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MYANMAR'S RURAL ECONOMY: A CASE STUDY IN DELAYED TRANSFORMATION

By

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Food Security Policy *Research Papers*

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ACRONYMS

ADB	Asian Development Bank
FSP	Food Security Policy Project
GDP	Gross Domestic Product
LIFT	Livelihoods and Food Security Trust fund
MAAS	Myanmar Aquaculture-Agriculture Survey
READZ	Rural Economy and Agriculture Dry Zone survey
SME	Small and Medium Enterprise
USAID	United States Agency for International Development

1. INTRODUCTION

Following the initiation of political and economic reforms in 2011, Myanmar is emerging from five decades of political and economic isolation and becoming more deeply integrated into the regional and global economy. Myanmar's long isolation has caused economic development, especially in rural areas where the majority of the poor live, to lag far behind most other countries in the region. A dearth of empirical studies (Haggblade et al. 2014) has resulted in a divergence of views on the nature and extent of rural transformation underway, as well as the implications for rural livelihoods. For example, a major study of farm production economics conducted by the World Bank in 2013-2014 in Myanmar's main agricultural regions reported low rural wages, surplus agricultural labor, poor rural infrastructure, a lack of service providers, a poor regulatory environment, lack of access to long-term capital by farmers, and very low levels of agricultural mechanization (World Bank 2016). But other sources suggest that the processes associated with structural transformation, such as changes in the pattern of demand for agricultural products as a result of urbanization and income growth, will inevitably lead to rapid changes in the rural economy (NESAC 2016). The government has recently published a new Agricultural Development Strategy which aims to harness the potential of agriculture to contribute to inclusive growth and food security (MOALI 2018).

Three potential drivers of rural economic change are of current relevance. First, the national economy is growing rapidly, spurred in particular by investments in (primarily urban) sectors such as manufacturing and construction. Gross Domestic Product (GDP) growth is forecast to reach 8.0% in 2018, making Myanmar the fastest-growing major economy in the region (ADB 2017). Second, Myanmar is experiencing rapid migration. For example, 14% to 26% of households surveyed in six townships in Chin State, Magway and Ayeyarwady had at least one migrant (Pritchard et al. 2017). International migration flows are well established and relatively well documented (e.g., Pearson and Kusakabe 2012), but internal rural-urban migration has increased significantly since 2011 (World Bank and LIFT 2016). Third, rural outmigration is driving wage increases in migrant sending areas. For example, average inflation adjusted wage rates for casual labor in four rural townships close to Yangon are reported to have increased by 40% from 2011 to 2016, apparently in response to a tightening of the labor market induced in part by migration (Win and Thinzar 2016).

A key question for policymakers is how these drivers of change are affecting poverty in rural areas. The most recent analysis of rural poverty, published in December 2017 by the Ministry of Planning and Finance jointly with the World Bank (MOPF and World Bank 2017), uses nationally representative consumption expenditure data collected in the first half of 2015. While the poverty headcount appears to have fallen over the decade from 2005 by one third, from 48.2% of the population to 32.1%, the poverty rate remains very high. The results confirm that poverty in Myanmar remains a predominantly rural phenomenon. An estimated 13.8 million poor people live in rural areas, 87% of the total, compared to 2 million poor in urban areas.

Rural poverty rates vary considerably by region. They are higher in coastal and hilly areas (44% and 40% respectively) compared to the Dry Zone and Delta areas (32% and 26% respectively). Nevertheless, due to higher population density, two thirds of the poor live in the Dry Zone and Delta. Spatial variation in rates of food poverty (the inability to purchase a minimum amount of food) are even starker. Two to three times as many households are estimated to be food poor in

the coastal and hilly areas (19% and 16% respectively) compared to the Dry Zone and Delta areas (7%). One caveat to bear in mind when interpreting the latest poverty results is that the survey was conducted between January and April, when food prices are generally lower. The poverty headcount and depth of poverty measures are therefore likely to be lower bound estimates.

Given that Myanmar's rural economy is changing rapidly, and that residual poverty and malnutrition may be difficult to root out, an empirical understanding of the nature of transformation in the rural economy is essential to shape policies and public investments aimed at inclusive growth. Our paper uses the results of two recently completed household and community surveys to characterize the nature of rural transformation (i.e., the rural component of structural transformation) in Myanmar's main agricultural zones, the Ayeyarwady Delta and the Dry Zone (respectively the country's 'rice-bowl' and main oilseed producing areas). We find evidence of early stage rural transformation in both zones, including: (1) high rates of agricultural mechanization; (2) improvements in infrastructure; (3) rapid growth of the rural non-farm economy; and (4) improving access to formal finance. These changes have occurred concurrently with high levels of rural out-migration to national urban centers, rapidly rising wages and greater mobility. However, access to farmland is highly skewed and agricultural productivity, diversification and profitability generally remain low. This is problematic because farming is the most important provider of both primary and secondary employment and incomes in the areas surveyed.

Our paper is organized as follows. The next section provides a simplified conceptual framework for the purpose of organizing our analysis. Section 3 discusses the data sources. Section 4 presents the main body of analysis. Section 5 concludes with a policy recommendations for more inclusive and sustained agricultural and rural economic growth.

2. CONCEPTUAL FRAMEWORK

We follow the conventional definition of structural transformation of an economy as the process whereby the agricultural share of GDP and employment declines over time with economic development (Johnston and Kilby 1975). Structural transformation of the economy is accompanied by urbanization so that the share of rural inhabitants in total population also declines. Rural-urban linkages, through exchange of factors, products and services, shape local transformations of the rural economy. Within the agricultural sector, which usually continues to grow in real terms even as its share in total GDP declines, structural transformation manifests itself by an increasing share of agricultural GDP and employment generated off the farm, especially, downstream (e.g., processing, retailing, and food consumed away from home) as well as upstream (Reardon and Timmer 2014). At the farm level, transformation results in increases in labor productivity through the use of improved crop and livestock production technologies combined with the substitution of human energy by mechanical energy. Increased engagement with the market results adds a financial dimension to pre-transformation, subsistence-oriented farm decision making. This implies important changes in the human capital requirements for successful farm management (Schultz 1961).

The foregoing stylistic characterization of transformation enables us to identify the following categories of analysis. These are: 1) enabling conditions and constraints that shape recent changes in Myanmar's rural economy; 2) the evolution of markets for factors and services; 3) changes in the agricultural sector of the rural economy; 4) changes in the non-farm sector of the rural economy; and 5) rural household income composition as an outcome of the first four inter-related processes. Prior to presenting empirical results we review the data used for our analysis.

3. DATA

We draw on two sources of primary data. The first is a survey of 1,102 rural (farm and non-farm) households in Ayeyarwady and Yangon regions of the Ayeyarwady Delta, close to the Myanmar's largest city, Yangon—the Myanmar Aquaculture-Agriculture Survey (MAAS). The second is a survey of 1,587 rural households, conducted in the three main regions (Mandalay, Magway, Sagaing) of Myanmar's Central Dry Zone—the Rural Economy and Agriculture Dry Zone survey (READZ). In both studies, four townships were purposively selected to reflect the major agricultural production systems and value chain linkages in each zone after extensive field visits (scoping) and secondary data review. Within townships, enumeration areas were selected randomly from the 2014 census sampling frame with assistance from the Department of Population of Ministry of Labor, Immigration and Population. Further details are provided below:

1. MAAS was fielded in May 2016 to generate a baseline of information on farm yields, size, tenure status, management practices and profitability, evaluate patterns of migration, and determine levels of ownership and utilization of agricultural machinery. Respondents from 1,102 households, representing the entire population of forty village tracts in four townships close to Yangon, were interviewed. A community survey, conducted with focus groups of 4-6 knowledgeable community residents of mixed occupation and gender, was implemented simultaneously in all 73 villages where the household survey was implemented. The community survey included recall questions on wage rates, access to infrastructure, inventories of non-farm businesses, and access to credit, in order to capture 'landscape' scale changes occurring in the villages surveyed over the past 5 to 10 years.

2. READZ was conducted in April and May 2017, with similar goals and methodology to MAAS. Extensive scoping visits were undertaken to identify the main agro-ecologies, cropping systems, patterns of irrigation access and livelihood strategies in the Dry Zone. Four townships spanning a range of farming systems, from rainfed upland oilseed and pulse cultivation to irrigated double cropped lowland paddy were selected purposively. One hundred rural communities (25 in each township) were selected randomly, and 1,578 randomly selected households, representing the entire rural population of the four townships, were interviewed. Community questionnaires were administered in the 100 communities where the READZ household survey was implemented, and extended to a further 200 randomly selected villages in ten additional townships (20 communities per township) to increase spatial coverage and statistical power.

4. EMPIRICAL FINDINGS

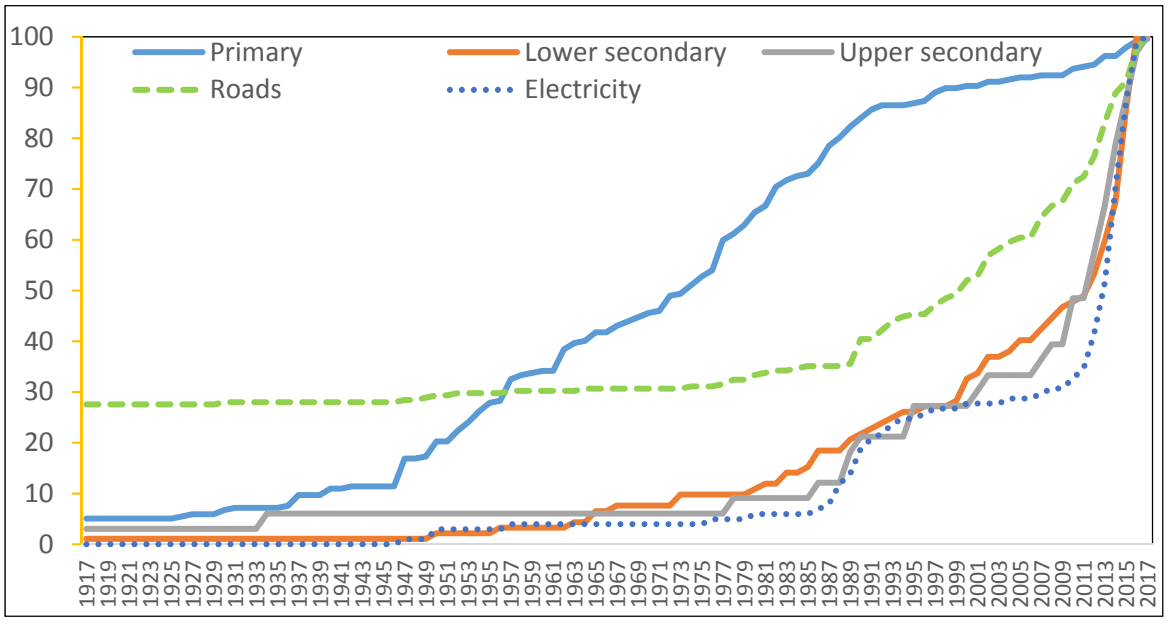
We organize the empirical findings on Myanmar's current stage of rural transformation in terms of the categories identified in section 2. These are: 1) enabling conditions and constraints; 2) rural factor and services markets; 3) the agricultural economy, both farm and downstream valued added; and 4) the non-farm rural economy. We conclude with an analysis of how these changes are manifested in the composition of rural household incomes.

4.1. Enabling Conditions and Constraints

4.1.1. Rural Infrastructure Development

Investment in public goods and services expanded greatly following the transition to quasi-civilian government, as marked by a huge upsurge in rural infrastructure development from 2011. The most significant changes in infrastructure captured by community surveys are: (1) construction of secondary schools; (2) provision of electricity connections; and (3) improvements in rural roads. The number of Dry Zone villages with electricity connections and secondary schools has doubled since 2011 (Figure 1). It is likely that access to rural healthcare facilities have also improved, though this has not yet been empirically confirmed. Encouraging as these trends are, they often start from an extremely low base. For example, the share of villages with access to public electricity supply remains low (just 12% in the Delta), and even in villages with electricity many households remain unconnected. Many villages also remain inaccessible by road, particularly in the Delta, where 68% of villages could not be reached by car during monsoon.

Figure 1. Cumulative Share of Schools, Roads and Electricity Connections Established in Surveyed Communities, by Year (1917-2017)



Source: Belton et al. 2017

Travel times from villages to nearby urban centers fell by around one third over the preceding five years in both Delta and Dry Zone, as a result of road improvements and increases in motorcycle ownership and motorcycle taxi services. This has contributed to increasing rural mobility and easier access to markets.

4.1.2. Mobile Phone Access

One of the most dramatic changes affecting all Myanmar citizens is access to mobile phones. Limited to a small percentage of wealthy or politically privileged elites prior to 2012 as a result of monopoly pricing, liberalization of the communications sector has led to mobile phone ownership has soaring in urban and rural areas. For example, 77% of households in our Dry Zone survey owned a mobile phone in 2017. One advantage of Myanmar's late access to mobile services is that the majority of handsets are smartphones. In addition to greatly reducing search-related transactions costs in the rural economy, recent reforms in the banking sector mean that rural mobile banking is set to take off with the major cellphone companies teaming up with banks to provide mobile banking platforms. Farmers use Facebook extensively for information sharing and several start-up companies are developing agricultural extension applications.

4.1.3. Climate Change

Extreme or erratic weather has major implications for the farm economy of Myanmar. In the Dry Zone, where the same average rainfall amount during the growing season is now distributed across only one third as many rainy days compared to three decades ago (Cornish et al. 2018), between 24% and 40% of upland (*Ya*) and lowland (*Le*) parcels incurred crop loss due to drought or flooding within the past 12 months. In the case of sesame production, for example, 58% and 48% of producers in the dry Zone reported having pre- or post-harvest crop losses, respectively (Mather et al. 2018). Erratic rainfall (lack of rains, excessive rainfall), poor water control (flooding), and pests were the main causes. For almost all crops, median gross margins were 2-4 times lower for households who experienced crop losses compared to those who did not.

Dry Zone communities overwhelmingly reported that the average intensity or frequency of climatic conditions had changed during the past 30 years. For example, changes in the average amount of rainfall received over this period were reported in 98% of communities, while 94% reported the perception that average temperatures had changed. In almost all communities average temperatures were perceived to have increased, whereas 43% of communities felt that rainfall had become more erratic, and 51% reported that it had decreased (Oo 2018).

This climatic context means that irrigation in the Dry Zone serves is necessary to prevent or reduce crop losses due to insufficient monsoon rainfall, not just to increase cropping intensity and/or diversification through irrigated dry season crops.

4.2. Markets for Rural Factors and Services

4.2.1. Land Access

Rates of landlessness are high in all regions surveyed, ranging from 68% in the Delta, to 40% in the Dry Zone. This reflects a long history of dispossession due to bankruptcy linked to the paddy

quota system imposed during the period of socialist government from 1962-1988, and (particularly in the Delta) land confiscations (Boutry et al. 2017). Even among landed households there is a high degree of inequality in land ownership. In the Dry Zone, the bottom third of landowning households (tercile 1) have rights to a mere 4% of all cultivable farmland, while the third of landowners with the largest holdings (tercile 3) have rights to 20 times the share of the bottom tercile (81%). The distribution is similar in the Delta where tercile 1 has access to just 3% of cultivable agricultural land while tercile 3 can access 69%.

4.2.2. Rural Labor Markets

The most powerful change in rural labor markets has been rapid outmigration. In both Delta and the Dry Zones, migration accelerated after the reforms initiated in 2011, and 16% and 30% of households in these regions, respectively, now have a current migrant member. Migration from these regions is strongly domestically oriented (92% and 85% of Delta and Dry Zone migrants remained within Myanmar). The urban poles of Yangon and Mandalay, as well as other secondary towns, are the main migrant destinations. The gender composition of migrants is approximately equal in all survey locations, with most migrating for the first time in their early 20s, and working mainly in urban industrial and low-skilled service jobs.

One important outcome of accelerating migration has been its impact on rural wages. The outflow of young, economically active workers has caused tightening of rural labor markets. In both the Delta and Dry Zone, for example, real rural wages (adjusted for inflation) jumped by more than one third over the five-year period from 2011/12 to 2016/17. The association between the rate of out-migration and rural wages is clearly demonstrated in Mon State, where townships located closer to Thailand have greater numbers of migrant households and significantly higher local wage rates than townships located further from the border. Recent growth in numbers of secondary schools may also have contributed to a reduction in workforce participation by children, further contributing to wage increases.

Real wage increases of this magnitude have positive implications for the welfare of the many households with members who depend on off-farm employment. However, these welfare gains occur in the context of a large gender wage gap. In both the Delta and Dry Zone, for example, women earn between 15% and 35% less on average than men for casual agricultural or non-farm work. This gap does not appear to have narrowed (or widened) over time.

4.2.3. Sources of Credit

Myanmar is considered to have one of the least developed financial systems in the world, and rural finance is usually characterized as dominated by informal lenders charging very high rates of interest (Turnell 2009). Our surveys provide evidence that rural credit, in particular from formal sources, diversified rapidly from 2012 to 2017. For example, in the Dry Zone in 2016, 78% of all agricultural loans by value originated from formal sources, with government providing nearly three quarters of the total (73%). Amongst government sources, Myanmar Agricultural Development Bank (MADB) is the dominant source of agricultural credit, but loan facilities provided through the Department of Cooperatives and the Department of Rural Development's Mya Sein Yaung village credit scheme are increasingly important and widely used. Microfinance has also become much more widely available during the past five years, particularly in the Delta, where more than half of villages had access to at least one microfinance provider.

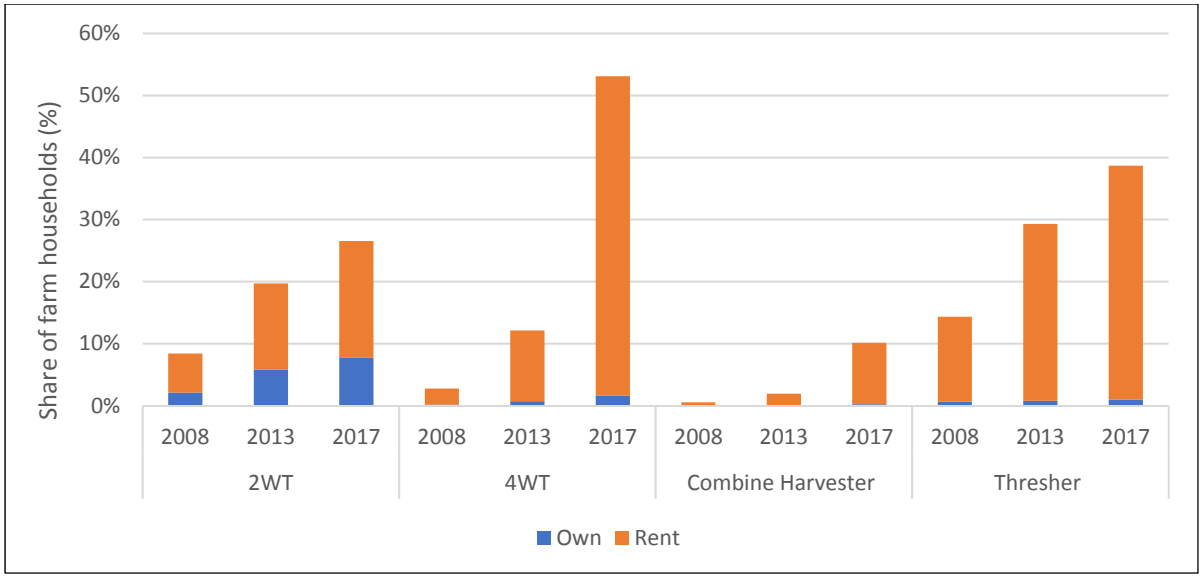
Access to these new sources of credit has resulted in significant improvements in the terms of informal borrowing. In the Dry Zone, the prevailing interest rate offered by informal moneylenders dropped by 5.2 percentage points, from 8.6% per month in 2012 to 3.4% per month in 2017, while the monthly rate charged by friends or relatives fell by 3.0 percentage points (Belton et al. 2017). Similar results were found in the Delta. In both Delta and Dry Zone there is very little output-tied agricultural credit (i.e., credit tied to a commitment by borrowers to sell their crops to loan providers).

4.2.4. Farm Mechanization Services

Rising wages and labor shortages have led to increasing demand for agricultural mechanization services. On the supply side, the availability of mechanization services has been encouraged by three factors: 1) the expansion of hire purchase financing for agricultural machinery since 2013, provided by private banks; 2) the ability for farmers to use land use certificates as loan collateral since 2012; and 3) the falling real cost of imported machines.

In the Delta, two-wheel tractors have almost completely replaced draft animals in paddy cultivation. More recently, in just three years from 2013-2016, the share of farm households using combine harvesters went from almost zero to 50%. The spread of machines has also been rapid in the Dry Zone, particularly four wheel tractors used for land preparation, and combine harvesters in the main paddy growing areas around Shwebo, but mechanization remains partial. This process has been facilitated by the growth of a dynamic mechanization services market, illustrated in Figure 2 below. It is striking that, with the partial exception of two-wheel tractors, almost all agricultural machinery used is hired. High levels of access to machines through rental markets has meant that their use is almost completely scale neutral.

Figure 2. Share of Farmers Using Different Types of Machinery, by Year and Ownership Status



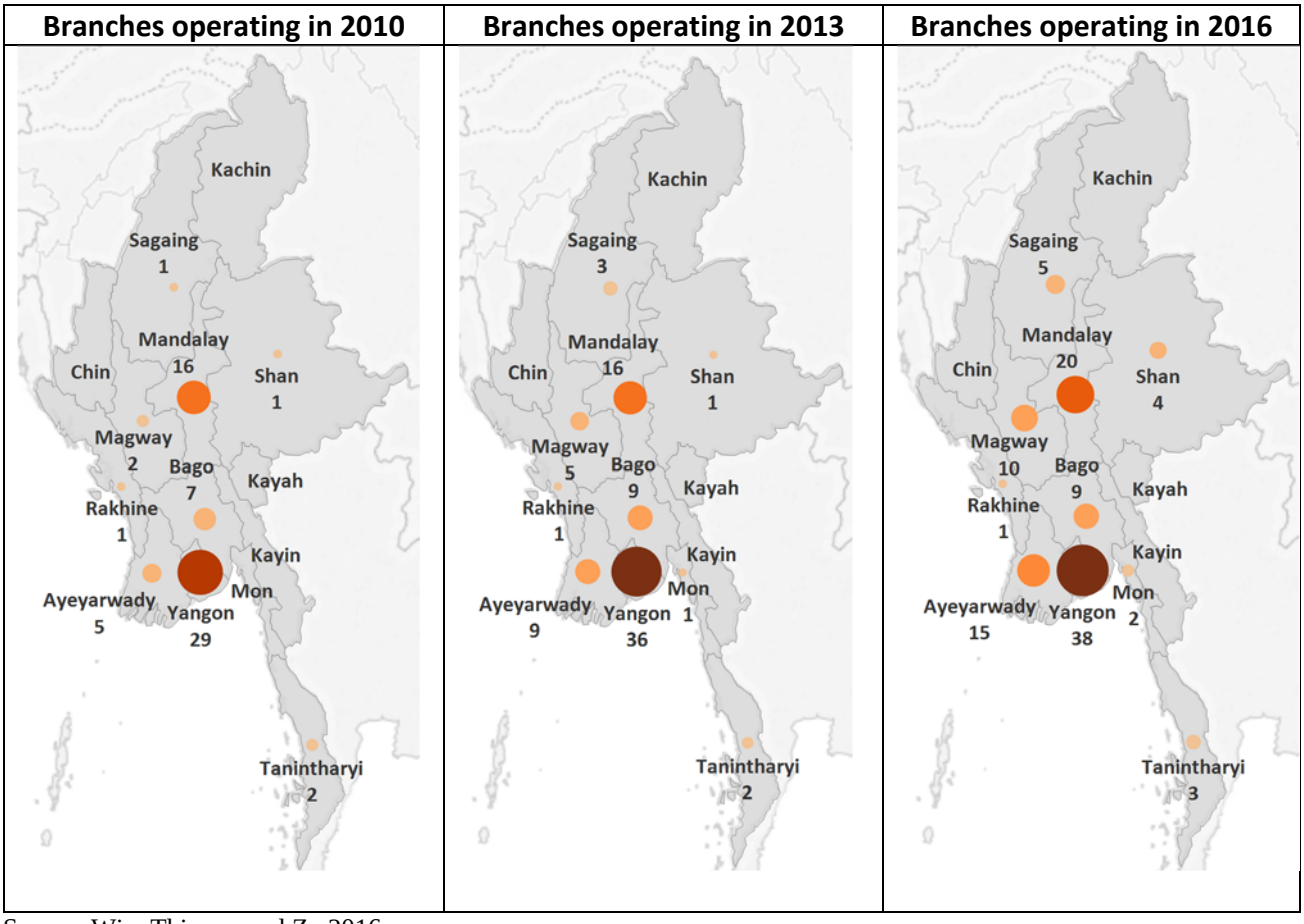
Source: Filipski, Belton, and van Asselt 2018.

Figure 3 illustrates the geographical distribution of branches belonging to agricultural machinery supply businesses operating in Yangon, in 2010, 2013, and 2016. In 2010, outlets were highly concentrated in Yangon, Mandalay, Bago, and Ayeyarwady—an area that forms a core agricultural corridor running down the center of the country along the course of the Ayeyarwady River and includes Myanmar's two largest cities. There were 64 branches in operation, of which 89% were located in these four core regions.

From 2011-2013 the number of branches operated by businesses in the cluster grew by 27% to reach 81. Most of this growth occurred close to Yangon. From 2014-2016, branch numbers increased by a further 29% to 104. Growth in the delta continued during this period, but was accompanied by the establishment of increasing numbers of branches in Dry Zone (Sagaing, Mandalay Magway), and in the more distant states of Shan, Mon, and Tanintharyi. Geographical concentration decreased slightly as a result, with 21% of branches now located outside of the four original main regions.

This pattern of spatial development suggests that labor shortages and wage rate increases (the main drivers of mechanization) occurred first in agricultural zone surrounding Yangon, and began to be transmitted to remoter and less dynamic areas only after 2013.

Figure 3. Number and Location of Machinery Suppliers, 2010, 2013, and 2016



Source: Win, Thinzar, and Zu 2016.

4.3. Agricultural Economy

4.3.1. Farm Level

Household agricultural production is closely related to land access. In the Delta, nearly two thirds (64%) of monsoon paddy was produced by households in the largest land holding tercile, compared to 33% from households in tercile 2, and just 3% from the lowest tercile. Households in the top land holding tercile also accounted for the largest share of dry season paddy (71% of total production), followed by tercile 2 (27%), while households in tercile 1 produced just 2%.

Despite low average farm sizes, most farms in the Delta and Dry Zone produce primarily for the market. For example, in the Delta, farms growing monsoon paddy (including the smallest third of farms) sell three quarters of the paddy they produce, while an even higher percentage of dry season paddy and almost all green gram is sold. In the Dry Zone, 41% of paddy is retained for home consumption, but more than 80% of groundnut and sesame (the two main rainfed crops) is marketed.

In the Delta the average gross margins for the three major crops of monsoon paddy, dry season paddy and black gram were $210/ha, $316/ha and $430/ha, respectively in 2015/16. The average gross margin across all cropped areas was $378/ha (around $840/year for a median sized farm, well under $200 per household member). In the Dry Zone, paddy was the most profitable of the main crops grown in 2016/2017, at $365/ha for dry season paddy and $309/ha for monsoon paddy, while returns from the main rainfed upland crops, groundnut and sesame, were just $213/ha and $202/ha, respectively.

These rates of return reflect low crop yields. In the Delta, average yields are about half the potential yield. Reflecting the difference in seasonal potential, the average yield of dry season paddy (4,202 kg/ha) is nearly double that of the main monsoon paddy crop (2,385 kg/ha). This reflects the higher yield response to fertilizer of dry season rice (due to more sunlight hours), and hence the higher percentage of households using improved varieties and higher rates of urea application. In the Dry Zone, the average yield of paddy (monsoon plus dry season) was 56 baskets/acre (2,890 kg/ha) and that of groundnut was 28 baskets per acre (788 kg/ha). The average yields of sesame, green gram and black gram were extremely low at between 4 and 6 baskets/acre (approximately 280-420 kg/ha).

Low yields in turn reflect very limited uptake of improved varieties in all crops, with the exception of irrigated paddy, and low levels of input use. Inorganic fertilizer, pesticide and herbicide use appears to have increased slightly over the past 10 years (for all Dry Zone crops, and for irrigated paddy in the Delta), but paddy is the only crop to have experienced yield gains during this period. These yield increases were small however, (up from 3,400 to 3,820 kg/ha for dry season paddy in the Delta, and from 2,890-3,200kg/ha for all paddy in the Dry Zone).

While the technologies used to produce paddy, pulse and oilseeds in the Dry Zone and Delta changed little over time, there are examples of widespread uptake of new crops, varieties, and rapid technological change. The most striking of these is the mechanization of agriculture, a revolution which has occurred mainly within the past five years. Five other examples include 1) the rapid spread of hybrid maize, since 2000, and hybrid rice cultivation, since 2010, in Shan State; 2) the rise of export oriented pulse cultivation during the 1990s; 3) the expansion of aquaculture in the Delta in spite of restrictions on the conversion of agricultural land to ponds

(doubling in area within a decade), 4) the switch from red to black sesame in response to demand from Japan and Korean markets; and 5) the dramatic growth of melon cultivation in the Dry Zone and Bago over the past five years, with exports possibly already exceeding those of rice in volume and value. These examples indicate that smallholders in Myanmar are willing and able to seize new opportunities when market conditions and policy environments are favorable.

4.3.2. Downstream Agricultural Value Added

The types of change outlined above have been enabled by, and contributed to, rapid transformation in off-farm segments of associated value chains. For example, the growth of aquaculture in the Delta has been accompanied by the emergence of specialist service providers upstream and downstream of the farm. These include harvesting teams, suppliers of feed, seed, and ice, transport rental services, and large and small traders. New employment and income generating opportunities create large spillovers, so that for every dollar earned directly by fish farmers themselves, more than one additional dollar of income is created within the local rural economy. Most of this spillover value is captured by landless and small farm households who provide labor to fish farms (Filipski and Belton 2018). Similarly, melon cultivation in the Dry Zone is labor intensive, bidding up wages in the vicinity of farms. These types of high value, labor intensive farming have an important role to play in rural economic development, given that such a large share of the rural population is dependent upon work off-farm.

4.4. Rural Off-farm and Non-farm Economy

4.4.1. Rural Non-farm Businesses

The rate of establishment of rural non-farm businesses has increased rapidly since 2010, signaling the emergence of new rural livelihood opportunities. The most rapid growth (in percentage terms) has been in agricultural machinery rental and transport businesses. Numbers of retail businesses and businesses providing personal services and food away from home have more than doubled within the past 10 years, in both Delta and Dry Zone, suggesting that income levels and discretionary spending have also grown.

Non-farm business now accounts for a significant share of rural incomes and employment (approximately 20% across survey locations). Most of these businesses, however, are self-operated micro-enterprises. The vast majority (81% in the Dry Zone) hire no labor. The rural non-farm economy is thus not yet a major provider of non-family member employment, and casual non-farm work lags far behind agricultural day labor as a source of off-farm employment in all survey locations.

4.4.2. Rural Off-farm Employment

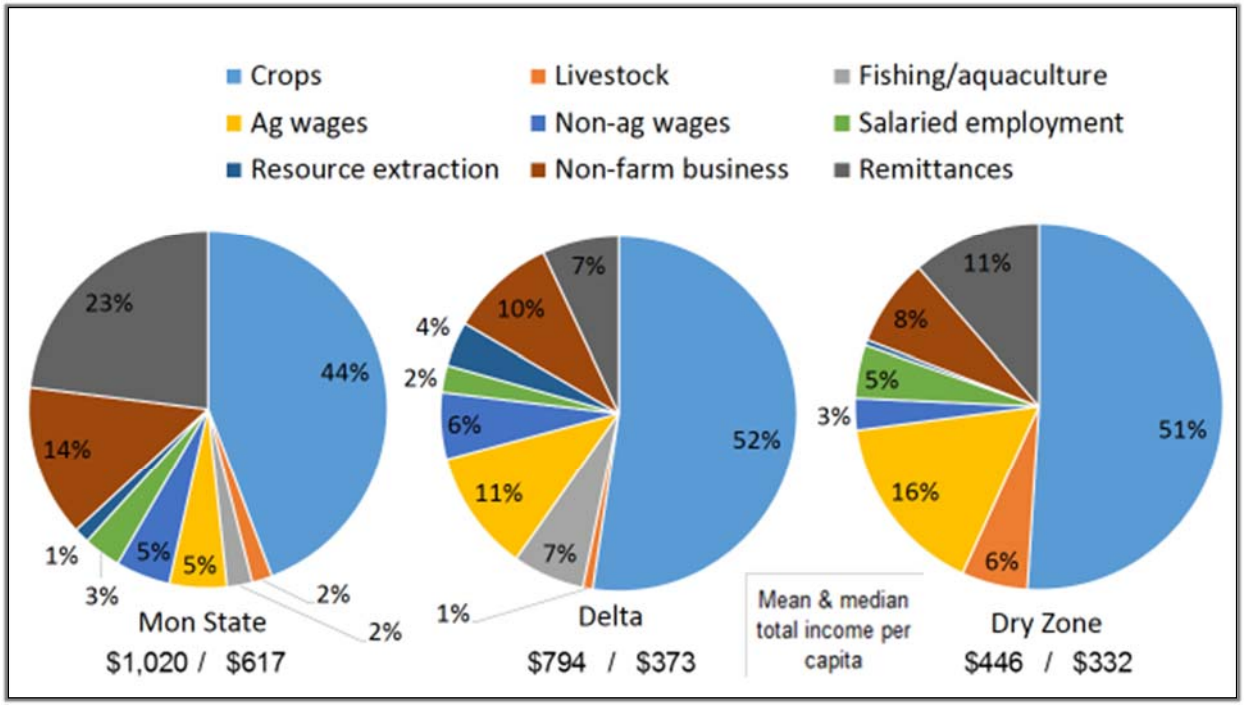
Low average size and uneven distribution of landholdings makes off-farm employment (defined as work away from own farm) a highly significant component of rural livelihoods. For example, in the Delta, households in the poorest fifth of the population (measured by consumption expenditure) are overwhelmingly dependent on off-farm employment. Seventy-four percent of households in this group have no other source of income, and just 8% are fully employed on their

own farms. Even among the wealthiest quintile, only 29% of households derive their incomes entirely from own-farm employment, while 44%, depend exclusively on off-farm income sources. Across survey locations, off-farm work (i.e., local causal labor or salaried employment) accounts for a similar share of rural income as farming (e.g., both shares account for 33% of rural incomes in the Dry Zone). As noted above, casual off-farm employment is dominated by agricultural wage labor, with rural non-farm business generating relatively few opportunities for hired labor.

4.5. Patterns of Rural Household Incomes

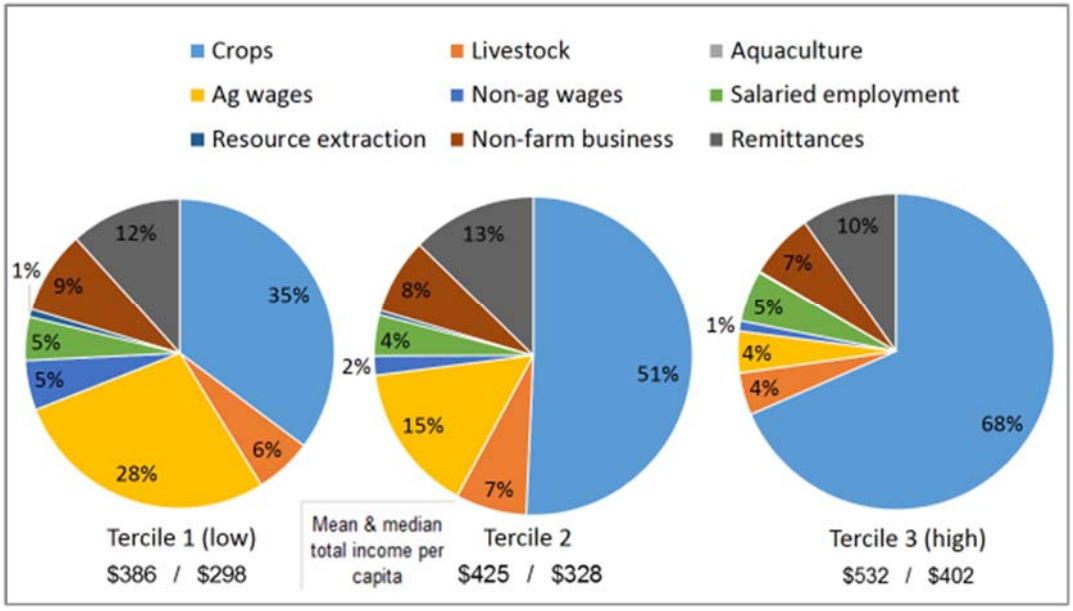
For the purposes of comparison, we include household income composition in Mon State, a region heavily dependent on international migration.[1] In all three regions (Mon, Delta, and Dry Zone) agriculture makes by far the largest contribution to rural livelihoods. Among households with land access, own agricultural production (crop, livestock and aquaculture) provides at least 50% of household income, rising to 70% in the Delta and Dry Zone when income earned from working on other farms is included (Figure 4). Using the Dry Zone as an example, the relative importance of crop income among household income sources is positively correlated with size

Figure 4. Household Income Composition for Households Operating Land in Three Regions



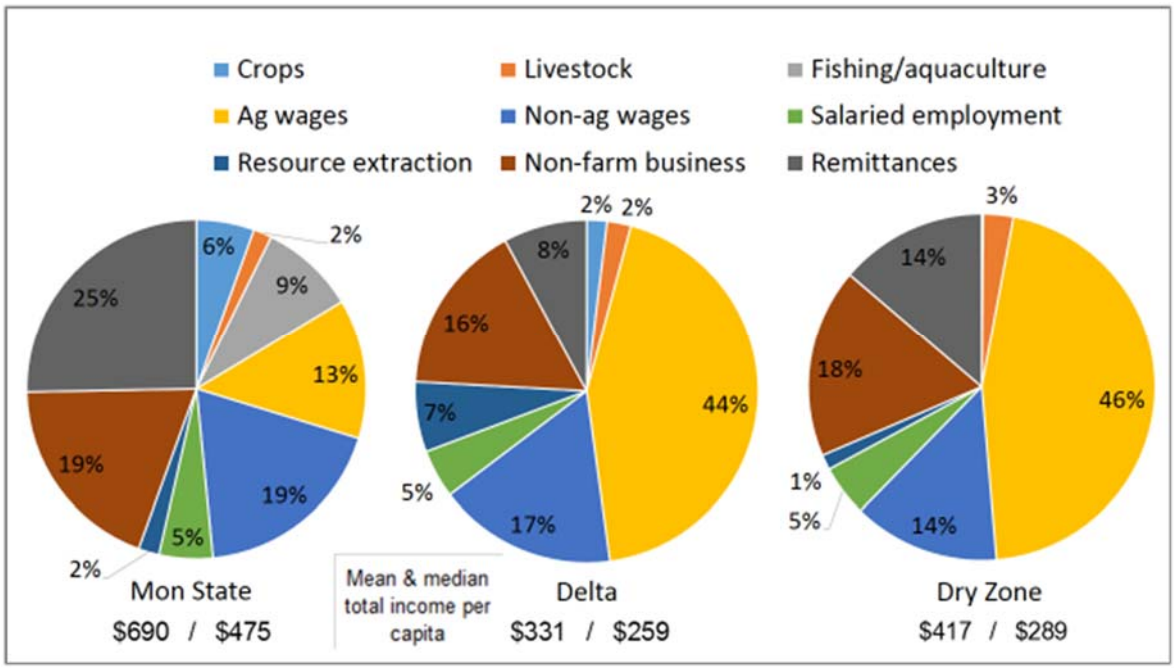
[1] Data for Mon State came from the Mon State Rural Household Survey (MSRHS), a sample of 1,627 households collected in 2015 (Hein et al. 2016).

Figure 5. Household Income Composition by Amount of Land Operated in the Dry Zone



of landholding, while the share of remittances from migrant household members is relatively stable (Figure 5). Households with smaller landholdings derive a larger share of their income from hiring out labor for agricultural and non-agricultural enterprises, as to be expected. Dependence of landless households on agricultural and non-agricultural employment is inevitably higher than for households with land (Figure 6). Given the increasing mechanization of agriculture, it will be especially important for landless households to diversify their income sources away from agricultural wages in the future.

Figure 6. Household Income Composition for Landless Households in Three Regions



5. CONCLUSIONS

To summarize, the following observations stand out.

(1) Migration from the Delta and the Dry Zone has accelerated sharply from around 2010 onwards, particularly to cities within Myanmar, with approximately 80% of migration in both zones taking place since this date.

(2) Real daily wages have risen dramatically in both zones, jumping by one more than one third from 2012 and 2016.

(3) The explosive growth of agricultural mechanization is linked closely to migration and rising real wages. For example, in the Delta and the Dry Zone, levels of combine harvester use in dry season paddy cultivation climbed from almost nothing in 2011/12 to 70% and 41% in 2016/7, respectively.

(4) Construction of rural roads, secondary schools, and electrification have all markedly increased sharply since 2011, in line with revised government spending priorities. Transport times to nearby urban areas have fallen sharply and increasing school enrollment rates have likely contributed to rural labor shortages.

(5) Numbers of non-farm enterprises have jumped sharply over the past five years. Transport, retail (including agricultural inputs shops) and machine rental service businesses have seen some of the fastest growth. Businesses selling food and personal services have also increased significantly, indicating greater disposable income among the rural population.

(6) Access to credit from microfinance institutions and cooperatives has improved dramatically. There has been a corresponding reduction in rates of interest paid on informal loans in both zones.

(7) Levels of landlessness are high, and agricultural landownership is skewed, with the smallest third of farms in both zones occupying less than 5% of all agricultural land. Agricultural production is heavily concentrated among the top third of farming households in terms of land access, while the bottom third possess insufficient land to support themselves through own agricultural production.

(8) Use of modern inputs in agriculture has increased somewhat over the past decade, but yields have shown little response, and agricultural profitability is generally low.

(9) Particularly in the Dry Zone, the risks of drought and flooding associated with increasing climate variability is limiting the potential for farmer investment in improved technology for rainfed crops.

6. POLICY IMPLICATIONS

Our empirical findings indicate that a complex series of changes with profound implications for the future of rural Myanmar are underway. Infrastructure, mobility, and access to and terms of credit, are improving quickly, contributing to rapid growth in the non-farm economy. However, while providing significant opportunities for own-account workers, rural non-farm enterprises currently absorb little labor. Agricultural mechanization has partially offset growing seasonal labor shortages, and mitigated rising hired labor costs for farmers, but may eventually have a negative impact on landless and land-poor agricultural workers who are heavily dependent on off-farm work. Adoption of modern farm inputs has been partial and yield gains have been small, and limited primarily to paddy. The relative profitability of farming vis-à-vis non-farm activities can therefore be expected to have declined over time. The effects of non-farm growth on the productivity and long-term viability of agriculture therefore remain uncertain.

Given that 87% of Myanmar's poor live in rural areas it makes sense for government to focus on eradicating rural poverty through interventions that attack its enablers and consequences. A viable farm sector is a critical leverage point given its importance as a source of rural incomes and employment to both farm and non-farm households. Given the large yield gaps between Myanmar and other countries in the region, and given limited diversification into high value agricultural enterprises to date, there should be scope to increase agricultural productivity. And given that inequality in land access marginalizes the landless and the bottom third of smallholder farmers, it makes sense to target interventions that benefit this very sizeable group in addition to raising agricultural productivity in the sector as a whole. Given the much higher rates of hunger and malnutrition in coastal and mountainous areas, often exacerbated by conflict, reduction in rural malnutrition will require geographic targeting. Although there are generally strong correlates between levels of income and malnutrition, in the case of Myanmar complementary interventions will likely be needed to lift the bottom third of households out of poverty and have a measurable impact on the geographic enclaves where malnutrition is most prevalent in the near term.

Given that land is an essential asset for agricultural production, expanding access to agricultural land for landless and land-scarce households interested in farming would be helpful. In many countries land rental markets are an important mechanism for land access, and the underlying causes for largely missing land rental markets in Myanmar needs to be better understood. Another option is the re-distribution of abandoned or contractually non-performing land concessions. For poor households with some degree of access to land, there is scope for improving the ability of households to improve the income and nutritional outcomes through the way land is utilized. The scope could be greatly increased through a legislative policy reform to allow smallholders to convert part of their paddy land to permanent alternative use, as this would allow access to high value enterprises such as floriculture, horticulture, aquaculture and intensive livestock rearing.

Given that both landless and landed poor depend on off-farm employment, and increases in access to land and diversification into high value enterprises will take time, interventions with high rural employment spillovers will be at a premium in the near term. This implies expansion of rural financial services for Small and Medium Enterprises (SMEs) beyond machinery rental to include aquaculture and livestock inventory (including feed), cold storage facilities, and value

added processing. Complementary financial services besides credit, such as insurance and business management skills, will be needed to expand and diversify employment-intensive rural SMEs. The scope and level of impact interventions in support of diversification of the rural economy will depend on access to electricity and distance to urban markets (including secondary towns).

The spatial diversity of agricultural and market opportunities related to agro-ecological factors, and domestic and regional urban markets, calls for a decentralized approach to shaping rural economic growth. This implies close collaboration between union and regional governments in the implementation of the new Agricultural Development Strategy. Specific examples where stronger coordination to address regional opportunities and constraints are as follows:

- Increased investment in research and development to improve pulse, oilseed and paddy varieties, and strategies to multiply and distribute improved seed.

- Policies to encourage diversification into the high value labor-intensive enterprises such as livestock, aquaculture and, horticulture, are a necessary complement to increases in crop yields.

- Strengthened linkages between farms and agro-processing to tap into growing domestic consumer demand for safe, high quality fresh and processed vegetables, fruits, livestock and dairy products.

- Migration is a key driver of rural transformation. As such it should embraced, but measures such as provision of insurance and healthcare and regulation of brokerage services are needed to support safer, less risky, higher quality migration.

- Levels of investment in infrastructure seen post-2011 should be sustained or increased, but must be complemented by the development of ‘soft’ infrastructure, such as well trained teachers and health professionals.

- The rural non-farm economy complements farming but provides relatively limited work (other than self-employment). Options for promoting greater productivity and job growth in this sector are needed.

- Mechanization is widespread, but spatial inequalities in access may be emerging. These should be addressed to prevent the competitiveness of some areas or farms lagging (e.g., by improving rural roads, land levelling).

- Strategies to mitigate impacts of climate extremes – such as drainage and anti-erosion soil management practices, development of groundwater irrigation, water storage infrastructure and stress tolerant plant varieties – will become increasingly important.

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