
The market for vegetables in North Vietnam

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I Introduction

I.1 Scope of Study

This desk study was undertaken within the framework of the applied research project titled: Year-round supply of vegetables in North Vietnam. The goal of the project is the development of year-round supply of vegetables to the large cities in North Vietnam from the North Vietnam area itself. The goal has been achieved when cool season vegetables, presently coming from Central Vietnam or China, are cultivated year-round in North Vietnam and are directly supplied to large cities like Hanoi and Haiphong.

The purpose of the project is first to develop the technical opportunities for vegetable cultivation in the Hoa Binh highlands, and later to establish the ways and means for marketing of the product.

To get some first insights in the marketing possibilities, a desk study was carried out of the available literature on the consumer market for vegetables in North Vietnam.

I.2 Methodology

As an indication of the limits of the study, financial resources were made available by PPO for the consultant to spend about three labour days on this report. In practices more days were spent, but the available time was limited.

The main methodologies used for this study were:

- Review of available literature, ranging from scientific reports to unpublished project reports and articles in the Vietnamese media
- Review of available datasets from various sources

I.2.1 Desk review

Scientific literature

With regards to official scientific publications on the Vietnamese vegetable sector few sources are available. All scientific publications which were available have been used for this study. Scientific journals with relevant information on the vegetable sector of Vietnam were the following:

- *Development Policy Review*, which publishes a lot of articles about the worldwide impact of supermarkets on the agriculture sector
- *Acta Horticultura*, a peer reviewed journal of the International Society of Horticulture Science in which mostly articles are published which were presented during ISHS conferences. Especially very relevant was the conference organised by ISHS in Chiang Mai (Thailand) in July 2005 titled: "Improving the performance of supply chains in the transitional economies"¹.

¹ See: for more information: <http://muresk.curtin.edu.au/conference/ishscml/>

Grey literature Compared with scientific publications, a large amount of grey-literature is available, produced by a large range of projects which focussed on improving the production technologies, marketing strategies and sustainability of the Vietnamese vegetable farmers. The most useful and interesting resources originated from the projects presented in Table I.

Table I Overview of vegetable development projects in Vietnam

<i>Project title</i>	<i>Organisations</i>	<i>Website</i>
Sustainable technologies for pest, disease and soil fertility management in smallholder vegetable production in China and Vietnam	LEI, Hanoi Agriculture University, Alterra, Hannover University, Sichuan Agriculture University	www.vegsys.nl
Managing pesticides in vegetable systems in Southeast Asia: Combining Environment & Trade	LEI, Hanoi Agriculture University, Alterra, Stirling University	www.mapet.nl
Urban and Periurban Small and Medium-Sized Enterprise Development for Sustainable Vegetable Production and Marketing Systems	CIRAD, Technische Universität München (TUM), Institute for Agricultural Science of South Vietnam (IAS)	http://www.puvep.com/projects/inco/inco.htm
Fruits and vegetables in Vietnam : adding value from farmer to consumer	IFPRI	http://www.ifpri.org/themes/crossmp/vietnam/vn.htm
The Vegetable Sector in Indochina Countries: Farm and household perspectives on poverty alleviation	AVRDC	www.avrdc.org
Making markets work better for the poor	ADB and DFID	www.markets4poor.org
Sustainable Development of Peri-urban Agriculture in South-East Asia Project	AVRDC, CIRAD, RIFAV	www.avrdc.org/susper

Popular media As changes in Vietnam go very fast, also the popular national and international media was reviewed to get access to the latest economic developments as well as changes in the supermarket sector. Most used sources were:

- Reports of the Economist Intelligence Unit
- The Vietnam Economic Times
- The Vietnam Investment Review
- The Vietnam News

1.2.2 Report structure

The report starts with an overview of the Vietnamese economy and giving insights on the Vietnamese consumer. Hereafter we focus on the vegetable sector of Vietnam. In chapter three we describe the vegetable market chains in Northern Vietnam, which is followed by a case study about tomato. Chapter six presents the main conclusions and recommendations.

2 Overview economic development Vietnam

2.1 Introduction

13th most populous country in the world

2nd fastest growing economy in the world for the past 12 years

Today Vietnam is a country consisting of more than 84 million people, with a vibrant and fast growing economy. But before the country achieved this growth and fast economic development it had to overcome several decades of war. After unification in the mid seventies the whole country followed the Soviet model of a planned economy. Bad economic performance forced the government at the end of eighties to deregulate the economy and gradually switch to a market economy. Most of the deregulation took place in the early nineties and combined with the end of the American economic boycott in 1994, the economy grew rapidly with an annual average of more than 7 % during the last decade. In fact after China, Vietnam is the second consistently fastest growing economy in the world

Figure 1 Map of Vietnam showing major cities and different provinces

Circles around major cities and vegetable production areas



Surface of 330,00 km², of which 75% consists of hills and mountains

Vietnam is situated along the Southeast margin of the Indo-Chinese peninsula. It stretches from latitudes 8.50 to 23.8, with a coastline of approximately 3,200 km and a land area of about 330 thousand km². Vietnam has borders with China which are 1,150 km long, 1,650 km with Laos and 950 km with Cambodia. Three-quarters of the country

consist of mountains and hills. The midlands (hills) region, which comprises about one-third of the country, lies between the mountainous highlands. The remaining areas (one-quarter) include the fertile plains formed by 15 major rivers. The major rivers are the Mekong, with a drainage basin of 72,300 km² and the Red River of 60,960 km².

The plain areas of the Mekong River Delta (MRD) are located in the South and the Red River Delta (RRD) in the North, with about 1,300 kilometres between them. These delta's are the major agricultural areas and centres of population. Four economic hubs dominate Vietnam: the state capital of Hanoi in the North, the commercial centre of Ho Chi Minh City (formerly Saigon) in the South and the booming harbour cities Haiphong in the North and Danang in Central Vietnam.

Wide climatic variation

Overall Vietnam has a humid tropical climate heavily influenced by the monsoon. In the North (roughly north of the 18th parallel) there is a wide variation in temperature between the cold, relatively dry season (November-March) and the hot, wet season (April-October). In the South the two seasons are not distinguished by marked differences in temperature (EIU, 2004). As can be seen in Table 2 the rainfall and mean temperature differ considerable between the main agro-ecological zones.

Table 2 Area and climate of different agro-ecological zones in Vietnam

Agro-ecological zone	Land area (mil. Ha)	%	Elevation (m)	Mean temp. (°C)	Rainfall (mm)
<i>Northern regions:</i>					
1. Northern highland	9.8	30.0	100-3140	12-32	1600-2500
2. Red River Delta	1.0	3.8	12-14	16-32	1700-1800
3. Central Coast	5.2	17.5	100-2710	25-32	2450-2890
<i>Southern regions:</i>					
4. Central Coast	4.6	13.9	1000-1050	26-30	1000-1300
5. Central Highland	5.5	16.6	2200-2600	23-32	2100-2280
6. North East	2.3	7.0	100-1000	26-32	1950-2000
7. Mekong River Delta	4.0	12.1	7- 10	26-31	1950-2010
Total	32.4	100	-	-	-

Population mainly rural (75%)

The Vietnamese population is distributed very unequally over Vietnam's total land area of 330, 363 km² and is mostly rural (75% of the total population). Within the two main rice-growing river deltas, The Red River Delta in the North and the Mekong River Delta in the South, 57% of the total population occupy 18% of the total area.

54% of population is younger than 25

The Vietnamese population is young, in 2000, 54 percent of the population was younger than 25, which is expected to have a significant impact on cultural development. Another important demographic trend is the fast growing urban population, which currently is growing with 3.7 percent per year. The overall population growth slowed

considerably, between the censuses of 1979 and 1989 it was 2.1%, but fell to 1.7%, between the last censuses (1989 and 1999). Life expectancy is around 66 years and infant mortality is 48 per 1000.

65% of labour force in agriculture

Around 65% of the labour force is working in agriculture, forestry and fisheries. Cultivated area per head is, at 0.1 ha, one of the lowest levels in the world. As a result of the communist system most land was equally divided, meaning that landlessness was very low. In combination with the adoption of liberalised markets this was one of the main reasons for the decline in poverty rates. The percentage of people living in poverty (as defined by a budget adequate to buy 2,100 calories of food per person per day and a modest amount of non-food purchases) fell from 58% in 1993 to 37% by 1998 and 29% by 2002 (World Bank, 2004).

2.2 Economic development

Market liberalisation started slowly in 1986

After many years of struggle during which the Vietnamese had to defeat the French to become independent, overcome a civil war with heavy involvement of the American army, defend itself against attacks from China, the country was unified in 1976. The government of the new Socialist Republic of Vietnam quickly imposed on the South the Soviet-style central planning that had been the model in the North since 1954 (EIU, 2003). The economic problems related to this system forced the Vietnamese government to start to deregulate the economy and give way to the free market. This process started in December 1986, when the Vietnamese government adopted the “Doi Moi” policy (“renovation”).

Spectacular change after land reforms

At first reform was slow, and many elements of the old system, remained in place. But when in 1988 the country was confronted with a huge trade deficit, hyperinflation of over 300% and the North was close to famine after bad weather conditions, the reforms process really took off. The most important change was that households rather than communes were to form the basic economic unit in agriculture. The results of the changes were spectacular. Agricultural output rose by 7.5% in 1989, and the country suddenly switched from being a major importer of rice to become the world’s third largest exporter (EIU, 2004).

From net rice importer to 2nd largest rice exporter

As can be seen in Table 3, in which the Vietnamese economy is compared with its neighbouring countries, the Vietnamese economy is still relatively small compared to Thailand, but Vietnam is catching up. Overall GDP growth between 1993 and 2005 was more than 7.5% per year. Except for a few countries recovering from civil war or economic havoc, over the last decade only China and Ireland have seen faster growth of GDP per capita than Vietnam.

Table 3 Major economic indicators of Vietnam and its neighbouring countries

Indicator	Vietnam	China	Thailand	Cambodia	Laos
Population (in millions) 2004	83	1,296	63	14	6
Annual population growth 1975-2002 (in %)	1.9	1.2	1.5	2.5	2.2
GDP 2004 (in US\$ billions)	46	1,914	162	5	2
GDP per capita in 2004 (in US\$)	550	1,490	2,538	354	423
Contribution of agriculture to the GDP 2004 (in %)	23	13	10	33	47
GDP per capita annual growth rate 1990 – 2002 (in %)	6	8	3	4	4
Exports of goods and services in 2004 (as % of GDP)	66	34	71	65	29

Source: World Bank datasets accessed in 2006 on:

Remarkable decline in poverty

From 51% below 1 US\$/day in 1990 to 11% in 2004

What has been even more remarkable is the decline in the number of people living below the poverty line. Based on the international standard of one purchasing power parity², the percentage of the population living with less than 1 PPP\$ per day declined from 51 in 1990 to 11 in 2004. The percentage of people living with less than 2 PPP\$ per day declined from 87 percent in 1990 to 53.4 percent in 2004. In the Vietnam Development Report of the World Bank (2004) it is shown that in comparison with other countries, that the poverty rate was lower than could be expected given the country's level economic development³.

Main success factors: land to rural households and rise of private sector

According to the World Bank, the main factors behind this success were:

- In the early nineties, the distribution of agricultural land to rural households, in a context where economic reform provided the right incentives for increased farm production
- In more recent years, job creation by the private sector and the increased integration of agriculture in the market economy.
 - Over the last four years, the proportion of people who mainly work on their own farm dropped from almost two thirds to slightly less than half. Instead, many more are now engaged in wage employment: 30 percent of those at work earned a wage in 2002, compared to 19 percent four years earlier (World bank, 2004a).
 - Farmers currently sell 70 percent of their farm output compared to 48 percent nine years ago

The role of the government in this success has been sound macro-

² Purchasing Power Parity dollars are used to compare the income levels of different countries. The PPP US\$ reflects the same purchasing power of dollar in the US. Because goods and services in in the US are more expensive than in many developing countries, one PPP dollar per day is equivalent of much less than a **current** dollar per day. In the case of Vietnam, the so-called "PPP deviation" is roughly equal to five, which means that 20 cents of a dollar in Vietnam buy as much as one dollar in the US (World Bank, 2004a).

³ China and India for example have an average GDP per capita in PPP \$ which is higher than Vietnam but the percentage of the population living below 1 PPP \$ per day was lower.

economic management, systematic introduction of market forces in the economy and promoting export diversification.

Relatively good health care and education

Despite these successes in economic growth and the internationally admired success in poverty reduction, the 2004 UNDP Human Development Index (HDI)⁴, shows that still a lot has to be done, Vietnam ranked as the 112th country out of the 177 countries. Its GDP per capita (in purchasing power parity) is half of China and one third of Thailand. But despite this lower PPP, education and healthcare is relatively good as measured by indicators such as life expectancy and infant mortality, even better than in more developed Thailand.

Table 4 Major human development indicators

<i>Indicator</i>	<i>Vietnam</i>	<i>China</i>	<i>Thailand</i>	<i>Cambodia</i>	<i>Laos</i>
HDI rank 2004	112	94	76	130	135
GDP per capita in 2002 (in PPP US\$ 2002)	2,300	4,580	7,010	2,060	1,720
Adult literacy rate	90.3	90.9	92.6	69.4	66.4
Life expectancy at birth	69.0	70.9	69.1	57.4	54.3
Infant mortality rate (per 1000 live births)	20	30	24	96	87

Source: UNDP, 2004

2.3 Domestic consumption

As was presented in section 2.2 the per capita income GDP figures and low ranking on the HDI, clearly indicate that Vietnam is still a developing country. But during its rapid economic growth over the past decade a new middle-class has developed with considerable disposable income. While the national average GDP per capita is just over \$550 per year, the same figure for Ho Chi Minh City is estimated to be over \$1,400.

In 2005 in HCMC 63% of households earned > US\$ 190/month

This new middle-class is very well illustrated by a recent study by ACNielsen titled: *“Delivering aspirations: meeting the demands of the new Vietnamese consumer”*. While the number of households in HCMC who earned more than US\$190 per month was only 32 percent in 2002, in 2005 63% of HCMC’s 2 million now achieve this figure. Higher earnings also mean higher spending. While in 1996 only 16 percent of households spent more than US\$ 60 per month, in 2005 this figure was 40 percent (ACNielsen, 2005).

Ranked as 3rd most attractive retail investment country in the world

With its domestic retail market of US\$23 billion per year and current low market saturation by the modern retail market, has put Vietnam in the spotlights of major foreign retailers. In the Global Retail Development Index (GRDI) of ATKearny of 2006, Vietnam jumped from the 7th position to the 3rd position. The higher the ranking in the GRDI the more urgency to enter the market (ATKearny, 2006). The

⁴ The human development index (HDI) is a composite index that measures the average achievements in a country in three basic dimensions of human development: a long and healthy life, as measured by life expectancy at birth; knowledge, as measured by the adult literacy rate and the combined gross enrolment ratio for primary, secondary and tertiary schools; and a decent standard of living, as measured by GDP per capita in purchasing power parity (PPP) US dollars. The index is constructed using indicators that are currently available globally (UNDP, 2004).

list in 2006 was topped by India (no. 1) and Russia (no. 2).

The main reasons for Vietnam’s high rank are:

- its fast economic development
- its large population (84 million)
- its young population of more than 50% being younger than 30 and they love to shop
- consumer spending increased by about 16 percent from 2004 to 2005
- modern retail sales rose by 20 percent (2004-2005)

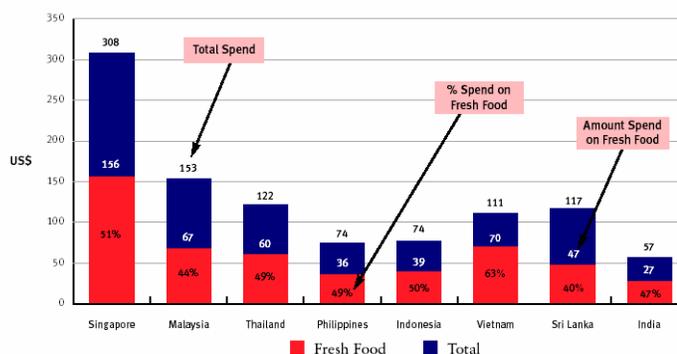
Vietnamese consumers relatively spend most money on fresh food in SE Asia

Another interesting figure which shows the potential of the Vietnamese consumer market are the average monthly expenditures on food, groceries and personal care items (*Figure 2*). Compared with more developed Southeast Asian countries, Vietnamese consumers have quite a high monthly expenditure. The Vietnamese consumer also spends, in relative terms, the highest amount on fresh foods. In absolute terms Vietnamese consumers even spend the 2nd highest amount of fresh foods in Southeast Asia. With regards to expenditures the Vietnamese consumers are almost at the same level as the Chinese consumers.

Care has to be taken in interpreting these figures. For Vietnam, we know that ACNielsen only uses a consumer panel in Hanoi and HCMC. Therefore, this panel is certainly not representative for the whole of Vietnam, but at best only for the three million consumers in Hanoi and five million consumers in HCMC. Also for the other countries ACNielsen is only monitoring an urban consumer panel. This makes the data comparable among the different countries, but the results can certainly not be multiplied with the number of inhabitants of a country.

Vietnamese urban consumers spend relatively highest amount on fresh food in SE Asia

Figure 2 Mean monthly expenditures on food, groceries and personal care items in 2005 in Southeast Asia



Source: ACNielsen, 2005

Vietnamese urban consumers have already the same monthly expenditures as the urban Chinese consumers

Figure 3 Mean monthly expenditures on food, groceries and personal care items in 2005 in Southeast Asia



Source: ACNielsen, 2005

To get an idea on what fresh foods Vietnamese consumers spend so much money, FAOSTAT data were used. These data were also used to see trends in consumption.

Strong increase in consumption of seafood, pork, poultry meat and vegetables

Since the reforms, national food consumption (in constant 1997 US dollars) has more than doubled, increasing from US\$6.1 billion in 1988 to US\$13.6 billion in 2004. Food security has been assured at the national level. While the diet for most of the Vietnamese people is still largely rice, fish, and vegetables, as income increases, so does the consumption of fruit, vegetables, and animal-based products. Cereal consumption has also diversified from rice to include other staples, such as wheat and maize (World Bank, 2006).

In 2003, a Vietnamese household spent, on average, as much as 65 percent of its total expenditure on food, with a strong increase from 1988 levels in consumption of seafood, pork, poultry meat, and vegetables. The middle- to high-end consumers increasingly demand better quality and safer food. Although the consumption of safe food is still small because of its 30 to 50 percent higher cost, an increase in consumption of such foods is likely in the future, given the trends in other countries in the region (World Bank, 2006).

Table 5 Food Consumption in Vietnam (kg/capita/year)

	1970	1980	1990	2000	2002	Per annum aver. growth rate (%)
Poultry Meat	1.6	1.8	2.6	4.7	5.4	24.9
Pork	6.3	5.5	10.8	17.1	20.4	21.9
Citrus	1.7	1.5	1.7	5.2	5.2	16.4
Vegetables	45.2	42	46	74.3	80.1	11.6
Milk, Whole	1	0.9	0.9	1.1	1.4	7.1
Beef	2.1	1.9	2.5	2.4	2.5	3.3
Fish, Seafood	14.5	10.5	13.2	19	17.7	1.4
Rice (paddy equiv.)	235.2	200	232.4	254.3	253.3	1.1
Bananas	9.7	15	16.6	12.9	11.2	0.3
Cereals (excl. Beer)	183	157.7	165.2	185.8	186.7	0.0
Sweet Potatoes	22.2	38.8	24.8	6	6.5	-79.8

Source: FAOSTAT, 2005 in World Bank, 2006

Strong growth in vegetable consumption

3 The vegetable sector of Vietnam

3.1 Introduction

Temperate
highlands and
warm lowlands

Because of its very long shaped geography (Figure 4), Vietnam hosts seven distinct agro ecological zones which contains a large diversity in horticulture crops. Temperate regions can be found at higher altitude in both the Central Highlands (Dalat district in Lam Dong province) and the mountainous areas in Northern Vietnam (Sapa in Lao Cai Province), while also in the winter period the Northern Red River delta plains can produce temperate vegetable crops and flowers (Figure 6). The Southern Mekong River Delta has a constant high temperature, very suitable for typical Asian vegetables and tropical fruits (Figure 5) the most important vegetable production areas are in the Red River Delta, Mekong River Delta and Lam Dong Province.

Figure 4 Contribution of each province (%) in total vegetable production of Vietnam

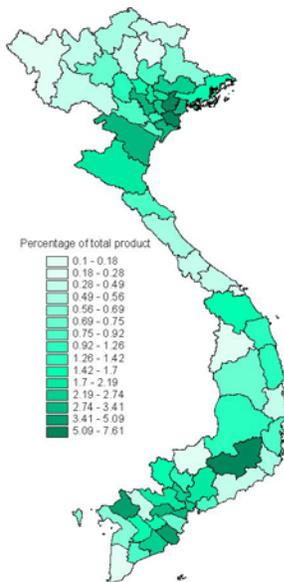
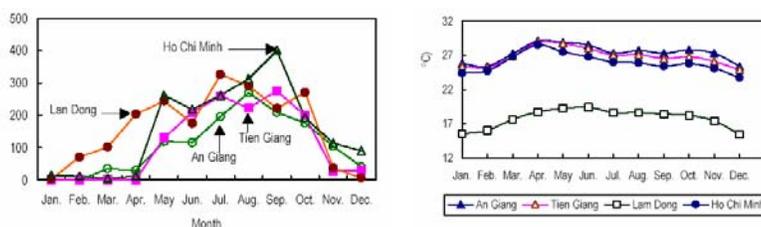


Figure 5 Rainfall and temperature in Southern Vietnam

Constant cool temperature in Dalat

Rain season from May to November

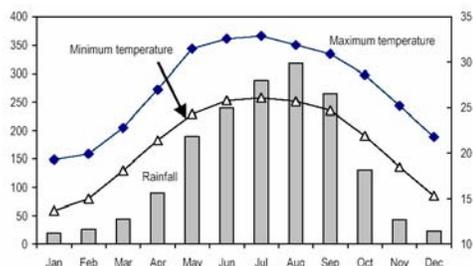


Average rainfall (mm) in main vegetable production provinces in Southern Vietnam

Average temperature in main vegetable production provinces in Southern Vietnam

Source: Thuy et al., 2002; Hau et al., 2002

Figure 6 Rainfall and temperature in Hanoi, North Vietnam



Source : Thuy et al., 2002

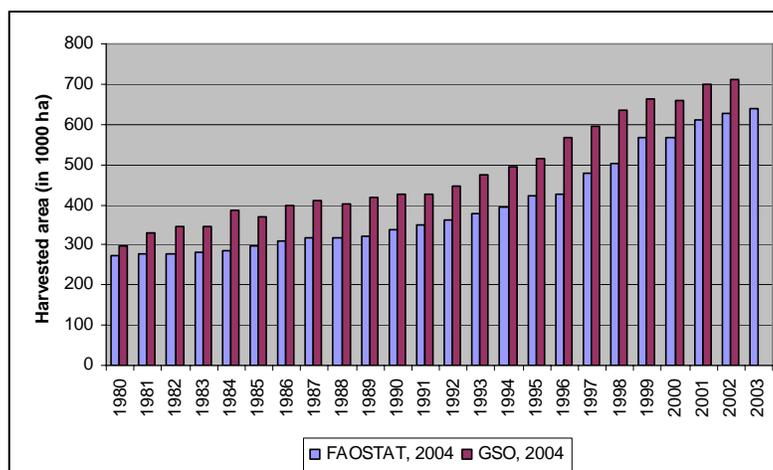
3.2 Vegetable acreage

Mean consumption of vegetables in Hanoi/HCMC 106 kg/person/year

Due to the fast economic development and rapid urbanisation the demand for horticulture products is growing fast. Based on data from FAO and MARD, Figuié (2003) estimated that within the period from 1986 until 2001 the total amount of consumed vegetables in Vietnam almost doubled to nearly 6 million tons. Figuié points out that this increase was caused by population growth and an increase in individual consumption. Another important observation is that the consumption of vegetables is 17% higher for urban consumers than for rural consumers and also increases in proportion to household income (ibid.). Based on the analysis of the 1998 Vietnam Living Standards Survey, the International Food Policy Research Institute (IFPRI) calculated a fourfold increase of vegetable consumption from 23 kg/person/year for the poorest category of households to 91 kg/person/year for the richest. The average consumption in 1998 for citizens of Hanoi and HCMC was even 106 kg/person/year (IFPRI, 2002).

Figure 7 Development of the acreage of vegetables according to various sources

From 274,000 hectares to close to 700,000 hectares of harvested vegetables



Source: Compiled from FAOSTAT, 2004 and GSO, 2004

Farmers responded to higher demand for vegetables

With the continuing economic growth, which was 7% per year for the last decade (EIU, 2004), and the fast growing urban population, 3.7% for the period 1990-2000, the total demand for vegetables is expected to continue to grow fast (van den Berg and van Wijk, 2003). In the past two decades Vietnamese farmers clearly reacted to this increasing demand, as the estimated sown area of vegetables increased from 274,000 hectares in 1980 to more than 630,000 hectares in 2003 (FAOSTAT, 2004).

This domestic demand provides big opportunities for the horticulture sector in Vietnam. With relatively well functioning irrigation systems in the Mekong and Red River Delta's, horticulture production can be year round. These highly populated river delta's also have all labour resources which are needed for the labour intensive requirements of horticulture production.

From *Figure 7* it becomes clear that farmers have reacted to this increased demand. Although various sources have different figures for the fruit and vegetable acreage, the main trend is the same, fast growth in the area planted with horticulture crops, especially during the nineties.

The main vegetable growing areas in Vietnam are the Red River Delta and the Mekong River Delta, which in 2003 covered 51% of the total acreage of vegetables. The mountainous areas in the North (North West region) only have a very small production area for vegetables, 12,500 hectares in 2003. These figures for vegetables are slightly different from the figures presented in the figure above. The figures in *Table 6* are the same as the GSO data for vegetables; the only difference is caused by the fact that beans are not included in the table below.

Table 6 Harvested vegetable area (in 1000 ha) per region

Region	1995	1996	1997	1998	1999	2000	2001	2002	2003
North	175.6	211.7	213.5	234.5	240.1	245.5	269.7	281.4	296.3
Red River Delta	86.2	115.6	113.1	127.7	126.7	125.9	138.5	141.5	148.7
North East	40.3	44.9	46.9	48.4	51	55.2	61.3	67.1	70.9
North West	6.5	6.1	7	7.4	9.7	9.7	10.1	11.6	12.5
North Central Coast	42.6	45.1	46.5	51	52.7	54.7	59.8	61.2	64.2
South	152.7	148.3	163.5	177.2	219	207.4	244.9	279.2	281.5
South Central Coast	17.5	20.6	24.8	28.9	30.9	32.2	34.9	37.6	37.7
Central Highlands (of which Lamdong ⁵)	17.8	18.4	21.9	24.1	25.1	31.2	35.4	42.1	41.8
South East	50.9	39.5	43.3	43.9	64.2	48.4	66.2	69.0	60.1
Mekong River Delta	66.5	69.8	73.5	80.3	98.8	95.6	108.4	130.5	141.9
Vietnam	328.3	360.0	377.0	411.7	459.1	452.9	514.6	560.6	577.8

Red River Delta and Mekong Delta the largest vegetable production areas of Vietnam

Source: For the period 1995-2001 Cuc, Nguyen Sinh 2003; For the period 2002-2003 UNCTAD, 2004

As individual vegetable statistical acreage data are hardly available, we summarised the results of an extensive study by the Asian Vegetable Research and Development Centre (AVRDC). In this study a survey was held among 853 vegetable farmers in the major vegetable growing provinces of Vietnam. The survey in the North⁶ covered the period January 1998 to February 1999, while the survey in the South⁷ covered the period January 1999 to February 2000. In the North in total 28 different vegetables were grown by the sampled farmers (n=453), while in the South in total 47 different vegetables were grown by the sample (n=400). The ten most important vegetables in the North and 12 most important vegetables in the South cover more than 75% of the harvested area of vegetables in the two regions (Table 7).

⁵ Dalat is located within Lamdong province

⁶ Sampled Northern Provinces: Hanoi, Vinh Phuc, Bac Ninh, Hung Yen and Hai Duong

⁷ Sampled Southern Provinces: Ho Chi Minh, Tien Giang, An Giang and Lam Dong

Table 7 Most grown vegetables by the sampled farmers in the AVRDC study

North Vietnam For 1998-1999 period	South Vietnam For 1999-2000 period
Cabbage	Cabbage
Shallot	Chinese cabbage
Tomato	Onion
Potato	Radish
Onion	Carrot
Soybean	Cucumber
Kohlrabi	Bitter gourd
Cucumber	Potato
Chinese cabbage	Lettuce
Gourd	Cauliflower
	Sweet pakchoi
	Okra

Source: Compiled from Tuy, et al., 2002; Hau et al., 2002

Despite the fact that official data on vegetables are hardly reported, at district level and provincial level statistical data on vegetable acreages are collected. In 1998 the Research Institute for Fruits and Vegetables (RIFAV) managed to collect some of these data⁸. A summary of this effort was presented in an AVRDC publication (Nguyen *et al.*, 2000). Unfortunately the authors only presented the percentage of each crop in the total vegetable cultivation area and did not mention how large this area was. Therefore, we multiplied their percentage data with the FAOSTAT figure for 1997 of a total harvested area of 476,000 hectares.

Table 8 Harvested major vegetable areas in 1997

Crop	Percentage of total vegetable harvested area (in %)	Estimated area
Baby corn	0.1	476
Cabbage	7.6	36,176
Carrot	0.5	2,380
Cauliflower	0.4	1,904
Chayote	0.1	476
Chili	1.4	6,664
Chinese chives	0.1	476
Cucumber	1.9	9,044
Cucurbits	3.6	17,136
Garlic & multiplier onion	5.8	27,608
Kangkong	5.9	28,084
Kohlrabi	4.6	21,896
Mungbean	0.5	2,380
Mustard	19.4	92,344
Onion	0.4	1,904
Tomato	3.6	17,136
Bean	9.9	47,124
Water melon	1.2	5,712
Others	33.0	157,080

Source: Compiled from Nguyen *et al.*, 2000.

Harvested tomato area between 17,000 and 25,000 ha/year

Another way to estimate the harvested area of vegetables is to use per capita vegetable consumption data and to multiply them with population data. This gives an estimate of the total vegetable consumption. By using

⁸ One other source with individual crop data was found, but only for one crop, tomato. These data are reported in chapter 5

average yield levels an estimate can be made of the total harvested area per year. We did this with the available (limited) vegetable consumption data from the Vietnam Living Standard Survey (VLSS), population data and yield data for vegetables in Vietnam from a study by the Asian Vegetable Research and Development Centre (AVRDC, 2003).

The results of tables 8, 9 and 10 are quite different, which is also partly caused by comparing different years. For 1997 – 1999 the cabbage acreages in tables 8 and 10 indicate the same magnitude, while in table 9 the cabbage acreage was almost twice as high. For kohlrabi and tomato the data in tables 9 and 10 are of the same magnitude. But for kangkong and watermelon, the figures in table 9 seem to be too low.

Table 9 Consumption data for various vegetables and estimated harvested area in 1999

	Consumption Hanoi and HCMC (ton/year)	Consumption Vietnam (ton/year)	Mean Yield (ton/ha)	Estimated harvested area (ha) to supply Hanoi & HCMC	Estimated harvested area (ha) Vietnam
Beans	17,628	82,032	10-15	1,469	6,836
Kangkong	343,746	1,394,544	20-30	17,187	69,727
Kohlrabi	52,884	328,128	19	2,783	17,270
Cabbage	96,954	574,224	34 to 51	1,901 - 2,852	11,259 - 16,889
Tomato	96,954	492,192	19 to 30	3,232 - 5,103	16,406 - 25,905
Other	326,118	1,394,544			
All	934,284	4,429,728			

Source: Compiled from IFPRI, 2002 data, AVRDC data (2003) and GSO population data (2004). See annex 3.

3.3 Vegetable prices

To check whether the rapid increase in the vegetable acreage has not eroded prices for vegetables, it would be very useful to analyse the trends in prices of various vegetables. Unfortunately no vegetable price data set is easily available for analysis, although vegetable prices are collected nationwide at the most important markets. These price data are published in newspapers, broadcasted on TV, radio and even on a website. But to get time-series data proved to be extremely difficult.

Prices of vegetables increased faster than inflation

One team of researchers managed to obtain a dataset of weekly vegetable prices for eight different vegetables at the most important markets of Hanoi for the period 1996-2001. They analysed the price trends and compared them with the inflation level. What was encouraging to see was that none of the analysed vegetables had a significant decline in their price. Most vegetable prices even had a significant price increase over time, of which especially the price for carrots and cucumbers increased faster than the inflation rate.

Table 10 Price trends for vegetables (1996-2001) on major Hanoi markets

Real prices of carrot, cucumber and cabbages increased

Trend	Vegetables	Annual growth rate
Not significant	Headed cabbage	+ 2.8 %
	Tomato	- 1.8 %
	Wax gourd	- 0.5 %
Significant	Carrot	+ 5.1%
	Cucumber	+ 4.6 %
	Cucurbits	+ 1.5 %
	Fresh onion	+ 2.0 %
	Kangkong	+ 2.8 %
Consumer Price Index (CPI)		+ 2.7 %

Source: An *et al.* (2003)

High prices for temperate vegetables between June and August

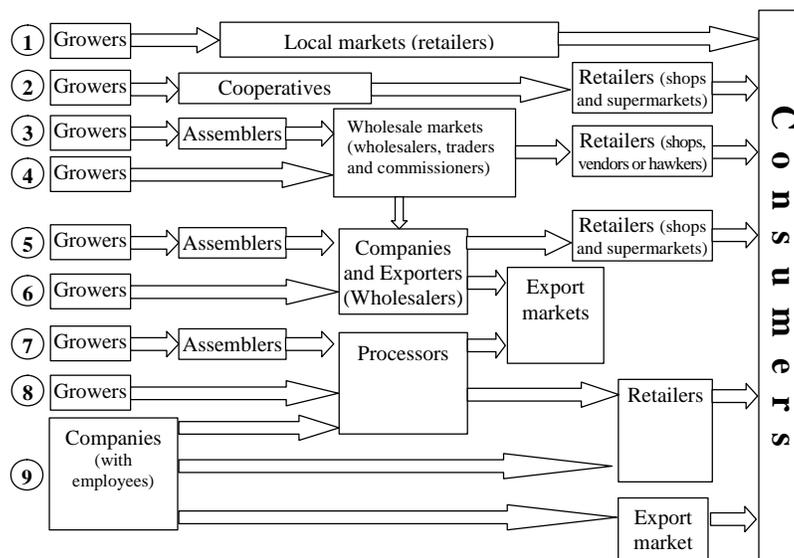
Because of the different seasons in Northern Vietnam, prices fluctuate a lot. Temperate vegetables such as tomato, headed cabbage, or carrot have a very strong seasonality. Their price is very high between June and September. This may be explained by the fact that the yield of these vegetables drops during the hot and wet season, due to pests and diseases: headed cabbage then suffers from diseases caused by bacteria (e.g. black rot, soft rot), and from the attack of pests (e.g. diamondback moth); tomato is subject to fungal and bacterial diseases (e.g. bacterial wilt). According to the price analysis by An *et al.* the variation between the lowest and the highest seasonality indexes can reach 152 % for carrots, 246 % for tomato, 473 % for headed cabbage.

Local vegetables such as wax gourd and morning glory are quite seasonal. Prices of these vegetables experience a similar evolution: they are quite low during the hot and wet season (when they are easily grown) and are high between December and February. Indeed, at average temperatures under 23°C, the growth rate of kangkong is too slow to make it an economic crop; wax gourd is best grown between 23 and 28°C. Another explanation for the peak in wax gourd prices may be that this vegetable is currently used to make sweets consumed during the Têt festival. The variation between the lowest and the highest seasonality indexes reaches 94 % for kangkong and 201 % for wax gourd (An *et al.*, 2003).

4 Vegetable market channels in North Vietnam

Market channels vary widely depending on the specific commodity, the location of the final consumer relative to the production area and the degree of processing. It is important to distinguish between market channels to serve rural consumers, urban consumers, and the export market. The diversity in the channels is reflected in the number of participants involved in the marketing of various commodities. The participants in the marketing process include input-suppliers, producers, intermediaries/ wholesale traders, processors, transporters, retailers and consumers. Figure 8 below gives a general overview of all the possible marketing channel configurations.

Figure 8 Overview of different vegetable marketing channels in Vietnam



In the North the study of An *et al.* (2003) gives good insight from which locations the most important vegetables come during various periods of the year. Based on their survey the authors conclude that:

- During the whole year non bulky, highly perishable leafy vegetables are supplied by areas less than 30 kilometres from Hanoi
- During the winter season, bulky and mildly perishable temperate vegetables (fruit vegetables and crucifers) are produced close to Hanoi, but in the hot season more temperate sites far from Hanoi become the main suppliers. These areas are Dalat in the South of Vietnam, Son La province in the Northern Uplands and the Southern Provinces from China.

4.1 Producers

Horticulture producers are mostly smallholders, responsible to ensure that the horticulture commodity is available for the initial transaction to take place. When Vietnamese farmers returned to their family-based farming systems in the early 1990s after long years of working in a centrally planned economy, their farming practices changed dramatically.

Average vegetable farm 0.3 ha in the North and 0.5 ha in the South

An extensive survey by the International Food Policy Research Institute (IFPRI) among 551 vegetable farmers in 2000⁹, in 11 provinces all over Vietnam, found that the average area of a vegetable farm ranged from only an average of 0.3 hectares for a specialised cabbage farmer to 0.63 hectares for a specialised cucumber farmer. The small size of the vegetable farms is also confirmed by the AVRDC study, with an average farm size of 0.25 hectares for a vegetable farmer in the North and 0.5 ha for a vegetable farmer in the south.

Farmers in peri-urban zones switched from rice production to horticulture. The large majority of the 1505 commercial fruit and vegetable farmers interviewed by IFPRI started their horticulture specialisation only in the early nineties. After having experienced the top-down government led cooperatives, farmers are not so eager to work in cooperatives any more. But despite this problematic past new more bottom-up approach farmer groups and cooperatives are starting again (Wijk *et al.*, 2005).

Box 1 Case of a small vegetable farmer involved in cucumber export scheme

Mrs. Ph, 37, and her husband have four children. Her husband owns a small tractor and provides services to villagers. Her youngest son is 16 and is now in Ha Tay Province working as a woodcarver. She reckons that rice farming is not very profitable, due to the high prices of inputs, high costs for tilling/ploughing services, and irrigation fees. She calculates that costs for each sao¹⁰ of rice are 92,000 VND per crop, while the yield is 200 kg of paddy, so the profit for each sao is just 300,000 VND (provided that the paddy price is 2,000 VND per kg in the high season). Three years ago, she set aside 1.5 sao of land to grow cucumbers for export. The company from Hung Yen province came to the village to train farmers in cucumber-growing techniques. Under the contract signed between the company and the commune's cooperative, the company provides in advance all seed and some fertiliser. Cucumbers imported from Japan are very expensive, i.e., 100 VND per seed (or 1 million VND/kg); and each sao requires 800 seeds. The company then buys back all the product at the agreed price of 700 VND/kg. Mrs. Ph can harvest three tons of cucumber from each sao and, after deducting 500,000 VND for costs, she can earn a profit of 1.6 million VND per sao – five times more than from rice farming on the same plot of land. Only some ten households in the village grow cucumbers, although the techniques are quite simple. The main problems are that cucumbers require all-day work on the farm and a large investment in fertiliser. For her 1.5 sao of cucumbers, Mrs. Ph invests more than 100 kg of chemical fertiliser and 400 kg of manure (due to the shortage of manure in the village, she has to go to her sister's house 10 km away to get manure). Two crops of

⁹ The collected data cover the period November 1999 to October 2000

cucumber can be grown per year, each crop over a period of three months (Feb–May and Oct–Dec). Every day, she has to work in her cucumber field, applying fertiliser and pesticides and watering the plants. After one month and five days, the plants start producing cucumbers, which must be harvested daily until the end of the crop. Now, with 1.5 sao of cucumber, she has no time to weave many bamboo and rattan products as in the past (when she could earn around 500,000 VND per month from RBC). She also has to reduce the scale of pig raising because of little time at home. She thinks that more households in the village will grow cucumber in the next season, but not all villagers can do it.

Source: Hang Xuan Thanh et al., 2005

4.2 Collectors

The collectors or rural traders are involved in rural purchases and transportation arrangements and sales at the farmer field. They go round the farms buying horticultural produce, in some cases they are involved in actual harvesting to meet the targeted volumes for the day (See Wiersinga, 2004). The collectors negotiate the price they want to buy the produce from farmers. Wiersinga distinguishes two types of collectors, the seasonal collector and professional collector. The seasonal collectors are farmers themselves and collect vegetables from other farmers. The professional collectors are fulltime collectors all year around. In many cases collectors work on commission basis for a wholesaler. The collectors sometimes double up as wholesalers once the commodity has reached the market place.

4.3 Wholesalers

After the appearance of METRO in Vietnam the wholesale sector can be split up in modern wholesalers and traditional wholesalers.

Traditional wholesalers

These are the individuals found at the market place dealing with bulk quantities of produce. The wholesalers sell the produce to the retailers who then sell to consumers. The wholesalers buy the produce mostly from collectors and are crucial in determining the price at other levels. Their main buyers are retailers, institutions and processors. In chapter 4 a case study of two large wholesalers in Hanoi is presented.

Modern wholesalers

Since 2002 the traditional wholesale sector for fresh produce in Hanoi and HCMC has been confronted by a modern type of wholesaling through the opening of the METRO Cash & Carry stores. These cash and carry stores are acting as a modern alternative for the wholesale market, as it sells to retailers, shops, hotels and restaurants. METRO tries to source directly from suppliers and their one hectare large clean and air conditioned stores are a sharp contrast with the traditional wholesale markets. But still the large majority of fruits and vegetables are sold through the traditional wholesale markets (van Wijk et al., 2005). In 2007 METRO has 8 stores in Vietnam with a total invested

*METRO invested
US\$ 150 million in 8
stores*

¹⁰ 1 sao = 360 m²

capital of US\$ 150 million.

*Domestic reaction
to METRO: G7-
mart*

During the four years METRO is present in Vietnam it only had to compete with the traditional wholesale sector. But by the end of 2005 a group of leading Vietnamese businessmen announced the plans to invest US\$ 500 million to set up G7 Mart. G7 is planned to be the Vietnamese answer to the invasion of Vietnam by foreign retailers and wholesalers. G7 aims to have opened 3 modern wholesale stores by the end of 2006, which should finally increase to 53 stores by 2010. In addition G7 also plans to setup 5000 convenience shops all over Vietnam and a large number of supermarkets. But till date, the plans have only been implemented and it is not expected that G7 will provide a serious challenge to METRO.

4.4 Processors

Processing of horticultural products plays an important role in attempting to add-value to the product in the supply chain. Vegetables juices, frozen and packed vegetables, cut and pre-packed salads are some examples. Processing is still a minor activity in the horticultural sector in Vietnam, but because of its centrally planned past, probably larger than in other developing countries.

One of the largest state owned processors with freezing and canning capacity is the Vietnam Fruit and Vegetable Export Company (VEGETEXCO) . VEGETEXCO has 12 canning plants (capacity 70,000 tons/year) and 5 freezing plants (capacity of 20,000 tons) which according to IFRI (2002) were underutilised. In addition there were 22 provincially-managed state enterprises involved in fruit and vegetable processing, about half which are located in HCMC and Dong Nai. Finally, there are about 18 processing plants built by private companies, including 100 percent owned foreign enterprises. Most of the survey private processors operated only on a seasonal basis, with most processors only producing two types of products using only one major type of fruit and vegetable (IFPRI, 2002).

4.5 Traditional retailers

The traditional retail system for fresh vegetables consists out of two types of markets, official markets and unofficial (street) markets. On both types of markets there are both fixed and mobile (hawkers) vegetable retailers. In addition to selling vegetables on fixed markets, the hawkers also sell vegetables directly at the doorstep of consumers (Cadilhon and Tam, 2004).

*12,000 vegetable
retailers active in
Hanoi Province*

Official markets have been set-up, or formally approved, by either the provincial or district level government. Unofficial markets are not approved by the local government and at best are only tolerated. As described by Cadilhon and Tam (2004), on these unofficial markets sellers will come together everyday on a particular street in a certain neighbourhood to sell vegetables to consumers who live nearby. The past two years both in Hanoi and HCMC the city authorities are becoming stricter and closing unofficial street markets in order to diminish traffic jams and possible unhygienic conditions (Nguoi Lao

Dong, 2004; Cadilhon and Tam, 2004).

An extensive study of the vegetable traditional retail sector in Hanoi was carried out by van Wijk *et al.* (2006). Based on surveys they estimated that in Hanoi alone about 12,000 traditional retailers are involved in selling vegetables in Hanoi's 130 official markets and 600 unofficial street markets and as hawkers. On average fixed vegetable retailers sold 22 tons of vegetables per year, while hawkers sold about 9 tons of vegetables per year.

Retailers sell vegetables to an average of 64 clients per day, with fixed retailers selling to more customers. Of the 64 clients, 60% are regular customers, with hawkers having a lower number of regular clients. The retailers have about eight different suppliers of vegetables. About 7% of all retailers had some kind of agreement with their suppliers, especially for the higher value vegetables. These agreements were all verbal and meant that the retailer could place an order by telephone several days before she needed the products. These agreements were only made by fixed retailers operating on markets in both zones (van Wijk *et al.* 2006).

Fixed retailers in the urban zone source most of their vegetables from wholesalers (78%), while the hawkers buy mostly from farmers (53%) and from wholesalers (39%). In the peri-urban zone, fixed retailers obtained most of the vegetables directly from farmers (80%), which was also the case for hawkers (66%), for whom their own vegetables (24%) were also an important source.

4.6 Modern retailers

First supermarket in 1993

Since the first supermarket opened in 1993, the development of the supermarket sector accelerated after the entry of three foreign owned chains; Seiyu¹¹ from Japan, Big C of the French Espace Bourbon Group and Metro from the Netherlands¹². These foreign chains bring in large amounts of capital, for example METRO has built 8 cash & carry stores, invested US\$ 150 million and employs more than 2500 people in Vietnam. By 2010, it plans to have sixteen stores across Vietnam. The French Bourbon group has opened four hypermarkets in Vietnam, employs 1500 people and plans to open 8 more stores by 2008.

In addition to the foreign owned retailers there are also numerous domestic supermarket chains such as Saigon Coop Mart, Citimart, Fivimart, Marko, Maximark, Hanoi Star mart, Thanh Long mart and Intimex.

¹¹ Wal-mart has a 38 percent of the shares in Seiyu (Reuters, 2004)

¹² Despite the fact that METRO Vietnam is considered by most people to be a german owned company, officially METRO Vietnam is a 100% owned daughter company of MAKRO Netherlands. But off course MAKRO Netherlands on its turn is owned by the German METRO Group. All other MAKRO's outside the Netherlands are still owned by the SHV group and not by METRO.

Table 11 Trends in supermarket numbers in HCMC and Hanoi (cumulative)

	1990	1993	2000	2001	2002	2004	2005
Hanoi	0	3	25	32		55	
HCMC	0	0	24	38	46		71

Source: Moustier *et al.*, 2006

140 supermarket stores in Vietnam

Currently there are over 140 supermarket stores in Vietnam, which is a rather small number compared with other countries in the region such as Thailand and China. Developments in these countries went much faster as the foreign investment in retailing was allowed. In Vietnam this is decided on a case by case basis.

But since Vietnam joined the WTO in December 2006, it has announced that from 2009 the domestic market will be liberalised completely for foreign direct investment in retail. This means that from 2009 foreign supermarket chains can start to enter the Vietnamese market.

Table 12 Current major supermarket chains in Vietnam

Chain	Format	Started in	Number of stores 2007	Planned no. of stores in 2010	Ownership
Co.Op mart	Supermarket	1996	25	100	State owned Saigon Trading Cooperation (SATRA), VN
Intimex	Supermarket	?	4	20	State owned, VN
Fivimart	Supermarket	2001	8	?	?
Citimart	Supermarket	1994	6	?	Sold in May 2006 to Dairy Farm (Hong Kong) Private VN
24 Seven	Convenience store.	2005	2	200	Private VN
HAPRO mart	Convenience store.	2006	10	30	State owned VN
METRO	Warehouse	2002	8	16	Metro
C&C	club				Netherlands
Big C	Hyper market	1998	4	10	Bourbon group

But despite the restrictions in FDI in the retail sector the number of supermarkets increased 17% per year in HCMC (1993-2005) and 14% per year in Hanoi (2000-2004).

Dairy Farm and Lotte group will start supermarkets in 2006

In 2006, two more foreign owned chains will open supermarkets in Vietnam, the Lotte group from South Korea and Dairy Farm from Hong Kong (VIR, 2006). The Lotte group already has a fast-food chain in HCMC (named Lotteria) and now wants to expand in Vietnam with its Lotte Mart supermarket brand.

Hong Kong based Dairy Farm has more than 2400 stores across Asia

Walmart and Tesco trying to get license

and manages the following brands:

- 7-eleven in Hong Kong, Southern China and Singapore
- IKEA in Hong Kong and Taiwan
- Cold Storage supermarkets in Singapore
- Giant in Malaysia
- Hero in Indonesia
- Foodworld in India

Dairy Farm has received approval by the Vietnamese government to take over the small Citimart chain.

According to the local press and various key-informants also Tesco and Wall Mart have started negotiations with the Vietnamese government to obtain a license to operate supermarkets in Vietnam (VIR, 2006; VET, 2006).

4.7 Food catering sector

Already in 1997, 20% of urban food consumption outside the house

Figuié and Bricas (2003) state that already in 1997 20% of urban food consumption was outside the house with a total value of US\$ 600 million. In 2004 the HCMC City Nutrition Institute estimated that at least 30-35 percent of food consumption occurred in restaurants. This figure is expected to rise to 45-50 percent by 2010. Cadilhon *et al.* (2006) estimated that for HCM City thirty percent of the total tomato consumption was consumed through the food catering sector.

Survey among 59 restaurants in Hanoi

Despite the importance of the fast growing food catering sector in Vietnam, so far little attention has been given to it. We only know of one study carried out to assess the current sourcing practices and needs of the food catering sector. This study, carried out by Quang *et al.* (2006), undertook a survey among 59 restaurants in Hanoi. This survey does not include the food caterers who serve institutions such as schools, universities, hospitals and the fast growing number of factories and companies.

As it was impossible to get a restaurant register from the city administration a sampling method was designed which could be used for estimating the total population of restaurants. A stratified random sampling method was applied to select the restaurants for an interview. At the first stage, 30 streets were randomly selected out of 347 streets in Hanoi. Hereafter all restaurants present in these 30 selected streets were counted. In total 266 restaurants were counted and classified into 7 categories. Out of these different categories, 59 restaurants/café's were selected for a structured interview.

For some unfortunate reason the survey team dismissed to interview the very small restaurants (no. 5 in *Table 1.3*). Off course the volume per restaurant would have been small, but their total number of an estimated 532 restaurants in Hanoi is significant.

Morning glory most consumed vegetable by restaurants in Hanoi

The results of this study show that on average, a restaurant in Hanoi consumes 6,471 kg of vegetables per year. Morning glory is consumed by the largest quantity, 1,256 kg per year, followed by mustard greens: 837 kg/year; sweet potato buds: 723 kg/year; and choysum: 543

kg/year. The consumed quantities of these four vegetables are respectively accounted for 19%, 13%, 11% and 8% of total vegetables bought by a restaurant in Hanoi.

Table 13 Number of restaurants in 30 random selected streets of Hanoi and the estimate of total of each category in Hanoi

No	Category	Total number counted	Number Surveyed	Total estimated number of restaurants in Hanoi (census * (347/30))
1	High-end restaurant	6	3	69
2	Mid-range restaurant	20	6	231
3	People restaurant (Com binh dan + Com pho)	48	24	555
4	Draught beer restaurants (Bia hoi + Lau)	44	12	509
5	Small restaurants (Bun, mien, pho)	46	-	532
6	Juice café (Sinh to café)	47	14	544
7	Café	55	-	636
Total		266	59	3077

Source: Quang *et al.* (2006)

A complete list of all vegetables consumed by the sampled restaurants is presented in Annex 2.

Table 14 Average consumption per restaurant type of the top 10 vegetables for 2004

Products	Categories of restaurants				Mean (kg/year)
	1	2	3	4	
Morning Glory	1,120	867	1,931	2,055	1,256
Mustard greens	336	1,876	763	1,407	837
Sweet-potato buds	0	3,360	117	1,057	723
Choy sum	560	1,619	599	569	543
Headed cabbage	280	612	734	140	335
Potato	1,200	1,128	354	247	349
Pumpkin buds	0	50	315	749	297
Kohlrabi	0	168	551	146	220
Bean sprouts	112	112	321	294	189
Tomato	1,680	80	57	341	178
					6,471

Source: Quang *et al.* (2006)

Based on the average consumption per restaurant category, per vegetable type and the total estimated number of restaurants for urban Hanoi the total annual consumption was estimated:

- Kohlrabi: 419 ton
- Tomato: 340 ton
- Cucumber: 320 ton
- Celery: 266 ton
- Cauliflower: 168 ton
- Carrot: 101 ton
- Lettuce: 50 ton
- Broccoli: 57 ton

Tomato consumption Hanoi restaurants estimated at 340 ton/year

- Leek: 30 ton
- Bell pepper: 32 ton
- Eggplant: 21 ton

The total estimated volume of vegetables consumed by our total estimated number of restaurants is 12,351 tons. If one estimate that on average 300 gram of vegetables per meal, this means about 41 million meals per year, or about 112,794 served meals per day. For a city of 3 million people this would seem on the low side. This low estimate is probably caused by the fact that the small side-street restaurants were not incorporated in the survey.

Another reason for the low total figure is that the study only covered one segment of the food catering sector (restaurants). Many people consume their meals in the canteens of institutions, factories and companies which were not incorporated in the study.

4.8 Final consumers

*Hanoi Province
tomato
consumption 10,317
ton/year*

To get some detailed insight in which vegetables are consumed by Vietnamese data collected by AVRDC for Hanoi were used (*Table 15*). The data in this table are in line with the results from the restaurant survey. Namely that morning glory is volume wise the most consumed vegetable in Hanoi.

*Women key
decision maker*

To be able to get more insight in the Vietnamese vegetable consumer it is important to know the perception of consumers. Which attributes in vegetables do they find important? And what is their perception of the different type of vegetable outlets? First of all it is very important to realise that in urban Vietnam shopping is mostly exclusively done by women (97% of all household shoppers) and they are also the key influencer (95% of all household shoppers). Compared with 17 other Asian countries, the Vietnamese shopper is the most female dominated (ACNielsen, 2004). Understanding preferences in vegetable buying behaviour requires understanding women.

Table 15 Consumption of vegetables in Hanoi in 2002 per day and per year

Total estimated consumption of vegetables in Hanoi: 280,996 ton per year

Vegetable	Mean vegetable consumption (in gram per day)	Consumption (in ton/year) ¹
Morning glory	78.7	81,252
Cabbages	36.6	44,793
Pak-choi	13.8	19,307
Kohlrabi	20.1	19,337
Mustard	11.8	16,206
Tomato	11	10,317
Alliums	7.3	8,599
Green bean	5.3	8,162
Smooth loofah	6.8	5,423
Mungbean	4	5,782
Ceylon spinach	4.7	6,966
Star gooseberry	6.9	5,075
Bamboo shoot	3.4	4,142
Wax gourd	4.2	4,384
Bottle gourd	3.7	3,837
Garland chrysanthemum	3.1	3,849
Pumpkin buds	3	3,235
Other vegetables	28	30,300
Total		280,966

Source: Anh et al., 2004 and GSO, 2003.

¹Calculated by multiplying consumption per day with Hanoi 2002 population data, as reported in GSO, 2003.

Proximity to house main criteria for selecting vegetable retail outlet

For Hanoi little information is available about preferences by consumers with regard to vegetable retail outlets, but for HCMC Candilhon and Tam (2004) undertook a very interesting study about this subject. Based on a survey of 100 women in one of the central city districts of HCMC, they found that 45% of the interviewed women bought their fresh vegetables from an official retail market, 37% from an unofficial retail market, 4% from hawkers and only 7% bought their vegetables in a supermarket.

This last figure is another confirmation about the small share of supermarkets in vegetable retailing. Although 7% seems higher than earlier mentioned figure for HCMC, this sample was taken in an area where supermarkets are very much present, which is certainly not representative for HCMC.

The most important factor for 79% of the respondents to select a certain outlet for buying vegetables was proximity to their house. Freshness of vegetables and cheap price was mentioned by respectively 39 and 35% of the respondents. Only 9% of the respondents mentioned safety of the vegetables as an important factor (ibid.).

In an additional survey focussing on the same topic Cadilhon and Tam (2004) interviewed 138 respondents at eleven different locations, covering five different types of outlets. The percentage of respondents buying vegetables in the modern retail outlets in this second survey was

40%, so the results do not represent the average buying behaviour of consumers for vegetables in HCMC.

Supermarket consumers believe vegetables they buy are safe

For 90% of the respondents in the supermarkets and 77% of the respondents in the Cash & Carry store, the main reason to buy vegetables in these modern outlets was because they believed that the vegetables were safe to eat. Other important reasons were the freshness of the vegetables and because many types of vegetables are available. One difference between the respondents in the supermarket and the Cash & Carry store, was that 49% of the respondents in the last group mentioned cheap prices as an important driving force, while only one of the supermarket respondents mentioned this (Cadilhon and Tam, 2004).

For the respondents in the traditional outlets the most important reason was that the shop was close to their house, followed by lower prices and that the vegetables are fresh. Besides these reasons, clients of hawkers also mentioned that friendliness of the hawker was an important reason (ibid.).

Hanoi consumers perceive vegetables as the most unsafe foodstuff

Research by Figuié (2003) in Hanoi confirms that consumers are aware about the issue of food safety risks with regards to vegetables. Asked which three foodstuffs are the most dangerous to consumer health, 89% of the 200 respondents mentioned vegetables as the most dangerous, followed by meat (70%), fruits (46%) and fish (37%). Of all the vegetables, water spinach was mentioned to be perceived as the most dangerous species (47%). But this does not seem to influence consumption as water spinach was the vegetable which was consumed in the largest quantity in 2002 in Hanoi (see *Table 15*). The respondents thought that the best place to buy safe vegetables are supermarkets, however, most consumers still buy their vegetables in traditional retail markets.

Morning glory considered to be most unsafe

These two findings seems to indicate that also in Hanoi the average consumer has others priorities than food safety for making their decision about where to buy their vegetables. According to Figuié (2003) the main reason for food safety not being the highest priority, is the believe, by almost half of the respondents, that they can mitigate the possible negative effects of unsafe vegetables. In addition 89% of the respondents estimated that the consumption of the food which they prepared does not or hardly presents a health risk.

4.9 Traditional vs. Modern

Share of modern retail in total urban vegetable market <2%

Currently the impact of the modern retail sector on vegetable farming in Vietnam is quite limited, because the shares of vegetables sold through the traditional retail sector is much larger. According to research by Loc (2002) in the autumn of 2002, only 22 shops and 13 supermarkets in Hanoi sold fresh vegetables, while in HCMC there were only 2 shops and 19 supermarkets selling fresh vegetables.

The average amount sold per day in supermarkets in HCMC was 1 ton per day and only 180 kg per day per supermarket in Hanoi. Loc estimated that the share of vegetables sold through the modern retail

sector in HCMC was just above 1% and 2% for Hanoi. Cadilhon et al. (2003) estimated that less than 7% of all fresh foods in HCMC are sold through the modern sector.

Despite the growth in vegetables sales in the modern retail sector and the growth in the number of supermarkets since 2002/2003, it is our opinion that the share of modern retail in the total vegetable retail is still very small, lower than 5%. The reason for this is that because of the rapid urbanisation and rising income the overall demand for vegetables has also grown considerable. Although the modern retail share might have caught up slightly, their share is still dwarfed by the traditional retail sector.

Expect convenience store format expected to become successful in Vietnam

For the future probably the most decisive factor in gaining a market share in vegetable retailing seems to depend on who can best serve the consumers need for convenience. Currently consumers clearly prefer to buy their vegetables on a location close to their house, which saves time and costs. As supermarkets do not yet have the same dense cover as traditional retail markets, the last market type seems to have an advantage. This advantage might diminish because of the trend of increasing ownership of refrigerators which favours the supermarkets, as it allows consumers to do all their shopping in one or two times per week, making it worth while for consumer to travel to the less convenient located supermarkets. Luckily for the traditional retailers the increasing economic development is also causing more and more traffic jams, which will favour the traditional retail system.

But the modern sector is innovative and has developed the format of the convenience store, which has become the fastest growing store format in Asia (ACNielsen, 2004). Convenience stores are small stores selling mainly groceries and open until late at night or even 24 hours per day (Retail Asia, 2005). Because of their small format it is much easier for chains to obtain locations in the dense populated urban areas. The most successful convenience store in Asia is the 7-Eleven franchise, which is not yet present in Vietnam. Although fresh food sales through these convenience shops are rather limited, for example only 10% of total sales of in total 2,397 7-Elevens in Thailand (Wiboonponse and Sriboonchitta, 2004), they might become an additional competitor with traditional retailers.

The second important factor is the development of prices of vegetables in different outlets. A recent study of prices in different retail outlets in Hanoi, undertaken by a consortium of Vietnamese and French research institutes, concludes that prices in supermarkets for several fresh vegetables are higher than in the traditional retail outlets (MALICA, 2005). In November 2004, prices for water spinach and tomatoes were respectively 160% and 43% higher than on the wet markets. A comparison of prices for tomatoes on the traditional wholesale market and its competitor in the modern sector, the Cash & Carry outlet, revealed that prices in the Cash & Carry were 44% higher in August 2004 and 16% in November 2004. But in HCMC these differences appear to be much smaller than for Hanoi (ibid.).

The last factor is the growth in the share of vegetable consumers for

whom food safety becomes the key-decision factor. Although Vietnamese consumers find food safety important, for the majority of them it is not yet more important than convenience and a low price. For the consumers who have food safety as the major decision factor, supermarkets have the best image both in HCMC and Hanoi on this attribute. Currently this image does not yet seem to be based on facts; supermarkets should change this situation quickly before consumer confidence is hurt. It is expected that they will apply the same strategies as supermarkets in other countries, moving away from sourcing of vegetables on spot markets towards preferred suppliers who can meet private safety and quality standards.

5 Tomato case study

To develop successful marketing strategies for vegetables from Moc Chau, an analysis needs to be made per vegetable. In this chapter we do a case study about tomato, because this is one of the most important vegetables and the largest amount of data are available for this vegetable.

5.1 Tomato sector

The main tomato production areas are in the Red River Delta, Lam Dong Province (Dalat) in the Central Highlands and the Mekong River Delta. In 2003 the total harvested area was over 21,000 hectares, with an average yield of just over 15 tons per hectare. Yields between the different zones ranged from just below 7 ton/ha in the South Central Coast zone to 20.5 in the Central Highlands.

Table 16 Harvested tomato area, production and yield per region in Vietnam for the period 2001-2003

Rapid growth of tomato production area; 10,000 hectare increase in 3 years

Location	Area (ha)			Production (ton)			Yield (ton/ha)		
	2001	2002	2003	2001	2002	2003	2001	2002	2003
Red River Delta	5,676	6,719	7,773	101,852	123,483	137,687	18.0	18.4	17.7
North Eastern	1,267	1,672	1,862	20,709	23,734	261.36	16.3	14.2	14.0
North Western	86	118	184	588	790	1,314	6.8	6.7	7.1
North Central Coast	655	756	752	5,975	6,587	6,742	9.1	8.7	9.0
South Central Coast	850	910	1,014	4,463	5,242	6,792	5.3	5.8	6.7
Central highlands	1,124	3,811	5,303	25,242	87,035	108,531	22.5	22.8	20.5
South Eastern Coast	359	870	1,432	4,821	8,741	13,119	13.4	10.0	9.2
Mekong River Delta	1,475	4,012	3,308	16,105	56,566	54,525	10.9	14.1	16.5
Vietnam	11,492	18,868	21,628	179,755	312,178	328,971	15.6	16.5	15.2

Source: Hoang Bang An, 2005

Total production in 2003 was estimated to be about 330 thousand tons, which is considerably lower than our estimated total tomato consumption in Vietnam of about 490 thousand tons (see *Table 9*). This would require considerable imports, which is also the case. In the hot summer season large quantities of tomatoes are imported from China to supply the large cities in Northern Vietnam (Hanoi, Haiphong and Ha Long).

Table 17 Imports to Vietnam of Tomatoes, fresh or chilled (SITC code 0544)

	1994	1995	1996	1997	1998	1999	2000	2003
<i>Sudden increase in tomato imports from China in 2003</i>								
Volume (Tons)	152	301	157	138	177	524	100	5,649
Value (in 1000 US\$)	11	72	74	53	31	148	11	410
Price (in US\$/ton)	70	240	470	380	180	280	110	70

Source: Compiled with TSA express® from PC-TAS 2004

Analysing official trade statistics in the PC-TAS database, revealed that Vietnam has been importing tomatoes from China since 1994 with the exception of 2001 and 2002¹³. Imports varied between 138 tons to 524 tons between 1994 and 1999. Then in 2000, imports decreased to 100 tons then to zero for two years, before importing over 5000 tons in 2003. The price for tomatoes imported from China was 70 US\$ per ton in 2003 and in 1994, but in the meantime the price varied greatly and increased to 470 US\$ per ton.

With regards to exports, the only country in the PC-TAS dataset which imported tomatoes from Vietnam was Singapore. Vietnam has been exporting tomatoes to Singapore since 1999. Exports began at 24 tons and dropped to 10 tons in 2001. But exports more than doubled from 2002 to 2003 from 50 to 137 tons. The price per ton has increased from 380 US\$ in 1999 to 480 US\$ in 2003, almost US\$ 0.5 per kg.

Table 18 Exports from Vietnam of Tomatoes, fresh or chilled (SITC code 0544)

702 – Singapore	1999	2000	2001	2002	2003
<i>Strong growth in tomato exports to Singapore in 2003</i>					
Volume (Tons)	24	31	10	50	137
Value (in 1000 US\$)	9	10	3	22	66
Price (in US\$/ton)	380	320	300	440	480

Source: Compiled with TSA express® from PC-TAS 2004

In the Red River Delta in the North, tomato is grown in the winter and early spring season, with seeds sown in September, transplanted in October and harvested from December to March. In Lam Dong Province tomatoes can be cultivated year round, because of the optimal and constant climate, but during the raining season (May-September) it is more difficult then during the dry season.

With regards to tomato processing the Vietnamese government played an active role through the investment in processing plants in the year 2000. The target of the government is to produce 240,000 tons of tomato for export by 2010 of which 33,000 tons are concentrated tomato. The tomato processing factory was built in Hai Phong, which requires a harvested area of about 1,200 – 1,500 ha in the Red River Delta (Nguyen Thanh Minh, 2003).

¹³ Reason not know. Either no trade or not captured in the trade statistics

5.2 Tomato market chains

As presented in *Table 15* the total estimated consumed amount of tomatoes in 2002 in Hanoi was about 10,317 ton. Through the research work by the SUSPER, we can get a very good insight in the tomato marketing system. During one full year (2002/2003) they monitored the main wholesale and retail markets in Hanoi (An et al, 2003). They estimated that the average amount of tomatoes sold on these markets was about 26 tons per day. This would mean an annual figure of about 9,490 tons in 2002, which is close to our tomato consumption estimate.

As can be seen in *Table 19*, the origin of the tomatoes depends on the season. During the winter season, most tomatoes to Hanoi are supplied by areas all less than 50 kilometres from Hanoi. But in the summer period from May until August the main supply areas are Dalat (Lam Dong province) and China. What is very interesting is that in June and August also a new higher altitude area in the North, Moc Chau in Son La province, is able to supply the Hanoi market.

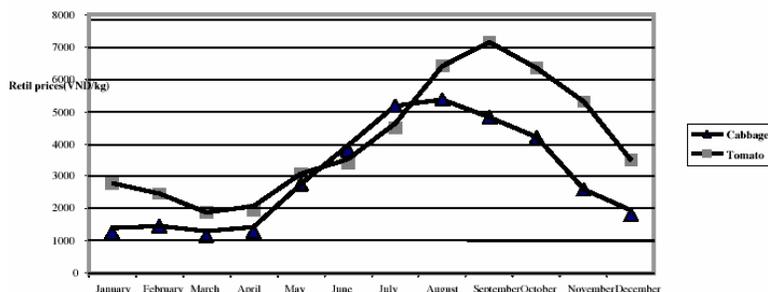
Table 19 Origin of tomatoes sold on surveyed markets

<i>Location</i>	<i>January</i>		<i>March</i>		<i>June</i>		<i>August</i>		<i>November</i>	
	<i>Mean (t/d)</i>	<i>%</i>								
<i>Bac Ninh < 50 km</i>	0		1.3	10%	0.0		0.0		3.8	24%
<i>Ha Noi < 50 km</i>	6.0	31%	1.5	11%	0.0		0.0		1.6	10%
<i>Ha Tay < 50 km</i>	6.8	35%	4.8	36%	0.7	2%	0.0		4.4	28%
<i>Hung Yen < 50 km</i>	2.5	13%	1.5	11%	0.0		0.0		1.9	12%
<i>Vinh Phuc < 50 km</i>	4.3	22%	4.3	32%	3.2	9%	0.0		1.3	8%
<i>Bac Giang < 50 km</i>	0		0.0		0.0		0.0		0.3	2%
<i>Son La 250 km</i>	0		0.0		0.0		2.7	6%	2.0	13%
<i>Lam Dong; 1400 km</i>	0		0.0		13.7	39%	6.3	14%	0.0	
<i>China > 300 km</i>	0		0.0		17.6	50%	35.9	80%	0.5	3%
Total	19.4	100%	13.3	100%	35.1	100%	44.9	100%	15.7	100%

Source: An et al., 2003.

The lack in supply of tomatoes during the May – September period is clearly reflected in the monthly average prices (*Figure 9*). The mean monthly prices, based on data for the period 1996-2002, are twice as high compared with the winter season.

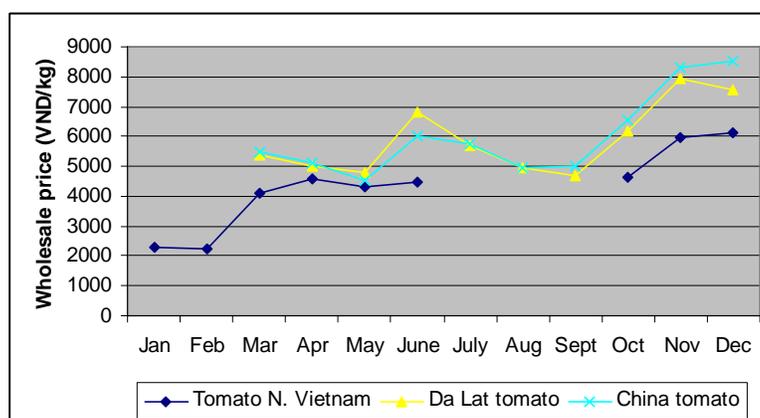
Figure 9 Mean monthly Hanoi wholesale market prices for tomato and cabbage for the period 1996-2002



Source: Susper project, 2003

More recent data, for 2005, show a different pattern of prices for tomato even increasing in the winter season. Probably the main reason for the high tomato prices in the winter season of 2005, were the enormous problems which farmers had with viruses.

Figure 10 Mean monthly wholesale price for tomatoes in Hanoi in 2005



Source: compiled by author from SUSPER data, 2005 and 2006.

5.3 Tomato farming systems

Based on data collected in the earlier mentioned study by AVRDC (see section 3.2) and IFPRI (see section 3.4.1) we try to get some more insight into tomato based farming systems.

In the IFPRI study 150 tomato producers in Hai Duong, Bac Ninh (both in the North) and Lam Dong provinces were interviewed. They grew several varieties of tomatoes: French (33.5%), American (31%), Taiwanese (18.6%), and Polish (14%). Farmers could not tell the names of the varieties, they only knew from which country the varieties came. Tomato farmers irrigated their crops by canal (33% of respondents), manually (37%), and mechanically (30%).

Table 20 Tomato production input-output data

Indicator	North	South
Labour input (days/ha)	715	390
Seed input (kg/ha)	0.7	0.3
Plant no. (no/ha)	37,795	18,750
N (kg/ha)	248	159
P (kg/ha)	102	73
K (kg/ha)	126	65
CaCo ₃ (kg/ha)	-	33
Manure (kg/ha)	11,040	3,033
Pesticide (no of sprays)	4.1	8
Pesticide (lit/ha)	11	6.2
Herbicide (no of sprays)	-	0.3
Herbicide (lit/ha)	-	0.3
Mean yield (kg/ha)	30,150	18,540
Total cost ^a (US\$/ha)	993	1,171
Gross return (US\$/ha)	2,557	1,771
Net return (US\$/ha)	1,557	600
B-C ratio (%)	161	60
Cost price (US\$/kg)	0.05	0.07
Market price at moment of survey (US\$/kg)	0.31	0.19

^a Includes labour cost, which was 52% of all cost in the South and 70% of all costs in the North
Source: Compiled from Thuy et al., 2002; Hau et al., 2002

The large difference in labour input between the North and the South is caused by the irrigation system. In the North farmers have to bring the water from the irrigation canals themselves on their land, which costs a lot of extra labour. Farmers in the North also seem to use a much more intensive tomato production system. This is probably caused by the fact that vegetable farmers in the North have less land (on average 0.27 ha) than farmers in the South (on average 0.5 ha).

As family labour costs were included by AVRDC in the total cost, labour costs were by far the highest cost item, 70% of all costs in the North and 52% for the South. Seed cost were only 4% for tomato farmers in the North, with investments on fertilizers (16%) being the second most expensive cost and pesticides 6%. For Southern tomato farmers seed cost made up 7% of the total cost, followed by fertilizers (11%), irrigation expenses (10%) and net houses (7%).

5.4 Consumer preferences

A very interesting study on the preferences of Hanoi consumers (sample of 500 consumers) with regards to tomatoes has been carried by Figuié (2004). Consumers currently distinguish the following tomato types:

- “Van Noi” tomato
- Dalat tomato
- Supermarket and safe vegetable shop tomato
- Chinese tomato

With the Van Noi tomato, consumers refer to a famous vegetable production area in peri-urban Hanoi. The Dalat tomatoes, are all the tomatoes coming from Lamdong province. The origin of supermarket tomatoes is often not know, but consumers see them as one specific

category. Chinese tomatoes are all the imported tomatoes.

Hanoi consumers perceive the “Van Noi”, Dalat and Supermarket tomato as a quality tomato, while Chinese tomatoes are classified as non quality.

Table 21 Description of a quality tomato

Themes discussed	Frequency of associations	Content
Associated categories	20	Origin: Vietnam (6), not Chinese (6), Da Lat (1), Van Noi (1), Point of sale: safe vegetable shop (5), supermarket (1)
Pulp texture	36	Floury (17), firm/not crushed (15), a bit soft/not too hard (3), not much water (1)
Ripeness	33	Ripe (10) but not too ripe (2), naturally ripe (9), homogeneous (12)
Stem	25	Present (6), green (11), slender (7), not too green (1)
Shape	24	Big (6) but not too big (5), round (5), slightly elongated (4), a little flat (3), small (1)
Freshness	23	Fresh tomatoes (12) and fresh stems (11)
Colour of skin	25	Pink (9), red (8), homogeneous colour (4), no spots (4)
Seeds	15	Little (13), no seeds (1), non-green seeds (1)
Skin	11	Smooth (15), not too smooth (1), thin (3), thick (2)
Colour of pulp	6	Pink (4), red (2)
Sanitary quality	18	Naturally ripe (9), sold in safe vegetable shops (5), safe (3), unsprayed (1)
Other	5	Expensive (1), not very attractive (3), tastes good after being cooked (1).

Source: Figuié, 2004

A quality tomato can be summarised as one which is floury, firm with few seeds. It must be ripe and of homogeneous colour. It must above all have ripened naturally. ‘Chinese tomatoes’ are seen as unnatural products, which were ripened with chemicals.

Freshness is an important element. A green stem is, according to the subjects, a sure sign of freshness and also indicates natural maturation. If red colouring is appreciated, it is also suspect because it can indicate artificial maturation. This is important information for METRO, Saigon Co.Op and Big C. In these supermarkets the stems are removed because they are believed to damage the skin of the other tomatoes. This is mostly caused by the bad packaging method.

Another important piece of information is that consumers think that a tomato which is too big, points to the use of growth stimulating chemicals. For these two reasons, consumers think it is best to choose a pink and smallish tomato.

Thus, the size and colour of a tomato are two attributes which create tension between the search for sanitary quality and visual quality. The skin must be thin, although a minority prefer a thick skin. The difference may lie in the use of the tomato, be it for a salad or a sauce.

Interesting enough consumers hardly mention the taste. It was only

mentioned by one subject who mentioned 'taste after cooking'. It should also be noted that a starchy or floury texture is highly appreciated by Vietnamese consumers even though it is considered a defect in Europe.

Next to these attributes, which can be called intrinsic since they concern the product itself, are extrinsic attributes such as origin (Vietnamese vs. Chinese), point of sale (safe vegetable shops) and price (expensive).

The sanitary quality has already been widely mentioned in such terms as 'ripened naturally' (9), 'sold in safe vegetable shops' (5), 'clean, safe' (3), 'without spraying' (1). This confirms other studies that health quality is an important component of product quality and is measured in terms of chemical product use.

When we project in Moc Chau wants to introduce beautiful red tomatoes, which are larger than the current tomatoes in Vietnam, the project should take care to make clear that they are:

- Produced in Vietnam
- Are naturally produced
- Their beautiful colour, size and shape are a characteristic of the variety and not by using chemicals

6 Conclusions

6.1 Consumers

Starting from the Vietnamese domestic consumer market, the following conclusions can be drawn:

- Vietnam has the 13th largest population in the world
- Vietnam has a young population of more than 50% being younger than 30 and they love to shop
- The disposable income in Vietnam is increasing rapidly especially in the four largest cities. These four cities have a population of almost the same size as the Netherlands
- Vietnamese urban consumers already have the same monthly expenditures on food, groceries and personal care items as urban Thai and Chinese consumers
- Vietnamese consumers have one of the highest per capita vegetable consumption rates in the world, resulting in an estimated vegetable consumption of 4.4 million tons per year
- Within Southeast Asia, the Vietnamese urban consumer has the highest relative expenditure on fresh foods
- Due to avian flue and other food-health related problems Vietnamese consumers have become more quality conscience. This has especially driven fresh sales increases in the supermarkets as well in the modern wholesale chain of METRO Cash & Carry.
- Vietnamese consumers are willing to pay for higher quality but only when they clearly see and understand what the higher quality value attributes are
- Vietnamese consumers are very receptive to brands
- Vietnamese consumers want very fresh vegetables which they can buy close to their house, as they prefer to buy vegetables on a daily basis

Therefore, we conclude that if vegetables are sold fresh, at the right locations (close to people's home), carefully positioned as a quality product with a guaranteed high level of food safety, a large market share can be gained. Probably the best way to do this would be to link up with a convenience store format, which will be present in small shops on every corner. Off course this will require quite some logistics, but we believe that it will open up a very large market for high quality vegetables.

With regard to tomatoes, we will have to take care to introduce improved tomato varieties in the right way. There might be a chance that consumers perceive new variety tomatoes to be unnatural and produced in China. Currently Hanoi consumers perceive a quality tomato as one which is floury, firm with few seeds. It must be ripe and of homogeneous colour. It must above all have ripened naturally. 'Chinese tomatoes' are seen as unnatural products, which were ripened with chemicals.

6.2 Food catering sector

Little official data are available to get insight into the growth of the food catering sector of Vietnam. But already in 1997-8, food consumption outside the home represented 20% of urban food expenditure and 30% of the calorific intake of the Vietnamese urban population. At that time the catering sector of Vietnam already represented a market valued at US\$700 million in 1997, 67% of which was concentrated in cities (Moustier *et al.*, 2003). An indication of the growth is that in 2004, the HCM City Nutrition Centre estimated that at least 30-35% of food consumption occurred in restaurants and at take-away counters (Cadilhon *et al.*, 2006). For Hanoi we estimated that the annual demand for vegetables by restaurants is 12,351 tons.

So far foreign direct investment in the food catering sector is limited to KFC and Lotte. But one reliable source told us that MC Donald's is making preparations to enter the Vietnamese market. This is expected to happen in 2009.

As food safety is increasingly becoming a more important issue for the food catering sector, food caterers are sourcing their products more and more from modern wholesalers such as METRO.

6.3 Supermarkets

According to research in 2002 the share of vegetables sold through the modern retail sector in HCMC was just above 1% and 2% for Hanoi. Another study by Cadilhon *et al.* (2003) estimated that less than 7% of all fresh foods in HCMC are sold through the modern sector.

Since 2002/2003, a lot has changed, but despite the growth in vegetables sales in the modern retail sector and the growth in the number of supermarkets, it is our opinion that the share of modern retail in the total vegetable retail is still very small, lower than 5%. The reason for this is that because of the rapid urbanisation and rising income the overall demand for vegetables has also grown considerably. Although the modern retail share might have caught up slightly, their share is still dwarfed by the traditional retail sector.

Looking at experiences from neighbouring countries, the rapid rise of the supermarket sector will only take place when there are unrestricted opportunities for foreign direct investment. So far government policies have been restricting FDI into the retail sector, therefore, the number of supermarket stores is still relatively quite low. But this will change from 2009 when the domestic retail market will be opened for foreign retail. The potential of Vietnam for foreign retailers is huge. This was clearly indicated by the Global Retail Development Index (GRDI) of ATKearny of 2006, which ranked Vietnam as the 3rd most interesting country to invest in.

All existing supermarket chains reported that their fresh vegetable sales grew rapidly. Coop mart for example, reported a 40% growth in vegetable sales from 2005 to 2005. Coop mart stated that one of the

most important driving forces behind this growth was the increased awareness among consumers about food safety. As consumers associate supermarkets with high food safety levels, each national food scandal (bird flue, foot and mouth disease etc.) increases the sales in supermarkets.

Modern wholesalers

Currently METRO is the only modern wholesaler in Vietnam. METRO Vietnam is operating so well that they are currently negotiating with the Vietnamese government to extend their licence to 12 stores by 2010. Since 2003, the vegetable sales in METRO have increased with 230 percent.

6.4 Vegetable prices

It is difficult to get access to reliable vegetable price datasets. Based on out of date vegetable price data analysis, the vegetable prices in general were quite good but very volatile. Wholesale market prices for the current low quality tomatoes fluctuate during the year in Hanoi between VND 2,000 per kg to VND 8,000 per kg.

Despite several government and donor initiatives

6.5 Recommendations

Based on the desk review the following recommendations can be made for the marketing strategy development of Moc Chau vegetables:

- ▶ If Moc Chau vegetables want to gain a considerable market share in the Hanoi vegetable market, the main distribution channel should be through the traditional retail market system
- ▶ How the Moc Chau vegetables can position itself as being different from the other vegetables when it is distributed through the traditional retail markets, will be the most important challenge. A system needs to be developed with preferred and dedicated "Moc Chau" vegetable retailers. This will require quite some study and preparations as it will not be easy to control traditional retailers.
- ▶ As many government, donor and private sector attempts in producing and selling safe vegetables have failed, consumers have lost a lot of confidence. This can only be regained by having a watertight production and quality assurance system. So only when we are 100% sure that the Moc Chau vegetables meet all food safety requirements, a brand can be developed and launched.
- ▶ The lack of reliable market price information can be solved by setting up one's own price data collection system. Such a Market Information System (MIS) strengthen the decision making in the far from the market located Moc Chau vegetable farmers
- ▶ No information is available about the vegetable market situation in Haiphong City. Numerous studies have been carried out in Hanoi, while the 70 km further away 1.5 million populated booming city has been mostly ignored by researchers. It would be very useful to undertake a short market quick scan of Haiphong, as this can also be an interesting market destination for Moc Chau vegetables.

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Annex I Consumption data restaurants Hanoi

Table 22 Average consumption of vegetables by different restaurant categories in Hanoi

Products (in kg/year)	Mean of each sampled category ¹⁴ of restaurants				Total estimate Hanoi (in ton/year)
	1 (n=6)	2 (n=20)	3 (n=48)	4 (n=44)	
Estimated no of restaurants Of each type in Hanoi	70	231	555	509	1897 ¹⁵
Morning Glory	1,120	867	1,931	2,055	2,396
Mustard greens	336	1,876	763	1,407	1,597
Sweet-potato buds	0	3,360	117	1,057	1,380
Choi sum	560	1,619	599	569	1,036
Headed cabbage	280	612	734	140	640
Potato	1,200	1,128	354	247	666
Pumpkin buds	0	50	315	749	568
Kohlrabi	0	168	551	146	419
Bean sprout	112	112	321	294	362
Tomato	1,680	80	57	341	340
Cucumber	1,064	304	23	320	320
Celery	96	145	105	329	266
Bamboo shoots	0	0	34	560	304
French bean	0	0	220	0	122
Green pak choi	0	168	99	153	172
Heading Chinese cabbage	747	72	57	70	136
Cauliflower	96	560	26	35	168
Yard long bean	0	56	171	0	108
Onion	1,072	0	0	84	117
Tonkin flower	0	280	29	131	148
Squash	0	300	89	0	119
Pumpkin fruits	672	0	54	0	77
Carrot	336	203	0	61	101
White stem pak choi	0	0	35	140	91
Sauropus androgynus	0	0	105	0	58
Malabar spinach	0	0	48	98	77
Chrysanthemum greens	0	0	0	189	96
Lettuce	720	0	0	0	50
Bitter gourd	0	56	51	24	53
Other vegetables	0	112	0	67	60
Broccoli	0	168	0	35	57
Radish	0	0	27	63	47
Leek	384	16	0	0	30
Watercress	0	0	28	42	37
Chayote fruits	0	0	36	25	33
Green bell pepper	224	70	0	0	32
Chayote buds	0	0	0	77	39
Eggplant	0	16	31	0	21

¹⁴

1. High end restaurants 2. Mid-range restaurants 3. People restaurants (Com binh dan) 4. Draught beer and hot pot restaurants ("Bia hoi" and "Lau/ruou")

Annex 2 Vegetable consumption data

Table 23 Vegetable consumption data per zone and population data

	Hanoi/HCMC	Northern Provinces	Red river delta	North Central Coast	South Central Coast	Central Highlands	South East	Mekong River Delta	Vietnam
Population (x 1000)	8814	11770	17836	10505	6982	4674	13190	17076	82032
<i>Vegetables consumption (kg/capita/year)</i>									
Beans	2	1	2	1	2	1	2	1	1
Kangkong	39	8	12	10	24	19	24	10	17
Kolhrabi	6	5	8	4	1	2	0	0	4
Cabbage	11	6	10	5	3	8	7	4	7
Tomato	11	4	7	3	3	5	8	6	6
Other	37	3	6	7	20	6	35	26	17
All vegetables	106	27	45	30	53	41	76	47	54

Source: IFPRI, 2002

Table 24 Estimated vegetable consumption data (ton/year) per zone

	Hanoi/HCMC	Northern Provinces	Red river delta	North Central Coast	South Central Coast	Central Highlands	South East	Mekong River Delta	Vietnam
Beans	17,628	11,770	35,672	10,505	13,964	4,674	26,380	17,076	82,032
Kangkong	343,746	94,160	214,032	105,050	167,568	88,806	316,560	170,760	1,394,544
Kolhrabi	52,884	58,850	142,688	42,020	6,982	9,348	-	-	328,128
Cabbage	96,954	70,620	178,360	52,525	20,946	37,392	92,330	68,304	574,224
Tomato	96,954	47,080	124,852	31,515	20,946	23,370	105,520	102,456	492,192
Other	326,118	35,310	107,016	73,535	139,640	28,044	461,650	443,976	1,394,544
All	934,284	317,790	802,620	315,150	370,046	191,634	1,002,440	802,572	4,429,728

Source: IFPRI, 2002