

Technological Consultation and Backup for Young Generation Entry into Farming in Vietnam

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ABSTRACT

Out of 70% of the population in Vietnam (approx. 63 million people) are living in rural areas and relying on agriculture sector. Despite much effort to elevate the national agriculture, Vietnam's agriculture is facing considerable difficulties and challenges which can hinder the sector's sustainable development and its attempt at ensuring food security as well as developing the economy, particularly under the rigorous effects of climate change. Such situation has triggered difficulties in finding and/or being satisfied with farming jobs and caused a significant proportion of rural labor to find off-farm occupation – most of which are youngers – resulting in increase in average age (approx. 30% of agricultural labor are older than 44 years old) and raise in proportion of women in the current agricultural labor. In addition, low education level of the agricultural labor force – which is explained by more than 90% of unqualified labor - is the key reason in limited access to advanced technology in all terms of natural resource exploiting, cultural techniques and post-harvest management as well as farm business, which are considerably important to expansion of the agricultural production. Understanding the current situation, the government has been promulgated various policies and strategies so as to encourage the youngers to participate in agriculture, and improve their knowledge and skills, aiming at promoting adoption of high technology and the sustainable agricultural development.

Key words: agriculture, labor, young generation, sustainable, advanced technology

INTRODUCTION

Viet Nam is a traditional agricultural country with 70% of population (approximately 63 million people) living in rural areas and relying on agriculture sector. With population of around 90 million people, Viet Nam is now in a period known as the 'golden population structure', which means that for every two people, there is only one dependent person.

Located in the heart of Southeast Asia with total area of 330,000 km² Viet Nam is a narrow long country which stretching over 2,000 km long which results diversified climate among regions in Viet Nam. Therefore, there are eight different agricultural ecological regions in Viet Nam that are divided on the basis of the differences about nature and climate.

Although the presence and distribution of plants is various among different agricultural ecological regions but the role of rice varieties (*Oryza sativa*) are very important. The rice cultivation land in Viet Nam is about 7.9 million hectares with total yield is 44.07 million tons. Viet Nam was a food shortage country in 1980s but has become top rice exporter with the annual rice export at 7.5- 8 million tons (Nguyen Van Bo, 2014).

In recent years, thanks to the renovation of the national economic system and the integration with international market, Vietnamese agriculture has had a substantial development. Average growth rate of the sector is 4-5% annually and total value of agriculture makes up 22% of the country's GDP. Agriculture has partially satisfied food domestic demand, guaranteed food security and established intensive farming locations destined to export. Viet Nam has achieved noticeable achievements in agriculture in recent decades and become top-ranking exported country in many agricultural products such as rice, pepper, coffee, rubber, cashew etc. According to statistic in 2012, export value of some main exporting products from the country was 3.48 billion \$US for coffee, 2.64 billion \$US for rice, 1.96 billion \$US for rubber, 1.78 billion \$US and 1.22 billion \$US for forest products and Cashew nut and grains respectively (Hang *et al.*, 2014). However, Vietnamese agricultural sector is also facing considerable challenges and difficulties that need to be improved in future time. Small household farming scale, undeveloped technology, low quality product, high production cost and low competitiveness. Total cultivable land in Vietnam is only slightly more than 9 million hectare, consequently with current number of household, average household farming areas is just 0.63 ha and 60% of households are cultivating on the area smaller than 0.5 ha (MARD, 2013). Production is mainly done by human labor, the mechanization is low. The application of sciences and technologies especially in post-harvest processing are at starting stages. Production is many based on rice-monoculture which is shown instability and low efficiency in many regions. Labor force involving in agriculture although outnumbers in quantity but most of them are unable to meet the demand of industrialization and modernization process of the sector. In addition, the trend in ageing of agricultural labor force has also been pointed out as the main barrier of development.

I. Vietnam Agriculture: Challenge and difficulties

Although progress has been made, significant challenges and difficulties have been pointed out:

- Stagnant agricultural productivity.
- Slow rate of investment in agricultural diversification. Rice continues to dominate, accounting for 45 percent of agricultural production and 60 percent of cultivated land. Industrial crops (e.g. coffee, rubber, cashew, sugar cane and pepper) account for only 20 percent of production.
- Underdeveloped marketing channels, institutions and infrastructure. For example, farmers may not receive timely information on crop prices which affects their ability to sell products if the price is too high, or the lack of roads prevents them from transporting their crops to market in time and transaction costs increase.
- A widening gap between urban and rural areas and ethnic populations in particular. Economic growth has not benefited all populations equally, with poverty increasingly concentrated among ethnic groups and the more remote northern uplands populations.

- Unsustainable and inequitable patterns of natural resource use, access and control. In the forestry sector, for example, unmanaged logging leads to problems of erosion, flooding and loss of biodiversity. Water scarcity becomes a problem for both consumption and crop irrigation.
- Vulnerability to natural hazards. Flooding and storm surges in low-lying areas cause crop failure and livestock disease leading to loss of income and food insecurity.
 - Limited capacity of public institutions and misalignment of public expenditure serving rural sector interests. The budget for agriculture and rural development has been decentralized from the central to the sub-national governments which are still in the process of increasing their capacity to manage rural development projects.

In addition, the agricultural production in those regions is still manual labor based system which requires high manpower to meet the requirement of agriculture. Because it is not easy to provide miraculous solution in order to feed a continuously growing population (Gilland, 2002). Therefore production of food must increase in order to ensure food security in the world. The increase of food production in agriculture can be obtain by several ways such as agricultural land area expansion, enhancing yield of crops through the use of agrochemicals, organic fertilizer, biological controls, improvement of soil and water management, and application of new productive cultivars which are tolerant or resistant to disease and unfavorable condition (Fernando. 2006). But, the expansion of agricultural land area is not feasible and it is even declined as the invasion of urbanization and industrialization as well as due to land erosion, reduction of fertility, salinization and desertification. In the present time, probably the useful response to the need for increasing production of food is a more intensive use of agrochemical such as mineral fertilizers and pesticides. However, massive use of mineral fertilizers and pesticides cause serious contamination, decreasing water quality and safety of product (Schoroder et al. 2004).

The first challenges of rice cultivation in Viet Nam are the difficulties in seed management and production. Viet Nam at present just self-satisfies 30% in the demand of seed, 70% remainder areas are cultivating by low quality seed. Besides, the dramatic increase in input sources of production such as fertilizer, fungicide, pesticide, labor cost, seeds price which raised many difficulties for farmer in gaining profit to support their life. Over-using of chemical fertilizer and pesticide in rice-monoculture in many years have caused soil degradation, loss of biodiversity; out-break of new pests and diseases and environmental pollution. Although soils have inherent quality which is determined by chemical, physical, biological properties of specific kind of soils but the ultimate determinant of soil quality is the land management (Doran, 2002). The positive effect of long term irrigated rice cultivation causes a decrease in structural stability. Tillage performed before the installation of rice reduces aggregate size (Benintende *et al.* 2008). The decrease in the magnitude soil gaseous exchange does not favour the development of microorganism was reveal by the low content of carbon and nitrogen content in the microbial biomass (Benintende *et al.* 2008). The lowest values of organic carbon and carbon content microbial biomass were lowest in rice monoculture compared with other rotation system such as: rice-soybean rotation, rice-soybean-maize, rice-pasture rotation; probably associated with management practices for soil preparation and the inundation effects of rice cultivation (Benintende *et al.* 2008).

Regarding to climate change, poor and developing countries are very susceptible by the effects of climate change. Vietnam is one of the five most vulnerable countries to climate change. The result of climate change includes erratic and variable rainfall, higher

temperature, more extreme weather events like typhoons, floods, droughts, increase of sea level. And consequently, economic development is slow down, social security is insecure, livelihood of people especially farmer who rely upon on agriculture, aquaculture and fisheries is unstable. The recent study on potential impact of climate change to Vietnam showed that 1 meter rise in sea level would approximately affects 5 percent of Vietnam's land area, and influence living of 11% population, impact 7% of agriculture and reduce GDP by 10% (Peter Chaudhry. 2007). And large of land area will be flooded and disappeared as many regions in Vietnam such as Mekong river delta where is just 1-2 meter above sea level. Under impact of climate change, it is expected rainfall will be concentrated in rainy season months leading to the exacerbation of drought problems in dry season. Climate changes, is set to make precipitation more uneven and variable over time and space (Schaefer, 2003). Flood damage is expected to be aggravated by an increase in daily rainfall of 12-19% by 2070 in some regions. Drought will be exacerbated by increase variation in rainfall and increase evaporation (3% in coastal provinces and 8% in inland areas) as a result of global warming (MoNRE, 2003). The typhoon appears more frequently in southern in recent years, but it is expected that the north lands will suffers more typhoon and the intensity of storm will increase. The same situation will also threats coastal province. Mountainous regions will face more risks of flash floods and landslides from heavy rain. An estimated 80-90% of Vietnamese people will suffer the influence of typhoon (CCFSC, 2001). According the climate change scenarios in Vietnam of Ministry of Natural Resource and Environment, in the year of 2100 the temperature in Vietnam may rise from 1.4-1.7°C and the sea level may rise 65cm if the world's gaseous gas emission, population is reduced. However if the world population continue to increase and the gaseous emission is still maintained as high as those in current time, the temperature in Vietnam may rise 2.1-3.6°C and sea level rise 100 cm (Vietbao, 2009). Thus, to maintain the long term development and benefit of next generation in next 100 years, Vietnam need to takes consideration to develop the economy towards to efficiency and sustainability especially in agriculture which is the important sector of the country. Taking full advantages and effective using of natural resources, reasonable application farming practices, minimum relying on chemical input, utilizing recycled resource are useful solutions to resolve problems. And organic agriculture, through creating a whole system of agriculture based on nutrient and ecological principles satisfy all above mentioned requirement. In France, for example it is estimated that the conversion to Organic agriculture could decrease green-house emission by 10% (Sarah Boron, 2006). However, no single institution or country will be able to resolve this crisis, it is requires the joining efforts international community.

Vietnam is situated in region where is affected by tropical weather with the feature of hot and high humidity climate, agricultural production in Vietnam usually faces with high potential risks by the attack of pests and diseases annually. The annual average quantity of pesticide used has climb from 15.000 tons in 1991 to 76.000 tons in 2007 (as cited from Anh, 2002; Vinachem, 2008. Van Hoi, Mol et al. 2009). Total imported value of pesticides increased 9.8 times between 1991 and 2006 (as cited from GSO, 2008; Oanh 2005. Van Hoi, Mol et al. 2009). Beside the increase in the cost of production, overuse agrochemicals is also related to problems of foods safety and food quality. High level residue of harmful chemical substance which is exceeds the allowed threshold from the application of fungicide or pesticide is popular with many kinds of agro-product. In 2008 there were 205 food poisoning cases result 7828 contracted people and took a way 61 human lives (Health and life, 2009). In 2009 there were 147 food poisoning cases relating to 5026 people and 33 fatalities (Rural

economy, 2009). According to the World Health Organisation, approximately one-tenth of the Vietnamese population, or eight million people, suffer from food poisoning each year (Vietnamnet. 2009). Therefore there is an urgent demand in innovation the farming technique that reduces the dependence on agrochemical to enhance the safety and quality of agricultural product.

II. Characteristic of labor in Vietnam rural and solution to encourage young generation into farming

Majority of rural labor in Vietnam originates from farming families which base on agricultural production as the main occupation and income. Agriculture in Vietnam is mainly small household scale, and in shifting process from self-sufficiency to commodity production, limited technical infrastructure due to poor investment, manual labor, low productivity, backward farming habit and to be separated by customs and regional experience. These factors have negatively influence to rural workers in the country with inherent distinctive characteristics.

Population and labor in rural area accounts a high proportion of country's population and labor force. Rural population in 2011 was 59.9 million, accounting for 68.3% of the total population, a slightly decrease compared to from 60.4 million people, representing 71% of the total population in 2008. Labor force aged 15 and over in rural in 2011 was 36.1 million, accounting for 70.3% of the total social labor force, an increase by 1.1 million people compared to the figure in 2008. Social workers have mainly increased in rural areas, while the number of jobs created in rural areas has not been extended to meet the demand (Hai ,2012).

Table 1. Quantity and proportion of labor in rural and urban in Vietnam on 2001-2011 (Labor and society report, Institute of labor and Social science, 2011)

Order	Item	Year					Mean of growth (%)		
		2001	2005	2006	2010	2011	2005/01	2011/06	2011/2001
I	Quantity (1000 people)								
1	Total	40108	44382	45579	50837	51854	2,6	2,6	2,9
2	Rural	30522	33287	34002	36603	37024	2,0	1,7	1,9
3	Urban	9586	11096	11577	14234	14830	4,4	5,1	4,8
4	Male	20214	22768	23428	26130	26757	3,0	2,7	2,9
5	Female	19894	21614	22151	24707	25097	2,1	2,5	2,3
II	Proportion (%)								
1	Labor in Rural	76.1	75	74.6	72	71.4			
2	Labor in Urban	23.9	25	25.4	28	28.6			
3	Male	50.4	51.3	51.4	51.4	51.6			
4	Female	49.6	48.7	48.6	48.6	48.4			

Labor in agricultural sector accounts for 59.6% total labor in the country, a significant reduction compared to 70.4% in 2006 and 79.6% in 2001). The proportion of workers employed in industry and construction in rural was 18.4%, 12.5% and 7.4% in 2011, 2006 and 2001 respectively; employment in service sector in these 3 years was 20.5%, 15.9% and 11.9% respectively.

Table 2. Shifting of labor structure in different economic sectors in social economic regions in Vietnam
(Agriculture and Rural survey report in 2011, Department of Statistic)

No	Item	Agriculture			Construction			Service		
		2001	2006	2010	2001	2006	2010	2001	2006	2010
1	Whole country	79,61	70,41	59,59	7,36	12,46	18,40	11,51	15,95	20,52
2	Northern mountainous area	91,15	86,50	79,74	2,27	4,33	8,48	6,33	8,81	11,47
3	Red river delta	77,26	60,48	42,63	10,50	20,36	31,26	11,67	18,31	25,18
4	Central region	80,28	71,95	62,64	6,93	11,16	15,52	11,36	15,73	20,47
5	Central highland	91,94	88,38	85,28	1,55	2,52	3,04	6,22	8,84	11,42
6	South east region	8,46	49,06	36,07	16,06	23,37	31,45	20,02	24,43	28,5
7	Cuu Long river delta	79,23	71,81	62,17	7,83	9,74	14,33	12,64	16,89	21,33

Over the past 10 years (2000 -2011), the employment structure of the country has changed in a positive direction. The proportion and quantity of labor in agriculture is reduced, but the number of workers in industry and services sectors increased.

Table 3. Quantity and Proportion of labor (>15 years old) in different economic sectors (Annual statistic report, Department of Statistic).

Order	Economic sector	2000	2005	2006	2009	2010	2011
I	Quantity (1000 people)						
	Total	37075.3	42774.9	43338.9	47743.6	49048.5	50352.0
1	Agriculture	24136.0	23569.0	22449.6	24588.0	24279.0	24370.4
2	Industry and construction	4856.9	6525.3	8255.6	9548.7	10251.1	10725.0
3	Trading and service	4388.7	6228.7	7785.0	8928.1	9466.4	10120.8
4	Other	3693.7	3892.9	4363.0	4678.9	5052.0	5135.9
II	Proportion (%)						
1	Agriculture	65.1	55.1	51.8	51.5	49.5	48.4
2	Industry and construction	13.1	17.6	19.3	20.0	20.9	21.3
3	Trading and service	11.8	16.8	18.2	18.7	19.3	20.1
4	Other	10.0	10.5	10.7	9.8	10.3	10.2

Education of labor in rural areas is low. Rural labors that have secondary school level accounting for 28%, primary school level accounting for 37.3%, illiterate workers accounted

for 18.9%. Percentage of labor graduated high school accounted for only 15.8%, college and university degree is very limited. Number of untrained labor accounted for 91.8%. Proportion of primary, secondary vocational training certificate holder is nearly 3%. College and university certificate holder are 1.2% and 1.1% respectively. Untrained labor including in agriculture, forestry, aquaculture now accounts for over 65% of the total rural labor. Low education and professional skill have resulted in difficulties to access advanced technologies in production.

Table 4. Education level of labor in rural in 2000-2011 (Survey data of Ministry of Labor, Invalid and Social Affairs)

Education level	Proportion (%)			
	2000	2005	2010	2011
1, Illiterate	4,8	4,0	4,3	4,1
2, Primary school attending	18,5	13,1	13,1	12,3
3, Primary school graduate	31,0	29,1	27,4	24,8
4, Secondary school graduate	34,6	32,6	28,3	33,1
5, High school graduate	11,2	21,2	26,9	25,7
Total	100,0	100,0	100,0	100,0

Table 5. Professional qualification of labor in rural in 2000-2011 (Labor report, Institute of Labor and Social Science)

Qualification	Proportion (%)			
	2000	2005	2010	2011
1. Un-trained	85,43	74,7	60,0	58,0
2. Primary level of vocational training	8,72	15,1	28,0	28,8
3. Secondary level of vocational training	5,84	4,7	4,9	3,6
4. College and University		5,5	7,0	8,3
Total	100,0	100,0	100,0	100,0

Due to the pattern of small-scale, cultivation can not develop into large commodity production and farmers face many challenges in production expansion. This feature has forced rural households seeking additional income from off-farm activities to ensure life, thereby promoting a shift of the population and labor from agriculture to off-farm sector and migration waves to urban and industrial areas.

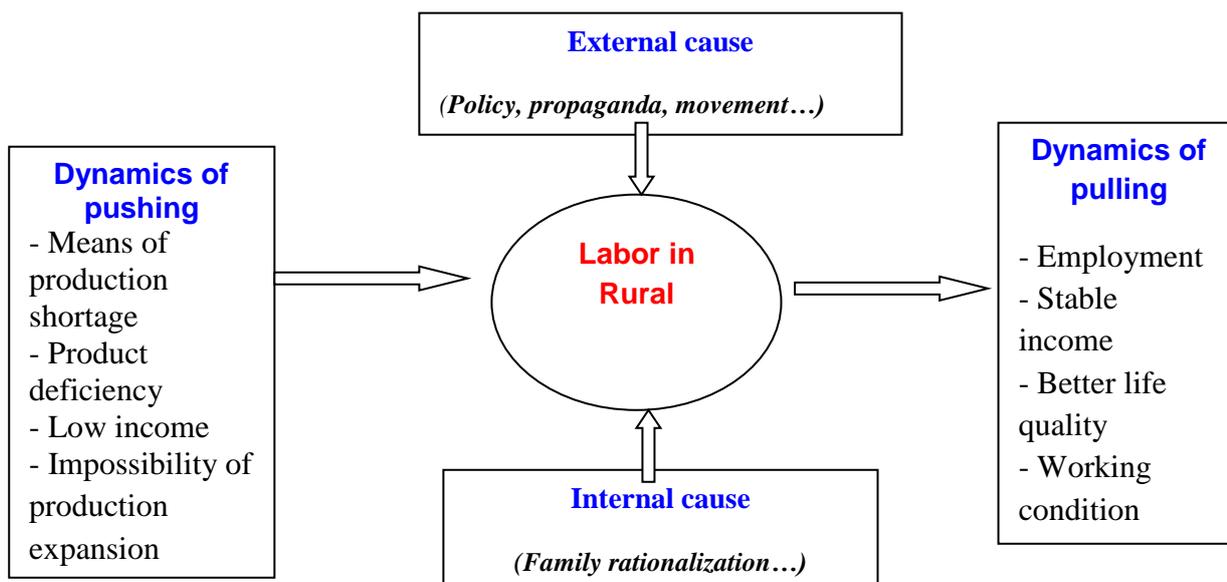


Fig. 1. Dynamics of employee shifting in rural area in Vietnam (Hai, 2012)

In addition, the general trend of labor in rural is "aging" and "feminization". Proportion of over 65 years old workgroup has increased steadily over the years, from 9.83% in 1996 to 10.45% in 2007; group from 45-64 years of age has also recorded similar trend, increasing from 18.49% in 1996 to 24.59% in 2007. This means corresponding reduction in the proportion of young healthy work group (15-44 years old), from 71.68% in 1996 down to 64.96% in 2007. In recent years, the rate of decline of young labor group is even faster.

Table 6. Proportion of labor of different age groups in rural in Vietnam (%)

Age group	1996	1997	2000	2001	2004	2005	2007
Total	100,00	100,00	100,00	100,00	100,00	100,00	100,00
from 15 – 44 year old	71,68	71,34	71,69	71,33	68,4	67,49	64,96
from 45 – 64 year old	18,49	18,83	19,22	19,02	21,54	22,31	24,59
Over 65 year old	9,83	9,83	9,09	9,64	10,06	10,20	10,45

(Source: Statistic of employment in Vietnam 1996-2005 and 2007)

Historical development of the developing as well as developed countries has demonstrated that the process of labor restructuring takes place in associated with the industrial revolution and economic restructuring towards industrialization and modernization. There is an inevitable trend of labor restructuring in which reduce both relative and absolute agricultural laborers, gradually remove boundaries to eliminate the gap of development between rural and urban areas.

With regards to Vietnam, in the changing process from agricultural production, subsistence and for many years operated under the centralized planning and subsidized economy to a market -oriented pattern, restructuring labor in accordance with market requirement is the irreversible trend. In agriculture that process has to comply with the general rules of the market economy, matches to the conditions and circumstances of Vietnam, and particularly tightly linked to the trend of economic restructuring towards industrialization and modernization including:

1. Maintain an appropriate workforce in agriculture to ensure national food security in the short and long term, both at the household level and the community
2. Increase the absolute number and proportion of workers in forestry, fisheries, and livestock; reduce the absolute number and proportion of labor in crop production. Creating interdisciplinary structure in agriculture, forestry, and fisheries and eliminate the dominance of crop production in agriculture.

Analysis of the qualitative aspects of agricultural labor in rural areas has showed that the small scale production practices, poor knowledge and skills due to education and training shortage have led to labor in rural lack of manners and discipline of industrial production, and facing problems accessing to scientific and technological applications. Therefore to improve the quality of rural workers and encourage young generation into farming, there is a need of proper policies and training programs to improve professional qualification and labor discipline.

Practical has shown that the policy on encouragement shifting of production at farming scale has resulted in some positive impact to agriculture in rural area in Vietnam. Since the majority of farm are established on the foundation of household labor and family budget. The transition into farming businesses has encouraged labor especially young people looking to learn new production technology, economic management ect. However, the development of the farm economy has faced many difficulties due to land shortage; capital; technology; and marketing ... In general the policies of development of farming production has received positive feedback from rural area but support farmers access to capital, the issue of product consumption and crop insurance need to be improved.

Policies to attract qualified young labor to work in rural areas in order to strengthen human resource and effective management of resources in rural areas have been applied. Some policies issued by the Government to encourage qualified young workers to work in rural areas such as Decision 354 / TTg 28/4/2000 encouraging young intellectual labor volunteer to work in mountainous region; Decision 149/2000 / QD-TTg on 28/12/2000 about some incentives for young intellectuals who volunteered to participate in the mountainous rural development and most recently resolutions No. 26-NQ/TW dated 5/8/2008 on agriculture, farmers and rural encourage young intellectuals to work in rural areas. These policies have been successfully in some situation but in general it has not resulted in a significant changing. Solving this problem requires a comprehensive strategy of reducing the disparity between rural and urban.

Professional training of labor in rural areas through agricultural extension is also a important solution encourage young generation into farming. Extension service has played an important role in expanding the understanding and technology for farmer in cultivation, livestock, economic management and other necessary knowledge, helping them actively resolve unexpected situations encountered in their production process. Extension policy has been highly evaluated by farmers. Thanks to this policy, agricultural labor has shifted towards enhancing in the level of production and business, and income.

In addition, policy on land resource, infrastructure development, credit and finance, public investment, education and training should also be improved to facilitate farmer in production and equip them all necessary knowledge and skills to meet the requirement of production.

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