

RURAL TRANSFORMATION IN SOUTHERN SHAN STATE: RESULTS FROM THE COMMUNITY COMPONENT OF THE SHAN AGRICULTURE AND RURAL ECONOMY SURVEY

By

Isabel Lambrecht and Ben Belton



Food Security Policy *Research Papers*

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EXECUTIVE SUMMARY

The community component of the Shan Agriculture and Rural Economy Survey (SHARES) was conducted in mid-2018 in 323 villages in 12 townships in southern Shan State. The survey was designed to facilitate analysis of recent changes in the rural economy in southern Shan. Data was collected through group interviews conducted with knowledgeable long-term residents in each of the communities surveyed. The survey collected data on recent changes in physical and social infrastructure, transport and mobility, crop cultivation, agricultural mechanization, labor costs and agricultural labor migration, off-farm enterprises and access to credit. Key findings are summarized below.

Population

Southern Shan State is home to a rich diversity of ethnic groups. A total of 19 different ethnicities resided in the villages surveyed, with individual villages home to between 1 and 12 different ethnicities.

Accessing areas where government control is contested is challenging, leading to an information gap for these areas. Two-thirds of villages in our survey sample are under the administration of the General Administration Department, while the remaining villages are mainly in the Pa-O and Danu self-administered zones. Observations from villages under control of the Shan State Army or others are limited.

Infrastructure

Rural infrastructure, such as electricity, roads, mobile network and schools, has improved substantially since 2011, but is still far from complete. Only 54% of the villages have a paved road and 21% of villages are inaccessible by car during the rainy season. Moreover, only half of all villages have access to electricity. Four out of five villages have a school, but only 15% of villages have a post-primary school.

Access to health infrastructure is poor. Only one in five villages has access to a clinic or rural health center, and the average distance to the nearest clinic is 6 miles, but we find distances as high as 70 miles.

Travel times have fallen sharply over the past 5 years. Declining travel times reflect a combination of improved road access and improved means of transportation. Motorcycles have become widely used and displaced slower modes of transportation.

Agriculture

Cropping patterns have changed over time, with a remarkable increase in maize production over the past 10 years. The total area of maize cultivated in the survey villages more than doubled over the past 10 years.

Over the past 10 years, we see a dramatic increase in the use of machinery for maize cultivation. The share of maize households using tractors for land preparation and mechanized threshers more than tripled during this period, while ownership and use of draft animals declined substantially.

Rural wages reported in South Shan are low compared to other areas of the country, and well below the national minimum wage. Low wages may reflect a low demand for labor relative to supply, related to small average farm sizes and relatively modest rates of migration.

Unlike other regions in the country, rural wages did not increase substantially over the past five years and the size of the gender wage gap is relatively small.

Enterprises

The total number of agriculture-related off-farm enterprises grew substantially over the past 10 years. Growth was particularly rapid for transport and agricultural machinery rental services.

Non-farm enterprises unrelated to agriculture are relatively uncommon, although numbers have increased over the past 10 years.

Credit

Agricultural traders are the most important source of credit in rural villages, surpassing friends and relatives and other informal and formal sources of credit.

Access to credit from formal sources has improved over the past five years. Access to credit from cooperatives, revolving funds and microfinance has improved most rapidly, but access to MADB credit saw only a modest increase.

Improved access to formal finance has been accompanied by a significant reduction in interest rates charged on informal loans. Over the course of five years, interest rates fell by between 0.6%/month and 1.4% per month.

Development projects and farmer groups

There is a surprisingly high rate of coverage by development project in the survey villages, focused mainly on infrastructure provision. Both government and non-government projects mainly focus on roads, water, education (mostly in the form of school buildings) and electricity.

The region contains very few farmer groups. The few groups that exist are relatively small, recent and mainly established with the support of NGOs.

Climate change

There is a clear perception that climate has been changing over the past 30 years. Respondents mostly report increases in the mean temperature, and changes in the mean rainfall, frequency of droughts and onset of the monsoon.

Conflict and land confiscations

Over half of all villages surveyed had experienced armed conflict in the past. One quarter of surveyed villages had experienced conflict within the past 25 years.

Land confiscations occurred in a quarter of all villages. A high share of confiscated land remained fallow or unused after confiscation.

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1. Introduction

Southern Shan is one of Myanmar's most dynamic agroecological zones. It is also one of the most complex in terms of geography, ethnicity, and agricultural practices. Throughout Myanmar there is a dearth of reliable information on agriculture and the rural economy and the nature of changes taking place in the wake of recent reforms. This information deficit is particularly acute in Southern Shan, due in part to a history of conflict.

The Shan Agriculture and Rural Economy Survey (SHARES) was conducted from June to August 2018. SHARES was comprised of three components: (1) a household survey; (2) a community survey; (3) a survey of off-farm segments of the maize value chain. Together, the three surveys are designed to produce a detailed picture of livelihoods, farming systems, agri-food value chains, and the rural economy in southern Shan, and the dynamics of recent changes in each of these areas, in order to support informed decision making by policy makers and development partners. This report presents findings from the SHARES community survey, which covered 323 villages in 12 townships in Southern Shan.

The report is organized as follows. Section 2 presents the survey methodology. Section 3 presents results on: village populations, administration and infrastructure; cropping patterns and irrigation access; agricultural wages; off-farm enterprises; access to credit; exposure to development projects; perceptions of climate change, and; conflict and land confiscation. Section 4 summarizes the main conclusions.

2. Methods

The SHARES community survey was originally planned to represent all 22 townships in Southern Shan State. While conducting scoping research prior to survey design it became evident that this would not be possible due to the security situation in many townships (particularly in the eastern part of South Shan). Permission was granted to implement the survey in 12 townships considered to be safe (Hsihseng, Hopong, Kalaw, Langkho, Lawksawk, Mongnai, Nyaungshwe, Pindaya, Pinlaung, Pekon, Taunggyi, Ywangan)¹. Together, these townships have a population of 1,253,309 people (based on 2014 Census data). With the exceptions of Langkho and Mongnai, these townships are concentrated in the western half of South Shan, covering an area running approximately 200 km north-south, and 100 km east-west, with Inle Lake roughly at its center.

The survey was implemented in a total of 323 villages. Ninety-nine of the selected villages overlapped with the enumeration areas selected for inclusion in the SHARES household survey. Selection of enumeration areas for the household survey was done by a stratified two-stage sampling design. Enumeration areas in 'high maize and pigeon pea' strata were sampled at a higher rate than those in

¹ Certain village tracts in Lawksawk and Mongnai were considered unsafe and were excluded from the sample frame.

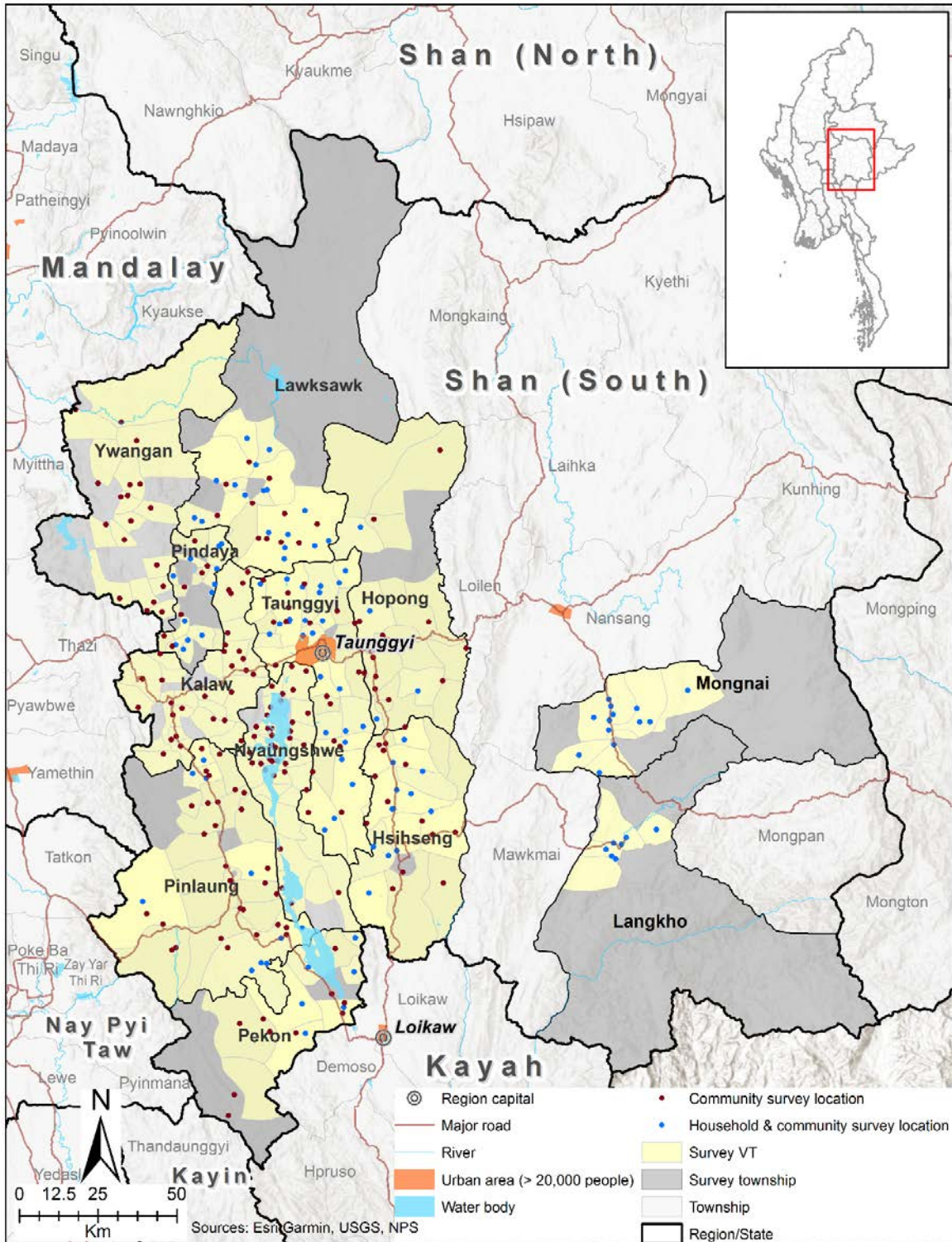
‘low maize and pigeon pea’ strata². The remaining 224 community survey villages were selected randomly with probability proportional to size³.

Community questionnaires were administered during group interviews with four to six knowledgeable men and women, usually including the village head. The survey instrument focused on capturing multi-year recall data on key community characteristics, and was divided into modules covering population, physical and social infrastructure, crop cultivation patterns, agricultural wages and migration, number and type of rural enterprises, access to credit, perceptions of climate change, and experience of conflict. This approach was adopted to gain insights into changes occurring within the rural economy at the ‘landscape’ level that would complement ‘micro’ level data from the household survey. The location of all communities surveyed is presented in Figure 1.

² These strata were defined using on village tract level data on the area planted to different crops in 2017. This information was collected from township offices of the Department of Agricultural Land Management and Statistics. The ‘high’ strata comprised of village tracts accounting for 80% of total planted area of maize and pigeon pea in the nine townships selected for inclusion in the household survey.

³ The sample excluded all village tracts in townships where sufficient communities were already interviewed after the household survey (i.e. Mongnai and Langkho), and village tracts that were already represented by at least two enumeration areas during the household survey. To obtain an estimate of village populations, the population of each selected village tract was divided by the number of villages within that village tract, as listed by the Myanmar Information Management Unit.

Figure 1: Map of SHARES community and household survey locations



3. Results

3.1 Village population and administration

Surveyed villages are relatively small on average, ranging from 7 to 3000 households, but experienced a dramatic increase in the number of households over the past ten years. Most villages are long established, being formed more than 50 years ago: less than 15% of villages were formed in the last 50 years, and only 5% in the last 25 years. The number of households per village increased from an average 98 in 2007 to 145 in 2018. Over the past decade, 73% of the villages in our sample saw the number of households increasing by at least 30%. The main reasons cited for increasing household numbers in these villages were natural population growth (74%) and the division of extended households into smaller nuclear units (74%). Other reasons reported included inflows of refugees from other parts of Shan State (10%) and inflows of migrants from the Dry Zone (5%).

The villages surveyed were home to a total of 19 different ethnicities, among which the most commonly encountered are Pa'O, Shan and Bamar. We also find Danu, Taungyoe, Kayan, Innthar, Lahu, Palaung, Kayin, Li Sue, Chinese, South Asian, and mixed ethnicities. Some villages consist entirely of households from a single ethnic group, but others contain up to 12 different ethnicities. At least one out of three communities host mixed ethnicity households. On average, villages contain households from two different ethnicities.

Villages surveyed are located overwhelmingly in areas that are under direct government control or governed as self-administered areas. Two thirds of the villages (65%) in our survey sample are under the administration of the General Administration Department (GAD). Another third of the villages are in the Pa-O (23%) and Danu (10%) self-administered zones. Two villages (0.6%) in our sample are reported to be controlled by the Shan State Army, and three are reported to be under control of other groups or a combination of administrative arrangements (Table 1). This distribution illustrates the difficulty of gaining access to or conducting field activities in areas where government control is contested. This has important implications for both development programming and research, as it suggests that populations living in such areas may lack access to services or infrastructure available elsewhere and may be under-represented in data derived from national surveys.

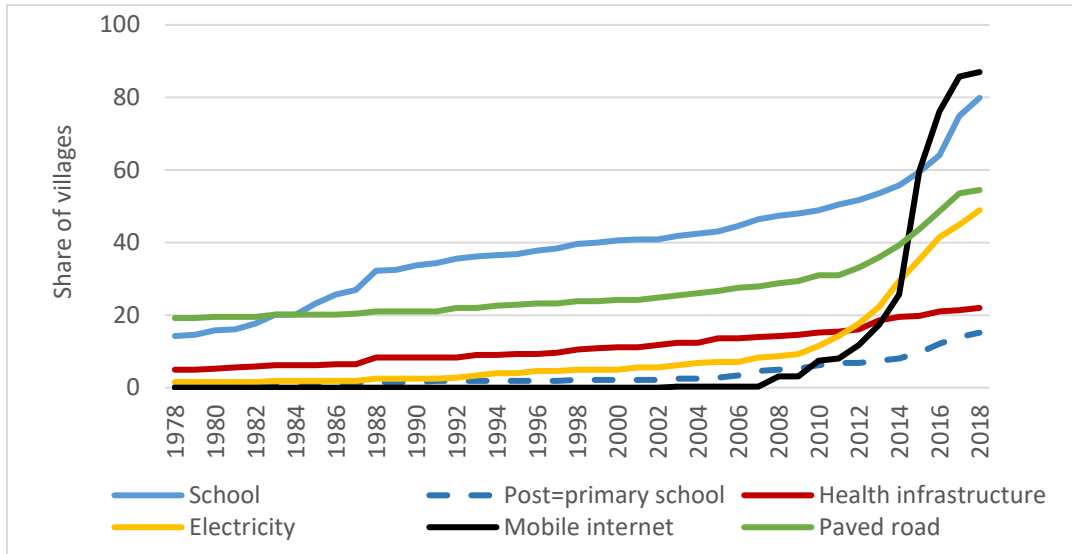
Table 1: Administration of survey villages

Administration	# villages	% of villages
General Administration Department (GAD)	211	65.3
Pa'O Self-Administered Zone	74	22.9
Danu Self-administered Zone	33	10.2
Shan State Army	2	0.6
Other	3	0.9

3.2 Infrastructure

Access to rural infrastructure, such as electricity, roads, mobile (data) network, schools and rural health centers, has improved substantially since 2011, but is still far from complete (Figure 2).

Figure 2: Cumulative share of villages with access to rural infrastructure, 1978-2018



The primary means of access to most villages (92%) is via road, whereas 6% of villages have primary access by boat, and 2% by path or track. Yet, only 54% of these villages has a paved road. Consequently, 21% of villages are inaccessible by car during the monsoon season. The number of villages with access to a paved road increased from 19% to 54% of all villages over the past 40 years, with the most rapid increase taking place since 2011. Villages without a paved road are located on average 4.4 miles from the nearest paved road.

Only half of all villages (49%) have access to electricity. In exactly half of these villages electricity connection is established through a government transformer. The remaining villages establish a connection through a community transformer (47%), which is a transformer purchased using pooled village resources to access the government power grid, or a private transformer (5%). Access to electricity has improved dramatically since 2009, when only 9% of villages had access to electricity (Figure 2). Yet, within villages with access to electricity, only 3 out of 4 households are connected to the electricity network. Moreover, electricity supply is not stable. Power cuts occur on average 5 hours per day and about 2 times per week, but some villages reported having had power cuts during the entire past 7 days.

Contrary to road and electricity access, nearly all villages are covered by mobile phone network (97%) and are served by on average three providers. Mobile internet can be accessed in 87% of villages. The main surge in access to mobile internet occurred between 2014 and 2016, but coverage continues to increase.

Up to 80% of villages now have a school of some kind (either primary or post-primary), with numbers growing especially rapidly from 2014. Students in villages without any school can reach a primary

school within 17 minutes on average, but this varies between a minimum of 5 to up to 90 minutes. Only 15% of villages currently have any type of post-primary level school, while students in other villages need on average 49 minutes to reach the nearest post-primary school.

Access to rural health infrastructure (either a rural health center or a clinic) is poor, being present in only 22% of villages, and has grown much more slowly than access to schools. The average distance to the nearest clinic is 6 miles, but we find a maximum distance of 70 miles.

3.3 Transport, mobility and market access

Travel times have fallen sharply over the past 5 years. Villages are on average 13 miles away from the nearest urban center. The average time required to reach the nearest urban center fell by 41% over the past 5 years, from 86 to 51 minutes in the dry season, and from 101 to 60 minutes in the monsoon, respectively.

Declining travel times reflect a combination of improved access to roads (as described above) as well as improved means of transportation. In 2012, the main modes of transport were motorcycle (41%), trawlerji (20%), boat (9%) and car (9%). By 2017 however, motorcycles have become the main mode of transport in the majority (87%) of the villages, whereas trawlerji and cars are now only the main mode of transport in respectively 1% and 6% of the villages. The widespread use of motorcycles and the displacement of other modes of transport by motorcycles had a dramatic impact, given that a similar distance travelled by motorcycle takes roughly only half the time it takes by trawlerji.

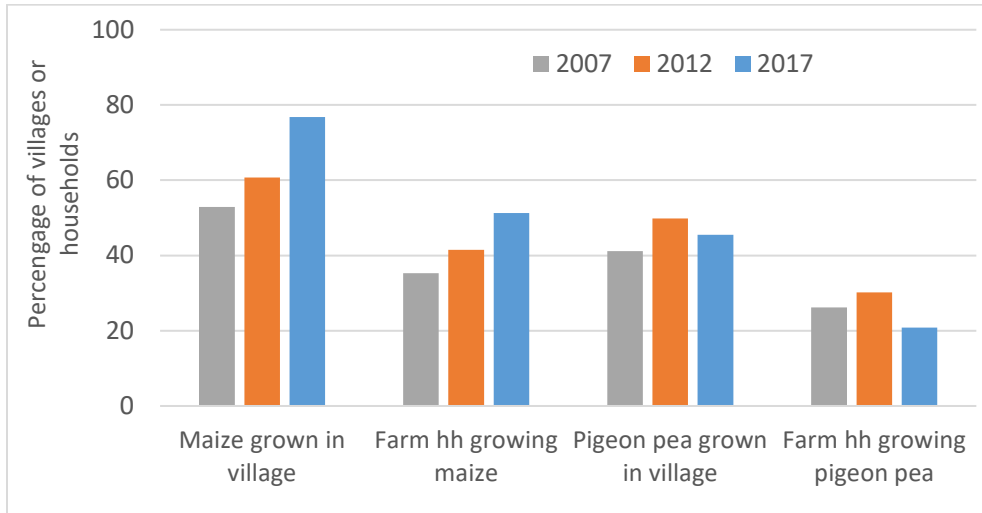
Only few villages are served by a temporary (once in every five days) or permanent market, respectively 8% and 4%. Residents from villages without a market needed to travel on average 5 miles to the nearest temporary market, and 11 miles to the nearest permanent market.

3.4 Agriculture

3.4.1 Cropping Patterns

In line with the increase in the number of households we see an increase in the number of farm households per village over time, but the share of farm households in each village has remained more or less constant at 85%. Nevertheless, cropping patterns have changed, with a remarkable increase in maize production. Maize was grown over an increasingly large geographical area (i.e. in more villages) and at a larger scale (i.e. by more farmers) over the past 10 years (Figure 3). The share of villages with maize growing households increased from 53% in 2007 to 77% in 2017. In the meantime, the share of agricultural households growing maize increased from 35% to 51%, while the average area of maize cultivated by a maize growing household remained around 3 acres. The total area of maize cultivated in survey villages more than doubled from 34,692 acres in 2007 to 73,324 acres in 2017.

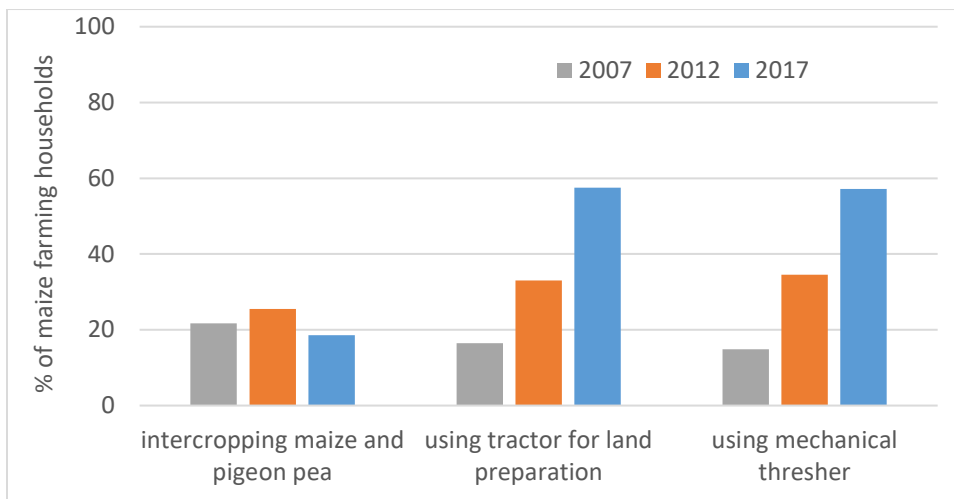
Figure 3: Maize and pigeon pea cultivation, 2007-2017



Looking at similar indicators for pigeon pea farming, we observe a slight reduction in geographical spread but an increase in the share of farm households growing the crop (Figure 3). Intercropping maize with pigeon pea is practiced by 19% of the maize farmers. The share of villages with pigeon pea growers increased from 41% in 2007 to 46% in 2017, while the share of agricultural households growing pigeon pea dropped from 26% to 21% (Figure 4). Only 16% of pigeon pea farmers mono-cropped their pigeon pea in 2017, on an area of on average 1.7 acres.

Over the past 10 years, we see a dramatic increase in the use of machinery for maize cultivation (Figure 4). The share of maize households who use a tractor for land preparation more than tripled, from 17% in 2007 to 58% in 2017. In the same period, the use of mechanized threshers also more than tripled, from 15% to 58%. Meanwhile, the share of agricultural households owning draft animals dropped from 47% to 18%.

Figure 4: Intercropping and use of mechanization in maize cultivation, 2007-2017



About 52% of the surveyed villages have access to some form of irrigation. In 46% of the villages, this is by means of accessing streams or spring water. Only 8% of villages have access to irrigation water from dams, and 1% from private tubewells.

3.4.2 Agricultural Wages

Unlike other regions in the country, rural wages in Southern Shan State did not increase sharply over the past 5 years. Daily wage rates and the size of the gender wage gap in agricultural wages reported in South Shan are both smaller than in other areas of the country. Average wages are slightly lower in the dry season, when demand for labor is lower compared to the monsoon season, but median wages are similar in both seasons. Women’s mean wages were around 14% lower than men’s in both seasons throughout this period (Table 2).

From 2012-2015, mean reported wages for both men and women (adjusted to real 2017 values) remained almost constant (around MMK 3920 for men and MMK 3440 for women in the monsoon season), while median reported wages declined slightly for women and men in monsoon season (1.5% and 4.5% respectively) and women in dry season (1.5%), and fell sharply for men in dry season (18%). Mean wages rebounded from 2015-2017, growing 8-10% in both seasons and for both genders. Mean wages in 2017 were 7-10% higher than they had been in 2012, for both genders and both seasons. Men’s median wages in 2017 were marginally lower (2%) in both seasons than they had been in 2012, while women’s median wages were slightly higher (3%). Average men’s and women’s wages in 2017 stood at around MMK 4300 and MMK 3800, respectively. (Median MMK 4000 and MMK 3500). These rates are substantially lower than the national minimum wage of 4800 MMK per day.

Lower wages in Shan compared to other areas of the country may reflect lower demand for labor relative to supply. Small average farm size in South Shan may account for more limited demand for hired labor relative to the Delta or Dry Zone. The extent of migration from South Shan has been quite modest relative to other parts of the country, but has accelerated recently. This trend may be reflected in the positive shift in mean wages from 2015-2017. The small gender gap in agricultural wages observed in Shan, relative to other parts of the country, may reflect differences in the nature of agricultural work related to crop choice. Further work would be needed to confirm this hypothesis.

Table 2: Mean and median rural wages by season and gender (in 2017 MMK), 2012-2017

	2012		2015		2017	
	Mean	Median	Mean	Median	Mean	Median
Men: monsoon	3915	4089	3923	3915	4305	4000
Men: dry season crop	3797	4089	3761	3356	4093	4000
Women: monsoon	3436	3408	3440	3356	3779	3500
Women: dry season	3335	3408	3315	3356	3580	3500

Inward migration for agricultural work is not common, and this did not change much over the past 10 years. In 2017, migrant agricultural workers were hired in only 11% of the surveyed villages. In these villages, migrant workers made up about 30% of all agricultural workers. Migrant workers were mainly involved in maize and monsoon paddy cultivation, respectively 33% and 19%. Others were

involved in tea, sugarcane, orange, cheroot or pigeon pea cultivation. The main activity for which migrant workers were hired, in order of importance, was for harvesting (47%), weeding (25%), planting (19%), drying or sorting, and threshing. In nearly all of the cases, farmers contact migrant workers directly, rather than through a broker.

In all but one of these villages, agricultural migrant workers came from other villages in Shan state. We find many ethnicities among these migrant workers, and the profile is similar to the general population. Most frequently occurring ethnicities were Pa'O, Danu, Burmese and Shan. Nearly half of the migrant workers (47%) were women. Workers typically stay a few months in the village before returning home. They are rarely paid a different wage to local agricultural workers of the same gender. Only in one out of five villages, we find lower wages for migrant agricultural wage laborers compared to local agricultural wage laborers. Agricultural wage migration is mainly found in villages with higher than average wages, indicating a higher than average demand for labor.

3.5 Enterprises

3.5.1 Agricultural-related enterprises and services

For purposes of analysis we divide agriculture-related enterprises into four categories: agri-businesses; crop trading and retail; food processing, and; rental services. Over the period 2007 to 2017 the total number of businesses, and the number of villages with each type of business, grew for nearly every type of enterprise. Growth was particularly rapid for transport and agricultural machinery rental services, which were widely available by 2017. Most other types of agriculture-related business grew quickly, but from a very low base, and remained available in a minority of villages in 2017 (Table 3).

Table 3: Share of villages with agriculture related enterprises, and number of enterprises per village (2007- 2017)

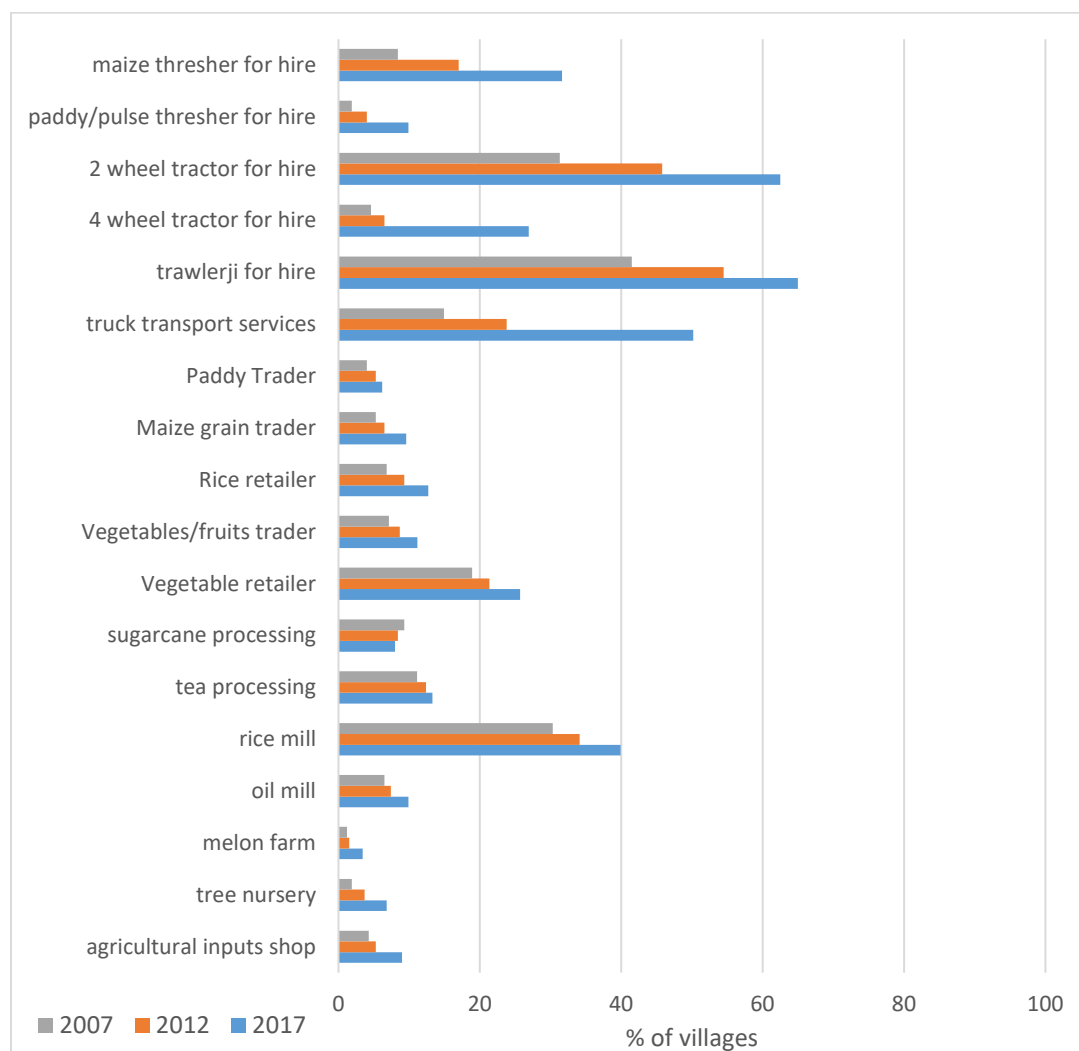
Enterprise type	% of villages		No. per village ^a	
	2007	2017	2007	2017
<i>Rental services</i>				
Maize thresher for hire	8	32	6	13
Paddy/pulse thresher for hire	2	10	2	3
2 wheel tractor for hire	31	63	7	19
4 wheel tractor for hire	5	27	12	10
Trawlerji for hire	42	65	4	11
Truck transport services	15	50	2	4
<i>Agri-trader</i>				
Paddy trader	4	6	4	5
Maize trader	5	10	2	3
Vegetables/fruits trader	7	11	6	6
Rice retailer	7	13	2	3
Vegetable retailer	19	26	11	11
<i>Food processing</i>				
Sugarcane processing	9	8	18	10
Tea processing	11	13	53	70
Rice mill	30	40	2	3
Oil mill	7	10	2	2
<i>Agribusiness</i>				
Melon farm	1	3	20	11
Tree nursery	2	7	23	12
Agricultural inputs shop	4	9	2	3

^a Average excludes communities without the enterprise

^b A *trawlerji* is a makeshift mode of transportation consisting of a tractor engine attached to a cart

The most spectacular increase in both business numbers and numbers of villages with businesses has occurred for agricultural machinery and transport rental services (Table 3). From 2007 to 2017, the share of villages with maize and paddy/pulse threshers for hire increased four- and five-fold, respectively, while the number of service providers per village doubled. The number of villages with two- and four-wheel tractor rental service businesses grew by two and six times, and these are now present in 63% and 27% of villages, respectively. Transport-related services such as trawlerji and truck rentals underwent similar rates of growth. These are available in 65% and 50% of all villages, respectively; an increase of 56% and 237% compared to 2007 (Figure 5). Moreover, the number of transport rental and service providers in each village also increased substantially.

Figure 5: Share of villages with at least one agriculture-related enterprise, 2007-2017



The number of villages with maize, paddy and vegetable traders, and paddy and vegetable retailers increased modestly from 2007-2017. Growth in trader numbers may correspond to greater volumes of crop production for sale, while the spread of retailers might indicate a growing reliance on markets for accessing food. The number of villages with tea processing, rice milling and oil milling businesses increased marginally, while artisanal sugarcane processing businesses declined somewhat, likely reflecting changes in demand for artisanal processed sugar (Figure 5).

Agri-businesses (melon farms, tree nurseries and agricultural input shops), are rarer than the other agriculture related enterprises and services. Nevertheless, tree nurseries and melon farms are respectively twice and three times as common in 2017 compared to 2007. Despite the wider spread across villages, we find a strong decline in the number of businesses per village of melon farms and tree nurseries over the same period. The share of villages with agricultural input shops also doubled over the past 10 years, but they are still only present in 9% of villages (Table 3).

3.5.2 Non-farm enterprises

The number and geographical distribution of most types of non-farm businesses also increased from 2007 to 2017. However, these remained relatively uncommon in comparison to the Dry Zone and Delta (e.g. Belton et al. 2017). This indicates that livelihoods in Southern Shan State remain more strongly agrarian in orientation, and the rural non-farm economy less developed, than in other zones.

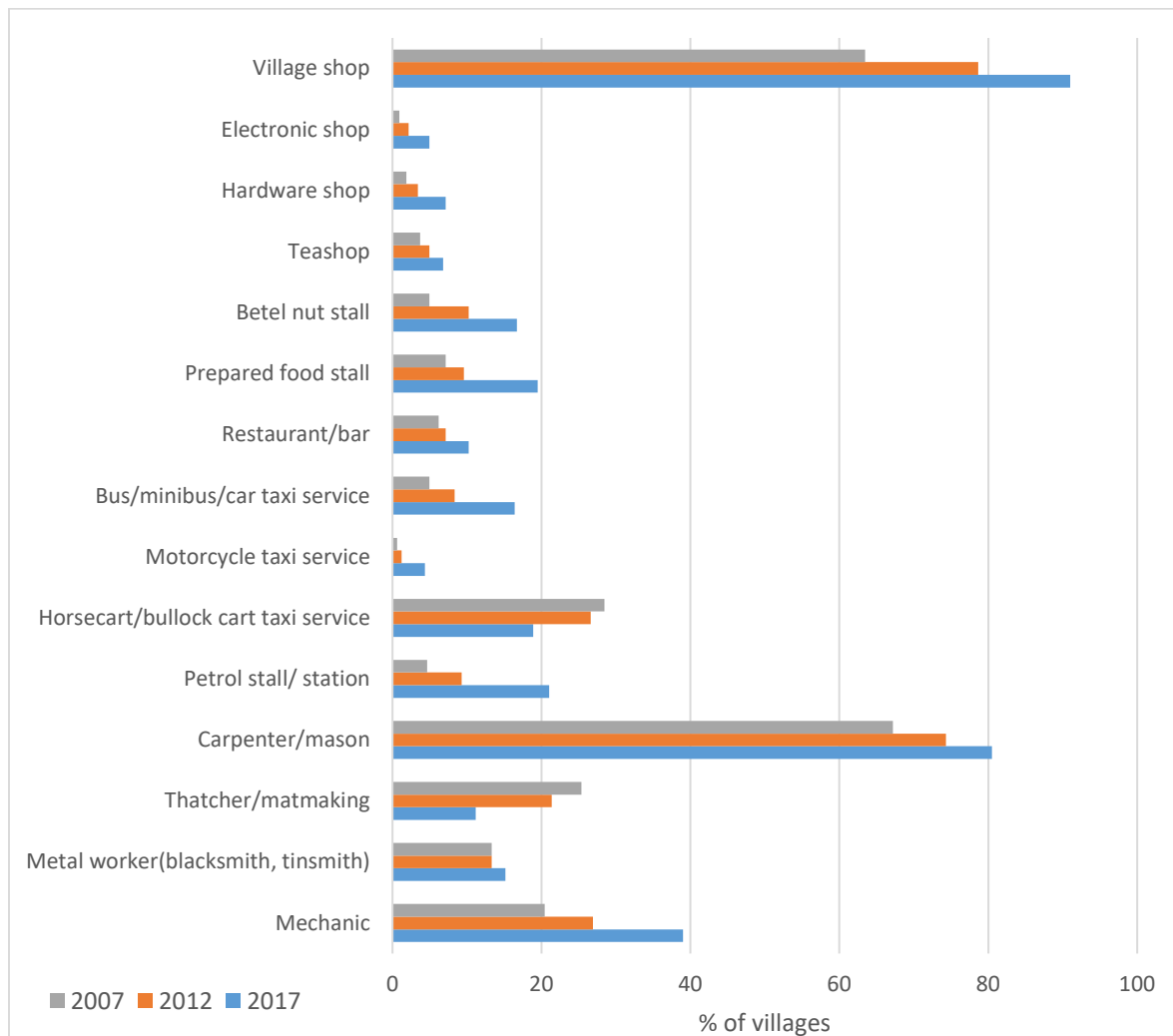
The number of villages with businesses selling prepared food and beverages grew by up to three times over the period in question, but the share of villages with any business of this type remained low, ranging from 7% of villages with teashops to 20% with prepared food stalls (Table 4). Shops selling dry goods, hardware and electronics are also present in more villages than in 2007, yet 9% of villages still lack even a village shop sells basic commodities such as soap and salt. Electronics and hardware shops are now present in 5% and 7% of the villages respectively.

Table 4: Share of villages with and number of non-agriculture related enterprises per village, 2007 -2017

Enterprise type	% of villages		No. per village ^a	
	2007	2017	2007	2017
<i>Food</i>				
Teashop	4	7	2	2
Prepared food stall	7	20	2	2
Restaurant/bar	6	10	4	5
Betel nut stall	5	17	4	5
<i>Non-food shop</i>				
Village shop	64	91	3	5
Electronic shop	1	5	2	2
Hardware shop	2	7	2	2
<i>Transport</i>				
Bus/minibus/car taxi service	5	16	4	4
Motorcycle taxi service	1	4	2	6
Horse /bullock cart taxi service	29	19	18	9
Petrol stall/ station	5	20	4	2
<i>Handicraft, personal services</i>				
Carpenter/mason	67	81	6	9
Thatcher/matmaking	25	11	21	5
Metal worker (blacksmith, tinsmith)	13	15	2	2
Mechanic	20	39	2	3
Hairdresser/beauty saloon	3	12	3	2

^a Average calculated for only those communities with the respective enterprise

Figure 6: Share of villages with at least one non-farm enterprise, 2007-2017



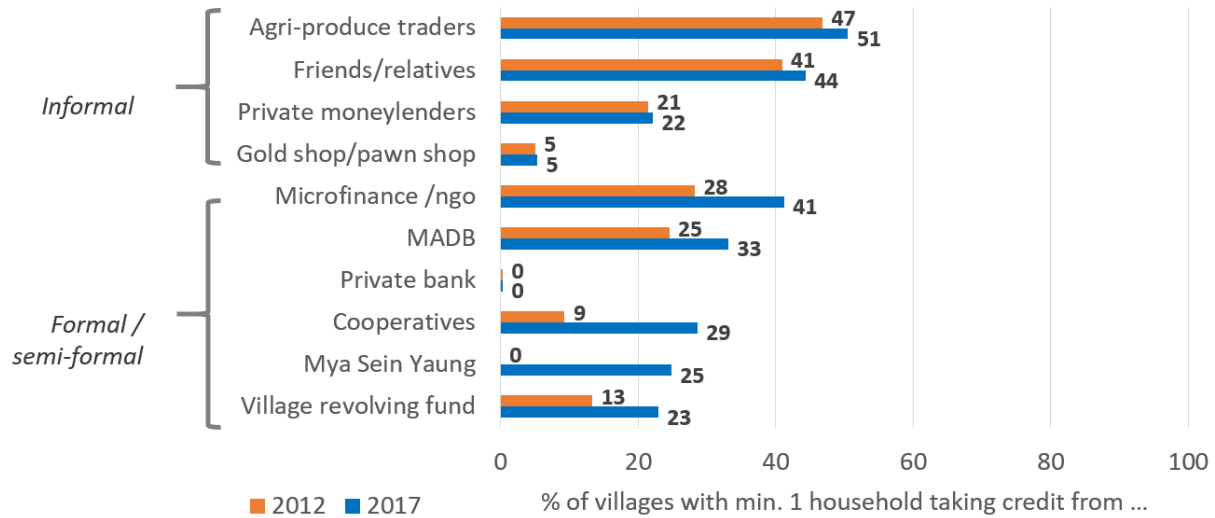
Over the past ten years, motorized taxi transport services became more widely available while there was a corresponding decline in numbers of businesses offering animal-cart taxi services (Figure 6). Nevertheless, animal-cart taxi services are still more frequently offered in villages (19%) than bus/car (16%) or motorcycle (4%) taxi services. Over the past ten years, we see a four-fold increase in villages with a petrol stall or station. The low share of villages with motorcycle taxis suggests that most people make use of their own motorbikes for transport.

Finally, we find rapid growth in some skilled or semi-skilled self-employed occupations (mechanic and carpenter/mason) and decline in others (thatching/mat making). This reflects changes in other segments of the non-farm economy. The growth of transport and rental services has created demand for mechanics while house construction has created demand for carpenters and masons. Conversely, the availability of manufactured construction materials, and perhaps the growing opportunity cost of time, has reduced incentives to produce goods by hand.

3.6 Credit

Access to credit in survey villages has improved over the past five years, driven by growth of formal sources (Figure 7). Agricultural traders are the most common provider of credit accessed by households in 51% of villages, followed by friends and relatives (44%). Households in 22% of villages obtained loans from private moneylenders. The share of households obtaining loans from these informal sources changed little in the five years from 2012 to 2017.

Figure 7: Share of villages with access to loans



In contrast, there were large increases in the number of villages where households obtained loans from formal lenders. Loans from microfinance providers were available in 41% of villages in 2017 (up from 28% in 2012). Access to Myanmar Agricultural Development Bank (MADB) loans also increased (from 25% to 33% of villages but remains very low in comparison to the Delta and Dry Zone. Access to loans from the Department of Cooperatives, Department of Rural Development (through the Mya Sein Yaung scheme) and revolving funds all increased sharply, and were available in respectively 23% and 29% of villages in 2017, though these rates of access still lag behind other parts of the country. It remains extremely rare for rural households to obtain loans from private banks (reported in only one village).

Improved access to formal finance has been accompanied by a significant reduction in the interest rates charged on informal loans. These fell by between 0.6%/month for loans from gold shops and 1.4% for loans from private moneylenders, although remaining high at 3.4%/month and 6.1%/month for loans from these sources, respectively (Table 5).

Table 5: Access, interest rate and time of availability of loans from different sources in 2012 and 2017

Source	Interest rate in 2012 (%/month)	Interest rate in 2017 (%/month)	Average year first available
<i>Informal</i>			
Agri-produce traders	5.24	4.42	2002
Friends/relatives	4.44	3.82	n/a
Private moneylenders	7.45	6.06	n/a
Gold shop/pawn shop	3.96	3.38	n/a
Other	1.1	1.96	n/a
<i>Formal or semi-formal</i>			
Microfinance /ngo	2.36	2.32	2008
MADB	0.42	0.67	2005
Private bank	1.08	1.08	1990
Cooperatives	1.67	1.56	2013
Mya Sein Yaung ^a	n/a	1.2	2016
Village revolving fund	3.91	3.18	2007

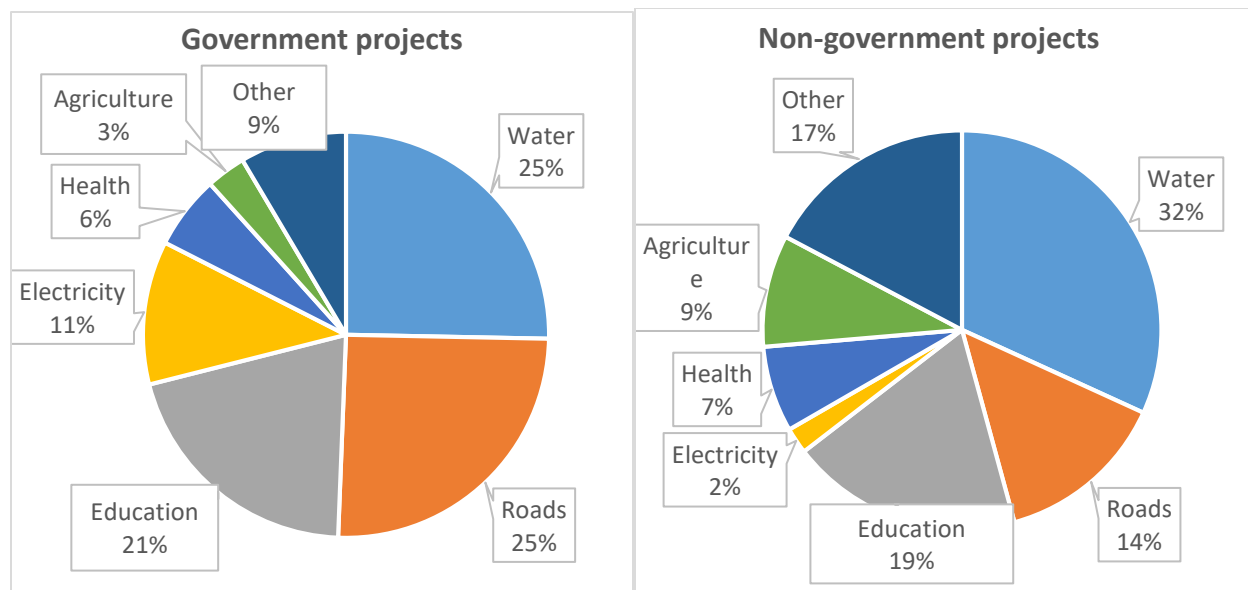
^a Mya Sein Yaung (green revolution fund) is a microfinance fund administered by the Department of Rural Development

3.7 Projects and groups

We find a surprisingly high project coverage in the survey villages. Two out of three (66%) of villages had at least one government project taking place in the last 10 years, and 57% of villages had at least one non-government project. Both governmental and non-governmental projects took place in 38% of the villages, while 15% of villages did not have any type of project taking place. On average, government projects were established later than NGO projects. Nine out of ten government projects were initiated after 2011, compared to only six out of ten for NGO projects. More than a third of the non-governmental projects were from a UN agency, such as UNDP, UN Habitat, UNICEF, and UNODC (in order of occurrence). UNDP was both the most frequently cited NGO as well as the NGO with the longest history of projects in the field.

Projects primarily focus on infrastructure. About half of all government project relate to roads (26%) or water (25%), and another 11% to electricity. About one in five focuses on education, mostly construction of school buildings. Only 3% of projects focus on agriculture and only 6% focus on health. Projects implemented by NGOs are also concentrated on infrastructure: 32% focus on water, 14% on roads and 2% on electricity. Nearly one in five is related to education. There is more emphasis on agriculture, but this still accounts for only 9% of all NGO projects, while only 7% relate to health (Figure 8).

Figure 8: Government and NGO supported projects from 2007-2017

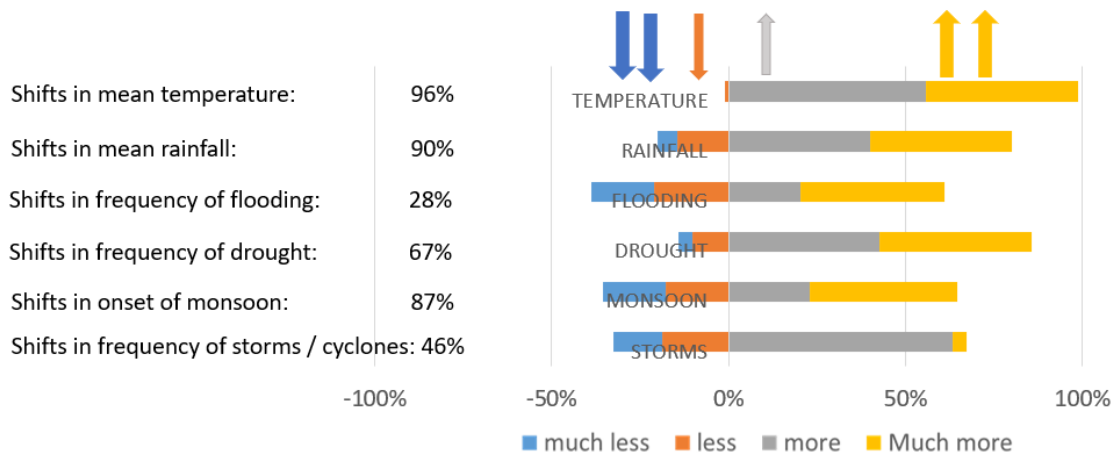


Although Southern Shan’s rural economy is largely agriculture-based, we find very few farmer organizations or groups. Only 7% of surveyed villages reported any kind of farmer organization operating in the village. The few farmer organizations that exist are only recently established (on average only 2 years old). At least half of these are NGO farmer groups.

3.8 Perceptions of climate change

Survey respondents were asked about their perceptions of any long-term changes in the intensity and frequency of climatic conditions and events over the past 30 years. Nearly all villages (96%) noticed an increase in temperature, among which 99% reported that temperatures had increased (Figure 9). About 89% of villages experienced shifts in mean rainfall, but while about two thirds of these villages (63%) experienced more rainfall, a quarter mentioned less rainfall and 12% more erratic rainfall. More than a quarter of villages reported a change in experience of flooding, with less than one third of these experiencing more flooding and two thirds experiencing less flooding. Two thirds of villages reported changes in the frequency of droughts, with most of these experiencing more droughts (81%). The timing of the onset of the monsoon was also perceived to have changed in 87% of villages. The majority of these experienced a later (63%) or more erratic (13%) onset. Nearly half of all villages (45%) experienced either more frequent (68%) or less frequent (33%) storms. Finally, 57% of villages experienced shifts in cold spells, reported as becoming more frequent in nearly half of villages (45%). Variations in the consistency of these answers may reflect the highly diverse terrain found in Southern Shan, with low-lying valleys and hilly uplands having quite different microclimates.

Figure 9: Experience of shifts in climatic factors over the past 30 years, and if so, direction of change (% of villages)



3.9 Conflict and land confiscations

Over half of all villages (53%) surveyed had experienced armed conflict in the past. This is a high number, especially considering that the survey was conducted only in villages where security was considered good, implying no active conflict or threat of conflict at the time of the survey. Twenty-five percent of surveyed villages had experienced conflict within the past 25 years, 7.5% within the past 10 years, and 1% within the past 5 years. Villages were affected directly by conflict for a median of three years, varying from 1 to 90 years.

In the majority of affected villages, villagers were forced to work as porters or laborers (87% of affected villages). Livestock was reported killed or stolen in 28% of villages, housing was damaged or destroyed in 9%, and crops were destroyed or stolen in 4%. In nearly one fifth of villages (18%), households were forced to relocate to another place.

Figure 10: Share of villages ending conflict in respective year, 1978-2017

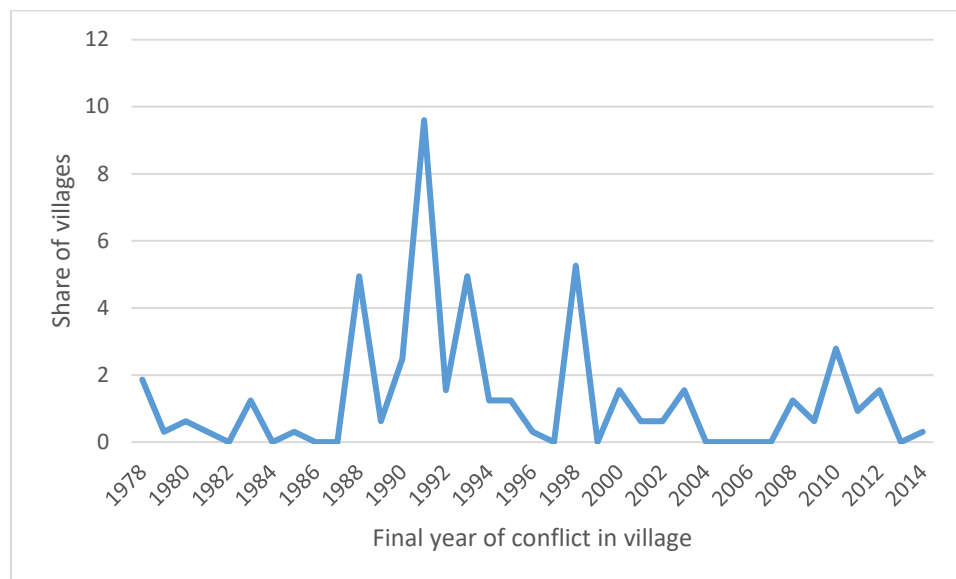


Figure 10 shows the year of end of conflict in the survey villages over the past 40 years. Nearly half of the villages that experienced conflict, did so for the last time before 1992, with a peak in 1991 (10% of all villages). This reflects the timing of ceasefire agreements signed by several of the main ethnic armed organizations in Southern Shan State including Pa-O National Organization, and Shan State Army between 1989 and 1994.

Land confiscations frequently occurred in the past. They were committed by different actors and varied substantially in the number of households and land sizes affected. Confiscations took place in a quarter of all villages, with on average one but up to maximum six different occasions of confiscations in the village. The earliest confiscation mentioned was in 1953. Nearly three quarters of all confiscations took place before 2008. Each confiscation affected up to 150 households (average of 25 households), and covered between 1 to 4000 acres, with an average of 138 acres.

One third of confiscations were attributed to the Myanmar Army, one third by another state institution, and one third by other entities; ethnic armed organizations (12.5%), militia (7%), companies (9%) or private individuals (4%). In only 12.5% of cases was land leased back to the original owners after confiscation, whereas 9% was leased out to new tenants and 7% was sold to new owners (Table 6).

After confiscation, a quarter of the confiscated land remained unused or fallow, and this proportion is relatively similar across different confiscating parties (Table 6). Less than a third (29%) of all confiscations were used for agriculture, but more frequently so when confiscated by State Institutions (35%) or others (38%) compared to confiscations by the Myanmar Army (16%). Only 13% of all confiscations were used for the construction of public infrastructure (roads, dams or other), which consists mainly but not exclusively of land confiscated by state institutions. Furthermore, 10% of confiscations are used as military base, which are exclusively confiscations by the Myanmar Army. Finally, 7% of confiscations are used for mining, 3% for factories or other commercial buildings, and 4 % for other purposes.

Table 6: Use of land after confiscation (% of confiscations), by confiscating party

What was done with the land after confiscation?	All confiscations	Myanmar Army	State institution	Other
Leased back to original owner	13	18	5	14
Leased out to new tenants	9	18	8	0
Resold to new owners	7	5	3	14
Agriculture	29	16	35	38
Fallow/not used	24	24	22	27
Public infrastructure	13	5	27	5
Military base	10	29	0	0
Mining	7	0	8	14
Factory/commercial building	3	0	3	5
Other	4	3	5	3

4. Conclusions

Southern Shan State has experienced rapid changes over the past 10 years. Rural infrastructure, such as electricity, roads, mobile networks, and schools, has improved substantially since 2011, but is still far from complete. Access to secondary schools and health infrastructure are especially lacking. A combination of improved road access and improved means of transportation, especially motorbikes, has led to considerable reduction in travel times of the past five years. At the same time, cropping patterns have changed with a doubling of maize area cultivated, a tripling of use of machinery for maize cultivation and a substantial reduction in the use of draft animals. Meanwhile, an increase in access to formal sources of finance has been accompanied by a significant reduction in the interest rates on informal loans. Both governmental and non-governmental development projects were common in surveyed villages. Projects focused have mostly on infrastructure provision and there are surprisingly few farmer groups. Respondents from almost all villages perceived that changes in climate had occurred over the past 30 years. Half of the surveyed villages had experienced conflict in the past, and a quarter had experienced conflict within the past 25 years. Land confiscations have occurred frequently, enforced by a variety of different actors. A quarter of confiscated lands remain fallow or unused after confiscation.

Despite the aforementioned changes, overall growth and transformation of the non-farm rural economy is much slower than other areas that we have studied, such as Dry Zone or Delta. Numbers of agriculture-related businesses and non-farm enterprises grew, with changes in enterprise types reflecting the changing needs of the rural population. Yet, non-agriculture related enterprises are much less common compared to other areas. Informal lenders, in particular agricultural traders, continue to play a key role in access to credit. Changes in the rural economy have not been substantial enough to generate real wage growth. The gender wage gap is small, but rural wages in Southern Shan are low and there was no substantial increase in wages in real terms over the past five years.