



CONTRIBUTION OF URBAN AGRICULTURE AT HOUSEHOLD LEVEL IN NORTHERN VIETNAM: CASE STUDY IN TRAU QUY TOWN, GIA LAM DISTRICT, HANOI CITY

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Abstract

Similar to many developing countries, urbanization has been happening in Vietnam with bigger scale and higher speed for two recent decades. Urbanization has strongly impacted on livelihood of people those who used to be farmers. These new urban residents are facing with lack of employment, food insecurity and food unsafety. Based on quantitative and qualitative data which have been collected from 40 households by survey, in-depth interview and group-focused discussion, this study tries to show that agriculture still plays important roles in socio-economic lives of households in Trau Quy town where most of farmers have been turned into non-farmers and they lost almost all their farmland due to urbanization. The research results witness that, for economic aspect, urban agriculture contributes to households' income, food security, food safety, and creates job opportunities for family labours, especially for those who cannot find off-farm jobs in labour market. Regard with social aspect, livelihood security and maintenance of traditional social networks are considered as significant roles of urban agriculture.

1. INTRODUCTION

In the decades to come, the world will become increasingly urban. Follow the WHO, by 2050, 70% of the worldwide population will live in urban spaces ([World Health Organization, 2016](#)). Governments face major challenges in building urban food systems that guarantee food security and nutritional value for citizens. They have to pay a lot of attention to the urban agriculture.

In Vietnam, because the progress of urbanization is increasing at a fast pace, many new cities established. The process of agricultural - rural urbanization and industrialization has created drastic changes in the lives of Vietnamese farmers at present ([Thinh, 2009](#)). The role of agriculture reduces in terms of value when Vietnam's economic development is advancing toward diversifying

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occupation structure. However, agriculture still plays a very important role in the livelihood of most of the population not only in the rural areas, but also in the urban regions. The rapid urbanization makes agricultural land become limited, expansion of urban land but the indirect impetus to expand the area of urban agriculture and the emergence of new urban agricultural areas. In bigger cities throughout Vietnam, urban agriculture has had a lot of attention in recent years.

Under a plan of urban expansion of Hanoi city, Trau Quy is a new town which has been converted from a rural community in 2005. In this town, the population is more vulnerable to food insecurities, as they heavily rely on external sources for their food needs and are thus exposed to greater supply risks. The supply chain linking farmer and consumer has been largely informal, with an intricate network of transporters, wholesalers, and vendors delivering products to Hanoi city. This study therefore, aims to analyze the role of UA in the urban in recent years because of the urbanization progress in terms of income contribution, food security, food safety and job creation. The case study in Trau Quy town is used to illustrate our recognition.

2. LITERATURE REVIEW

Urban agriculture is defined as, production in the home or plots in urban or peri-urban areas (Ruel *et al.*, 1998; FAO, 2003). Its main motivation is food production (for personal consumption or sale) and/or higher income. According to Mougeot (2000), the most important feature of urban agriculture is not merely represented by its localization within the city boundaries, but by its increasing relevance in the urban texture both at a socio-economic and ecological perspective.

UA has been considered as a solution to a host of issues, ranging from food insecurity in urban communities to employment and environmental sustainability. However, currently, in Viet Nam, the statistics data on urban agriculture is not adequate. According to Truong (2008), the progress of urbanization has restricted the agricultural land, expanded urban built land and has become the motive force for establishment of the new UA areas. It can be said that, UA has become an important factor for sustainable development in the cities of Vietnam. In 2007, contributions of UA in GDP of cities as follow: 0,9% in Ho Chi Minh city, 2% in Hanoi, 5,6% in Da Nang and 11% in Hai Phong. UA is not only contribution to GDP, but also brings another value as ecology, environment... Nevertheless, the regard of Vietnamese government for UA is still minor and blurred in improving the food security in the cities in Vietnam.

Beside of urbanization, food safety is a major social and political issue in Vietnam. Subsequently, Vietnamese consumers are anxious about the safety of the vegetables they consume on a daily basis. According to WHO, in Vietnam more than 5,000 people were affected by food poisoning in 2014 (Thanhniem News, 2015). Globally, diseases caused by unsafe food claim an estimated of 2 million lives each year.

Food hygiene and safety, particularly related to pesticide use, as well as freshness, linked with the time lapse between harvest and consumption, have caused/created recurring problems for the traditional supply chain (Lauren, 2013). People seem to trust the quality of food from supermarkets or with a veterinary seal "because, it has a guarantee from the State" (Muriel *et al.*, 2004). Face on this problem, urban agriculture has contributed a significant role to safe and clean food supply and income generation for urban residents.

3. RESEARCH METHODOLOGY

3.1. Research site selection

Hanoi is the country's second largest city with 29 districts including Gia Lam. Trau Quy was one of 22 communes in Gia Lam district. It has been remained as town according a decision of Hanoi People Committee since the early 2005. Trau Quy is the administrative town of the district Gia

Lam, located in the north of the capital Hanoi. Along with the development and expansion of the capital, the town now has 12 population groups with a total area of 734.28 hectares and a total population of over 25 thousand people. Since Trau Quy commune upgraded to the town in 2005, it is associated with the process of urbanization taking place rapidly, the residential land area increased, the average rose by 8.45% in 3 years.

This research has been done in Trau Quy town in order to have a deep understanding of urban agriculture development. There are two reasons that Trau Quy town had been chosen: Firstly, in recent years, the process of industrialization and urbanization of the town has been going strong, it had a large impact on production, lifestyle and the mentality of the people in town. Secondly, although livelihood strategies of people have moved away agriculture in the trend of non-agriculture, there are still 28% of households that maintain agricultural production and emergence new households who start agricultural production for their daily food need.

Data Collection

General information on Trau Quy including land areas, population and labor forces were gathered from the statistical section of town. The primary data on the UA trend, collected by doing in-depth interviews with 40 households related to agriculture: 10 households (25%) are farm-based. Their livelihood strategies based on agriculture production (group I). 17 households (42,5%) are combine farm (group II). Their incomes not only come from agriculture, but also non-agriculture production. The residents in group I and II, formerly almost worked in agricultural production, but from 2005 reoccupation cultivated land for building the new area for living, the people now work in sector non-agriculture. They have their agriculture production on private land (owned or leased). 13 households interviewed are off-farm (group III). The people in this group are the teachers, officers, traders and workers. They have horticulture a variety of containers, like boxes, rain gutters, and used tires, even plastic bags, which can be placed in different locations, including patios, balconies and flat roofs. The most important crops of urban farmers are perishable fruits and vegetables grown.

3.2. Data analysis

To secure the representative, the socioeconomic characteristics of the farm households such as land area, capital asset of households, and expenditure for agricultural production... took into account when sampling. Focused group discussion mainly used to get information about the opinion of households in the agricultural production face on food security and land loss. Facilitative discussions initiated by open-ended questions provided the group with the opportunity to explain these issues more clearly.

4. RESULT AND DISCUSSION

4.1. Overview of agricultural production in Trau Quy town

In Trau Quy town, the farmers cultivate not only two crops of rice on their allocated farm land, but also vegetables, flowers, livestock and aquaculture on their gardens. According to the Land Law issued in 1993, farm land was allocated to every farm household. Each farm household in Trau Quy was allocated about 600 square meters to grow rice. Under the process of urbanization, agricultural land has been converted into other purposes such as park, resident, hospital and so on. In 2015, agricultural land per capita was 380 square meters. It is so small that nobody can live on farm.

Garden plots away from home which were converted into non-agricultural purposes have been used for cultivation. Almost all households surveyed in group I and II applied this model. They said that they had changed their type of agricultural production in some ways over the last ten years. In fact, the process of urbanization has emerged the challenges that are the size of land for agricultural production has been narrowed, some agricultural models are no longer appropriate and

well adapted, a lot of farmers have altered their production from staple crops, such as rice to vegetables and subsequently flower and ornamental plants. A part of agriculture labor force has become jobless due to agricultural land loss.

Home garden situated nearby the detached house in the town area. This model can be carried out in front of the balcony, on the terrace and even on the roof, for growing sprouts and vegetables, are applied by almost all of the households of group III. These households mainly grow to serve the needs of family consumption and to improve microclimate conditions. The most common type of crops is fresh produce (salad greens, vegetables). Fresh produce is less regulated and easier to package for transport, than other food products such as meat and eggs. Livestock is less common due to regulations, space, care and nuisance complaints.

According to many scientists, several factors such as continuing rural-urban migration, economic recession, structural adjustment, rapid urbanization, ineffective agricultural policies, wage cuts, civil strife, war and natural disasters are recognized as factors pushing urban residents into food production (Mougeot, 1994; Obudho and Faeken, 1999). On the other hand, cultivation of crops and breeding of animals in urban areas are firstly motivated by home consumption, and secondly by commercial purposes (Lee-Smith & Memon, 1994; Maxwell, 1994; Mbiba, 1995; Freeman, 1991). This means that UA is not only a survival strategy for poor urban residents, but also a means of enrichment for middle and high-level classes throughout the city. The resources on which households draw to maintain their UA are mainly land and water.

There are two challenge concerns about land. The first is access to land and the second is policy and regulatory barriers preventing farm users in non-agricultural zones. As mentioned above, home garden has been applied by most of the households in group III. Most of the agricultural activities are on a small scale and not stable. Some of the cultivated areas are abandoned urban land or on-going construction sites. The zoning of these lands may or may not permit urban agriculture as an allowed activity. Furthermore, urban farming activities on non-agricultural land are often limited by a lack of support for urban farming or policy and regulations that may or may not apply to urban farmers.

Like any farm, a reliable water source is required for irrigating crops, washing harvest and equipment, and general farm hygiene. Water in urban agriculture can come from many sources including piped water, ground water or rainwater. Accessing water for gardening or small-scale farming can be a more serious concern in places with water restrictions or a lack of access to ground or surface water.

In general, there are two trends of UA production, one case consist of the informal agricultural production, and another case targets formal agricultural production. General concern about the first case, is that it has spontaneous agricultural activities that are responsible for the need of food security and high quality. This agricultural production is often applied by people who are officers, teachers, traders or workers. However, it can be said that currently urban agriculture in Trau Quy town is only in the early stages, spontaneous and thus, orientation and solutions for sustainable development associated with special planning should be made for the coming time.

4.2. Contribution of urban agriculture at household level in Trau Quy town

4.2.1. General information of households

The agricultural land per capita is low, because of the town's government policy to withdraw a portion of agricultural land for housing construction. Average agricultural land per household of population groups is, 1082m² (table 1). On the other hand, some families have moved the business by service, but they still have farmland, so they let anyone borrow it for agricultural production. Agricultural lands are mainly used for growing rice and vegetables, seedlings and aquaculture.

Table 1: General information of households

	Unit	Group I	Group II	Group III	Average
1. Inhabitant	Person/household	4.3	4.2	4.1	4.2
2. Main occupation	Person/household	1.9	1.8	1.8	1.8
3. Agricultural land	m ² /household	1650	1495	0	1082
4. Residential land	m ² /household	299.3	211.5	194.6	235.1
5. Servicing ground	m ² /household	0	150.9	60.5	105.7

Source: Survey data, 2015

The average residential land per household is 235,1m², limited than other localities. The reason is that, this place is attracting more and more families from elsewhere moving because of various reasons. This has made the town's households increase; while the land of the town is limited, so residential land for each household is relatively low. Most households spend only a small portion of residential land to build houses, the rest spent on investment and development of service facilities.

4.2.2. Income contribution

According to Maxwell (2000), urban agriculture contributes to household income which includes fungible income through the sale of urban agricultural produce and savings by not purchasing foods they already produced.

Households in the Trau Quy used traditional agricultural production for a long time. Agriculture has to feed them from generation to generation. However, in the new era with many changes, it also has a role to bring income to the people that the agricultural production declined. Through surveyed households, we found that the income of the households from agricultural production accounts for only a small proportion of the total household income, many other sources of income occupy a higher value.

Table 2: Household income structure

Criteria	Income from agriculture		Income from trade-service		Income from other sources		Total	
	Value (mil VND)	%	Value (mil VND)	%	Value (mil VND)	%	Value (mil VND)	%
Group I	15.83	81.80	0	0	3.52	18.20	19.35	100
Group II	10.04	9.50	90.88	85.50	4.76	5.00	105.68	100
Group III	0	0	165.46	94.50	9.62	5.50	175.08	100

Source: Survey data, 2015

In terms of household groups (table 2), group III has the highest income, but they don't have any income from agricultural activity. Group I with total incomes is 19.35 million VND of which revenues from agriculture activities represent 81.8% and the other revenue represent 18.2%. Group II has an average income of 95.15 million VND, of which revenues from agriculture represent 9.50%.

Table 3: Income structure from agriculture of households

Criteria	Group I		Group II	
	Value (mil.VND)	%	Value (mil.VND)	%
Total income from agriculture	15.832	100	10.04	100
1. Rice cultivation	4.33	27.35	2.25	22.41
2. Vegetables, seedling, flowers	8.40	53.07	2.6	25.90
3. Livestock	3.1	19.58	5.19	51.69

Source: Survey data, 2015

Table 3 shows the income structure of agricultural production in the household. Group I and group II have income from agriculture through activities such as rice cultivation, subsidiary crops, seedlings and livestock. For group I, income from crops and seedlings is the highest with 8.40 million VND, accounting for 53.07%, and income from livestock is the lowest with 3.1 million VND accounting for 19.58%. For group II, income from livestock is the highest with 5.19 million VND, accounting for 51.69%, and income from rice cultivation is the lowest with 2.25 million VND accounting for 22.41%.

4.2.3. Food security and safety

Urban agriculture provides for family self-consumption, thus contributing to a healthy diet and saving on food expenditures. It is able to guarantee a minimum level of “food self-sufficiency”, especially for the poor with low purchasing power. Household food production covering a diversified range of food commodities (essentially fruits and vegetable crops, small livestock, dairy products, eggs, etc.), will enrich the families food intake and provide a healthier diet according to own culture and food preferences (FAO, 2008).

In Trau Quy town, urbanization is growing at a fast pace, the proportion of the agricultural sector accounts for only a small structure in the local economy and it is decreasing, though it still plays an important role in providing food and ensuring food security for households throughout the town.

Table 4: Ability of self-sufficiency food of households

Unit: %

Kind of food	Group I	Group II	Group III
Rice	100	100	0
Vegetables	79.06	65.89	11.20
Egg	54.32	32.41	6.10
Meat	34.10	30.78	7.52
Fish	23.67	11.89	0

Source: Survey data, 2015

Table 4 shows that group I has the highest subsistence level of food sources. They can manually provide, ensure their meal 100% on rice, 79.06% for vegetables, 34.10% for meat, 54.32% for eggs and 23.67% for fish. Group II has rather subsistence level, they can still meet 100% demand for rice, 65.89% of vegetables and more than 30% of meat and eggs, 11.89% of fish. The group III can only manually satisfy themselves 15.32% of the demand for vegetables, 7.52% for meat and 6.10% for eggs. They are unable to meet their rice demand. The cause of this phenomenon is due to group III having no agricultural land, but due to the increased focus on sanitary, food safety problems, despite busy businesses, they still want to plant or animal by themselves to ensure their meals.

"Ms. Khuyen who is now retired, said: since I began to grow vegetables, I don't buy vegetables at the market anymore. What I grow, is not only sufficient to my family's needs, I can also feed my neighbor. I do not use any chemicals, my products are of high quality and they are fresh. It ensures a better diet for the family. "(Personal interviewed in July 2015).

On average, comparing group III and group II, group I has a higher subsistence level on food, but they only partly meet needs of households, they still need to buy the rest in addition to serving their needs. Households can only manually meet portion of food of family, but all families are able to guarantee food security.

Households interviewed also shared their concerns about the effects of dangerous chemicals in fertilizers and pesticides as well as problems with the use of polluted water on crops. A significant number of households commented that in recent years they had started to grow vegetables

specifically for their families, thereby ensuring the vegetables they eat are safe. In addition, households often grow various fruits and raise chickens, as these are rather expensive foods, and producing them allows households to diversify their diet without increasing the food budget.

4.2.4. Job creation for rural labor

To clearly see role of creating jobs for family labor in agriculture, we must consider the time factor, of the process of urbanization taking place in the town. The process of urbanization took place long-ago, but perhaps more powerful since 2005, when Trau Quy was officially recognized as the town under Gia Lam district. The process of urbanization has been rapid, because of agricultural land decrease, along with the variation in employment. When farmland reduced, some people had the expertise and skills to transfer to another job. Some could organize production-business, however, the rest; especially those who are old and have many traditional experiences in agricultural production were not so lucky even though they still wanted to continue with agricultural production. Maybe it does not have high income, but they still want to do it. If they don't work in agriculture, they have nothing else to do with their time, but sitting and sitting surely isn't what they want to do.

Table 5 shows variability in occupation among households interviewed. We can see the labor movements of the households in the process of urbanization in the town. The main occupation of about 71,25 % respondent of group I and 45,54 percent of group II are farmers.

Table 5: Occupation shift of labor

Unit: %

Occupation	2005			2014		
	Group I	Group II	Group III	Group I	Group II	Group III
Farming-based	85.77	70.56	0	71.25	45.54	0
Employee	7.69	12.21	11.84	11.91	12.01	13.88
Trade-service	0	10.56	68.39	5.27	20.68	80.32
Worker	4.24	4.54	14.70	5.49	12.41	4.47
Others	2.3	2.13	5.07	6.08	9.36	1.33

Source: Survey data, 2015

Under the impacts of industrialization and urbanization, labors' occupations in Trau Quy town became diversified; farmers, industrial workers and small traders. There is a significant influence of age and gender in the labor structure of the town. As usual, only the elderly or women want to remain in agricultural production for a long time, while younger people tend to search for other less hard working and higher paying jobs. However, finding a good job isn't easy. Therefore, there are plenty of young people who don't have stable jobs, while large areas of agricultural land have not been used effectively.

On the other hand, the town also has households who bravely invested in agricultural production. When people saw uninhibited land, they conducted negotiations to lease the land. They invested in expanding production and planting new rice varieties of high economic efficiency or open livestock farms. These households not only generated employment for its stability, but also created jobs for unemployed people in the town or the nearby localities. The majority of group I are elderly households, so at times of main season, demand of labor is considerably higher. They cannot do all the things themselves, hence there is a need to hire more workers. An agricultural household head is often just a manager, the job as transplanting, harvesting, fertilizing ... they hire people to do. On harvest day, many workers from surrounding areas like Thuan Thanh and Van Lam districts came to town to search for employment. Thus, agricultural production has not only created jobs for families but also created jobs for the rest of society.

4.2.5. Land property right

According to Vietnamese land law, land belongs to the state and gets allocated to individual households to cultivate with rights of transfer, rent-in, rent-out, heritage, mortgage, and compensation when the land is reclaimed by the state. Vietnamese land law also prevents farmers from land abandon. Thus, people in Trau Quy keep farmland for property right (waiting for selling at a high price in the future or for compensation) by renting out at a very cheap price; Lending to neighbors or relatives; Extensive rice cultivation.

In Trau Quy town, the majority of group II when asked whether they want to continue farming, we will get the answer no, but they still want to keep the land allocated by the State. Currently, although there are many group III and group II no longer doing agricultural production, but they still retain the land. Households are unable to let/leave land uncultivated, so they look for people who need land for agriculture and let them rent or borrow it land. This is a benefit for both parties; the agricultural producers have more land to expand the production scale, while households do not want to. Agricultural production has achieved their purpose of keeping their land as security property. At the local, depending on the different groups have different ideas about land holding. Groups can be classified by the type of households, age and household income. These groups had different stories during the investigation. Other types of households, apart from group I considered agricultural land as the main livelihood of their production, group II considered that land as collateral assets only for themselves.

Different age groups have different perspectives on land assets. The majority of the surveyed household heads aged older than 40, are unanimous that, they should retain agricultural land as collateral assets. Even though there was no longer agricultural production on that land, they never thought about selling or transferring their use right/ of use right on the land. However, the younger household heads have other thoughts, they said that manufacturing trading has brought them higher revenues, and it can meet all the different needs, therefore, there is no need to stick with agriculture.

In general, each person has different views on land assets, depending on their age, income or professions. For people who are older, they often want to keep the land, because agriculture was a traditional activity, longstanding linking with them. For young people, by contrast, they only care about the immediate economic value that agricultural land brings. Agricultural production needs a lot of time and effort, but provides lower earnings, so general sentiment in this age group is to lease the land. For those who have other jobs with stable income, no matter if their land is used efficiently or not, but the most important problem that they were most concerned about is to preserve the land of their ancestors or it may be a back-up plan for them in bad financial times.

4.2.6. Maintenance of traditional community relationship

Conventionally, social roles of urban agriculture have been seen as an eco-tourism site and recreation center for urban people. This study looks at social roles of urban agriculture as a way to maintain traditional community relationships in production as well as in everyday life. For local elders, traditional farming practices had created relationships such as mutual aids, labor reciprocity, and experience sharing in production. For old generation, they maintain farming activities because of cultural value/meaning of farm produce and farm work.

Agricultural production requires cooperation and mutual assistance in production, which makes people live close and pleasantly with one another. In the past, when agriculture was thriving, most people were involved in agricultural production. They had close relationships in the community and they collaborated well in and out of the production fase, working and talking happily, sharing joy, and sadness. The nature of farmers is honest and frank. These features were formed during ancient agricultural production. It is the uniqueness of Vietnamese people.

Before urbanization took place, Trau Quy town as well as other localities of Vietnam, was very calm and had heavy community relationships. People helped each other in production, they could exchange and convey experience in agricultural production to help other households develop their own production system, besides, when physical life was difficult, emotions always came first, they helped each other comfortably, without prejudice. It is these relationships that created camaraderie feelings among farmers, created beauty of Vietnamese agriculture and rural.

As urbanization is going strong, agricultural production is narrowing gradually, people are no longer interested in agriculture as they were before. They gradually switch to other occupations. Invisible bond in manufacturing has been lost, instead of market relations; it led to a more viable division between rich and poor. Meanwhile, cooperation and mutual assistance in agricultural production is also fading away.

Nowadays, people are accustomed to a new lifestyle of, industrial work. People get access to science, technology, and new business methods. Working is more productive and of, better quality, therefore, they have a higher income. The level of expenditure also increases; spending is more reasonable, spending ratio for homes, equipment service life increases.

When considering the lifestyle of the family, besides the positive advancement, many negative points have emerged and now exist in human life, and this was reflected most notably through the social problems. During development, industrialization and, urbanization has had an impact on the security situation, the social order and, the increased problems, such as fighting, gambling, drug addiction and theft. These things create negativity for security and order amongst citizens. Previously, when agricultural production was a traditional occupation, these problems occurred less often.

It can be believed that agriculture production has helped the town maintain the traditional cultural identity of Vietnamese people. Strenuous manufacturing exercises make people diligent and hard over. Focusing on the fields help bring people closer to nature, resulting in an urge to know how to protect the environment.

5. CONCLUSION

Urban agriculture affects and is affected by the urban environment. UA uses the city's resources (land, labor, organic wastes and water). It feeds the city inhabitants. It's strongly influenced by the contingent conditions as policies, land competition, market presence, price trends and quality standards. It plays a crucial role in the socio-economic conditions like the effects on food security, poverty, health, and environment of urban (Orsini & Kahane, 2013).

In Trau Quy town, urbanization process has been happening on a rapid scale. This caused positive and negative impacts on local livelihood: land areas, pollution, and employment. Roles of agricultural production have changed in terms of income contribution, labor participation, types of products, etc. Local people still keep farming at different scales for different reasons: economic, food provision, food safety, land property right, livelihood security, and traditional community relations.

In the future, the town should have orientation to diversify their livelihoods, encouraging trade in services further development, namely: (1) The work of planning agriculture should be done first, followed by a plan on industrial and urban development. In this master plan, food security should be made absolutely stable for decades. This plan is the base for the development of agriculture and rural area ; (2) Investment in agriculture should be enhanced, especially investments that create better conditions for the private sector to increase their competitive capacity and help make their entry into the market more efficient. Public investment in agriculture should concentrate on

infrastructure, irrigation, transportation, plague and natural disaster control, research, agricultural encouragement, trade promotion and information provision; (3) Applying new technologies should be promoted in agricultural production, especially new technologies at a low cost to increase efficiency and the competitive capacity of agriculture ; (4) Renewing management mechanisms should be implemented. Roles of the Government and market mechanisms should be clearly separated; (4) Knowledge and skills in operations in the market economy of farmers should be improved. Vocational training courses should be supplied to affected people whose land was recovered in the process of industrialization and urbanization. Works of agricultural encouragement, technological transfer as well as agricultural extension services should be promoted to raise competitive powers of agricultural products; (5) Each special region needs specific policies to enhance agricultural production, especially regions in the master plan of food security. Public investments should link closely to the work of poverty alleviation. Labor migration should be considered as a condition for economic growth and unemployment reduction in rural areas; (6) To develop rural areas, it requires a combination of economic and social environmental solutions. Economic solutions include upgrading rural infrastructure, providing information and applying technology to increase the capacity of competitiveness amongst agricultural products; (7) Social solutions include improving the social roles of rural households as well as their participation in social associations and social groups. A sectoral rural economy (households, farmers, business and landless labors should) should be recognized and encouraged in which there are four sectors (households, farmers, business and landless labors) to have equal opportunity to operate and develop together. Markets of labor, land and science – technology should be respected and developed within in law the law; and (8) Environmental solutions are protecting and maintaining land, water and biological resources and managing the environment in rural areas.

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