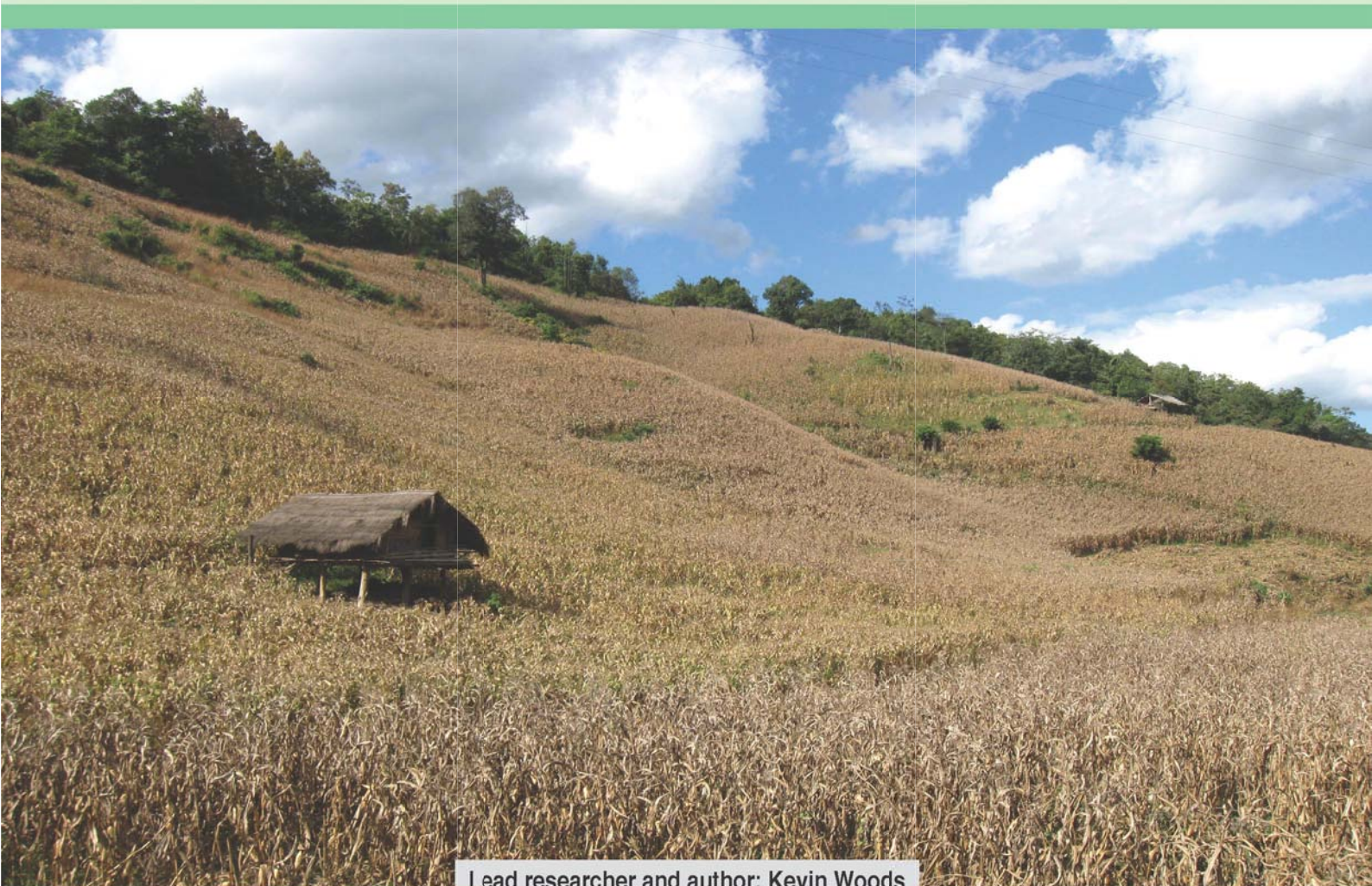




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Land Core Group

Opportunities, Risks and Growing Inequality: The Charoen Pokphand Group and Maize Smallholder Production in Shan State, Myanmar



Lead researcher and author: Kevin Woods

December 2015



Livelihoods and Food Security Trust Fund





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DISCLAIMER

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About the Land Core Group (LCG), Myanmar:

The Land Core Group (LCG) is a Myanmar NGO working on land tenure issues operating through a diverse network comprising LNGOs, INGOs, and concerned individuals. The LCG's overall goal is to promote formulation of land and natural resource laws, policies and institutions to support sustainable socio-economic and environmental development that benefits smallholder farmers.

Front Cover: Former rice swidden fields transformed into CP maize fields, North Shan State.

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Abbreviations

ACMECS	Ayeyawaddy-Chao Phraya-Mekong Economic Co-operation Strategy
ASEAN	Association of Southeast Asian Nations
CP	Charoen Pokphand Group
FGD	Focus Group Discussion
IFI	International Finance Institutions
KNU	Karen National Union
LUC	Land Use Certificate
LSLA	Large-Scale Land Acquisition
MADB	Myanmar Agricultural Development Bank
MMK	Myanmar Kyat
MoAI	Ministry of Agriculture and Irrigation
MOU	Memorandum of Understanding
NPK	Nitrogen-Phosphorus-Potassium
NSAG	Non-State Armed Group
NTFP	Non-timber forest product
SAC	Special agricultural development company
SSI	Semi-structured household interview

1. Executive Summary

This study was commissioned by the Land Core Group (LCG) to examine the complex dynamics of new agricultural modalities in Myanmar, specifically large scale contract farming schemes. With minimal information currently available, the LCG hopes this research contributes to a deeper understanding of maize contract farming, and trends in smallholder cash cropping more generally, especially for the development community, government and private sector.

Industrial farming is now a firmly established mode of agricultural production in Southeast Asia, partially catalysed by China's global economic rise and subsequent growing demand for food, fuel and feed.¹ Regional and global corporations investing in mass agricultural production present new opportunities for smallholders and businessmen, and corresponding threats to the environment and farmers' livelihoods.² These trends have consolidated since the 2008 global economic crash and expansion of financial speculation involving land and agriculture.³

In the wake of these developments, land grabs are a high-profile issue confronting governments, as well as civil society who are broadening the political space in Myanmar today, all in the midst of a renewed global land grab pandemic. Indeed, past and present grievances, especially regarding land and livelihood dispossession, are now openly expressed across the country.⁴ The government has established several committees to try to solve land conflicts, while civil society organisations, lawyers, and grassroots networks advocate for the government to systematically address farmers' land-related grievances.⁵

Despite or because of the interest in land grabs, other forms of land and livelihood dispossession have gone largely unknown or ignored, despite being potentially more pervasive and severe in terms of the extent of land area and population affected. Beyond the lack of state commitment to building and maintaining protective institutions for farmers, problems relating to low household capital, the lack of low-interest loans, the absence of market information, and poor infrastructure have severely restricted the overall rural economy and especially economic opportunities for farmers, especially in the uplands.⁶

Contract farming seeks to redress lack of capital, inputs, and markets by connecting directly with smallholders. While Laos and Cambodia provide many such examples of contract farming, Myanmar has thus far experienced few similar schemes due to the closed economy and a political context that had for years been prohibitive.⁷ However, this is expected to rapidly change.

As Myanmar's economy continues to open to the global market, agro-food corporations, in part supported by international development agencies, are preparing to integrate smallholder production into global supply chains. While this mode of production bypasses the problems often associated with land grabs for agribusiness concessions, new challenges arise, especially given Myanmar's subsistence agriculture context and agrarian political economy.

This report offers a critical socio-economic analysis based on a literature review of agrarian transitions in comparative contexts and field research of Charoen Pokphand Group's (hereafter CP) maize contract farming scheme in upland rural Shan State, northern Myanmar. Research in selected villages in Shan State shed light on factors often ignored in political economy studies: geography, agro-ecology, political histories, migration patterns, illicit economies, and cultural and ethnic identities. Yet these aspects influence smallholder production and livelihoods just as much, if not more, as economic and technical aspects, thus demanding greater consideration.

More generally, the report stands as a cautionary note on the challenges arising from large scale contract farming schemes, and as a starting point for further examination, discussion and ultimately proper regulation of agricultural production in Myanmar. More research into contract farming modalities in Myanmar and across the region will allow recommendations to be generated for development of equitable best practices specific to the variable contexts across the country. This evidence will be used to advocate for change in smallholder contract farming operations in Myanmar, to enhance their rights and those of agricultural workers, reduce negative social and environmental externalities, and empower poor smallholder households to better position themselves to determine their own economic lives and ensure sustainable and more equitable outcomes.

2. Key Findings

Industrial maize production is now the second largest crop by acre planted and volumes produced in Shan State, after paddy. Myanmar government figures claim nearly half a million acres of maize planted in 2013,⁸ although CP Group figures based on seed volumes sold estimate closer to 750,000 acres.⁹ Volumes of maize grain harvest reached approximately 1.5 million tons in 2012/13.¹⁰

The majority of industrial maize produced in Myanmar is destined for export, with up to 75% of total volume imported by China.¹¹ Officially over USD 200 million was earned from maize exports in 2011/12, not including unofficial exports across the borders with Thailand and China.¹²

The lack of formal contracts between companies and smallholders is an ongoing concern, as is the shifting of risk from companies to farmers, both of which result in reducing farmers' negotiation power for fairer farm-gate grain prices and input costs. Informal negotiations and tacit agreements through local brokers negates responsibility of the company, with risk falling disproportionately on poor and marginalised households.

CP maize cash cropping has decreased food security for low - and some middle-capital households. Growing food insecurity has been predominately caused by switching from subsistence food cultivation to only relying on CP maize and purchasing food.

Size of household land holdings and access to affordable credit contributes to the different household outcomes, and is further exacerbated by poor households cultivating CP maize. There is a multiplier effect for wealthier households when it comes to purchasing power and ability to avoid taking out loans to purchase inputs, leading to more economic choices. The converse is true for poorer households, resulting in growing inequity in villages where most families farm maize.

Farmer-broker relationships are largely determined by the specific social relationships in different parts of Shan State. Brokers in North Shan State are mostly ethnic Chinese based in towns, offer unfavourable loan conditions, and tend to loan in higher land value areas closer to infrastructure routes. In South Shan State, brokers are usually of the same ethnicity as, and have a closer relationship with, their clients, and hence are more lenient regarding loan repayments. As a result, much higher rates of debt are reported in the north compared to the south.

Soil nutrient collapse is one of the main reasons why indebted CP maize farmers do not stop CP maize cultivation. Farmers assert that after cultivating CP maize, the soil becomes unable to again support subsistence, low-input rice farming, hence limiting them to high-input maize cultivation, but with rising costs yet dropping yields.

Coping mechanisms for managing debt resulting from CP maize cultivation depend on a particular village's agro-ecology, geography, and ethnicities. Besides diversifying cash crops, coping mechanisms include: cultivating and/or labouring on poppy fields, on- and off-farm wage labour, selling of household assets, NTFP collection, logging and using collective labour pools from within the village. Some families incur regular debt to ensure food security.

3. Background of study

Myanmar has become one of the world's newest land and natural resource frontiers. The political-economic conditions in rural farming communities in Myanmar have stagnated, from the socialist period, through forms of market experimentation in the 1990s, to the current reform period. Domestic economic liberalisation measures coupled with restructuring of the economy by International Finance Institutions (IFIs) are working to formally re-integrate Myanmar into regional and global economies. Recent land laws have turned land into capital through the issuance of land use certificates (LUCs) that can be legally bought, sold and transferred on the market.

Into this new context has come foreign investment in the agricultural sector. While large-scale land concessions have mostly been allocated to domestic corporations, a few notable foreign businesses have also joined in the production of industrial agricultural commodities, primarily paddy, rubber, oil palm, cassava, and sugarcane, predominately for regional and global food, biofuel and animal feed markets. However, because these concession production schemes have largely failed for both technical and political reasons,¹³ several global firms have signed Memoranda of Understanding (MoUs) with the government to implement contract farming schemes. Following suit, many Myanmar agribusiness companies are pursuing interests in contract farming, particularly in the paddy sector.

Minimal household capital, insufficient low-interest loans, absence of adequate and current market information, and poor infrastructure, has restricted rural economic growth and opportunities for farmers in Myanmar.¹⁴ It is exactly these limiting conditions that have made contract farming in Myanmar alluring. Indeed, in situations where capital markets are not adequately functioning as intended, or where there is vast production benefit provided by a superior technology (in this case where inputs such as manufactured seeds and fertilizers generate higher-yields), contract farming systems can provide significant benefits over and beyond local alternatives. Moreover, elements of contract farming, such as a pre-agreed supply contract between farmers and buyers, have the potential to mitigate risk for both parties and provide new sources of rural economic growth, while in theory respecting customary and / or statutory land rights.

However, to ensure contract farming delivers better access to markets, improved market information, affordable credit, inputs and technologies, reduced market risk, and increased household capital assets, an enabling environment must be present. Prerequisites include consensual agreements between producers and buyers, well-organised farming communities, and government support services.¹⁵ If these conditions are not in place, contract farming can have negative impacts, particularly where market concentration, unequal bargaining positions, and lack of information allow powerful firms and middlemen to off-load risks to smallholders. This forces down farm gate prices, and can generate household-level and community-wide socio-economic negative impacts, such as debt, loss of access to land and/or water, transition to relying on wage labour to support the household, and redistribution of wealth towards a minority of households.

This study features one specific example, and explores the emerging modalities and processes of contract farming used in Myanmar, including how these operate, how risks are divided, who benefits, and who loses.

4. Research framework

Findings are based on key-informant interviews over a span of one year, complemented by field research in eight CP maize-producing villages.

Phase I consisted of the lead researcher conducting key-informant interviews in Yangon, Taunggyi, Shan State's capital located in South Shan State, and Lashio, regional capital for North Shan State, to better understand the dynamics of social, economic, cultural and environmental factors influencing impacts of CP maize production. Both North and South Shan States were selected as study areas because of contrasting differences in political histories, ethnicities, migrations, border countries, agro-ecologies, and moneylending practices.

Phase II research objectives, based on insights from Phase I, were to expand and deepen analysis of existing contract farming operations for growing CP maize in Shan State from a pro-poor perspective, and to further elaborate the limiting and enabling conditions for pro-poor contract farming of CP maize in Shan State. Data was

collected in villages by field researchers who are knowledgeable about CP maize production and about the township in which they conducted the interviews.

4.1 Case study selection

A total of eight villages were selected, four villages each in the north and the south, in townships that had overall higher volumes of CP maize production according to government data. Village selection aimed to capture maximum diversity across the following selection criteria: agro-ecology (upland/lowland and elevation); distance from infrastructure (roads and towns); ethnicity; geographical location; governance (Myanmar government and/or non-state armed groups), and presence/absence of opium cultivation.

The actual names of study site villages are kept anonymous in this report, identifiable only by the township. In South Shan State the four villages are located in Hse Saing (1), Hopong (1), and Pekong (2) townships.¹⁶ In North Shan State the four villages are located in Kutkai (1), Kyaukme (1), and Lashio (2) townships. See **Figure 1** for a map illustrating the field site township locations and their proximity to shared borders with China and Thailand.

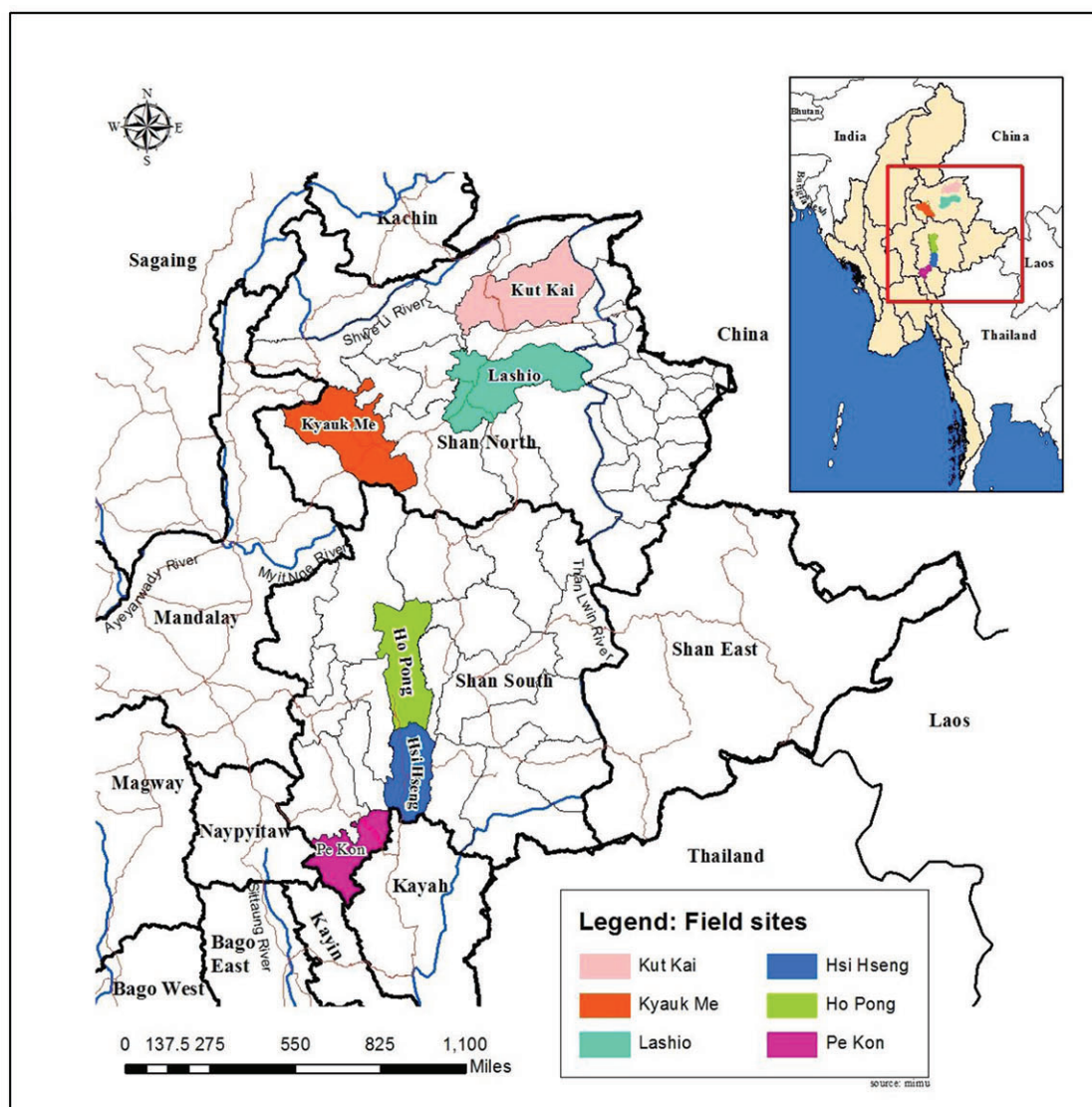


Figure 1: Map of Shan State with township-level field sites

4.2 Research questions and methodology

The overarching research questions guiding this study were:

- Who are the key actors in this process and what are the power relationships between them?
- What roles are intermediaries such as brokers and agents playing in this process, who are they, and how do those roles differ across different areas of Shan State?
- What are the socio-economic impacts in North and South Shan State, how are they different, and what are the most important factors shaping these differences?
- What are the positive and negative impacts on lower-capital households, including woman-headed households, engaged in CP maize production, particularly in relation to access to and control over land and resources, distribution of costs, benefits and risks, re-distribution of wealth within a village, food security, and environment?
- Broadly what factors appear to enhance or reduce the pro-poor impact of contract farming?

A participatory action-based learning research method was used, in part to overcome particular field constraints but also to better affect positive change, whereby knowledge, at least in part, was co-produced by and for those most negatively affected by CP maize production. This method enables collective knowledge production, learning, information distribution and action regarding varying socio-economic impacts from smallholder production schemes. This theoretical and practical approach to research, advocacy and empowerment purposefully challenges the power relationship between the “researcher” or the “expert” and those “researched.” By doing research with, by and for the people whose situation is under study for the purpose of stimulating positive change, the local perspective of those being “studied” can be more readily captured and communicated to policy makers. Furthermore, villagers themselves become more self-aware of, engaged in, and are able to take ownership over the research, potentially empowering them to become agents of change. In addition, where data is collected by local field researchers from the same area and ethnicity as the villagers studied, more sensitive data can be garnered that can be difficult to collect. Through published community-based research and other forms of appropriate communication, local voices can also reach decision makers to better inform policy changes.

Each research assistant - one each for North and South - selected and managed field researchers who were split into pairs based on the following criteria for each pair: 1) originating from near the selected village sites; 2) able to speak the main ethnic language of the village, and 3) from a household and village that grows CP maize, and 4) an eagerness to learn and lead. The lead researcher first conducted research methodology trainings with the field research teams, after which village-level empirical data was collected in early 2014. In each village focus group discussions (FGDs), with as much diversity in socio-economic factors represented as possible, were conducted first. This was followed by random sampling selection for semi-structured household interviews (SSIs) guided by an in-depth list of questions to assist the field researchers in their inquiries. Interviews were conducted in local ethnic languages in all villages except one. The number of villagers present at FGDs amounted to about a quarter of households in the village represented, and also

included the headman. SSIs covered about ten percent of households in the village. Data analysis was led by the lead researcher together with the field research teams and research assistants, with field notes translated from non-Bama languages into Burmese.

The methodological design of this study was not meant to provide a statistically robust data set explaining the situation for CP maize contract farming everywhere in Shan State for all types of village and household contexts. Rather, given human, financial and temporal limitations, the aim of the study was to reveal underlying and often obscured realities related to debt and dispossession in rural upland farming communities engaging in the cash crop economy.

The eight villages that were studied in-depth provides enough contextualised field data to make sound analysis on *trends* in socio-economic differentiation from CP maize contract farming at the village level. Based on these observed trends, policy prescriptions can be made, with the hope that further research is conducted to test the validity of these results - both from academic researchers as well as or in collaboration with villagers as participatory action learning research.

4.3 Future research

Phase III of the project will seek research validation and uptake by bringing research results back to village field sites, as per villagers' requests and design of this project. This will involve discussing the data analysis in an appropriate format with villagers, followed by village-level decisions on follow-up actions to address the unequal distribution of benefits from CP maize production. Written research will also be disseminated to the development community, policy makers, the Myanmar government, and the private sector engaged in agricultural investments, to promote more informed and equitable policy formulation and practice. This project aims to facilitate affected farmers to advocate for agricultural policy that benefits rural low-capital farming households through empirical action-based learning research.

5. Agriculture and socio-economic development in Myanmar

5.1 Agricultural policy in Myanmar

In the mid-1990s Myanmar's military-government initiated industrialisation and liberal market reform. The establishment of agro-based industries became the first of five policy objectives to be achieved, and a number of domestic private companies were formed.¹⁷ State control of agricultural production and trade has receded over the past two decades, largely replaced by government-favoured domestic private companies, with increased investment in industrial, large-scale agriculture. The government's partial liberalisation of the agricultural sector also boosted agricultural development.

The current government's national development plan aims to intensify industrial agricultural production particularly in the rice sector, as well as targeting rubber, edible oil palm, and bio-fuel crops such as sugarcane and cassava. Similarly, the Framework for Economic and Social Reforms Policy priorities for 2012-15 proposes to boost agricultural productivity by increasing extension services and government

loans, removing barriers throughout the supply chain, and promoting demand-oriented market support mechanisms.¹⁸ These reform policies could have a positive impact on smallholder farmers, if pro-poor policies are properly implemented.

5.2 Agricultural production and land ownership and rights

The ongoing marginalisation of smallholders is substantiated by the available research data. One study shows half of all rural households hold no official cultivation rights to arable land.¹⁹ Other studies have estimated that at least one-quarter of all farmers in government-controlled areas in Myanmar are now landless - defined as the number of households without *formal* land use and access rights - with some studies showing upwards of 50 percent in certain areas for example in Chin State and eastern Shan State.²⁰ In addition, poor rural households typically own fewer livestock, have fewer fishing rights and have less access to credit. On-going civil war, poor land governance, farmers' rising debt, and land grabs all contribute to a gradual constriction of rural farmers' economic opportunities, especially in upland ethnic nationality areas.

5.3 Land use certificates

Another government mechanism meant to help farmers capitalise on their assets is by creating legal and institutional provisions to turn "land into capital". The two new land laws of 2012 provide the legal basis to create a quasi-private land market by issuing land use certificates (LUCs), whereby LUC holders possess state-recognised land use rights claims, although the state still "owns" all land and resources.²¹ The Ministry of Agriculture and Irrigation (MoAI) has been trying to issue LUCs within the limits of their financial and technical capacity, but has not reached large numbers of farmers yet, as widespread allegations of corruption, bribes, and unequal access in the allocation of LUCs has plagued the process, especially in upland areas.²² Predominately lowland, wealthier farmers with landholdings along infrastructure and trade routes are the primary recipients of LUCs. The MoAI states long-term loans equal to 30 percent of the value of their titled land are available to farmers. However, the current agriculture minister declared that farmers owing debts to the MADB or the SACs (see Chapter 6 below) will not be eligible for these loans.²³ Upland rotational and fallow farmers do not qualify for LUCs because shifting cultivation is not legally recognised, omitting the majority of the ethnic nationality rural populations who practice upland shifting cultivation from the state's official agricultural and land tenure map.

Lack of access to land is a key source of vulnerability to food insecurity, with a strong correlation between landlessness, poverty and household debt.²⁴ Low-capital households in general hold significantly smaller landholdings and have a higher rate of formal landlessness compared to non-poor households. With issuing of land use certificates, landless farmers have relatively less capital than those with land.²⁵ One study demonstrates that among the poorest households, nearly 40 percent were landless, while landless rates of only 7 percent were found among the highest-capital households.²⁶ For those households who *do* hold formal land use and access rights according to government data, one-third of the country's farm households are working on farm holdings of less than three acres, substantially less than the recommended minimum subsistence land area in Myanmar.²⁷

6. Smallholder Maize farmers and access to rural credit

Rural aspirations to modernise has catalysed the transition to cultivate high-yielding, high-input industrial cash crops, creating a growing need for capital. Many farming households have never required loans to purchase inputs for agriculture, though some have previously borrowed money or taken loans for farming poppy. Access to affordable agricultural loans for less credit-worthy clients is a major barrier in successfully adapting to cash cropping. The influx of CP maize growing in Shan State has emphasised this shortcoming in the production cycle.

CP maize gained a foothold in Shan State through the American 101 of WWII legacy as an agricultural opium crop substitution programme beginning in the 1990s and gaining ground in the 2000s. American 101 focused their alternative development work in Kutkai township, predominately in Kachin villages that had previously cultivated poppy. The organisation initially provided free, and later heavily subsidised, inputs for CP maize cultivation, eliminating the need for households to take loans from brokers to buy inputs. Two years ago when American 101 stopped providing their services, Kachin farmers in Kutkai township turned to local brokers to fill the capital gap.²⁸

CP Group targeted villages deemed of higher potential in terms of returns on investment, and with middle-class aspirations of greater capacity to consume “luxury” items. CP Group’s marketing campaign comprised of youthful, urban and affluent-looking teams travelling to villages advertising the benefits of CP maize, presumably to capture the imagination of rural farmers to create a modern lifestyle. CP Group co-opted village headmen to attract farmers. One headman promised a prize of a new tractor through a lottery for CP maize farmers (although it did not eventuate), and it was common for headmen to distribute inputs to farmers for a small fee. This additional legitimacy by a local authority may have influenced farmers to participate.

Villagers were quickly attracted to this new cash crop. Some villagers in a few village sites had previously grown sugarcane as a cash crop, but found hardships in cultivating it, while most villagers only cultivated upland rice for mostly subsistence cultivation. Those villagers growing for subsistence or for the cash crop economy were both easily persuaded to try cultivating CP maize instead to realise quick profits. Over time though, CP Group stopped subsidising inputs, and poorer villagers could not easily afford the inputs on their own. Some villagers felt deceived by CP Group as expectations seemed unclear. One maize farmer during a FGD recounted how his broker persuaded him to farm CP maize: “If you are poor, then you can grow CP maize and become rich. Even if you don’t want to be rich, you will become rich anyway.”²⁹ In the few years in which inputs were subsidised and soil fertility not yet overused, it was possible for farmers of a wider socio-economic standing to make decent profits from growing CP maize. This led to a rise in the popularity with an increasing number of villages adopting CP maize.

The lack of equitable and affordable finance for smallholder farmers forces rural farming communities, especially in the uplands, to borrow cash and inputs from informal private lending sources.³⁰ According to a 2012 Myanmar LIFT survey, the top

constraint among respondents - half of all answers - living in different agro-ecological regions and ethnic states was the lack of money to buy farming inputs. Half of respondents in the same study claimed to borrow money from brokers including shopkeepers, to fill this capital void.³¹ One study found that a third of these households will require loans to pay for food during shortage months, especially given that cash crop yields often fall below expected levels.³² The average rural household has adequate food supplies for only about ten months out of the year; landless households less so.³³

Myanmar's agricultural sector contributes one-third of national GDP and employs up to two-thirds of the workforce, with about two-thirds of the country's population being primary food producers.³⁴ Despite the national economic importance of the agricultural sector, only a few percent of formal bank loans are extended to agricultural production. The following sections outline the rural finance sources in Myanmar.

6.1 The Myanmar Agricultural Development Bank (MADB): loans to traders/brokers

The Myanmar Agricultural Development Bank (MADB) under MoAI is the only government source of credit for small farmers. More than two-thirds of clients receiving MADB loans are actually agricultural traders, not farmers, who themselves then play the role of brokers, informally financing farmers.³⁵ Although lending has modestly increased in recent years, MADB provides only short-term seasonal loans that cover just a limited share of crop production costs. MADB continues to loan almost exclusively to lowland paddy farmers due to state defined priorities towards lowland (Bama) agricultural systems, and financial and infrastructural constraints. An agricultural officer in North Shan State asserted that interest free government loans of 10,000 Kyat (nearly USD\$10) per acre, repayable over four years, are available for smallholders to grow CP maize. However, no households in village research sites in this study confirmed receiving any government loans for CP maize cultivation. An additional constraint is the lack of mobile or village based banking, with farmers incurring costs to travel to MADB branches to manage loans. Consequently, financial assistance to the majority of smallholder producers, especially to non-paddy communities in the uplands is very limited.³⁶

After cyclone Nargis struck the Irrawaddy Delta in May 2008 and decimated paddy farming households and their fields, the Myanmar government established "special agricultural development companies"(SACs) to act as the government's private lending arm to paddy smallholders to in theory assist farmers to plant paddy in time for the monsoon. In return for SACs providing low-interest, low-volume credit under private contract farming schemes to the bigger established paddy farms, these favoured companies received coveted state-backed rice export licenses. Within a few years none of the nearly 60 SACs remained viable due to the high cost of input financing, and poor repayment rates resulting from crop losses, flooding and low paddy prices.³⁷

6.2 Private banks: loans direct to farmers

Another significant financial reform is to allow private banks to provide loans to farmers. Interest rate caps and state regulatory restrictions make it unprofitable to lend to small, potentially higher-risk, farmers.³⁸ Micro-finance is emerging as a potentially significant capital lending mechanism after the passing of a new micro-finance law, which is expected to receive ample attention from INGOs and private banks. The scope and scale of operations of micro-finance institutions measured by the number of rural households reached and areas covered in Myanmar still remains very limited due to previous blockages by the former military-government.³⁹ Microfinance offers both opportunities and also significant risks for smallholders.

6.3 Informal moneylenders

Moneylenders, or brokers, have long played a traditional role in providing capital to rural farmers in Myanmar. During the British colonial era Indian moneylenders called Chettiars were an integral part of the paddy boom in the Delta until the paddy price plummeted in the early 1930s and many rice growers lost their land to Chettiars from defaulted loans - although the degree of land transferred remains debated.⁴⁰

Local moneylenders have traditionally made funds available to families at times of extra expense, such as during festivals, weddings, funerals, and during rice shortages. In opium growing areas in Shan State, the opium economy has fostered the broker system: brokers would provide credit when needed to poppy cultivators, be paid back in opium, and double as an opium agent for villagers. Reliance on the poppy economy could be quite profitable pending good harvests, and provide nearly year-round cash income, boosting food security as a result. Households who have transitioned away from opium, however, lose their main income source, and hence must rely more on moneylenders to purchase agricultural inputs and manage household finances, and are thus more prone to food insecurity and indebtedness. The traditional practices of moneylenders may also be changing according to field research data analysis: defaulted loans previously would either be forgiven or re-negotiated with more lenient brokers, whereas now repayment conditions seem to be stricter, partly driven by brokers' land speculation in certain areas. "Traditional" money lending practices have experienced a recent resurgence as the rural economy's natural resource base has been eroding, the opium economy is increasingly under pressure from some authorities, and high-input agriculture for both licit crops and poppy, has become increasingly widespread.

7. The political economy of maize livestock feed in the region

7.1 Maize production and demand globally and in South East Asia

Maize is a globally prioritised industrial ‘flex’ crop used as food for humans, livestock feed, and bio-fuel.⁴¹ The United States has long been the world’s dominant maize producer and exporter, but with increasing meat consumption per capita due to growing middle-class consumption in East and Southeast Asia, maize production has increasingly shifted to Asia. Global annual maize demand for livestock feed exceeds global supply, with demand in Asia at 100 million tons in 2009. These changes have led the global market price of maize to rise 30 percent in recent years, catalysing further production.⁴²

Trade and investment negotiations among the Association of Southeast Asian Nations (ASEAN) + 3 (China, Japan and South Korea), for example the Ayeyawady-Chao Phraya-Mekong Economic Co-operation Strategy (ACMECS), has created more liberalised, business-friendly conditions, including production and trade of industrial agricultural commodities. These have entailed provisions promoted by Thailand seeking cheap imports, for expansion of maize contract farming in less developed countries such as Cambodia, Laos and Myanmar.

7.2 Maize production in Myanmar and Shan State

Industrial maize as a crop and production mode differs from other high-volume agricultural commodities grown in Myanmar. First, industrial maize is not a priority government-promoted industrial crop, such as rubber and oil palm; second, CP maize is produced by smallholders and not large-scale concessions; third, the MoAI has not actively promoted target production and national quotas. Instead, production, transport, and trade have been operated exclusively by domestic and regional private companies and traders. As such, CP maize can be perceived as an experiment in what can be achieved without the active regulation of the Myanmar state.

Production of industrial, high-yielding CP maize in Shan State was selected for in-depth study on the socio-economic impacts of smallholder production schemes in Myanmar because it is a:

1. Globally important ‘flex’ crop, meaning it can be used for food, animal feed, or fuel markets depending on fluctuating demand;
2. Regionally important animal feed crop; and
3. Smallholder production scheme operated by a foreign company in the Myanmar uplands - in fact, the only one.

Myanmar's CP maize craze

Rapid expansion in CP maize cultivation in Shan State and growing exports across the China border follows fifteen years of establishing the CP maize product, promoting benefits from potential high yields. Of all high-yielding maize varieties on the market in Myanmar, 80-90 percent is CP maize, with the 888 variety being the most popular in most geographical areas, according to CP regional office representatives. Industrial maize production is now the second highest crop by acre planted and volumes produced in Shan State, just after paddy. Myanmar government figures claim over 500,000 acres of maize planted in 2013 in Shan State, although CP Group figures based on bags sold is closer to 750,000 acres. (See **Tables 1 and 2** and **Figures 2 and 3** for government data on maize cultivation).

The rise of the CP Group stems from increased economic relations between Thailand and China in the 1970's and 80's. CP Group targeted rising demand for meat from the emerging Thai middle class. As market-led economic reforms concurrently took effect in China, CP Group exploited its CEO's ethnic Chinese heritage to finalise business agreements with top Chinese party officials. CP Group was the first foreign company to do business in China, allowing them to quickly expand to multiple sectors and establish their regional vertically integrated agro-feed supply chain.

CP Group now sources its maize grain largely through smallholder production schemes, plus large-scale concessions in Cambodia and Laos. Shan State fulfils several criteria of CP Group's business model: suitable agro-ecological conditions, a large population of smallholder farmers and available household agricultural land, agreements with top-level military-state officials, and a convenient trade route through China's back door. Hence Shan State was targeted at an early stage of CP Group's "going out" strategy. Perhaps the very first Sino-Myanmar private agricultural scheme was the CP Group's deal with Burmese military leaders in 1996 to sell, as part of an opium crop substitution programme, high-yielding CP maize seed to farmers in Shan State to produce maize for the Chinese chicken-feed market.

Smallholder agro-ecological practices in Shan State are rapidly changing under China's rising demand for industrial agricultural food and bio-fuel crops, such as cassava, sugarcane and maize. Upland households cultivate local varieties of maize for household livestock feed (chickens and pigs) as well as for limited low-value market sale. Local maize varieties are now planted in very small quantities, usually just in home gardens for household use, and have minimal market value due to CP maize dominance. The agricultural and labour advantages of cultivating CP maize compared to "traditional" varieties are many. CP maize produces several heads per stalk versus one, produces heavier maize cobs, fetches a much higher market price, requires less labour and hired labour costs due to less weeding and maintenance, and eliminates intercropping as sturdy stalks do not need a climbing legume plant, and chemicals substitute nitrogen from legumes.

7.3 Contract farming in South East Asia and Myanmar

Research across the Mekong region shows transnational agribusiness companies sourcing commodities through contract farming with smallholder farmers, directly or via local intermediaries such as traders or middlemen. Governments, multilateral agencies and companies are also promoting contract farming across the region, and the modality is expanding rapidly as a result. In Myanmar however, a very limited number of companies are utilising smallholder farmers for cash crop production schemes; most are opting for the large-scale concession model, in line with Myanmar government policy support. Their business models vary according to crop grown, geographic area and company objectives.

Large-scale land concessions have mostly been allocated to domestic corporations, although a few foreign businesses produce industrial agricultural commodities,

primarily paddy, rubber, oil palm, cassava, and sugarcane, for regional and global food, bio-fuel and animal feed markets. However, these concession production schemes have largely failed for both technical and political reasons.⁴³

7.4 The CP Group in South East Asia and Myanmar

Established in the early 1990s, CP Group's vertically-integrated, high-yielding maize production has predominately supplied China's domestic chicken-feed market. It is Myanmar's longest running, corporate-led, market-based smallholder production scheme. The CP Group is Thailand's largest business conglomerate across a range of sectors and the largest independent producer of animal feed in the world. CP Group has continued to expand its business in the region, being one of the largest, and indeed the first, foreign investors in China and the major foreign contender in the animal feed and poultry sectors there.⁴⁴ This type of smallholder CP maize production represents one of the oldest and only types of private-led, and in this case foreign, contract farming schemes operating in Myanmar.

Under the guise of running an opium substitution alternative development programme, CP Group selected Shan State for its project, given that it is the geographically best-positioned area to feed the Chinese domestic animal feed market.

The CP Group is also expanding production in Myanmar along the Thailand border to supply the Thai domestic chicken feed market, specifically in Karen State as the ceasefire between the Myanmar Government and the Karen National Union (KNU) in 2013 allows for increased access.⁴⁵ In 2012, CP Group announced plans to invest US\$550 million in Myanmar's agriculture sector additional to US\$150 million invested since the mid-1990s, for maize seed farms, rice farms and mills, aquatic animal and cattle farms, and livestock processing plants.⁴⁶ CP Group set a precedent for new global business: the US-based Cargill, one of the world's largest agribusiness and food processing corporations, has opened an office in Yangon to explore opportunities for import/export of food and livestock feed, focussing on maize production.⁴⁷ DuPont, a global food supply and agribusiness corporation, also opened an office in Yangon exploring maize production for livestock feed.⁴⁸

Table 1: Planted industrial Maize (acres) in South Shan State, 2013/14

District	Township	Planted (acres)	Township	Planted
Taunggyi	Total	147,023		
	Taung Gyi	52,960	Pin Daya	7,857
	Ho Pong	7,004	Ywa Ngan	4,830
	Nyaung Shwe	4,499	Yat Sauk	40,512
	Hse Hseng	9,989	Pin Laung	6,552
	Ka Law	3,130	Pe Kon	9,690
Loilen	Total	30,606		
	Loi Len	1,290	Kye Thi	5,974
	Lai Hka	1,141	Mong Kaing	3,895
	Nan Sang	14,602	Mong Hsu	1,554
	Kun Hing	2,150		
Langkho	Total	6,303		
	Lang Kho	1,337	Mauk Mai	1,170
	Mong Nai	2,436	Mong Pan	1,360
TOTAL PLANTED ACRES		183,932		

Source: Regional State Office, MoAI, Taunggyi, Shan State.

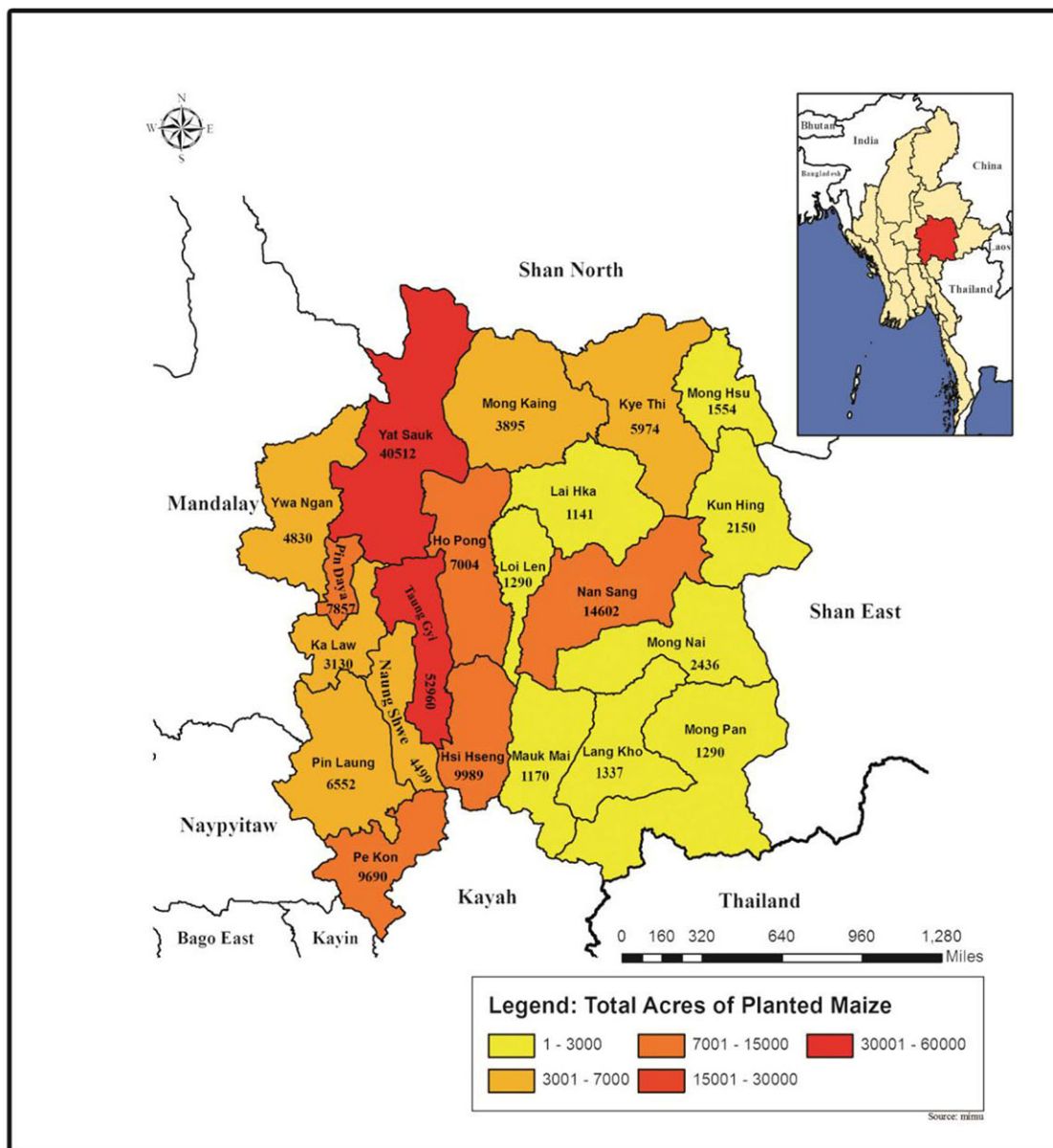


Figure 2: Map of industrial maize planted (ac.) by township in South Shan State, 2013/14

Table 2: Planted industrial Maize (acres) in North Shan State, 2013/14

District	Township	Planted (acres)	Township	Planted
Lashio	Total	78.309		
	Lashio	46,128	Tang Yan	11,917
	Hse Ni	14,729	Mong Yai	5,535
Muse	Total	33.228		
	Muse	9,976	Kut Kai	18,059
	Nam Hkam	5,193		
Kvauk Me	Total	124,262		
	Kvauk Me	30,507	Nam San	677
	Hsi Paw	21,487	Moe Mate	185
	Naung Cho	58,882	Ma Bein	442
	Nam Tu	10,375	Man Tone	1,707
Kun Lone	Total	7,267		
	Kun Lone	7,267		
Lauk Kai	Total	27,513		
	Lauk Kai	7,282	Kone Gvann	10,231
Wa Region	Total	14,495		
	Ho Pan	12,715	other townships	1,780
TOTAL PLANTED ACRES		285,074		

Source: Regional State Office, MoAI, Taunggyi, Shan State

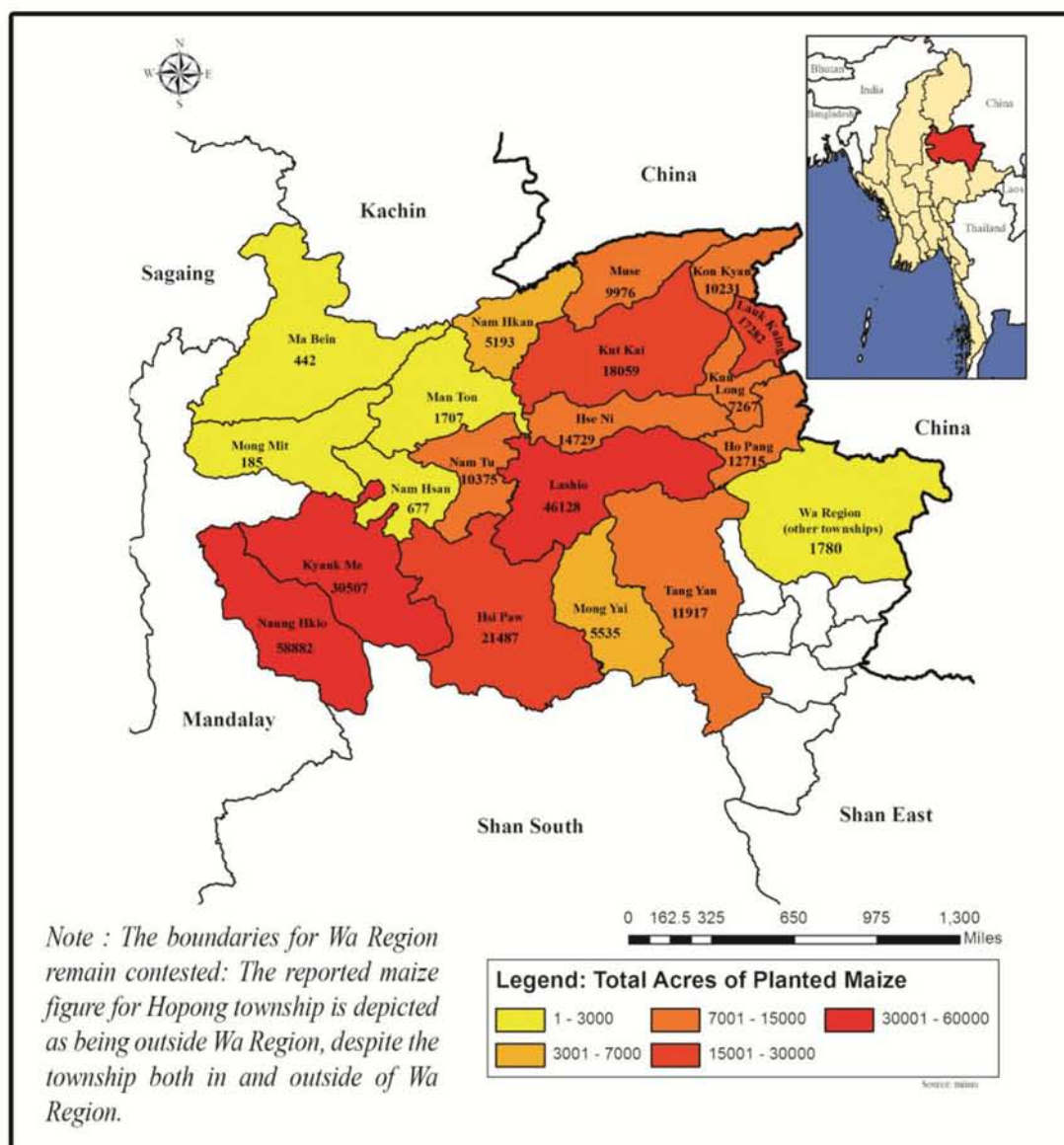


Figure 2: Map of industrial maize planted (acres) by township in NSS., 2013/14

Approximately 1.5 million tonnes of industrial maize was harvested in 2012/13, reflecting both area expansion and considerable yield gains.⁴⁹

Agricultural government officials and CP Group agents in Shan State claimed in interviews that over three-fourths of the market for CP maize cultivated in Myanmar is destined for China, with the remaining for the Burmese domestic market.⁵⁰ According to other data, just over half of maize harvested nation-wide is exported, with overland export to China from Shan State accounting for three-fourths of that volume. If unofficial maize trade along China and Thailand particularly along Karen State borders were included, that export figure would be considerably higher.⁵¹ Officially over USD 200 million was earned from maize exports in 2011/12, not including unofficial exports.⁵² These statistics are reflected in the response by a local NGO worker in Shan State: "If maize is there, a road will come; maize is the new gold here."⁵³

8. Data Analysis

8.1 Household typologies and the maize demand and supply cycle in Shan State

Empirical field data was collected for each of the eight villages in North and South Shan State. Village research data was compiled into a summary chart (see **Annex 1**) grouped according to identified main determining factors for particular outcomes: village demographics, village wealth distribution over time, geography, agro-ecology, land tenure regimes, broker system, coping mechanisms, food security, poppy economy, overall impacts and miscellaneous issues.

For the sake of analysing trends, the socio-economic status of households have been categorised as “low-”, “middle-” and “high-” capital households. **Table 3** generalises these household socio-economic categories based on field data across the eight village sites.

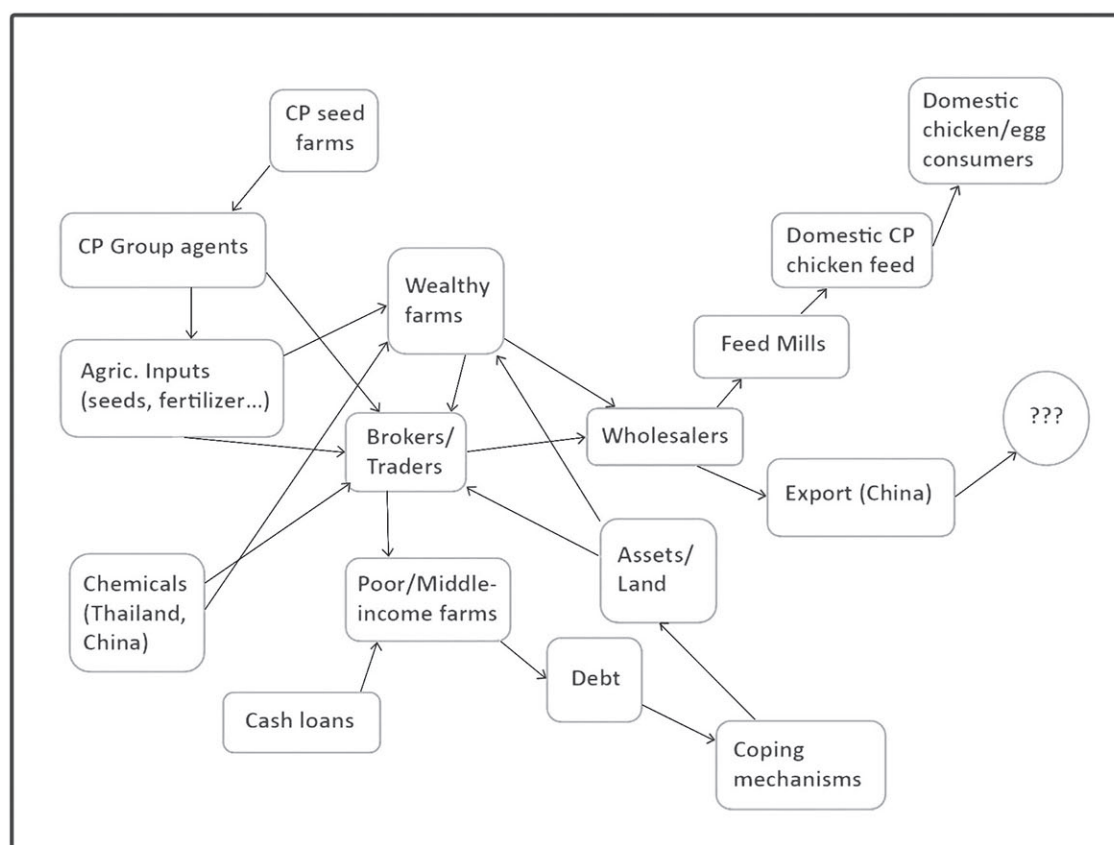
Table 3: Typologies of households based on field data across the eight village sites

Socio-Economic Category	Low-capital Households	Middle-capital Households	High-capital Households
<i>Land (acres)</i>	<5 acres	5-8 acres	>8 acres
<i>House structure</i>	bamboo	wood or concrete, metal roof	brick, two stories
<i>Household items</i>	maybe TV or motorbike	TV, motorbike, etc.	‘luxury’ items
<i>Land use titles</i>	no	maybe one plot if near road	most of their land, especially if near road
<i>Loans/debt</i>	yes (unless have poppy income)	about half	no
<i>CP maize inputs</i>	low quantity chemicals, maybe 2nd generation seeds	somewhat below recommended doses	full recommended doses of chemicals
<i>Yields</i>	very low	middle	high
<i>Farm gate price</i>	below market price	below market price (if loans), otherwise market price	market price
<i>Selling strategy</i>	immediately after harvest, to broker	depends if in debt to broker	gradual selling as price goes up over time, directly to traders
<i>CP maize income</i>	low	middle	high
<i>Food security</i>	low, rice loans, but depends if grow poppy or other crops	depends on if took out loans and if grow other crops	adequate

Three different ways exist in which rural households are involved in the CP maize production system in Shan State, the first two of which represent modes of production.

1. *Owner-cultivator*: household members labour on their own household land plot; higher-capital households with more land hire extra labour (whereas low-capital households often rely on village collective labour pool).
2. *Broker-“owned”*: the broker obtains temporary use rights or “ownership” of land from indebted households; broker hires labourers, including hiring members of indebted family.
3. *Land-/capital-poor, and/or landless households*: on-farm wage labour for high-capital households’ CP maize farms, mostly in the same village and for households of the same ethnicity.

The relationships between stakeholders within the maize commodity chain are pictured in the flow diagram in **Figure 4**.



Note: Data solely based on this study's field research.

Figure 3: Flow diagram of maize commodity chain analysis for Shan State

According to CP Group representatives in Shan State, the numbers of farmers cultivating CP maize scaled too rapidly and CP Group were unable to administer contractual agreements with all smallholders to keep pace. Instead of continuing to directly engage with smallholder cultivators, CP Group sub-contracted local brokers and traders to provide credit to cultivators and procure maize harvest.

The contract farming arrangements used are unconventional; currently with no formal contracts directly between smallholders and the CP Group for maize production. Instead, local brokers connect, in a way, producers with CP Group. These brokers act as middlemen, providing smallholders credit (cash) and inputs (seeds and fertiliser) they have purchased directly from CP Group in the major provincial towns. Smallholders sell their maize harvest to the brokers under a range of formal and informal agreements, mostly at below-market price. The brokers then sell the maize on to agents further up the commodity chain, acting on behalf of CP Group as well as other buyers, who then transport the maize across China's border into Yunnan, for use in China domestic chicken feed market. An exception to the rule is a village outside Taunggyi in South Shan State where a conventional contract system between CP Group and smallholders for the production of CP maize seeds is in operation.

Brokers maximise their profits by marking-up input costs by approximately 10 percent, significantly increasing cultivation costs. According to one CP Group representative in Shan State, "after the farmer accepts [the CP maize production system], we find them a broker."⁵⁴ CP Group locates appropriate local brokers, after which the "broker follows CP."⁵⁵ Using brokers has reduced the negotiation power of cultivators for fairer farm-gate grain prices and more affordable inputs. Under this arrangement, CP Group has reduced its own liability, delegating many obligations and risks to smallholders and fewer to brokers. Cultivation risks fall disproportionately on poor and marginalised households, less so on more wealthy households who do not need loans to purchase inputs, averting brokers and their constraining conditions. A high-level government agricultural officer in Shan State confirmed, "the broker became more developed from CP maize cultivation, while the actual growers get less developed."⁵⁶

The brokers in each area studied self-organise, colluding to collectively fix interest rates for loans and maize purchase prices so that farmers do not have any lower interest-rate brokers to choose instead – although there is no evidence this practice is supported by CP Group (or the Myanmar government). Brokers' organising increases their collective bargaining power in the value chain; farmers do not have the same levels of organisation and must accept broker terms and conditions.

8.2 Loan conditions

Interest rates are predominately 5 percent per month across all villages studied.⁵⁷ Interest generally starts accruing as soon as the loan is taken out, especially in the north. Loans are not paid back, and only partially if at all, until the maize is harvested, at approximately four months of interest accrual and at which time interest payments grow to 20 percent of the initial loan principal. There is some variation in rates charged, however, with two brokers in different villages in South Shan State charging no interest, but balancing this by charging significantly higher prices for inputs and offering even lower farm gate prices for maize, resulting in similar overall debt burdens for their clients. Some brokers have been reported to switch to only providing cash loans to farmers if those farmers use those loans to purchase CP maize inputs, rather than pay in kind (maize harvest), as this makes the brokers even more money.

After loan repayments, indebted farmers sell their remaining harvest to their broker at below market price. Most villagers complained that this was an unfair arrangement and they felt cheated, but there was nothing they could do; farmers feel pressured to maintain good relationships with their broker to obtain loans for future seasons. Most villages are also heavily constrained by remote location, as well as lack of decent infrastructure and affordable transportation to get their harvest to the nearest market town, effectively limiting their buyers to CP brokers.

Farmers taking cash and input loans from brokers thus “lose” several times over: interest on loans (maize inputs plus cash for various purchases), purchasing inputs at above market price from brokers, and selling the maize harvest at below-market price to brokers. One villager in a FGD described their stressful debt situation as such: “We villagers may be sleeping at night, but the interest rate is still awake.” Brokers in effect “win” thrice: once through interest repaid on cash and input loans, selling CP maize inputs at a significant mark-up price, and again by re-selling maize harvest at market price having purchased from farmers at below market price. For these reasons, brokers in Shan State have been eager to act as informal CP Group agents and lend capital to smallholder CP maize producers. The relationships among actors embedded within CP maize contract farming system in Shan State are illustrated in **Figure 5**.

Using land as loan collateral is an increasingly common condition attached to loans from ethnic Chinese brokers in North Shan State, a trend that is expected to increase with state-sponsored land titling and an emerging legal land market. Loss of land from debt seems much more common in North Shan State based on village-level data collection and key informant interviews for this study (although no specific quantitative figures are available), perhaps linked to the particular relationship between ethnic Chinese brokers and their village clients.

Land loss from CP maize-induced debt in South Shan State appears to be much less common than in the north, however. Brokers are usually of the same ethnicity as their clients, come from a nearby village, and in general have a longer and more trusting relationship with farmers to whom they lend. Land was never mentioned as being used as collateral in study villages in the south or according to key informant interviews. As a result, brokers in the south appear to be more lenient in loan agreements and debt forgiveness. Additionally, three of the villages in the south are also currently either cultivating or labouring on poppy farms, and have less of a debt crisis as they receive income from the poppy sector and loans are not required.

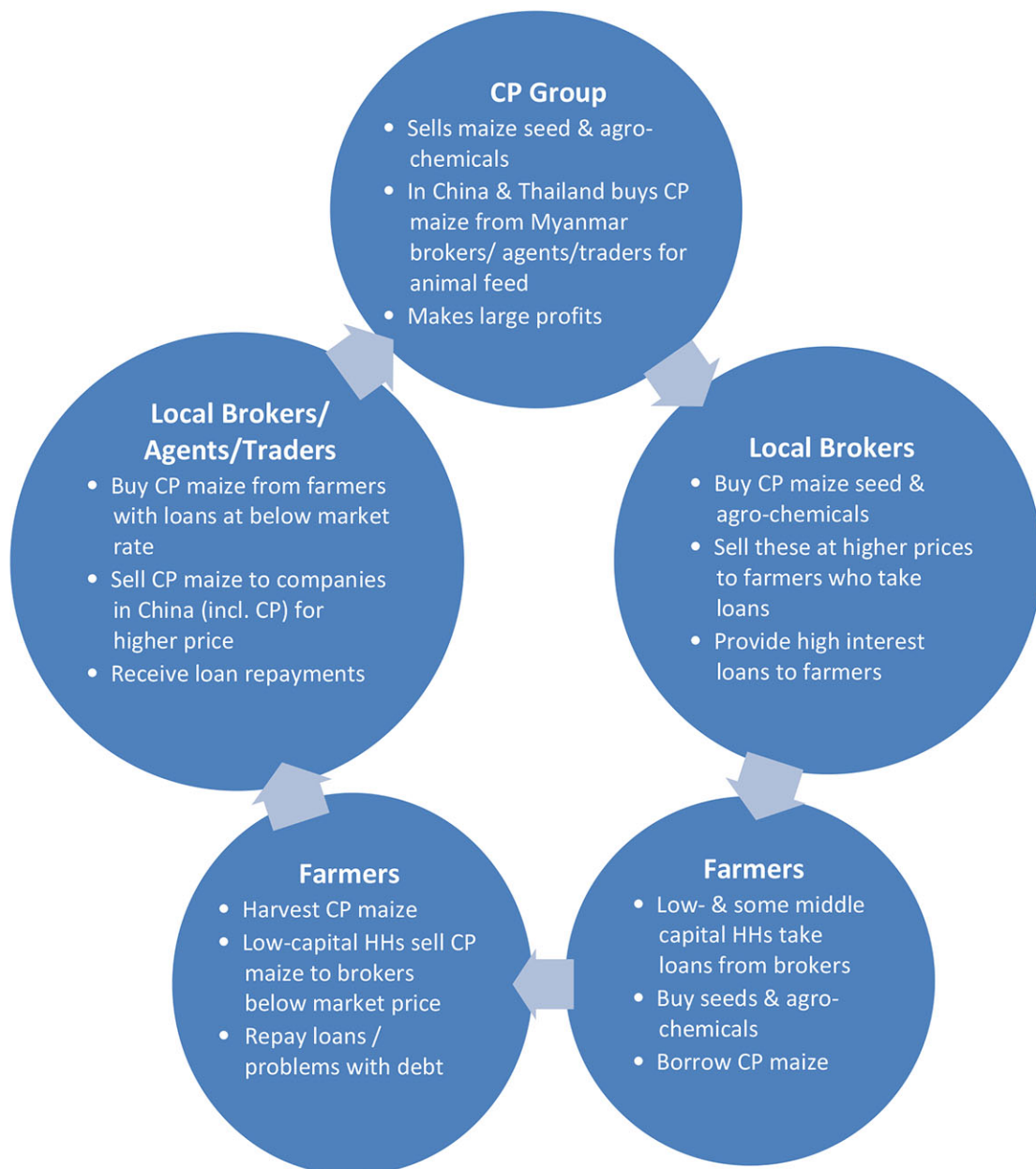


Figure 4: Flow chart of the specific roles of different actors embedded in the supply chain within Myanmar

8.3 Redistribution of village wealth and growing inequality

The socio-economic situation for a household largely determines both whether credit from a broker is needed and the terms of the contractual relationship between cultivator and broker (refer to **Table 1**). High-capital households rarely need credit from brokers: only in two village sites did a few high-capital households need to take out any loans.⁵⁸ In order to purchase inputs required to grow CP maize, for example seeds and chemicals, about half of middle-capital households and nearly all low-capital households in the study villages needed credit from brokers. Low-capital households usually either cannot obtain or cannot take the risks of large loans to purchase the recommended volumes of inputs, however, because of their lack of substantial collateral (even if land is included) or expected income. Households with “capital-deficiency” (measured in monetary and non-monetary terms) often produce

lower-than-expected yields and incomes as a result. This scenario is created from predominately social and political-economic factors, rather than “technical problems” as often cited by agronomists and economists. Lower profits restrict capacity to repay loans that were calculated using CP Group’s advertised expected yields, or the yields from previous years when soil fertility was higher, potentially catalysing or worsening the debt cycle for these households.

As a result of the loan entrapments, in villages where most of the households commit to CP maize cultivation, wealth is redistributed away from middle- and low-capital households to higher-capital village households (and brokers in towns). One poor farmer explained it in simple terms: “We cannot survive growing CP maize; we become farm labourers for other [wealthy] farmers.”⁵⁹

Before CP maize cultivation started, a typical village’s wealth distribution in general resembled an inverted u-shaped bell curve, where the majority of households had 4-7 acres of land and owned livestock. After approximately five years of CP maize production in villages where the vast majority of households have committed to growing only CP maize, distribution of a village’s wealth - measured in livestock and land - shifted from the majority middle-capital households to being consolidated in the few existing now very wealthy households, as illustrated in **Figure 6**.

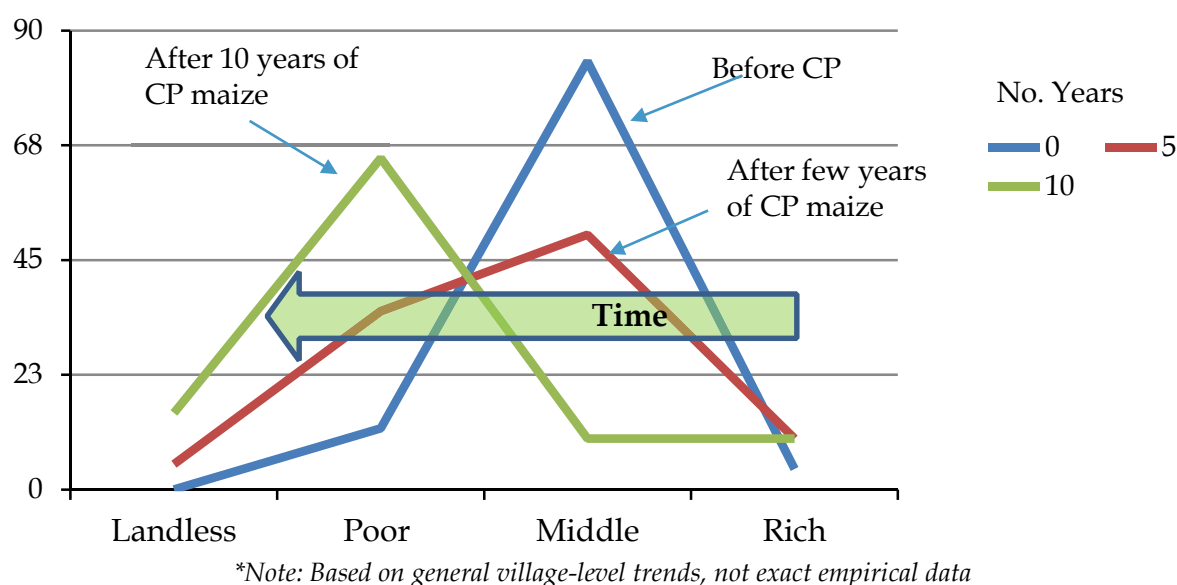


Figure 5: Generalisation of differentiation of wealth over time in CP maize growing villages in Shan State, Myanmar

Despite robust field evidence in study villages of loss of assets from CP maize cultivation debt, a high-level government agricultural officer in Shan State repeatedly claimed there were no problems for maize farmers. This official ignored the political economic conditions that farmers are living in though, stating, “If there is low maize production [by households], then farmers could have debt. But next year they can get higher yield so they can pay back [the loan], so there is no problem. There is no problem with land loss from debt from [CP] maize, it is not happening.”⁶⁰

Field data collected suggests otherwise. Production costs per acre in study villages in North Shan State in 2013 averaged 223,000 MMK (USD 225) for lower-capital households, compared to 352,250 MMK (USD 356) for higher-capital households, a difference of 58 percent.⁶¹ This difference in production costs is explained by higher-capital households being able to purchase and apply more agro-chemicals and hire more labour more often to maximise yields. Average maize yield per acre across study villages in North Shan State was 813 viss (a Myanmar measurement) for low-capital households, compared to 1,775 viss for higher-capital households, a **difference of 118 percent**. The farm gate price for CP maize in the 2013 harvest was the highest ever recorded, at approximately 450 MMK (USD 0.45) per viss with some expected geographical variation, nearly 30 percent higher than the year before in 2012 (although the farm gate price is nearly always below the actual market price, verified in the study villages). Final income *before repayment of any loans* for lower and some middle-capital households (for those who took out loans) was **142,625 MMK (USD 145) per acre**, and for high-capital households was **446,500 MMK (USD 450) per acre**, a difference of **213 percent**. Due to high indebtedness all the low- and some of the middle-capital households must sell their maize harvests immediately to the broker in order to repay loans as that is the time of lowest household cash and food security. It is common during the rainy season, while waiting for the CP maize harvest, for cash reserves of lower-capital households to be depleted. Brokers take advantage of these household's desperate financial and food security situation and pay far below market price, in addition to market prices being at the lowest point immediately following harvest. This leaves farmers with little leftover income or even in negative return. High-capital households, however, do not have any high-interest loans to repay, and in addition can fetch a higher harvest price by waiting until market price rises after harvest, resulting in significantly higher take-home profits.

As these figures are per acre, total profits for high-capital households are even greater as they cultivate ten acres or more per household, whereas lower- and some middle-capital households only have a few acres of land to grow CP maize. These diverse opportunities and challenges for different socio-economic households are summarised for North Shan State village field sites in **Table 4 and Figures 7 and 8** below.

Table 4: Cost-benefit analysis by socio-economic stratification for CP maize production (per acre), 4 villages in North Shan State, 2013

Expenditure (per acre)	Vill. 1, Kutkai tsp.		Vill. 2, Lashio tsp.		Vill. 3, Lashio tsp.		Vill. 4, Kyaukme tsp.		Average		% Diff
	Poor	Rich	Poor	Rich	Poor	Rich	Poor	Rich	Poor	Rich	
<i>Land preparation</i>	40,000	40,000	35,000	35,000	35,000	35,000	45,000	45,000	38,750	38,750	0
<i>Labour for planting</i>	60,000	60,000	45,000	45,000	45,000	45,000	45,000	45,000	48,750	48,750	0
<i>Weeding</i>	30,000	48,000	25,000	45,000	25,000	48,000	25,000	40,000	26,250	45,250	72
<i>CP 888 seeds (5 kg)</i>	29,000	29,000	27,000	27,000	32,000	32,000	30,000	30,000	29,500	29,500	0
<i>Urea fertilizer (50 kg)</i>	23,000	60,000	23,500	60,000	23,000	57,000	23,000	42,000	23,125	54,750	137
<i>Compound Fertilizer (50kg)</i>	16,000	105,000	19,000	84,000	17,500	45,000	15,000	84,000	16,875	79,500	371
<i>Labour for fertilizer app.</i>	3,500	7,000	3,000	7,000	4,000	7,000	3,500	7,000	3,500	7,000	100
<i>Harvesting & threshing</i>	40,000	50,000	35,000	55,000	35,000	50,000	35,000	40,000	36,250	48,750	34
Cost of production	241,500	399,000	212,500	358,000	216,500	319,000	221,500	333,000	223,000	352,250	58
Gross Income	373,500	788,500	273,000	721,500	315,000	714,000	360,000	660,000	330,375	721,000	118
Yield/acre (viss)	900	1,900	700	1,850	750	1,700	900	1,650	813	1,775	118
Net Income (before loan payback)	132,000	389,500	60,500	363,500	98,500	395,000	138,500	327,000	142,850	446,500	213

*Gross income is total income from sale of maize harvest before deduction of production costs

*Net income is income after deduction of production costs but before loan repayments

There are other ways in which high-capital households are able to maximise profits, including delaying sale of maize harvest until market prices increase, such as later in the dry season. This strategy is not an option for low- and some middle-capital households who must sell their harvest immediately to repay loan interest and to pay for household expenses. Low-capital households also employ a range of coping strategies to minimise costs and risks, such as planting second-generation CP maize seeds despite very low fertility rates, to avoid purchasing seeds every year - a strategy not used by households with more capital. Another common trend among low-capital households is to use collective share-labour to minimise labour costs, effectively spreading the costs and risks among many poorer households - a strategy more common with subsistence rice production. Yet, counter to all the evidence presented in this report, another high-level government agricultural official in Shan State asserted that there are only positives for CP maize-growing farmers, and everyone is getting higher yields and therefore higher profits. Government agricultural officials often stated “the farmers are all happy.”⁶²

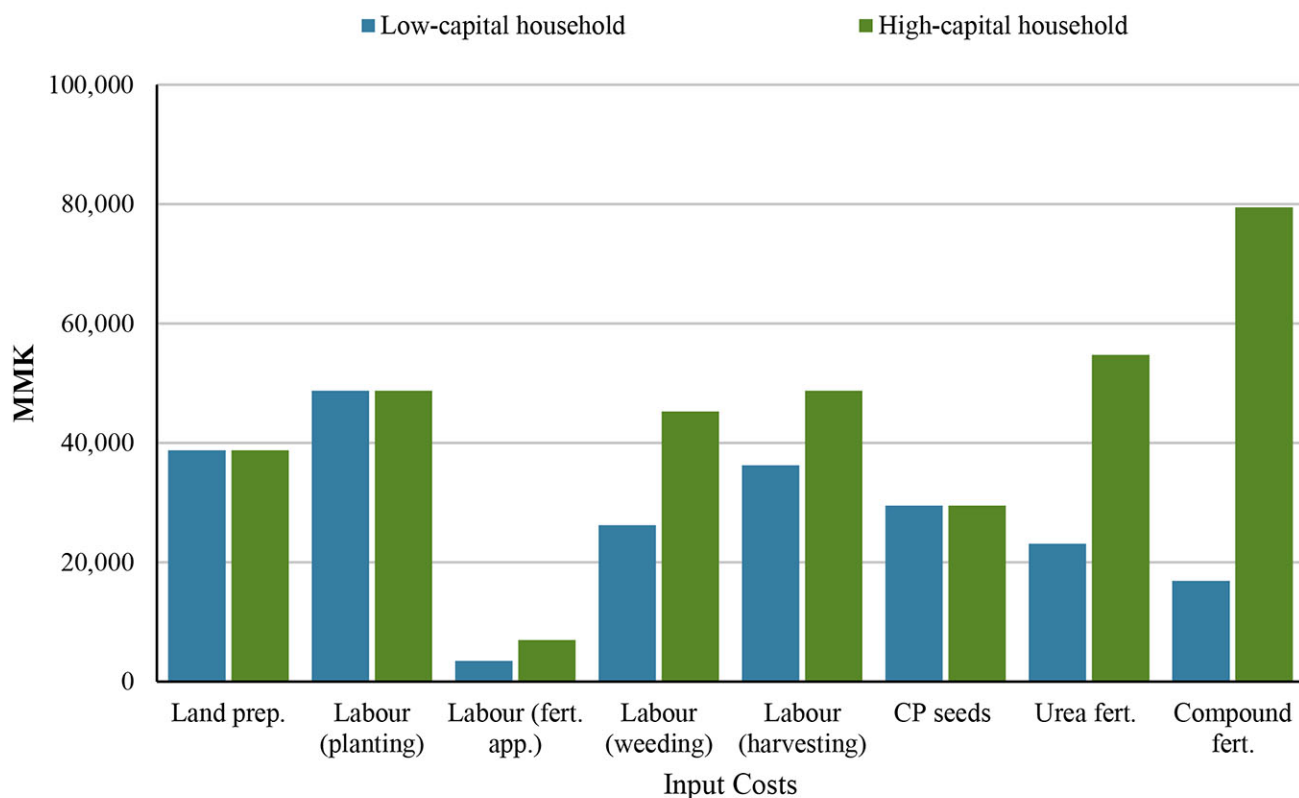


Figure 6: Low versus high-capital household CP maize average cost analysis (per acre), across four North Shan State villages, 2013

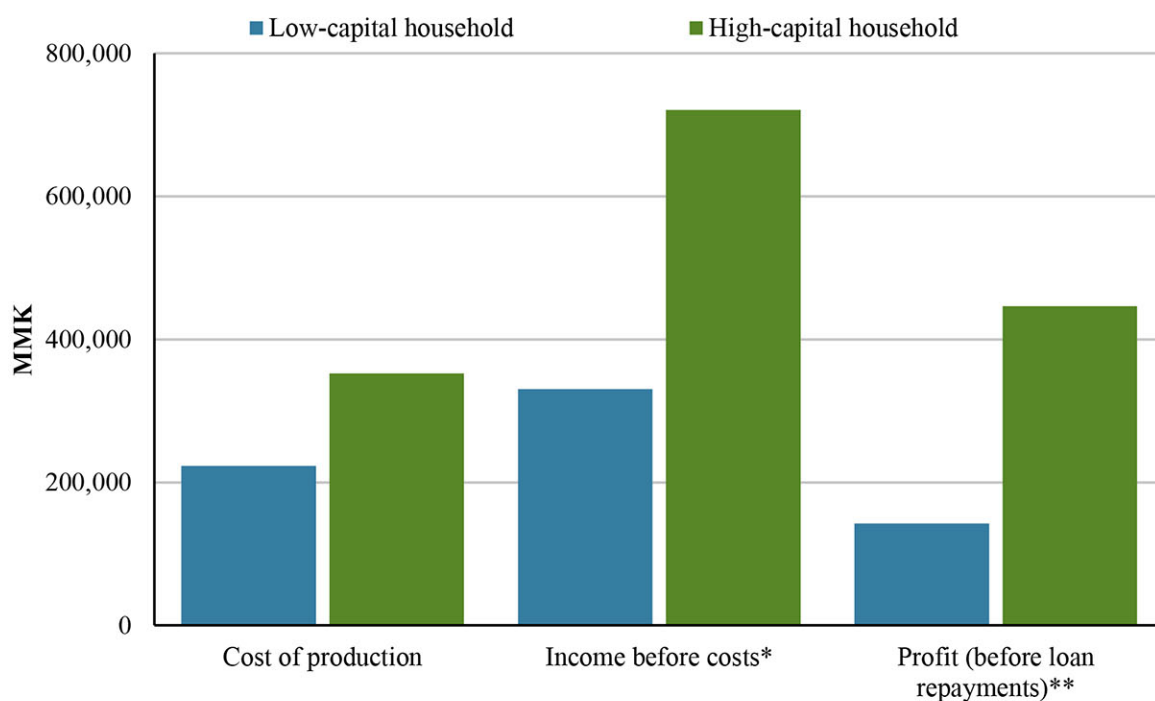


Figure 7: Low versus high-capital household CP maize average benefit analysis (per acre), across four North Shan State villages, 2013

* Gross income is total income from sale of maize harvest before deduction of production costs

** Net income is income after deduction of production costs but before loan repayments

Note: Low-capital households (unlike high-capital households) must then pay back loans, further undermining any potential profit.

8.4 Geographies, agro-ecologies and political histories

This study has identified other significant non-technical factors influencing socio-economic outcomes that need to be considered in agricultural development outreach schemes.⁶³

Physical geography is of particular importance, particularly whether a village is located in the north or south of Shan State due to different political histories, migration patterns, broker relationships, its distance from roads and towns, whether cultivation plots are located in valleys or in more remote uplands, and distance to national borders, in this case China. The closer a village is located to transportation routes, towns, productive valleys and the China border, the more at risk farmers seem to be of losing their household assets, particularly land, from defaulted loans to brokers, not to mention being at a higher risk for outright land grabs. This is because the higher the value of land (closer to infrastructure), and the closer villagers are to town-based brokers, the more household farmland becomes the desired asset to obtain rather than just profit from CP maize loans alone.

Agro-ecology and agricultural production management strategies also influence wider socio-economic outcomes, including farmer cash crop choice, overall food security, and mechanisms for coping with debt. Lower elevation villages with cultivable uplands and lowlands are generally more food secure due to availability of paddy land and more favourable soil and climatic conditions for diverse food crops. For higher elevation villages, nearby forests, if any still remain (with informal access rights), provide wild foods, timber, charcoal production, and other non-timber forest products (NTFPs) which can be sold to generate income to pay off debt. In areas where it is ecologically and politically suitable to grow poppy, poppy-growing households have a higher income, pending a good harvest, to buffer against the debt cycle as they have available household capital from the selling of the poppy harvest.

The historical lineage of ethnic politics in northern Myanmar has shaped a particular geography of farmer-broker relationships derived from histories of war, drugs and migration in different parts of Shan State,⁶⁴ although this is not commonly discussed in relation to smallholder agriculture. North Shan State, for example, was at the centre of Cold War-linked conflict in Burma (Burmese Communist Party, Kuomintang, etc.), which gave rise to greater incidences of poverty, opium cultivation, and armed groups - of which the legacy continues today with non-state armed groups (NSAGs). The recognized close relationship between some top Burmese military rulers and the national Chinese government, coupled with an illicit drugs and resource extraction economy and cross-border trade opportunities, are contributing factors encouraging in-migration of ethnic Chinese into North Shan State over time. Kokang Chinese in Kokang Special Autonomous Region migrated further into North Shan State during particular tumultuous periods as well. Further migrations of ethnic Chinese into North Shan State towns has given rise to a new group of brokers operating under different cultural norms than those that non-Chinese farmers are accustomed to, according to field informants. Ethnic Chinese brokers in the less remote study sites were very interested in obtaining land along transportation and trade routes. According to village field sites nearer to roads and markets, as well as key informant interviews with community development workers, there appears a particular trend of

lending for CP maize cultivation to these farmers, which in some cases result in the transfer of desirable land holdings to brokers upon farmers defaulting on loans. This is in part facilitated by the issuing of land use certificates (LUCs) which are sometimes now requested by brokers in the north as collateral for loans; although government-issued LUCs are not necessary for transfer, as transfer of informal use rights can be recognised locally.

8.5 Alternative income stream activities

Supplementary agriculture crops

In a limited number of villages, some farmers cultivate licit crops in the off-season, such as black Niger and tobacco in conjunction with poppy (discussed in detail below), which provide crucial cash income to help pay off loans and in effect subsidize CP maize production. However, commonly most farmers have dedicated all their available farm land to CP maize production, meaning that often the soil becomes too degraded to grow any other crops after repeated CP maize harvests thus removing the farmers ability to produce supplementary crops. On-farm wage labour, predominately by low-capital households for high-capital households' CP maize farms in the same village (but also for poppy farms), is a major financial coping strategy. Non-farm wage labour appears much less common, mostly because few non-farm jobs are available in Shan State – the exemption being for those that migrate abroad (China mostly) who may end up in the construction industry. Natural resources, especially forests, also provide a coping mechanism; one village field site engaged in logging and charcoal making in nearby forests, although this seems tied to particular ethnicities (Lahu), geographies (near more remote upland forests) and (higher) elevations.

Livestock ownership and raising

Cultivation of CP maize has also had an impact on levels of livestock ownership. Livestock, especially cattle –which are culturally important throughout Shan State for different ethnic communities – have been used as an asset with which to pay-off debts. This practice has been so common that in study villages nearly all low-capital, and most middle-capital, households no longer owned any cattle a few years after CP maize cultivation commenced. Many low- and middle-capital households have started chicken raising (and pigs for a few villages) as a supplemental form of income to offset low incomes from CP maize.

Labour migration

Household members may migrate as casual wage labour to the nearest bordering country, usually China since debt in the north is more widespread and severe, to send remittances back home. Remittances have become a critical household economic strategy, but one which potentially puts the migrant at higher risk in their destination country.

Sale of land

Once all other options have been utilised, the final option left for indebted households is to sell their most important asset, which is their land. Farmers either rent out land, for example to ethnic Chinese brokers in North Shan State, or (informally) sell their land, in most cases either directly to the broker or on the market for cash to pay off

debts. In several of the study villages the selling of land under economic duress has become common enough that headmen, backed by higher-capital households, have made new decrees forbidding selling of village land to outsiders. While these decrees may stem outside businessmen from obtaining land from loan defaults, in effect high-capital households in the village are now able to accumulate more land by buying up debt-ridden household land due to the elimination of outside competition.

8.6 Opium versus maize crops: the trade-offs

In the village study areas the cultivation of poppy or labouring on poppy farms (which receives a relatively high daily wage rate due to risk) significantly mitigated the varying socio-economic impacts from CP maize cultivation. Five village field sites (of eight in total, all four villages in South Shan State and one in the north),⁶⁵ partook in poppy production as producers or labourers, ranging from a few households in the village providing labour to most households cultivating. The relatively high incomes earned (during years with successful harvests, as in the past few years) off-set those households' need to rely on brokers for loans for CP maize inputs and other household necessities. In other cases, households entered the poppy economy only after debt from CP maize as a coping mechanism.

During planting and harvest seasons, labour demand is highest, and competition between poppy and maize crops for available labour can ensue. There is an economic necessity to grow both crops in some areas, which was explained by a villager in a FGD in South Shan State: "If I only grow CP maize it is only enough to provide for my stomach. But if I grow poppy too then it is good for growing my household economy."⁶⁶

Households involved in poppy cultivation tend, when harvests are good, to have more available cash and are therefore mostly able to avoid entering a debt cycle. However for households in debt, villagers in poppy growing areas felt that, as one farmer put it: "Only poppy can solve our debt problem." This suggests that as land and livelihood dispossession continue to increase in Shan State, more households will rely on the poppy economy to cope with their household finances, which is further supported by grassroots research networks operating in Shan State.

Evidence from the research shows that villages involved in poppy production have lower inequality and less redistribution of wealth from low- and middle-capital households to higher-capital households. There are greater risks for these households as cultivation is illegal and often attracts taxation from various (non-)state parties. In response to the legality issue, one villager retorted, "If the government wants us to stop growing poppy, then give us a better CP maize harvest price!"

The demographic of households involved in poppy growing has been changing in recent years. These crops are mostly grown in different agro-ecological habitats, so competition for land is minimal. Intensification of cultivation with the use of agro-chemicals and irrigation means higher-capital households or businessmen dominate poppy farming. It is no longer a poor farmer's crop because of the input costs, and poorer farmers are now more likely to be labourers. This provides some insight into the poppy economy, demonstrating that a multi-scalar political economy analysis of

both licit (CP maize) and illicit (poppy/opium) production, and their interaction at a landscape and village level must be studied to order to understand the poppy economy and therefore more effectively implement post-poppy “alternative development” projects in Shan State.⁶⁷

8.7 Food security

Generally, maize farming has reduced food security for most low- and some middle-capital households. The major reason is a switch from subsistence cultivation - or in some cases cash crops that did not involve the purchase of expensive inputs - to growing high-input cash crops and instead relying solely on purchasing food. CP maize fields have replaced upland rice and vegetables, as well as some paddy fields. Few households in the villages studied continue to grow their own rice, relying on cash from CP maize harvests to purchase household rice and other supplemental foods for the year. Since profits from CP maize cultivation are less than expected for low and some middle-capital households, less cash is available than expected to purchase food and pay for other essentials such as education. One local NGO worker in Shan State summarised this situation as: “they are working for lower quality rice now.”⁶⁸ A villager captured the deteriorating food security situation in their village as such: “We still have some rice, but no more curry.”⁶⁹

This problem became especially acute when CP Group phased out its subsidies of inputs, leaving farmers spending relatively more to support their CP maize crops. Although low-capital farmers struggled to make a profit or break even, they had difficulty exiting or transitioning to other income streams. A key reason is because maize is mono-cropped, planted in the same plot every year, and applied with heavy doses of NPK and urea fertiliser. Over successive years soil fertility becomes heavily compromised, with soil nutrient depletion rendering land unsuitable for continued cultivation. As soil fertility continues to deteriorate annually without organic matter applied, input costs increase and debts potentially grow, diminishing farmers’ abilities to achieve advertised yields and profits from CP maize cultivation.

This dilemma has particularly severe effects for lower-capital households with limited land resources, and renders them either landless or forced to open up new frontier forested land, further aggravating environmental problems and sustainable development challenges.

8.8 Environmental sustainability

Continuous high chemical input mono-cropping used to cultivate CP maize has also been identified as a significant factor in environmental and socio-economic outcomes. Higher-capital households are also affected by soil fertility depletion, but may be able to afford to apply manure to boost fertility and/or could leave some plots fallow and instead cultivate other household farm plots under their possession. Villagers have been expanding CP maize cultivation into upland forest frontiers to open up new fields in the hopes of capturing more potential profits (for more wealthier households with higher labour and input purchasing power) or because former lands were lost to debt or soil exhaustion. Such practices exacerbate deforestation of remaining upland forests that are fundamental for maintaining watersheds, providing wildlife habitat, stabilising climate, and providing NTFPs to supplement incomes and nutrition.

Uplands, where much CP maize production takes place, are especially susceptible to soil erosion, particularly from mono-cropping. Soil erosion reduces the fertility of the land, and seriously impacts local freshwater systems. Industrial maize cultivation requires use of large amounts of agro-chemicals, including NPK and urea fertilisers, and pesticides. These both damage soil health and pollute wider water systems through run-off.

Soil nutrient collapse is one of the main reasons why indebted CP maize farmers do not switch out of CP maize cultivation, because they claim that the soil is no longer able to support the cultivation of subsistence, low-input rice – leaving them trapped in a high-input maize cultivation cycle, but with dropping yields. This hits low-capital households especially hard as they only have a few acres to cultivate, or forces them to open up new frontier land, exacerbating environmental concerns. A limited number of households in this study were also found to cultivate other crops, especially legumes, during the off-season in their maize plots to help partially restore depleted soil nutrients while also providing supplemental income. For all these reasons, mono-cropping of high-input cash crops in the uplands of Shan State is not sustainable.

Conclusion

Myanmar's economy is set to change rapidly as it enters the global market under a new government and further political and economic reforms. Intentions to shift the country more towards an industrial economy reliant on its rich natural resources and cheap labour force would see urban cities and rural villages alike undergo vast changes. The agricultural sector and smallholder farmers in particular – as the backbone of the country's economy and culture – are thus at a dynamic crossroads. As land grabs for large-scale agribusiness concessions receive a backlash from civil society, companies are increasingly looking at ways to invest in smallholder agricultural production schemes.

CP maize contract farming in Shan State offers crucial insight into how one such smallholder scheme has been operating in Myanmar – the only such operation in the country's uplands. While maize contract farming does offer substantial economic opportunities to relatively well-endowed households with the capital means to securely participate, less secure and more marginalised households face significant risks. Myanmar's agrarian political economy is plagued by market monopolisation, lack of government regulation, asymmetric information, and limited physical and market infrastructure, which can allow firms and middlemen to exert unchecked power over smallholders, particularly those with minimal or no financial savings or assets.

Contract farming seeks to redress many of these hurdles by connecting companies with their access to capital, inputs, and markets directly to smallholder producers. However, as this in-depth field research case study has illuminated, the agrarian structures within which villages and diverse smallholder producers find themselves lead to very different outcomes. A household's capital assets, such as land and cash,

significantly determine potential profits due to relatively high input costs to obtain good yields. More poor households therefore must rely on local moneylenders to afford inputs, but with high-interest loans yet low yields from inadequate input applications, get caught in a spiralling debt trap.

But more than just economic endowments shape differential outcomes, as many other pertinent factors often ignored in political economy studies have been shown in this study to influence trends: geography, agro-ecology, political histories, migration patterns, illicit economies, and cultural and ethnic identities. These aspects influence smallholder production and livelihoods just as much, if not more, as economic and technical aspects, despite oftentimes being disregarded, thus demanding greater consideration in devising agricultural development programmes.

The transition from upland subsistence food production systems to industrial cash cropping not only causes dramatic socio-economic effects, but also on the ecosystem and landscape. High-input chemicals and repeated annual mono-cropping are leading to soil nutrient collapse, leading farmers to open up new forested hills to further repeat the cycle of degradation. The growing popularity among smallholders in industrial agricultural cash cropping, and subsequent shift to purchasing food rather than growing food, raises serious concerns about food security, environmental health and overall sustainability.

No technical solution can solve the systemic problems identified in this case study; instead, the country's agrarian political economy needs to be overhauled in order to make outcomes more equitable and sustainable.

Recommendations

Ensure robust policies and state support for smallholder farmers, and more so the poorest and most vulnerable households			
<i>Research</i>	<i>Coordination</i>	<i>Extension services</i>	<i>Action</i>
• Conduct other contract farming case studies, for CP maize in Karen State and other crops throughout the country, to better capture nation-wide trends • Conduct legal research on specific conditions of contract agreement between CP Group and government for maize production scheme (if any exists) • Research smallholder contract agreements for other agricultural commodities (e.g., rubber, biofuels) • Conduct environmental impact studies of CP maize cultivation in particular, and industrial cash cropping in general, to better understand the processes of degradation	• Different organisations to coordinate collaborative research on the country's main contract farming schemes • Link in with existing national and regional advocacy and legal networks that have successfully negotiated settlements with companies and government on smallholder contracts • Bring in agricultural and soil scientists to add scientific insight into soil nutrient depletion from CP maize cultivation	• Work with farmers directly to document cases and create a database for use by civil society and government • Set up a civil society sub-working group with the mandate to help coordinate research and advocacy on behalf of smallholders engaged in contract farming arrangements • Work with regional and national farmers' unions	• Create awareness through targeted advocacy campaigns • Link in with regional coalitions on land and agriculture issues • Set up petitions and other lobbying efforts targeting government, private sector, development community and media on key issues related to detrimental impacts on smallholders from cash cropping contracts. • Write detailed submissions with community members to relevant government agencies on specific cases of smallholders' grievances from contract farming arrangements

<i>Research</i>	<i>Coordination</i>	<i>Extension services</i>	<i>Action</i>
Better regulate small-scale agricultural production and trade by ensuring a fairer distribution of risk along value chains			
• Research entire CP maize commodity value chain to better understand the political, power, risk and economics along each node of the chain • Research other agricultural commodities' smallholder value chains to examine differences and leading factors of empowerment for smallholders	• Coordinate research on both sides of China border to capture the value chain of CP maize in China • Provide lessons learned from other national contexts	• Develop a generic risk management framework with various scenarios to help inform smallholders how best to prevent unmanageable debt • Provide hands-on logistical and political support to establish farmer co-operatives where and when desired to share supply and storage facilities, labour teams, and maize inputs • Provide information briefs to farmers' unions to distribute to their communities	• Design an information portal using web and mobile phone platforms in major local languages so farmers can input and access current market information on maize farm and market prices, interest rates and repayment conditions, input prices, etc., so the best informed choices can be made • Provide political and logistical support to civil society organisations to help hamper local moneylenders virtual cartel over smallholders with their unfair advantages • Lobby CP Group to not offload risks to smallholders by their particular CP maize production module

<i>Research</i>	<i>Coordination</i>	<i>Extension services</i>	<i>Action</i>
Encourage a policy-enabling environment for improved access to affordable credit for rural (non-paddy) smallholder farmers, especially low-capital households			
• Engage with private sector, universities, donors and researchers of different disciplines to better understand the country's diverse contacts of smallholder finance and the rural agricultural economy • Research lessons learned from other countries on the positive and negative outcomes to different segments of society on providing extensive micro-finance services	• Coordinate research and advocacy among the different agencies, researchers and civil society organisations	• Liaise with existing government agencies and micro-finance organisations to provide better outreach and affordable services to rural smallholders • Workshops to civil society organisations, government and donor agencies, and farmers unions on the pros and cons of micro-finance lending to rural smallholders	• Petition and lobby government agencies, banks, moneylending cartels and micro-finance organisations on how to better meet rural smallholders financial needs, and the associated risks • Lobby CP Group to not contract out local moneylenders as sources of cash and inputs for their CP maize commodity production chain
Better monitor and regulate local money-lending practices to minimise debt risk among at risk households			
• Further research on the role of moneylenders in Myanmar's rural economy • Further research the role of land use titles to farmers in facilitating access to credit, and incidences in furthering the loss of land to debt	• Collate lessons learned from other countries on best practices and successful regulations that have assisted marginalised smallholders in contract farming schemes • Investigate successful monitoring and regulations on land sales under economic duress from other countries	• Use legal advocacy organisations or independent evaluators to work with smallholders to document such cases of ill repute • Set up a referral system easily available to farmers to file complaints of malpractice in loan arrangements	• Advocate for government to prohibit lending to smallholders using entire value of land as collateral • Advocate for government to prohibit selling of land to non-locals without any regulations in place • Implement an informal legal empowerment mechanism so the smallholders who have been unethically or illegally treated by lenders can notify appropriate government agencies for legal recourse • Apply pressure to break up moneylenders' monopolies on rural finance

<i>Research</i>	<i>Coordination</i>	<i>Extension services</i>	<i>Action</i>
Create a conducive political-economic environment in northern Myanmar to better enable alternative development (AD) scenarios that equitably benefit ex-poppy farmers			
• Understand the connections between illicit (ie, poppy) and legal (e.g., CP maize) cash cropping and labour • Better understand first on whether an alternative crop would actually offer long-term equitable benefits to marginalised ex-poppy farmers • Research on linkages of brokers for poppy and for legal crops (e.g., CP Maize)	• Coordinate with the UN, foreign government development agencies, civil society organisations and farmer unions for research uptake and advocacy positions • Provide lessons learned from past attempts at AD in Myanmar and positive relevant examples from other illicit agricultural producing countries	• Set up a mechanism for (ex-)poppy farmers to provide feedback to development agencies working on AD • Encourage more farmer-to-farmer exchanges facilitated by civil society organisations	• Make and distribute a policy brief on AD best practices given Myanmar's agrarian political economy • Highlight the linkages between the poppy economy and rural upland farm livelihoods, especially land grabs and debt • Organise forums at national and regional levels to encourage debate and research uptake • Set up a task force between LCG and the UNODC to help guide AD best practices from a land rights and livelihood perspective
Ensure business standards – environment, social protection, economic equity – are aligned with international standards			
• Understand the complex relationships between brokers, farmers and companies for the specific crop and contract farming system under scrutiny • Research similar initiatives that work in certain contexts e.g. the EITI, the 3ADI, etc. to see how such mechanisms could work for Myanmar	• Work with local and national government agencies to coordinate better contracts for farmers • Link in with existing bodies that monitor and work with government to regulate private sector • Link with NGOs operating in Myanmar advocating for transparency and best practices	• Publish and workshop guidelines of best practices for civil society organisations and contract farming communities to create awareness of standards	• Advocate government to establish safeguards, such as enforcing a threshold price for inputs sold by brokers, and penalising breaches • Hold workshops and distribute briefing reports to the private sector engaged in the agribusiness sector in Myanmar

Annexes

Annex 1 –Overall Trends of CP Maize Producing Villages in South and North Shan State, 2013

<i>SOUTH SHAN STATE</i>	Demographics	Village Wealth Distrib.	Geography	Agro-Ecology	Land Tenure	Brokers/Loans
<i>Village 1: Hse Saing township</i>	104 HH; 650 people; Pa-O ethnicity	Landless = 5%; poor HH = 30% (avg. 2 acres); middle HH (avg 7 acres) + rich HH (avg. 15 acres) = 65%; HH became more poor from selling land to now rich HH; Female-headed HH = 10%	1 mile from main road; 3,000 ft elevation; PNO authority + MM govt admin	Upland/lowland; CP maize for taungya; now only CP maize grown since 4 years ago	No land grabs; some MM govt land titles to wealthy HHs; low tenure security; customary laws; MM govt land admin	1 broker in nearby village, same ethnicity (Pa-O), for middle + some poor HH; 1 Pa-O broker in town for poor HH; 5% interest rate for \$ & input loan (starts at harvest for input loan); richest HH no loans, 1/2 middle HH take loan; all poor HH take loans
<i>Village 2: Hopong township</i>	100 HH; 596 people; Pa-O ethnicity	Landless = 3%; poor HH = 40% (avg. 4 acres); middle HH = 57% (avg. 6 acres); rich HH = 2% (8+ acres); female-headed HH = 30%	Beside road far from town; 3-3,500 ft; only PNO authority	CP maize grown in both upland & lowlands since 3 years ago; some rice & beans in uplands still; lowland paddy & other crops all replaced by CP maize; cattle still common; few pigs & chickens	No land grabs or conflict (because remote); no govt land titles; customary laws only; overall high tenure security	Two Pa-O brokers in Hopong town are relied on for money and input loans; starting in 2014 only money loans will be available to purchase inputs because broker makes more money this way; 5% interest rate/month, effective immediately; rich HH take out no loans, but all other HHs do
<i>Village 3: Pekong township</i>	86 HH; 460 people; Padaung/Kayah ethnicity	No landless HH remaining in village; poor HH = 25% (2 acres avg); middle HH = 65% (6 acres avg); rich HH = 10% (13 acres avg); Female-headed HH = 30%; this has been rather stable distribution like this	Located beside the road, not too far from town, at about 3,000 ft elevation; with only Myanmar government administration	It is mostly lowlands, with very little steep lands; main crops in addition to CP maize is garlic and paddy; no taungya land remains; a lot of pigs and chickens are raised	No land grabs or land conflict; every HH has official land title from Myanmar govt; customary law is followed except for Myanmar government land laws	Two brokers, one Shan and one Pa-O, both in Pekong town; most HH use the broker that charges no interest rate but charges slightly higher price for inputs and lower gate price at harvest; all HH take out input loans, even rich HH; some HH have problems paying back loans, especially female-headed HH
<i>Village 4: Pekong township</i>	194 HH; 1,198 people; Kayan ethnicity	No landless HH remain in vilalge; poor HH = 25% (4 acres, avg, 2 for CP maize); middle HH = 60% (8 acres, avg, 4 for CP maize); rich HH = 15% (10 acres, avg, 8 for CP maize); female-headed HH = 20% (mostly middle HH)	Located 10 miles from road; mostly lowland with some non-steep uplands; 3,000 ft elevation; Myanmar govt administer, some KNPP	Predominately lowlands, with some non-steep uplands; but no more taungya because forest frontier gone; CP maize has replaced upland crops; lowlands paddy, CP maize and poppy are only crops	No land grabs except 1 previous case; 35% HH have official land title; customary laws followed except for Myanmar govt land laws; greater tenure security if have title	Main broker for village is rich HH from village that grows a lot of CP maize and poppy; the other broker is the same Shan one from village no. 3; money loan is 5% interest rate/month starting immediately; input loan has no interest but payment in kind is far below market rate with higher input costs; yet no reported debt problems

<i>SOUTH SHAN STATE</i>	Coping Mechanisms	Food Security	Poppy	Impacts	Misc. Comments
<i>Village 1: Hse Saing township</i>	(1) sell other crops; (2) on/off wage labour; (3) some labour on poppy farms; (4) sell cattle; (5) sell gold; (6) live more simply	Moderate security because some HHs (of all socio-economic categories) have more income to buy food; less security for middle HH because they live beyond means now	Before many grow poppy; now a few HH are growing poppy to supplement corn income; but many labor on poppy plantations	House quality improve and have electronic goods for rich and middle HH; most switch from poppy to corn but some still labour on poppy farms; sell all livestock	"Sethana" NGO providing 2 lak loans to poor HH who have no broker relationship with 5% interest rate
<i>Village 2: Hopong township</i>	(1) sell other crops (tobacco leaf); (2) migrate to Thailand for wage labour; (3) poppy labourers; (4) on-farm wage labour in village	No more paddy available for eating because all paddy land converted to CP maize, so must purchase; have some upland rice but not much; so overall worse food security	Agro-ecology not suitable for cultivating poppy near village; some labour on poppy farms to earn extra income and pay off debts	Some socio-economic improvements, such as hiring a teacher for the school, solar electricity, rebuild village road; some have more cash for food during hot season; but 2011/12 season 35 HH lost everything and went to Thailand for work instead	United, strong village; a good headman that was voted into power; a significant % of HH are in debt from CP maize, especially from two years ago
<i>Village 3: Pekong township</i>	(1) sell other crops; (2) poor HH labour on rich HH maize plots; (3) grow poppy; (4) labour on poppy farms; (5) migrate abroad; (6) sell cattle; (7) plant second generation seeds	Still have paddy for eating since CP maize didn't replace, but did replace upland crops which they now have to buy	Some HH cultivate poppy in response to debt from CP maize, others labour on poppy farms for extra HH income	Every HH growing CP maize by 2006, but with shrinking profit every year; now do not allow to sell land from debt; other crops help subsidize HH economy; whole village sold off cattle	Plan to not expand CP maize in 2014 due to so much debt problems
<i>Village 4: Pekong township</i>	(1) grow poppy; (2) on-farm labour for rich HH; (3) do not take out any loans; (4) buy inputs with cash; (5) sell harvest later; (6) plant 2nd generation seeds; (7) use local NGO for credit	Only a few HH struggle with food security, largely because of the extra income from poppy to subsidize their CP maize ventures; there is a collective rice bank to help those in need	Most HH cultivate poppy in the surrounding village area, alternating with CP maize	All HH grow CP maize starting 4 years ago; most HH also grow poppy; poppy provides much needed alternative income to offset any potential negative economic consequences from CP maize; many HH have farm machines; methamphetamine problems among youth	CP company reps tricked villagers into committing to grow CP maize; headman favorably elected by villagers

NORTH SHAN STATE	Demo-graphics	Village Wealth Distrib.	Geography	Agro-Ecology	Land Tenure	Brokers/Loans
<i>Village 5: Kutkai township</i>	56 HHs; 240 people; mostly Kachin, but also Shan, Bama & Chinese	No landless HH remain in village; poor HH = 63% (avg. 1.5 acres); middle HH = 30% (avg. 4 acres); rich HH = 7% (avg. 10 acres); female-headed HH = 18% (widowed from war)	Located on the main paved road to Muse, 1 hr drive south; Kong Ka militia has authority, Myanmar government administers; elevation = 4,000 ft	Both lowland and uplands; no shifting taungya left as forest frontier gone and all fallows permanently planted; pigs and chickens raised; no poppy able to grow	A lot of land grabs by military and companies because located on major road; much land sold from debt and taken by land grabs so no more selling allowed; rich HH title some land; customary law but statutory land laws	Many brokers in nearby village, with each villager going to broker of same ethnicity as villager; money & input loan: 5% interest rate per month, start as soon as take; pay back in cash after sell harvest; land as collateral for cash loan (not input loan); all HH except rich take loans; all HH except rich sell harvest immediately; debt is a serious and wide problem, except for rich HH
<i>Village 6: Lashio township</i>	58 HHs; 299 people; nearly all Palaung, just a few Kachin and Shan	Landless HH = 3%; poor HH = 91% (avg 2 acres); rich HH = 6% (a lot CP maize cult.); no middle HH anymore from CP maize debt; female-headed HH = 9% (all poor); before the now poor HH were middle HH but they sold their land due to CP maize debt	Located off the main road, not too far from Lashio and from a Kokang Chinese village; 3,000 ft; Myanmar govt administers but with influence from SSA-N	CP maize and black niger are cash crops, with little upland rice; no poppy; some pigs	A lot of land grabs by military and companies and govt, who now cultivates CP maize; no land titles; customary law and statutory administration	80% HH use ethnic Chinese brokers who charge 5% interest/month; pay back is in money or grain based on previous agreement; cancel debt by lease land to ethnic Chinese broker who grows CP maize until debt paid; 20% HH use Kokang Chinese broker with high interest and land as collateral; land lost to debt to Kokang broker as result; all HH take loans and problems with debt; land loss from debt very common
<i>Village 7: Lashio township</i>	280 HH; 1,400 people; majority Lahu, some Wa and a few Shan HH	Landless HH = 7%; poor HH = 71% (less than 2 acres); middle HH = 18% (avg. 7 acres); rich HH = 4% (10 acres); female-headed HH = 11%; poor and landless HH used to be middle HH before sold land from CP maize debt	Located on dirt road in a valley at 2,800 ft; Myanmar government administers but with influence from SSA-N and local militias (Man Bang)	10 years ago start growing CP maize in lowlands and communal uplands; no more rice produced; sold all cattle; pigs and chickens raised; very bad soil fertility and weeds now in CP maize fields	Military land grabs, then give to militia with forced labor for rubber; a lot of land sold under duress from CP maize debt; no HH have land titles; customary law only	Two brokers are used: middle + poor HH use Shan-Chinese broker from nearby town; some rich HH use big Lahu-Chinese broker from Lashio; both use 'big people' in same village to administer loans; repayment in kind with far below market price; every HH take out loan except rich HH (who administer them for others); land as collateral (despite no govt land title); big problem with debt and land loss - but now only can sell land to fellow villagers (e.g., rich HH)
<i>Village 8: Kyaukme township</i>	95 HH; 435 people; all Shan HH	Absent HH (landless, left village but kept house) = 16%; landless HH (remain in village) = 15%; poor/middle HH (inbetween middle and poor, having lost land from CP debt) = 63%; rich HH = 6%; female-headed HH = 16%; former middle HH sold land to rich HH from maize & sugarcane debt	Located 2 mi from main road, at 2,750 ft; village in lowlands surrounded by slightly sloping uplands; govt and SSA-N actively fighting in area	2003 start to grow CP maize, others join afterwards; all HH growing CP maize now instead of sugarcane; obtaining 1/2 yields now for CP maize; rice has been mostly replaced now; new forests opened in uplands to grow; all cattle sold	No land grabs; some middle HH and all rich HH have some of their land titled under govt; middle HH sold land to rich HH from debt; customary law followed except for govt land laws	Several Shan brokers in nearby town as maize trader hub; money & input loans, take by all middle HH and no rich HH; 5-6% monthly interest; pay back in cash (not in kind); market price for harvest grain by brokers (very unusual); land not used as collateral; big problems with debt

NORTH SHAN STATE	Coping Mechanisms	Food Security	Poppy	Impacts	Misc. Comments
<i>Village 5: Kutkai township</i>	(1) \$ loan during rainy season; (2) \$ loan to pay back input loan; (3) rich HH sell harvest later; (4) collective share labour pool; (5) poor labour for rich HH; (6) go to China; (7) pigs/chickens; (8) sell land	CP maize replaced upland rice, so buy mostly, except for some upland rice still cultivated; veggies from homegarden; overall worse off because of no more taungya	No poppy cultivation since forcibly relocated to this village from further and higher elevations by military; no known poppy labouring	All HH grow CP maize; 101 America started CP maize cultivation here but left in 2011 leaving villagers with no alternative credit system; quite poor with few electronic goods, mostly bamboo houses; only rich HH benefiting from CP maize	101 America started CP maize cultivation, but after left villagers needed brokers; policy against selling land now; in future poor & middle HH plan to stop CP maize and instead do sugarcane contract farming
<i>Village 6: Lashio township</i>	(1) grow black niger; (2) labour on poppy farms; (3) migrate to Thailand (very common); (4) non-poppy wage labour; (5) lease land to broker; (6) sell land to broker; (7) sell pre-harvest grain for cash advance; (8) multiple lenders	All households have to buy rice for nearly the entire year now, which often involves money loans and other means to afford	No poppy cultivation; labor on poppy farms by many HH to pay off CP maize debts	All HH grow CP maize for 15+ years; very poor living conditions; sold a lot of land to Kokang Chinese to pay off CP maize debts; rich HH got land from customary inheritance	The nearby Kokang Chinese village has had a big impact on land dispossession where villagers now have about 2 acres but Kokang have considerable land in the village
<i>Village 7: Lashio township</i>	(1) wage labour on rich HH CP maize fields; (2) charcoal + firewood production in forests; (3) sell pigs/chickens; (4) migrate abroad; (5) collective share labour pool; (6) work at grain factories; (7) sell land to rich HH	All upland rice is gone because CP maize has replaced; all HH must buy rice now; poor HH need to take out rice loan	No poppy growing (lower elevation, near military base); no poppy laboring	All HH grow CP maize except landless; started to use brokers after start CP maize 10 years ago; big problems with debt and land loss; 'big people' in village get rich off administering loans on behalf of brokers	Greater inequality in wealth distribution where well-connected HH got rich from administering loans and buying up land from HH under duress from CP maize debt; middle HH sell land and become poor and landless HH; village rule can only sell land to fellow villagers now
<i>Village 8: Kyaukme township</i>	(1) share labour; (2) on-farm wage labour for rich HH on corn farms; (3) labour for timber production; (4) wage labour on sugarcane farms outside village; (5) sold all cattle (none left); (6) raise/sell chickens; (7) migrate to Thailand; (8) sell land to rich HH	Nearly all rice cultivation is gone so all HH must purchase; declining CP maize yields so less profit and money to purchase food; cash loan during rainy season for food; worsening food security	No poppy growing; no HH labour on poppy farms	All HH grow CP maize except landless; started CP maize in 2003 which then replaced sugarcane; didn't use brokers before sugarcane; rich HH became big land holders and CP maize growers from buying up middle HH land from debt; all cattle sold from maize debt; plummeting maize yields; high debt; houses now poor quality	Shan brokers buy Shan villagers' harvest grain at market price without land as collateral, which is unusual; but still debt and landlessness is prominent problem

Works Cited

- Anseeuw, W., Wily, A., Cotula, L. and M. Taylor. 2012. *Land Rights and the Rush for Land: Findings of the Global Commercial Pressures on Land research project*. International Land Coalition, Rome
- Beek, V.T. 2012. "Charoen Pokphand to invest US\$550 million in Myanmar." *Pig Progress News*, 26 July.
[http://www.pigprogress.net/Home/General/2012/7/Charoen Pokphand-to-invest-US550-million-in-Myanmar-PP009104W/](http://www.pigprogress.net/Home/General/2012/7/Charoen_Pokphand-to-invest-US550-million-in-Myanmar-PP009104W/)
- Borras, S. Jr. and J. Franco. 2012. "Global Land Grabbing and Trajectories of Agrarian Change: A preliminary analysis." *Journal of Agrarian Change*, 11: 34-59.
- Borras, S. Jr., Franco, J., Isakson, R. Levidow, L. and P. Vervest. 2014. Understanding the Politics of Flex Crops and Commodities: Implications for research and policy advocacy. Transnational Institute (TNI) Agrarian Justice Program's Think Piece on Flex Crops and Commodities, No. 1., June.
- Burch, D. 2010. Agribusiness Expansion in the Mekong Region: A case study of the livestock/animal feed complex. Internal report, Oxfam Hong Kong.
- Certo, B.D. 2014. "Focus on the food chain." *The Myanmar Times*, 24 March.
- Chung, P. 2011. Agribusiness Expansion in the Greater Mekong Subregion: Cambodia. Internal report, Oxfam Hong Kong.
- Dapice, D., Valley, T. and B. Wilkinson. 2010. *Revitalising Agriculture in Myanmar: Breaking down barriers, building a framework for growth*. IDE, Myanmar and Ash Center, Harvard University, USA.
- Deininger, K., Byerlee, D., Lindsay, J., Norton, A., Selod, H. and M. Stickler. 2011. *Rising Global Interest in Farmland: Can It Yield Sustainable and Equitable Benefits?* The World Bank, Washington, D.C., USA.
- Fisher, I. 1930. "The theory of interest." *New York* 43.
- Grant, J. 2013. "Myanmar: Will Asia's breadbasket rise again?" *Financial Times*, 25 January.
- Hosonuma, N., Herold, M., De Sy, V., De Fries, R., Brockhaus, M., Verchot, L., Angelsen, A. and E. Romijn. 2012. *An Assessment of Deforestation and Forest Degradation Drivers in Developing Countries*. IOP Science, October.
- International Development Enterprise (IDE). 2009. *Assessment of the Myanmar Agriculture Economy*. Feb.
- Integrated Household Living Conditions Assessment (IHLCA). 2011. *Integrated Household Living Conditions Survey 2009-10 Myanmar: Poverty Profile*. Yangon: United Nations Development Programme.
- Jackson, S., Pratumsa, A., Thet Thet Mar, Pritchard, A. and Sweetie Soe Nyo Nyo. 2013. *Myanmar Crop Selection and Value Chain Mapping Report*. Mekong Institute, Thailand.
- Kay, S. 2012. *Positive Investment: Alternatives to large scale land acquisitions and leases*. The Transnational Institute (TNI), Amsterdam.

- Kramer, T. and K. Woods. 2012. *Financing Dispossession: China's opium substitution programme in northern Burma*. Transnational Institute (TNI), Amsterdam.
- Kudo, T. (Ed.). 2002. *Industrial Development in Myanmar: Prospects and Challenges*. Institute of Developing Economies, IDE-JETRO, Japan.
- Lintner, B. 1999. *Burma in Revolt: Opium and Insurgency since 1948*. Chiang Mai, Thailand: Silkworm Books.
- Livelihoods and Food Security Trust Fund (LIFT). 2012. *Baseline Survey Results*. July.
- Mellac, M. 2013. "Understanding rural land issues to engage comprehensive policy dialogue in Myanmar." First research mission, land tenure project, GRET.
- Michigan State University (MSU) and the Myanmar Development Resource Institute's Center for Economic and Social Development (MDRI/CESD). 2013. "A Strategic Agricultural Sector and Food Security Diagnostic for Myanmar." Working Paper. Draft prepared for USAID/Burma. 14 March.
- Michigan State University (MSU) and the Myanmar Development Resource Institute's Center for Economic and Social Development (MDRI/CESD). 2014. *Agribusiness Models for Inclusive Growth in Myanmar: Diagnosis and Ways Forward*. A USAID-supported project.
- Ministry of Agriculture and Irrigation (MOAI). 2012. *Myanmar Agriculture in Brief 2012*. Department of Agricultural Planning (DAP), Government of the Union of Myanmar (GoUM), Naypyitaw.
- Myanmar Census of Agriculture. 2010. MOAI-FAO Joint Project. Survey and Land Records Department (SLRD), MOAI, Government of the Union of Myanmar (GoUM), Naypyitaw.
- Oberndorf, R. 2012. *Legal Review of Recently Enacted Farmland Law and Vacant, Fallow and Virgin Lands Management Law Improving the Legal & Policy Frameworks Relating to Land Management in Myanmar*. Food Security Working Group's (FSWG) Land Core Group (LCG), Myanmar.
- OECD. 2014. *OECD Investment Policy Reviews: Myanmar*. OECD Publishing.
- O'Toole, B. 2013a. "Fears over growth in land concessions." *The Myanmar Times*, 3 June.
- O'Toole, B. 2013b. "Three quarters of new land concessions unused: Ministry." *The Myanmar Times*, 15 December.
- Smith, M. 1999. *Burma: Insurgency and the Politics of Ethnicity*. 2ndEd. London: Zed Books.
- Transnational Institute (TNI). 2010. *Alternative Development or Business as Usual? China's Opium Substitution Policy in Burma and Laos*. Drug Policy Briefing No.33, Amsterdam.
- Turnell, S., Ward, R. and B. Campbell. 2008. "The Chettiars in Burma". *Australian Economic History Review* 48 (1): 1-25.

- White, B., Borras, S. Jr., Hall, R., Scoones, I. and W. Wolford. 2012. "The new enclosures: Critical perspectives on corporate land deals." *Journal of Peasant Studies*, Vol. 39, Nos. 3-4, July–October
- Wong, L. and E. Wai. 2013. *Rapid Value Chain Assessment: Structure and Dynamics of the Rice Value Chain in Burma*. Background paper 6 for the USAID-sponsored "Strategic Agricultural Sector and Food Security Diagnostic." March.
- Woods, K. 2013. "The politics of the emerging agro-industrial complex in Asia's 'final frontier': The war on food sovereignty in Burma." *Food Sovereignty: A Critical Dialogue*. International Conference, Yale University, 14-15 September.
- Woods, K. 2014. "A political anatomy of land grabs." *The Myanmar Times*, 3 March.

Endnotes

¹ Burch, D. 2010,2011; Chung, P. 2011

² See Hosonuma, N. et al. 2012.

³ See, for example, a special issue on a critical examination of 'land grabs' in *The Journal of Peasant Studies*

Vol. 39, Nos. 3–4, July–October 2012, with introductory essay by White, B. et. al. 2012. Also see Borras, S. and J. Franco 2012. For a somewhat different perspective, see Deininger, K., et. al. 2011.

⁴ Woods, K. 2014.

⁵ Woods, K. 2013.

⁶ IHLCA 2011; LIFT 2012; MSU and MDRI/CSRD 2013

⁷ For example, Chinese companies investing in rubber production under China's opium substitution programme use a contract farming scheme in northern Laos, but rely on large-scale concession model for northern Myanmar (see TNI 2010).

⁸ Supplied by Taunggyi, Shan State regional Ministry of Agriculture and Irrigation office.

⁹ Personal communication, Taunggyi CP office representative, 2014.

¹⁰ MSU and MDRI/CSRD 2014.

¹¹ Interview by lead author, Taunggyi, January 2014

¹² MSU and MDRI/CSRD 2014.

¹³ O'Toole, B. 2013a; Woods, K. 2013; MSU and MDRI/CSRD 2013

¹⁴ IHLCA 2011; LIFT 2012; MSU and MDRI/CSRD 2013

¹⁵ Kay, S. 2012

¹⁶ The research team attempted to select a village to study in Yat Sauk township due to the very high concentration of maize cultivation there, but could not confirm a field researcher from that area and so had to select an alternative township / village site.

¹⁷ Kudo 2002

¹⁸ OECD 2014

¹⁹ IHLCA 2011

²⁰ IHLCA 2011

²¹ Oberndorf, R. 2012.

²² According to field research for this project, as well as personal communication with other Burmese researchers and CBO members engaged in rural land issues.

²³ MOAI 2013

²⁴ LIFT 2012

²⁵ IHLCA 2011

²⁶ IHLCA 2011

²⁷ Myanmar Census of Agriculture 2010

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- ²⁸Interview with head of American 101 CP maize programme, Kutkai, North Shan State, March, 2014.
- ²⁹Interview by field research team, South Shan State, February, 2014.
- ³⁰IDE 2009
- ³¹LIFT 2012
- ³²LIFT 2012
- ³³LIFT 2012
- ³⁴MOAI 2012; OECD 2014
- ³⁵OECD 2014
- ³⁶Dapice, D., Vallely, T. and B. Wilkinson 2010; OECD 2014
- ³⁷Wong, L. and E. Wai 2013
- ³⁸OECD 2014. Although, given the absence of legal and institutional mechanisms in place to protect farmers, the caps and regulations may currently be protective for farmers.
- ³⁹OECD 2014
- ⁴⁰Turnell, S, Ward, L., and B. Campbell 2008
- ⁴¹Borraset.al. 2014.
- ⁴²Chung, P. 2011
- ⁴³O'Toole, B. 2013a; Woods, K. 2013; MSU and MDRI/CSRD 2013
- ⁴⁴Burch, D. 2010
- ⁴⁵Jackson, S. et. al. 2013.
- ⁴⁶Beek, V. T. 2012.
- ⁴⁷Grant, J. 2013
- ⁴⁸Certo, B.D. 2014
- ⁴⁹MSU and MDRI/CSRD 2013
- ⁵⁰Interview by lead author, Taunggyi, January 2014
- ⁵¹By 2013 there were 17 Thai investors officially registered to import maize from Myanmar into Tak province through Mae Sot (Thailand) / Myawaddy (Myanmar), which is the major national Thai-Myanmar government trading zone. Imported maize at this official border crossing reached 90,000 metric tonnes per year at a value of between US\$ 160,000 to USD 180,000 per year, although local government officials claim about 10,000 tonnes less (Jackson, S. 2013).
- ⁵²MSU and MDRI/CSRD 2013
- ⁵³Interview by lead researcher, Lashio, March 2013.
- ⁵⁴Interview by lead researcher, Taunggyi, January 2014.
- ⁵⁵Interview by lead researcher, Taunggyi, January 2014.
- ⁵⁶Interview by lead researcher, Lashio, January 2014.
- ⁵⁷Other reports indicate much higher monthly rates of 10-20 percent, however (Dapice, D., Vallely, T. and B. Wilkinson 2010).

⁵⁸ Although in a few of the more poor villages relatively higher-capital households needed to take out small loans for CP maize cultivation due to their relatively lower capital base compared to wealthy households in less poor villages overall - thus functioning more as “middle-capital” households in other villages.

⁵⁹ Interview by field research team, southern Shan State, February, 2014.

⁶⁰ Interview by lead researcher, Lashio, January, 2014.

⁶¹ For the 2013 maize planting season in Shan State, CP maize seeds doubled in price compared to the year before (up to 35,000 MMK/bag suitable for one planted acre) due to high demand and shortage of supply.

⁶² Interview by lead researcher, Taunggyi, August 2013.

⁶³ See also Mallec, M. 2013 for highlighting non-technical reasons for differentiation in the Delta region versus the Central Dry Zone: geography, agro-ecology, culture, and migration histories.

⁶⁴ Smith 1999; Lintner 1999

⁶⁵ Only the two village sites in Pekong township in South Shan State were purposefully selected based on their known involvement in poppy production, the others were not known to be involved in poppy production at time of village site selection. This highlights the extent to which villages throughout Shan State are involved in varied ways in the poppy economy.

⁶⁶ Interview by field research team, southern Shan State, February, 2014.

⁶⁷ See Kramer, T. and K. Woods 2012

⁶⁸ Interview by lead researcher, Lashio, January 2014.

⁶⁹ Interview by field research team, southern Shan State, February, 2014.