

Food Security Policy Project (FSPP)

RURAL TRANSFORMATION IN CENTRAL MYANMAR: RESULTS FROM THE RURAL ECONOMY AND AGRICULTURE DRY ZONE COMMUNITY SURVEY

By

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Food Security Policy *Research Papers*

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Author's Acknowledgment:

This study was made possible by the generous support of the American people through the United States Agency for International Development (USAID). The contents are the responsibility of Michigan State University and the International Food Policy Research Institute, and do not necessarily reflect the views of USAID or the United States Government.

This study is also supported with financial assistance from the Livelihoods and Food Security Trust Fund, supported by Australia, Denmark, the European Union, France, Ireland, Italy, Luxembourg, the Netherlands, New Zealand, Sweden, Switzerland, the United Kingdom, the United States of America, and the Mitsubishi Corporation. We thank these donors for their kind contributions to improving the livelihoods and food security of rural people in Myanmar. The views expressed herein should in no way be taken to reflect the official opinion of any of the LIFT donors.

This study is made possible by the generous support of the American people through the United States Agency for International Development (USAID) under the Feed the Future initiative. The contents are the responsibility of the study authors and do not necessarily reflect the views of USAID or the United States Government.

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Published by the Department of Agricultural, Food, and Resource Economics, Michigan State University, Justin S. Morrill Hall of Agriculture, 446 West Circle Dr., Room 202, East Lansing, Michigan 48824, USA

EXECUTIVE SUMMARY

The Rural Economy and Agriculture Dry Zone Survey (READZ) community survey was conducted in mid-2017 in 300 villages in 14 townships across Mandalay, Sagaing, and Magway. These regions are located in Myanmar's Central Dry Zone - one of the country's most important agricultural zones. The survey was designed to facilitate analysis of recent changes in the rural economy of the Dry Zone. 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, irrigation access, cropping patterns, agricultural mechanization and labor costs, numbers of off-farm enterprises, and access to credit. Key findings are summarized below.

Infrastructure

Access to lower and upper secondary schools has improved dramatically since 2011. More than half of all lower and upper secondary schools in the villages surveyed were constructed within the past six years. This reflects the huge increase in public spending since Myanmar's political transition began.

The number of villages with access to electricity increased very rapidly after 2011. Sixty-five percent of all electricity connections were established since this time. However, despite these improvements, only one third of villages have access to publicly provided electricity.

Road infrastructure in the Dry Zone is better than in many other parts of the country. For example, almost all villages are accessible by car during dry season, and more than three quarters can be accessed by car during monsoon. The number of villages connected to paved rural roads increased at a fairly steady rate between 1989 and 2011, and accelerated somewhat thereafter.

Travel times from surveyed villages to nearby urban centers have fallen sharply since 2012. Average travel times to the nearest town fell by around one third in both monsoon and dry season. Shorter travel times reflect improvements to rural roads and increasing ownership of motorbikes. Motorbikes have displaced non-mechanized modes of transport to become by far the most common mode of passenger transport used reach nearby urban areas.

Irrigation

Dams are the main source of irrigation in the Dry Zone, providing water to 43% of villages and 71% of irrigation-receiving households. Dams were the only source of irrigation in the surveyed villages prior to the mid-1970s, but access to dam irrigation has increased only very gradually since this time.

Groundwater irrigation and river pumping schemes have grown more rapidly than dam irrigation over the past three decades. Eighty percent the community tubewells and river pumping schemes were built after 2002. Ninety percent of public tubewells were constructed after 2011. However, when the total population of households is considered, access to all forms of irrigation other than dams is very limited

Investment in new irrigation infrastructure has not kept pace with growing numbers of households. The share of households with access to irrigation declined very slightly (by 1%) from 2012-2017.

Cropping patterns

The area planted to irrigated paddy has contracted by 20% over the past five years. The area of sesame, peanut and green gram (combined) increased by 9% over this period. This shift is consistent with observations in the field suggesting that paddy cultivation outside of monsoon season is no longer feasible in some locations due to deteriorating access to irrigation water from dams.

Agricultural mechanization & labor costs

Real daily wages for casual agricultural labor rose by more than one third from 2012 to 2016. Women earned approximately 20% less per day than men, but the gender wage gap narrowed very slightly.

The price of mechanized and non-mechanized harvesting has diverged as the price of labor has increased and the cost of combine harvesting has fallen. In 2012, the real cost per acre of harvesting/threshing paddy without a combine harvester was 24% higher than the cost of harvesting/threshing with a combine. This gap widened to 52% in 2016.

Massive adoption of combine harvesters occurred, as a result. The area of irrigated and monsoon paddy land harvested by combine amounted to just 7% and 3% of planted area in 2012, respectively. These shares jumped to 72% and 39% in 2016.

Rapid mechanization does not appear to have severely impacted the ability of laborers to find work during periods of peak seasonal labor demand. The length of time workers took to find work during this period increased very slightly. This suggests that migration and growing rural non-farm employment opportunities during this period were almost sufficient to offset the loss of jobs in agriculture.

Rural enterprises

Growth in numbers of rural enterprises has been extremely rapid over the past ten years. Businesses providing agricultural mechanization services have grown most rapidly. The number of enterprises renting out combine harvester services grew by 2600%. Four-wheel tractor rental services grew by 1200%, and two-wheel tractor providers by 450%. Transport service providers were the second fastest growing category of enterprise. Businesses offering truck and trawlerji rental services (used mainly for transporting agricultural goods) grew 560% and 430%. Motorbike passenger taxi services grew 400%.

Rising real incomes appear to have allowed rural populations to increase and diversify their consumption expenditures. This is reflected in brisk growth in numbers of rural businesses offering non-essential goods and services. These include retail businesses (up 190%), businesses selling foods and beverages (up 120%) and personal services - e.g. hairdressers (up 125%).

Credit

Access to loans from microfinance providers and the Department of Cooperatives has improved dramatically since 2012. The share of villages where residents were able to access loans from the Department of Cooperatives jumped from 17% in 2012 to 87% in 2017. The share of communities with access to other microfinance providers also rose sharply, from 12% to 35%.

The average rates of interest offered by every single type of informal lender have fallen, as a result. Most notably, the prevailing monthly interest rate offered by informal moneylenders fell by 5.2 percentage points, from 8.6% to 3.4%, while rates charged by friends and relatives fell by 3.0 percentage points per month, representing a huge saving to informal borrowers.

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INTRODUCTION

Myanmar's Central Dry Zone (CDZ) lies along the middle course of the Irrawaddy River, which bisects the country from North to South. It is one of the country's most important agricultural regions, and home to more than 10 million people. Agro-ecologies, crops, farming systems and livelihoods in the CDZ are highly diverse, but the characteristics of farming and the rural economy are poorly documented and little reliable data exists.

The Rural Economy and Agriculture Dry Zone Survey (READZ) survey was conducted in April and May 2017 to address this information gap. The survey was designed to generate a detailed picture of cropping systems, farming practices, agri-food value chains and the state of the wider rural economy in the Dry Zone to guide policy makers' decisions. READZ was comprised of two components: (1) a household survey; (2) a community survey.

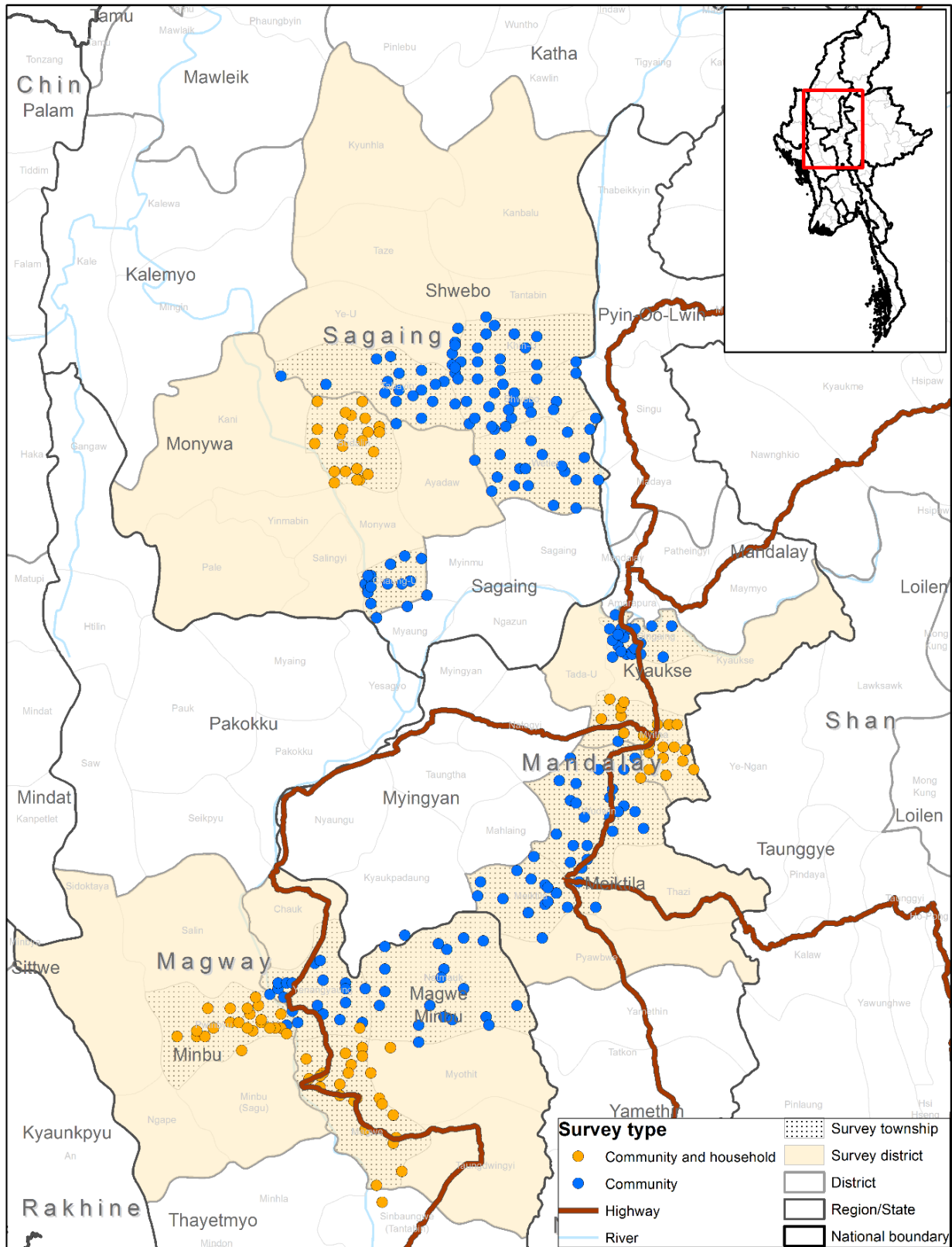
Prior to the READZ household survey, scoping studies identified the main agro-ecologies, cropping systems and forms of irrigation access present across the three main regions of the CDZ (Mandalay, Magway and Sagaing). Four townships, containing the main sets of conditions identified during scoping were selected for inclusion in the household survey.¹ The survey was implemented in April 2017. 1578 rural households, selected at random from 100 communities (also randomly selected) were interviewed to collect data on households' activities over the past year.

Unlike the READZ household component, questions in the READZ community survey were based on multi-year recall. This approach was adopted to make it possible to track temporal changes occurring at the broader 'landscape' level. The community survey instrument was divided into modules designed to capture data on the recent history of the following: village populations; access to educational facilities; modes of transport and travel times to nearby urban areas; access to irrigation facilities; crops grown; use of agricultural machinery; wages, labor costs and labor availability; inventories of agriculture related and non-farm businesses; land ownership; access to and terms of credit; climate change.

Community questionnaires were administered during group interviews with four to six knowledgeable men and women in the 100 communities where the READZ household survey was implemented (25 communities in each). To increase the survey's spatial coverage and lend it greater statistical power, the survey was extended to a further 200 villages in ten additional CDZ townships (20 communities per township). These were also selected purposively, based on the main cropping systems present and distance from major urban areas, with the intent of incorporating a broad range of geographies. The locations of all communities surveyed are presented in Figure 1.

¹ Myittha (Mandalay), Budalin (Sagaing), and Pwintbyu and Magway (Magway).

Figure 1: Map of READZ household and community survey locations



VILLAGE POPULATIONS AND MIGRATION

The average number of households per village grew rapidly, from 185 in 2007 to 259 in 2017. It is probable that this trend was driven by the breakdown of extended households into nuclear units because there was little difference in the number of households who permanently left or permanently migrated to the villages surveyed, and birth rates in Myanmar are low.

Out-migration from surveyed communities has increased since 2012. The number of households reported as having a migrant jumped 45% from 2012 to 2016 (from 8510 households to 12,370). However, as the total number of households also increased by 40% over this period the increase in the share of households with at least one migrant was less extreme, up from 15.3% to 18.2%. These figures indicate that large scale migration from the Dry Zone pre-dates Myanmar's political and economic transition post-2010. This result differs from that of recent research in the Delta close to Yangon, which found that large scale migration only began in earnest from 2011 onwards ([Htoo & Zu, 2016](#)).

As elsewhere in the country, levels of landlessness are high, with only 53% of households reported to own agricultural land.

INFRASTRUCTURE

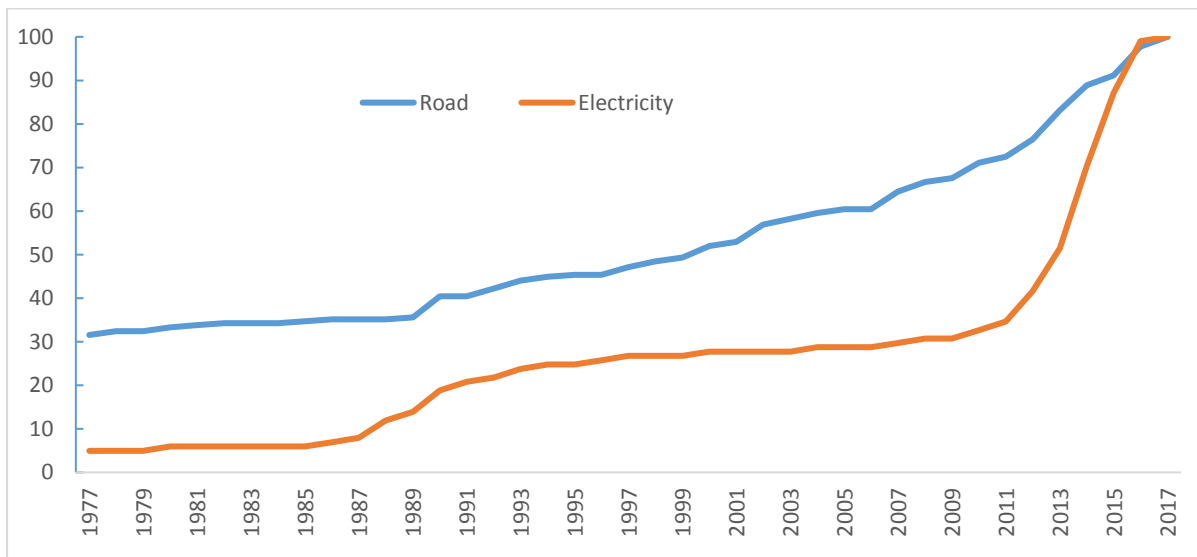
The CDZ has been settled for much longer than many other parts of the country. Ninety-seven percent of villages surveyed had been established for more than 50 years, and 88% for more than 100 years. Road infrastructure in the CDZ is relatively good compared to other areas of the country such as the Delta, due in part to its long history of human settlement and flat topography. Ninety-eight percent of villages were accessible by road, and 80% of village access roads were paved.

Almost all villages (99%) were accessible by car during dry season, although this number dropped to 72% during monsoon. Most villages have been accessible by road for a considerable length of time (the average year in which villages were first connected to a paved road was 1974), but this varies considerably between locations (e.g. 1958 in Pwintbyu, and 1998 in Budalin).

The number of villages connected to rural roads increased at a fairly steady rate between 1989 and 2011, and accelerated somewhat thereafter (Figure 2). However, villages that have yet to receive a paved access road remain isolated, being located an average of 4.3 miles from the nearest paved road.

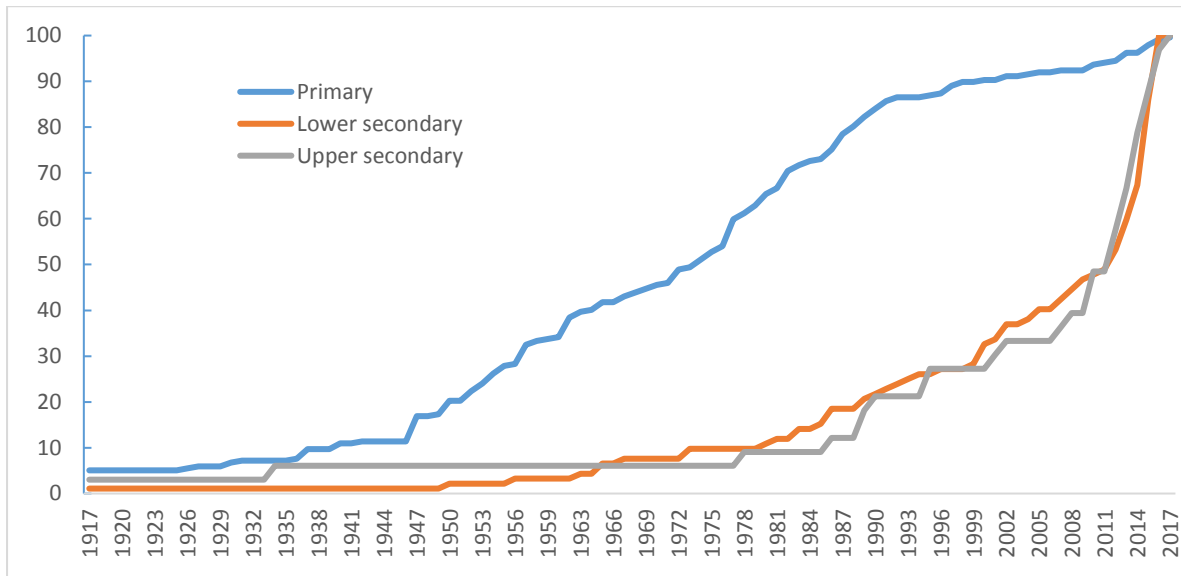
Only one third (34%) of villages have access to publicly provided electricity. There has been very rapid growth in the number of villages receiving electricity connections since 2011, during which time 65% of all connections occurred (Figure 2). However, even in villages with access to publicly provided electricity, only 55% of households have a connection. Moreover, in 29% of villages with public electricity, access to the grid was obtained by community members pooling their resources to pay for installment of a transformer.

Figure 2: Cumulative share of villages with road and electricity access established, by year (1977-2017)



Access to lower and upper secondary schools has improved dramatically since 2011. Although more schools may still be needed, it is striking that 51% and 52% of all lower and upper secondary schools in the villages surveyed were constructed within the past six years. This is a reflection of the huge increase in spending on public services that has taken place since Myanmar began its political transition. Seventy-nine percent of villages surveyed had a primary school in 2017, while 31% had a lower secondary school, and 11% an upper secondary school (Figure 3).

Figure 3: Cumulative share of primary, lower secondary and upper secondary schools established, by year (1917-2017)



TRANSPORT AND MOBILITY

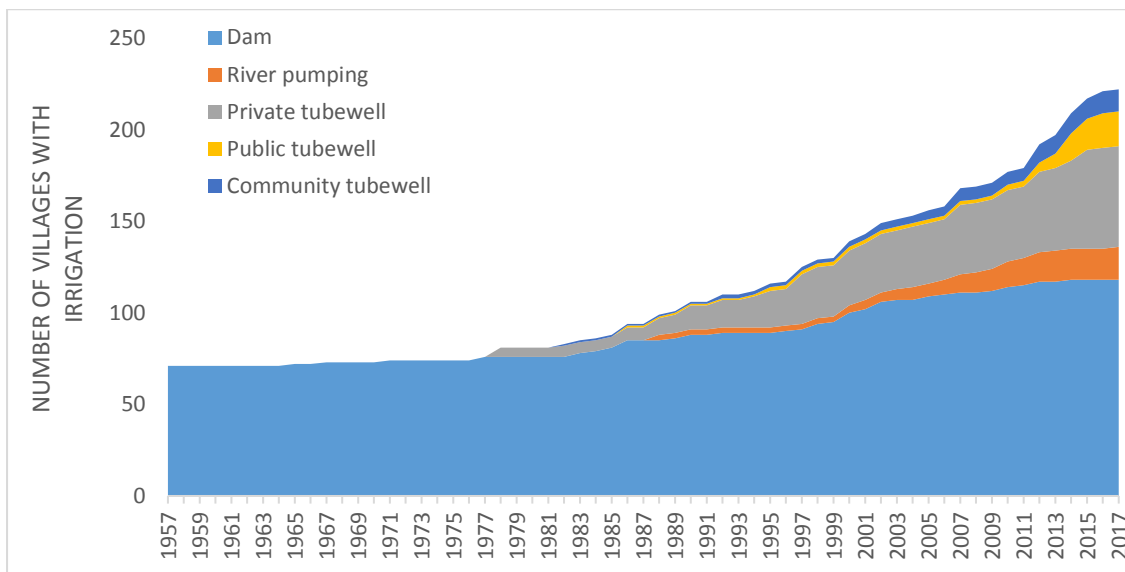
Travel times from surveyed villages to nearby urban centers improved dramatically between 2012 and 2017, representing a significant saving in terms of the opportunity cost of travel to and from urban areas. Villages were located an average of 10 miles from the nearest town. Average dry season travel times to the nearest town fell from 70 to 46 minutes (a reduction of 24 minutes, or 34%), while travel times in monsoon season fell by 32 minutes or 33%, down from 98 minutes to 66.

Falling travel times reflect improvements to smaller rural roads (noted above), as well as increasing ownership of motorbikes and access to motorbike rental services. Already in 2012 the motorbike was the most commonly used mode of transport to reach nearby towns, as reported by 46% of villages. By 2017, this had risen to 79% of villages. Motorbikes displaced non-mechanized modes of transport - e.g. bicycles and ox-carts, which were the most common mode of transport taken for this journey in 46 and 21 villages respectively in 2012, but no villages in 2017 - as well as slower or less convenient forms of motorized transport (e.g. buses, which ceased to be the most common form of local transport in 19 out of 40 villages over this period).

IRRIGATION

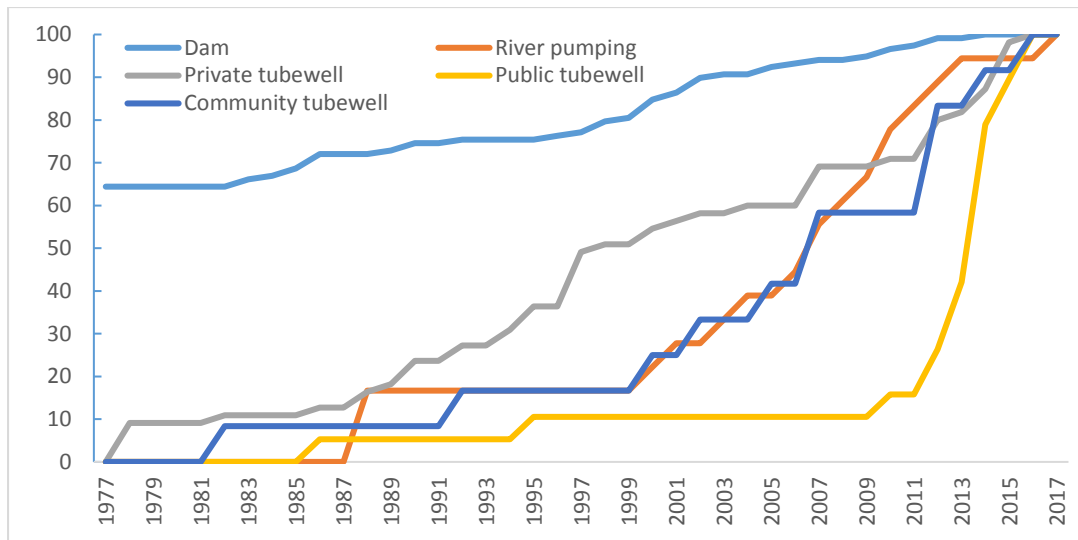
At present, over half of surveyed villages (57%) have access to some form of irrigation for agriculture. Dams are the main source of irrigation, providing water to 43% of villages and about three quarters of irrigation-receiving households. Approximately 14,600 households in surveyed communities had access to dam irrigation in 2017, compared to 5750 households with access to all other types of irrigation combined (Table 1). Dams were the only source of irrigation in the surveyed villages prior to the mid-1970s (with half of these dams constructed before living memory), but access to dam irrigation has increased only very gradually since this time.

Figure 4: Cumulative number of villages with access to irrigation infrastructure, by year (1957-2017)



Groundwater Irrigation (tubewells) and river pumping schemes have grown more rapidly than dam irrigation over the past three decades (Figure 4). Privately operated tubewells were established at a fairly steady rate between 1977 and 2010. The rate of establishment accelerated slightly after 2010, and they are now found in 18% of villages. Eighty percent of community tubewells and river pumping schemes were built after 2002, with access to both growing at a similar rate over this period. Public tubewells were the most recent form of irrigation to develop. Ninety percent were constructed after 2011, reflecting the increased public spending that took place during this period (Figure 5).

Figure 5: Cumulative share of villages with access to irrigation infrastructure, by year (1977-2017)



However, although the number of households with access to irrigation from a public tubewell increased nine-fold between 2012 and 2017, the extent of coverage remained limited, at just 700 households (1% of all households). Similarly, river pumping schemes and community operated tubewells, while they experienced significant growth, are each found in only 4-6% of villages (Table 1). Furthermore, not all households in irrigation-receiving villages are able to access irrigation. This share ranges from about half in villages within the command area of dams, to one quarter in villages with river pumping schemes and private tubewells, and 16% in villages with community and public operated tubewells. Although the number of households with access to dams, river pumping schemes and private tubewells increased from 2012 to 2017, the share of households with access to these forms of irrigation in receiving villages has changed little, because the total number of households has grown simultaneously (Table 1).

The largest relative improvements in household irrigation access over this period have come in villages receiving community operated or public tubewells. However, when the total population of households (in both irrigation receiving and non-receiving villages) is considered, access to all forms of irrigation other than dams remains very limited (Table 1). In fact, the share of households with access to dam irrigation shrunk slightly during the period 2012-2017, as growth in household numbers of outpaced the spread of access. As a result, the net share of households with access to irrigation of any type fell by one percentage point over that period.

Table 1: Access to different types of irrigation

Item	Dam	River pumping scheme	Private tubewell	Public Tube well	Community tubewell	Any irrigation
# villages with access to [...]	130	18	55	19	12	171
% villages with access to [...]	43%	6%	18%	6%	4%	57%
Number of households with access to [...], 2012	13887	897	2692	74	273	17823
Number of households with access to [...], 2017	14603	1162	3500	696	391	20352
Change in total number of households with access, 2012-2017 (%)	5%	30%	30%	841%	43%	14%
Share households with access to [...] in receiving villages, 2012 (%)	53%	26%	26%	4%	13%	30%
Share households with access to [...] in receiving villages, 2017 (%)	47%	24%	27%	16%	16%	29%
Share of households with access to [...] in total population, 2012 (%)	21%	1%	4%	0%	0%	27%
Share of households with access to [...] in total population, 2017 (%)	19%	2%	5%	1%	1%	26%
Change in share of population with access (percentage points)	-2%	0%	0%	1%	0%	-1%

CHANGING CROPPING PATTERNS

The area planted to irrigated (dry season) paddy has undergone a significant contraction over the past five years (2012-2016). In 2012, the area planted to irrigated paddy was one third of the area planted to monsoon paddy (34,145 acres, versus 101,404 acres). By 2016, the area planted to monsoon paddy had grown 4%, while the area of irrigated paddy shrunk 20%, so that the area under the latter amounted to only one quarter (26%) of the area under former (27,220 acres versus 105,899 acres).

Changes in the number of households growing these crops reflect this shift, up 6.4% for monsoon paddy growers, and down 26% for dry season paddy producers. However, the average area under dry season paddy in villages growing the crop remained almost constant over this period, suggesting that some villages ceased production entirely, while others continued largely as before. This finding is consistent with observations during scoping, which indicated that in some locations access to water from dam irrigation schemes had deteriorated to the point that paddy cultivation outside of the monsoon season was no longer feasible. The slight expansion of monsoon paddy might indicate (although this has yet to be verified in the field) that the expansion of tubewell irrigation apparent in the results presented above, has facilitated monsoon paddy production in areas with erratic or low rainfall.

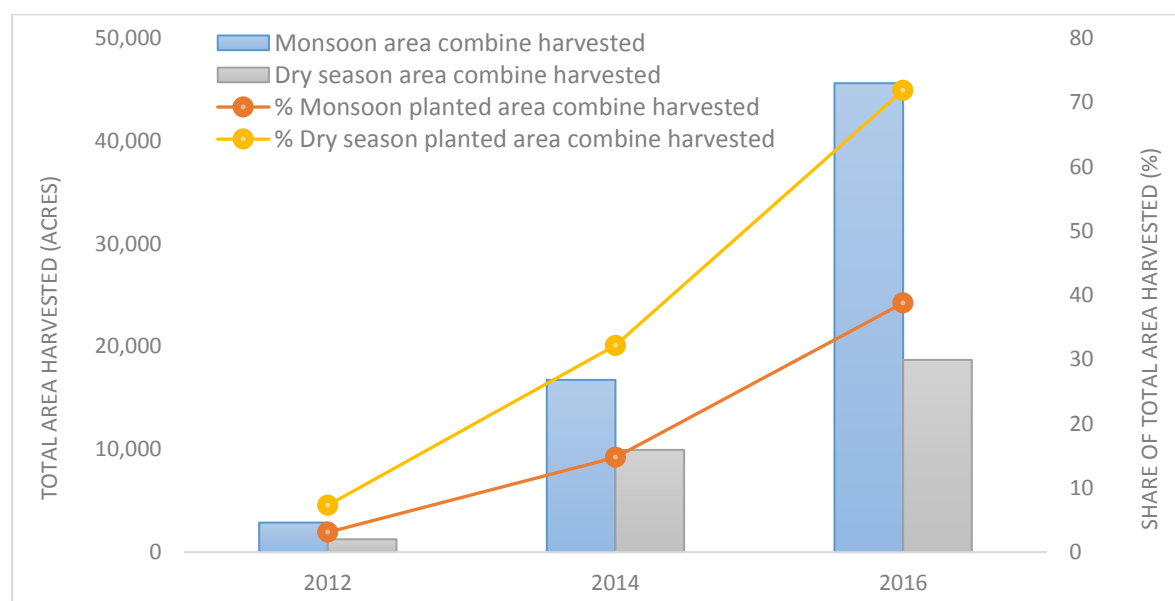
The area planted to sesame, peanut and green gram (combined) increased by 9% over the same period, with some of this expansion likely to reflect a shift out of summer paddy production. Scoping visits indicated that sesame in particular was increasingly being planted as a substitute for summer paddy in areas where scarcity of irrigation water made paddy cultivation impractical, or where inaccessible fields hampered mechanized harvesting.

MECHANIZATION AND LABOR COSTS

The adoption of combine harvesters increased dramatically from 2012 to 2016, particularly for dry season paddy. In 2012, just 7% and 3% of the area planted to dry season and monsoon paddy in the surveyed townships was harvested by combine. These shares jumped to 72% and 39%, respectively in 2016. This pattern is very similar to that observed in our earlier survey in the Delta. However, although the share of dry season paddy harvested by combine was greater than that of monsoon paddy, the area of monsoon paddy harvested by combine was 2.4 times greater than that of dry season paddy (Figure 6).

Seasonal patterns in the extent of combine harvester use can be explained, in part, as follows. Dry season paddy is concentrated within the command areas of dam irrigation schemes. This means that most farms growing a dry season paddy crop are part of a large contiguous planted area of paddy. Monsoon paddy cultivation is much more widely distributed – and thus often less geographically concentrated. Machine rental service providers attempt to reduce transaction costs by locating in, or - if originating from more distant locations - targeting, locations where they can serve the greatest number of customers, meaning that zones outside the command areas of irrigation schemes, where much monsoon paddy is grown, tend to be less well served by machine rental services than those within them.

Figure 6: Total planted area and share of planted area of monsoon and dry season paddy harvested by combine, 2012-2016



On the demand side, the rise of combine harvester adoption is very closely linked to rising rural wage rates at peak times of seasonal demand. Data on the average real daily wage for casual labor is presented in Table 2 for men and women in 2012, 2014 and 2016. Real daily wages rose by 37% for men and 42% for women over the four-year period.² The rate of wage increases for both genders was slightly higher from 2012-14 than from 2014-16. Throughout this period, women earned approximately 20% less per day than men, but the gender wage gap narrowed very slightly (Table 2).

² Nominal values were converted to 2016 real values using consumption price index (CPI) values of 1.37 (2012) and 1.22 (2014).

Table 2: Real daily wage rates for men's and women's casual labor (2012-2016)

Gender	2012	2014	2016	Change '12-'14 (%)	Change '14-'16 (%)	Change '12-'16 (%)
Men	3228	3863	4434	20%	15%	37%
Women	2548	3098	3606	22%	16%	42%
Women/men (%)	79%	80%	81%	-	-	-

Note: Values in 2016 MMK.

Combine harvesters perform the dual function of simultaneously harvesting and threshing paddy. Households which do not make use of combines must complete these two activities separately. These households harvest paddy manually, usually using hired labor. Paddy threshing is increasingly mechanized, using locally manufactured threshing machines, but labor is required to perform tasks such as feeding paddy plants into the machines, and collecting threshed grain.

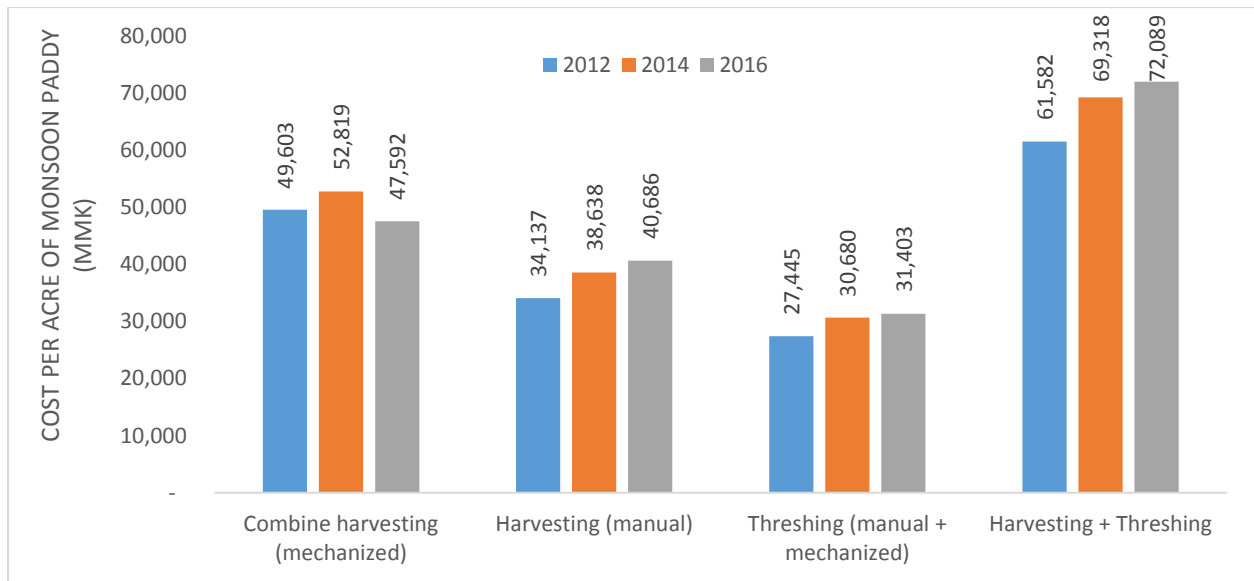
Figure 7 compares the price, in real terms, of harvesting and threshing an acre of paddy by combine harvester to harvesting and threshing as separate activities, in 2012, 2014 and 2016. The relative prices of separate harvesting/threshing and combine harvesting diverged over this period. In 2012, the real cost of separate harvesting/threshing was 24% higher than that of combine harvesting. This gap widened to 52% in 2016.

The real price per acre of combine harvesting fell 4% from MMK 49,000 to 48,000 over this period (rising by 6% from 2012 to 2014, but falling 10% thereafter). Over the same period, the real cost of harvesting and threshing paddy without a combine rose by 17% (4.2% per year on average). The cost of manual harvesting rose slightly faster than the cost of threshing (which includes both manual and mechanized components). This is likely indicative of the substitution of capital for labor occurring in threshing activities (Figure 7).

Interestingly, rising wage rates do not appear to be strongly correlated with deepening labor shortages, suggesting that the widespread adoption of agricultural machinery for harvesting has eased demand for labor. Respondents were asked how long on average a farmer would have expected to wait to hire a group of 10 male casual workers or 10 female casual workers, during the post-monsoon harvesting season (the period when paddy and other important monsoon crops are harvested). This rose only marginally from 2012 to 2016 (from 7.1 to 7.4 days) for both men and women - an increment of about 4.5%.

Another important finding is that rapid mechanization does not appear to have severely affected the ability of laborers to find work during periods of peak seasonal labor demand. Survey respondents were asked how long a man or woman might each expect to wait to find work during the post-monsoon harvest season in 2012, 2014 and 2016. If combine harvesters had displaced large quantities of labor faster than it was employed in other sectors, the duration workers had to wait to find work should have increased over this period. The increase in waiting times was tiny, up from 1.9 to 2.4 hours. Encouragingly, this suggests that the growth of migration and rural non-farm jobs during this period was almost sufficient to offset the loss of employment opportunities in agriculture resulting from mechanization and the shift (noted above) to less labor post-monsoon intensive crops.

Figure 7: Real costs for manual and mechanized harvesting and threshing of monsoon paddy, 2012-2016 (MMK/acre)



Note: All values expressed in 2016 MMK.

From the supply side, the provision of mechanized harvesting and threshing services has matched (and likely stimulated), booming demand for agricultural machines. The average distance to the nearest combine service rental provider fell by nearly half from 2014 to 2016; from 94 to 50 miles. This parallels a general proliferation of rural agricultural enterprises, as discussed in the next section.

AGRICULTURE-RELATED ENTERPRISES

Over the past ten years, growth in the numbers of enterprises in surveyed villages providing services related to agriculture has been spectacular. We collected data on four types of enterprise: crop processing businesses (threshers and mills), agricultural machinery rental services, forms of transport used for moving agricultural goods, agricultural input suppliers, and agribusiness farms operated by commercial investors.

Table 3: Agriculture related enterprises and services

Enterprise type	Share of communities with enterprise (%)	Average number of enterprises per community ^a
<i>Food processing</i>		
Rice mill (huller)	29	2.7
Oil mill (small)	25	2.0
Thresher (peanut)	15	2.8
Thresher (paddy & pulses)	50	4.3
<i>Machinery and transport for hire</i>		
Two wheel tractors for hire	70	19.9
Four wheel tractors for hire	48	3.3
Combine harvesters for hire	7	2.8
<i>Trawlerji</i> for hire ^b	53	5.9
Truck transport services for hire	56	3.5
<i>Input provider</i>		
Agricultural inputs shop	15	2.8
Tree nursery	4	2.5
<i>Agribusiness</i>		
Melon Farm	8	16.3

^a Average excludes communities without each enterprise

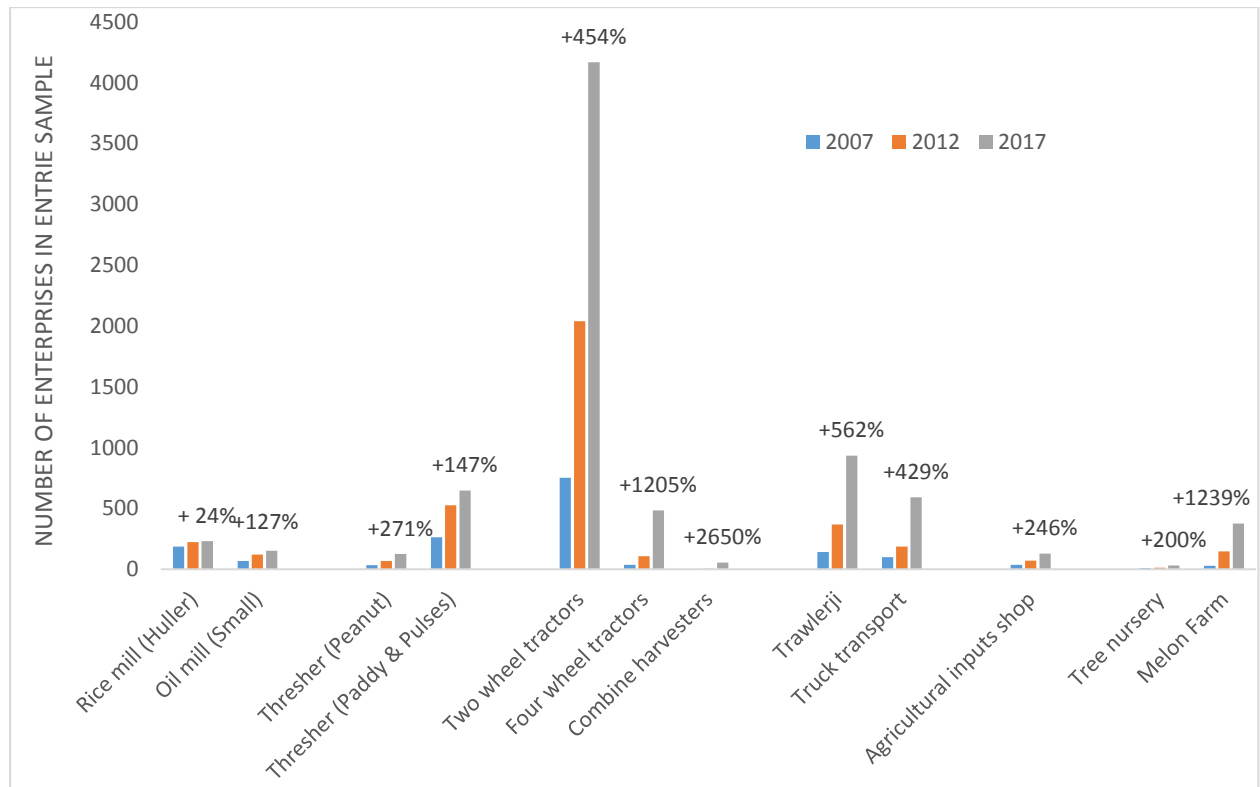
^b A *trawlerji* is a makeshift mode of transportation consisting of a tractor engine attached to a cart.

Machinery rental services business - especially those offering rental of small machines - were very common: 70% of the communities surveyed had households offering two-wheel tractors for hire. Businesses offering four-wheel tractors for hire were present in almost half (48%) of villages. Few villages have resident combine harvester rental service providers (7%) (Table 3). These tend to be concentrated in a small number of rural locations and towns, with each machine often covering large geographical areas.

The number of households offering two-wheel tractor rental services jumped by 450%, from a few hundred in 2007 to more than 4000 in 2017, making this by far the most common type of agriculture-related enterprise. While much less common, numbers of four-wheel tractor rental service providers increased even more dramatically, from just 37 to 483, a 12-fold increase. Although numbers of combine harvester rental service providers remain small in absolute terms, they exploded after 2012, growing 26-fold during this period (Figure 8).

Numbers of enterprises renting out motor vehicles used (among other purposes) for transport of goods such as harvested crops have also risen sharply. Truck transport and trawlerji rental services are available in over half communities (56% and 53%, respectively). The number of enterprises offering these services grew by 430% and 560% between 2007 and 2017.

Figure 8: Numbers of agriculture related enterprises, 2006-2016



Half of the communities surveyed were home to at least one mechanized threshing machine, rented out for threshing rice and/or pulses. These communities had more than four threshing businesses on average. Specialized threshers for peanuts were less common (15%). This difference likely reflects the relative abundance of the two sets of crops. Numbers of each type of threshing enterprise grew by 147% and 271%, respectively, from 2007 to 2017.

Twenty-nine percent of communities had a simple rice mill (“*buller*”), and 25% had a small oil mill. These are relatively well established, and numbers grew more slowly than those of mechanized threshers, up 24% and 127% respectively over the decade. Local input shops remained relatively uncommon, being present in only 15% of communities, but their numbers grew 246% over the period in question. Similarly, tree nurseries providing seedlings of commercially cultivated plants such as mangos were found in only 4% of communities, but numbers had grown by at least 200%.

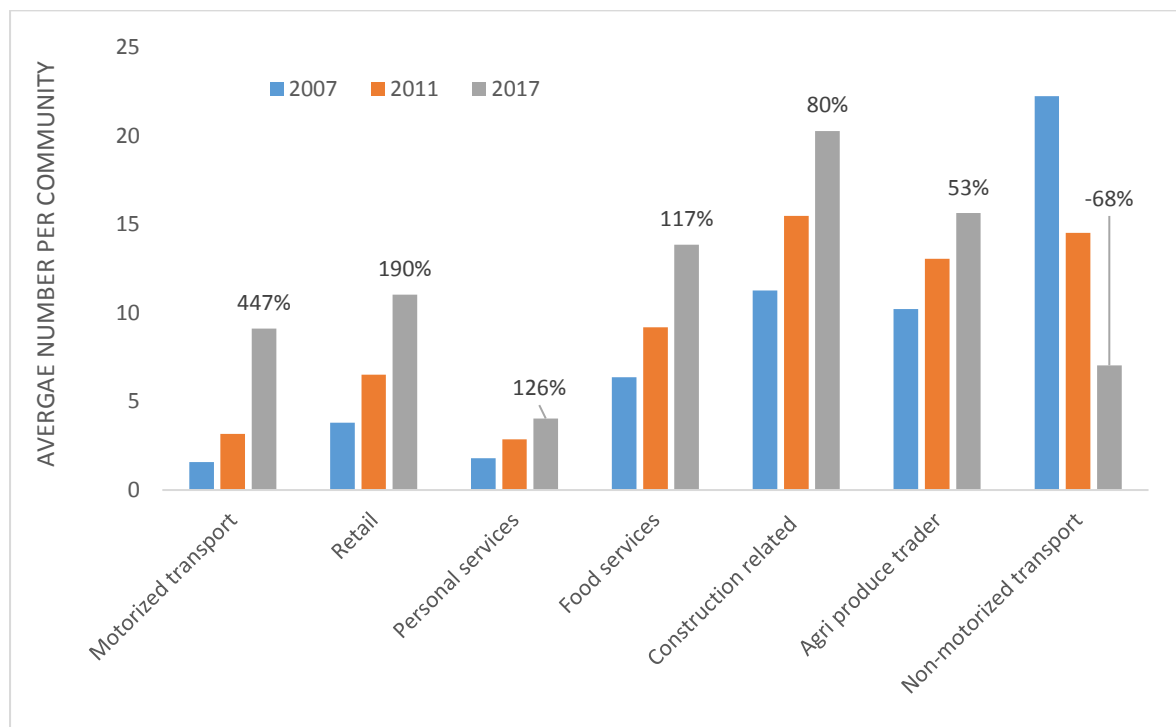
Some communities have seen an influx of outside investment in commercial melon farms, usually from the urban sector or abroad. While these capital intensive agribusinesses were present in only 8% of the communities surveyed, there were an average of 16 commercial melon farms in each, reflecting a tendency for these enterprises to co-locate in clusters. The total number of melon farms increased by a massive 1200% from 2007-2017.

NON-FARM BUSINESSES

Impressive (though generally less extreme) increases occurred in numbers of non-farm enterprises unrelated to agriculture (Figure 9). Enterprises offering motorized transport for passengers rose by more than 400% over ten years (2007 to 2017). In the same period, the average number of non-motorized transportation service providers (mostly horse-carts and bullock carts) was dramatically reduced (-68%), reflecting the rapid conversion of the economy toward mechanical power.

Rising real incomes appear to have allowed rural populations to increase and diversify their consumption, resulting in demand for a variety of non-farm businesses. In those ten years, the number of retailers in the communities surveyed increased by 190%. Numbers of businesses selling foods and beverages increased 117%, and those providing personal services (e.g. hairdressers) by 126%. Construction related services have also increased 80% over that period, suggesting that households have increased investments in their dwellings. The average number of agricultural produce traders has also grown, but by less than other categories of business (53%).

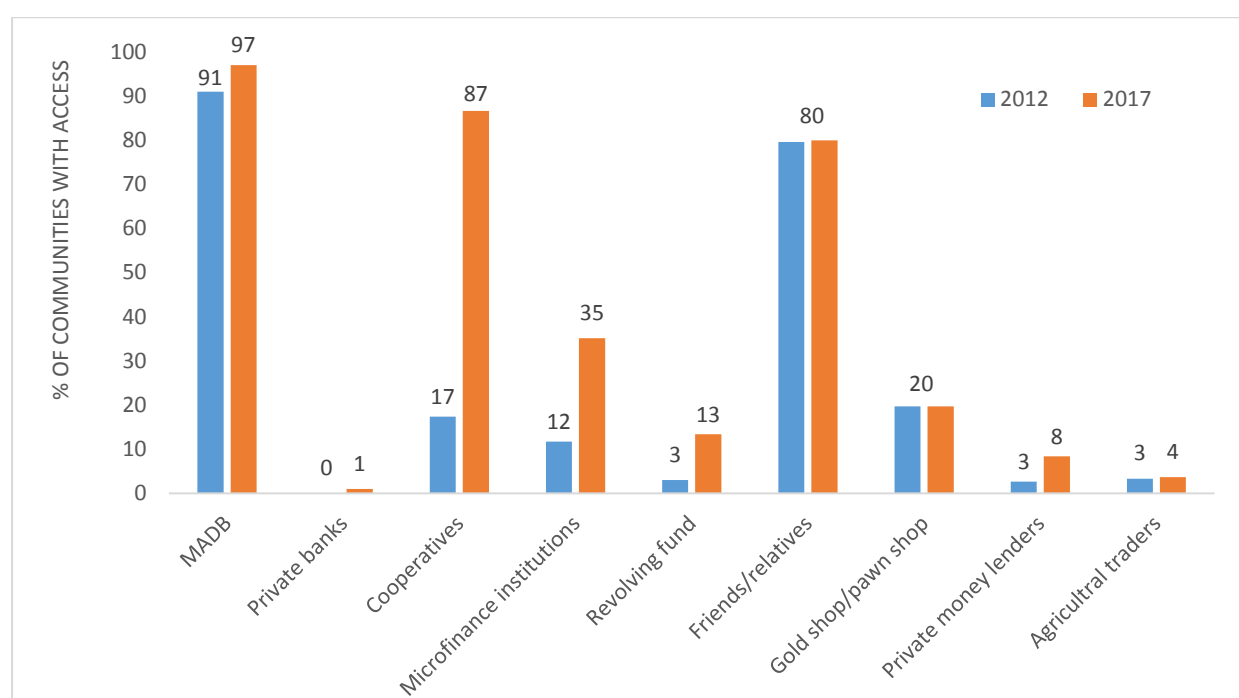
Figure 9: Average number of non-agricultural service providers per community, 2007-2017



CREDIT

The availability of financing for investments can play an important role in the development of rural enterprises. Households in almost all villages surveyed (97%) took crop loans from MADB (Myanmar Agricultural Development Bank), indicating its importance in financing agriculture. In contrast, households took loans from private banks in only 1% of communities. Informal private lenders included pawn shops (used by households in 20% of villages) and private moneylenders (reportedly used by households in 8% of villages). Agricultural produce traders provided loans in just 4% of villages, reflecting the decline of tied output-credit arrangements in agriculture (Figure 10).

Figure 10: Access to financing in the community, 2012-2017



The presence of providers of microfinance has increased significantly, marking an important positive development. In 2012, households were reported to have access to loans from the Department of Cooperatives in only 17% of villages. This number leapt to 87% in 2017. There was also significant growth in microfinance institutions, with the share of villages with access to these rising from 12% to 35% between 2012 and 2017. Access to loans from revolving funds - which may operate either formally (e.g. through an NGO) or informally (e.g. a group of friends) - also increased, from 3% to 13% of villages.

Access to credit from these new financial institutions appears to have resulted in significant and pervasive improvements in the terms of informal borrowing (Table 4). Prevailing monthly interest rates offered by microfinance providers and informal lenders in 2017 ranged from 1.5% (Department of Cooperatives) to 6.9% (friends or relatives), but rates of borrowing from every type of informal lender and microfinance provider have fallen from their 2012 levels. Most notably, the prevailing interest rate offered by informal moneylenders dropped by 5.2 percentage points, from 8.6% per month in 2012 to 3.4% per month in 2017, while the monthly rate charged by friends or relatives fell by 3.0 percentage points. Rates offered by microfinance

institutions have also fallen slightly (0.4% per month), suggesting that increasing competition within the sector has brought down the cost of borrowing here too.

Table 4: Evolution of interest rates from informal lenders and microcredit providers (2012-2017)

Lender	2012 Monthly interest rate (%)	2017 Monthly interest rate (%)	2012-2017 Change in monthly rate (PP)	Annual interest rate (%), 2012 ^a	Annual interest rate (%), 2017 ^a	2012-2017 change in annual rate (PP) ^a
MFI s (a, b)	1.8	1.6	-0.2	21.7	19.0	-2.7
a. Department of cooperatives	1.7	1.5	-0.1	19.8	18.5	-1.3
b. Other microfinance providers	2.0	1.7	-0.4	24.5	20.3	-4.2
c. Revolving funds	4.0	2.7	-1.3	48.0	32.2	-15.8
Informal lenders (d, e, f, g)	8.8	6.0	-4.9	106	72	-34
d. Friends/relatives	9.9	6.9	-3.0	118	83	-35
e. Gold shop/pawn shop	4.9	3.3	-1.7	59	39	-20
f. Private money lenders	8.6	3.4	-5.2	103	41	-63
g. Agricultural traders	7.9	6.6	-1.3	94	79	-15

^a Annual interest rates calculated by multiplying monthly rates by 12. Survey respondents reported that simple (not compound) interest was charged on loans from all these sources.

CONCLUSIONS

Public infrastructure development since 2011 has been extremely rapid, reflecting changing budgetary priorities at the union level. Sixty-five percent of rural electrification has occurred since this time, as has construction of more than half of secondary schools and 70% of public tubewells. Road infrastructure – already relatively good in comparison to other areas of the country – also improved during this period. Businesses offering transport services for goods and people have proliferated, reducing journey times from rural to urban areas and promoting greater mobility and market access. There has been a similar explosion in numbers of other off-farm enterprises, most notably those offering agricultural mechanization services, which have expanded with extreme rapidity. Brisk growth in numbers of non-farm enterprises providing goods and services for consumption (retailers, food sellers, etc.) has also taken place. The growth of both sets of businesses is associated with rapidly rising real rural wages, which increased by close to 40% between 2012 and 2014. This has created demand for labor saving technology in agriculture, and has increased consumer spending power. Access to credit has improved significantly, driven particularly by the expansion of loans provide by the Department of Cooperatives, and by microfinance institutions. This change has had a very significant impact on rates of interest charged on informal loans, which have fallen almost 5% per month since 2012.

