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Local transformation in rural Vietnam

A commune level analysis

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Abstract: This study documents the local transformation of rural Vietnamese communes in 12 different provinces from 2006 to 2014. Three key areas are considered, namely occupational and agricultural choice; provision of public goods and infrastructure as well as land markets. While many areas showed great improvements over the period, the level and the speed of transformation was also found to vary between different geographical regions. While communes report fewer problems in 2014 than in 2006, there has been a marked increase in the number of communes who say climate change is an issue. Officials expect this to increase even more going forward.

Keywords: Vietnam, occupational choice, land markets, infrastructure
JEL classification: O13, O18, Q15, R11

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1 Introduction

The process of structural transformation takes place at many levels. At one end of the spectrum, it is the result of decision making of individual households or even household members. At the other end of the spectrum, government policies can affect the direction and speed of transformation.

There are, however, several intermediate levels, which form part of the framework within which households act. This study utilizes information from Vietnamese communes to analyse how this intermediate level has evolved over the years. This is a part of the transformation process, which is easily overlooked using data collected at the more disaggregated household level. This can provide insights into the part of structural change over the period that is not a result of individual household decisions. The data for this project comes from the Vietnamese Access to Resources Survey (VARHS), a bi-annual commune survey recorded since 2006.[1] The commune, the lowest administrative division in Vietnam, is a natural level of analysis for providing a high-level yet local view of changing economic conditions and structural transformation. Vietnamese communes typically consist of a few separate villages; in 2014, the average number of households in communes participating in the VARHS was 2,079. This size, combined with the fact that long-distance travel in rural Vietnam still requires a significant commitment of both time and money, means that the conditions of the commune of residence are informative about the everyday conditions faced by rural Vietnamese households.

The VARHS includes a commune level survey. Interviews with commune administrators were performed in all communes where the VARHS households reside. This study utilizes the resulting commune level panel database to provide an overview of economic conditions and transformation in the years 2006-14. The final section of the paper looks ahead by pointing to some potential future challenges for the VARHS communes and for the people living in them.

The commune panel includes 390 communes that were followed from 2006 to 2014. The five rounds of the VARHS from 2006 to 2014 took place in 12 provinces. These 12 provinces are aggregated into five regions, the names of which will be used to describe the communes of the VARHS.[2] Indeed, while the VARHS survey is representative at the province level, I make no claim about the representativeness at the level of the five aggregated regions. However, the regional aggregations are reasonable as the provinces within each category share important geographical and economic conditions. The five regions are:

- Red River Delta: Includes VAHRS communes from the province of Ha Tay. In 2008, Ha Tay was subsumed into the metropolitan area of Hanoi. The close proximity to Hanoi means that urban-related activities such as handicrafts contribute substantially to livelihoods. The location in the Red River Delta means that agriculture is focused on high-yield rice production.

- North: Includes VAHRS communes from the provinces of Lao Cai, Phu Tho, Lai Chau, and Dien Bien. These provinces, located in the more mountainous and remote areas of Northern Vietnam on the borders to China and Laos are relatively poor. They also

[1] CIEM and Dept. of Economics, University of Copenhagen (2007, 2009, 2011, 2013); and CIEM (forthcoming).

[2] There are of course other communes and other provinces not included in the VARHS, which would also fit into these regional categorizations.

exhibit low population densities of between 50-100 persons per km^2, except Phu Tho where the population density is greater than 300 (GSO 2015).[3]

- Central Coast: Includes VAHRS communes from the provinces of Nghe An, Quang Nam, and Kanh Hoa. This set of mountainous provinces on the coast has a complex geography including large areas covered in forest. They are dependent on agriculture, primarily rice and a range of cash crops such as rubber, cinnamon, peanuts, cashews and coconuts. In later years, some of these provinces have experienced high rates of industrial and tourism growth. Population densities vary from between 140 persons per km^2 in Quang Nam to 229 in Kanh Hoa.

- Central Highlands: Includes VAHRS communes from the provinces of Dak Lak, Dak Nong, and Lam Dong. Placed on a series of contiguous plateaus that are surrounded by higher mountain ranges, households in these communes are dependent on upland rice activities as well as a range of cash-crops, which are well-suited for the higher altitudes and sub-tropical climate. Chief among these is coffee but there is also a non-negligible production of other products such as tea, cocoa and rubber. Population densities vary from 85 persons per km^2 in Dak Nong to 139 in Dak Lak.

- Mekong River Delta: Includes communes from the province of Long An. Long An is located just west of the metropolitan area of Ho Chi Minh City. While not nearly as industrialized as the South East region immediately North of Ho Chi Minh City (not included in the VARHS survey), the Mekong River Delta has the third-highest industrial output of any region in Vietnam after the South East region and the Red River Delta region. The Mekong River Delta, a low-lying coastal region, is considered the rice bowl of Vietnam: even though the risk of flooding is severe, it has one of the highest outputs of cereals per capita in Vietnam.[4] This also means the area supports a high population density of 327 persons per km^2.

Table 1 shows how the VARHS communes are distributed within the five regions. It also shows how communes are distributed within three income tertiles. It is immediately clear that there are differences both within and between these five regions. In the provinces of Red River Delta and Mekong River Delta, which are close to the large population centres of Hanoi and Ho Chi Minh City, respectively, many communes are doing quite well. This is especially the case for the only province in the sample, which belongs to the Mekong River Delta, namely the province of Long An. Here, more than two thirds of communes belong in the highest (third) income tertile and this region has the highest average income per capita of the five regions. Conversely, in the more remote and mountainous North region, more than two thirds of communes belong in the lowest (first) income tertile. The Central Coast region is doing markedly better, but not quite as well as the Central Highlands where most communes are in the highest income tertile. Interestingly, the Central Highlands are on average doing better than the Red River Delta communes in terms of per capita income. It should be kept in mind that income is not necessarily equivalent to consumption if there is substantial consumption of own production. The high prevalence of cash crop agriculture in the Central Highlands will decrease the wedge between income and consumption. This can partly explain why the Central Highlands appear to be doing so well in this table. Indeed, in 2010, only the Northern Mountain regions and the North Central Coast had higher poverty rates than the Central Highlands region (World Bank 2012).

[3] Population density information is from 2013.

[4] Author's calculations based on 2012 population and output statistics from GSO (2015).

Table 1: Communes in commune panel sample by 2014 income tertile and region

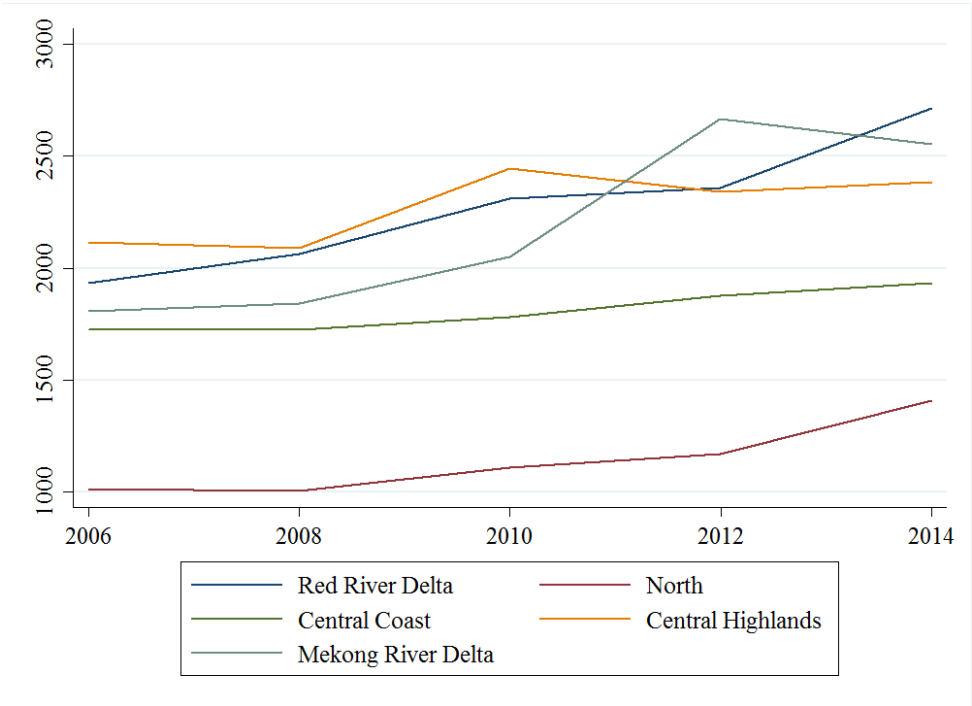
	Red River Delta	North	Central Coast	Central Highlands	Mekong River Delta	Total
1	12	69	37	12	5	135
	(18.5)	(69.)	(33.9)	(15.6)	(12.8)	(34.6)
2	29	21	48	20	7	125
	(44.6)	(21.)	(44.)	(26.)	(18.)	(32.1)
3	24	10	24	45	27	130
	(36.9)	(10.)	(22.)	(58.4)	(69.2)	(33.3)
Total	**65**	**100**	**109**	**77**	**39**	**390**
Average monthly income per capita in 2014, '000 VND[1]:	2,782	2,043	2,651	3,320	3,551	2,739

Notes: The following provinces are included in the five regions: Red River Delta: Ha Tay; North: Lao Cai, Phu Tho, Lai Chau, Dien Bien; Central Coast: Nghe An, Quang Nam, Kanh Hoa; Central Highlands: Dak Lak, Dak Nong, Lam Dong; Mekong River Delta: Long An. Column frequencies are displayed in parentheses. Income tertiles are based on stated average commune income. Due to bunching of answers, there are not exactly 1/3 of communes in each of the three tertiles. The former Ha Tay province is now a part of Hanoi province. Column frequencies in per cent are reported in parentheses. [1]: Income is calculated as an unweighted mean of the average per capita income in each commune. Values are in real June 2014 VND.

Source: Author's calculations based on VARHS database.

Figure 1 documents the evolution of the number of households in the average commune in the sample. Communes in the North tend to be smaller than elsewhere but in all regions, communes have been growing in terms of number of households over the period. This reflects the general population increase in Vietnam over the period. Even though there has been a tendency of migration toward the urban areas in the last decade, an increase in the number of rural households is still apparent in the rural communes of the VARHS sample.

Figure 1: Average number of households in VARHS communes by region



Source: Author's calculations based on VARHS database.

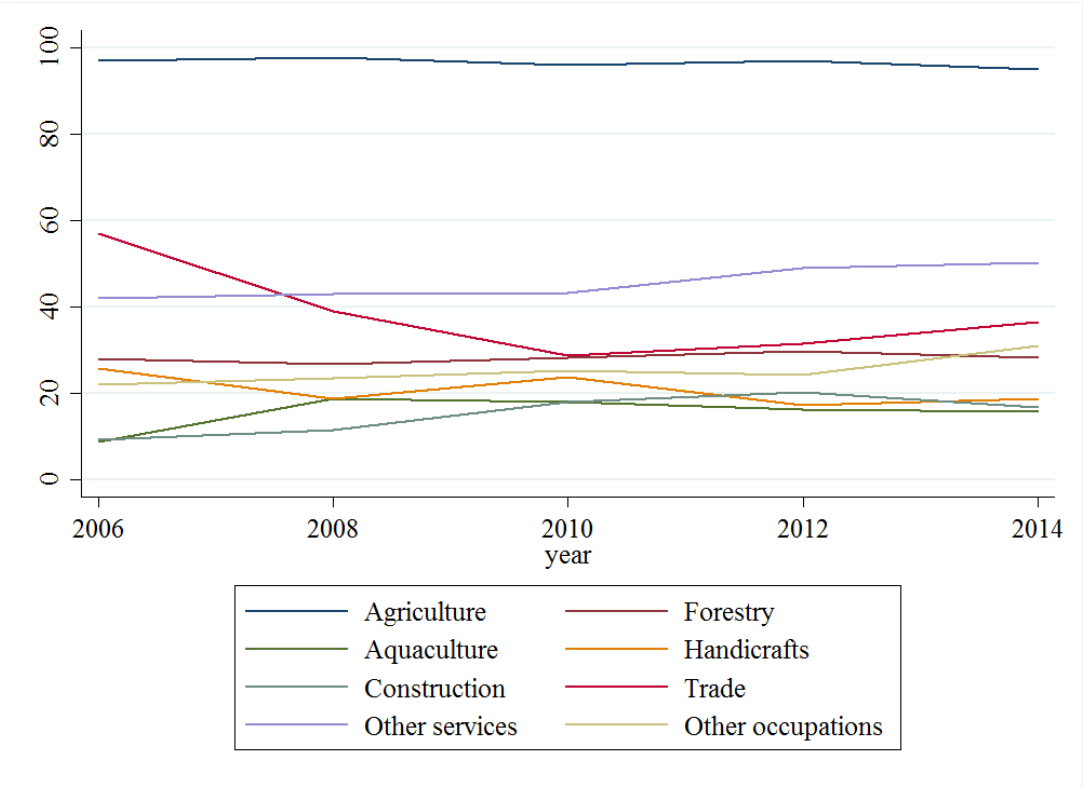
2 Occupational and agricultural choice

This section aims to provide an overview of what the households in the VARHS communes are doing for a living. Figure 2 shows the evolution of the most important occupations in the communes. In almost all communes, agriculture is one of the three most important occupations with upwards of 90 per cent of all residents taking part in some form. Trade was the second-most important occupation in 2006 but the importance of this occupation was falling drastically up to 2010, and has only recovered slightly since then. There are at least two candidate reasons for this. First, the financial crisis of 2008, which coincided with rising oil prices increased costs and reduced opportunities for long-distance trading. This can also explain why the sector has experienced a slight resurgence after 2010 as the crisis abated and oil prices returned to a lower level. Second, petty trade may have become a less important absorbing sector of surplus labour as non-agricultural sectors have developed. To support this argument, aquaculture, other services, construction activity and other occupations have all gained importance over the period.[5] The increase in aquaculture as an important occupation corresponds well to the known increase in aquaculture production in Vietnam (See for instance the FAO Fisheries and Aquaculture Statistics Database). The increase in construction activity reflects the high levels of growth experienced in Vietnam over the period. While the occupational shifts mentioned above are substantial and certainly points toward structural transformation, the occupation structure has not changed radically. The picture that emerges is instead one of diversification at the commune level into a wider range of activities, and especially out of trade, without leaving the main occupation of agriculture behind.

The country-level averages can hide interesting geographical variation. In order to explore this, Figure 3 shows the most important occupations in 2014 by region. While agriculture is important in all regions, it is slightly more important in the more remote and poorer Northern provinces as well as the Central Highlands. In these two regions, almost 100 per cent of communes report that agriculture is one of the most important occupations. In the more sparsely populated Northern region, more than 50 per cent of communes engage in forestry while almost no communes in the more densely populated provinces in the Red River Delta and Mekong River Delta regions do so. Handicrafts and other occupations are more common occupations around the big population centres as well, and in the specific provinces of the VARHS survey, handicrafts is particularly common in the Red River Delta area of ex-Ha Tay. Many communes in the Mekong River Delta province of Long An engage in activities that fall under the category of other occupations, including transport and manufacturing, both of which are typical of rural areas in close proximity to large urban population centres.

[5] The changes in these occupations are all statistically significant at the 5 per cent level using a two-sided t-test comparing 2006 and 2014 occupations at the commune level.

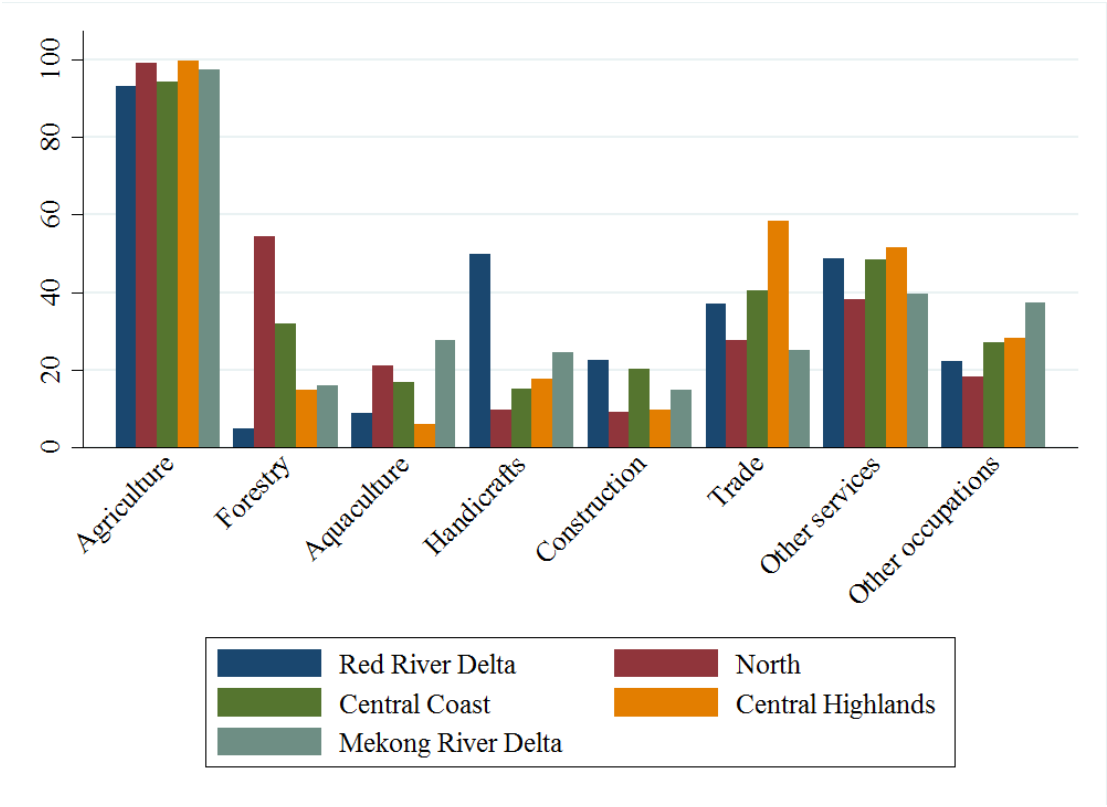
Figure 2: Most important occupations by year in per cent



Note: The graph shows the share in per cent of communes where different occupations were among the three most important occupations. Commune officials were asked to mention the three most important occupations. Officials had the option to list fewer than three if there were not three relevant occupations. Other occupations include everything not included in the other categories, including transport and manufacturing.

Source: Author's calculations based on VARHS database.

Figure 3: Most important occupations by region in 2014 in per cent



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Source: Author's calculations based on VARHS database.

Since agriculture is the most important occupation throughout the period and in all regions, it is worth digging deeper into the structure of agriculture. Figure 4 shows how the allocation of land for different uses varies between regions as well as over time. In the Red River Delta, the majority of land is used for rice cultivation. This share has steadily declined over time, however. Instead, more and more land is used for non-rice annuals as well as for residential purposes.

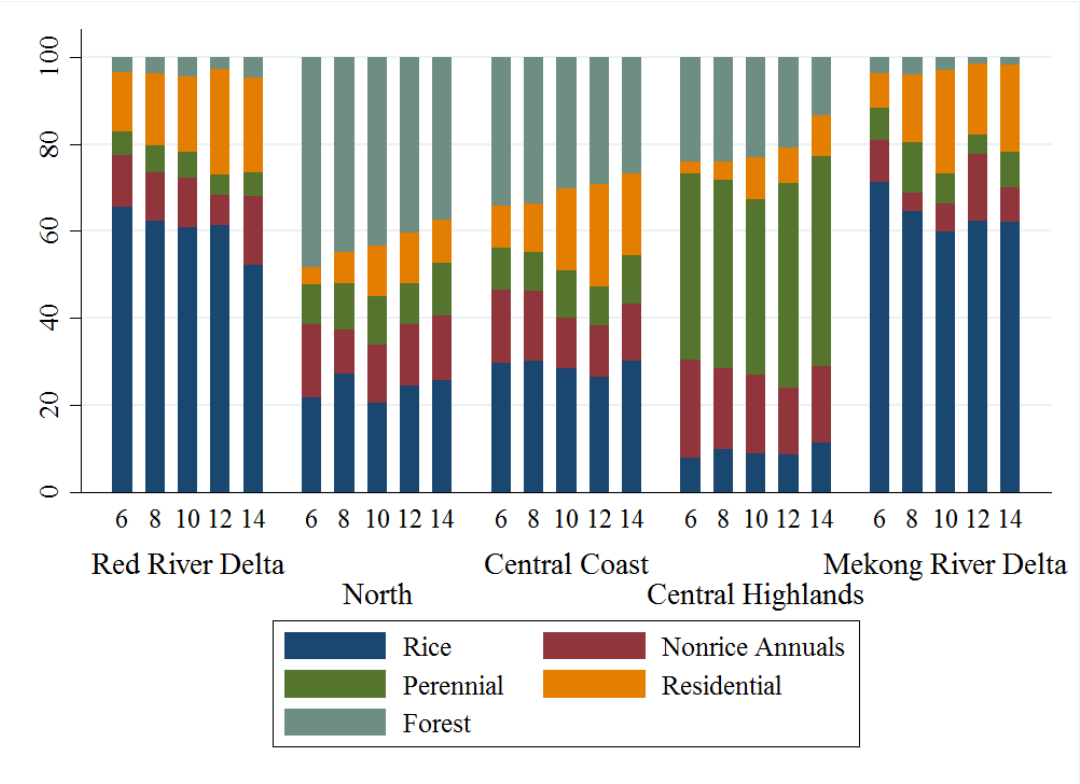
In the North, there has been a steady decline in forested land while the shares of all other land use purposes have increased. Deforestation has also taken place in the Central Coast region. This land has mostly been converted into residential land. The North and Central Coast regions had high initial forestation rates (more than 50 per cent and 30 per cent in 2006, respectively). As population density and income levels rise, some of this land is converted into agricultural and residential land. In the North, which is still very focused on agriculture as shown in Figure 3, much of the land was converted for agricultural use. As shown above, construction, trade and other activities such as tourism have become increasingly important in the Central Coast provinces. It is therefore not surprising that a larger share of the deforested land is converted into residential land in these provinces.

The agricultural focus on cash crops in the Central Highlands is evident from Figure 4. A larger share of land (around 50 per cent in 2014) was devoted to perennial crops while only about 30 per cent was used for rice and other annual crops. There is also a minor trend of conversion of forested areas into agricultural and residential land.

Consistent with its nickname as the rice bowl of Vietnam, the majority of land in the Mekong River Delta is used for rice production. In 2014, more than 60 per cent of land was used for this purpose. There is no clear trend in land use shares over time in this region. This combined with the possibility of measurement errors, means that the year-to-year differences in this region will not be explored further.

In conclusion, both the structure of land use and the evolution of this over time varied between regions. Most land in the two delta regions are used for rice cultivation. In the two poorest regions, the North and the Central Coast, a trend toward deforestation is clearly observed. The structure of land use is very different in the Central Highlands due to its high intensity of cash crop agriculture. In general, the share of land used for residential purposes has increased. This reflects both rising incomes and rising population densities.

Figure 4: Land use by year and region



Source: Author's calculations based on VARHS database. The shares are calculated as simple averages of commune shares. The five categories always sum to 100%. Other types of land such as water surfaces, mountains etc. are not included in the calculations.

3 Provision of public goods and infrastructure

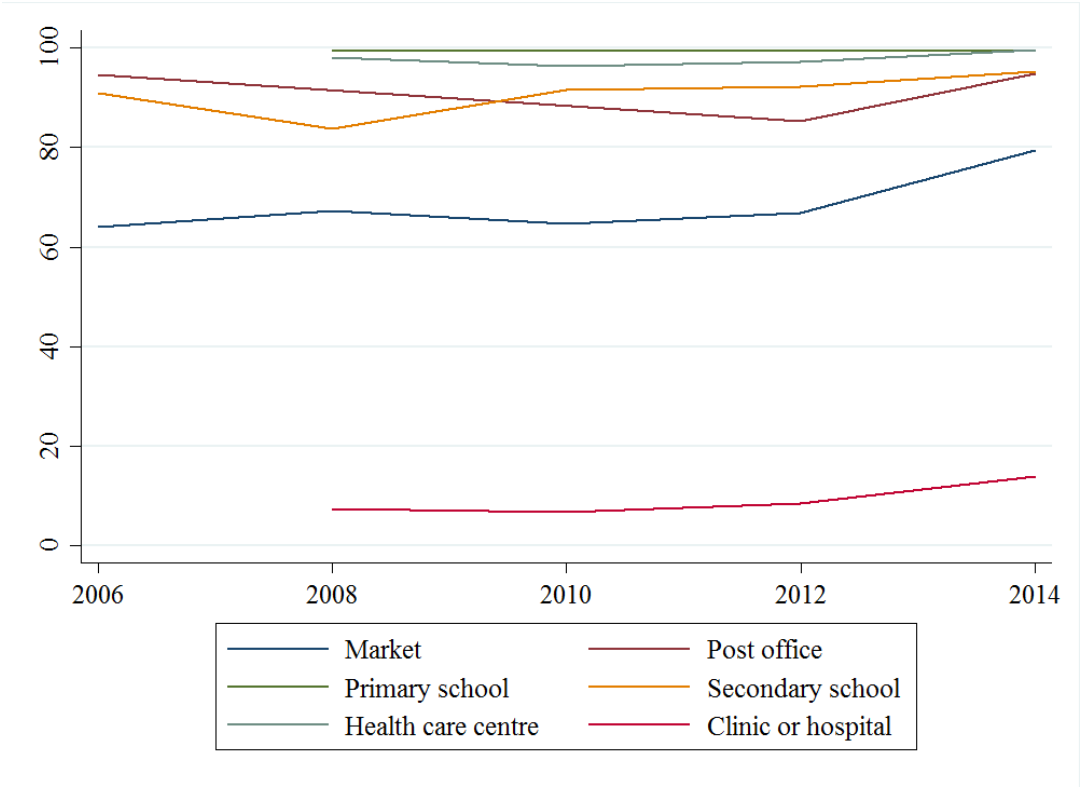
The set of services offered at the commune level establish the framework conditions that households work, earn income, and make decisions under. Public investments in infrastructure were greater than 10 per cent of GDP per year between 1997 and 2009 (Thanh and Dapice 2009). This high level has changed conditions on the ground. Between 2000 and 2010, rural connections to the electricity grid increased from 14 per cent to almost 100. The length of paved roads in the country almost quadrupled while the number of households with access to piped water rose from 12 per cent in 2002 to 76 per cent in 2009 (Vietnam Development Report 2012). While these figures document a high level of growth, they are also indicative of a low initial level of infrastructural services.

While the expansion of infrastructure is well documented, less has been said about the expansion of other public goods. This section investigates to what extent the high level of public investments and the expected expansion of infrastructure and basic services can be observed in the communes of the VARHS. The section also investigates the heterogeneity of the expansion across regions.

Even though the level of the commune is a natural level of analysis for this since it encompasses the daily surroundings of the households, the decisions to provide the types of infrastructure analysed in this section are not made solely by the commune administrators. Some facilities such as public primary and secondary schools and healthcare centres are managed at the district level (the second-lowest administrative level), but funded at the provincial level. Commune authorities can request provision of these facilities but they do not make the decision. For other types of facilities such as roads and streetlights, the funding and decision process differs depending on the type of road. A third type of facilities such as extension shops and centres can also be funded at the provincial level—but private non-profit and for-profit agents also operate in this market. Similarly, some communes will have private primary and secondary schools. The results should therefore be interpreted as the conditions of households living in these communes and not as a view into the decisions of commune authorities as to which facilities and services to provide to the community.

Figure 5 shows the presence in the communes of six types of facilities from 2006 to 2014. There is evidence of some improvement. For example, the share of communes that had markets and secondary schools are significantly higher in 2014 than they were in 2006. Likewise, the share of communes that had healthcare centres and a clinic or hospital was significantly higher in 2014 than in 2008, the first year in which these variables were recorded. There is no significant change in the share of communes that had primary schools, but this is because almost all communes already had one in 2008. Likewise, there has been no improvement overall in the share of communes with a post office. In fact, this share declined slightly in the sub-period 2006 to 2012. In general, improved provision of these types of public facilities did not take place evenly throughout the period. The presence of post offices, clinics or hospitals and healthcare centres all declined at some point from 2006 to 2014. This shows that transformation, even at the more aggregated commune level, is a complex process where setbacks can occur in some aspects in some years while others improved. It also highlights the importance of not over-interpreting short-term changes. A longer time horizon such as the one of the VARHS, which covers eight years, is needed in order to conduct meaningful inference.

Figure 5: Presence of six commune facilities over time



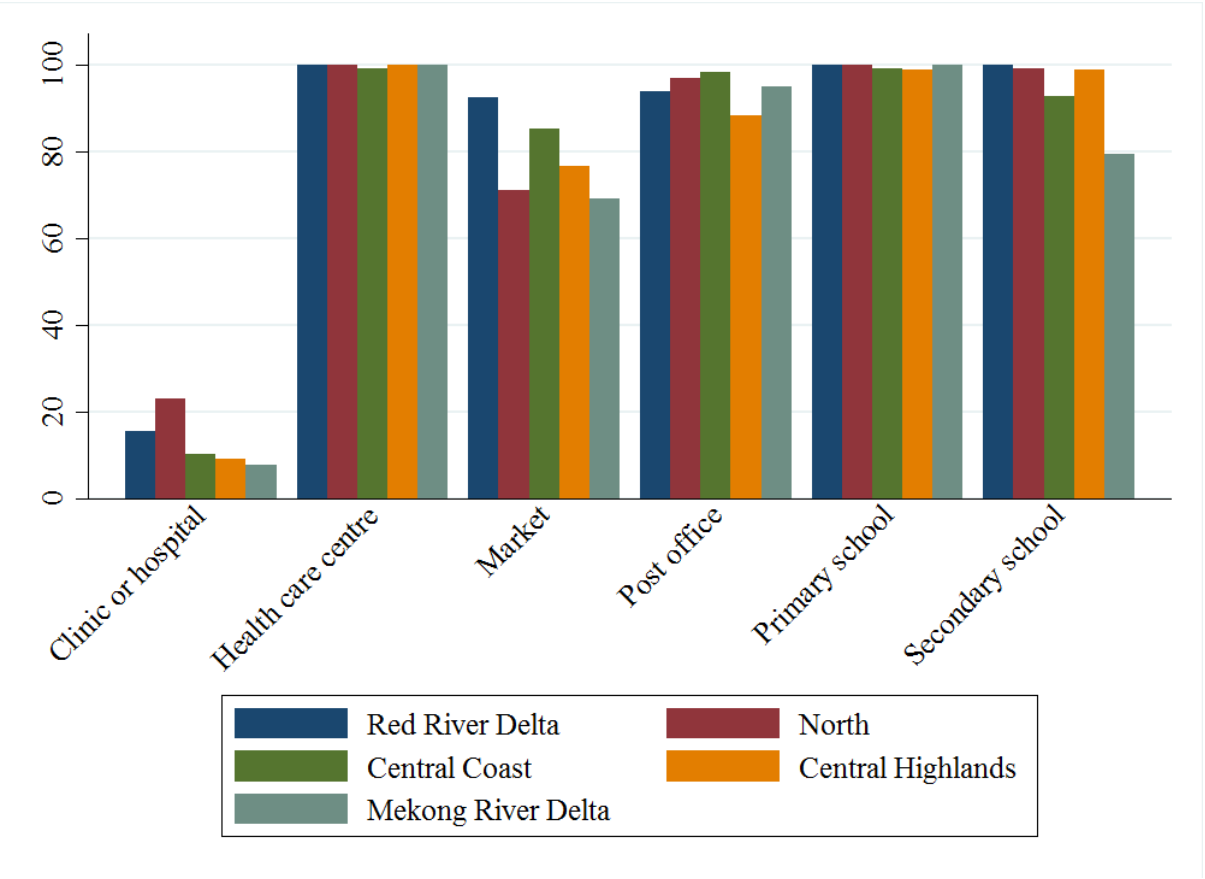
Note: Information on primary schools, healthcare centres and clinics or hospitals is only available from 2008.

Source: Author's calculations based on VARHS database.

Figure 6 shows the presence of the same six types of facilities in 2014 by region. Perhaps surprisingly, the Mekong River Delta region is not doing as well on this set of indicators as one might expect, considering how relatively well-off the households of these communes were, based on Table 1. The communes of the Mekong River Delta region have the lowest presence of clinics or hospitals, markets, and secondary schools of all five regions. One potential explanation is that the communes of Long An, given their close proximity to the massive population centre of Ho Chi Minh City, tend not to have their own markets, secondary schools and clinics but instead rely on facilities provided in other nearby communes and in the urban areas. However, this is not what is observed in the Red River Delta communes located in ex-Ha Tay. This region has the highest prevalence of markets, secondary schools and clinics of all regions. The North region has the highest prevalence of clinics but the lowest prevalence of markets. The lack of markets can be at least partially explained by the lower population density and lower agricultural productivity in this region, which means that the carrying capacity of local markets is reduced. This can also explain the lower prevalence rates of markets in the Central Coast and Central Highlands regions. The high rate of clinics is surprising, given that communes in the North region are generally poor. This high rate is not found in the Central Coast and Central Highlands regions.

In summation, Figure 6 shows some degree of consistency in the sense that regions that are doing well in one indicator are also more likely to do well in others. There is less consistency between the relative income level of the regions as reported in Table 1 and the prevalence of the commune facilities explored here. This is not necessarily a bad thing. The mobility of poorer households in poorer provinces is more restricted and they are therefore more dependent on facilities such as markets and clinics to be located nearby.

Figure 6: Presence of six commune facilities in 2014 by region

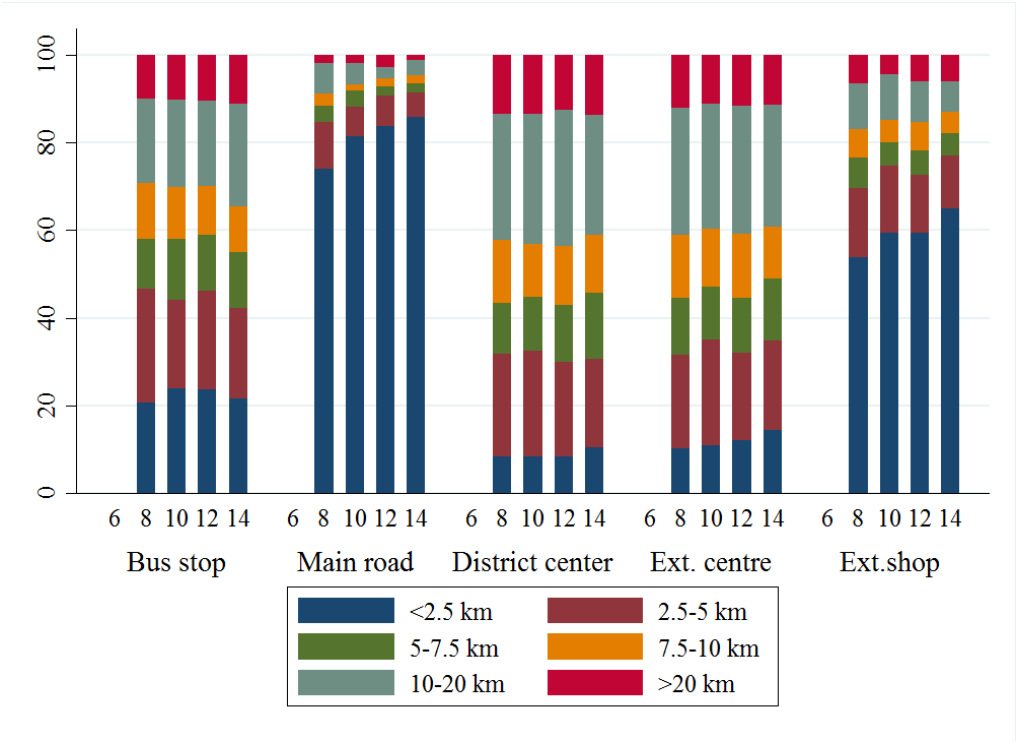


Source: Author's calculations based on VARHS database.

Figure 7 investigates how the distances to the nearest bus stop, the nearest main road, the district centre, as well as to the nearest extension centre and shops have evolved. For all distances except the distance to a bus stop, there are indications of improvement over the period. The share of communes that are more than 2.5 km to these locations have increased. However, there is less improvement at the other end of the distribution: the share of communes that have very long distances to these facilities (i.e. more than 20 km), is largely unchanged over the period for all indicators. This is worrisome since it indicates increasing heterogeneity. For a large group of households, distances have been reduced over the period but the most remote households are not becoming more integrated. Additional measures should be taken in the future to close this gap.

Figure 8 shows how distances varied in 2014 by region. The close proximity to urban centres of Hanoi and Ho Chi Minh City are apparent in the distances for the Red River and Mekong River Delta regions. Here, infrastructure tends to be more developed and distances shorter. The North region with its mountainous terrain and low population density is the clear loser on all distance measures except distance to main road. In the North, more than 20 per cent of communes are than 20 km to the nearest bus stop. This is the case for less than five per cent in the Red River Delta. Likewise, more than 30 per cent of communes in the North are more than 20 km to the district centre whereas this is the case for only a few per cent of communes in the Red River Delta. On most indicators, the less densely populated Central Highlands communes have the second-longest distances.

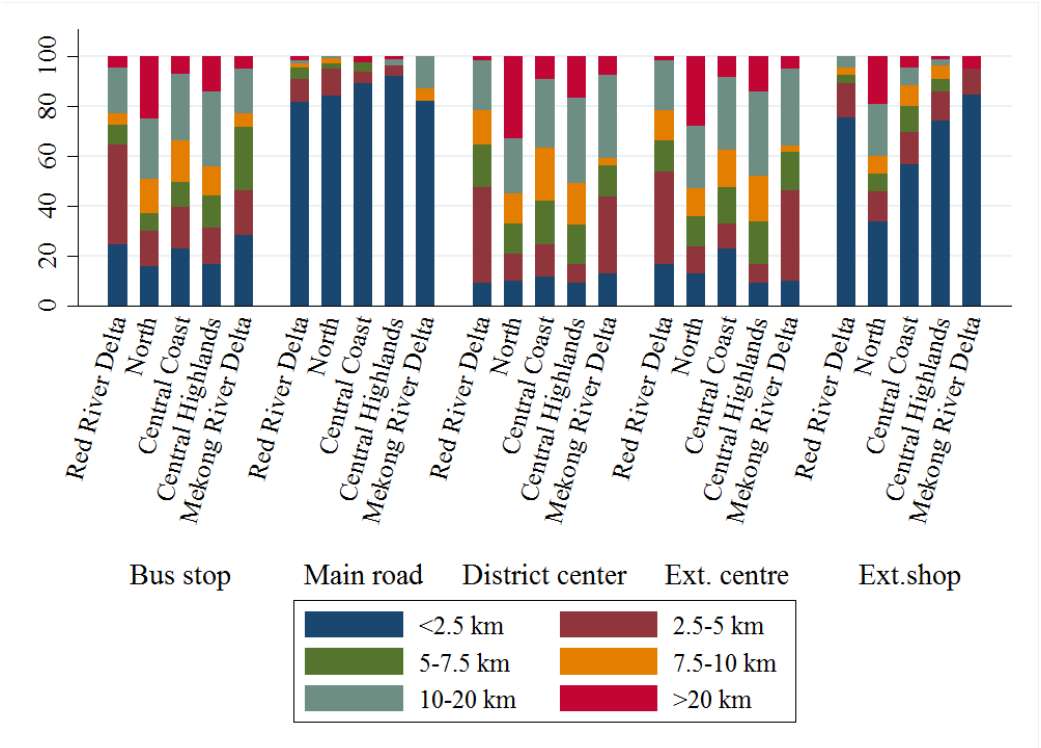
Figure 7: Distances to transportation and other facilities by year



Note: Distance to bus stop is measured from the People's Committee office. All other distances are measured from the centre of the commune. Often, the People's Committee office is located at the commune centre.

Source: Author's calculations based on VARHS database.

Figure 8: Distances to transportation and other facilities in 2014 by region

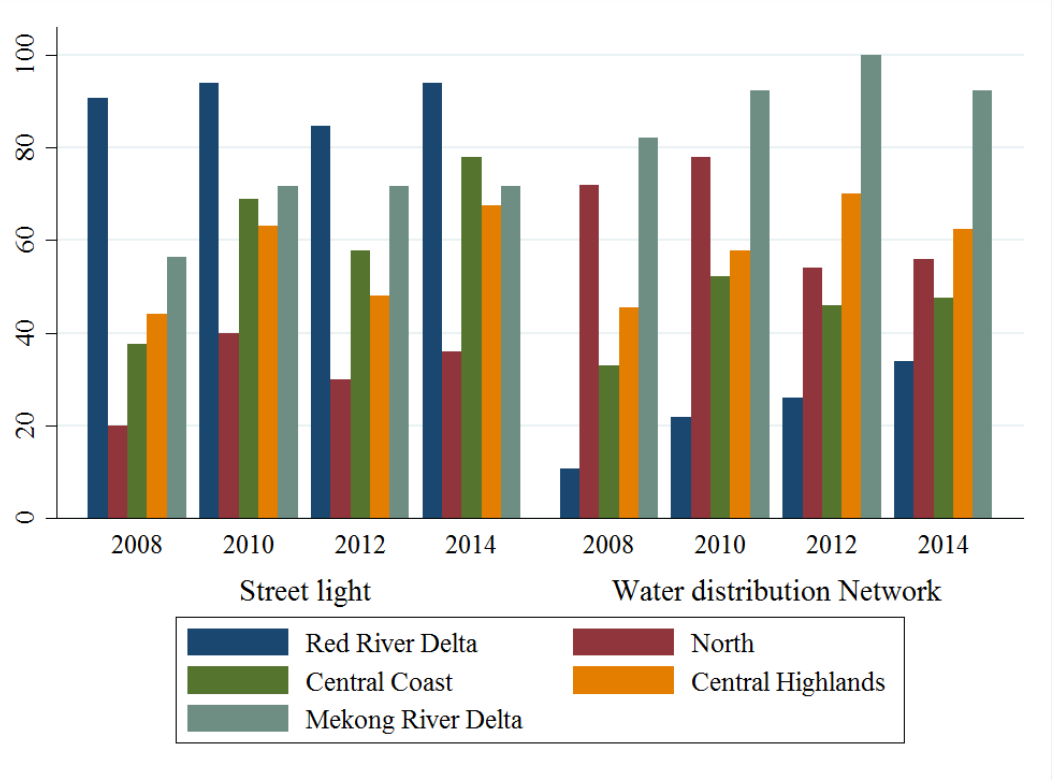


Note: Distance to bus stop is measured from the People's Committee office. All other distances are measured from the centre of the commune. Often, the People's Committee office is located at the commune centre.

Source: Author's calculations based on VARHS database.

Figure 9 shows the prevalence of streetlights and drinking water distribution networks in the communes by region and over time. The figure shows the presence of these two types of networks but not the coverage. Coverage is less precisely measured in the data, but the available information indicates that in most communes that have streetlights and water distribution, less than 50 per cent of households are placed directly on the street lights and water distribution grids. Both indicators show steady progression over time in most regions. The Red River Delta communes are the clear leaders in terms of streetlights. In 2014, more than 90 per cent of communes had at least some streetlights. However, the other regions with the possible exception of the North region have been catching up over the period. A similar picture emerges from the water distribution network information. Here, the Mekong River Delta communes are the best off. In 2014, more than 90 per cent of communes had at least a limited water distribution network. Some catch-up has happened over time except for in the North region where rates appear to have fallen. Communes in the Red River Delta region have the lowest prevalence of water distribution networks among the five regions, which may be explained by the close proximity to surface water from the delta—even though this is likely to be polluted. Less than 40 per cent of Red River Delta communes reported the presence of a water distribution network in 2014.

Figure 9: Share of communes with streetlights and drinking water distribution network by region and over time

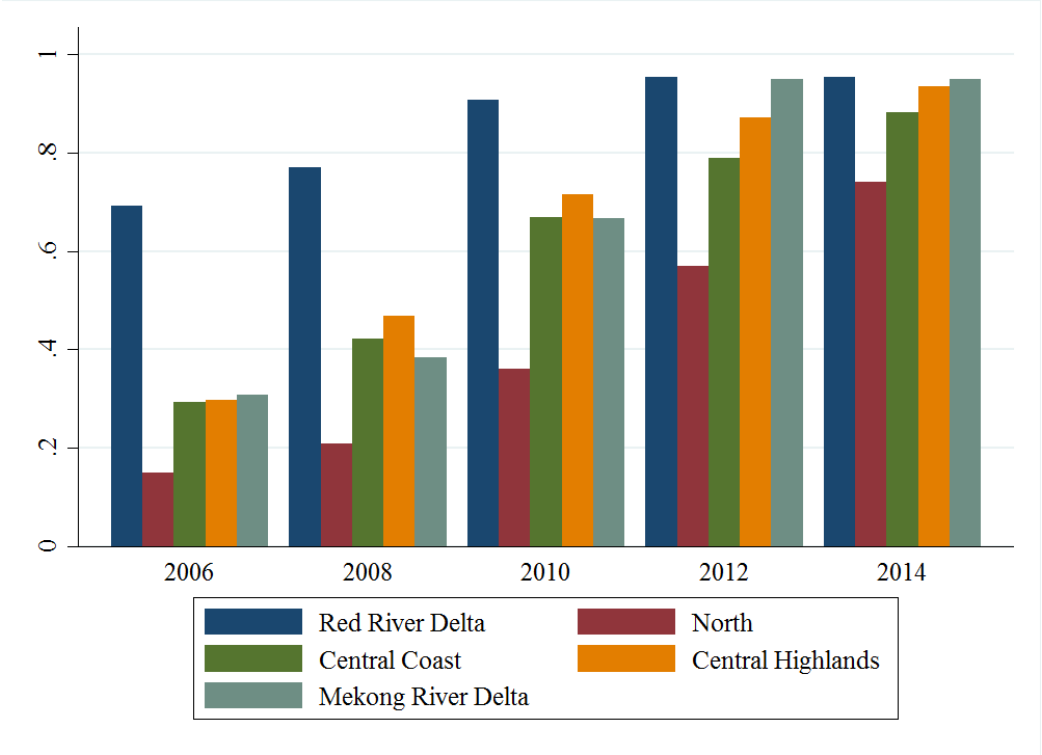


Source: Author's calculations based on VARHS database.

A third type of infrastructural network is internet access. Even though mobile phone technology and wireless data speeds have improved at a rapid pace over the period, wired internet access is still of importance since wireless coverage can be patchy or non-existent in some rural areas. Many aspects of internet usage are also easier using an internet-connected computer rather than a mobile device. Finally, high-speed wireless access requires a nearby antenna connected to an internet cable. In this sense, commune internet access points can also be considered a proxy measure for high-speed wireless internet access. As Figure 10 shows, there has been substantial progress in internet access over the period in all regions. In 2006, 33 per cent of communes had

at least one internet access point. This had increased to 87 per cent in 2014. The communes in the Red River Delta region were early adopters. Already in 2006, 69 per cent of communes had a connection to the internet. Again, the North region lags behind. In 2014, only around 75 per cent of communes in the North had access.

Figure 10: Share of communes with at least one internet access point by region and over time



Source: Author's calculations based on VARHS database.

In conclusion, it is possible to observe real improvements across a multitude of indicators related to commune facilities and infrastructure in the period 2006-14. The prevalence of commune facilities such as markets, secondary schools, healthcare centres, and clinics has increased. The high level of infrastructural investments seems to have had an effect on the ground: distances to roads and extension shops are reduced and the existence of water distribution networks and internet access points has become more widespread. While progress is observable in all the regions of the country that VARHS covers, stark intra-regional differences can also be observed. On a few indicators such as internet access, the poorest regions of the North and the Central Coast are doing as well in 2014 as the richest provinces of the Red River and Mekong River Delta were in 2006. On many others such as distance to crucial pieces of infrastructure such as main roads, extension shops and bus stops as well as infrastructural indicators such as streetlights and water distribution, the poorest regions were in 2014 still very far from 2006 levels of best off regions.

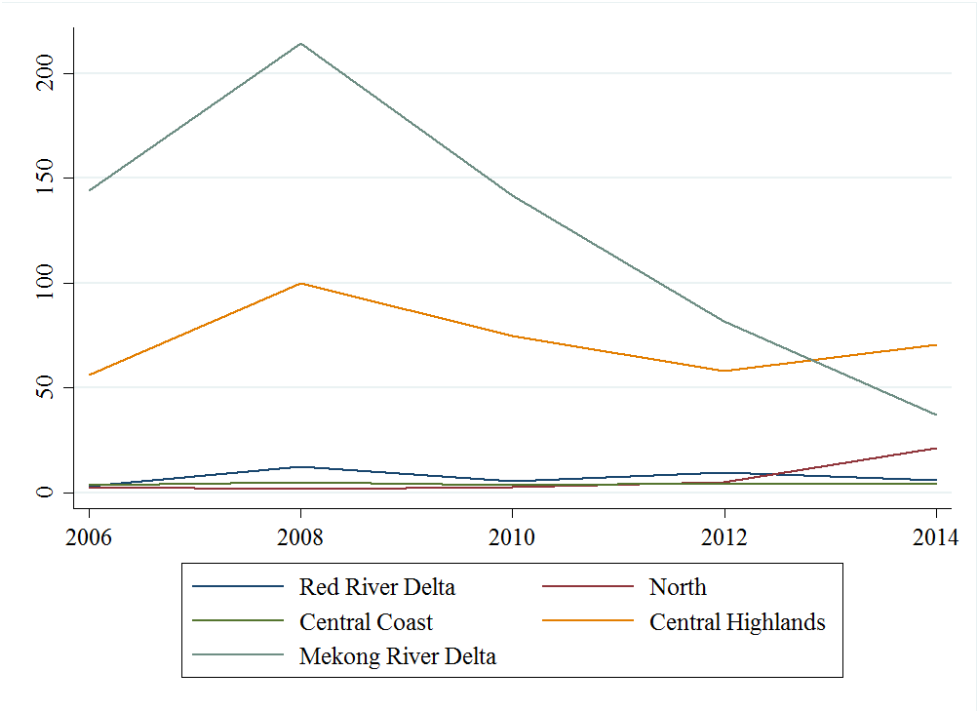
4 Land markets

As shown in the introduction, agriculture is still the main occupation in the rural areas of Vietnam covered by VARHS. A major input into agricultural activities is land. This study has shown how forested areas are being transformed into agricultural land as well as used for residential purposes. Another aspect of land transformation is that land rights can be transferred between people with relative ease. If land markets work well, more land can be bought and

cultivated by relatively efficient farmers and households who wish to leave agriculture can do so by selling their land. These issues are of special importance in a densely populated country such as Vietnam with a movement of population from rural to urban areas in progress. This section will provide an overview of land markets using the commune-level information and focus on land sales even though land rentals can fulfil a similar role. Previous studies have found land markets to be active in some parts of Vietnam (Khai et al. 2013).

Figure 11 shows the number of agricultural land sales by region. A clear geographical divide emerges. While land markets are quite active in the Southern regions of the Central Highlands and the Mekong River Delta, few transactions took place in the three Northern regions. This is not a new finding; Khai et al. (2013) similarly found land markets to be more active in the South using the 2008 round of VARHS. Also of interest is the apparent decline in land sales since 2008 in the previously very active Southern regions. This finding is unexpected. As the development process continues, it could instead be expected that land markets would become increasingly dense and well-functioning.

Figure 11: Agricultural land sales per commune by year and region



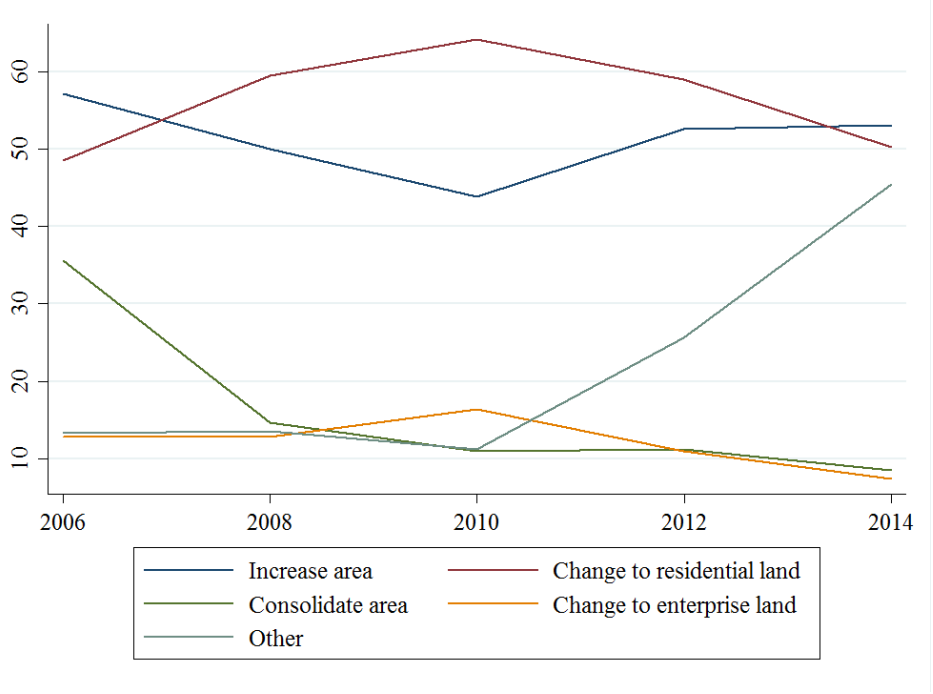
Source: Author's calculations based on VARHS database.

Why did households buy agricultural land? Figure 12 shows that motivations have changed over time. Commune administrators were asked to list the two most important reasons for households to buy land in their commune. In the beginning and at the end of the period, the most important motivation to buy land was to increase the scale of production by increasing the agricultural area. This was listed as one of the most important reasons in more than half of the communes. The second most important motivation was to change agricultural land to residential land. This lines up with the previous finding that increasingly, areas of land in the communes are used for residential purposes. In the years 2008, 2010, and 2012, this was the most commonly listed reason for buying land. Consolidation of land area was quite important in 2006 where more than 35 per cent of communes listed it as one of most important reasons for buying land. However, this decreased to around 15 per cent in 2008 and has decreased slightly over the remaining period as well. From this data, it is unclear if the slow-down in the consolidation

process occurred because the immediate benefits of land consolidation had already been reaped by the end of the period, or if other political or economic factors slowed the land consolidation process. Finally, many more communes are reporting 'other' motives as important: more than 40 per cent of communes listed this motive in 2014, whereas this was true for less than 15 per cent of households in 2006.

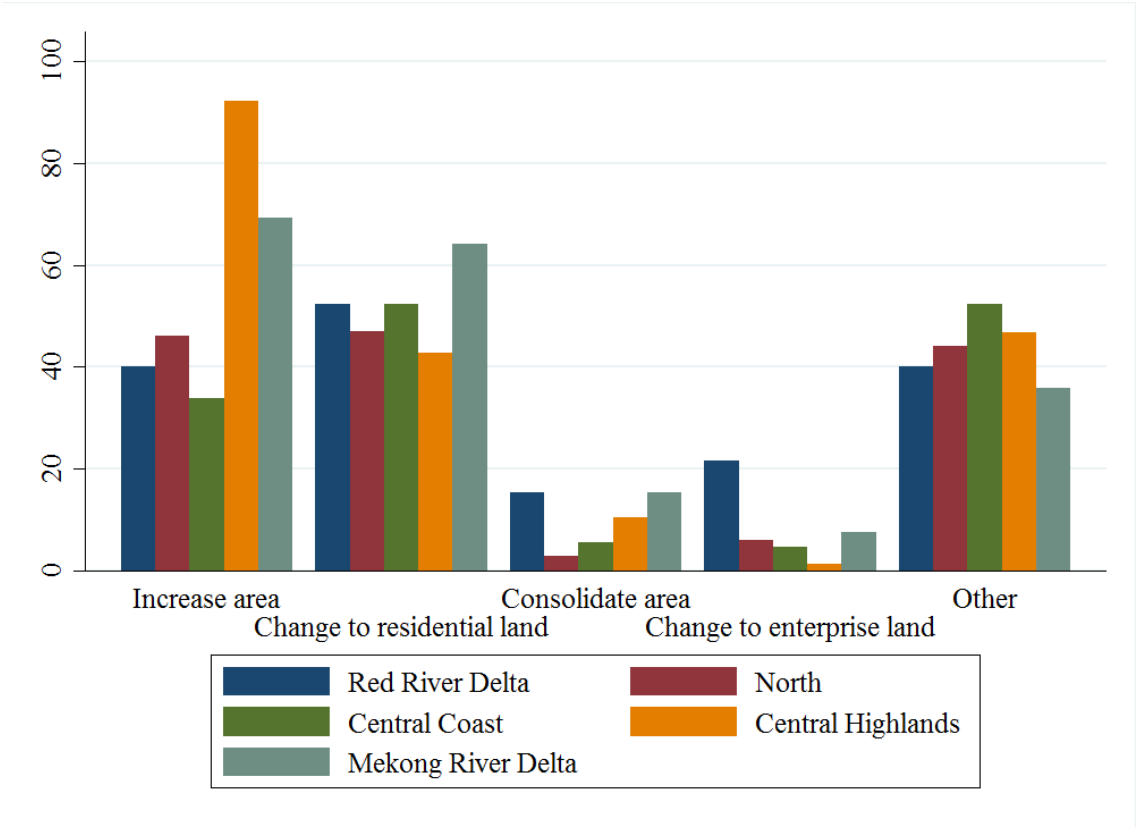
Given the discussion above, it is no surprise that the relative importance of the different motives vary across regions. This is evident from Figure 13, which breaks down the reasons for buying land in 2014 by region. In the Central Highlands, the motive of increasing land area is listed as an important motive in more than 90 per cent of communes. One potential explanation is that cash-crop production, which is particularly prevalent in the Central Highlands, may scale better to large farm sizes. This can also help explain why the land markets are relatively more active in this region than in the other regions. In the Red River Delta, the North, and the Central Coast regions, the most important motive was to change land into residential land. Consolidation of area is most important in the two delta regions where population densities are highest and plots more scattered.

Figure 12: Reasons for buying land over time



Source: Author's calculations based on VARHS database. Respondents were asked about the two most important reasons but were free to name less than two.

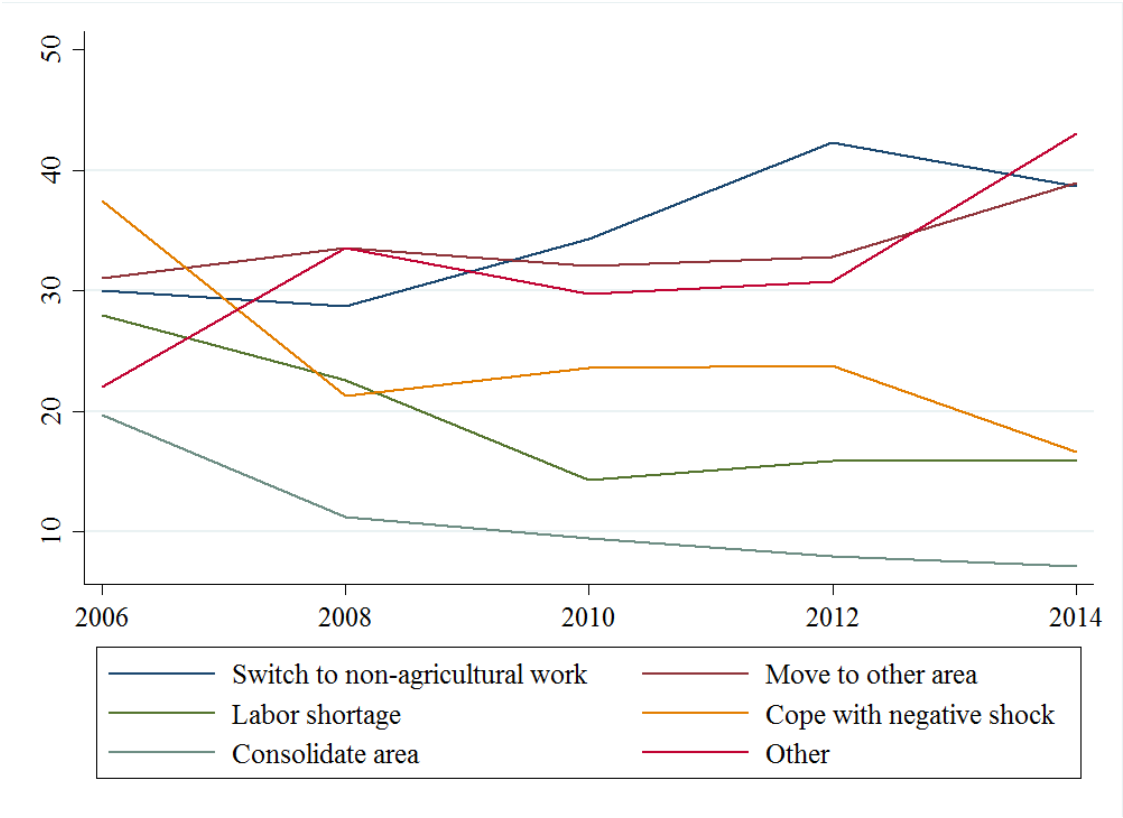
Figure 13: Reasons for buying agricultural land in 2014 by region



Source: Author's calculations based on VARHS database. Respondents were asked about the two most important reasons but were free to name less than two.

The reason for buying land is only one half of the equation. The other half consists of the reasons for selling land. Figure 14 looks at which reasons households in the VARHS communes had for selling land. In 2006, the most important reason for selling land was to cope with a negative shock. More than 35 per cent of communes listed this as one of the three most important reasons for households to sell land. A negative shock, such as a bad harvest or a family member dying, is typically unforeseen and can be hard to insure against. If credit is not easily available, households can be forced to sell off land in order to get through hard times. This can have negative long-term consequences, since the loss of land makes it difficult to recover completely. It is therefore a positive development that this reason has since declined in importance. In 2014, it was only the fourth most important reason, listed in less than 20 per cent of communes. Which reasons have then increased in importance over the period? Three stand out. First, in 2014, almost 40 per cent of communes listed the desire to switch to non-agricultural work as one of the three most important reasons. Second, just over 40 per cent mentioned the wish to move to another area. These two reasons again show the transformation process in action. As agriculture becomes increasingly mechanized and as population density increases, parts of the rural population leave agriculture and may even leave their home commune. This process is facilitated by well-functioning land markets. Finally, the 'other' category has gained importance. This category covers a variety of reasons including switching of crops, freeing up money for investments or construction activities.

Figure 14: Reasons for selling agricultural land over time



Source: Author's calculations based on VARHS database. Respondents were asked about the two most important reasons but were free to name less than two.

5 Past, present, and future commune problems

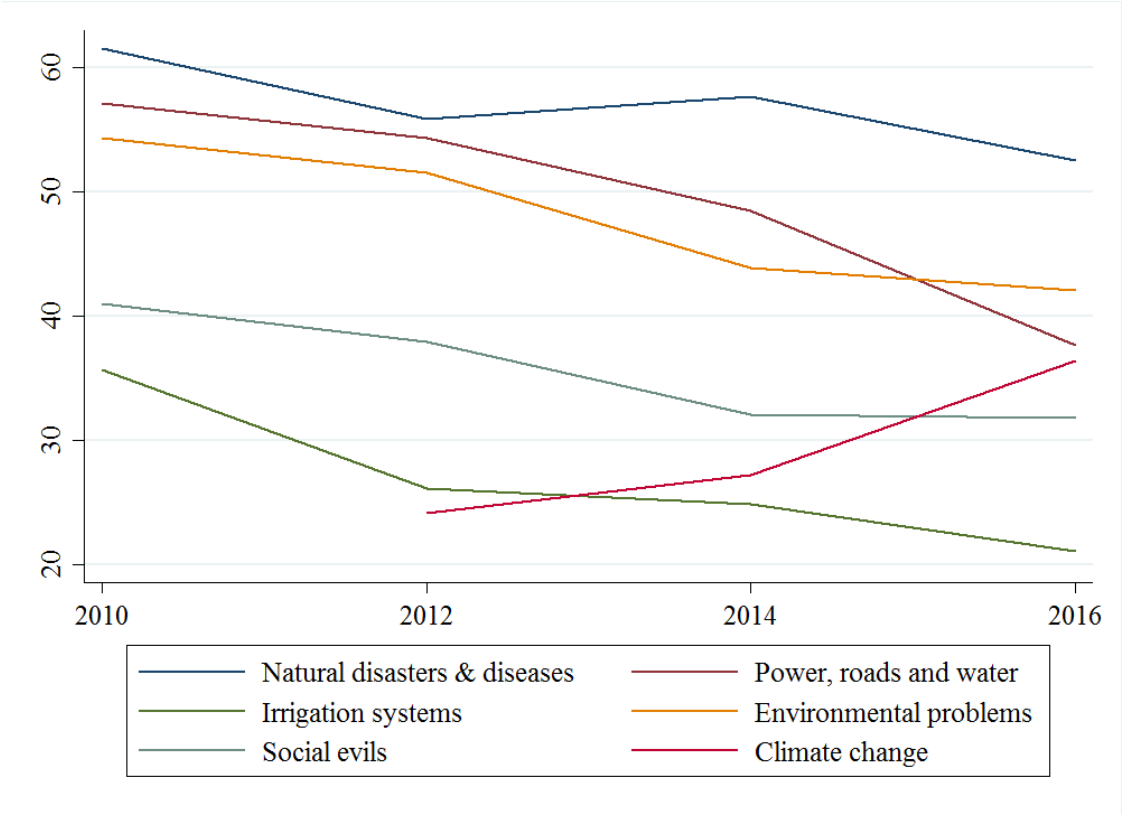
The previous sections have considered a series of objective indicators of the transformation process observed at the local level. This final section instead considers subjective answers of commune administrators as to which problems affect their commune the most.

Figure 15 shows which problems commune administrators listed as having affected the commune the previous year, starting in 2010 when these questions were first asked. The questionnaire also includes questions on which problems commune administrators thought would affect the commune in the next two years. The answers given in 2014 to this question are also included in the figure to give an insight into which problems may become more important in the future. The section of the questionnaire was expanded in 2012 to include climate change.

The overall message is quite positive. All the problems listed in the figure, except climate change, are affecting a smaller share of communes over time. The problem affecting the most communes since 2010 has been natural disasters and diseases. In 2010, more than 60 per cent of communes were affected by this. The importance of natural disasters and diseases has declined slightly since then. This can be either due to changes in the resilience of communes or simply due to fewer or less severe incidents in 2012 and 2014 than in 2010. In 2014, the share of commune administrators who believe natural disasters and shocks will be a problem in the next two years is even lower, which lends support to the first former explanation. The second-most widespread problem in 2010 was power, roads, and water. The share of communes who were affected by this also fell in both 2012 and 2014. Even fewer administrators expected this to be an important problem in the coming two years. This lines up with results of Figure 7 and Figure 9, which

found improvements in distances to roads as well as improvements in power and water distribution networks. As mentioned earlier, the only problem that appears to be affecting more and more communes is climate change. In 2012, 24 per cent reported that their commune was affected by climate change. In 2014, this share increased to 27 per cent; 36 per cent expect this to be important in the coming two years. Climate change can result in changing as well as more extreme weather patterns. Using only observations from one's own commune, climate change can be hard to observe in the sense that adverse weather events such as floods, storms and year-on-year temperature changes happen even in the absence of climate change. Instead, the frequency and magnitude of such events can change under climate change. However, this doesn't mean that one should discount the fact that in more than a quarter of communes in the VARHS database, administrators feel they are already experiencing the negative impacts of climate change and an additional 10 per cent expect to experience such effects in the coming two years.

Figure 15: Share of communes affected by different commune problems in the past, present, and future



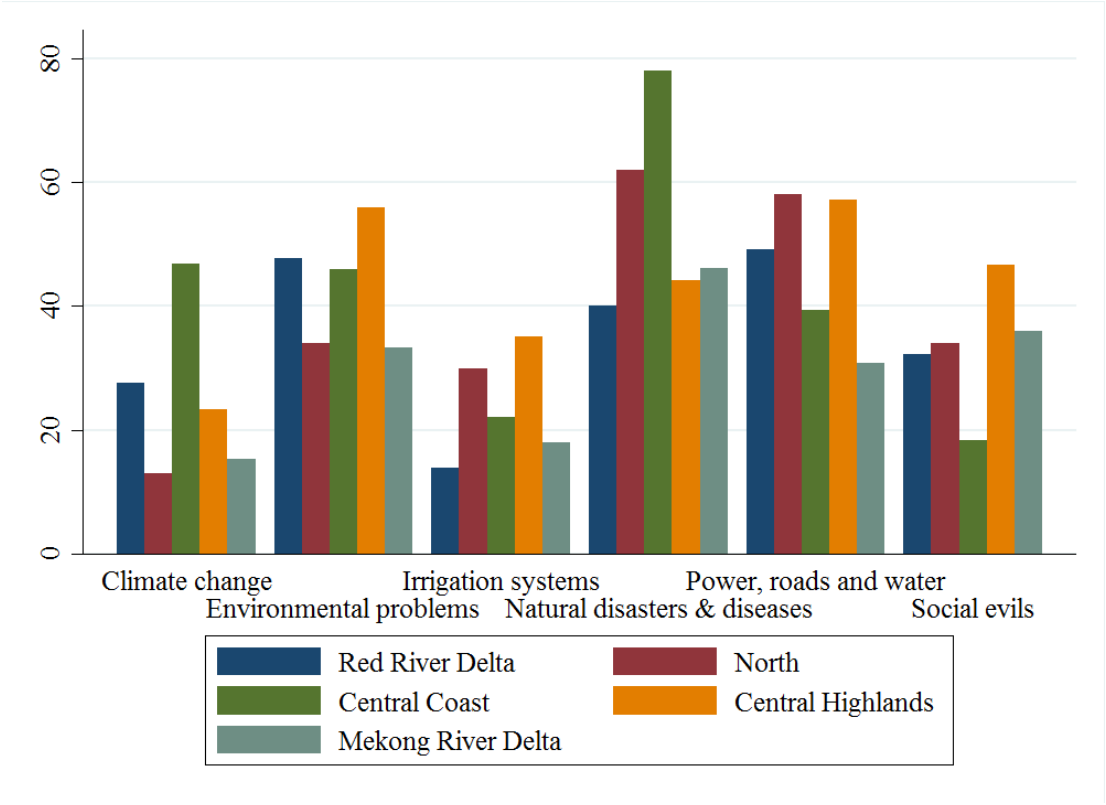
Note: Respondents were asked to list all problems affecting the commune. The list of problems also included health and education, access to health and education, quality of health and education, gender discrimination and family, and ethnic discrimination. These were left out of the figure since very few communes chose these options. Climate change was not included as an option in 2010. In 2014, respondents were asked which problems they expected to be important in the coming two years. These answers are included in the figure as 2016 responses.

Source: Author's calculations based on VARHS database.

Figure 16 breaks the 2014 answers down by regions. There are differences across regions both in the share of communes that experience problems as well as which problems are most prevalent. Less than 40 per cent of communes in the Red River Delta experienced natural disasters and diseases in 2014. This is lower than in all other regions. The Central Coast region was hit the hardest: almost 80 per cent of communes were affected by such a shock in 2014. More than 40 per cent did so in 2014 compared to 27 per cent at the national level. Power, roads, and water are less important in the Mekong River Delta where around 30 per cent of communes experienced these issues as a problem. It is, however, quite important in the more mountainous regions of

the North and the Central Highlands where population densities are lower and there are more complicated topographies. The Central Highlands is also the region where the highest share, more than 35 per cent, of communes report that irrigation systems are problematic. This is most likely due to the combination of the need for proper irrigation for many of the cash crops grown in these areas and more complicated access to water compared to the lowland and delta regions. The Central Highlands is also the region where problems of social evils are most prevalent. Social evils include, but are not necessarily limited to, drug and alcohol abuse, such as alcohol and tobacco usage, prostitution, and gambling. More than 45 per cent of communes in the Central Highlands have problems with this compared to 32 per cent at the national level. As with natural disasters and diseases and possibly related to that, the Central Coast is also the region where most communes experienced adverse effects of climate change. More than 45 per cent of communes experienced problems related to climate change here. In the regions of the North and Mekong River Delta, this share was less than 20 per cent.

Figure 16: Share of communes affected by different problems in 2014 by region



Source: Author's calculations based on VARHS database. Respondents were asked to list all problems affecting the commune. The list of problems also included health and education, access to health and education, quality of health and education, gender discrimination and family, and ethnic discrimination. These were left out of the figure since very few communes chose these options. Climate change was not included as an option in 2010.

6 Conclusion

This study has documented the structural transformation process as it has taken place at the commune level in rural Vietnam over the period 2006 to 2014. Significant change and improvements were found in many types of indicators. However, the pace of transformation varies greatly between different regions. This is partly due to varying initial conditions in 2006 and partly due to substantial differences in occupational and agricultural structures, which are at least partly determined by geographical conditions.

While the changes and improvements in living conditions that have taken place over the period are substantial, the observed changes should not be overstated. Many things were the same in 2014 as they were in 2006. Agriculture is still by far the most important occupation, and rice is still the most important agricultural crop. Instead, the picture that emerges is one of steady and gradual progress in many different dimensions. The occupational structure was more diversified in 2014 than in 2006 with more communes reporting occupations such as construction, other services and aquaculture to be of importance. Likewise, land use diversity has increased with more land being used for residential purposes at the end of the period.

The study also documents steady improvements in the provision of public goods and access to basic infrastructure in communes. Here, however, the regional differences are stark: The poorer and less populated regions of the North and Central Coast, and to some degree the Central Highlands, are worse off on a wide range of distance indicators as well as on connection to the internet and to a water distribution network. However, on some of the indicators of commune facilities, the poorer regions are doing relatively better than the richer regions located in the deltas near the population centres of Hanoi and Ho Chi Minh City are.

The evidence on land markets is more mixed. First, land markets are more active in the two southernmost regions of the Mekong River Delta and the Central Highlands compared to the Northern regions. Second, since 2008, there has been a declining trend in the number of communes that report land sales to have taken place in the South. This finding warrants further investigation.

The final section of the study shows how commune problems, as experienced by commune officials, have changed over time. This piece of evidence is quite positive. Most problems affected fewer communes in 2014 than in 2006. However, there has been an increase in the number of communes that see climate change as a problem and the number of communes that expect this to be a problem in 2016 is even higher. Climate change is a problem that is unsolvable at the commune level and even at the national level. What can be done at the commune and at the national level is to help farmers and other people to adapt to climate changes. This should be a policy priority for moving forward.

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