SUSTAINABLE DEVELOPMENT OF PERI-URBAN AGRICULTURE IN SOUTH-EAST ASIA
Kingdom of Cambodia, Lao PDR, Vietnam RS

SUSPER

STRATEGIES OF STAKEHOLDERS IN VEGETABLE COMMODITY CHAIN SUPPLYING HANOI MARKET

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TABLE OF CONTENTS

LIST OF TABLES

LIST OF DIAGRAMS

SUMMARY

The objectives of this specific study are:

- To understand the situation of some vegetables areas supplying Hanoi
- To describe the flows supplying Hanoi vegetable market
- To understand the roles and relationships of the stakeholders of the commodity chains supplying Hanoi vegetable market
- To understand the advantages and constraints of each stakeholder

The study focuses on 4 product flows from 4 different supplying regions:

- The safe vegetable flow from Dong Anh – the main safe vegetable supplier of supermarkets, stores of state-owned and private companies, canteens of schools and kindergartens.
- The normal vegetable flow from Me Linh – the important vegetable supplier of Dich Vong wholesale market.
- The vegetable flow from Gia lam– the main vegetable supplier of Bac Qua-Long Bien wholesale market.
- The vegetable flow from Thanh Tri – the main vegetable supplier of Mo and Nga Tu So market.

The relation between the producing areas and markets depend on the distance from producing region to markets, and the strategies as regards quality management. The safe vegetable channel is characterised by close relationship between stakeholders. The retailers are the stakeholders regulating the chain. They inform the stakeholders upstream the chain about the demands of the market and induce them to widen their scale in order to be more efficient. The biggest limit of this flow is that consumers have little confidence in the product quality. The demand for safe vegetables is increasing but producers cannot find regular outlets for their safe vegetables.

In the normal vegetable flows, the assignment of the different actors is relatively clear; however, in almost all the three flows, the relationships among them are very loose as illustrated by the commodity chain from Me Linh to Hanoi. The participation of the farmers in the market is relatively frequent, especially for farmers from Thanh Tri and Gia Lam. The irregular involvement of many farmers in the market makes the flows less centralized. That is the reason why the information from the market to producing regions is very scattered. This affects the income of the stakeholders.

Product quality is one of the factors connecting market and production levels. This is a tool to connect the actors participating in commodity chain. This is clearly expressed in the safe vegetable flow. Nowadays, in peri-urban districts, the pressure of urbanization and the cultivated area reduction have led the farmers to change their strategies. They choose vegetables giving more profitability and improve the quality to raise the income per area unit. On the other hand, to make customers willing to buy at higher prices, it is important to make them trust that the bought products have the quality mentioned on the labels. So it is necessary to help consumers to have means to check the products quality. The first step is to help actors building the standard of product quality. In any case, the state should act as a referee to make actors respect the regulations.

INTRODUCTION

In this report we discuss the strategies of actors participating in the commodity chain of vegetables supplied to the Hanoi market with the aim of:

- Understanding the supply of vegetables to Hanoi from production areas.
- Understanding the function of the markets distributing vegetables in Hanoi.
- Defining, describing and understanding the operation mechanisms of vegetable supply flows to Hanoi.
- Understanding the roles and relations of actors and factors connecting them through the vegetable supply flows to Hanoi.
- Understanding the advantages and difficulties of each actor.
- Offering solutions to improve the present supply of vegetables to Hanoi.

According to the results of night market interviews by RIFAV and VASI, we concentrate our research on four product flows from four different production regions. They are:

– Safe[1] vegetable flow from Dong Anh – the main safe vegetable supplier of supermarkets, state-owned or private stores, companies and canteens of schools/ kindergartens.

– Normal vegetable flow from Me Linh – the most important vegetable supply line for Dich Vong wholesales market.

– Vegetable flow from Gia lam– the main vegetable supply line for Bac Qua-Long Bien wholesale market.

– Vegetable flow from Thanh Tri – the main vegetable supply line for Mo (old) and Nga Tu So market.

[1] 'Safe' is the term applied in Vietnam to produce that meets certain standards in terms of sanitary quality and minimal pesticide residues.

I- GENERAL BACK GROUND

A. DEMAND

In recent years, Vietnam's average income per person has risen dramatically, especially in big cities. Along with the rise in income is the increasing demand by people for vegetables not only in quantity, quality, and species but also in availability as well (off-season produce). Statistics show that Vietnam's average vegetable consumption per a person is relatively low in comparison with the average of the world and the region. While the average of the world is up to 91.2 kg, for China it is 112 kg[2], but in Vietnam it only reached 65 kg/year in 1997. Moreover, we should note the quality of vegetables has not met the demands of consumers. Vegetables are not safe, vegetable poisoning is a pressing problem in general and in cities in particular. Nowadays, in big cities such as Hanoi or Ho Chi Minh, there are some "clean vegetable" stores, however, in practice, the turnover of these stores is still limited. Consumers want safe vegetables but they still lack confidence in vegetable products available in present stores[3].

B. THE CAPACITY OF VEGETABLE PRODUCTION

In recent years, there have been many changes in the production of green vegetables in Vietnam. The area devoted to vegetable cultivation has grown in many regions. The production of vegetables has increased not only in quantity but also quality of clean vegetables. Vietnam's (Government) orientation for developing the vegetable branch of food equation in the coming years is to raise the area from 4,000 ha in the year 2000 up to 5,000 ha by 2005.

The focus will be not only put on quality and quantity but also variety. This orientation also emphasizes that most vegetable products must be safe and hygienic. It is estimated that it will take until 2005 for the average amount of vegetables/person to reach 80 kg and then 100 kg/year by 2010.

C. THE STATE OF VEGETABLE PRODUCTION AROUND HANOI

Hanoi is one of the big cities in Vietnam. The demand for vegetables of its residents is increasing. Despite the pressure of urbanization, in which the area for cultivation, especially for vegetable cultivation has decreased, the total area for cultivating vegetables in Hanoi's peri-urban districts tends to rise. (Graph 1)

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[2] Prof. Ngo The Dan. Strategies for researching and developing vegetables in the agriculture of Vietnam. Ministry of Agriculture and Rural Development, Hanoi, Vietnam.

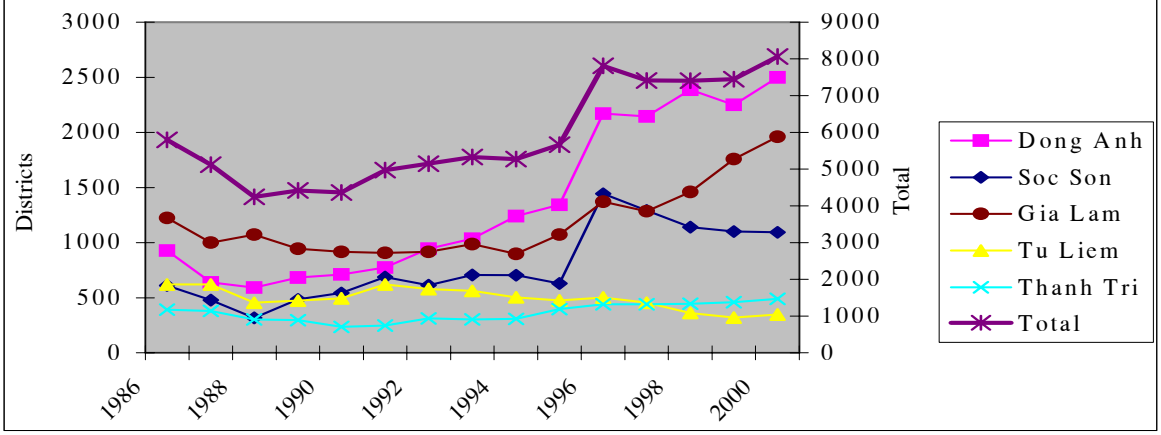
[3] Paule Moustier, Emmanuelle Bridier, Nguyen Thi Tan Loc. 2002. Food safety in Hanoi vegetable supply. Some insights from a consumer survey. In: E. Hanak, E. Boutrif, P. Fabre, M. Pinesiro (eds). Food safety management in developing countries. Proceedings of CIRAD/FAO international workshop CDRom.

Since 1996, Hanoi has had policies to encourage farmers to produce clean vegetables to meet the demand of consumers. The Hanoi's People Committee has supplied concrete guidance to concerned organs to establish areas and carry out a program for producing clean vegetables in Hanoi's surrounding districts. The planned areas for safe vegetables include 30 of the total 128 villages in Hanoi's peri-urban districts.

At present, the city has about 40 projects and research activities on clean/safe vegetable programs through the Agricultural Service, Commercial Service, and Center for Agriculture Extension. In addition, there are projects of foreign organizations such as: Association of Denmark Development in Asia (ADDA) and the Asian Vegetable Research and Development Center (AVRDC).

The above programs and projects are aimed at helping farmers produce clean/safe vegetables by training them to grow vegetables following a technical procedure of safe and clean vegetables. These programs also help to invest in infrastructure: irrigation systems, net houses and seeds. Thanks to these, the production of clean vegetables in Hanoi in recent years has developed relatively rapidly. (Graph 1)

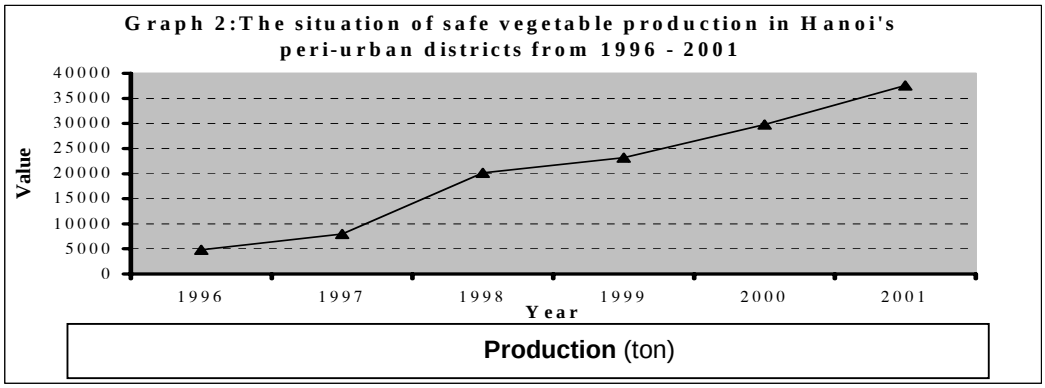
Graph 1: Vegetable production (hectares) in Hanoi peri-urban districts



D. THE COMMODITY CHAIN OF SAFE VEGETABLES

Safe vegetables can be categorized as those that are grown according to technical procedures meeting the following requirements:

- Clean water (deep well water, river-water).
- No fresh human manure.
- Only use safe chemicals from a defined list.
- Delayed harvest time (how many days since the last day of spraying chemicals) and following the regulations for each kind of chemical.
- Using fully decomposed compost.



Source: Hanoi People's committee Nguyen Tien Dinh - 2002

Presently, most safe vegetables are consumed in the cities. These vegetables are sold in vegetable stores and in some big central markets such as: Hom, 19/12 and Nghia Tam. After the introduction of The Department of Technology and Science to the City administration, clean vegetable co-operatives in Van Noi (Dong Anh), Dang Xa (Gia Lam) have developed retail points at: supermarkets, schools, canteens and some vegetable stores in markets. The number of safe vegetable co-operatives has increased in peri-urban districts, especially in Dong Anh. For example, in Van Noi there was only one co-operative in 1996. Now there are 12 co-operatives. Most co-operatives are issued certificates as clean vegetable cooperatives by the district administration and product quality certificates by The Technology Science Department to make it easier for them to establish relationships with purchasing stakeholders.

Nowadays, the demand for safe vegetables by customers is very high, however, the quantities of vegetables sold daily at supermarkets and clean vegetable stores is still very small, about 50 –100 kg/day for the shops we surveyed. Through discussion with producers as well as sellers it has been determined there are many reasons affecting the consumption of safe vegetables. The main reason is consumers do not believe in the quality of 'safe' vegetables. Therefore, they still resist buying at prices that are 1.5 or 2 times higher. On the other hand, producers face many problems cultivating safe vegetables. Although the production price of safe vegetables is 30 – 50% higher than that of normal vegetables, not all the vegetables produced are sold at these increased prices. This affects the execution of technical procedures for producing safe vegetables: allowed kinds of chemicals and harvesting at the right time after spraying insecticides.

At the market, the management of the vegetable commodity chain in general and safe vegetables in particular is still informal. Vietnam still lacks regulations forcing vegetable or supplier stakeholders to follow the procedures for safe vegetables to ensure benefits for consumers as well as the stakeholders participating (the benefits are defined as the elements ensuring the safety of the stakeholders participating in the market not purely in finance but also in health, safety and convenience).

II- RESEARCH METHODS

A. STEP 1: DEFINING PRODUCT CHANNELS

Using the results of night market research by RIFAV and VASI, we define the sources of supply for vegetables into Hanoi. On the other hand, we define supply flows and finally wholesale/retail markets of vegetable products.

Again using RIFAV and VASI research about intermediary stakeholders (collectors, wholesalers in central markets and wholesale/retail markets) we seek to understand the organization, operation and the results of stakeholders in the process of commercializing products.

This allows us to define production areas and the stakeholders participating in each product channel. From a list generated, we met some wholesalers, retailers and producers to research the next step.

B. STEP 2: EXAMINE RELATIONS AND ROLES OF STAKEHOLDERS OF CHANNELS

Inquiries were made about the operation of stakeholders in the same chain (collectors/wholesalers, wholesalers/retailers, producers/collectors) to understand the role of each stakeholder, their strategies, relations and limiting factors in a product flow. We chose a small number of stakeholders to be able to develop confidence relationships without which it is impossible to get reliable data on sensitive issues like incomes or access to information (Table 1).

Table 1: Number of interviewed stakeholders

Stakeholder	Area/products		Number of interviewed
Producers	Dong Anh (safe vegetables)		9
	Me Linh		6
	Gia Lam		9
	Thanh Tri		10
Collectors/wholesalers	Dong Anh (safe vegetables)		4
	Me Linh		6
	Gia Lam		6
	Thanh Tri		3
	At markets		1
Retailers Hanoi	Safe vegetables		7
	Normal vegetables		7
Consumers Hanoi	Hanoi city	Safe vegetables	7
		Normal vegetables	2

C. STEP 3: ANALYZING THE FINANCIAL RESULTS OF STAKEHOLDERS

We will analyse the ability in profit making of each stakeholder participating in different product flows.

These different steps of analysis will enable the understanding of the economic strategy of the stakeholders participating in each "safe" and normal vegetable business category.

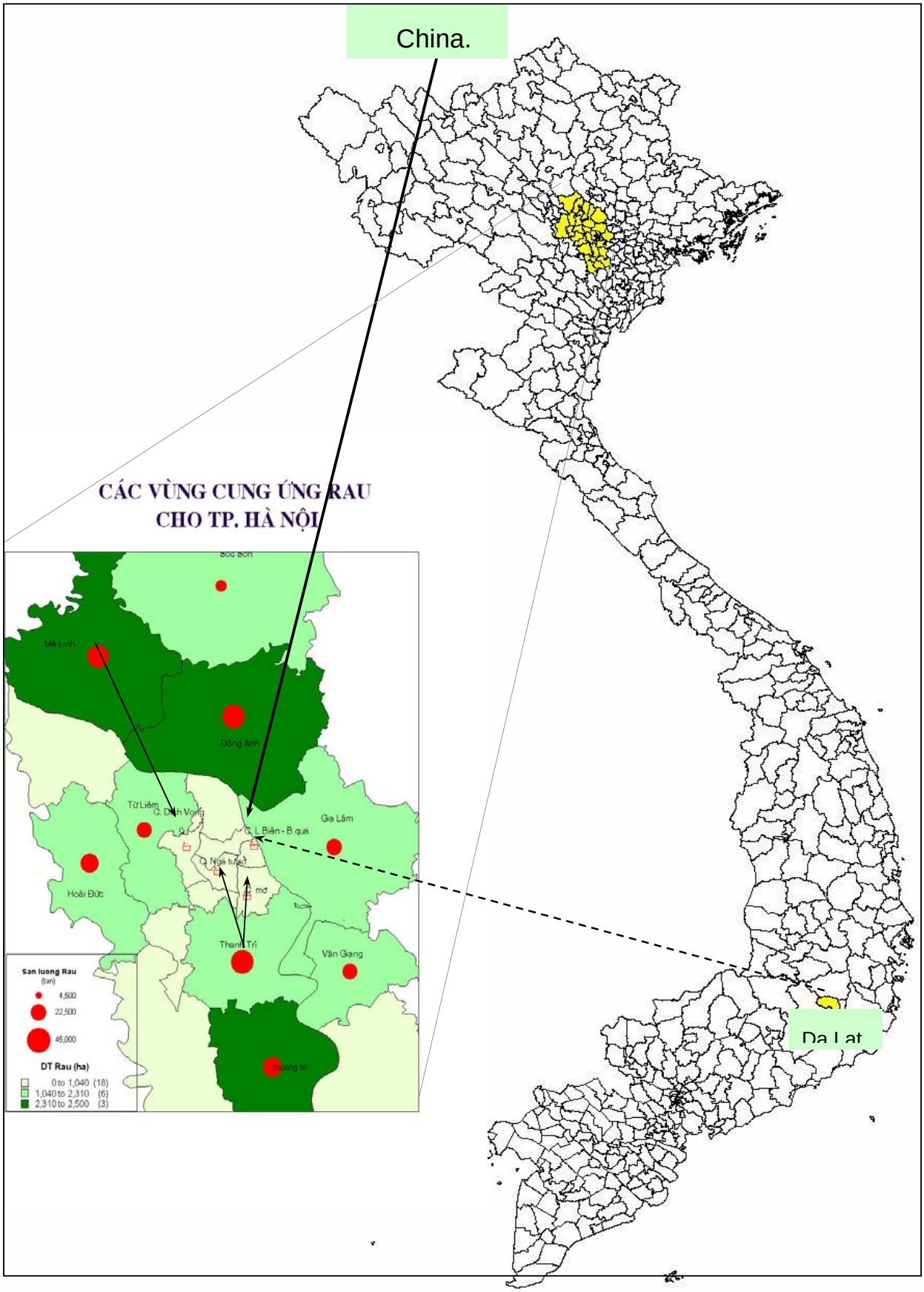
III- MAIN RESULTS

1. CHOOSING RESEARCH AREAS FROM THE NIGHT MARKET TO INVESTIGATE

The results from the night market research[4] show that the supply flows to Hanoi are plentiful with different organization and operation systems. The flows of vegetable supplies to Hanoi are mainly from four big gates into the city: North, South, East, West (see Map 1 for flows of ordinary vegetables and Map 2 for flows of safe vegetables).

Map 1- Areas supplying safe vegetables to Hanoi

[4] See: Hoang Bang An, Isabelle Vagneron, and al. 2003. Spatial and institutional organisation of vegetable market in Hanoi. SUSPER project report, Hanoi, RIFAV, 57 p.


China.
CÁC VÙNG CUNG ỨNG RAU
CHO TP. HÀ NỘI
Sóc Sơn
Mê Linh
Đông Anh
Từ Liêm
C. Định Công
Gia Lâm
C. L.Biên - B.qua
C. Ngã Tư Sở
C. mơ
Hoài Đức
Thanh Trì
Văn Giang
Sản lượng Rau
(tấn)
4,500
22,500
45,000
DT Rau (ha)
0 to 1,040 (18)
1,040 to 2,310 (6)
2,310 to 2,500 (3)
Da Lat

From the results of investigating eight night markets, we chose four markets to research the relationship between product areas as well as the relationship of these markets with other markets in the city. We divided markets into wholesale or retail based on the proportion of produce being resold (at another location) as opposed to final consumption. In principle, in the case of products are mainly for resale (> 70%), we call it a wholesale market (Table 5).

Table 2 shows that each wholesale market is often connected with large producing areas in the peri-urban districts of Hanoi and neighboring provinces. For example:

– Dich Vong market takes vegetables from the North: Dong Anh-Hanoi, Me Linh-Vinh Phuc.
– Mo market takes vegetables from the South: Thanh Tri-Hanoi, Thuong Tin-Ha Tay.
– Bac Qua-Long Bien takes vegetables from the East: Gia Lam-Hanoi, Chau Giang-Hung Yen.
– Nga Tu So market takes vegetables from the West: Tu Liem-Hanoi, Hoai Duc-Ha Tay.

Each market has different vegetable species available according to specific characteristics of each production area. Observation of night markets (March, April) showed that in Dich Vong market, cabbages and green mustards account for a higher proportion than other vegetables. In Bac Qua-Long Bien, cabbages and tomatoes are important. Tomatoes account for a relatively big proportion of produce in the Mo market. In Nga Tu So market, green mustards and tomatoes contribute the greatest proportion (Table 2).

Table 2: The number of vegetables sold and main supply source of wholesale markets

Market / **Target**	**Dich Vong**	**Nga Tu So**	**Mo**	**Bac Qua-Long Bien**
Amount (tons/day)	35 – 40	15 - 18	10 - 13	20 - 27
% of total				
Cabbage	30	11	18	32
Green mustard	20	29	19	5
Tomato	15	18	31	24
Salad	10	5	8	2
Ceylon spinach	10	3	6	3
Mint	10	-	-	-
Cucumber	5	15	6	18
Yard long bean	-	13	8	9
Chinese cabbage	-	7	6	7
Main supply areas *(Peri-urban districts)*	Dong Anh Me Linh Ha Tay Tu Liem	Me Linh Gia Lam Tu Liem Thanh Tri Thuong Tin	Thanh Tri Tu Liem Ha Tay Thuong Tin Hung Yen	Gia Lam Bac Giang Me Linh Dong Anh Hung Yen

Source: CIRAD/RIFAV surveys and VASI observations on night markets

2. GENERAL CHARACTERISTICS OF SUPPLYING AREAS

STATE OF PRODUCTION IN PERI-URBAN AREAS

The result of the survey shows that at present, the main sources of vegetables supplied to Hanoi are from peri-urban districts. Dong Anh, Me Linh districts, to the north and Thanh Tri to the south of Hanoi having the highest yields for vegetables. However, we have not taken into

account the quantity of vegetables brought from China and Da Lat to Hanoi in off-season times for the North of Vietnam. Crops transported from these locations include cabbages, carrot, tomatoes and potatoes.

Table 3: Production situation of some areas supplying the Hanoi markets

Districts	Area (ha)	Yield (ton/ ha)	Output (ton)
Dong Anh – Hanoi	2,498	16.73	41,789
Me Linh - Vinh Phuc	2,314	16.75	38,766
Thanh Tri – Hanoi	1,471	28.44	41,838
Thuong Tin - Ha Tay	2,447	12.28	30,060
Gia Lam – Hanoi	1,961	11.58	22,706
Van Giang - Hung Yen	1,403	15.20	21,319
Tu Liem - Ha Noi	1,041	19.99	20,813
Hoai Duc - Ha Tay	1,779	16.06	28,562
Soc Son – Hanoi	1,094	10.76	11,772

Source: Agricultural statistics, 2000

From the results of surveying Hanoi's big night markets, we chose four regions to do in depth interviews on production scales, transactions at the market and vegetable species. They are: Dong Anh, producing safe vegetables for Hanoi; Me Linh the main supply for Dich Vong wholesale market, Gia Lam for Long Bien-Bac Qua market; Thanh Tri for the Mo and Nga Tu So market.

Table 4 data shows that: Dong Anh and Me Linh have the largest cultivation area/person, 1,680 m^2 and 1,932 m^2 respectively. These areas are far from the city center, nearly 20 km from big wholesale markets.

The main rotation cultivation formulas for farmers in Dong Anh, Gia Lam, Me Linh, Vinh Phuc are Vegetable-Vegetable-Vegetable or Vegetable-Vegetable-Corn (for regions near a river).

DISTANCE AND MEANS OF TRANSPORTATION TO MARKETS

Table 4 displays characteristics of the areas relative to distance and transportation means. In Dong Anh and Me Linh, motorbikes are the main means of transport (67%), while in two nearer districts, Thanh Tri and Gia Lam, bicycle is the main means of transportation.

Table 4: The characteristics of four main regions supplying vegetables to Hanoi

	Dong Anh	Me Linh	Thanh Tri	Gia Lam
Cultivation area/ family (m^2)	1,932	1,680	1,320	1,045
Distance to wholesale markets (km)	8 - 14	15 - 20	5-8	7-12
Rotational cultivation formula	R –R - WV V- V - V	R-R- WV V – V- V	R – R - WV V-V-V	R- R - WV V – V - C
Transportation means (%)				
Car (2.5 - 3 tons)	0	0	0	0
Motorbike (0.2 - 0.25 ton)	67	67	35	36
Bicycle (0.1 - 0.15 ton)	30	30	61	62

R-R-WV: Rice-Rice-Winter Vegetable -V-V-V: Vegetable-Vegetable-Vegetable -V-V-C: Vegetable-Vegetable-Corn

3. CHARACTERISTICS OF WHOLESALE MARKETS

At present, in the Hanoi area, there are about 10 vegetable night markets. These markets generally take place from midnight to 6 AM. Wholesale markets have a trading volume of about 10 to 40 tons of vegetables per market-day concentrated in four main markets. They are: Dich Vong, Bac Qua-Long Bien, Nga Tu So and Mo markets.

Table 5: Trading character of markets

	Dich Vong	Nga Tu So	Mo	Bac Qua-Long Bien
Kind of markets	Wholesale	Retail Wholesale	Retail Wholesale	Wholesale
Buy and sell at the same spot (%)	15	70	65	40-100*
Buy to take to other places (%)	85	30	35	60

Source: Surveys of Night Markets- CIRAD/ RIFAV, April 2002.

** Bac Qua- Long Bien is a unique wholesale market bringing vegetables from China to Hanoi with an amount of about 100 tons/day in the period July to September*

Of the four markets, Dich Vong and Bac Qua-Long Bien have the largest scale. Vegetables from these markets can be resold to middlemen to take to other markets such as Hom, 19/12, Nga Tu So, Mo, Lang street market and a market at Ha Dong town on the outskirts of Hanoi. Vegetables in those markets can be resold to retailers who have vegetable stores at markets and to street-vendors.

Table 6: The average amount of vegetables per day traded at wholesale markets and stores

Market names or main places of consumption	Amount of Vietnamese vegetables sold (ton/market/day)	Amount of Chinese vegetables sold (ton/market/day)
Dich Vong market	35 - 40	
Bac Qua-Long Bien market	20 - 27	100 (peak off-season supply)
Mo market	10 - 13	
Nga Tu So market	15 - 18	
Supermarkets, stores*	4	

**The amount of vegetables sold*

Source: Surveys on Night Markets- CIRAD/RIFAV, April 2002

The above data shows that Dich Vong is the market that sells most domestic vegetables, about 40 tons/day. Bac Qua – Long Bien is next. However, it sells vegetables imported from China in the highest quantity (60 tons/day averaged over June, July, August, September).

The number of vegetables sold at supermarkets and clean vegetable stores accounts for less than 3% of vegetables consumed daily.

4. CHOOSING RESEARCHED PRODUCT FLOWS

We chose four supply flows based on the above results:

- Flow 1: Clean vegetables from Van Noi - Dong Anh to Hanoi.
- Flow 2: Normal vegetables from Me Linh to Hanoi.
- Flow 3: Normal vegetables from Gia Lam to Hanoi.
- Flow 4: Normal vegetables from Thanh Tri to Hanoi.

IV- FLOWS OF PRODUCT MARKETING FOR HANOI MARKET

A. THE FLOW OF SAFE VEGETABLES FROM VAN NOI TO HANOI

Dong Anh district is one of the big vegetables supplying regions for Hanoi markets. Nowadays, Dong Anh is also a main source of safe vegetables for the city. The production area is increasing: presently the cultivated area is 268 ha (703 ha by considering total developed area - as the land can be cultivated more than once per year, the effect is to increase cultivation area). The quantity produced is about 12,700 tons/year or more than 100 tons/month, equivalent to 4,000 kg/day. Van Noi village has the greatest area for growing safe vegetables in the district (Diagram 1).

Van Noi is one of the villages with a tradition of growing vegetables in the district. Especially after Contract 10[5], production accelerated. In recent years, vegetables have been grown nearly exclusively. Since 1996, Van Noi has been part of the planned regions for safe vegetable production. Farmers are trained and guided in production according to technical procedures for producing safe vegetables. Many farmer families have changed from rice cultivation to growing vegetables. The vegetable species here are plentiful (there are 47 kinds of vegetables according to statistics). Before 1996, farmers grew few vegetables such as kohlrabi, cabbage, melon and tomato. Nowadays, they grow leafy vegetables and off-season vegetables such as: sweet mustards (the whole year), sweet pepper, Yard long bean, cabbage, Chinese cabbage, cucumber and cauliflower – vegetables that have high economic gains.

1. DESCRIPTION OF THE MARKETING FLOWS OF SAFE VEGETABLES

The marketing flows of safe vegetables consists of 3 main channels:

Channel 1: Includes four main participating actors. They are producers, collectors, retailers (stores and crowded consumption points) and consumers. This channel accounts for nearly 90% of the total amount of vegetables that the area supplies Hanoi each day. In the past few years, many vegetable-growing cooperatives have been created.

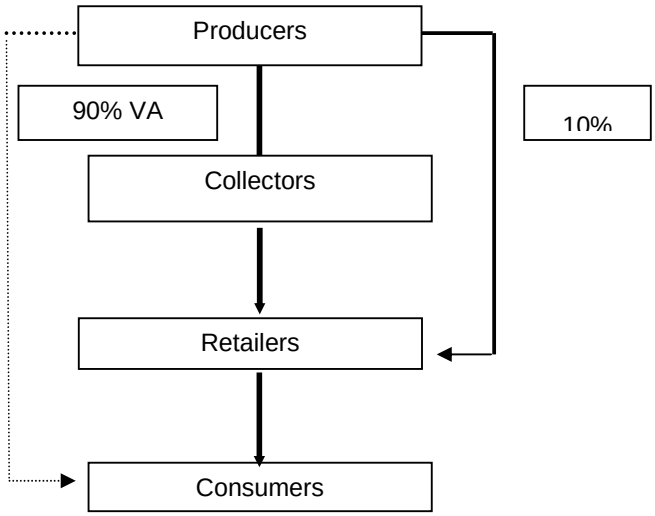
Channel 2: Consists of three main stakeholders: producers, retailers and consumers. This channel accounts for a small proportion, about 10% of the amount of products. The producers bring their products to Hanoi markets to be consumed. They mainly sell to retailers in the markets. The majority of this channel is farmer families in new which are in the early period of marketing and finding markets cooperatives,

Channel 3: The producers directly sell vegetables to consumers. In this case, there are a small number of producers in cooperatives, which are certified as members of 'clean vegetable cooperatives' by People Committee. They rent stalls in some Hanoi markets with the aim of surveying the market and finding opportunities to establish relations with purchasing stakeholders.

[5] Central Government edict on small holdings. It allocates land in 15 year leases and makes users entirely responsible for production and marketing. Introduced in 1988, it is considerably different to the previous socialist system of centralized supply and demand.

Diagram 1: The marketing flow of safe vegetables in Dong Anh

(VA: Vegetable Amount)



2. THE STAKEHOLDERS PARTICIPATING AND THEIR SPECIFIC CHARACTERISTICS

We focus on the stakeholders participating in channel 1 – the channel that trades the biggest amount of products.

2.1. Producers

In recent years, the process of urbanization has eroded the agricultural area rapidly in peri-urban districts (cultivation area/person is low: 400 m^2). This affects the production strategy of farmers. The farmers are choosing the rotational cultivation formula: Vegetable-Vegetable-Vegetable (vegetable production gives greater efficiencies than rice production) especially for leafy vegetables with short cropping periods (35-40 days). Long cropping vegetables are often grown as early or off-season crops. The activity of growing vegetables has become one of the main activities of many farmer families in the village. Farmers are trained in disease prevention (IPM), techniques for growing safe vegetables (carried out by the Center of Agriculture Extension, research institutes and some foreign organizations). Additionally, farmers also receive initial support from the city's programs such as: net houses and drilling wells to help farmers make use of clean water sources for irrigation. The average cultivation area per researched family of the study is 1,930 m^2, or 400 m^2/person. However, the co-efficient of land rotation is very high (more than 6 times) so the cultivation area/family is very large.

2.2. Collectors

Collectors have the following specific characteristics:

– Collectors in this chain are also producers (who often have large areas for growing vegetables).
– They are members of clean vegetable producing cooperatives.

– They collect the products of the cooperatives to which they belong, plus from people outside the cooperatives, e.g. their relatives. In this case, production has to be alongside safe vegetable regulations.
– They supply products regularly to retail points (stores, supermarkets and canteens: kindergartens, primary schools in the city).
– The average amount of vegetables purchased is 230 kg/day. The collectors usually supply the market with 3-5 kinds of vegetables or more, depending on the demand of customers.
– The main means of transportation is motorbike (200-300 kg/motorbike).
– Collectors supply 4-10 wholesale/retail points a day.

2.3. Retailers

In this product flow, retailers are supermarkets, clean vegetable stores/shops of state-owned or private companies or big markets in Hanoi. Stores and supermarkets sell an average of 170 kg of vegetables per day. Retailers and collectors trade according to contracts or agreements between two sides.

3. THE RELATIONSHIPS AMONG STAKEHOLDERS

3.1. The connection of producers in product marketing

Here, producers have associated with each other and founded cooperatives – clean vegetable growing cooperatives to help each other in production and marketing products. Clean vegetable cooperatives aim to help their members receive support about investment, training techniques from city programs and applying new seeds to production.

When founding cooperatives, farmers are obliged to comply with formalities to get a certificate of product quality by the Science and Environment Department (at least until 2001), and a certificate from the Peoples Committee of the district. This is a good chance for cooperatives to establish relations with purchasing stakeholders.

3.2. The relationship between collectors and producers

In the commodity chain of safe vegetables, the collectors are closely connected with producers. Producers like to sell to collectors to get a higher price than they would if they were selling themselves (usually, only collectors can sell products at the price of safe vegetables). The collectors who live in the same hamlets/villages have the ability to examine the producers' obedience of technical procedures. Because they are in the same area, collectors know timetables of production and vegetable species farmer families can supply the market according to demand.

In this flow, retail and catering enterprises (supermarkets, stores and canteens) require suppliers to commit themselves in agreements to guarantee the quality of supplied products. Thus, there is a tie between collectors and producers (although there are no written texts). The price of safe vegetables is often 20%-30% higher than that the price of normal vegetables. The price is agreed by the two sides and based on the price of the market.

The payment is in cash, paying every day/week/month. For private stores, depending on agreements, buyers usually pay sellers after buying products three times.

3.3. The relationship between collectors and retailers

The relations between two stakeholders are established by an introduction from the Hanoi Trade Department or Agriculture Department. After this, cooperatives' collectors can expand their customers informally.

At present, Dong Anh supplies vegetables to about 40 stores, supermarkets, and over 100 boarding schools in Hanoi (according to the head of Van Noi Clean Vegetable Cooperative).

For some supermarkets like Intimex (a large central supermarket) there are detailed agreements about quality, quantities and price for each kind of vegetable in each cropping season. The above requirements can be changed according to discussion. Exchanging information between the sides is very dynamic, either by telephone or after each exchange.

4. THE SCALE OF ACTORS

The scale of actors participating is an important factor allowing us to understand the organization and the operating mechanisms of the commodity chain. Collectors purchase about 80 tons/year and retailers purchase about 59 tons/year. The maximum quantity of products that collectors purchase can reach about 430 kg/day and the minimum is 150 kg/day. Similarly with retailers: 500 kg/day and 50 kg/day (Table 7).

Table 7: Scale of actors

	Producers (kg/year)	Intermediaries (kg/day)		Consumption points (kg/day)	
				Canteens	Families
		Collectors	Retailers		
Max	23,570	430	500	45	2
Min	7,100	145	50	35	1
Average	14, 300	230	170		

5. FORMS OF TRADING

The stakeholders in this product flow trade products mainly by wholesale and retail methods. Farmers sell about 90% of vegetables produced to local collectors. They often sell their product from the fields, this accounts for 70 % of the exchange. For collectors, 95% of vegetables are sold to retailers and collective consumption points. Similarly, retailers mainly buy products from collectors, this accounts for 90% of the vegetables that they buy daily.

Table 8: Form of exchange among stakeholders

Producers	Selling form (% of product amount)		
	At field to collectors	At collecting houses	Bring to markets
	70	20	10
Collectors	Selling form (% of product amount)		
	To retailers	To consumers	
	95	5	
Retailers	Buying form (% of product amount)		
	Buy from collectors	Buy from producers	
	90	10	

6. PRICE DISAGGREGATION

We have selected the cabbage and two channels as examples to see the increments in prices. The price that collectors sell to retailers rises by 25% from the purchase price (paid to producers) while the price from retailers to consumers rises by 92%. For channel 2, the collector is missing so the producer prices are 250 dong/kg or 21% higher than that of channel 1.

Table 9: Changes in cabbage prices

Product flows	Channel 1		Channel 2	
Target Stakeholders	Selling price (dong/kg)	Price increase/100	Selling price (dong/kg)	Price increase/100
Price of producers	1,200	100	1,450	100
Price of collectors	1,550	125	-	-
Price of retailers	2,875	192	2,875	189

7. PRODUCTION RESULTS

7.1. The income of actors

Retailers have the highest income in comparison with other stakeholders in the commodity chain: 98,000 dong/day. Next are collectors with 43,000 dong/day, finally producers at 32,000 dong/day, which is equivalent to 70% of that of collectors and 44% of that of retailers. To understand more clearly about the activity of growing vegetables and the trading process of safe vegetables, we calculated the income per worker per year. All have relatively high incomes/year: 6 million/year for producers, 22 million/year for retailers and 15 million/year for collectors.

Table 10: The income of stakeholders (dong)

Product flow Stakeholders	Income/day/worker		Income/ worker/year	
	Channel 1	Channel 2	Channel 1	Channel 2
Producers	32,000	33,000	5,700,000	6,600,000
Collectors	43,000	-	15,200,000	-
Retailers	98,000	98,000	22,113,000	22,113,000

7.2. Production and cost structure of stakeholders

To understand the operational factors of production, we must understand the cost structure of each stakeholder to realize limiting factors, especially the commercialization process of the area's products. The production cost of materials and inputs accounts for about 45-60% of the total cost, labor cost is 30-45%, the remaining are other costs like agricultural duty. The contents of input and material costs are as follows: 20% for seeds or seedlings, 12% for fertilisers, 6% for pesticides, 17% for infrastructure depreciation, and 5% for other expenses. For middlemen, the cost of buying products accounts for 88% (for collectors) and 85% (for retailers). Table 11 shows that: for collectors, the transportation cost accounts for the highest proportion (6.7%). This includes collecting product, transporting products to consumption points, bridge and boat fees. This is only 3.3% for cooperatives (according to the cooperative's regulations for collectors who are members of cooperatives). For retailers, the cost of rent accounts for 9%. So, any factors directly or indirectly raising the transportation

cost, rental cost, market fees will raise the selling costs of products and affect the operation for all.

Table 11: The cost structure of production and trade activity of stakeholders per year

Stakeholders	Total cost (1,000 dong)	Among this (%)						
		Inputs and infrastructures	Other expenditures	Other expenditures				
				Taxes	Renting stores	Transportation	Tel	Others
Producers	6,620	45-60	-	-	-	-	-	-
Middlemen	125,600	88	12	3.5	-	6,7	1	2.8
Retailers	121,158	85	15	2	9	2	1	1

7.3. Comparative profits for selected crops

Table 12 shows that: sweet pepper (out of season from July to October and with a growth period of 90 days) and broccoli are two kinds of vegetables that give the highest profit. The profits from sweet peppers reach 2,150,000 dong/crop, from broccoli 1,120,000 dong/crop, sweet mustards yield less profit, but vegetable mustards in general and sweet mustards in particular have short growing cycles: 30 - 40 days. This is one of the reasons why farmers in Van Noi mainly grow sweet mustards.

Table 12: Economic benefits from some kinds of safe vegetables in Van Noi

Unit: 1,000 dong/sao/crop (1 Sao = 360 m^2)

Target	Kohlrabi	Cabbage	Sweet mustards	Broccoli	Sweet pepper	Yard long bean
1. Total revenue/sao/crop	1,200	1,200	900	1,800	3,500	960
2.Total expenditure/sao/crop	760	880	450	680	1,350	700
- Material cost	460	580	200	430	900	500
- Labour cost	300	300	250	250	450	200
3. Net profit	440	320	450	1,120	2,150	260

8. DIFFICULTIES

8.1. Producers

The greatest difficulty is selling the product. However, the market potential is very big for safe vegetables. The problem with this product is making the consumers believe in the quality of the vegetables sold on the market.

The amount of vegetables purchased in Hanoi is still limited (little more than 4 tons/day for shops and supermarkets). So farmers produce safe vegetables but they cannot sell all production at the price of safe vegetables (Table 13). It is clear that if farmers spend more and receive less, their commitment to safe vegetable producing procedures will lapse.

8.2. Collectors

The commodity chain for safe vegetables is a new one. There are no instruments to help consumers believe in the quality of products, the market still lacks referee regulations.

Collectors have excess competition and bad infrastructure. Sometimes the demands of customers represent no economic benefit, e.g., for supplying a canteen that wants only 5 kg of vegetables.

The collector is responsible for product quality according to commitments with retailers. However, collectors have no means of checking the quality of producers' vegetables, mainly basing their purchases on "belief".

8.3. Retailers

There are no means to help consumers believe in product quantity apart from the certificate of the People Committee certifying the cooperative that supplies vegetable is a clean vegetable-producing cooperative. This limits the number of vegetables consumed at retail stores. Because the consumption amount is small, the selling prices are often high. High prices do not attract consumers.

8.4. Comments

– The flow of safe vegetables features relatively close to organization: the relations established among stakeholders are strong and regular. The collectors play an important role in bringing information from the market to production region; in other words, they link supply and demand.

– Producers and collectors establish relations through verbal agreements.

– Supermarkets and stores play an important and decisive role in the flow of products. They fix prices, quantities and quality demands. Retailers have the highest income in the product flow.

– The payment between collectors and retailers is made weekly or monthly by invoices or receipts

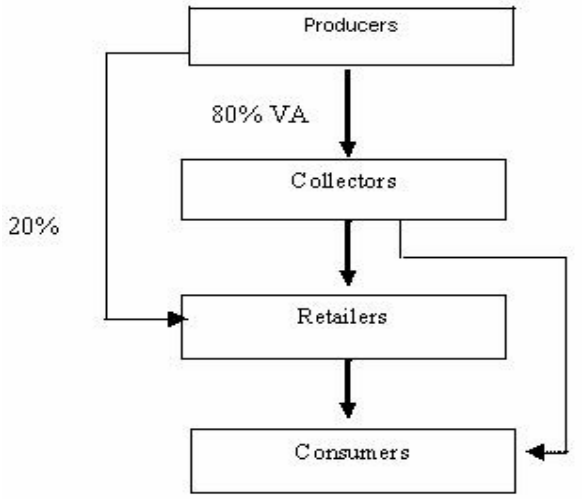
The problem in this flow is how to help consumers believe in product quality. Solving this problem will help develop the commodity chain and satisfy consumer demand.

B. THE FLOW FROM ME LINH - VINH PHUC TO HANOI

Me Linh district is a relatively large vegetable-producing region in Vinh Phuc province. The total area for growing vegetables in the district reaches upto 2,300 ha, producing about 40,000 tons every year. In this province, Dai Thinh village possesses the largest area for vegetable cultivation in Me Linh district. According to interviews, production here is mainly consumed in Hanoi.

1. DESCRIPTION OF THE PRODUCT- MARKETING FLOW

Diagram 2: Flow of normal vegetables from Dai Thinh, Me Linh, Vinh Phuc.



In this flow, there are also three main supply channels.

Channel 1: Includes four main stakeholders (Diagram 2), producers, collectors, retailers and consumers. Channel 1 accounts for nearly 80% of the daily supply to Hanoi.

Channel 2: Includes three stakeholders: producers, retailers and consumers. Channel 2 accounts for about 20% of vegetable supply. Producers sell directly at wholesale markets as well as other retail markets.

Channel 3: Includes three stakeholders: producers, collectors and consumers. Some collectors are retailers at small markets or street-venders.

2. THE STAKEHOLDERS' PARTICIPATION AND THEIR SPECIFIC CHARACTERISTICS

There are four stakeholders participating in this flow, however, we only need to look at three stakeholders: producers, collectors, and retailers to understand the specific characteristics participating in this flow.

2.1. Producers

After Contract 10, winter vegetable production developed rapidly. Vegetable species are relatively plentiful but still center around some kinds of winter vegetables: cabbage, kohralbi, onion, yard long bean, tomato. Some kinds of early or out of seasonal crops are also grown here (however not as many as in Dong Anh). The average cultivated area per interviewed family is 1,680 m^2 (largest is 4,170 m^2).

2.2. Collectors (local)

Collectors regularly supply products to markets, mainly to Dich Vong market. The collectors in this product flow have the following specific characteristics:

– Mode of selling: mainly wholesale. The average amount of vegetables consumed is relatively high, more than 330 kg/day.
– Motorbike is the main means of transportation (200-250 kg/day)
– Collectors often buy/sell only one kind of vegetables.
– They have relations with farmers not only in one village but also in neighboring villages.
– Each collector has 5 to 7 regular customers.

Besides this, collectors can buy products at wholesale night markets in the region to bring to Hanoi's wholesale markets. However, the amount bought from night markets is not great (only in the times of shortage).

2.3. Collectors at wholesale markets

At wholesale markets, there are several people collecting vegetables at markets to sell to retailers in other markets. They often buy an amount of 100 up to 300 kg. They mainly transport vegetables to other wholesale or retail markets by motorbikes or small cars (500 kg load). The number of such collectors is not significant.

2.4. Retailers

The retailers in this marketing flow mainly operate by buying vegetables from wholesale markets to sell in the daily markets.

3. THE RELATIONSHIP AMONG STAKEHOLDERS

3.1. The relationship among producers

The producers here have no links between production and consumption like in the safe vegetable flow. Farmers often produce according to their conception about the market. They produce the kinds of vegetables (according to them) that make for high economic results (based on the results of the last crop).

3.2. The relationship between collectors and producers

The relations between collectors and producers in this product flow are not as close as that of safe vegetable flows. There are no agreements among them. The relationship is based on regular purchase or being from the same village. For the flow of normal vegetables, there are no requirements on product quality among the actors apart from the appearance: fresh looking, no insects. Collectors do not base the purchase on the technical procedure of producing vegetables; their interest is in price. Collectors depend on the selling prices of the last day to decide the price to pay and amount to purchase of each kind of vegetable. Collectors pay producers one or several days following receipt of the products.

3.3. The relationship between collectors and retailers

The relationship is established through daily trading. The connection between two stakeholders is not close because retailers can choose to buy products from many collectors in markets at the prices that they think reasonable. In practice, they buy products more regularly from about 3 to 4 people.

3.4. The relations between producers and retailers

The number of farmers directly selling vegetables at the market is more than that of the safe vegetable branch. However, producers participate seasonally in the market, so the relation between producers and retailers is temporary.

4. THE SCALE OF TRANSACTIONS

The product exchange scale of the stakeholders in channel 1 is very different. Collectors have the highest scale. They can sell to the market up to an amount of 115 tons/year. The maximum daily amount that they can process is 500 kg, the minimum is 150 kg and the average is 330 kg. Retailers have a smaller gross amount of 40 tons/year – nearly 130 kg/day. The difference in the production scale of farmers is relatively big. Some families reach a production amount of 30 tons/year, however, there are some families producing 6 tons/year – an average is about 14 tons/year.

Table 13: Scale of stakeholder transactions

	Producers (kg/year)	Middle stakeholders (kg/day)	
		Collectors	Retailers
Max	30,500	500	160
Min	6,520	150	80
Average	13,700	330	130

5. STAKEHOLDERS' FORMS OF TRADING PRODUCTS

Like the safe vegetable flow, the stakeholders trade in main channels (Channel 1) mainly by retail and wholesale means. Producers sell the majority of products to collectors. This proportion accounts for 80% of the turnover. Collectors mainly buy farmers' products from the field (accounting for 85%). Collectors sell to retailers 94% of the vegetable amount exchanged daily.

Table 14: Stakeholders' forms of buying products

Producers	Selling form (% of product amount)	
	At fields	At markets
	80	20
Collectors	Selling form (% of product amount)	
	To retailers	To consumers
	94	6
Retailers	Buying form (% of product amount)	
	From middlemen	From producers
	80	20

6. CHANGES IN PRODUCT PRICES THROUGH ACTORS

We can see the change of prices through stakeholders in this marketing flow through the vegetable: cabbage. The data in Table 15 shows that: the price from collectors to retailers rises 33% in comparison with selling price of farmers. The price from retailers to consumers rises 94.5%. In channel 2, as previously, producers and retailers receive the higher difference than in channel 1 (selling prices of producers are 233 dong higher and the purchase price for retailers is 67 dong/kg lower).

Table 15: Changes in cabbage prices

Product flows	Channel 1		Channel 2	
Target Stakeholders	Selling price (dong/kg)	Price increase (%)	Selling price (dong/kg)	Price increase (%)
Prices of producers	900	100	1,133	100
Prices of collectors	1,200	133.3	-	-
Prices of retailers	2,333	194.5	2,333	205

7. PRODUCTION RESULTS

7.1. Actors' income

We can see the economic results of the actors participating in the product flow of normal vegetables in Table 16. Here, collectors have the highest income (89,000 dong/day) in comparison with other actors in the flow (collectors have the highest throughput of the four actors). The second, retailers, have 58,000 dong/day. Producers have a workday value of 29,000 dongs, which is equivalent to 33% and 50% of that for collectors and retailers respectively. Income/worker shows that the income of producers is relatively low (over 3 million dong/year) in comparison with others actors. This income level also does not persuade farmers produce vegetables. That is why in recent years, some farmers have changed to planting flowers.

Table 16: The income of stakeholders (dong)

Product flow	Income/day/worker		Income/ worker/year	
Stakeholders	**Channel 1**	**Channel 2**	**Channel 1**	**Channel 2**
Producers	29,000	41,000	3,117,000	4,186,000
Collectors	89,000	-	25,232,000	
Retailers	58,000	58,000	17,000,000	17,000,000

Next, we analyze the cost structure in the trading process.

7.2. Production and trade cost structure of actors in one year

Here, the costs of production and trading activity of actors in the main channel are lower than that of the safe vegetable flow. The production costs of farmers are distributed as follows: 34% for seeds or seedlings; 20% for fertiliser; 11% for pesticides; 8% for investment depreciation; 7% for other costs. For middlemen, vegetable purchase costs account for 80% (collectors) and 82% (retailers) of all.

Table 17 shows that: for collectors, transportation costs (include the cost of finding vegetable sources, transportation, bridge and boat fees, landing-place fees) account for a very high proportion: 13.8% (about 60% of the remaining costs after purchasing costs have been paid). For retailers, transportation costs also account for a high proportion. These costs account for 5.3% (the second highest costs after store renting costs: 7%). It can be said that: any factor raising costs will affect the process of product production, distribution and consumption.

Table 17: Cost structure for production and trade activity of stakeholders per year

Target / Stakeholders	Total cost (1000 d)	Among this						
		Buying goods Material (%)	Others (%)	Others expenditures				
				Tax (%)	Renting stores (%)	Transportation (%)	Tel (%)	Others (%)
Producers	5,000	80		-	-			20
Middlemen	118,105	80	20	-	2	13.8	1	3.4
Retailers	50,032	82	18	3	7	5.3	1	1.7

7.3. Compare efficiency of PRODUCING some kinds of safe vegetables

Table 18 shows that: broccoli gives the highest economic results among all kinds of vegetables of the region (profit: 920,000 dong/sao/crop). The next is sweet mustards and kohlrabi (profit: 380,000 dong/sao/crop).

Table 18: Production economic results of some kinds of clean vegetables in Dai Thinh village, Me Linh

(Unit: 1000 dong/sao/crop)

Target	Kohlrabi	Cabbage	Sweet mustard	Broccoli	Yardlong bean
1. Total revenue/sao/ crop	978	990	750	1520	900
2. Total expenditure/sao/ crop	598	700	370	600	660
- Material cost	370	440	180	380	470
- Labour cost	228	260	190	220	190
3. Net profit	380	290	380	920	240

8. DIFFICULTIES

8.1. For producers

Producers totally depend on changes in demand. They produce according to their experiences without enough feedback from market. Their production scale is still small with numerous kinds of vegetables. Small scale does not allow them to establish closer relationships with intermediaries. This translates into lower income.

8.2. For collectors

In this product- marketing flow, collectors have a relatively high amount of turnover. To collect a great amount to bring to Hanoi, a collector has to buy vegetables from at least from 3 to 7 farmers. This is explained clearly in the above cost structure, transportation costs account for a very high proportion. Another difficulty of collectors is that: in season, the

difference in revenues and expenditures is very low. For early or out of season vegetables, there are many other difficulties in collecting vegetables such as: high costs for collecting and finding vegetable sources because of scattered production, limited surplus available per family.

8.3. For retailers

Nowadays, there are many vegetable suppliers for the market, among whom many are also producers who directly sell vegetables on the market. Therefore, there is competition in price and amount.

In conclusion:

– This product chain has clear organization and assignment among stakeholders: producers, collectors and retailers.

– The relations among actors have been established although they are still not close. These relations have not been built on the factors that link them with each other such as: certain targets about qualities, quantities, and time of supply.

– This flow lacks regular information exchange among actors like in the safe vegetable flow.

– The proportion of farmers participating in this flow is higher than in the safe vegetable flow (2/6 interview families in comparison with 1/9 families).

– The biggest difficulty of the chain from Me Linh to Hanoi is that there are so many actors participating in the market (producers, local collectors, collectors at markets, retailers). Therefore, the information from the market to producer is very scattered.

C- THE FLOW OF NORMAL VEGETABLES FROM GIA LAM TO HANOI

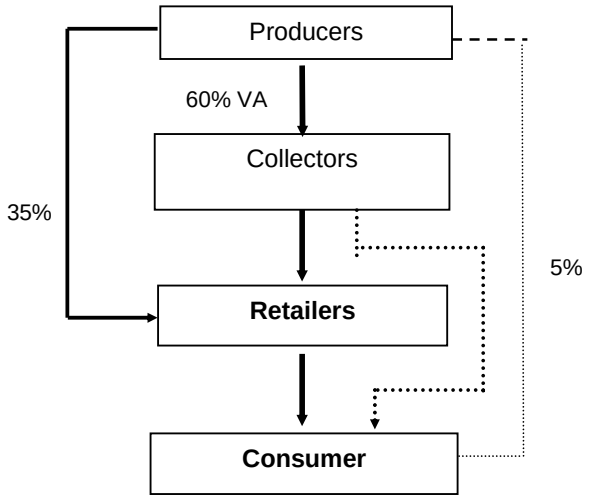
General characteristics of the producing region:

After change from the centralized economy to Contract 10, Gia Lam has been one of the main vegetable suppliers of Hanoi. Van Duc is one of three villages having large vegetable areas. Its products are mainly brought to Hanoi to be sold. Vegetables species here are relatively plentiful: cabbage, kohralbi, green mustard, aubergine, eggplant, cucumber, yard long bean, melon. Vegetable crops diversified with very early, early and even out of season vegetables.

In recent years, the profit of vegetables has been lower than that of other crops so farmers have begun to change part of their vegetable area into soybeans and peanuts. Vegetable growth here is not only in competition with other crops but also with non-agricultural activities such as pottery, building or carpentry. The average value of a workday in the area is about 20,000 dong/workday.

1. DESCRIPTION OF MARKETING FLOW

Diagram 3: Supply flow from Van Duc to Gia Lam



The vegetable flow from Van Duc to Hanoi includes four channels:

Channel 1: Includes four main stakeholders (Diagram 3). They are producers, collectors, retailers and consumers. Channel 1 accounts for nearly 60% of the vegetables supplied to Hanoi.

Channel 2: Includes three stakeholders. They are producers, retailers, and consumers. This channel accounts for about 35% of supply and consumption.

Channel 3: There are a small number of collectors bringing vegetables to Hanoi to retail in some markets or to peddle on the streets.

Channel 4: About 5% of vegetables consumed are in this channel. Some farmers bring vegetables to Hanoi to retail.

2. THE ACTORS PARTICIPATING AND THEIR SPECIFIC CHARACTERISTICS

2.1. Producers

The average cultivated area is 1,045 m^2/family. In comparison with previously discussed producing areas, the cultivated area of vegetables is relatively small. On the other hand, the cultivated area is often flooded and left fallow on June and July. Farmers mainly grow according to the rotational cultivation formula: Vegetable-Vegetable-Corn. As in Me Linh, among vegetable growers there is no connection for marketing.

2.2. Collectors

Collectors mainly supply their products to Bac Qua-Long Bien market. Some specific characteristics of the actors in this product flow are as follows:

– The collectors are farmers in hamlets/villages
– The average gross amount of sales is higher than 180 kg/day, mainly by wholesaling.
– Bicycle is the main means of transportation with an amount of 150 kg/bicycle. This accounts for 60%. The remaining is transported by motorbike, 200 -250 kg/motorbike.
– Collectors can buy one or several kinds of vegetables in one consignment, normally combining vegetables such as: mint, fresh onion, and tomato. With other kinds of vegetable such as: cabbage, kohlrabi or mustard, collectors only buy one type of product.
– Collectors have relations with farmers not only in their villages but also in other neighboring villages. They often have relations with about 10 -15 producers and retailers.
– They can pay the producers after several days.

2.3. Retailers

Retailers can be divided into 2 kinds:

a. Retailers buying vegetables from the collectors in wholesale markets (Bac Qua-Long Bien), and taking vegetables to other markets.

b. Retailers supplied on the spot in retail markets. The average throughput is more than 130 kg/day. They mainly buy large volumes from collectors, about 60% of their volume. They buy the remaining amount directly from producers.

3. THE RELATIONSHIPS BETWEEN ACTORS

3.1. Relations among producers

Producers have begun to establish relationships among themselves through the city programs/projects for producing safe vegetables. They can attend some IPM training courses. However, unlike Dong Anh, in Van Duc, there is no safe vegetable network, so the connection among them is still informal.

3.2. The relationship between collectors and producers

Like the vegetable flow from Me Linh to Hanoi, among collectors and producers in this flow, there is no close relationship. They lack certain connection factors such as agreements about quality and supply times. They only care about the sale prices and the price of vegetables for which they have demand. Prices paid and quantities bought are based on the selling prices of the last day. Normally, collectors pay producers several days following the time of receiving produce.

3.3. The relations between collectors and retailers

The relations between stakeholders are that of business acquaintances, built on daily trading. However, the relationship between them is very loose because they do not have the factors that tie them together as in safe vegetable flows (quality factor). Retailers can buy vegetables from more than one collector, depending on the product that they need and price. However, some collectors and retailers are closer. In this case, the retailers can pay several days after receiving produce.

3.4. The relations between producers and retailers

In this flow, the number of farmers participating directly in the market is higher than that in previous flows (5/9 interview farmers). Numerous farmers participate in the market. However, their participation is usually seasonal.

4. THE SCALE OF TRANSACTIONS

In channel 1 the average volume of collectors is about 62 tons/year. The highest throughput can reach 350 kg/stakeholder; the lowest is 150 kg. Retailers have an annual average volume of 44 tons/year. The maximum daily throughput is 180 kg and the minimum is 100 kg.

Table 19: The scale of each actor

Target	Producers (kg/ year)	Traders (kg/ day)	
		Collectors	Retailers
Max	21,800	350	180
Min	6,200	150	100
Average	14,700	180	130

5. ACTORS' FORMS OF TRADING PRODUCTS

The data shows that farmers sell 56% of their produce to collectors, the remaining 44% is sold at Hanoi markets. Collectors mainly wholesale to retailers.

Table 20: Product trading forms of actors

Producers	Customer (% product amount)	
	Sell to collectors	Sell at markets
	56	44
Collectors	Customer (%product amount)	
	To retailers	To consumers
	96	4
Retailers	Supplier (%product amount)	
	From middlemen	From producers
	60	40

** Retailers buy products mainly from wholesalers and collectors (60%).*

6. CABBAGE PRICE CHANGES

Table 21 shows the prices received by the different stakeholders for the two channels. For channel 1, the price of cabbage from collectors to retailers rises by 40% in comparison with the producers' sale price. The price from retailers to consumers rises by 64.3% in comparison with the collector's price. For channel 2, farmers often sell directly to retailers at a higher price of 250 d/kg; similarly for retailers, if buying directly from farmers, the price is 150 dong/kg lower.

Table 21: Cabbage price changes

Product flows	Channel 1		Channel 2	
Target Stakeholders	Selling price (dong/kg)	Price increase (%)	Selling price (dong/kg)	Price increase (%)
Price of producers	1,000	100	1,250	100
Price of collectors	1.400	140	-	-
Price of retailers	2,300	164	2,300	184

7. PRODUCTION ECONOMIC RESULTS

7.1. The income of the stakeholders participating

We can assess the economic gains through Table 22. Collectors have the highest income in comparison with other stakeholders at 81,000 dong/day. The income for each retailer is 73,000 dong/day, and for the producers, it is 28,000 dong/day, which is equivalent to 26% of that of collectors and 29% of that of retailers. The income/worker shows that like the previous flows, the income of the producers is the lowest.

Table 22: The income of stakeholders

Product flow / **Stakeholders**	**Income/day/worker**		**Income/ worker/year**	
	Channel 1	Channel 2	Channel 1	Channel 2
Producers	28,000	39,000	5,681,000	6,493,000
Collectors	81,000	-	13,930,000	-
Retailers	73,000	73,000	16,927,000	16,927,000

7.2. Production and trading cost structure of each actor

The cost structure table shows that: 84% of collectors' costs are in buying products (80% for retailers). Transportation costs (12%) of collectors' account for the highest proportion among other costs. For retailers, the cost for renting stores is an additional 14% of their cost structure. Production costs include seeds and seedlings (33%), fertilizers (23%), pesticides (14%), others (5%).

Table 23: The cost structure of production and trade activity of stakeholders per year

Expenditure / Stakeholders	Total cost (1000 d/ year)	Among these						
		Buying goods (%)	Others (%)	Other expenditures				
				Taxes (%)	Renting (%)	Transportation (%)	Tel, office supplies (%)	Others (%)
Producers	4,825	75				20		5
Middlemen	64,390	84	16	-	-	12	1	3
Retailers	55,388	80	20	3	14	-	1	2

7.3. Comparing efficiency of producing different kinds of vegetables

Among the main kinds of vegetables grown in the area, broccoli (out of season), kohlrabi and cabbages are those giving the highest returns, especially broccoli. The difference in revenues and expenditures for broccoli reaches 900,000dong/sao, for kohlrabi: 410,000dong/sao and 390,000dong for cabbages. This result explains why cabbages and kohlrabi are two important vegetables of the region.

Table 24: The effects of producing some kinds of vegetables in Van Duc-Gia Lam

Unit: 1,000 dong/sao/crop

Target	Kohlrabi	Cabbage	Sweet mustard	Broccoli	Yard long bean
1. Total revenue/sao/crop	1,050	1,060	610	1,310	800
2. Total expenditure/sao/crop	640	670	260	410	610
- Material cost	400	390	140	200	430
- Labour cost	240	280	120	210	180
3. Net profit	410	390	350	900	190

8. DIFFICULTIES

8.1. For producers

Like in Me Linh, farmers often grow 3-5 kinds of vegetables. Due to the unstable income, the workday value is not as high as in other activities such as breeding pigs, cows or working as employees. In recent years, farmers have changed part of their land into growing soybeans and peanut. From 1996, through the city's safe vegetable program, farmers have been able to attend IPM training classes and they know how *to* produce vegetables according to IPM procedures. However, the problem is how to market their vegetables at a price that is related to quality. In this flow, the relationship between farmers and downstream actors is very loose and seasonal. 'Safe' vegetables are now mainly sold at the price of normal vegetables.

8.2. For collectors

Collectors have to buy vegetables from two to four farmers to get high enough quantities to bring to Hanoi, so the cost for middlemen is raised markedly. The data above shows that

transportation accounts for 12% (including finding sources), and bridge and boat fees. There are many actors participating in this flow, farmers account for a higher proportion than in other previous flows (5/9 interview families). This makes the scale of actors smaller. The small scale of stakeholders impacts directly on the farmers' bargaining power.

8.3. For retailers

The cost of renting stores for retailers in Bac Qua-Long Bien market accounts for a great share of the cost structure of their trade (14% of the total cost).

8.4. Comments

– This flow has many similarities with the flow from Me Linh to Hanoi. This is an organized flow of marketing with four stakeholders participating with different functions.

– The relations among the stakeholders have been established but they are not close and regulated because there are no certain connection factors concerning quality, quantities or time of supply.

– One of the constraints of this flow is the income of producers, which has made them change their production strategies and lease their lands for other services. It has also made them change their crop structure, for example, changing from growing vegetables into soybeans, peanut. Important to note is that the number of farmers participating directly in the market is high but irregular. This causes a lack of information from the market being accurately transferred to the producing region. Moreover, the information is not centralized.

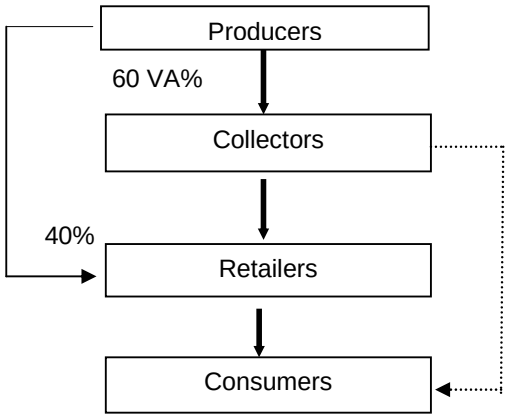
D- THE MARKETING FLOW OF VEGETABLES FROM THANH TRI TO HANOI

Thanh Tri is one of the districts having large low land areas so the main species of vegetables that Thanh Tri supplies are water vegetables: Ceylon spinach and water spinach. Such kinds of vegetables as: cabbage, kohralbi, sweet mustard, mustard greens and cauliflower, are grown on raised areas, however, these account for a little proportion.

1. DESCRIPTION OF PRODUCT CONSUMING FLOW

This flow is composed of three channels:

Diagram 4: Thanh Tri – Hanoi marketing flow



Channel 1: Has four main stakeholders participating: producers, collectors, retailers and consumers. This channel accounts for more than 60% of the volume that the area supplies daily.

Channel 2: Has four stakeholders participating. They are producers, retailers, and consumers. This channel accounts for nearly 40% of the volume. Producers participate in selling at wholesale markets as well as at the retailer markets. They even peddle in Hanoi city.

***Channel 3*:** A few collectors are also retailers in the city's markets.

2. THE ACTORS' PARTICIPATION AND THEIR SPECIFIC CHARACTERISTICS

2.1. Producers

The average cultivation area of researched families is relatively large, more than 3,000 m^2/family. Ceylon spinach is the main vegetable of the area. The season of the vegetable lasts until October, harvesting time is very short: about 25 days/crop. Producers are mainly individuals rather than part of a collective.

2.2. Collectors

Collectors supply products mainly to markets such as: Mo, Nga Tu So. The average volume is more than 150 kg/day. Collectors sell to 7 -10 retailers or canteens. Producers mainly transport by bicycle or motorbike, 140 kg/bicycle and 250 kg/motorbike. Collectors often sell one main kind of vegetables. Collectors buy product more regularly from 10 -15 producers.

2.3. Retailers

They often buy vegetables from collectors in night markets. The average purchased quantity of retailers is more than 60 kg/day. They buy in two ways: buying from collectors (accounts for 60% of their goods) and buying directly from producers (accounts for 40%).

3. THE RELATIONS AMONG STAKEHOLDERS IN THE FLOW

3.1. The relationship among producers

The connection between them and the market through middle stakeholders seems to be very loose. This may prevent producers from meeting the demand of the market to improve the quality of their products (safe vegetables).

3.2. Relations between middle stakeholders and producers

The collectors as well as other actors in the flow have few relations with other stakeholders or amongst themselves. For the normal vegetable flow, among the middlemen and

producers, there are no detailed requirements about quality or quantity apart from a fresh appearance with any insects. The purchase price depends mainly on the last price paid the day before. Collectors pay producers up to several days after buying products. Between producers and retailers, the relationship is seasonal. If buying products directly from producers the price will be 150 - 200 dong/ kg lower. However, retailers still buy mainly from collectors. This link in the chain accounts for roughly 60% of volume.

4. SCALE OF STAKEHOLDERS' TRANSACTIONS

Collectors purchase about 66 tons per year. They can sell a maximum amount of 400 kg/day and the minimum is 100 kg. Retailers have a volume of 20 tons/year, which is equivalent to 70 kg/day. This amount is relatively small in comparison with the volume of retailers in the flows above. Producers have a relatively large throughput of nearly 24 tons/year. We can see that the scale of middlemen is relatively small. Their scale depends on the scale of the markets that they participate in. The areas produce is mainly consumed at two main markets: Mo and Nga Tu So. These two markets are retail/wholesale markets; the marketed amount/day is lower than that of Dich Vong and Bac Qua-Long Bien market. On the other hand, the plethora of vegetable species produced affects the scale of middlemen, especially the collectors.

Table 25: Scales of stakeholders

Target	Producers (kg/day)	Middlemen (kg/day)	
		Collectors	Retailers
Max	42,000	350	90
Min	14,198	70	40
Average	24,000	150	60

5. TRADING FORMS OF ACTORS

The table shows that producers mainly sell vegetables to local collectors (60% of the volume). Collectors wholesale 80% of the vegetables to stores and other consumption points. Similarly, retailers mainly buy vegetables from collectors.

Table 26: Forms of trading products of stakeholders

Producers	**(%) volume**	
	Sold to collectors	Sold at markets
	60	40
Collectors	(%) volume	
	To retailers	To consumers
	80	20
Retailers	(%) volume	
	From middlemen	From producers
	60	40

6. THE INCREASE IN PRICES THROUGH STAKEHOLDERS

We can see the change of prices through stakeholders in this flow again using the cabbage. The following table shows that: for channel 1, the sale price from producer to collector rises

by 28%. The sale price from collector to retailer rises by 74%. For channel 2, the direct selling price of farmers to retailers is 100 dong/kg. Whereas, the purchase price for retailers is 150 dong/kg cheaper (Table 27).

Table 27: Changes in the price of normal cabbages

Product flows	Flow 1		Flow 2	
Target / Stakeholders	Selling price (dong/kg)	Price increase (%)	Selling price (dong/kg)	Price increase (%)
Price from producers	900	100	1,000	100
Price from collectors	1,150	128	-	-
Price from retailers	2,000	174	2,000	200

7. PRODUCTION RESULTS

Table 28 shows us the economic benefits for the actors concerned. Collectors have the highest income in comparison with other stakeholders in the flow: 49,000 dong/day.

The income of retailers is 36,000 dong/day and producers have a workday value of 18,000 dong/day, which is equivalent to 37% of that of collectors and 50% of that of retailers. In this flow, collectors and retailers receive a very low income/worker, the income/worker/year of producers is only 4.7 million dongs, and for collectors it is 5.7 million dongs.

Table 28: Income per stakeholder

Product flow	Income/worker/day		Income/worker	
Stakeholders	Flow 1	Flow 2	Flow 1	Flow 2
Producers	18,000	24,000	4,728,000	6,056,000
Collectors	49,000	-	14,700,000	-
Retailers	36,000	36,000	12,740,000	12,740,000

The cost structure table shows that: collectors spend 85% in buying products and retailers spend 80%. Collectors' transportation costs account for a high proportion in other costs. For retailers the cost of renting stores is the highest and accounts for 12%.

Table 29: Cost structure for production and trade activity of stakeholders per year

Target / Stakeholders	Total cost (1,000 d)	Among this						
		Buying goods Material (%)	Others (%)	Others expenditures				
				Tax (%)	Renting stores (%)	Transportation (%)	Tel (%)	Others (%)
Producers	3,912	-				-		
Middlemen	27,293	85	15	-		10	1	4
Retailers	22,976	80	20	4	12	-	1	5

8. DIFFICULTIES

8.1. For producers

The income of producers is very low: 18,000 dong/worker/day. Therefore, in the past 5 years, farmers have changed a part of their production area to aquatic products or other more profitable plants like medicinal herbs.

8.2. For middlemen

The above analysis shows that: the species of vegetables that the area supplies is more limited than that of other region. This is the main reason affecting the efficiency relative to scale for collectors. Small scale and low product values (average vegetable quality) have affected the income of collectors.

8.3. Conclusion

- This product flow is organized and there is a function assignment for each actor participating.
- Actors' scale is small. There is not a close relationship among stakeholders because they do not have defined connection factors concerning quality, quantities and supply.
- The specific products of the area are water vegetables (most of which is Ceylon spinach). However, the area has not developed a specific image for its products (the market requires diversity of products and qualities). These two features limit the development of the area at present.
- The limited incomes of collectors and producers have made many families change their strategies of trade and production.

E- MARKETING CHANNELS FROM CHINA

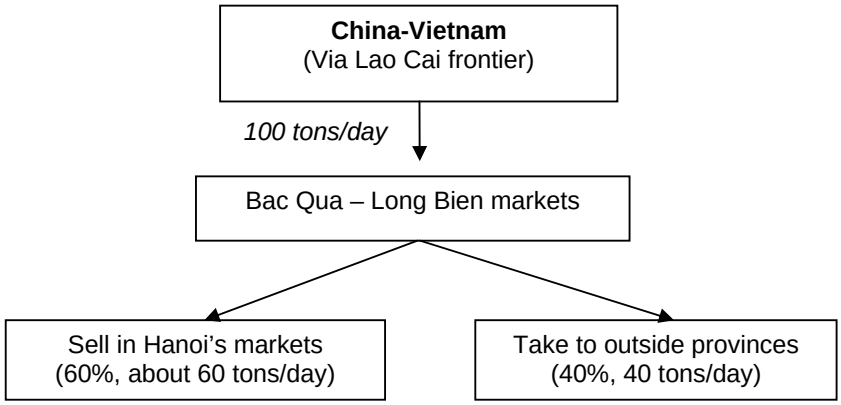
In recent years, the exchange in agricultural products, especially fresh vegetables, between Vietnam and China has mushroomed. According to interviews, Chinese products are imported to Vietnam all year. However, the highest volume is from May to September of the solar calendar and when there is a shortage of vegetables in winter in Vietnam. Main kinds of vegetables are cabbage, mustards, tomato, and carrot.

Table 30: Place of origin for vegetables, June and August

Kinds	June	August
Fresh onion	-	Hung Yen, Ha Tay, Bac Ninh, Tu Liem
Mint veg.	Gia Lam, Tu Liem, Dong Anh, Thanh Tri	Tu Liem, Gia Lam, HaTay, Thanh Tri
Tomato	Da Lat, China, Me Linh (few)	China, Da Lat, Son La
Cabbage	Da Lat, China	China
Green mustard	Hung Yen, Me Linh, Dong Anh, Thuong Tin, Tu Liem	Hung Yen, Dong Anh, Me Linh, Tu Liem
Cucumber	Hung Yen, Me Linh, Dong Anh	Hung Yen, Me Linh, Dong Anh
Yard long bean	Me Linh, Dong Anh, Hoai Duc, Hung Yen	Ha Tay, Hung Yen, Me Linh, Dong Anh
Ceylon spinach	Thanh Tri, Tu Liem	Thanh Tri, Gia Lam

Source: CIRAD/RIFAV surveys

Diagram 5: The vegetable flow from China to Vietnam



In the flow of vegetables imported from China, there are big traders at two points of the frontier. The actors at the sale point exchange information of market demands for quantity, species, and other requirements with their counterparts on the supply side. The main means of transportation is trucks. Vegetables are transported from the frontier to Bac Qua-Long Bien market to be sold. In the period of five months (from May to September), every day, there was an average of 100 tons of vegetables brought to this market for sale or resale to other markets. About 60% is consumed in the city and 40% consumed in other provinces.

F- VEGETABLES BROUGHT FROM DA LAT

Some years before, there were products brought from Da Lat: cabbages, mustards, tomatoes, potatoes, carrots and other raw vegetables. However, in recent years, Da Lat became un-competitive in comparison with Chinese vegetables because the transportation cost is lower (Chinese produce is brought to Hanoi from Lao Cai so the distance is shorter), Chinese vegetables are also fresher. This reason has made the volume of Da Lat vegetables decrease considerably in the Hanoi market. According to the research, Da Lat vegetables are brought to the North from May to late October. The high season is May to August with an average of more than 4 tons/day, consisting of mustard (50%), cabbage (25%), pepper and other vegetables (25%). Da Lat vegetables are mainly supplied to some restaurants and hotels that are accustomed to using Da Lat vegetables. According to traders, Da Lat vegetables are 'safe' so customers enjoy them very much, especially customers from Korea.

The main means of exchanging information is the telephone. The traders at markets have a direct relationship with producers in Da Lat. Among them, there are some agreements about vegetable sources as well as producers' responsibilities for the quality of the vegetables that they supply. In addition to that, traders at markets (in the North) also require targets; such as vegetables with no insects dry vegetables (to avoid the losses resulting from the rottenness during the transportation process of 48 hours).

Table 31: Time of bringing vegetables from China, Da Lat to Hanoi

Vegetables species	China	Da Lat
1/ Cabbage	April - Sept	April-May
2/ Cauliflower, mustard	April - September	June-September
3/ Tomato	April - June/September	June-September
4/ Potato	June - September	
5/ Onion	July - October	
6/ Carrot	May - October	
7/ Green pumpkin	March –J uly	
8/ Bean	March - July	
9/ Other vegetables (green pepper, kohralbi)	February - December	

Normally, the prices of vegetables from Da Lat are higher than that of vegetables imported from China (depending on the time of supply).

Table 32: The selling prices of vegetables brought from the two points (dong/kg)

Vegetable species	China	Da Lat
Mustard	3,500 – 4,000	5,000
Cabbage	4,000 – 4,500	4,000 – 4,500
Sweet pepper	8,000 –13,000	10,000 – 15,000
Tomato	4,000 – 6,000	5,000 – 6,000

According to comments from traders and retailers of Chinese vegetables, the appearance of the Chinese product is more beautiful than that of Da Lat because of their freshness and plentiful variety.

Traders also said Chinese products corresponded with market demand: tightly twisted cabbages, luxuriously red tomatoes, etc. However, in regard to quality, customers are more confident in Da Lat's vegetables. That is why when customers ask about the source of vegetables, sellers often say that their vegetables are from Da Lat (they only give the right sources of their vegetables to their regular customers).

Da Lat's mustards have greater demand than Chinese vegetables and Thanh Tri or Dong Anh's out of seasonal vegetables. Da Lat's mustards are white with long leaves and customers, especially Korean, prefer them.

The payment between stakeholders is often made via the post office or drivers.

V- DISCUSSION

The analysis of different flows of vegetables shows that:

– The relationship among stakeholders in the safe vegetable flow is closest in all vegetable supplying chains. Information about quantity and quality is exchanged among them to meet the demand of the market. The problem is making customers confident in the quality of the product.

– For other flows: although these flows have been established for a long time and they are organized, the relations among stakeholders lack closure. For example, Dich Vong is the biggest wholesale market, however, the trade relations among stakeholders are not regular. There have not been agreements among buyers and sellers about quantities and qualities.

– Flows (apart from safe vegetable flows) still lack regulation and information, by stakeholders, about market demand for producing regions. This is also a limit of the organization of the vegetable flows supplying near markets in general and the Hanoi market in particular.

– In two flows of vegetables brought from China and Da Lat, there are big traders at production and consumption points. These two stakeholders regularly exchange with each other about information relating to quantities, species, prices and other requirements of product quality.

In recent years, the Vietnamese economy has been improved rapidly with an average GDP growth rate of 7.0%/year. This rate has greatly influenced changes in food consumption of the Vietnamese people, especially in big cities. The demand for fruits and vegetables of municipal residents is increasing remarkably. In addition, the requirement on the quality, safety and hygiene of food is raised up. Over the past few years, vegetable production of Vietnam in general and of Hanoi in particular has seen rapid increases in quantity, species, and quality to meet the demand of the market. After analyzing four supply flows of vegetables to Hanoi, we want to concentrate on the following points.

A. FARMERS' PARTICIPATION IN THE MARKET AND ORGANIZATION OF FLOWS

Table 33: The factors reflecting the participating of farmers in the market

Target	Trading forms of farmers (proportion of product amount %)		Number of farmers participating in the market
	To collectors	To retailers	
Dong Anh	90	10	1/9
Me Linh	80	20	1/6
Gia Lam	56	44	5/9
Thanh Tri	60	40	6/10

For the safe vegetables flow, farmers mainly sell their products to collectors, in the three other flows, the proportion of vegetables which are self-sold by farmers rises from 20% to 44% of the quantity produced. Farmers participate in the chain with two main aims:

– Raise their incomes through bypassing traders and create jobs for members in their families: selling prices rise by about 10% in comparison with the selling prices to wholesalers.

– On the other hand, because the vegetable flows normally go to near markets the organization lacks closure. The relationship among stakeholders is not regular. When products are scarce, collectors come to buy but when products are plentiful, they choose carefully or they don't buy. This makes farmers sell their products themselves.

For one commodity chain, a high proportion of farmers participating in the market impacts greatly on their organization. The scale of middlemen, especially collectors, is limited. In each product flow, however, there is always a division of stakeholders (producers, collectors, retailers), in addition to these, there are other stakeholders participating in the markets that hold dual functions. It can be said that the actors in the commodity chain lack specialization and coordination to have information circulate from the market to production.

B. THE DIFFERENCES AMONG PRODUCT FLOWS

To understand the strategy of actors in each flow, it is necessary to understand the present difference between the safe vegetable branch and the normal one.

Table 34: The difference between clean and normal vegetable branches

Target	Safe vegetables	Normal vegetables
- Organization	Newly-founded	Founded for a long time
- Regulating stakeholders	Retailers	No actor
- Strategy	Widen city markets	Depend on the existing market
- Strong points	The connection between actors	Easily sold
- Weak points	High expenses	No factors connecting stakeholders
- Difficulties	Lack of methods to make consumers believe in the products	Low prices

The above table demonstrates that: for the safe vegetable chain, the strategy of each actor is expressed clearly; they all try to widen safe vegetable markets to raise their income.

– Producers in Van Noi have applied progress in seeds and techniques, have invested in production (net houses, drilling wells) and have chosen kinds of vegetables profitable relative to investment (leafy vegetables, short-crop vegetables, off-season vegetables).

– Collectors try to widen consumption markets. They exploit markets by attending conferences and meeting the demands of fellow traders (preparing vegetables according to requirements and supplying even in time of scarcity) to increase their credibility and gain opportunities to widen areas of supplying.

– Retailers in safe vegetable branches give more advantages to consumers. They are: supermarkets, stores of food companies. These retailers sell their product with municipal

licenses and keep their sales points clean and modern. Because of these advantages, their selling prices are higher.

– The normal vegetable commodity chains, especially the chain supplying nearby markets, are organized, however, the link between stakeholders is still loose. This chain has a tendency to reduce the number of actors with clear functions and replace them with stakeholders undertaking two functions at the same time (being producers as well as wholesalers/retailers; being collectors as well as retailers). The scale of the stakeholders participating in the chain may be reduced. The chain lacks stakeholders connecting supply and demand information. This makes the commodity chain operate inefficiently and in a scattered manner.

We also see that: safe vegetable chains have a closer organization partly because the stakeholders participating have relatively clear strategies and the connection among them is an important factor allowing market shares. It cannot be denied that the development of this commodity chain is due to the policies and active influences of the Ha Noi city Peoples Committee. Through product quality orientation and supporting policies to carry out safe vegetable programs to supply the city, the chain has developed strong foundations.

For the normal vegetable chains, the foundation of planned wholesale markets, e.g. Den lu and Dich Vong that are attached to producing regions that supply the city, had a positive impact.

C. DIFFERENCES AMONG PRODUCING REGIONS

1. ADVANTAGES OF PRODUCING REGIONS

Table 35: The results of rotational cultivation formula (1,000 dong/ha/year)

Producing areas / Targets	Dong Anh	Me Linh	Gia Lam	Thanh Tri
Rotational cultivation formula	R-R-WV V-V-V	R-R-WV V-V-V	R-R-WV V-V-C	R-R-WV V-V-C
Total revenue	99,280 157,172	10,9111 15,2847	83,788 121,078	87,006 83,791
Total cost	29,882 32,748	21,935 39,278	19,625 24,583	23,181 13,900
Profit	69,339 124,423	87,176 113,596	64,163 96,495	63,825 69,880

The data in Table 35 shows that the efficiency of the second formula: V-V-V/C for regions is on the whole higher than the first one. In percentage points: R-R-V, in Dong Anh: 79%, Me Linh: 30%, Gia Lam: 50.4% and Thanh Tri: 10%.

Table 36: The results of producing cabbages in producing areas

Unit: 1,000 dong/sao/crop

Target	Dong Anh	Me Linh	Gia Lam	Thanh Tri
1. Total revenue	1,200	990	1,060	810
2. Total expenditure	880	700	670	560
- Material cost	580	440	390	300
- Labour cost	300	260	280	260
3. Net profit	320	290	390	250

Table 36 shows that cabbage yields the highest profit of 390,000 dong/sao (360 m^2) in Gia Lam, the lowest in Thanh Tri: only 250,000 dong/sao which is equivalent to 60% of the vegetables produced in Gia Lam. The two remaining areas generate average profits.

Table 37: The results of producing sweet mustards in producing areas.

Unit: 1,000 dong/sao/crop

Target	Dong Anh	Me Linh	Gia Lam
1. Total revenue/sao/crop	900	750	610
2. Total expenditure/sao/crop	450	370	260
- Material cost	200	180	140
- Labour cost	250	190	120
3. Net profit	450	380	350

For sweet mustards, Dong Anh has more advantages. The profit from producing sweet mustards reaches 450,000 dong/sao in comparison with 390,000 dong/sao (or equivalent to 87%) in Me Linh district; in Gia Lam, 350,000 dong/ sao or equivalent to 78% of the production of Van Noi- Dong Anh.

Table 38: The results of producing broccoli in select areas.

Unit: 1,000 dong/sao/crop

Target	Dong anh	Me Linh	Gia lam
1. Total revenue/sao/crop	1,800	1,520	1,310
2. Total expenditure/sao/crop	680	600	410
- Material cost	430	380	200
- Labour cost	250	220	210
3 Net profit	1,120	920	900

The data shows that the profit from producing broccoli is very high: 1,120,000 dong/sao in Dong Anh, which is about 20% higher than that in Gia Lam and Me Linh districts.

Table 39: The results of specific vegetables of areas

Unit: 1,000 dong/sao/crop

Target	Sweet chilli (Dong Anh)	Ceylon spinach* (Thanh Tri)
1. Total revenue/sao/crop	3,500	3,000
2. Total expenditure/sao/crop	1,350	1,150
- Material cost	900	550
- Labour cost	450	600
3 Net profit	2,150	1,850

Sweet chilli is produced in Van Noi (out-of-season) mostly in July and is harvested within 3 months. It gives high income but requires investments in techniques and materials. That is why sweet chilli is grown out of season mostly in Dong Anh.

Ceylon spinach is the specific vegetable of Thanh Tri. Profit of a product cycle is relatively high: nearly 2 million/sao however the cycle is long (10 months).

2. COMPARING THE SCALE OF PRODUCTION AND TRADE OF EACH STAKEHOLDER

Table 40: Production and trade scale of each actor (ton/year)

Stakeholders	Dong Anh	Me Linh	Gia lam	Thanh Tri
Producers	14.3	13.7	14.7	24
Collectors	80	115	61.5	68
Retailers	59	37	44.3	16

2.1. For producers

There is only a little disparity in the production scale of the farmers in four regions. The farmers produce a volume of 14 to 15 tons per year in three regions. As for Thanh Tri, which is specialized in water vegetables, especially Ceylon spinach, the cycle of a vegetable is short so product volume is relatively high in comparison with other regions.

2.2. For collectors

Their scale is very different from each other. The producers in Me Linh are the stakeholders with the highest scale, which are twice that of Gia Lam's collectors, Thanh Tri's collectors and 1.5 times that of collectors in safe vegetable flows.

Maybe this is due to the clear assignment in function that allows middlemen, especially collectors, to have a higher efficiency relative to scale. In this flow, the number of farmers participating in the markets is the least in comparison with two flows from Thanh Tri and Gia Lam (Table 33). On the other hand, the characteristics of wholesale markets also influence greatly the scale of stakeholders. Dich Vong is a big wholesale market; the second is Long Bien- Bac Qua - wholesale/retail market. The smaller wholesale/ retail markets are Mo and Nga Tu So. As for the safe vegetable flow, this is a new business flow so its success depends on the establishment of relations between stakeholders at production and points of

consumption. Dong Anh is one of the regions producing the greatest amount of safe vegetables and with the ability to market them. One constraint is making consumers believe in the safe product of this region. However, the scale of the actors in the flow is large.

2.3. For Retailers

Their scale is relatively different from each other. However, the above figures show that the scale of stakeholders is closely related to the characteristics of the scale of markets. Retailers' scale in wholesale markets, wholesale/retailer markets is higher than in retail markets).

Table 41: Income of the stakeholders in 4 flows (multiplied by 1,000 dong)

Target Stakeholders	Dong Anh		Me Linh		Gia lam		Thanh Tri	
	*	**	*	**	*	**	*	**
Producers	32	5,700	29	3,117	28	5,681	18	4,728
Collectors	43	15,200	89	25,232	81	13,930	49	14,700
Retailers	98	22,113	58	17,000	73	16,927	36	12,740

**Income/ worker/ day, ** Income/ worker/ year*

2.4. For producers

There are no big differences in their income for the three regions. The highest is for safe vegetable producers. The disparity in the incomes of Gia Lam and Me Linh producers is negligible. It could be due to low terrain conditions and because the diversity of species is low, Ceylon spinach seems to have a lower value than other kinds of vegetables.

2.5. Summary

The natural ecological conditions that surround Hanoi (peri-urban areas) are very diverse and thus impact directly on the yield and income of all involved in the chain of supply.

Special characteristics of the peri-urban area make scale of production either more difficult or easier for each actor. It is important to note that the collectors face additional constraints in getting produce to markets due to sometimes needing to use water transport.

The distance between the production region and the market is one factor which has made significant influence either directly or indirectly on the difference of a commodity chain's organization (if the distance is far a smaller number of farmers (producers) participate in the market.

VI- CONCLUSION

Although there are differences from one production area to another and from one flow to the other, the actors' strategies can be broadly analyzed.

– The actors participate directly in the market, especially producers and collectors. Their objective is to increase their income, which creates more competition. This strategy influences the development and the efficiency of the commodity chain: the scale of each actor is smaller and the links among actors are looser. The direct results are that the information from the market to the production region is not concentrated and therefore there is a lack of co-ordination.

– Increasing the scale of production and trade, especially for the safe vegetable chain: the producers choose the vegetables with the shortest turnover time. This increases the amount of product regularly supplied to the market and the frequency of selling the products to the collectors. The collectors increase the scale by adding services. In this flow we begin to see specialization. In fact, the income of all actors is relatively stable and high, compared with other flows.

– When their income rises, consumers' demand for vegetables also goes up, not only in quantity but also in quality, variety, and availability.

– The consumption of safe vegetables in cities is still limited. This is mainly because consumers are not confident in the quality of the products, and thus are not willing to pay a higher price for safe vegetables.

– The limited number of safe vegetables consumed affects the income of the producers (they produce according to regulations, but have to sell at the price of normal vegetables because the market is too small).

– To solve this problem requires answering the questions of how to get the actors of the safe vegetable commodity chain to regulate themselves; and how to get them to act together to create standardized norms for product quality. Now, Hanoi City has programs to manage and audit the input of production (fixed kinds of chemicals that are allowed, spraying time, etc.). The management of products at consumption points will be more effective and it will force producers to respect the procedure of producing safe vegetables to supply demand.

– An important thing to note is he transportation costs and landing place fees for all vegetable commodity chains.

– The main objectives that lie behind our research should be to help (i) downstream actors build agreed norms for product quality; and (ii) upstream actors respect and implement procedures for producing safe vegetables to meet the demand of the market through cooperation among producers.