



Living through crises due to successive commodity booms and busts: Investigating the changing peasants' farming style in rural Indonesia

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ABSTRACT

This study aims to explain how a peasant community makes decisions in response to recurring crises in order to maintain their farms, and the extent to which vulnerability contexts and (external) institutions influence peasants' decision-making regarding their livelihoods. In doing so, we present a case study of the Village of Ranga, in the South Sulawesi Province, Indonesia, where data collected through semi-structured interviews, observation, and Focus Group Discussion (FGD). Data regarding farmers' livelihood strategies in responding to the crises, in the form of commodity booms and busts, is analyzed by employing a sustainable rural livelihoods framework, while a Chayanovian "balance" approach is used to understand peasants' decision making and the extent to which they retain operations as 'peasant farms'. We found that the most critical vulnerability that directly contributes to changes in the peasants' livelihood trajectories is successive shocks in the form of physical disturbances to plants and land. In making decisions regarding changes in livelihood strategies when facing crises, farmers seem to be pushed to abandon various balances they previously upheld, except to some extent the labor-consumption balance. This change potentially deepens the vulnerability of the Ranga Village peasants by adding more exposure to volatile markets and environmental pressure (such climate-induced hazards, pests, disease, and water crisis). This research can help us to understand the nature of the peasant responses in times of crises, and therefore help to inform the scanning of potential strategic measures for rural agricultural development in order to increase agricultural resilience.

KEYWORDS

Peasant; Crises; Commodity; Booms and busts; Livelihood strategies; Balances.

1. INTRODUCTION

This study aims to explain how farmers make decisions in their responses to crises in order to maintain their farms. The crises being discussed are serious threats to the livelihoods system, which require important and swift responses to avoid further deterioration in that system. Crises are different from and broader than disasters, and can be seen as a "disaster with a bad ending" (Quarantelli et al., 2018). Therefore, a group of people can experience a serious disturbance, such as income crises, without plunging into disastrous shock. In rural Indonesia, crises can be stimulated by extreme weather events such as droughts, floods, storms or fires, as well as biological phenomena like epidemics and pest infestations. We investigate the extent to which vulnerability contexts and institutions influence farmers' decision-making regarding their livelihoods (Scoones, 2015). Within the framework of sustainable livelihoods, 'vulnerability context' is understood as a situation of vulnerability that at any time can affect or bring about significant changes in livelihoods (Chambers & Conway 1992; Scoones, 2015). Uncertainty is part of the vulnerability context, and farmers constantly

negotiate various kinds of uncertainty in their livelihood activities. The uncertainty here refers to factors or problems that are ill-defined, are very difficult to model and predict, and almost impossible to control (Brugnach et al., 2021). Vulnerability can harm household well-being by reducing the value of household assets or reducing the returns to income-generating activities (Pain & Lautze, 2002).

One of the current causes of vulnerability of farmers' livelihoods is closely related to the issue of climate change. The weather anomalies brought about by climate change have an impact on rural farmers' ability to manage natural resources, maintain their livelihoods, and achieve food security for their lives. Indonesia ranks in the top-third of countries in terms of climate risk due to its high exposure to floods and extreme heat, which are most likely to have an impact on crop losses for smallholders. Some of the impacts are already happening sooner than expected, which requires more proactive and faster adaptation (Howden et al., 2007; Batiran, 2013; Leeuwis et al., 2013; WBG & ADB, 2021; Etwire et al., 2022).

This research is based on the stories of smallholder farmers in a village situated in a mountainous area in Enrekang Regency, Province of South Sulawesi, Indonesia. The village was selected purposively to explain why the villagers move from one commodity to the other, following local trends of boom and bust with different cash crops, in order to maintain their livelihoods. This village is unusual in that there is not a single rice field in the village, which is uncharacteristic of villages in the province in which households normally have at least one or two rice fields; rice has been the main commodity cultivated by farmers in South Sulawesi since the sixteenth century (Zain et al., 2016).

We hypothesize that farmers in this village are struggling with uncertainties, which points to different types of vulnerability in their lives. Studies have described the vulnerability of rural communities' livelihoods related to how local farming management responds to agricultural crises. For example, Rerkasem et al. (2009) reported research on the transformation of land use in mountainous areas in Thailand, which influences the management of farming businesses that are increasingly changing. Meanwhile, Promphakping et al. (2021) reveal why tobacco farmers in four provinces in Thailand persist in tobacco farming, even though tobacco markets are declining.

Smallholders' decision-making is also influenced by various contexts e.g., national and sub-national policies, boom crops, market dynamics, and political dynamics. Kallio et al. (2019) found how the expansion of hybrid corn in northern Lao PDR ("Laos") is supported by national policies through the green economy movement program which aims to increase the welfare of farmers. It seeks to shift farmers from relying on subsistence-based traditional farming to becoming profit-driven cash crop farming. They are advised to use a variety of strategies such as promotion, market demand and high pricing, as well as trader investment, to influence farmers' decisions. Junquera & Grêt-Regamey (2019) discovered that the rise of rubber as a "boom crop" in northern Lao PDR and other hilly regions of Southeast Asia after 2003 was primarily driven by smallholder farmers, who were motivated by the prospects of high yield and influenced by the behavior of Chinese farmers adopting and expanding rubber plantations. This decision was not only shaped by policies and economic factors, but also by the exchange of information and ideas among farmers through social networks. By opting to cultivate rubber, Laotian farmers aimed to secure a reliable source of cash income, reduce labor needs, and benefit from the durable and inheritable nature of the crop.

However, these studies are fragmented, explaining only limited aspects of rural livelihoods, and do not shed light on the temporal dynamics connected to historical trajectories of the smallholders' livelihood strategies when facing successive crises. In order to present a more complete picture and historically- rooted analysis of the rural

livelihoods in Ranga Village, this study utilizes a sustainable rural livelihoods approach that explains the vulnerability context in relation to livelihood strategies, local institutional arrangements, access and control to available assets or capital, as well as the broader political economic contexts (Scoones, 2015). We will also investigate the local livelihood strategies through the Chayanov-van der Ploeg approach to explain how the peasants make decisions to keep their farms going, by looking into the principal ‘balances’ they considered in facing the crises (van der Ploeg, 2013).

The most important research question in this study is why smallholders in Ranga Village choose to replace the commodities they cultivate. This study aims to provide an overview of how a peasant community makes decisions in response to crises in order to maintain their farms, and the extent to which vulnerability contexts and institutions influence peasants’ decision-making regarding their livelihoods. This paper begins by describing the events and vulnerability context related to crises in farmers’ livelihoods. It continues with a description of the context of the sustainable livelihoods of rural farmers by looking at the sources of livelihood and the influence of the context of trends and institutions. Finally, the article ends by concluding on what makes or how farmers in the village decide to change their livelihood commodities, using the peasant balances approach as the guiding explanatory framework.

2. THEORETICAL FRAMEWORK

This study analyzes the context of vulnerability in Ranga Village by looking at the history of peasant agricultural practices. By delving into successive crop changes in the context of agricultural crises, we describe livelihood strategies and institutional context influencing farmers to access livelihood resources (Scoones, 2015). We use the Chayanovian concept of “balances” (van der Ploeg, 2013) in order to understand how farmers make decisions to maintain and/or develop their farms. It should be noted that the notion of farming in this context needs to be distinguished between the Marxian perspective of agrarian studies, in explaining agrarian differentiation, with the Chayanovian view describing the concept of “peasant farmers.” (Lenin, 1961[1906]; Chayanov, 1966[1925]; van der Ploeg, 2013). Differences can be noted in how each theory describes capital or accumulation, labor systems, and profit maximization (as discussed below). Through a sustainable rural livelihood approach (Scoones, 2015), this paper will examine the livelihoods of rural farmers who are dealing with crises. It will then examine how they respond to these conditions through the Chayanov-Ploeg ‘peasant balance’ approach (van der Ploeg, 2013), as shown in Figure 1 below.

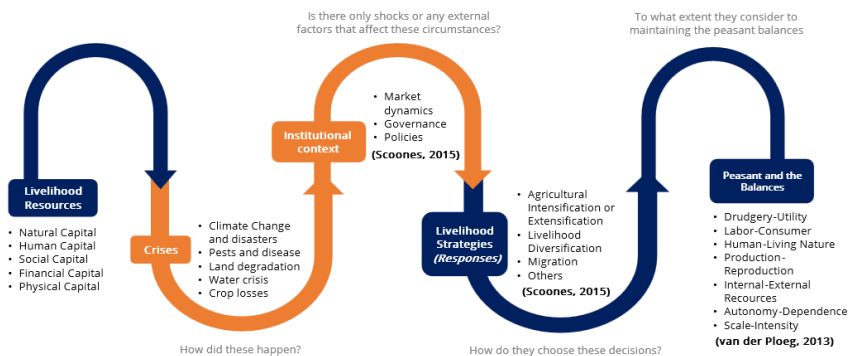


Figure 1. A workflow to analyze farmers livelihoods

2.1 The crises and vulnerability context

Livelihoods can be defined as a combination of assets, activities, and access that generate income for individuals or households. The term livelihood includes capacity capital in the form of goods and social capital, as well as activities carried out in order to live (Ellis, 2000; Valdés-Rodríguez & Pérez-Vázquez, 2011). Rural households will usually diversify their sources of livelihood, through carrying out various activities in order to survive and improve their living standards.

Livelihood resources include natural resource capital, human capital, economic or financial capital, social capital, and physical capital (Scoones, 2015). Natural resource capital is intended to provide natural resources to earn livelihoods (e.g., land, water, air, biodiversity, and other environmental resources). Human capital includes skills, knowledge, the ability to work, and a healthy human physical condition. Economic or financial capital means financial resources such as cash, savings, credit supplies, regular remittances, or pension funds. Social capital means social resources such as networks, membership in groups, relationships of trust, and access to broad societal institutions, affiliations, and associations. And last, the physical capital referred to is basic infrastructure such as transportation, energy, buildings needed for communication, as well as the production equipment and facilities that enable people to earn a living (Carney et al., 1999; Scoones, 2015).

Exploring the vulnerability context is essential to identify various vulnerability factors that are often difficult to control for the smallholders - such as weather, pests and diseases, access to market (information) - and which have a significant influence on the sustainability of their livelihoods. These arrive in the form of shocks, trends, and seasonality. Shock here is understood as changes that are sudden and difficult to predict, which have a relatively significant impact on human livelihoods, can damage or destroy, and are felt directly. Shocks can have effects on health, natural and economic conditions (or both), plant or livestock health, or conflict events. Trends are gradual changes that are more predictable, and are the accumulation of several conditions. They occur over the longer term, and which can be in the form of changes in market dynamics, prices, and technological developments. Seasonality refers to periodic changes that often occur at a certain period, such as changes related to weather, seasons, or natural changes, including social and political changes or dynamics (Chambers & Conway, 1992; Pain & Lautze, 2002).

The vulnerability context has mainly been treated in the livelihood's framework as an exogenous factor, and practice has focused primarily on building household resilience to vulnerability through asset development and diversification strategies. This research explores the root causes of vulnerability and discusses why and how rural communities are considered vulnerable. This research will focus on the interaction between humans and how they exploit nature through a political ecology approach (Sirimorok, 2013). Through this approach, we explore how the context of institutions and organizations affects the efforts of rural communities in adapting to the context of ecological vulnerability due to the impact of climate change and the crisis that farmers and rural communities are experiencing. We also investigate how practices and knowledge of farmers are contributing, directly or indirectly, to adaptation efforts and building resilience to various threats of the climate and ecological crises, especially in the agricultural aspects.

2.2 Livelihood strategies and institutional arrangement

Livelihood strategies describe the efforts made by smallholders to achieve an adequate standard of living. This relates to how smallholders manage the livelihood assets that are available or owned, responds to changes, and determines priorities in order to

maintain or improve their livelihoods (Scoones, 1998). Sustainable livelihoods can be achieved when a community can cope with, or recover from, shocks and crises as well as maintain or enhance its capabilities and assets both now and in the future whilst still paying attention to aspects of the sustainability of natural resources (Chambers & Conway, 1992).

Livelihood strategies can be grouped into agricultural intensification and extensification, livelihood diversification, and migration. Agricultural intensification emphasizes increased production by intensifying the cultivation treatment to similar size of land, while extensification is related to expansion of cultivated land. Livelihood diversification is how rural households build a diverse portfolio of activities and social support capabilities to survive and improve their standard of living. Diversification focuses on developing responses to shocks to overcome problems that are felt temporarily, or as a form of permanent adaptation in livelihood activities. Migration is moving from their place of origin to another place (temporary or permanent), searching for a different source of livelihood, or continuing to invest in the same field but in another place (Ellis, 1998; Scoones, 1998; Wijayanti et al., 2016).

In livelihood analysis, an essential but often neglected factor is related to institutions, organizations, and policies that shape the access to livelihood resources and which determine various opportunities and barriers to livelihood strategies. Taking into account institutions and organizations is very important in order to understand how some people get access to livelihood resources, and others do not; or, in other words, are excluded. To understand this, it is necessary to know that this access is defined as the ability to benefit from various things, including, among others, technology, capital, markets, labor, knowledge, authority, identity, and social relations (Ribot & Peluso, 2003). Indeed, exclusion in access theory is defined as the inability to benefit from these things (Ribot & Peluso, 2003; Sahide et al., 2020). Access and exclusion theory will draw our attention to who benefits and who is excluded in the governance of livelihoods in society.

2.3 Peasants and the balances approach

Farmers carrying out their farming business in a way that they are sustainable cannot only be seen from how they collect capital and the extent to which that capital is accumulated to meet their livelihoods. Farmers as "peasants" are different from capitalist farmers. In practice, the difference between the two can be seen in how they are connected to land, plants, or animals. Van der Ploeg (2013) describes how a peasant farm runs by considering several "balances". This study will relate empirical facts about how farmers make decisions in implementing livelihood strategies in order to maintain their farms or to increase their capital to be passed on to the next generation.

The two principal balances found by Chayanov (quoted in van der Ploeg, 2013) include the labor-consumer balance and the balance between utility and drudgery. The labor-consumer balance looks at the relationship between household consumption needs and the labor force in the family. Labour in the peasant farming unit is not seen as labor in the style of a capitalist company, as the labor force in the peasant farming unit is oriented to the involvement of family or relatives. The utility and drudgery balance illustrates that in deciding to maintain the farm, farmers relate the extent to which farming provides benefits or value for survival with how much effort must be made and what must be spent or sacrificed to obtain the extra benefits needed. Drudgery refers to the extra efforts required to increase the agricultural total production (or the total farm income). Drudgery can be associated with hardship, long working days, and sweating under a burning sun. The utility is the extra benefits (of whatever nature) that are provided by increases in production.

Van der Ploeg (2013) adds other balances, including the balance between humans and living nature, production, and reproduction, as well as internal and external resources, autonomy and dependence, scale, and intensity. The balance between humans and living nature illustrates that farming activities need to be understood as co-production activities that bring together both natural and social elements. Agricultural practices are about production from the land in order to meet livelihoods, and on the other hand it is also necessary to reproduce nature by fertilizing, improving, and diversifying it. In a broader context, agricultural modernization has led to agricultural intensification that limits various decisions in farming to merely increase production with little consideration of the effect it has on the land.

The production and reproduction balance provides an insight into how the amount of production meets the primary needs of farmers. Current agricultural development, where reproduction in farming is directed to agroindustry, tends to focus on increasing production. The agroindustry provides a set of particular and scientific standards that impact how farms are run, whereas farming communities are gradually reducing the set of rules (i.e., norms and practices), they apply to the objects and instruments they use in their farms. For example, the rules regarding cattle feed prioritize factory concentrated feed to meet industrial standards, so the farmers have to modify their farming business and production process to survive.

The internal and external resources balance describes the chain of agricultural production processes, namely converting agricultural resources into products. Some resources in farming are produced and reproduced, and some are obtained from outside (i.e., from the market). Farming units can produce natural fertilizers (e.g., manure); others choose to use chemical fertilizers. Farmers need to balance between self-produced resources and external resources.

The autonomy-dependence balance concerns the impact of social relations and independent decision-making in farming. The social relations in rural communities illustrate how elite circles can effectively absorb the benefits (surplus) from the farmers. The farming economy can become the target of surplus extraction through dependency relations. If the farm depends on parties outside of the farm (for example, through land rent, interest on loans as part of the input, or taxes), part of the surplus from the farmer's production output must be handed over to other parties.

The scale and intensity balance can be explained in various farming styles or organizations according to needs, interests, and prospects. The scale refers to the number of objects of labor, such as land, while intensity refers to the production per object of labor. The scale and intensity will determine the various farming styles; either economical farming style, intensive farming style, large-scale intensive agriculture, or labor-saving farming styles (see Figure 2). The economical farming style can be characterized by a relatively small scale of farming and also low intensity. This economical farming style is more oriented towards cost-cutting so as to reduce dependence and increase autonomy. On the other hand, the intensive farming style is aimed at increasing crop yields. The large-scale intensive farming style has also emerged; several factors such as agricultural policies, technical advancement, and agricultural entrepreneurs' business strategy have contributed to this style's creation. The labor-saving agricultural style aims to have as many objects of labor as possible and also strives to minimize labor input.

These peasant balance approaches are used to explain the empirical reality in the village studied here, with regard to the extent to which the peasants are retaining their production units as peasant farms. Some of these balances may be relevant to farming style in the research location, whilst others may not be.

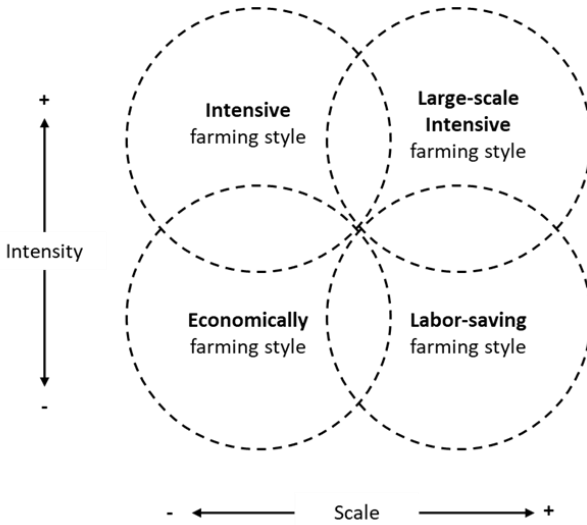


Figure 2. Farming Styles (Source: van der Ploeg, 2013)

3. METHODS

3.1 Study area

This research was conducted in Ranga Village, Enrekang Regency, South Sulawesi Province, Indonesia. Ranga Village is an upstream-middle area of the Saddang River watershed, situated around 8 km from the capital town of Enrekang Regency. With the size of 40 km square, the village is divided into three sub-villages, namely Lembong, Ranga, and Tirowali (RPJMDes, 2016). The distance to move from one sub-village to another is about 15-20 minutes by motorbike.

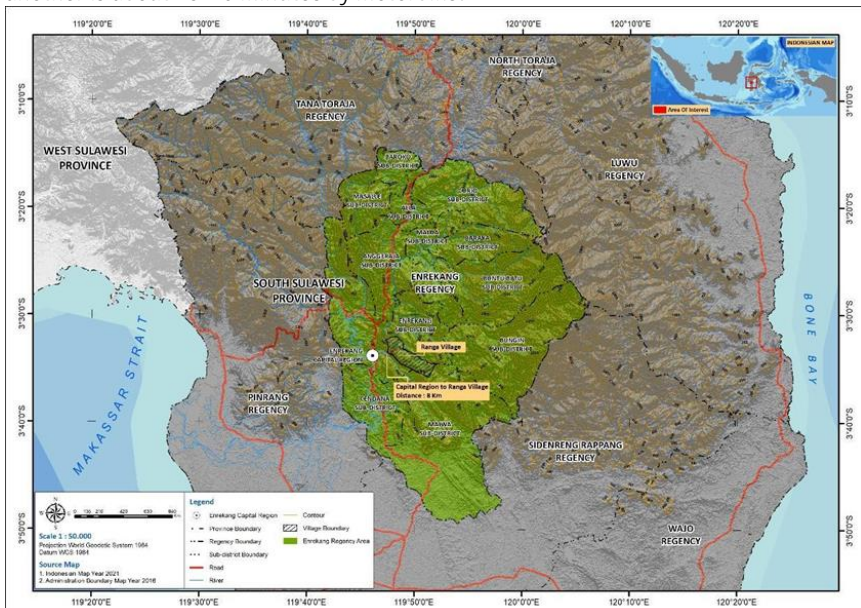


Figure 3. Situation map in Ranga Village

3.2 Data collection and methods

Data was collected over a period from July 2021 to November 2022, using semi-structured interviews (in-depth interviews) with 43 farmers in Ranga Village who were members of two government-supported farmer groups (the Salu Bulu Forest Farmers Group and the Sipatuju Forest Farmers Group). These government-supported groups are established mainly to receive different aids from the government, usually in the form of chemical inputs, high-yielding seeds, and modern agricultural tools. Moreover, they have experienced commodity booms and busts at some point in their profession. The interviews were conducted in a conversation style where two individuals discuss a topic in a relaxed, open, and honest manner. In this format of a semi-structured interview, the interviewee can tell a story but the interviewer is expected to make sure that the critical topics in the interview guide are covered, and that the interview is confined reasonably well to this (although in principle at least respondents of course could raise relevant issues that the research team had not foreseen). This allows the interviewer to explore and establish why the informant has the perceptions they express (Morris, 2015).

The in-depth interview guides were divided into two main themes; the first theme explore the history of crop changes in Ranga Village, and the pattern of cultivation and exploitation of commodities; the second theme directed to explore the processes that took place during the commodity changes. Direct observations were carried out to review and directly verify the data and information (or both) collected in the interview process.

In addition, Focus Group Discussions (FGDs) were carried out to complete the data. Focus Group Discussions (FGDs) were conducted to verify, cross-check or triangulate, and explore further information relating to the history of commodity changes, especially for farmers in the village, actors or outsiders who played a role in the changes, as well as the impacts and benefits felt by farmers when the commodity changes.

3.3 Data analysis

Data analysis was carried out through qualitative research design by dissecting chronology or empirical facts in the field, and juxtaposing it with relevant theories (Creswell et al., 2007; Glaser & Strauss, 2017).

To describe events about the crises which occurred in different periods and which often meant that farmers changed their primary commodities, a narrative approach was carried out. Coding of the results of in-depth interviews was carried out in order to explore considerations that emerged among farmers who chose livelihood strategies so as to respond to the respective crisis. In the end, this paper will connect empirical facts with micro-analysis on how rural peasant farming businesses deal with vulnerability contexts, and understand the extent to which the peasants maintain the balances after the commodity shifts.

The peasants' stories surrounding their livelihood strategies in responding to the crises are conceptualized here from a sustainable rural livelihoods approach, which helps us to understand the extent to which the context of vulnerability influences changes in farming styles in Ranga Village (Scoones, 2015). In addition, the Chayanovian approach that explores balances in peasant agriculture is utilized to look at the micro-level decision-making in the peasant production unit i.e., how far the peasant farms have transformed into capitalist farming that is governed by the creation of rate of return that equals the average profit rate (van der Ploeg, 2013).

4. RESULTS

This study will briefly describe the history of successive crops cultivated in Ranga Village, so as to explain the reasons the peasants stopped with one crop and started with another as well as the considerations that influenced the changes. We break down the chronology of commodity turnover in Ranga Village into three phases: (1) from the past (pre-1980) to the end of the 1990s; (2) from early 2000 to 2010; and (3) from 2010 to the present (see Figure 4).

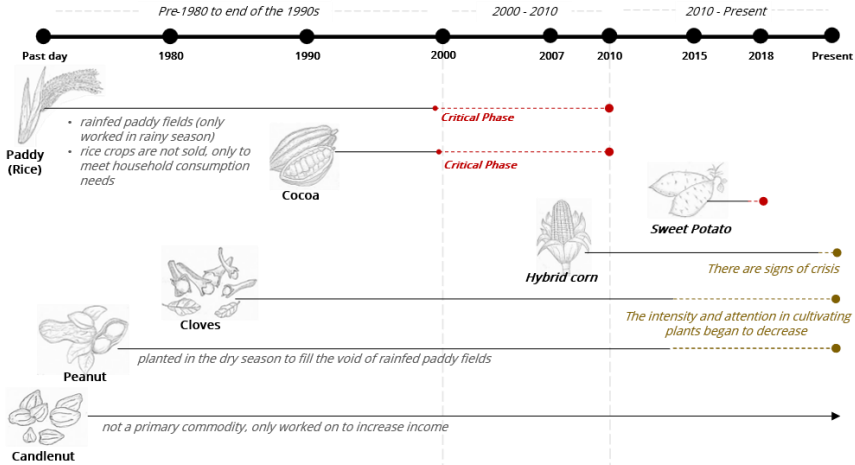


Figure 4. Chronology of commodity turnover events in Ranga Village

4.1 Pre-1980 to the end of the 1990s

In this phase, farmers of Ranga Village were mainly working on rice fields that produce staple food. To meet other needs, farmers rely on secondary sources of livelihood such as raising livestock, picking candlenuts in the forest. In addition, during the dry season, the rainfed rice fields were planted with seasonal crops such as peanuts and corn, mainly for own consumption.

Since the earliest period that they can remember, the farmers of Ranga Village used to work on rice fields that produce staple food while meeting other household needs by picking candlenuts, planting peanuts and corn in the dry season, and raising chickens and cattles. In 1980, clove plants began to be planted by villagers. A Ranga male farmer, who is now in his seventies, was the first to plant cloves in Ranga Village. The management of these plants is carried out from generation to generation, with one generation of farmers inheriting rice fields or dry croplands and candlenut collection locations in the forest to the next generation.

Farmers cultivate rice on rainfed fields and therefore rice can only be planted during the rainy season. In general, the rice cultivation system in Ranga Village is not much different from the one practiced across South Sulawesi at that period. They planted local seeds: seeds from the previous harvest, seeds purchased from neighboring regencies such as Pinrang and Sidenreng Rappang, and subsidized seeds from the city center in Enrekang Regency. They plow the fields using traditional equipment, and the planting done collectively (*massiallo*: in a group of around 30 people, they work from one member's plot to another until all plots have been finished). Chemical fertilizers (urea) and pesticides (chemicals) were applied. The harvesting process was carried out using traditional tools such as *ani-ani* (or in the local language called "*rakkapan*"), sickle, and mortar to thresh rice seeds.

When the dry seasons came, farmers fill the short fallow lands by planting various seasonal crops such as peanuts, millet, and local corn for consumption. The rice harvested is processed into husked rice by farmers: they are not sold but instead are for household consumption. We did not find a market chain for rice products. As for the candlenut plant, a male farmer in his seventies said he had planted candlenut in 1971 with seeds derived from candlenut fruit from trees planted by the previous generations.

In 1990, cocoa plantations began to enter Ranga Village. The introduction of cocoa in Ranga is connected with the booming cocoa cultivation in Sulawesi in the early 1980s, with production exceeding 200,000 tons in the mid-1990s (Ruf et al., 1996; Ruf, 2002). During this period, the cocoa boom in Indonesia was stimulated by changes in the global market structure. Indonesia's entry into the global cocoa market since the early 1990s was a response to declining market interest in West Africa who in the 1980s experienced a prolonged drought, land fires, and national policies that have implications for hampering cocoa productivity (Ruf, 2007).

Information about cocoa in Ranga Village was obtained from various sources, including from close relatives and migrant workers who came back from Malaysia. Upon returning to the village, they disseminated information about the cacao potential as cash crops and advised the farmers to start cultivating the crops. The advice was strengthened by the success of farmers in nearby district, Luwu; thus, gave rise to the assumption that cocoa can support the economic welfare of the farmers. The price of cocoa was high, with the average selling price from farmers to middlemen (traders) reaching IDR 30,000 per kg. In addition, the care and maintenance of cocoa trees were considered not so difficult to do. They only need to apply fertilizer once a year, from year one to three. When the cocoa trees start to bear fruit and were disturbed by rats, the farmers only needed to apply 'pest poison'. At this time, the cocoa harvest was sold as much as 100-500 kg per week to the local market and carried by horse or on foot.

4.2 Critical phase: 2000-2010

In the early 2000s, rice and cocoa began to show signs of a crisis that would last for years. The crisis peaked in 2010, when farmers felt, they could no longer continue to cultivate rice and cocoa and decide to stop. For rice, the crisis is marked by pests and disease such as "at the age of two months, the rice flowers become red, and the fruit is white and does not contain rice." Another disease made the plant "turn yellow and stunted." The diseases occurred for a whole year, and resulted in no harvest at all. Some farmers think that the rice crisis is due to global warming that changes the weather and creates difficulties to predict the arrival of the dry and rainy seasons. Therefore, it is increasingly difficult to determine the right time to begin plowing the rainfed rice fields. Another assumption farmers mentioned for the cause of the crop failure is that river water was starting to decrease in volume or is drying up quickly. This began when there was an explosion of cacao planted in a monoculture system through which many kinds of trees were then lost, causing damage to the water system in the village. Massive cacao cultivation in Ranga Village stimulated widespread land conversion, and degraded the diversity of land coverage. A male villager in his forties describe the cocoa boom in the 1990s as marked by the view of a mountain:

"One mountain is all cocoa."

Some villagers also consider that since a large portion of cocoa is fertilized and sprayed with chemicals, it causes diseases on other plants (see further below). On the other hand, some think that the river water is starting to decrease due to the teak trees around the river that have begun to grow larger and absorb a lot of water.

The cocoa crisis was characterized by a disease that turned the cocoa pods black and dried up before being harvested. Cocoa cultivations are also often disturbed by rats, wild boars, and monkeys. In 2012, through the Cocoa Gernas Program, the national government tried to provide a solution by delivering assistance in the form of tree rejuvenation using the side grafting method, but to no avail because plant diseases reappeared. A male farmer in his forties, who lives in Tirowali Sub-Village, has attended the training on cocoa rejuvenation and grafting conducted by the Job Training Center of the Enrekang Regency. He followed up the training and yielded an increase in cocoa productivity which indicates the absence of emerging diseases. However, monkey (pest) disturbance remains, and so in 2016 he stopped tending and harvesting his cocoa.

Between 2015-2016, Barry Callebaut with Mondelez International, through the Cocoa Life Program in Enrekang, also assisted farmers in Ranga Village to return to cultivating cocoa. They used damaged cocoa groves as demonstration plots for physical interventions to solve the disease problem. However, until 2021, the five years of assistance have not shown any progress towards improving the cocoa production. Pest attacks on cocoa are still common and push the farmers to shift to cultivate other plants rather than trying to solve problems that occur to their cocoa.

In 2007, a few farmers started to plant hybrid (high-yielding) corn in limited areas. When this crop showed satisfactory results, other farmers followed suit and experienced similar success. They then decided that corn could replace rice and cocoa, which both at that time presented some problems that they could not resolve. In addition to rice and cocoa, peanuts were eventually being abandoned because farmers choose an intensive farming system in the cultivation of corn that does not allow for fallow when they used to plant peanuts. In 2021, only a few farmers are still working on peanuts as most of the arable lands in the village are planted with corn. Another impact of intensified corn cultivation is that some farmers can no longer take care of their currently neglected clove groves. This situation is very different when farmers were still working on rainfed rice fields, when the cultivated crops are diverse. In other words, the Ranga Village smallholders are increasingly running monocrop farms.

In the post-rice and cacao phase, the farmers chose different livelihood strategies. When the crops are in crisis at a point in time, intensification efforts such as providing physical intervention on the plants to restore production are not made, nor are extensification efforts such as expanding the land and increasing the number of plants. The choices of actions taken by farmers in responding to the crises is limited to substituting the degraded crops with other crops or leaving them without any treatment. In addition, as complementary income, they return to the largely neglected crops that were cultivated by the previous generations, such as candlenut and cloves. A small number of farmers also choose to migrate or to move out of the village and look for other sources of livelihood outside the village, generally migrating to the Island of Kalimantan, both on the Indonesian or Malaysian side. However, judging from the various responses, replacing one crop with another is the option that most smallholders choose.

4.3 2010 to the present day

During the transitional phase, when the primary crops (rice and cocoa) began to deteriorate, the smallholders experimented with different plants that would be suitable for them in the long run, namely the crops that could provide sustainable yields. They began to grow brown rice, onions, and coffee. In addition, for those who inherited lands with cloves and candlenut, they turned back to these crops as their main income sources and some also returned to plant peanuts which was secondary during the cocoa boom. It was only in 2015 that they began to try to grow sweet potatoes, starting with a

farmer who attempted to cultivate the crop by taking its shoots from an acquaintance in Randanan, an area near the town center of Enrekang, about half an hour drive from Ranga Village. This information spread to other villagers, and in the time of crisis, the sweet potato cultivation quickly flourished in Ranga Village. This experiment was widespread because the capital to bring in sweet potato seeds is relatively low: they only needed to take the shoots from mature sweet potato plants for free and the maintenance required only a small amount of capital. And the crop had a market thanks to the farmers' network. Fertilizer is applied by spreading it near the stems, and when the weeds grow longer, they are sprayed with herbicides. To anticipate pests, rat poison and electricized wires for wild boar were installed when the sweet potato tubers are maturing.

Sweet potatoes were only cultivated for three years, from 2015 to 2018. Farmers stopped growing sweet potatoes because they were beginning to lose their market. Traders were reluctant to buy them, and so the sweet potatoes were thrown away or used as fodder. Sweet potatoes lost their market because the tuber's skin had holes due to caterpillars. There was an attempt to control the pests by sprinkling "*pordan*" (a local term for pesticide with the "*Furadan*" brand), but this effort did not succeed in eliminating the pests.

Therefore, hybrid corn has now become the village's leading commodity. Most of the farmers of Ranga Village started planting corn because they witnessed the success of corn planted by neighbors and farmers from outside their village. Generally, they saw the achievements of corn farmers in the northern part of Enrekang. In the Ranga Village, this information was spread by word of mouth, and then to verify this they saw firsthand the improvement in the welfare of the pioneer farmers. They assess the increase in welfare by looking at farmers who were able to buy motorcycles, build better houses, or buy home appliances (e.g., a refrigerator, a washing machine, a wardrobe, etc.) resulting from the gains of corn cultivation.

Farmers do not entirely depend on the government to choose their source of livelihood. It is always the (group of) individual peasants that take initiatives to determine the following steps, either in order to improve their current conditions or to look for other alternatives. Corn was chosen as the primary commodity because the smallholders considered that the cultivation of corn requires relatively small amounts of capital, is comparably easier to tend, as well as factoring in the existence of an annual assistance program from the government which also reduces the costs. In addition, market availability is also one of the important variables in decision making.

In planting corn, farmers buy seeds at the local market. At first, there was no seed assistance from the government. Upon seeing the success of corn farmers in neighboring villages, they started to buy seeds at the market. Utilizing their local informal network, several farmers were able to connect with the Department of Agriculture and managed to propose governmental assistance for seeds and fertilizers regularly (annual). They drafted a proposal document, in this case the Definitive Plan for Group Needs (*Rencana Definitif Kebutuhan Kelompok*-RDKK) to be submitted to the Agriculture Service. However, the farmers think the assistance provided is insufficient that they still need to buy more seeds to start a corn planting season.

Planting corn starts with land clearing; if the land has been previously harvested, the corn stalks are burned first, and then land clearing is carried out by using herbicides.¹ After that, planting is done by making holes using a tread or hitting a wooden stick into the ground, inserting 1-2 corn kernels into the hole, and then

¹ If the grass is dense, they use "supremo" poison used as a herbicide for the roots, namely "supremo," but if the grass is not so thick, they use "gramoxone."

backfilling. Fertilization is carried out using urea and is then followed by spraying herbicides. Furthermore, when the corn begins to bear fruit, wire installation is carried out around the plot to ward the wild boars off. In addition, the monkeys are guarded on the land bordering the forest. Harvesting corn is done by working collectively in mutual cooperation. After harvesting, the corns are dried in a drying area (in the local language, this is called “*kalampang*”), and when they have dried enough the farmer then removes the corn kernels from the cob using a private or family-owned “*deros*” (threshing machine) or rents it for IDR 120,000 per tonne of harvested corn. The corn harvest yield varies depending on the size of cropland, the cultivation practice (e.g., fertilizer application), and the rate of pest infestation. The maximum yield in a hectare plot is around 2 tons per year, with a harvesting frequency of two times per year.

The presence of external actors also plays important role in the widespread explosion of corn in Ranga Village. The government, in this case the agricultural extension workers from the local Agriculture Service, advised farmers to plant corn and they were given small-scale hybrid corn seeds to try out first. Since corn became the primary commodity in the village, there is an annual support program for corn through the Farmer Groups. The program came to Ranga when a few farmers contacted their network of relatives to access information about corn support programs, which can reduce the capital burden to start corn farming.²

More importantly, hybrid corn has managed to survive and become the primary source of livelihood because market demand is easily available. The profit from production shows a surplus position compared to the capital spent, as described in Table 1 below.

Table 1. The average income of hybrid corn farmers at one harvest per ton.

	Gross Income (IDR per tonne)	Production Cost (IDR per tonne)	Net Income (IDR per tonne)
<i>Average</i>	3,581,395	993,127	2,588,269

Source: Primary data analysis (2022)

Results in Table 1 show that the average net income of farmers per harvest (after deducting production costs such as seeds, herbicides, fertilizers, etc.) is less than IDR 2,6 million per ton. The production of hybrid corn per harvest is different for each farmer; some produce only an average of one ton per harvest and some reach 12 tons per harvest, depending on land size, cultivation methods (such as fertilization applied), as well as pests and disease. The average selling price of hybrid corn from farmers to middlemen (traders) varies from IDR 700 per kg to IDR 5,300 per kg. Generally, in a year, hybrid corn plants can be harvested twice.

In 2015, Gugah Nurani Indonesia (GNI), an NGO focused on child welfare and community economic improvement issues, extended training for villagers on processing corn into flour and noodles. However, there was no follow-up on the training and the farmers still chose to sell their corn to intermediaries. The corn harvest is sold to wholesalers from Enrekang and Sidenreng Rappang Regencies. Previously, farmers had tried to bring their corn harvest directly to a larger market or a large corn-processing industry, namely PT. Japfa Comfeed Tbk., in the neighboring regency (Sidenreng Rappang). However, due to the tight selection of raw material for quality control, the villagers were worried that their harvest would be rejected after transporting their harvest far away, which required additional costs. Therefore, the

² The information obtained from the farmers referred to earlier is directly distributed to other farmer group members, who responded by registering their lands and then making a Definitive Plan for Group Needs to be submitted to the Agriculture Service.

farmers prefer to sell it only to local traders (“collectors”) who pick up their yields in the village and offer a price that is considered sufficient to meet the farmers’ needs.

However, recently, around early 2022, corn has also begun to show signs of a crisis. Some farmers who cultivate corn began to complain about diseases in the kernels, such as the appearance of white fungus on some of the kernels. Currently, some farmers are trying to plant different types of corn seed in the hope of finding varieties that match the physical characteristics of the village. In table 2 below, we briefly provide the types of crops cultivated by farmers in Ranga Village, along with the start and stopped years.

Table 2. Types of crops cultivated in Ranga Village

Crops	Sub-Village	Year started	Year stopped	Remarks
Rice	Lembong	<i>“From a distant past” (unknown)</i>	2010	Rainfed rice fields are only tilled during the rainy season.
	Ranga	<i>“From a distant past” (unknown)</i>	2010	
	Tirowali	<i>“From a distant past” (unknown)</i>	2008	
Candlenut	Lembong	<i>“From a distant past” (unknown)</i>	<i>ongoing</i>	-
	Ranga	<i>“From a distant past” (unknown)</i>	<i>ongoing</i>	
	Tirowali	<i>“From a distant past” (unknown)</i>	<i>ongoing</i>	
Cocoa	Lembong	1990	2010	-
	Ranga	1987	2010	
	Tirowali	1980	2010	
Hybrid Corn	Lembong	2007	<i>ongoing</i>	In Tirowali Sub-Village, a male farmer in his fifties was the first to plant hybrid corn.
	Ranga	2010	<i>ongoing</i>	
	Tirowali	2002	<i>ongoing</i>	
Sweet Potato	Ranga	2017	2018	
Potato	Tirowali	2017	2018	
Clove	Lembong	1980	<i>ongoing</i>	Attention to clove cultivation is increasingly reduced since the rise of corn cultivation.
	Tirowali	1993	<i>ongoing</i>	
Peanuts	Ranga	<i>“From a distant past” (unknown)</i>	<i>ongoing</i>	In the past, peanuts were only planted in rainfed rice fields during the dry season to fill the void of land when rice was not being planted. Now, peanut cultivation has reduced since the rise of corn cultivation.
	Tirowali	<i>“From a distant past” (unknown)</i>	<i>ongoing</i>	

5. THE BALANCES

The trajectory of commodity change in Ranga Village shows the ways in which the peasants are going through successive crises with different crops. In order to

understand the extent to which the Ranga smallholders try to retain their production unit as peasant farms, we now turn to see how they consider several balances in carrying out their farming activities. As van der Ploeg (2013) noted, a peasant farm is “an actively constructed response to external conditions, opportunities and threats.” (p. 36)

The peasants choose to ignore some livelihood options if they required excessive physical labor which are not commensurate with the benefits received. This assumption represents *the balance of utility and drudgery*, and the peasants of Ranga Village recently choose to cultivate hybrid corn since the benefits are considered equivalent to the labor they expend, although the crop needs more attention than the previous commodities. From planting, tending, harvesting and even post-harvest, the smallholders have little time to spend away from their croplands, and most of the usual free time is now spent guarding them from wild boar's attack. Despite this, corn is considered by the smallholders as commensurate with the utility received, especially when compared to previous crops such as rice and cocoa. Corn cultivation is considered by the local farmers to only require lower to comparable effort with more satisfactory results, even though the labor expended in the cultivation of corn is greater than that for cocoa and rice. In cocoa, the busy time was only during the fertilizer application periods, while for rice they only worked on the rainfed rice fields during the rainy seasons.

The degraded balance of drudgery and utility in corn cultivation has implications for the peasants: they need to leave secondary crops to give full attention to corn if they hope to achieve the balance point. Most of them are no longer able to cultivate secondary crops because they are considered to add to their level of drudgery with an incomparable utility.

Meanwhile, the peasants of Ranga Village seem to some extent to be capable of retaining *the labor-consumer balance*. This can be seen in how they always prioritize family labor and collective work in order to minimize ties with the labor market. Collective work among peasants is very much alive even today by practicing *massiallo*, as explained above. However, in the last phase with corn cultivation most of the farmers pay laborers especially for planting, albeit with small amounts (starting from IDR 5,000 up to IDR 15,000 per kg seed planted).

The *balance of human-living nature* is seen in how the smallholders care for the nature (land) that provides them with yields, which is expressed in a gratitude ritual for the abundance of harvests given through harvest party activities. But on the other hand, they treat nature with little consideration of soil sustainability. This is reflected in the continuous use of chemical inputs, especially since they began to plant (global) market-oriented crops such as cocoa and corn. This may explain the damage to the soil or even the entire ecosystem, reflected in the uncontrollable pests and diseases that effectively ended their cash crops production in the past. This trend also shows that the peasants are pushed to neglect *the balance of production-reproduction* as this modernized practice tends to minimize the natural elements from farming. More planting season per year, with monocrop and chemical intensive cultivation, reduces time and ability available for the soil to self-regenerate. As the peasants modify their farm to produce more crops for a higher return (more on that below) with acceptable quality for market demand, human-living nature co-production is diminishing.

Moreover, the market commodities also require extensive land clearing and conversion, cutting down trees in the forest to build monocrop cultivation systems that cannot support the natural function of the soil. These relatively new practices limit the elements that are important to avoid hazards such as floods and landslides, especially in the geographical conditions of Ranga that is located in a mountainous ecosystem.

Conversion of bushes and forested areas to dry land agriculture, which also increase the absence of shade trees, may have implications for increased erosion in the mountainous areas with relatively steep topography. Thus, the Ranga case shows how previous relations between the peasants and their lands are breaking down, as they are forced to ignore this balance due to the pressure from market-oriented commodities they adopted. "The peasants sell more but they also buy far more." (van der Ploeg, 2013: 51-52)

The introduction of global commodities in Ranga Village has stimulated a degraded *balance between internal and external resources*. The booming of cash crops such as cocoa and corn imply that the peasants of Ranga are increasingly dependent on external resources such as fertilizers and other chemicals. Aside from the fact that these inputs are purchased from outside of the village, the peasants also need external assistance such as obtaining seed and fertilizers supported by state subsidies, as well as information on the market and the agricultural practices suited to chemical-intensive cultivation. This shift also led to the degradation of *autonomy-dependence balance*. In this context, the market demand requires them to provide faster and thus characterized by more production, and so intensification will likely still be the option. The commodities dictated that the old multi-crop cultivation system be minimized in order to make way for the monocrop of cocoa or corn. In this way, the peasants lose full control of types of crops to plant on their plots. In addition, as the single crop farms dominate, the peasants are increasingly dependent on a particular channel of market. The need to achieve a return to the costly capital-intensive corn farms, with limited own land and labor at their disposal, requires them to acquire more and more labor and land sourced from the market. They have to pay laborers from outside the pool of family members, and some farmers engage in land contracts in order to achieve a margin to the costly commodity production.

In the phase when the Ranga Village smallholders were mainly engaged in rice cultivation as their primary crop, this was carried out on a small scale, in cost-effective manner, and with minimal labor. When they switched to cocoa and later corn, however, they required additional production costs and therefore needed an increased yield. They do this mainly through intensification: i.e., more chemical inputs and labor from the market. This trend increasingly tips the *balance of scale-intensity*. After the crisis in rice cultivation, farmers had to change their livelihood strategy, one that increased their production and consumption costs by depending more on the market, including buying rice for family consumption. Thus, they were required to boost their cash crop yields to cover these needs; in other words, the peasants began to shift from the old dual economies (subsistence and market oriented), toward the one that merely directed to market.

6. DISCUSSION AND CONCLUSION

This paper began by exploring in chronological order key trends and events that shape crop changes in the Village of Ranga. Furthermore, we have highlighted factors considered by the farmers in making their livelihood decisions. We have divided these commodity shifts into three main phases. First, the phase before the introduction of cocoa (i.e., before the 1980s) when farmers' livelihoods in Ranga Village were mainly subsistence based and also geared towards capital formation of the family farms to be passed down to the next generation. In this phase, although Ranga Village smallholders expanded their land through shifting cultivation to control more land, the results of agricultural activities were in the main not oriented toward profits. Farmers' livelihood strategies very much continued as a peasant farming system (van der Ploeg, 2013).

The roles of local formal organizations in livelihoods were much less visible in this phase. There was not much influence from village politics or market structures on farmers choosing their respective livelihood strategies, as the centralized government of Indonesia determined much of the state policies and the global market commodities were yet to dominate the village. Therefore, local informal institutions such as those operated in family farms dominated access to livelihood assets and thus directed the respective livelihood strategies (Scoones, 2015). The internal and external resource balance in peasant agriculture in this phase can still be seen in how farmers with sufficient internal capital (i.e., means of production) were able to meet the necessities of life. The peasants did not depend on external institutions or organizations to increase the wealth of their family farms. Likewise, by not relying on labor outside of the labor force farmers had immediate access to (family members, relatives, and neighbors) there was little need to satisfy an increased the return on capital investment for further capital expansion and accumulation as in capitalist farms (van der Ploeg, 2013: 24-26).

However, the next phase was marked by the widespread cultivation of another export-oriented commodity, namely cocoa, which started in the early 1990s and ended in 2010. The cocoa boom in Ranga Village marked the beginning of the transition of rural livelihoods from peasant farms to ones dominated by global capitalist governance. By planting export-oriented commodities such as cocoa, certain standards required by governing institutions within global value chains demanded them to practice a monoculture system (Kaplinsky & Morris, 2000), which means less independence for the local smallholders in deciding what to plant and how to manage their farm.

The smallholders started to build capitalist farms, with the markets supplying most of the inputs and markets also became the sole target of their commodity, with different phases of cocoa cultivation activities increasingly dependent on the labor market inputs instead of family members. Therefore, although the peasants try to maintain dual economies by retaining rice fields as source staple food, most of the peasant family farms are pushed to start creating a “rate of return that equals the average profit rate” (van der Ploeg, 2013: 25).

Only ten years later, by the early 2000s, after cocoa became the main source of income apart from cultivating rice to meet daily consumption needs, signs of a cocoa crisis began to occur in the sub-villages. Both cocoa and rice started to show a declining trend in productivity. The context of the vulnerability of farmers' livelihoods was beginning to emerge, stemming from factors that are difficult to predict and control. This makes farmers having to once again shift to other crops. However, up to this point, among the livelihood strategies, namely intensification, extensification, diversification, and migration (Scoones 1998; 2005), Ranga Village farmers seemed to be locked in intensification, and appeared to lessen their activities in diversification. The majority of farmers continued to apply chemical fertilizers and pesticides to increase production, only with successively different crops. In the next and so far, final (ongoing) phase, Ranga Village smallholders are going through a boom in new commodity (i.e., corn) and with a sign of another bust. After years of trying out new crops while trying to find a solution to the crisis that hit their previous main commodities (i.e., cocoa and rice), farmers completely gave them up, and replaced them with yet another crop, namely corn for animal fodder.

The historical analysis of the Ranga Village smallholder farming shows that during the periods of uncertainty in their livelihoods the farmers increasingly abandoned the balances they previously considered. More specifically, they increasingly have depended on non-human factors such as chemical inputs, degrading the co-production relations they used to have with the surrounding natural environment (human and living nature balance). They also have depended more and more on markets for

chemical inputs, harvest channels, and labor, which corrodes the balance between dependency and autonomy as well as between the internal and external resources. The fact that most of them are locked in intensification due to limited access to land also diminishes the balance between scale and intensity.

It is also clear that in facing successive farming crises, Ranga Village farmers are led to abandon the peasant farming system by continuing with intensification strategies, only with different commodities. They are pushed toward becoming capitalist farmers by the combination of crises of old crops, the opening of the global market, and government support for modernized and sedentary farming in Indonesian upland areas (Li, 2012). This is similar to what occurred in northern Lao PDR, where the government promoted the transformation of subsistence farming into profit-driven cash crop farming practices, particularly through the cultivation of corn, which was granted favorable policy treatment, including simplified permit procedures for forested areas by district or provincial governments. The government's intervention was partly influenced by external factors such as the demand from international markets, high prices, and significant investments from external actors like traders, which also played a role in shaping small farmers' decisions (Kallio, et al., 2019). As a result, they enter a global (cocoa and corn for fodder) supply chain with much less access to capital, information, and other inputs, compared to the much larger players such as the international cocoa and fodder processing industries.

The smallholders' tendency to adopt or imitate the behavior of their relatives who became more "successful" or wealthy after returning from trying one type of plant to develop was another factor that contributed to the surge in the harvest of various common commodities in Ranga Village. This is driven by social networks and the exchange of knowledge on prices, marketability, crop resilience, and heritability (Junquera & Grêt-Regamey, 2019). This livelihood strategy deepens their vulnerability: together with climate-induced vulnerability, an increasing dependence on the market brings the Ranga smallholders into 'double exposure' (Kelley & Prabowo, 2019).

When this research was conducted, signs indicated that farmers are beginning to face yet another commodity crises, and thus vulnerability, with a similar pattern from the past. Believing in corn as a primary commodity with a desirable return on investment, the smallholders have not yet determined which other commodities have similar prospects to replace it. Their current response is trying different varieties of corn to suit the biophysical conditions of the area and holding discussions with agricultural extension workers to find solutions to the corn problem. However, the peasants may just replace corn, once again, if they find a promising crop with comparable or better prospects.

Since the adoption of global commodities, important changes in the peasants' farming practices and the changes are more likely to deepen vulnerability. This study shows the importance of the type of commodity in driving the systemic changes in the peasant production unit, which in this case limited the on-farm livelihood choices and required the peasants to adjust their cultivation practices, as well as labor and capital mobilization.

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