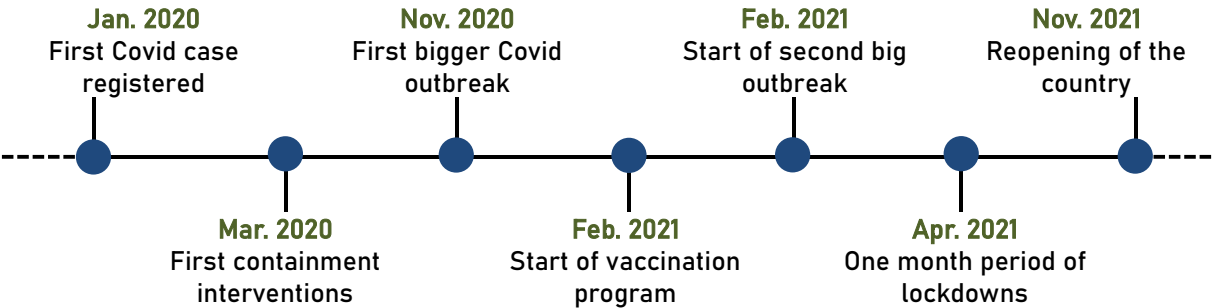
Currently, no research is available that sufficiently explains the difference between the three countries. Yet, one explanatory factor is the successful vaccination program of Cambodia’s government (Chhim et al., 2023; Nozaki et al., 2023). Starting its vaccination program on February 10<sup>th</sup>, 2021 (Kongnov & Badzmierowski, 2021), Cambodia managed to accomplish an 80 percent first dose rate in October 2023, whereas Thailand and Vietnam were still at 50 and 40 percent (WHO, 2023a, 2023d, 2023c). A year later, in 2022, Cambodia’s first dose vaccination rate reached 91 percent. The success of the vaccination program and the success of other

measures that were taken to dampen the spread of the disease are also attributed to the good cooperation of the public (Chhim et al., 2023). In informal conversations<sup>6</sup> with Cambodians held during the fieldwork, the strong cooperation of the public was recognized and confirmed. According to the people, there was little resistance to government measures, and people were mostly willing to get the vaccines. It was said that in Cambodian society, it is normal to not question the government in this respect and to do as the government instructs.

Next to the direct health impacts of Covid infections, the Covid-shock also brings about secondary health impacts (Clay & Rogus, 2021; Global Financing Facility, 2020). According to UNICEF (2022), the pandemic did lead to extra pressure on Cambodia’s health systems and services, impacting well-being (WFP et al., 2022). There is, however, at this moment, little other literature that addresses the extent of the secondary health impacts in Cambodia. Yet, in several informal conversations<sup>7</sup> with Cambodians, the impact of Covid on mental health was mentioned. In these conversations, it was mentioned that people’s mental health had deteriorated during the Covid crisis, specifically during the lockdown period. Young people struggled with the lack of social interaction as schools and other public venues closed. Other people who had lost their jobs during the pandemic did experience repercussions for their mental health. In these conversations, the people also put forward that mental health care in Cambodia is generally lacking, which increased the impacts during the pandemic. For some people spoken to, the impact on their mental health was experienced as the most severe impact of Covid on their well-being.

**5.1.2 Government Interventions**

After the initial outbreak of Covid in late 2019, Cambodia’s government did not immediately install measures in response to the threat. News reports from that time describe how Cambodia’s government, led by prime minister Hun Sen, believed there was no need for preventive action (S. Heng, 2020). However, the government’s stance changed in March 2020 and first measures were taken by the government to contain the spread of the disease (see *Figure 5.2*).



*Figure 5.2: Timeline of Covid in Cambodia.*

<sup>6</sup> The informal conversations took place throughout the three months between February 2023 and May 2023.  
<sup>7</sup> The informal conversations took place throughout the three months between February 2023 and May 2023.

The first government intervention was the closure of all education institutions nationwide, starting the 16<sup>th</sup> of March 2020 (The Ministry of Education Youths and Sports, 2020). The closure disrupted the learning of an estimated 3,2 million students and 93 thousand teachers (The Ministry of Education Youths and Sports, 2020). To keep on providing education, a switch was made to online teaching. However, this did not work for all schools and students, especially for those in remote areas due to lacking internet access or stability (WFP et al., 2022). Savrin and Sokunthy (2023), find that during the school closures, both teachers and students had troubles with the digital structures as well as with increased stress and anxiety (Savrin et al., 2023). Schools were reopened on 6 September 2020 and closed again on the first of December the same year only to be definitely opened again on the first of November 2021 (Chhim et al., 2023).

Starting in mid-March 2020, the land borders between Cambodia and Vietnam, and Cambodia and Thailand were closed for both people and trading (Chhim et al., 2023). After some in-between (partial) border openings (Phnom Penh Post, 2021b), the border with Thailand fully reopened on May 1, 2022 (Khmer Times, 2022b), the border with Vietnam was fully reopened in the same month (UCA News, 2022). The closure of border between the nations did have impact on trade, tourism, and migration (Chhim et al., 2023).

Border closures in Thailand and Vietnam did affect Cambodian who had migrated to either of these two countries (Bunthea et al., 2022). Before the pandemic, many Cambodians had migrated to Thailand to find work (International Organization for Migration & ARCM, 2021). During the pandemic, many of them lost their jobs and had to return to Cambodia (Bunthea et al., 2022). At the end of 2021, according to Cambodia's National Committee for Counter Trafficking, more than 260,000 migrants had returned to Cambodia, most of them from Thailand (Phnom Penh Post, 2021c). According to Bunthea et al., many of these migrant workers had moved to other countries because of limited opportunities for them in their home villages and when they returned they found themselves struggling to find work (Bunthea et al., 2022), and are often indebted (UNPFA Cambodia, 2020).

In March 2020, the government also cancelled and prohibited public events, and gatherings, including Khmer New Year<sup>8</sup>, weddings, funerals, and festivals (Chhim et al., 2023). In April 2021, parts of Cambodia went into lockdown. People living in the areas designated as red zones, were informed to not leave their houses for any other reasons than medical reasons (Tatum, 2021). This had implications for the food security of the households restricted by the lockdowns, despite government efforts to provide these households with food (United Nations Cambodia, 2021). The lockdown also put restrictions on the movement between villages and communes (Chhim et al., 2023).

To support vulnerable people that were impacted by the pandemic, the government also took supportive measures. Started in June 2020, the Government has put into action a nationwide

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<sup>8</sup> A three-day public holiday in April marking the end of the traditional harvest season.

cash transfer supporting the poorer and vulnerable households impacted by Covid (Chhoeung et al., 2022). Since it started, approximately 700,000 households, identified by the IDPoor program<sup>9</sup>, have received over 1 billion US dollar in cash transfers and the program will continue throughout 2023 (WFP et al., 2022). In addition to support for the most vulnerable, the government put in place certain policies aimed at rebooting the country’s economy after Covid by supporting the tourism, manufacturing and agricultural sectors (Ministry of Economy and Finance, 2023), and the government put in place food assistance programs during the lockdown (United Nations Cambodia, 2021).

In November 2021, most restrictive measures were abandoned and the country’s economy and society opened up again (Chhim et al., 2023).

**5.1.3 Economic Impact**

Figure 5.3 shows the annual GDP growth of Cambodia. Following years of rapid growth, Cambodia’s GDP decreased by 3.1 percent in 2020 due to the impact of the pandemic (World Bank, n.d.-b). According to the World Bank, the three most affected sectors are tourism, manufacturing, and construction; each of them being vital sectors in Cambodia’s economy (World Bank, 2020b). The following year, in 2021, GDP did start to grow again, albeit at a lower rate than in the years before the pandemic. In 2022, the growth rate increased further, signifying economic recovery. This recovery is attributed to the country’s shift to the state of ‘living with Covid’ and the connected removal of restrictive measures at the end of 2021 (World Bank, 2022).

**Annual GDP Growth %, Cambodia**

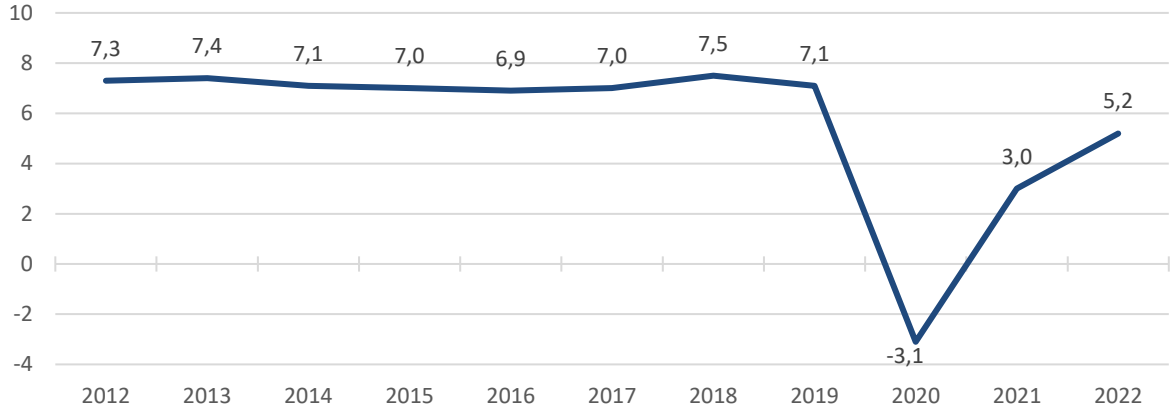


Figure 5.3: Annual GDP growth in %. Source: The World Bank (2023).

On the household level, Covid significantly impacted employment and income (WFP et al., 2022). The aforementioned contraction of the economy has led to a decrease in household income. Before the pandemic, 28 percent of households had an income lower than 150 US dollars per month. In July 2021, 66 percent of households had an income below 150 US dollars, improving to 52 percent by December 2021 (World Bank, 2022). A share of the households that

<sup>9</sup> The IDPoor program identifies poor and at-risk households for social assistance services (Department of Identification of Poor Households, n.d.).



had escaped poverty in the years before the pandemic fell back into poverty as a result (Asian Development Bank, 2021). Households engaged in the informal sector, especially households in rural areas, were more likely to fall below the 150 US dollar income level (World Bank, 2022).

According to the World Bank (2022), job losses and income reductions were very high between March and July 2021 when strict measures were in place. People with jobs in tourism and garment manufacturing and people working in the informal sector were most affected (World Bank, 2022). One of the coping strategies employed by people in response to the loss of jobs in cities was returning to family-owned land in the rural areas of Cambodia and taking up farming to generate an income and a source of food (WFP et al., 2022).

The impact of Covid on the agriculture sector, from a national point of view, is said to have been lower compared to the impact on other important sectors (World Bank, 2022). However, falling harvest prices led some farmers to struggle with debt repayment, resorting to land or product sales (World Bank, 2020a). The World Farmers' Organization (WFO) noted that poor Cambodian farmers had difficulties buying health products, and were impacted by fewer buyers of their produce and transportation options for getting their products to the markets (World Farmers' Organisation, 2020).

With the opening up of the country towards the end of 2021, Cambodia's economy recovered as tourism and trade picked up (World Bank, 2023b).

## **5.2 Manifestations of the 5Fs Crisis**

In this section, data is presented that indicates the extent to which Cambodia has been impacted by a 5Fs crisis during the 2020-2023 period. The situation around food, fuel, feed, fertilizers, and finance is discussed using both secondary (statistical) data and proceedings of interviews and conversations.

### **5.2.1 Food**

According to the food price index (see *Figure 5.4*), food prices increased during 2020-2023. The index price of food and non-alcoholic beverages increased by 12 percent between January 2020 and March 2023 (NIS, 2023b). The price index of Cambodia's main staple food, rice, increased by just 6 percent. The price index of meat increased by 14 percent, and the price index of vegetables by 16 percent in the three years.

The United Nations Nutrition Cambodia (UNNC) reported that Cambodia faces threats to food security and nutrition resulting from rapid increases in local and global food prices. The increasing cost of food produced in Cambodia is said to be caused by the increase in the price of fuel, transportation, and crop inputs (UNNC, 2022).



### Food Price Index, Cambodia

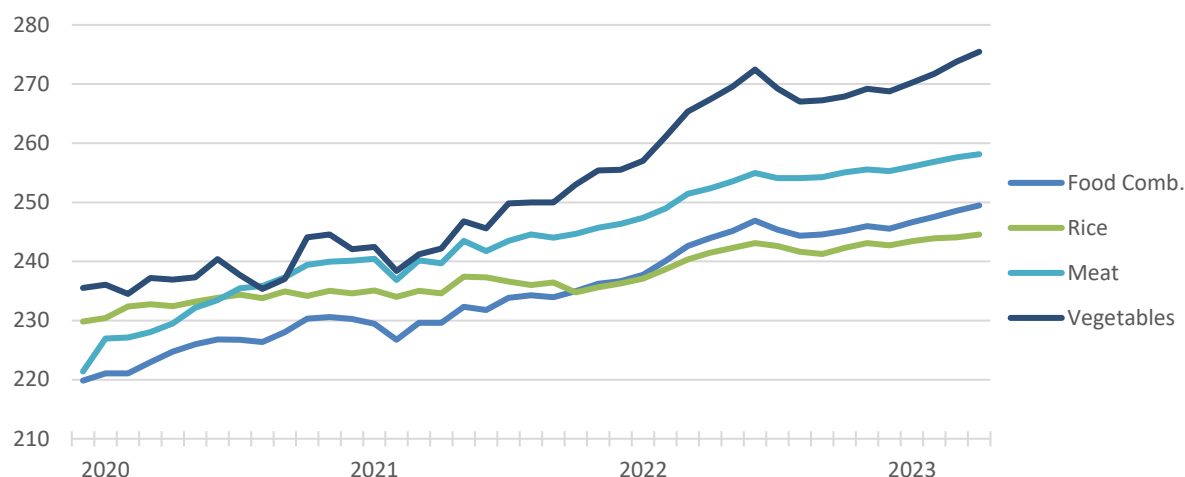


Figure 5.4: Consumer food price indexes<sup>10</sup>. Source: Cambodia’s National Institute of Statistics (2023).

### 5.2.2 Fuel

The price for fuels changed during the 2020-2023 period. The available data on gasoline shows that the price for a liter of gasoline was higher in 2023 than it was at the time when the pandemic started (see Figure 5.5). During the period, the price of gasoline and other fuels decreased significantly at the beginning of 2020. This is attributed to the economic downturn caused by the onset of the pandemic (Duppati et al., 2023). This resulted in a drop in demand and, thereby, a drop in the price of fuels. After the initial decrease, however, the price did increase to its peak in June 2022. At that time, the price for gasoline was 40 percent higher compared to the price before the outbreak of the pandemic. At that moment, Cambodia’s government decided to intervene. The government intervened to relieve some of the financial burden of the inflation of prices to limit the negative economic consequences. This was done by enforcing a maximum price per liter of fuel (Khmer Times, 2022c). Hereafter, the price of fuel remained stable at a level around 25 percent above the pre-pandemic price.

### Gasoline prices in US dollar per liter, Cambodia



Figure 5.5: Cambodian gasoline prices in USD. Source: Trading Economics (Trading Economics, 2023).

<sup>10</sup> Index based on Cambodian riels. Average of October - December 2006 = 100.

### 5.2.3 Feed

There are no statistics available on the development of feed prices in Cambodia. However, indications of the feed situation can be found in news articles in Cambodian newspapers. For example, in an article about a newly opened feed plant, the minister of MAFF is reported to have said that the opening of the plant is important for supplying the local market with feed, especially during times like Covid, highlighting the importance of the reduced need to import from other countries (Phnom Penh Post, 2022).

In the same article, Sun Prov, the president of the Cambodia Livestock Raisers Association, is quoted saying that the opening of the plant will help local farmers because of more competition in the price of feed. In the article, the following quote is used:

*"Currently, imported animal feed prices are rising by about 20 percent, so if there are more local factories, farmers will be able to buy at a reasonable price. More factories can absorb agricultural products that are raw materials ... to help create markets for farmers,"* – Sun Prov, Phnom Penh Post, 2022.

Another indication that the price of feed has gone is given by a report by the United States Department of Agriculture (USDA). In this report, it is stated that the production of certain feed input crops in Cambodia had increased due to rising demand for feed, increasing the price of feed on the local and international market (USDA, 2023).

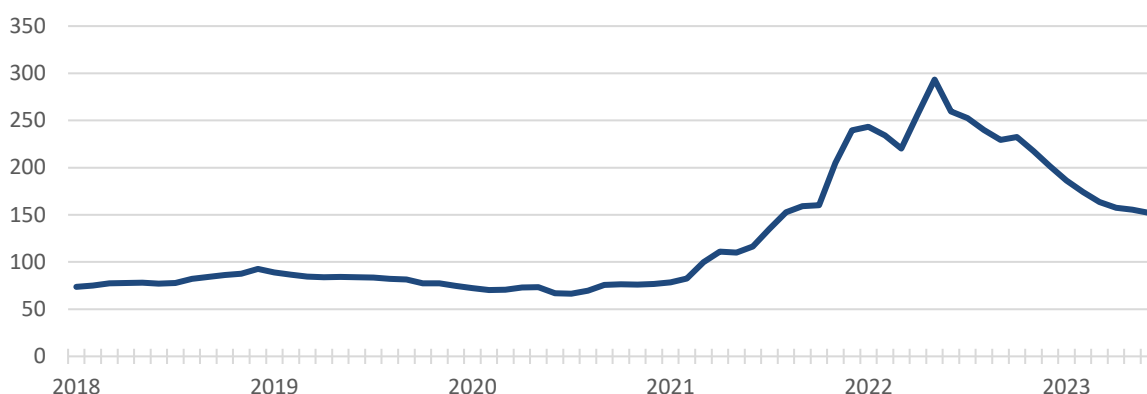
More data was found regarding the feed prices in neighboring country Vietnam. Reports say the price of feed did increase since the start of Covid due to several reasons, including the pandemic, adverse weather, and the Russia-Ukraine conflict (Pig333, 2022). The Phnom Penh Post reported on the increase in feed prices in Vietnam on March 21, 2021, reporting that farmers in Vietnam were facing losses due to price increases caused by dependency on imports and the high market demand due to crop failures in China (Phnom Penh Post, 2021a).

### 5.2.4 Fertilizers

Several indications indicate an increasing price of fertilizers during the 2020-2023 period. In June 2022, the Khmer Times reported on the steep increase in the price of imported chemical fertilizers (Khmer Times, 2022a). In the article, a reference is made to local news reporting an increase in price between 200 and 300 percent. It is said that this steep increase in price has become a challenge for farmers. The article further highlights that the rising fertilizer price had increased the demand for locally produced and natural fertilizers (Khmer Times, 2022a).

The world price index for fertilizers shows that since the start of 2020, the price has increased, peaking in the middle of 2022 (see *Figure 5.6*). Since then, the world market price has dropped but is still double the price index at the start of 2020. As chemical fertilizers are a commodity traded on the world market, local prices for fertilizers are dependent on the world market price.

## Fertilizers Price Index, World



**Figure 5.6:** Fertilizer world price index. Weighted average of natural phosphate rock, phosphate, potassium, and nitrogenous prices. Based on current US dollars, 2010=100. Source: The World Bank (2023).

### 5.2.5 Finance

The main providers of loans to smallholder farmers are banks and microfinance institutions (MFIs). According to the CAS 2021 data, 57 percent of Cambodian farmer households' loans are sourced from MFIs and 30 percent from banks.

In an interview held with an MFI representative on March 15, 2023, several aspects of the recent changes in financing surfaced. Two government interventions that restricted microfinance institutions were discussed. The first one is the imposed restriction on the interest rate in 2017. The government decided that the interest on financing products offered by institutions like MFIs could not exceed 18 percent (D. Heng et al., 2021). This posed a problem for the formal financing sector because it impeded their options to give out loans with higher risks attached. In other words, this intervention restricted access to loans for those who could not provide enough securities for the financing institutions. In the case of farmers, it became harder for those with lower incomes or with less available collateral to get a loan. A study by the IMF subscribes to this report and further finds that MFIs shifted to larger borrowers, moving away from smaller ones (D. Heng et al., 2021).

In addition to setting a maximum interest rate, the MFI interviewee also reported that during the pandemic, financing institutions were instructed to be more lenient with payback terms. If loan-takers did not meet the contractual payback moments, the financial institutions were asked by the government to extend the payback moments. They were asked not to take punitive action to limit the liability, such as forcing people to sell their land or other capital assets, as many MFI loans in Cambodia are collateralized (VOA News, 2020).

This second intervention further restricted MFIs from operating their business and did weigh in on the profitability. While the MFI the respondent worked for continued operating their business in Cambodia, he did state that other MFIs had left the country or were looking to exit the Cambodian market because of the new regulations. The respondent said that the MFI he works for provided fewer loans after the new regulations. It was mentioned that the poorer farmer households were rejected more when they applied for a loan.

# Chapter 6 – Impacts & Response on Household Level

This second findings chapter presents the impacts and responses on a household level. These findings are based on the household and village chief interviews, supplemented by CAS statistics. The chapter is divided into sections, each discussing an indicator. Some indicator sections discuss impact and response to the impacts; others discuss impacts or the responses to impact. The first two sections delve into the impact on the households’ agricultural activities, including the use of inputs, marketing, and profitability of farming. In the second section, other household impacts are grouped, including impacts on education, food security, and other income-generating activities. The third section presents the outcomes of questions about the perception of households on the impacts as well as future outlook..

The CAS 2021 data shows that **66%** of all private owned agricultural holdings reported to have been **impacted by Covid**.

The data shows reports of different **impacts of Covid** on farming activities. **46%** of agricultural holdings reported **decreased production** due to Covid. Other reported impacts are lower availability and affordability of inputs, sickness, changes in access to labour, and changes in access to market among others (NIS, 2023a).

## 6.1 Agricultural Inputs

The most prominent impact households felt was the inflation of prices and, specifically, the increase in price for agricultural inputs. Households were asked about changes in accessibility and affordability of agricultural inputs and if they reduced the use of the inputs or started to use alternatives to the purchased inputs. *Table 6.1* summarizes the responses.

Input	Used by Household	Availability Issues	Price Increase	Reduced Use	Use of Alternative
<i>Fuel</i>	18	0	18	5	-
<i>Feed</i>	2	0	1	1	1
<i>Fertilizers</i>	22	0	22	14	2
<i>Pesticides</i>	21	1	21	7	0
<i>Seeds</i>	18	0	12	0	-
<i>Labor</i>	8	0	6	4	2

*Table 6.1: Changes in (use of) agricultural inputs, N=24.*

### 6.1.1 Fuel

Fuel is used for multiple activities within farming activities. Despite owning little land, several households own small tractors to cultivate their fields. These tractors require fuel. Also, households use motorcycles that run on gasoline to commute between their homes and parcels and to transport inputs and harvests. While the fuel consumption of these machines is low, changes in the fuel price affect the overall profitability of the farming operation. Higher

fuel prices mean higher farm operating costs and, thus, lower profits. Indirectly, the fuel price can also affect households using hired labor. It is common for smallholder farmers to outsource some of the farm work. For example, when households do not own a tractor, rice fields can be prepared by hiring people who bring their tractors. As fuel prices change, the price charged per hectare worked can also change.

A total of eighteen households reported to be using fuel for their farming activities. Another five households reported not using fuel in a direct sense but through outsourced farming activities that require the use of fuel.

There have been no availability issues within the sample throughout 2020-2023. None of the interviewed households reported to have faced more trouble accessing fuel as compared to the situation before the pandemic. In four villages, there was a petrol station or a nearby petrol station where the households could buy the needed fuel throughout the period. In the fifth village, the petrol station was somewhat further away; in this case, there were no changes in accessibility reported by the interviewed households.

All households reported a change in the price of fuel. At the time of the interviews, they all said the fuel price was higher than before the pandemic. However, there are differences in how the price dynamic during the period was perceived. Some of them did not remember exactly how the prices of fuel compared throughout the last three years. Some households mentioned an initial decrease in the price of fuel during the early stages of the pandemic in 2020, while others did not. The households did, however, notice that the price increased and peaked in 2022, after which the price dropped and remained more or less stable. Still, because for most of the period, the fuel price was reported to be higher than before Covid, the households were impacted because they had to pay more for the same amount of fuel. Subsequently, this impacted the profitability of farming operations.

The households reacted in different ways to the rise in fuel prices. Five of the households tried to reduce their fuel consumption. This was not done by abstaining from activities that required fuel but by attempting to use it more carefully and economically. Other households changed nothing in reaction to the price increases. The increased price did not cause households in the sample to refrain from using machinery needed to work the land, nor did it have implications for other farming activities. Therefore, while the rise in fuel price affected the profitability of farming, the household did not report it as a direct cause of or reason for a reduction in production.

Apart from the use for farming activities, households also use fuel for non-farming activities. Most households use small motorcycles to get around, and some have small generators to generate electricity for household purposes. The increased prices either decrease the total purchasing power further or reduce the mobility or comfort of households. This was not inquired into during the interviews.

### **6.1.2 Feed**

No household was impacted by changes in feed availability or price changes during the three years, even though one household reported changes in the price of feed. Feed is used in livestock farming. Most of the households in the sample own some livestock. For the more significant part, the households owned chicken, some owned cows, and two households held pigs. The two households holding pigs reported buying feed used for the pigs. The other households feed their cows and chicken with food leftovers and grazing.

Neither of the two pig-holding households reported any feed availability issues during the three years. One of the households had been using a stock of feed bought during the early stages of the pandemic, which had lasted for the time being. Still, the respondent thought she would have had no trouble acquiring feed during the period if needed. The other household had been buying feed throughout the three years and did not face any difficulty accessing feed at any moment.

In terms of price changes, the two households reported something else. While the respondent of the household that had been buying feed did report that there had been no significant changes in the feed price, the respondent of the household that had not been buying feed reported that if she were to buy feed, the price would be significantly higher as compared to the prices before Covid. She explained that this would soon happen as the feedstock was running out. She also expressed her concerns about how the feed price increase may impact the future profitability of her household's pig farming activities. The household, therefore, pursued to do as long as possible with their stock of feed by supplementing the feed with other sources like food leftovers.

### **6.1.3 Fertilizers**

Farmers use fertilizers to increase their production of crops. None of the 22 households that reported having bought chemical fertilizers did have any difficulty accessing fertilizers during the three years. All these households could keep buying the same fertilizers in the same place as before the pandemic.

The households were all impacted by the changes in the price of fertilizers. For all 22 households, the price they had to pay for fertilizers had, at some point, gone up in 2020-2023. While most household respondents indicated that the price for fertilizers is still higher than before the pandemic, two respondents said the price they paid for the fertilizers had returned to the pre-pandemic level. Still, considering the entire 2020-2023 period, all households were subject to an increase in the price of fertilizers.

Fourteen households indicated they reduced fertilizers application on their crops in reaction to the price inflation. When asked what this meant for their production level, all believed the reduced use had led to a drop in crop production. For this reason, because some farmers expressed awareness of this relationship between fertilizers use and yield, they expressed that they did try not to use too little fertilizers as the save in costs would not weigh up against the



loss in income from the reduced harvest. Therefore, even though the farmers reduced their use, most paid more for fertilizers despite this effort.

The CAS data shows that between 2019 and 2021, the **use of fertilizers increased**. In 2019, fertilizers were used by 80% of the holdings, in 2021, this was up to 91% (NIS, 2023a).

Instead of chemical fertilizers, some farmers made use of organic fertilizers. In the sample, six households made use of organic fertilizers. Two households exclusively used organic, and the other four used organic and chemical fertilizers. The price increase of chemical fertilizers did not impact the two households that solely used organic fertilizers. As they produced the organic fertilizer, the price changes did not affect them. A shared feature among these two households is the relatively small farm size; both owned 1 hectare of land. Two of the four households using a combination of organic and chemical fertilizer did increase the share of organic fertilizer to reduce the effect of the increased price of chemical fertilizers.

#### 6.1.4 Pesticides

To protect crops against pests, farmers use pesticides. In the interview sample, 21 households reported having bought pesticides in the period of interest. One of these households did face an issue with the availability of pesticides as the product that this household would typically use was at one point no longer available. This, however, had little impact as the household could switch to a different available pesticide. It is not clear what caused the unavailability of the first product.

The reported price developments differed between and within the villages. All households reported an initial increase in price after the start of the pandemic. The price remained stable in the two villages after the initial increase. Households in the third village reported a further increase in price in the period after the Covid restrictions were lifted. Thus, all households have been facing higher prices for pesticides, some more than others, adding to the costs of farming and reducing profitability.

The CAS data shows that between 2019 and 2021 the **use of pesticides decreased**. In 2019, pesticides were used by 62% of the holdings, in 2021, this was down to 52% (NIS, 2023a).

In reaction to the price increase of pesticides, seven households reported reducing pesticide use during the period. While all of them had expected this would affect production, just three of these seven households believed this was the case. The others were unsure about the causal relation between the reduced use of pesticides and yield outcomes. None of the interviewed households stopped using pesticides altogether, and several respondents highlighted the benefits of using pesticides.

Three households that did not buy pesticides manufactured their organic substitute, made with chili peppers and rice wine. All three households were located in the same village. Not having to buy the chemical pesticide, the three households that used organic 'home-made' pesticides were not impacted by the price increase. One of these three respondents said he had learned about this recipe when he received agriculture training. He further explained that he preferred using organic pesticides over chemicals because of personal health. He said chemical fertilizers were bad for the farmer's health and the health of the people who consumed the produce on which chemical fertilizers were used. However, at the same time, the farmer also believed chemical pesticides to be more effective and efficient when used on a large scale. The three households using organic fertilizers were all relatively small within the sample.

### **6.1.5 Seeds**

Farming crops requires seeds. Eighteen households did report having bought seeds during the given period. The reported price developments differed between these households. Twelve respondents reported that the price of seeds has increased compared to before the pandemic. In contrast, six households reported that the price for seeds had remained similar. For none of the households impacted by a price increase, did this increase have direct consequences for the amount of crop seed bought. One of the households decided to buy more expensive seeds of a different variety of vegetables as they knew the profitability of the crop would be higher.

Six other households solely used the seeds they had saved from the previous year. Therefore, these households were not impacted by the increase in seed prices. One farmer said that using their seed from previous harvests resulted in a lower yield than using certain seeds that could be bought on the market.

### **6.1.6 Labor**

Farming is a labor-intensive activity. Crop farming requires the input of labor throughout the year. All households did have members doing farmwork. Several of the interviewed households employed external labor to help out with this work. The work that people are hired for is mainly the work that needs to be done in the preparation phase of farming rice. For the larger farms, people are also employed throughout the year to help with other stages of farming. None of the households that use external labor reported issues with reduced availability of labor.

Four of the households said they reduced their use of external labor. This was a reaction to the increased inputs and labor costs. At the same time, some households reported that the work done by household members increased during the pandemic. In two cases, this was to make up for the reduced use of hired labor. In one other case, it was mentioned that because of the pandemic, there were fewer other things to do. In one final case, the work done by household members increased because someone had returned from elsewhere and started to work on the farm.

In the interview with a woman whose household did not own any land but instead worked on other peoples' farms, she said that the Covid period did have a destructive impact on her income. While she had much work before the pandemic, this was very different during the pandemic. It was tough for her to find work, so she had a very hard time maintaining her livelihood. She did receive financial aid from the government as part of the ID-Poor program and some help from neighbors in the villages, without which she said it would have been very difficult to survive. For her, the situation has hardly improved since the pandemic resided; there is still little work for her. This impact led to her son dropping out of school, as she could no longer afford to pay for the school supplies. At the moment of the interview, she saw no other option but to keep looking for farm jobs as she did not receive any education. She also believed her son would end up doing the same, which she did not like. A distinction can be made between laborers that can bring their machinery and those who do not. The village chief of one of the villages mentioned that those who own a tractor and use this to work on other people's land can get good pay for their services. The woman did not have any machinery.

The CAS 2021 data shows that **21%** of private farming holdings make use of **occasional external labor** (NIS, 2023a).

## 6.2 Sale of Agricultural Products & Profitability

### 6.2.1 Impacts to Sale of Products

After harvesting, the farmers marketed their products in different ways, either by bringing the produce to markets where it could be sold to consumers or selling the produce to buyers who would come to the farms. Most respondents reported that selling their products was harder, especially during the Covid restrictions. One farmer and one village chief both mentioned that fewer buyers came to the village after the harvest, which gave the farmers fewer options to sell their produce. Another respondent said that the trade of goods within the village had increased due to the reduced access to markets and reduced demand. Instead of selling products to outside buyers, farmers would trade more among themselves and the other inhabitants of the village.

Regarding the level of sales prices for the products, eight households reported that the prices at the time of the interview were similar to those before the pandemic. Five reported the prices to be lower, and seven households reported the prices to be higher. Considering that most of the farmers' primary produce is rice, there appear to be differences between the villages. It should also be noted that during the period, the prices fluctuated; this was, however, not adequately addressed during the interviews. However, some respondents did mention that the sales prices dropped significantly due to reduced demand and the closure of markets during the Covid restrictions.

### 6.2.2 Profitability of Farming Activities & Response

While some farmers reported an increase in the price at which they could sell their products, this did not offset the increase in their inputs' prices. All interviewees reported a decrease in the profitability of their farming activities compared to before Covid. Due to the inflation of prices of inputs and the lack of compensation in sale prices, the profitability of farming had gone down for all households that did sell agricultural products. Subsequently, the income from farming decreased, affecting the total household income and financial situation. In response, as mentioned before, many households reduced their use of certain inputs. Furthermore, none of the interviewees reported an increase in production, and fourteen reported a decrease in production, further slimming down the income generated through agricultural activities. All in all, this resulted in eight households losing money in at least one of the years studied.

The CAS data shows that the **profitability of farming decreased** from 2019 to 2021. For 2019, 62% of the agricultural holdings reported to have made a profit. For 2020, this percentage decreased to 55%. In 2021, it decreased to **49%** of the holdings reporting to **have made a profit** from farming that year (NIS, 2023a).

However, this did not cause any household to stop farming at some point during the period. All interviewed households did continue their farming activities. Yet, three households decided to stop farming a part of their land because of the reduced profitability of farming. Parts of their parcels, usually not giving good yields, were left bare, saving on input costs. One respondent reported that the land was still not in use since 2021. The other two households did start farming on all their land again.

While not captured in the interviews, two village chiefs reported that some households in their respective villages had stopped farming altogether during the period. Some only for one or two seasons, others had quit farming and moved away to a city to find other work. The chiefs argued that this was caused by the increased difficulty of profiting from farming and better opportunities elsewhere.

### 6.3.4 Farmers' Associations

Just one household in the sample was part of a cooperation. All the other households were not part of a cooperation. Being part of the cooperation meant the farmer did get help in getting better prices for his produce through collective contracts rather than individual contracts. The cooperation also offered help in getting loans for farming purposes with better terms than standard agricultural loans. It is common to get a loan for agricultural inputs during the planting period that can be paid back after harvest. For this cooperation-endorsed loan, there was some insurance to cover when the harvest would fail. The household did not make use of this option to get loans for agricultural inputs. In the case of a failed harvest, the payback period of the loan could be extended due to the farmer being part of the cooperation. In the case of this farmer, this option was never needed.

Before the pandemic, the cooperation also organized agricultural training programs to improve farming practices. During the pandemic, up to the moment of the interview, there were no such programs organized. The farmer did not know if they would return and said that the cooperation has been less active in organizing and communicating since the start of the pandemic. Still, the farmer was happy to be part of the cooperation as it provided some support, and he believed it improved his position as a farmer relative to the buyers. He also hoped that the training programs would return.

The CAS data shows that **between 2019 and 2021, farmer association membership dropped**. In 2019, 7% of farmers were part of a formal farmers' association and 6% of an informal association. In 2021, the percentages dropped to 3% and 2%, respectively (NIS, 2023a).

## 6.4 Non-farming Impacts & Responses

### 6.4.1 Health

Direct health impacts from contracting Covid were present but limited. Within the sample, three households reported to have had a household member infected with Covid. One of these households reported that the infection did not do much harm to their livelihood. The contraction meant the members had to stay inside for some time, which had some repercussions for the household's income and mobility, but this was not perceived as a severe impact. The household was helped by neighbors to access food when they could not leave home. In one other case, the whole household contracted Covid twice, and as this household relied on non-farming jobs for their income, it had a more severe impact on the household's finances. The working member could not work for several weeks during the Covid period, which meant she did not make any money. In a third household, a Covid infection led to the decrease of one elderly member. When this member first contracted the virus, the household spent significant amounts of money on medical bills.

For two other households, pre-existing non-Covid related medical conditions of one member meant these households did have to spend increasing amounts of money on health as their conditions worsened during the pandemic. It did not become clear whether the accessibility of health services was impacted for these households during the period of interest.

### 6.4.2 Migration and Remittances

Migration to locations where it is considered easier to find a well-paying job is one of the strategies employed by farmer households to increase their income. Within the country, people can move to the bigger cities. Also, many people move to neighboring countries, Thailand and Vietnam, where the average pay is higher than in Cambodia. Complete households can move together to a new location, leaving the farm. In this case, the household can decide to sell the land to free resources for the replacement, or a household can decide to hold on to the land if their situation allows. It is more common that some household members (temporarily) move

away to find a job elsewhere and send back money. Through this, the income of the household is diversified through receiving remittances.

During Covid, the government imposed strict interventions regarding the movement of people. International borders were closed, and internal movements were restricted. At the same time, some of those who had gone to work elsewhere lost their incomes due to the economic recession and government interventions. In two of the villages, the role of migration was more significant, and the pandemic's impact on this aspect was mentioned more during interviews. In the early stages of the pandemic, household members returned from Thailand as they had lost their jobs. In another case, a household member was stuck in Thailand without a job. After some of the restrictions were lifted, he did move back in with his family in Cambodia. When he returned, his family started a small farming business to earn an income. Now, a year after coming back and having started the small farm, the household's ambition is to move to Thailand together as the income from farming is too low to provide for the household's expenses, especially now that they are expecting a child. During the pandemic, those households that received remittances from family members living away from the households stated that the money sent back had significantly decreased, worsening these households' financial situation. Still, the impact of the decrease did not cause severe issues for the interviewed households as they had other sources of income.

The CAS 2021 data shows that **12%** of agricultural households receive **remittances**. In 2021, **69%** of these households reported that the amount of remittance had **decreased** (NIS, 2023a).

More households mentioned that migration is something they consider to improve their livelihoods, especially those living further away from major cities. The financial barriers and lack of education put off these plans. In the village closest to the Thai border, the village chief expected that in five years, up to 30 percent of the people would migrate to Thailand to find better-paying jobs and leave the farming business behind.

**6.4.3 Non-farming Jobs**

Income diversification can be a good strategy to make a livelihood more resilient. The sample households had their farming income as a common denominator. However, what appeared from the interviews, most of the households had at least one member working a different job on the side.

The CAS 2021 gives the following data on how much of the household's income is accounted for by their **income from farming** (NIS, 2023a).

Share	<10%	10%-39%	40%-59%	60%-99%	100%
Households	13%	29%	35%	19%	4%



While in other parts of the country, some garment factories closed down, the one close to two of the villages in which the interviews were held remained open. The household's income from these jobs was, therefore, not directly impacted. For each household in these two villages, at least one member worked in this garment factory during weekdays. They would help on the farm on their day off.

There were also households in which members had non-farming jobs affected by the pandemic. In one case, a woman had her own small tailoring business. Before the pandemic, the demand was growing each year. During the pandemic, the demand dropped, and at some point, her only customer was her husband. In the last year, demand for her tailoring services has not increased. Nevertheless, she still has the ambition to expand her business to contribute significantly to the household's income in the future. In another case, a teacher lost some of her income due to the closure of schools. This did affect the households' total income significantly, as the contribution from teaching was more than half of the total income.

#### **6.4.4 Education**

Most of the households with children in school going age did manage to keep their children in school. Still, the children's education was impacted by the closures of schools during the pandemic. Some schools did offer online education, but this was suboptimal as most households do not possess computers, and not all schools could provide these online classes. As a result, the education of the children was disrupted. Several of the interviewed parents or grandparents voiced their concerns about this disruption, but all believed there was no lasting effect on their children.

In the sample, there was one case where a child dropped out of school because the family could no longer pay for the supplies. This happened after the schools reopened in November 2021. In another household, two adolescents did not drop out of school but stopped their education after middle school. This was initially not the plan; the household had hoped that these children would continue to higher education, but the family was forced to make this decision because of a worse financial situation. Apparently, the boys did not mind; they both got a job, one on his parent's farm and the other would move to Thailand in some weeks to work in construction.

#### **6.4.5 Household Spending**

Due to the inflation of prices and health risks, the spending of most of the interviewed households did change during the period of interest. Ten households said their total spending on non-farming-related expenses stayed similar. Two households reduced their spending, and thirteen reported that their expenses had increased compared to the period before Covid. The households were asked about five expense categories; food, health, education, maintenance, and non-essential<sup>11</sup>. *Table 6.2* lists the reported changes in spending in each of these

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<sup>11</sup> Non-essential expenses refer to optional spending on items or activities that are not essential for meeting basic needs or maintaining a standard of living. E.g., motorbikes, luxury goods, and extra clothing.

categories. A large share of the households spent more on healthcare, comprising the purchase of preventive equipment like masks and disinfectant, and in some cases, Covid treatment expenses. The increase in education expenses is unrelated to Covid induced impacts.

Category	Decreased	Similar level	Increased
<i>Food</i>	4	15	5
<i>Health</i>	1	11	12
<i>Education</i>	3	13	8
<i>Maintenance</i>	0	20	4
<i>Non-essential</i>	3	19	2

Table 6.2: Change in household spending (N = 24).

**6.4.6 Food Security and Variety**

Food security was impacted for some of the households, but the food situation was manageable throughout the period for most households. In the sample, twelve of the households did, at some point, struggle to access enough food. The main reason for the reduced accessibility was the increase in the price of food. Since the closure of markets, the prices for certain foods did increase, which further increased the impact on the households' financials. This resulted in households deciding to buy certain food products no longer and, therefore, changing their diet.

Another consequence was a decrease in the variety of the food consumed. This decrease in variety was the case for four households. Leaving out the more expensive foods and replacing them with staple foods saved money on food expenses without decreasing the amount consumed. Another reason that was put forward by three households for the lower accessibility of food is the fear of contracting Covid when going to the market to buy food. While this meant that the households would go to the market less often and try to avoid the busiest time, it did not affect the amount of food they consumed. This is also reflected in the result that just one of the households consumed less food in the given period.

Also, most of the households increased their own production consumption during the period. The use of own production reduced the impact of the increased prices. The one household that struggled with accessing food was without farming land of its own. Due to a shortage of money, the household had to save on food by buying and eating less.

**6.5 Response Strategies**

**6.5.1 Changes to Farming**

The households that continued their farming activities kept their farming practices the same. Besides reducing inputs, no households had made any significant changes to their farming practices. None of the households did switch to organic farming, nor did they specialize or diversify their produce. Farmers did not seem to be aware of the benefits or options when asked about the option to switch to organic farming.

Even though some farmers suggested that their farming activities hardly make a profit, none of the farmers in the sample did sell any land. One farmer stated that the land would be the last thing to sell as it is the base of his income. He would rather sell off other assets, such as his cows and jewelry, or take a loan. Another factor that surfaced during an interview with one of the village chiefs is the steady increase in land prices in recent years for that specific village. He stated that land value is rising, especially for land close to bigger cities, which may make people want to wait for the prices to increase further before selling their land.

### 6.5.2 Income Diversification

None of the households actively engaged in new income-generating activities in reaction to the adverse circumstances. Most households already generated income through different activities next to farming, and these activities did not change during the period.

### 6.5.3 Use of Loans

During the interview, the participants were asked if they tried to get a loan between 2020 and 2023. Eleven of the 25 households shared that they had been able to take a loan during that time. The purpose of the loaned money varied; one household intended to use the loan to build a new house, another for health expenses, seven for agricultural inputs, three for general expenses, and one for expanding farming activities after Covid receded. Interestingly, one household applied for a loan but unfortunately had their request denied by the bank. It was rejected due to the lack of collateral that the household could provide. Unfortunately, the interviewees were not eager to discuss loan details, like the amount or the interest rates.

### 6.5.4 Use of Savings

Not all households in the sample did have savings. Ten of them did and used these savings to cover increased expenses during the period. The savings were used for health expenses, food, festivities such as weddings, paying back loans, and general expenses. One household reported that their savings had increased due to increased income. The households who did not have savings had, instead, transferred their money into other tangible assets such as jewelry. Eleven households were reported to have sold assets like jewelry to cover increased financial expenses. The money earned from selling these assets was used for festivities, health expenses, food, and general expenses.

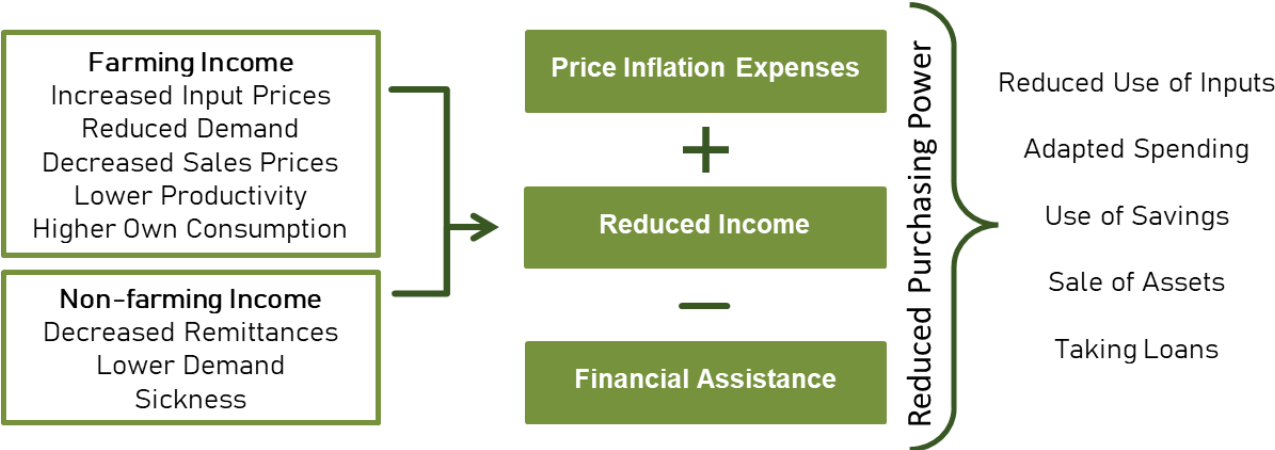
The CAS 2021 data shows that **24%** of agricultural households have **financial savings**. This is a 2% increase from 2020 (NIS, 2023a).

### 6.5.5 Received help

Six of the households received financial support at some point during 2020-2023. Four households received government cash transfers, as they were identified through the IDPoor program. This financial support helped these households to cope with the inflation in prices. One household had received help from the village chief in the form of agricultural inputs. Another two households reported that neighbors had given them food.

### 6.6 Main Identified Financial Impacts and Responses

The impacts of the compound shock are mainly described by how it affected the households' finances. *Figure 6.1* gives an overview of the main impacts on households purchasing power and the main strategies employed to deal with these impacts. Most of the households had to deal with reduced income at some point during 2020-2023. This was either due to reduced profitability of farming activities or a reduction of the income from other sources. This worsened the households' financial situation and forced households to make budgetary decisions based on a reduced purchasing power, either through acquiring additional funds, for example, by selling assets, or through reducing expenses.



*Figure 6.1: Representation of the impacts on households' finances and coping mechanisms.*

### 6.6 Households' Perception of the Impacts

The impacts and consequences of the impacts are perceived in different ways by households. While all of the interviewed households reported to have been impacted by the changes in the 2020-2023 period, not all indicated the same perceptions of the severity of the impacts. Also, the persistence of the impact and the lasting impacts are different from one household to the next. From the data, most households report that their overall situation/livelihood has returned to a similar level compared to their situation before the pandemic. They do not experience lasting impact from the pandemic, and while they still face higher input prices, they do not perceive this to weigh down significantly on their situation.

Six Likert-scale-type questions were asked at the end of the interview to capture the household's perception of the impacts and their outlook on the future. Respondents were asked how they rate their situation compared to before the pandemic and their outlook on the future. A total of 24 households answered these questions.

The CAS data shows that in 2020 and 2021, Covid was the **third most** reported event as the most **severe shock** to farming activities. In both years, droughts and floods were reported more often as the most severe shock (NIS, 2023a).

### 6.6.1 Comparison of Situation

When asked whether the household was in a better or worse situation than before the pandemic, thirteen of the household representatives answered that their situation was similar to before the pandemic (see *Figure 6.2*). Despite being affected by the shocks, they stated that not much had changed in terms of their general situation; which indicates that the impacts were marginal. Four interviewees perceived their situation to be worse than before the pandemic. One interviewee explained that the main reason was the deteriorated health of one household member, the other three told that their situation was worse because their farming income was lower than before the pandemic due to the higher input prices and lower sales prices. Seven interviewees perceived their household’s situation to be improved over the last three years. The total income of these households had increased in the period after Covid to a higher level than before the pandemic, mainly through increased income from non-farming jobs. Thus, despite the compound shock, 20 out of the 24 perceived no negative difference to their household’s situation.

### 6.6.2 Comparison of Maintenance

The question about the perception of the difference in maintenance of the households yielded more negative responses. The majority of interviewees reported that in their perception, the maintenance of the household was more challenging than before the pandemic (see *Figure 6.3*). Compared with the previous question about the household situation, maintenance was more associated with the present and the cost of living. Most of the households reported that the cost of living was higher than before the pandemic. The increased cost of living was the reason that thirteen interviewees thought it to be harder to maintain their livelihood than before the pandemic. Three of the household representatives indicated that it actually was easier to maintain their household’s livelihood. Again, an increase in household income was given as the reason for the positive change.

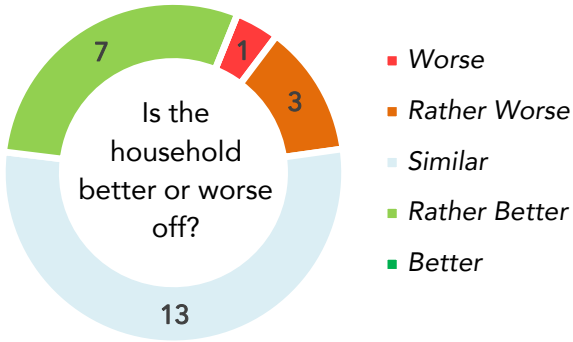


Figure 6.2: Comparison of household’s situation. N=24.

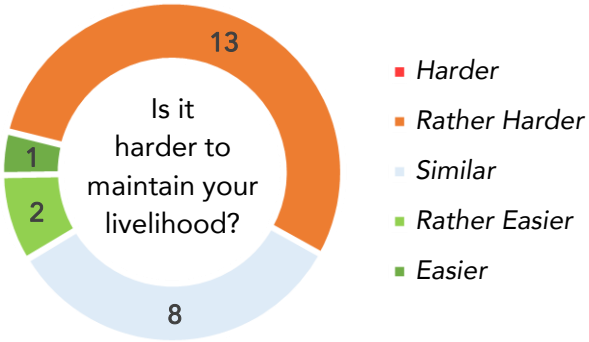


Figure 6.3: Comparison of household’s maintenance. N=24.

**6.6.3 Comparison with Other Households**

Most of the interviewees saw little difference between the impacts on their household and the impact on similar households in the neighborhood (see *Figure 6.4*). Three of the five who reported being impacted more than their neighbors, told this was due to health issues they faced during the period. Unlike their neighbors, they had been infected with Covid, which affected their mobility and income from non-farming jobs. The five representatives who perceived their households to be less impacted, once more mentioned a rise in income as explanation for the positive answer.

**6.6.4 Continuation of Farming**

The majority of interviewees believed that members of the household would continue being engaged in agriculture for at least the next five years (see *Figure 6.5*). While younger members of the household were often employed outside of farming, the elder members could take care of the farming, at least for the next five years. Several respondents mentioned the benefits of farming as a supplement to other income sources as a reason to continue farming. The benefits they mentioned were the additional income on top of other income sources, and access to food. Two interviewees believed that their household would stop farming in the next five years because of the old age of the people doing the farm work. It was expected that the younger members would focus on their non-farming jobs and that they would not want to do the farming on the side.

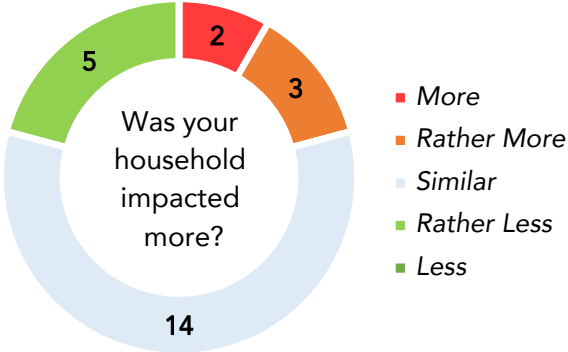


Figure 6.4: Comparison with neighbors. N=24.

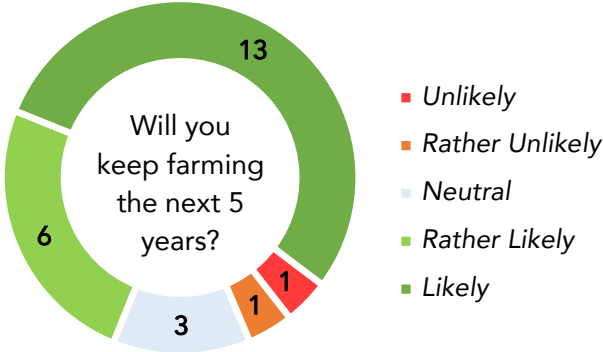


Figure 6.5: Continuation in the next 5 years. N=24.

**6.6.5 Takeover by Younger Generation**

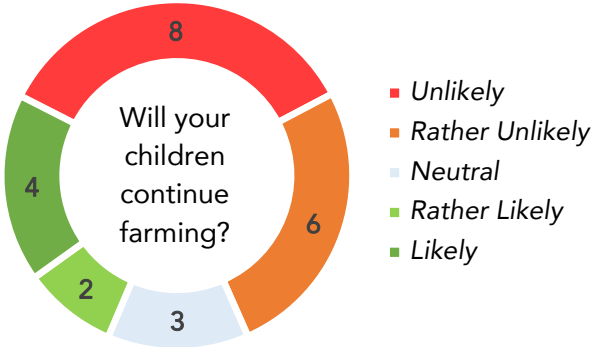
More than half of the household representatives did not expect their children to stick to farming (see *Figure 6.6*), thereby indicating that they thought the household’s farming activities would stop once the current generation can no longer do the work. This expectation stems from the household’s aspiration that through successful education, their children could find higher-skilled and higher-paying jobs in the formal sector. Several interviewees made clear that farming is regarded as a poor man’s job, and that moving out of farming is a step towards prosperity. The children of two interviewees who expected their children to continue farming, were already working on the farm. At some point, these children had dropped out of school



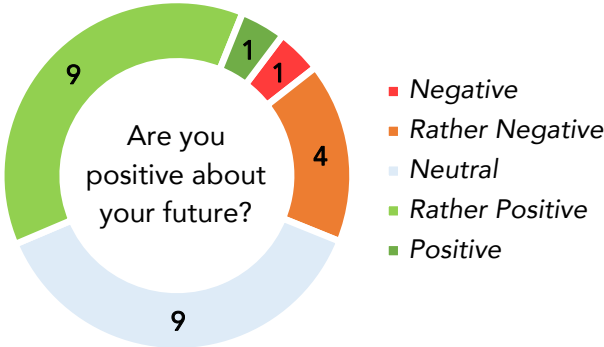
for different reasons. Another four interviewees thought their children would continue farming in the form of a side job next to formal employment. These four households were located in the second village, close to the garment factory where this combination of jobs is already present.

**6.6.6 Future Outlook**

The last question that was asked examined how the interviewees saw the future of their households. The answers were mostly positive (see *Figure 6.7*). Five of the nine respondents who had a neutral outlook argued that it could go both ways with the household’s situation. They argued that it depends on how the economy would develop in the years to come. If the economy would keep on growing, they believed that their situation would improve as well and vice versa. Another seven of the ten interviewees who reported a positive outlook, also mentioned the economy as a deciding factor; they had positive expectations for the economy in the next years. Another factor that was mentioned in support for a positive outlook, is the expectation that the younger generation will be able to secure better jobs as a result of their education. The reasons for the negative answers to this question include the inflation of prices, old age, and health issues.



*Figure 6.6: Takeover by younger generation. N=24.*



*Figure 6.7: Future outlook. N=24.*

## Chapter 7 – Discussion of Findings

This chapter discusses the most prominent findings, evaluating the interrelationships and linkages to the theoretical framework. The first section discusses impacts that can be attributed to Covid. The second section will discuss the effects that cannot exclusively be linked to Covid but are assumed to be caused by the combination of the pandemic and further market disruptions.

### 7.1 Impacts of Covid

The literature review identified multiple impact channels of Covid. Next to direct health impacts, including Covid infections and Covid deaths, government interventions aimed at containing and mitigating the virus and global market disruptions were found to be channels through which the pandemic exerts pressure on countries. The findings of this study suggest that Cambodian households were affected through roughly the same channels.

In the case of Cambodia, the direct health impacts appear to have been limited since the start of the pandemic till 2023. The country's total number of infections and Covid deaths are comparatively low, according to the official statistics of the WHO. However, whether the low health impact results from adequate government countermeasures and the successful vaccination program is yet to be determined.

On the household level, health impacts did affect several families in the sample. Relative to the national numbers, a larger percentage of people in the sample did get infected with the virus. Besides the direct impact on health, which in one case led to the death of an elderly family member, the infections affected the daily lives in several ways, mainly affecting mobility and income. The government required people to stay home when infected, which meant that these people could not go to their non-farming jobs. This did affect their household income significantly, albeit only for a short period. The relative share of non-farming income of households enhanced this impact. The one household that entirely relied on income from non-farming work reported that the impact was quite severe. Whereas the households that generated a larger share of their income through farming did perceive the infection more as an inconvenience.

This finding does signify a potential additional benefit to being engaged in farming during this type of shock. Being able to generate income from farming on one's own farm has the advantage of being less impacted when one gets a Covid infection. In contrast, income from formal or non-farming jobs appears to be impacted more when infected by Covid. This indicates that there are advantages to being a smallholder farmer during shocks that impact mobility. The return of people from the city to their rural homes and farming during the pandemic (WFP et al., 2022), supports this idea. Being engaged in farming can be considered a vulnerability-reducing feat, if the land is owned by the household.

While infection does not lead to loss of income from farming, the requirement to stay home when infected disallowed people to go out to buy food. Rural Cambodia has no food delivery infrastructure, as is now common in some Western countries. Instead, this issue was overcome by the communal relationships in the villages. Neighbors did bring food to households in quarantine. The communal relationships as a form of social capital did act as an impact mitigating livelihood asset that increases livelihood resilience.

The loss of income and mobility as a result of infection are indirect impacts of sickness and direct impacts of government policies in reaction to Covid. It signifies that it is indeed government measures through which livelihoods are impacted more, which is also what is found in the literature (Jaacks et al., 2021; Krauss et al., 2022; Nolte et al., 2022; Rathnayake et al., 2022).

However, many other impacts on livelihoods presented in the findings section cannot be tied to government interventions or more global market disruptions. The impact on education, however, is likely a direct consequence of the closure of schools by the government. Children of the school-going age stayed at home for prolonged periods. This did not appear to have caused any severe problems for the households within this study's sample, although parents voiced some concerns. There were no reports of children being deployed for agricultural work like it was found by Nolte et al. (2022), nor were there any reported dropouts caused by the school closures. It was reported that the education plans for two children were changed; they did not continue their education after the reopening and dropped out of education. However, this was not a direct result of the school closures but rather due to the worsened financial situation of the household.

## **7.2 The 5Fs Crisis**

Combining the developments in the prices and accessibility of the five individual components of the 5Fs on the national level, it is clear that there are indeed problematic developments for the agriculture sector. There are solid indications that food, fertilizer, and fuel prices significantly increased between 2020 and 2023. The data on feed, however, is not strong enough to draw conclusions. The access to financing is affected by government regulations, which were reported to be pushing MFIs out of the country. All put together, it can be concluded that there is indeed a 5Fs problem for the agriculture sector in Cambodia.

Households recognized the adverse changes to the prices of fertilizers, fuel, and food, which impacted production levels and household finances. The two reports on feed suggest that the feed price might also have increased, but the effect was not captured in the data. Similarly, the household data on access to finance is too sparse to draw conclusions. Thus, this study is not able to give a definitive answer to whether households are facing a 5Fs crisis due to lacking access to reliable data at this moment. Further, specific, research is necessary to draw conclusions to the question.

### 7.3 Impacts of the Compound Shock

All the other main impacts identified in this study cannot be exclusively attributed to the Covid pandemic. Therefore, the following impacts are considered to be, in part outcome of the compound effects of Covid-induced changes and other factors causing disruptions in the global, national, and local markets between 2020 and 2023. However, it is important to note that other events in the same period will also have interfered in the livelihoods of the smallholder farmers.

The household data shows that the financial situation of all households was affected during the period. A main driver was the increase in prices for agricultural inputs, which put pressure on the profitability of farming. Restrictions in mobility and downward changes to the price at which farmers could sell their produce further decreased the income from farming. Despite the decreased profitability, none of the households in the sample stopped farming or considered to stop farming in the coming five years as was found by Hoyweghen et al. (2021). However, the reports from village chiefs indicate that there were farmers that did stop due to the adverse circumstances during the period. This report may signify that the households in the sample have been more resilient to the impacts than the average households and, therefore, the sample is somewhat biased. Future research could address this bias by actively selecting households that quit farming during the period.

One explaining factor could be the high presence of diversified income in the sample. Most of the households did have one or more other income sources. While the other income sources were sometimes also impacted, having an additional source of income makes households less dependent on profits from farming alone. This supports the theory that a diversified income can dampen impacts by spreading the risk, as Ellis (1998) described. Importantly, not only did the engagement in other income-generating activities dampen the impact of reduced agricultural income, but the engagement in farming also acted as a buffer to the loss of income of non-farming jobs.

As it was found in the literature review, the impact on households was heterogeneous. These differences can be attributed to different factors. In the first and second village, where most of the households had members working in the garment factory close to the village, the impact on income was less severe as the garment factory did not close during the pandemic. Households that did not use chemical fertilizers, pesticides, feed, or seeds and did not rely on external labor were less impacted by the inflation of prices for these inputs. Farmers are not dependent on volatile market prices by using organic fertilizers, organic pesticides, and their own grown seeds.

Similarly, the households that could grow more of their own food were affected less by increasing food prices. The impacts' heterogeneity indicates that certain household characteristics may be advantageous or disadvantageous when the livelihood is under stress. Consequently, the needs of farmer households in terms of outside assistance are different from one household to the next.

The impact of the events on the situation of households is limited in the perception of the interviewed households. Many have described their situation to be similar to before the pandemic, and some reported that their situation had improved, albeit only after the Covid restrictions had been lifted. At the same time, most interviewees reported that household maintenance had become harder compared to the situation before the pandemic. The difference between the perception of the situation and the perception of the maintenance is not necessarily contradictory. The perception of the situation may include advantageous future prospects and opportunities, whereas the perception of maintenance is likely to be grounded in day-to-day life and difficulties. Also, the positive perception of the household situation might be a sign of optimism rather than a representation of the objective situation.

It is important to recognize other potential biases in the findings. The selected villages are all relatively close to urban areas, whereas many smallholder farmers in Cambodia live in more remote areas. Being in the vicinity of a city comes with certain possibilities that people in remote areas may not have. Also, the interviews were held with households still engaged in farming at the time of the interviews – missing out on households that had to stop farming due to the compound shocks.

## **7.3 Coping with the Impacts**

### **7.3.1 Employed Strategies**

The literature review identified multiple types of response strategies. At any time, people can opt to change their lives by changing their livelihood strategy. These include accumulation, specialization, diversification, and migration strategies. More specifically, in the case of a shock, people need coping strategies to deal with the stresses on their livelihoods. These coping strategies are classified according to their reversibility; either being reversible, with no lasting negative impacts on livelihood sustainability, erosive, meaning that the employed strategy affects long-term productivity, and destitution when people or households are forced to make a full shift in livelihood strategy to cope with the shock.

The findings suggest that most households employed coping strategies that can be classified as either reversible or erosive. The households in the sample did not reach the level of destitution, which is a logical consequence of how the households were selected on the basis that they were still engaged in farming.

The reduced use of fertilizers, fuel, pesticides, and labor is a cost saving strategy. While production and income may be affected in the specific growing cycles during which farmers reduce their inputs, it does not necessarily affect long-term productivity. In the following growing cycle, the farmers can decide to switch back to using the amounts of fertilizers, fuel, and pesticides they used before the price increases.

Moreover, the reduction in the use of inputs might not have a negative impact on production levels. A more economical use of fuel due to price inflation does save money and does not per se lead to productivity loss. This coping strategy, reducing the use of an input without

hampering the production levels, can be regarded as a general improvement to the sustainability of the livelihood and does not have to be reversed after the shock impact fades. It might be that the incentive to reduce the use of fuel caused by the peaking price and the general circumstances have a lasting positive effect. However, in order for this to stick, farmers must be aware of this. This supports the argument by McLean (2015) that coping strategies might not always have a negative impact on the sustainability of livelihoods (McLean, 2015). However, the benefits of reduced use of inputs in the years after the shocks are likely to be marginal and dependent on each year's growing conditions and input prices. Future research could be conducted to see if the coping strategies employed in this period of stress will show lasting positive effects some years in the future next to negative effects.

Households also saved on other expenses in response to the impacts of the compound shock. Most of these can also be found in other studies on different cases, including a shift towards cheaper foods similar to the findings of Stöber (2021). In contrast to findings by Stephens et al. (2022), none of the households in this study reported to have skipped meals. Still, due to the limited sample size, it cannot be ruled out that this did not happen in Cambodia. Another food-related coping strategy is the increased consumption of households' own production to save on food expenses. Like the reduction of use of inputs, the adaptations related to food are reversible, assuming that nutritional intake was not significantly impacted for it to have long-term consequences.

While many other studies found that households impacted by Covid diversified their income (Boughton et al., 2021; Carreras et al., 2020; Middendorf et al., 2021), this study finds little evidence of households engaging in other income-generating activities. The reason for this difference could be the limited sample size. It could also be because most of the households in the sample already had a diversified income before Covid, or it could be due to a lack of opportunities.

Similar to the findings of Rathnayake et al. (2022), households used up emergency savings to cope with reduced income and increased expenses. Next to saved money, households sold cows and jewelry to cover their expenses, which is also a reversible coping strategy. Most households have a lower amount of savings than before the pandemic as a result, which may be problematic in case of a new shock anytime soon. The decrease in savings makes households more vulnerable to further income shocks as their ability to compensate with savings is reduced.

The household data gathered on the role of loans in coping with the impacts is limited. Several households did get loans during the period. The purpose of these loans was mainly the purchase of agricultural inputs. Similar to what Bliss (2022) found, households also took loans to cover general expenses. The methodological decision was made not to question households about their debt situation because of the sensitive nature of the topic. Consequently, nothing can be said about whether the households have problematic debts that might incur long-term negative impacts.



### **7.3.2 Disengagement of Younger Generation**

In the perception of the households of farming as a job may have implications on the decisions made by households on how to cope with the impacts. In the perception of the interviewees, farming is not a desirable job. They would like to see their children work in formal jobs because they believe that kind of work is less demanding and the pay is better compared to farming. This perception is shared throughout the whole sample, independent of farm size and the profitability of the farming activities. Consequently, education is viewed as important, and efforts are made to give children a chance to work elsewhere.

This might affect the decisions made in regard to farming activities. Suppose households have to choose between investing in the farming operation and the education of children. In that case, they might be inclined to use the money on education to enable their children to get a different job from farming. If all households succeed in getting their children out of farming, smallholder farming will likely significantly decrease in the long term, as is also predicted in the Agricultural Sector Master Plan (MAFF, 2020). In the short term, the preference for education means that farmers will likely be more reluctant to invest money into the farm, for example, to increase productivity or to increase the quality of the produce. This may affect government or NGO goals to strengthen smallholder livelihoods and smallholder productivity. It can be expected that farming households with the goal of moving away from farming as soon as possible make different decisions compared to households that expect to continue their farms in future generations. Their resources will be aimed at enabling opportunities for the younger generation to get 'better' jobs.

### **7.5 General Note on Limitations**

Studying agricultural livelihoods in relation to global shocks touches upon many complex themes, including livelihood dynamics, decision-making processes, food production and security, labor and migration, politics, market dynamics, and power relations. This study is a mere start to uncovering the dynamics between all the involved complexities. Moreover, due to the limited availability of secondary data and the small sample size, not all aspects of this research are evenly treated. Therefore, the findings and conclusions should not be regarded or used as definitive but rather as a first exploration of what happened to the livelihoods of smallholder farmers in Cambodia between 2020 and 2023. I do strongly encourage further research to build upon this exploration, and I hope that the lessons learned from this challenging period can contribute to increasing the resilience of vulnerable groups.

### **7.6 Recommendations**

#### **7.6.1 Stimulate Diversification of Income**

Smallholders should be stimulated to diversify their income sources to address the main vulnerability smallholder farmers face, namely their precarious income situation. The results show that households with a diversified income were impacted less than the households that solely relied on farming for their income. Through spreading the risk, smallholders become less vulnerable to shocks by having not all members always engaged in the farming operation (Ellis, 1998). If one or more members in a household engaged in agriculture work, for example, in a

garment factory, the household will be less vulnerable to sector-specific shocks. Income diversification may also be done through migration. Educational programs, financial incentives, and infrastructure improvements in rural areas can stimulate diversification. On-farm diversification should also be stimulated. A more diverse production by, for example, cultivating multiple crop varieties, spreads the risk of losing profits due to fluctuations in the price of crops (Mulwa & Visser, 2020). For example, instead of only cultivating rice, smallholders should be encouraged to start growing vegetables if that is possible. This could be achieved by providing educational programs.

### **7.6.2 Switch to Organic**

The impact caused by the increased prices for chemical inputs can be overcome by switching to organic farming. Organic farmers are resilient to price fluctuations of imported chemical fertilizers and pesticides. Therefore, farmers should be incentivized to switch to organic farming, thereby becoming immune to price fluctuations of chemical fertilizers and pesticides on the world market. Not using chemical fertilizers is also better for the soil quality in the long term (Savci, 2012). Moreover, as described by Pingali (2012), cutting the use of pesticides in farming benefits the farmer's health and the environment (Pingali, 2012). The incentive should be substantial to overcome the adversity of farmers to change their farming practices. Potential strategies could include sharing information on the benefits of organic farming and certification of organic producers to increase the prices at which organic products can be sold. Importantly, in the design of such policies, local food security should be considered, as not everyone can afford to pay a premium price.

### **7.6.3 Include Disengagement of Youth in Policies**

The disengagement of the younger generations from farming is another finding that the government should address. Smallholder families are eager to see their children get employed in different jobs than small-scale farming. This might have serious consequences for the sector in the years to come. In the short term, households may not be willing to invest in their farming operations due to a lack of future perspective. This should be considered and reflected on, especially in light of the implementation of the Agricultural Master Plan 2030. In the long-term, if the younger generation succeeds in exiting farming, there will be consequences for national food production. The country's food production will rely more on larger agricultural holdings (MAFF, 2020).

While this might increase efficiency and productivity, the government should monitor and guide such developments carefully to prevent potential negative impacts. For example, the shift to larger-scale farming may affect local and national food security. Moreover, the shift to large-scale farming in other countries has historically led to problematic situations concerning sustainability, like monocropping. However, with proper regulations, the shift to large-scale farming could also improve the sector's sustainability (Ren et al., 2019). If smallholder farming is to be held onto as an important provider of employment and food security, the government should develop policies to engage the younger generation.

#### 7.6.4 CAS

This study attempted to deepen the understanding of what happened in the lives of smallholder farmers based on the notion that things had changed, as seen in the CAS data. The results of this study add to the understanding by taking on a household-centered angle, supplementing the CAS data, which is mainly focused on production and productivity. The NIS will continue to conduct CASs in the upcoming years to collect data on developments in agriculture. Several findings of this study may serve as inspiration to adapt the next questionnaires to capture a broader picture of the developments in the sector, both for policy purposes and future theoretical analysis. This study shows that farming activities do not happen in isolation from other livelihood activities; smallholder farming activities are not changed solely because of impacts on agriculture. Thus, while the purpose of the CASs is to provide data that informs agriculture policy, the questions should extend beyond changes in the agricultural context. This extension can be in the form of incorporating questions about changes in other sources of income and future aspirations.



## Chapter 8 – Conclusion

This study aimed to explore and identify how Cambodian smallholder farmers reacted to the stresses on their livelihoods induced by the Covid pandemic and the manifestations of the 5Fs crisis. This exploration was done by connecting existing data sources with the outcomes of 25 household interviews in rural Cambodia. Conclusions to the research questions and suggestions for further research are presented in this chapter.

The first question examined how Covid affected Cambodia. On the national level, Covid's impact manifested itself in different ways. The health impacts seem to have been well contained; the reported infections and deaths are significantly lower than in neighboring countries. The overall economy did contract in 2020, the first year of the pandemic. This contraction was largely driven by decreased tourism, manufacturing, and construction activity. Poverty rates did increase due to the economic downturn, affecting vulnerable households. Government containment strategies included the closure of schools and borders, the cancellation of public events, and migration flows being disrupted by regional border closures and loss of jobs. Due to a successful vaccination program and the cooperation of the Cambodian people, the impacts of Covid were mostly mitigated by November 2021.

Secondly, the manifestations of the 5Fs crisis in Cambodia were investigated. The available data indicate that there is reason to assume an adverse situation has risen regarding the 5Fs between 2020 and 2023. The food, fuel, and fertilizers prices have significantly increased in Cambodia. This development is observed in the data on national accounts and in the data gathered through household interviews. There are also indications that access to finance has deteriorated in the past few years. Government regulations concerning maximum interest rates and payback terms have harmed the investment climate for MFIs. As MFIs play an essential role in financing small farmers, this development is expected to affect the investment opportunities of smallholder households. While there are indications of a similar upward trend concerning feed prices, more data is needed to confirm this.

The third research question concerned the impacts of both Covid and the 5Fs on the household level. The data gathered through the household interview give indications of various channels through which the livelihood of smallholder farmers has been impacted. Most prevalent was the impact on the income of households. Due to increased prices for agricultural inputs, as well as difficulties with selling the products, the profitability of farming did decrease – especially during the restrictions on mobility imposed by the government to contain Covid. The impact on income from agriculture is not equal for all households. This heterogeneity was found to be partly due to the relative share of farming income in the total income of households. Most families do not rely on farming for their primary income and are engaged in other income-generating activities. The impact on these non-farming income sources was primarily related to and limited to the Covid period and heterogeneous as not all income-generating activities were affected. Other effects include children being unable to attend school due to the closures. This inability did, however, not directly result in children dropping out of education. An impact

on migration and migration decisions was also among the findings. The closure of borders and loss of jobs lead to reverse migration and reduced income from remittances. Despite the adverse impacts on livelihoods, most households reported that their situation had not significantly changed for the worse when comparing their current situation with their situation before the pandemic broke out. Albeit, maintaining the household in daily life was perceived to be more challenging due to the inflated prices for inputs and expenses.

Lastly, the fourth research question examined the coping strategies employed by the farmer households in reaction to the impacts. In response to the increased prices for agricultural inputs, most households decided to reduce the use and application of these inputs. Some farmers also chose to stop farming part of their land because of a disbalance between the cost of inputs and the sales prices. This was possible because they had other sources of income. None of the farmers reported to have made significant changes to how they operate their farms; there were no reports of switching to organic farming. Due to the decreased income and increased food prices, households had to find a way to cover their expenses. This was done by using up savings, liquidating capital assets like cows and jewelry, and taking on additional loans. Another common coping mechanism was the use of own produce for consumption. Households increased the share of crops used for their consumption. Despite these efforts, some households reported that they had taken on a diet with less variety, opting for cheaper foods than before the pandemic broke out to save money. Besides reducing inputs, disposing of capital assets, and making different consumer decisions, migration is also a coping strategy farmer households employ. During the pandemic, there was much reverse migration, but since the borders reopened, people have started migrating to neighboring countries for job opportunities.

In applying the reversibility categorization of coping strategies by Berchoux et al. (2019) to the strategies identified in this research, this study finds that Cambodian farmers mainly employed reversible strategies (Berchoux et al., 2019), which means that the strategies employed are not likely to impact the long-term sustainability of livelihoods. The perception of the households studied is in line with this notion, as most of the households perceived their situation to be equal or better when compared to their situation before the pandemic.

Future research should be conducted to deepen further the understanding of how smallholder farmers can be supported to become more resilient. This research could be conducted on a larger scale with a larger sample to capture more of the heterogeneity in the smallholder population and the respective impacts and coping strategies. In addition, future research can be conducted on the long-term implications of the Covid and 5Fs shock. Finally, a comprehensive assessment should be made that factors in other trends and shocks affecting smallholder farmers' lives. This study focused on the impact of the compound shock, but as seen in the CAS data, households perceive weather-related shocks as a leading threat to smallholder farming. There likely is overlap in how to combat the adverse consequences of the compound shock and those of climate change, but a more comprehensive assessment is crucial.

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# Appendix

## I – Interview Guide Households

A fragment of the interview guide designed for the household interviews. The guide was set up with different sections referring to certain aspects of the households' livelihoods and changes therein.

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" ...

### 4. Holding Size and Farming Practices

1. Did the amount of land used for farming change since the start of the pandemic as compared to the period before COVID?

No change    More land    Less land

- a. **If change:** Why did this change?

Sold land    Bought land    Stopped farming on part of the land

Rented less    Other, namely: \_\_\_\_\_

Notes:

2. During the given period, did you do any of the following:

Changed the main crop                      Why: \_\_\_\_\_

Engaged in ecological farming              Why: \_\_\_\_\_

Stopped farming for a period                Why: \_\_\_\_\_

Diversified produces                         Why: \_\_\_\_\_

Started using modern techniques         Why: \_\_\_\_\_

Specialized in one produce                 Why: \_\_\_\_\_

Joined an association/cooperation         Why: \_\_\_\_\_

3. Are there any other changes in your farming practice in recent years that come to mind?

- a. **If yes:** What and why did you start doing this?

Answer:

### 5. Income from Farming

1. How much of your household's income comes from your farming activities?

0-25%     25-50%     50-75%     75-100%

2. How does this percentage compare to the percentage before the pandemic?

Similar     Percentage is lower now     Percentage is higher now

..."

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