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Ministry of Trade
Of S.R. Vietnam

Analysis of safe vegetables value chain in Hanoi province

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Ha Noi, March 2006

Table of contents

I -	Abstract	5
II -	Introduction.....	5
1-	Context of study.....	5
2-	Study objectives.....	6
3-	Scale of study.....	6
4-	Method of data collection.....	6
5-	Some regulations about safe vegetables.....	6
5.1-	Definition of safe vegetables.....	6
5.2-	Other relevant regulations.....	8
III -	Overview of Ha Noi city.....	8
1-	Geographical position.....	8
2-	Land.....	8
3-	Climate.....	8
IV -	Characteristics of production areas	9
1-	Places producing safe vegetables.....	9
2-	Places selling safe vegetables.....	12
2.1-	Safe vegetables stalls in markets.....	13
2.2-	Vegetables sold in supermarkets.....	15
2.3-	Shops selling safe vegetables in streets.....	16
V -	Safe vegetable supply chain for Hanoi city.....	18
1-	Map of safe vegetables supplying vegetable chain.....	18
2-	Characteristics of participants of safe vegetable supplying chain.....	20
2.1-	Producers.....	20
2.2-	Collectors.....	20
2.3-	Middlemen.....	21
2.4-	Retailers.....	21
3-	Relationship of stakeholders in the safe vegetable supplying chain.....	21
3.1-	As for producers.....	21
3.2-	The relationship between producers and collectors.....	22
3.3-	The relationship between middlemen and producers.....	22
3.4-	The relationship between collectors and retailers.....	22
3.5-	The relationship between middlemen and retailers.....	23
3.6-	The relationship between producers and retailers.....	23

4-	The average scale of stakeholders in safe vegetable chain.....	24
5-	The change in vegetable prices through stakeholders.....	24
6-	Structure of price formation through stakeholders.....	25
7-	Economic efficiency of some safe vegetables.....	27
8-	Information about some safe vegetable producers.....	28
9-	Some difficulties faced by stakeholders	32
9.1-	Safe vegetables producers.....	32
9.2-	As for middlemen stakeholder.....	32
9.3-	As for retailers.....	32
VI	Conclusions and recommendations.....	33
1-	Conclusions.....	33
2-	Recommendations.....	33
2.1-	Safe vegetables producers.....	33
2.2-	Intermediary actors.....	34
2.3-	Safe vegetables retailers.....	34
2.4-	Other recommendations.....	34
	References.....	35

List of tables

Table 1 -	Standards of Nitrate content (NO ₃).....	7
Table 2 -	Content of heavy metals and toxin.....	7
Table 3 -	Extra amount of pesticide	7
Table 4 -	Field area, productivity & output of safe vegetables in some districts.	11
Table 5 -	A list of safe vegetable stalls in markets.....	13
Table 6 -	Average expenses and revenues for a stall.....	15
Table 7 -	A list of supermarkets where selling safe vegetables.....	15
Table 8 -	A list of shops selling safe vegetables in streets.....	17
Table 9 -	Average expenses and revenues for a shop selling safe vegetables.....	18
Table 10-	The product scale of stakeholders participating in safe vegetable chain.....	24
Table 11-	The change in tomato prices through stakeholders in the distribution channel.....	24
Table 12-	The tomato price formation through stakeholders in the distribution channel.....	25
Table 13-	Production costs and economic efficiency of tomato and water morning glory.....	27
Table 14-	A list of safe vegetable organizations.....	28

List of figures

Figure 1 -	Production of safe vegetables in Ha Noi city	10
Figure 2 -	Area, yield and production of safe vegetables of Ha noi city.....	12
Figure 3 -	Safe Vegetable chains supplying Hanoi	19

I - Summary

The urbanization process has a negative impact on agriculture land area. The obvious result is the dramatic drop in agriculture land. So, it becomes harder for farmers living in outskirts to carry out agricultural production. Consequently, they have to change their production habits such as: a part of agricultural labor has moved to non-agricultural production; they have specialized in specialty trees (fruit trees, bonsai...); or moved from producing normal vegetables to safe vegetables. Together with the change in the production habits is the change in production organization such as: the appearance of groups, new style specialized cooperatives, companies Ltd. which specialize in producing and distributing safe vegetables...

However, the country's safe vegetable chain and that of Hanoi in particular are now facing several difficulties:

- Safe vegetables producers have difficulties and risks in commercializing their products. It is common knowledge that safe vegetable's prices are often higher than those of normal ones (mostly in retailing stage), but not all of safe vegetables can be sold at prices of safe vegetables.
- Consumers haven't got confidence in the quality of safe vegetables, so they are not willing to pay a far higher price for "safe vegetables".
- On Hanoi's market, the management of vegetables value chain and of safe vegetables selling points in particular (supermarkets, shops, stalls...) hasn't been carried out as expected.
- The system of building safe vegetable value chain is not fully established.

II - Introduction

1- Context of study

GTZ, Metro Cash company, Carry Vietnam and the Vietnam Ministry of Commerce have collaborated to carry out the project named "Supporting the development of vegetable value chain" since 2005. Meanwhile, the program "developing small and medium-sized enterprises" in the cooperation framework between Vietnamese and German Governments which has been carried out by the Ministry of Planning and Investment and GTZ also concentrates on helping raise competitiveness of several small agricultural branches through working on "upgrading value chain".

In order to have a basis for establishing a supportive plan which can meet requirement of vegetable value chain and to measure level of impact of such supportive activities, the project and program mentioned above have decided to carry out the research "Safe vegetable value chain" in Hanoi in order to identify activities.

2- Study objectives

- Collecting data about safe vegetables value chain basing on study contents. Then describing the current situation and analyzing value chain.

- As mentioned above, this intends to help identify project's intervention and collect information for measuring the intervention level.

3- Scale of study

- Selected production regions for the study are in Dong Anh district because this is one of the outskirts districts which have large growing area of safe vegetables to supply for inner districts.
- Safe vegetable markets will be investigated in some inner districts where there are many shops, stalls and supermarkets like Hoan Kiem, Dong Da and Cau Giay...

4- Method of collecting information

- Basing on information collected from safe vegetable shops, stalls and supermarkets to identify safe vegetable supplying sources for Hanoi.
- Quick investigation of some middlemen stakeholders: collectors and traders which are identified in supplying channel mentioned above in order to understand the organization, operation and decisiveness of stakeholders when they participate in transaction. This investigation is also the basis to identify production region, these stakeholders' operation and relationship with retailers and producers. From information selected above, we will have thorough study of several collectors, traders, retailers and producers.
- Investigating stakeholders who operate in the same network (collectors/traders, traders/retailers, producers/collectors) in order to understand the role of these stakeholders, their strategy and relationship with each other in the value chain.
- Studying stakeholders in order to understand factors that limit their product exchange.
- In this report, we consider safe vegetables and clean vegetables having the same meaning, and the same to value chain and value chain.

5- Some regulations about producing safe vegetables

5.1 - Definition of safe vegetables

Safe vegetables can be seen as vegetables which are produced in accordance with the following technical procedure:

- Safe vegetables have good quality, are in good condition and fresh.
- Pesticide residues, nitrate and heavy metal content is low.
- Pestilent insect or harmful microorganism free.

Table 1: Standard in Nitrate content (NO₃)

Unit: mg/kg fresh vegetable

<u>Vegetable</u>	Threshold level	<u>Vegetable</u>	Threshold level
Kohlrabi	Less than : 500	Wax gourd	Less than: 90
Cabbage	Less than: 500	Water melon	Less than: 60
Carrot	Less than: 200	Asparagus	Less than: 200
Onion	Less than: 80	Gourd	Less than: 400
Spring onion	Less than: 400	Green bean	Less than: 200
Potato	Less than: 250	Eggplant	Less than: 400
Baby corn	Less than: 300	Salad	Less than: 500
Tomato	Less than: 150	Capsicum	Less than: 200
Cucumber	Less than: 150	Cauliflower	Less than: 500

Source: MARD

Table 2: Content of heavy metal and poison

Unit: mg/kg fresh vegetable

<u>Kinds</u>	<u>Acceptable amount</u>	<u>Kinds</u>	<u>Acceptable amount</u>
Lead (Pb)	Max: 0,5	Canidi (d)	Max: 0,03
Arsenic (As)	Max: 0,2	Mercury (Hg)	Max: 0,02
Copper (Cu)	Max: 5,0	Zinc (Zn)	Max: 10,0
Tin (Sn)	Max: 20,0	Aglôtoxin	Max: 0,005
		Palutin	Max: 0,05

Source: MARD

Bảng 3 : Tolerant quantity of phyto-sanitary product

Unit: mg/kg fresh vegetable

Pesticide	Vegetable for leaves	Vegetable for fruits	Vegetable for root	Isolation period (days)
Basudin 10G	0,5-0,7	0,5-0,7	-	14 - 20
Diptorex 80	0,5	1,0	-	7
Dimothoet 50EC	0,1	0,5-1,0	0,5-1,0	7 - 10
Carbaxit 80WP	1-1,2	1,0-1,5	-	7
Padan 95 WP	0,2	-	-	14
Sanusidin 20EC	0,1	2,0	0,2	14 - 20
Decis	0,1	-	0,2	RAL: 7 - 10 RAQ: 3 - 4
Slerpa 25EC	-	-	-	RAL: 7 - 10 RAQ: 3 - 4
Kovote 2,5EC	0,03	0,02	-	4 - 10
Trebon 10EC	-	-	-	3

Source: MARD

5.2 – Other related regulations

- Reasonable amount of fertilizer
- Amount of chemical fertilizer is not higher than accepted and isolation period is more than 14 days
- Using long-term muck.
- Interdict to use the fresh manure, human manure and urea for vegetable fertilizer. Tolerant use of old manure only. The vegetable is being ready for consumption is 1 month in summer or 2 months in winter after being fertilized.
- Use the bio-organic fertilizer and leaf fertilizer Thien nong.
- Interdict to use the wasted water for vegetable irrigation, only use the water source from river or lake non-polluted.
- Not using pesticide group 1 and isolation period before consumption of other vegetable is from 10 to 15 days, depending on each kind of vegetable.

III - Overview of Hanoi city.

1- Geographical location

Hanoi, the capital of the Social Republic of Vietnam, is inside the Red river delta. It is on the latitude of 20°53'-21°23' in the north, 105°44'-106°02' in the east. It has the length of 50km from north to south, and the width of 30km from east to west. It shares the border with Thai Nguyen province on the North, with Bac Ninh and Bac Giang provinces on the East, with Hung Yen on the Southwest, with Ha Tay on the South and with Vinh Phuc on the East.

2- Land

Hanoi has a total land area of 921km² in which 3 main kinds of land is alluvium, dried soil and acrisols. Most of the alluvium is from rivers with an area of 2.500 ha and mostly in Gia Lam district, Thanh Tri, Tu Liem and some communes of Dong Anh district. Dried land's area is of 33.000 ha and can be found in some regions of Dong Anh and Soc Son districts acrisols's area is 5.900 ha.

3- Climate

Hanoi in the region of monsoon tropical climate with an average rainfall of 1.689 mm, 80% of which is in May to August, heavy rain and flood are normally in July. Dry season is from November to April the following year. The driest month is December, January and February.

The annual average temperature is 24°C. January is the coldest month with an average temperature of 16°C. July is the hottest one with an average temperature of 29°C. The moisture lasts throughout the year, but the highest moisture months are March, April and August, and the lowest ones are October, November and December.

The average sun per day is 4 hours, and from May to October, this can be 5-6 hours. However, this is only 1,6 hours per day in February and March.

In general, Hanoi isn't attacked by flood as much as other tropical cities like Ho Chi Minh and Da Nang cities. The temperature during the light is not too high or not too low so it is very good for vegetables to grow.

However, rather high moisture is the difficulty for Hanoi vegetable grower because it creates good conditions for insects to develop.

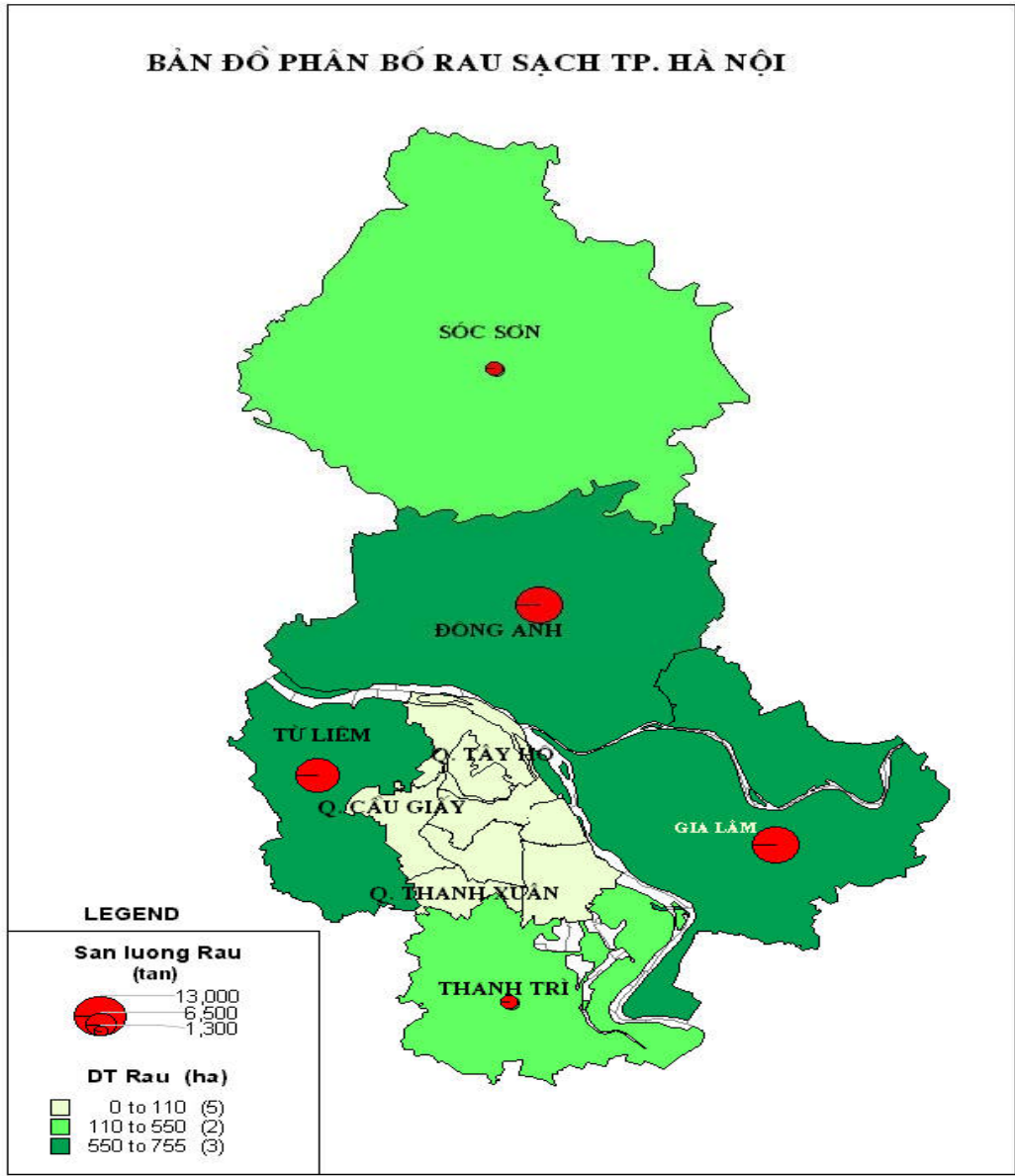
IV Specific characteristics of production regions and product commercialization points

1. Production regions of safe vegetables

Safe vegetables have been grown in the suburbs of Hanoi since 1996, especially, safe vegetables growing area has risen fast since 1999 when the City planned to develop a project on safe vegetables to supply for market in districts. Some communes like Van Duc and Dang Xa of Gia Lam district, Van Noi of Dong Anh district, Linh Nam of Thanh Tri district, Thanh Xuan and Dong Xuan of Soc Son district have been chosen as pilot production regions. Thanks to these policies, vegetables area has risen remarkably.

Figure 1

BẢN ĐỒ PHÂN BỐ RAU SẠCH TP. HÀ NỘI



Up to now, a lot of farmers have moved from growing rice into vegetables (eg. Linh Nam and Van Noi communes have over 15% of farmers who specialize in high-tech vegetables that requires fairly big investment). Vegetables are more and more diversified. If before 1996, there were only some main kinds of vegetables, such as kohlrabi, cabbage, tomato, etc of the main crop, now, farmers have over 30 various kinds such as: cabbage, tomato, salad, Chinese pea, cucumber, basella alba, water morning glory, etc. Especially, thanks to this policy, area of wrong - crop vegetables has also increased remarkably to over 15 kinds

However, in fact, the effectiveness of safe vegetables for producers are not stable because of product commercialization risks which have discouraged farmers to invest bravely. So, growing vegetables is still being competed by others such as non-agricultural production with cost of working of 25,000 dong to 30,000 dong per day

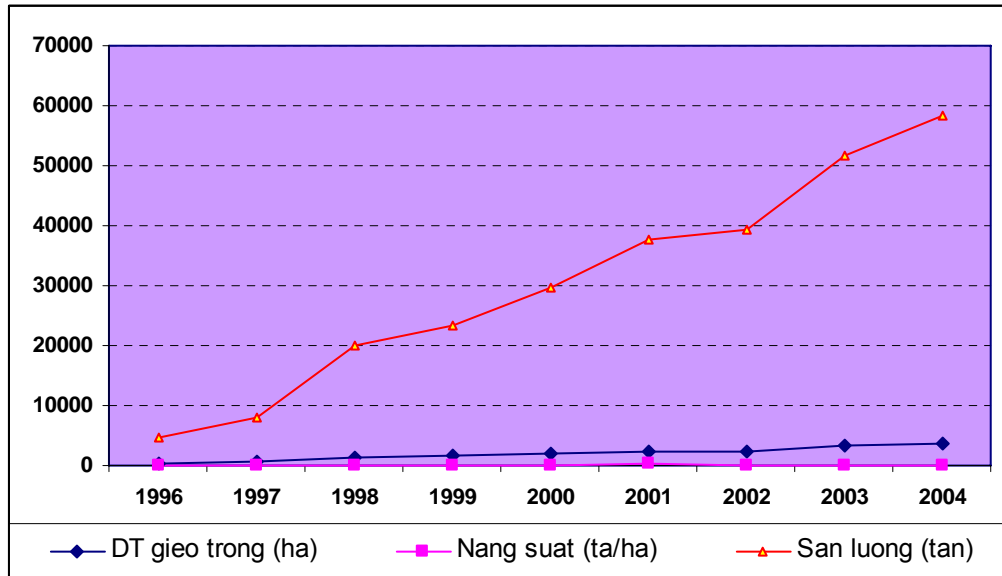
Table 4: Area, yiel and production of safe vegetables of Ha noi

District - Commune	Area (hectare)	Yield (tonne/hectare)	Production (tonne)	Quantities sold at price of Safe vegetable	Number of vegetables
1 - Dong Anh					
- Van Noi	60*3crops	20 - 25	3600 - 4500	1800 (40 - 50%)	Seasonal (43 types)
- Nam Hong	35*3crops	16 - 18	1700 - 1900	150 - 190 (10%)	Kohlrabi, cabbage, pumpkin buds...
- Bac Hong	30*3crops	16 - 18	1400 - 1650	700 - 800 (5%)	Tomato, kohlrabi, cabbage, green peas
- Nguyen Khe Tien Duong Kim Chung Kim No	100*3crops	15 - 16	4500 - 4800	200 (5%)	Tomato, kohlrabi, potato and variety of cabbage
2 - Gia Lam					
- Van Duc	100*3crops	16 - 17	4800 - 5000	100 (2%)	Cabbage, tomato, green peas, kohlrabi and variety of cabbage
- Dang Xa	50*3crops	15 - 16	2200 - 2400	115 (5%)	Variety of cabbage, green peas, tomato, cabbage
- Dong Du	40*3crops	16 - 17	1900 - 2000	400 (20%)	Eryngium, dills and another vegetables
- Le Chi	50*3crops	15 - 16	2250 - 2400	50 (2%)	Variety of seasonal vegetable
3 - Thanh Tri					
- Linh Nam	20*3crops	19 - 20	1140 - 1200	30 (2.5%)	Water morning glory, Sauropus androgynus, basella alba, pumpkin buds and another vegetables
- Yen My	15*3crops	15 - 16	675 - 720	70 (10%)	Cauliflower, tomato and variety of cabbage
- Duyen Ha	25*3crops	15 - 16	1120 - 1200	58 (5%)	Tomato and variety of cabbage
4- Tu Liem					
- Tay Tuu Minh Khai Phu Dien Lien Mac	185*3crops	19.5	108225	1100 (10%)	Fills and vegetables for leafs
5- Soc Son					
- Dong Xuan	50* 3crops	15	2300	100 (4%)	Cabbage, kohlrabi, vegetable maize and variety of cabbage
- Thanh Xuan	10*3crops	15	450	115 (25%)	Cabbage, kohlrabi, another cabbage, cucumber, pumpkin buds...

Source: Service of Hanoi Agriculture and Rural Development

Table 4 gathers information of production regions with big volume of safe vegetables in the suburb communes of Hanoi, products from these regions are supplied for supermarkets, safe vegetables shops in urban districts

Figure 2 : Area, yield and production of safe vegetables



Source: Ha noi of central vulgarization

2. Retailing points of safe vegetables

Investigation result on Hanoi market shows that supplying channels of safe vegetables have a diversification with various management and organization. The concentration is on the channels from 5 suburb districts of the city: Dong Anh, Gia Lam, Thanh Tri, Tu Liem and Soc Son

Retailing points of safe vegetables of inner districts of Hanoi are: safe vegetables stalls in markets, supermarkets and safe vegetables shops on streets. Some points have commercialized big volume of safe vegetables in Hanoi, such as: Big C and IMTIMEXT supermarkets (350 kg per day), Fivimark (150 kg per day), Hom market, Thanh Cong market, Nghia Tan market, etc. Kinds of safe vegetables are fairly diversified, but they depend on season: from solar August to February, there are usually over 30 kinds of vegetables (including kinds of dill, bulbs and fruits). According to sellers, this time of the year has the most kinds of vegetables with beautiful form (main crop products winner vegetables in Red river delta). Other time has fewer kinds of vegetables, only from 15 to 30 kinds (depending on the location of selling points and supplying resources). About 60% of sold safe vegetables are packed in plastic bags with label (printed on the bags or on hard paper) which have name of production unit, address, telephone of production unit, kind of product, selling price (50% of sold safe vegetables have been posted price), harvesting date and production process which are not in details.. To understand retailing forms of safe vegetables more clearly, we have some main characteristics as follow:

2.1. Safe vegetables stalls in markets

There are over 16 safe vegetables stalls in markets only in Hoan Kiem and Cau Giay districts, among them, some markets have a lot of stalls such as: Nghia Tan, Hang Be markets (Table 5)

Table 5: List of safe vegetables market stalls

Names of Stalls	Address	Area of Stall (m ²)	Volume traded (kg/ day)	Number of vegetable
Safe Vegetable Stall- Van Noi	Buoi market	2	60	18
Safe Vegetable Stall- Van Noi - No 5	Nghia Tan market	4	120	30
Safe Vegetable Stall- Van Noi - No 8	Nghia Tan market	4		30
Safe Vegetable Stall- Van Noi - No 10	Nghia Tan market	4	200	30
Safe Vegetable Stall	Nghia Tan market	4		30
Safe Vegetable Stall	Nghia Tan market	4	150	30
Safe Vegetable Stall	Nghia Tan market	4	110	30
Safe Vegetable Stall	Nghia Tan market	4		30
Safe Vegetable Stall of Thanh Tri Production Cooperative	9/ 12 market	3 - 4	100	15 - 20
Safe Vegetable Stall of Van Tri Production Cooperative	9/ 12 market	3 - 4		15 - 20
Safe Vegetable Stall	Hang Da market	3 - 4	70	15 - 20
Safe Vegetable Stall	Hang Da market	3 - 4		15 - 20
Safe Vegetable Stall – HN Food Co.	Dong Xuan- Bac Qua market	3 - 4	100	15 - 20
Safe Vegetable Stall - Dong Anh	Hang Be market	3 - 4		15 - 20
Safe Vegetable Stall - Dong Anh	Hang Be market	3 - 4		15 - 20
Safe Vegetable Stall - Dong Anh	Hang Be market	3 - 4	120	15 - 20

Source: Survey data of DSA-VASI in 2005

Safe vegetables stalls in markets usually have area of 2 to 4 square meters, having signboard with name and address of production unit (eg. Van Tri safe vegetables production cooperative) or name and address of selling unit (eg. Hanoi food Company). Vegetables are displayed on stands or plastic baskets for sale.

Activity of these stalls usually begins from 6 a.m to 12 a.m, and from 2.30 p.m to 7 p.m in summers, and in winters, they usually open about 30 minutes later in the morning and

close 1 hour earlier in the evening. However, some shops of Van Tri safe vegetables production cooperative only open in the morning

Kinds of vegetables sold in stalls are fairly diversified, but they depend on season, from solar August to February usually have over 30 kinds (including dill, bulbs and fruits). According to sellers, this time has the most kinds of vegetables with beautiful form (main crop products winner vegetables in Red river delta). But for various time in year, fewer kinds of vegetables are displayed for sale, only from 15 to 30 kinds (depending on position of selling stalls and supplying resource). About 60% of safe vegetables sold in stalls in markets are packed in plastic bags with label (printed on the bags or on hard paper) which write name of production unit, address, telephone of production unit, kind of product, selling price (50% of sold safe vegetables have been posted price), harvest date (40% of stalls). Production process is mentioned vaguely, not in details.

Every stall usually has one, sometimes two sellers. These sellers are members of safe vegetables production cooperatives (Dong Anh, Thanh Tri); staff of Hanoi food Company; some run safe vegetables stalls for profit. According to some sellers' estimation, every day, they sell at least 60 kg, and sometimes up to 200 kg and at an average of 120 kg per stall.

Most customers who buy vegetables of the stalls have stable income, such as civil servant, retired people and traders. Sales volume is usually from 0.5 to 2 kg for each buyer each time. According to sellers, these customers often come to buy vegetables after they are told by their friends. Before becoming loyal customers, they have wondered about or asked the questions relating to quality, price and form of product. Attracting loyal customers to come to buy vegetables is one of the reasons why safe vegetables stalls in market have stable sales volumes every day. So, sellers can estimate vegetables volume they need to order for selling next day or next week

Table 6: Cost and average income of a market safe vegetable stall

Criteria	Value
Operation capital (VND/month)	500 000
Cost (VND/month)	10 306 000
1 - Cost of goods sold	9 000 000
2 - Package + plastic bags	150 000
3 - Water and Electricity	36 000
4 - Hygiene fee	30 000
5 - Parking fee	30 000
6 - Store rent	600 000
7 - Tax	60 000
8 - Petrol	300 000
9 - Motorbike repairing fee	100 000
Sales volume of vegetable (kg/month)	3 600
Difference between purchasing and selling prices (VND/ kg)	600
Total revenue (VND/ month)	11 160 000
Profit (VND/month)	854 000
Profit/day (VND)	29 000

Source: Survey data of DSA-VASI in 2005

Stalls' operating capital is not large, other expenses such as rent selling points, tax depend on location and size of the stalls (rent for stall is 46%)

Stalls choose one member of family to be mail seller with 30 working days per month.

2.2. Vegetables sold in supermarkets

Up to now, there are 2 supermarkets in Cau Giay district and 5 supermarkets in Hoan Kiem district where have been selling safe vegetables. Safe vegetable stalls in supermarkets usually have an average area of 2 square meters, no sign with name and address of individual clean vegetable stall. Vegetables are displayed in shop window, on stand or in plastic baskets. The operating time of clean vegetable stalls is from the opening to closing hour of supermarkets.

Table 7: List of supermarkets selling safe vegetables

Name	Address	Telephone	Area of Stall (m ²)	Sales volume (kg/ day)	Number of vegetables
Quan Nhan Supermarket	Tran Dang Ninh Street	04 7910217	2	50	15
BigC	Tran Duy Hung Street		16	350	20
Supermarket- No 5 Nam Bo	No 5 Nam Bo - Hoan Kiem	04 7474853			
MINIMAX Supermarket	No 66 Ba Trieu - Hoan Kiem	04 9430466		30	7
INTIMEXT Supermarket	No 29-33 Le Thai To-Hoan Kiem	04 8256105		300 - 350	30
Fivimart	Tran Quang Khai Street			100 - 150	18
Vinaconex	Trang Tien Plaza				

Source: Survey data of DSA-VASI in 2005

Vegetable kinds sold in supermarkets aren't usually as diversified as in safe vegetable stalls in markets, only from 15 to 20 kinds, and the kinds of vegetable sold are often the same through seasons. However, in general, vegetables in supermarkets are packed in attractive plastic bags carefully, having labels printed on bags or on papers with name of production unit, address and telephone of production place, kind of product, selling price, harvest date; however, production process is still vaguely mentioned.

Vegetable sellers in supermarkets aren't educated in fruit and vegetable, each supermarket usually has one person who manages to sell fruit and vegetables and other foods such as meat, fish, etc, they work according to shift and get monthly salary like staff who sells other goods.

Customers who buy vegetables in supermarkets have high income, such as: civil servant, foreigners, the people trading high-value goods and some retired staffs

2.3. Safe vegetables shops in streets

According to general survey on area of Cau Giay and Hoan Kiem districts, there aren't many safe vegetable shops on streets today, the main reason is that they have many difficulties in finding selling points of safe vegetables, expense of renting shop is very high (600,000 dong to 1,500,000 dong per month). According to our preliminary statistics, there are only 3 safe vegetable shops in these 2 districts

Safe vegetable shops have an area of 3 to 4 square meters which all have signs with name and address of production unit (Van Tri safe vegetables production cooperative). Vegetables in shops are displayed on stands or tables and in plastic baskets for sale.

Working time of shops is usually similar to that of safe vegetable stalls in markets, vegetable kinds are fairly diversified, but not as many as those sold in stalls in markets. Product kinds here depend on crop: from solar August to February, shops usually have over 25 kinds (including kinds of dill, bulbs and fruits), other times in year, vegetable changes from 15 to 20 kinds. In general, few shops pack vegetables in plastic bags with print label, production unit, address and telephone of production place, name of product. In 3 surveyed shops, only one shop posted price, harvesting date and production process.

Table 8: List of enumerated safe vegetable stores

Name of selling place	Address	Area of selling place (m ²)	Volume (kg/ day)	Number of vegetables
Safe Vegetable Store - Van Noi	Nguyen Khang Street	3	70	22
Safe Vegetable Store - HN Food Co.	Han Thuyen Street	3 - 4		15 - 20
Store of Thon Dam Safe Vegetable Production-Consumption Cooperative - Van Tri	Nghia Tan Street	3	80	25

Source: Survey data of DSA-VASI in 2005

Every shop usually has one seller, they are mainly members of safe vegetable cooperatives (Van Noi of Dong Anh), some traders in Hanoi and nearby provinces (Bac Ninh, Ha Tay, etc) also open clean vegetable shops. According to retailers' evaluation, their family's income is at an average level in comparison with other families in place where they live. Safe vegetable shops help them earn a remarkable income, with minimum profit of 500 dong per kg, so, their average profit is 19,000 dong per day. According to sellers, every shop sells at an average of about 80 kg of vegetable per day. However, sales volume depends on each shop's location, so sales volumes of different shop are not the same.

Customers are mainly retired staff, civil servants and traders. Customers buy with different quantity ranging from 0.5 to 1.5 kg each time. Every shop usually has from 20 to 30 loyal customers who often come to buy vegetables, nonresident customers are about 50 to 80 people per day. These nonresident customers are the people who buy vegetables for the first time, or sometimes drop in shops

In general, the rent paid for safe vegetable shops in streets is usually higher than that in markets (hold 65% of total expenses), but sellers reduce some other expenses such as tax, plastic bags, etc, so total expenses are usually lower (Table 9)

Table 9: Cost and average income of a safe vegetable store

Criteria	Value
Operation capital (VND/month)	500 000
Cost (VND/month)	8 428 000
1 - Cost for buying vegetable	7 200 000
2 - Package + plastic bags	100 000
3 - Water and Electricity	36 000
4 - Hygiene fee	30 000
5 - Depreciation	17 000
6 - Store rent	800 000
7 - Tax	45 000
8 - Petrol	150 000
9 - Motorbike repairing fee	50 000
Selling volume of vegetable (kg/ month)	2 400
Difference between buying and selling prices (VND/kg)	750
Total revenue (VND/month)	9 000 000
Income (VND/month)	572 000
Income/day (VND)	19 000

Source: Survey data of DSA-VASI in 2005

Every shop usually has one seller who work 30 days per month.

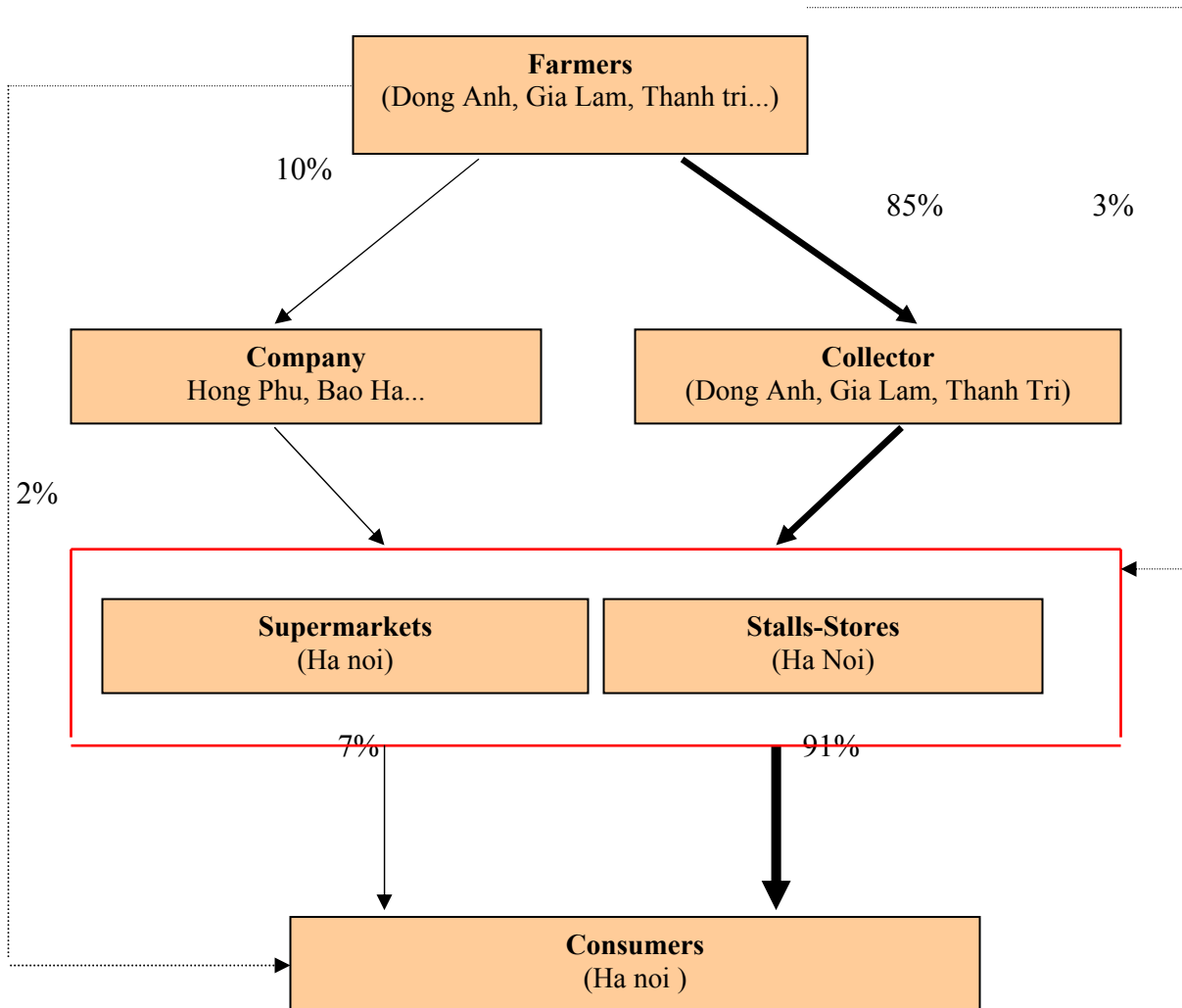
V. Supplying channels of safe vegetable for Hanoi City

1. Diagram of supplying channels of safe vegetables

Channel 1: This commercialization channel includes 3 main actors: producer, collector and retailer (safe vegetable shops and stalls in markets and streets, supermarkets and other selling points). This channel accounts for nearly 85% of total volume of safe vegetables which supply for Hanoi market every day. In this channel, there are many cooperatives, safe vegetable producer groups which are established and provided material facilities and training in IPM by the department of Hanoi, Hanoi Agricultural extension center, domestic and foreign organizations, such as: ADDA relating with farmers association of Hanoi, etc

Channel 2: This is the supplying channel of safe vegetables including 3 main stakeholders: producers, intermediate companies (Hong Phu, Bao Ha, etc) and retailers (supermarkets, trade centres, safe vegetables shops and stalls). It is estimated that this channel holds about 10% of supplying volume of products. Producers of this channel are the members of safe vegetable producer cooperative, safe vegetable producer groups founded by ADDA and Farmers association of Hanoi. They supervise the practice of growing safe vegetable and the packaging process with the association of the Department of sanitary protection (some products have packing, labels, barcode and seal with lead by each bunch of vegetables). Products in this channel are often tested in terms of heavy metal content, sometimes pesticide residues as well.

Figure 3: Safe Vegetable chains supplying Hanoi



Note: 100% = 15 tonnes of safe vegetable per day, safe vegetable makes up for 6% of the total vegetable sold in Ha noi market

Channel 3: This channel includes 2 main actors: producer and retailer (shops and stalls in inner markets), this channel holds modest rate, about 3% of safe vegetables volume. Producers at cooperatives (Van Noi, Linh Nam, Dang Xa, etc) sell safe vegetables products for safe vegetables shops and stalls at inner markets. Retailers in this channel are mainly traders living in the urban and some others coming from safe vegetables producing regions, such as Linh Nam of Thanh Tri, Van Noi of Dong Anh, Dang Xa and Dong Du of Gia Lam

Channel 4: Producers directly sell safe vegetables to consumers, this channel accounts for a small proportion of about 2% of products produced. In this commercialization channel, some members of safe vegetables cooperatives both produce and open safe vegetables shops and stalls to sell products directly to consumers.

Today, safe vegetables production organizations open selling points for consumers, which are applied more and more popularly, an example of this form is members of safe vegetables production cooperative in Dam hamlet of Van Noi commune (cooperative has 13 members who produce safe vegetables, of which 10 members have shops to sell products directly)

2. Specific characteristics of actors who participate supplying channel of safe vegetables

Commercialization channel of safe vegetables includes main actors as follow: producers, collectors (individual and intermediate company, etc), retailers (safe vegetables shops and stalls and supermarkets) and consumers. The following analysis (analysis on 3 actors from producer to retailer) allows us to understand some specific characteristics of each actor

2.1. Producers:

Safe vegetable production is regarded as one of the activities which give farmers major income. Especially, in recent years, safe vegetable producers have been trained with production process and protection methods of general epidemic diseases (IPM) by domestic and foreign themes, programmes and projects. Besides, these programmes and themes have helped farmer's materials, fertilizer, net house, drilled well so that they grow vegetables even in severe weather conditions. So, production scale of safe vegetables has increased in both area and kinds, of which leaf-vegetables still holds important position

Safe vegetable products after being harvested are mainly sold for collectors (85%) and intermediary companies (10%), remained volume is directly supplied for safe vegetables retailed shops and stalls and for consumers. According to an investigation result in Van Noi commune of Dong Anh district, safe vegetable volume is produced at an average of 10.5 ton per household a year

2.2. Collectors:

Most of the collectors are members of safe vegetable production groups and cooperatives, they have experiences in transaction, so, they collect vegetables to sell for traders

- Collectors sell products to orders: retailers (shops, stalls and supermarkets, etc) and consumers (kitchen of kindergarten, primary schools, secondary schools, etc) in Hanoi
- Average commercialization volume is 300 kg per day or 108 ton per year per person
- Safe vegetable is often traded according to contracts or agreement of two sides
- Means of transporting are mainly motorbikes (with carrying capacity of 200 to 250 kg per time)
- Collectors supply for at maximum of 10 customers for each selling point.
- Collectors usually have relationship with about 10 producers; however, they only buy products of 4-7 producers per time with volume of about 40-50 kg per person

2.3. Intermediary company

These are limited liability companies which realise intermediary period of safe vegetables consumption, they relate directly with groups, safe vegetables production cooperatives or by means of Agency of Phytosanitary Protection of Hanoi (unit that

supervises on production technology) to collect safe vegetables for safe vegetables shops, stalls and supermarkets in Hanoi

Some companies after having signed contracts with safe vegetables production units have combined with Agency of Phytosanitary Protection of Hanoi to supervise both production process and periods after harvesting, such as packing, sticking bar-coded and testing lead for each lock of vegetables

Each day, companies sell about 400 to 2000 kg of vegetables, with from 10 to 30 kinds depending on crop

2.4. Retailers

Retailers in Hanoi are supermarkets, safe vegetables shops/stalls at stresses and centre markets in Hanoi. Safe vegetable shops/stalls trade at an average of 120 kg per day, equivalent to 40 tons per shop per day. The shops sell safe vegetables at least of about 40 kg and maximum of about 200 kg per day. Supermarkets usually sell from 80 to 350 kg, today, Big C and Intimex supermarkets have a ability to trading about 300 to 500 kg per day

Trading methods between retailing points and collectors are contracts that decide quantity, quality, kinds, delivery time, selling price and payment method (apply for supermarkets and trade centre) or agreement about quantity, kinds, delivering time and payment method (safe vegetables shops-stalls)

3. Relationship among actors in safe vegetable value chain

3.1. As for producers

Vegetable producers founded safe vegetable production groups and cooperatives to raise economic effectiveness of their family, to ask for the help with technology, initial investment capital (seeds, net houses, drilled wells, etc) and to introduce the points of product commercialization from safe vegetable production programmes of Hanoi and institutes. Besides, if they found safe vegetables production groups and cooperatives with help from programmes and projects, they will have opportunities to apply for certificate on vegetables quality by the Department of Science and Environment Technology, or the certificate for safe vegetable farmer organizations by district People's Committee. That is one of the conditions for farmer organization producing safe vegetables to have opportunity to combine, build relationship with the actors, which make it easier to commercialize their products.

3.2. Relationship between collectors and producers

In safe vegetables value chain, collectors have fairly loyal relationship with producers, because most of them are safe vegetables group or cooperative in the same hamlet, commune. So, clearly collectors understand production process and calendar, product kinds of vegetables planters, besides, they also have "verbal undertaking" on product quality. This quality is understood as farmers produce according to safe vegetables process. In fact, both collector and retailing points which have great sales volume such as supermarkets, shops, kitchens have contracts or commitment on safe vegetables quality

Selling price is agreed on the basis of market price by two sides, price of safe vegetables is usually about 30% higher than that of normal vegetables.

Payment method: by cash, weekly or after on credit

On average, each collector has regular relationship with about 10 farmers, according to them, building this regular relationship helps them to check the producing practice of vegetables producers.

3.3. Relationship between intermediary companies and producers

This relationship is built on basic of connections or fellow traders who become familiar after having traded for a long time. Producers like to sell for companies because of high profit, stable consuming volume and advantage payment method

In this relationship, companies can check producers on executing safe vegetables production process through ability of self supervision and Hanoi Agency of Phyto sanitary protection's supervision. Here, companies are also master of production calendar, vegetables kinds of farmers to actively supply for markets products according to remands

Consuming companies' products through retail points: supermarkets, trade centre, shops and stalls has contracts or undertaking on ensuring quality for supplied products. So, between companies and producers have tie about quality (although this isn't made document contracts, they agree to ensure quality of products that supply for markets)

Companies usually buy vegetables with higher price than other collectors from 100 to 500 dong per kg, this price level is agreed on basis of market price by two sides

Payment methods: pay in cash immediately, weekly or monthly depending on two sides' agreement

3.4. Relationship between collectors and retailers

This relationship is mainly built on basis of connection after having traded for a long time, however, there are also some cases through primary introduction of Service of Trade of Hanoi. Collectors supply products according to retailers' remands with from 5 to 10 various kinds

Only particularly in Van Noi commune of Dong Anh district, today, collectors have supplied for over 70 shops, supermarkets and over 100/400 resident schools

For some supermarkets as Intimex, Big C, etc, between collectors and buyers have contracts that require on vegetables quantity, quality and price of each kind of products. However, those requirement can also change, information is noticed with together daily and price is corrected weekly by sides

Customers are ordered on kinds, quantity in previous day, if having unusual change, they have to exchange with each other by telephone

For some big consuming points, they usually order certification on safe vegetables of a jurisdictional institute.

Payment methods: in cash after buy goods, paying by weekly or monthly (for supermarkets)

3.5. Relationship between intermediary companies and retailers

Intermediary company usually have a lot of fellow traders which are various retail points, from supermarkets, trade centre to safe vegetables shops/stalls in markets and streets. They supply for retail points over various kinds of safe vegetables with consuming ability of 400 kg to 2000 kg per day

Trading activity among companies and some supermarkets, trade centre is implemented by document contracts which assign quantity, quality, kinds, delivering time, payment method, selling price of each kind according to crop in basis of price change on Hanoi market

For other retailed points as safe vegetables shops-stalls, between companies and retailers only have verbal contracts on quantity and quality of products and selling price of each kind in basis of price on market at present

However, inspite of retailers' possition, those requirements can change throught imformation that is exchanged between companies and retailers daily, price of products can be corrected daily or weekly. Generally, in previous day, customers give their requirements on kinds, quantity by telephone, or immediately after trading goods. Payment methods are very lively, it can be realized daily or weekly for safe vegetables shops and stalls, and can be paid 1 month later after delivering goods for supermarkets, trade centre. For unusual changes, they are only necessary to notice with each other at the latest in the afternoon before the day when trades goods

Totally, retailed points believe the products that companies supply although among them can or can't have ties by contracts. So, trading relationship between two sides has a strong attachment to each other

3.6. Relationship between producers and retailers

Some of the farmers who plant safe vegetables have to directly sell their products for safe vegetables shops and stalls in markets and streets, however, both two sides don't have regular relationship

Producers usually sell from 1 to 3 kinds of vegetables per time for retailers

Requirement on quality: choose vegetables by feeling of outward form

Payment methods: in cash immediately after buy goods

Retailers in these cases usually have small scale with selling volume of about 80 to 100 kg per day, at average, they buy from each customer about 7 to 15 kg per time

4- Average scale of actors that participating safe vegetables value chain

Generally, active scale of actors in safe vegetables value chain has remarkable difference, in among, intermediary companies and collectors have the greatest volume of consumed vegetables. Producers have average vegetables output of 10 tons per year, the biggest scale of 19.6 tons per year and the smallest one of 2.6 tons per year. Collectors have average volume of consumed vegetables of about 82.5 tons per year, some intermediary companies as Bao Ha company play the role as both wholesaler with consuming volume of 132 tons per year and retailer with volume of 29.7 ton per year

Table 10: Scale of actors that participating safe vegetables value chain

Criteria	Producer (kg/ year)	Moderators (kg/ year)			Consumers (kg/ year)	
		Collector	Compan y	Retaile r	Cantee n	Family
- Max	19600	98000		67000	11500	900
- Min	2600	49500	-	13200	4950	360

- Average	10000	82500	132000	29700	6500	432
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Source: Survey data of DSA-VASI in 2005

5- Change of vegetables price through actors

Following table analyses change in price through actors in 2 main consuming channels (channel 1 and channel 2) for tomatoes

Table 11: The change of potato's prices through distribution channels

From different sellers	Channel 1		Channel 2		Channel 3		Channel 4	
Criteria Stakeholder	Selling price (₹/ kg)	Percentage (%)	Selling price (₹/ kg)	Percentage (%)	Selling price (₹/ kg)	Percentage (%)	Selling price (₹/ kg)	Percentage (%)
Prices from producers	2096	58	2490	57	2500	100	2000	65
Prices from collectors	2850	79	3765	87	-	-	-	-
Prices from retailers	3600	100	4350	100	-	-	3050	100

Source: Survey data of DSA-VASI in 2005

We can realize that production cost accounts for a big proportion in price structure (58% in channel 1 and 57% in channel 2), the changing level of price mainly happens in transaction between collectors and retailers (21% in channel 1 and 20% in channel 2). But the change of price from retailers to consumers happens later of 21% in channel 1 and 13% in channel 2

6- Costs in the structure of price through actors

Costs forming the selling price are divided into two costs: material and labor costs. Analysis in price structure in channel 1 and channel 2 shows that if actors are producers and retailers, labor costs per product unit is higher than material costs and this is opposite to collectors in channel 1.

Table 12: Formation of price for potato through different distribution channels.

From different sellers	Channel 1		Channel 2		Channel 3		Channel 4	
Criteria Stakeholders	Percentage (%)	Selling price (₹/ kg)	Percentage (%)	Selling price (₹/ kg)	Percentage (%)	Selling price (₹/ kg)	Percentage (%)	Selling price (₹/ kg)
- prices from producers	2096	58	2490	57	2500	100	2000	65
+ Material costs	369	10	369	8	369	15	369	12
+ Labour costs	577	16	577	13	952	38	952	31
Gross profit								
+ Profit	1727	48	2121	49	2131	85	1631	53
	1150	32	1544	36	1179	47	679	22
- Prices from collectors	2850	79	3765	87	-	-	-	-
+ Material costs	156	5	357	9				
+ Labour costs	150	4	500	11				
Gross profit								
+ Profit	598	16	900	21				
	448	12	400	10				
- Prices from retailers	3600	100	4350	100	-	-	3050	100
+ Material costs	259	7	73	1			133	5
+ Labour costs	268	8	417	10			500	16
Gross profit								
+ Profit	491	14	512	12			917	30
	223	6	95	2			417	14

Source: Survey data of DSA-VASI in 2005

7- Economic effect of some kinds of safe vegetables that are produced in various locals

Statistics about producing tomatoes and water morning glory in accordance with the safe vegetable production process in two communes Tien Duong of Dong Anh and Thanh Xuan of Soc Son shows expenses and economic effect as follow (Table 13)

Table 13: Production costs and economic effectiveness of tomato and water morning glory

Unit: 1000 đ/ sào

	Unit	Dong anh	Soc son	
		Potato	Potato	Water morning glory
Material costs	d/sao	626371	319833	1038781
- Seeds	đ	89881	105500	69231
- Fertilizer	đ	265869	113750	918612
- Pesticides	đ	50357	32789	11538
- stall fee	đ	82262	37500	-
- rent	đ	61670	-	30400
- tax land	đ	-	20294	-
- other costs	đ	76332	10000	9000
Labour costs	đ	685060	500000	1453846
Total costs	d/sao	1311431	819833	2492627
Quantity	kg/ sao	1267	867	2400
Selling price	d/ kg	2522	2096	2000
Sales revenue	d/sao	3195374	1816667	4800000
Gross profit	d/sao	2569003	1496834	3761219
Profit	d/sao	1883943	996834	2307373

Source: Survey data of DSA-VASI in 2005

It is realized that in Thanh Xuan of Soc Son, cultivating water morning glory brings higher income than tomatoes. However, in terms of profitability of capital, producing tomatoes has more advantages. Besides, we are also necessary to notice the cultivating period of these 2 kinds (for tomatoes: maximum of 6 months; for water morning glory: 9 months)

The table above also shows that tomatoes in Soc Son bring lower income than that in Dong Anh for farmers (gross profit: 58%; net profit: 52%)

8 - Information about some safe vegetable production organizations and sponsors

Table 14: List about some safe vegetables production organizations.

Quota	Enclosed information		
Area	Tu Liem district		
List	Song gianh Company		
Technological process	Water-cultivated clear vegetables, plant in spongy box, net house		
Investing and sponsoring organisations	All investment of Song gianh Company		
- Investing capital			
- Material	Net house, surrounding wall and concrete foundation: 11000 000 Vnd/ perch (10 years) Spongy box: 3780000 Vnd/ perch (4 years) Fertilizer of the Company: 2500 Vnd/ perch/ class		
- Training	Technology Office where produces directly		
- Others			
Scale (numbers of household, area, volume, production time)	3 people are responsible on area: 1000 square meters - produce all year round		
Kinds of main products	Cabbage, salad (violet, French salad), sweet cabbage, and water morning glory		
Production process (who trains)	Technological staff self research model according to guide-book at target to introduce leaf fertilizer		
How often is production process checked?	Begin to plant in 1999 but analyze model only once. Mostly depend on belief and prestige of the Company		
Places consume output (%)	6 shops and some inner schools		
- Have contracts (forms of contracts)	Shops of the Company		
- Not yet have contracts	Sell for schools by verbal undertaking		
products sold with labels (bags)	Have plastic bag printed produced place		
Difficulties	High production expense ⇒ high selling price, so to unable to be competitive		

Quota	Enclosed information		
Production region	Dong Anh district		
List (Van noi commune)	Mr. May cooperative	Mr. Thi cooperative	Mr. Thuan cooperative
Form	Cooperative	Cooperative	Cooperative
Technological process	Clear vegetables-plant in and out net house	Clear vegetables-plant in and out net house	Clear vegetables-plant in and out net house

Organisations sponsor:	Centre of encouraging agricultural expansion	Centre of encouraging agricultural expansion	Agricultural office of Dong Anh district
- Investing capital	500 000 Vnd/ perch of net house's area	500 000 Vnd/ perch of net house's area * 10 perches	4.500.000 Vnd (make net house)
- training	IBM	IBM	2 courses on IBM on vegetation protection (Centre of encouraging agricultural expansion)
- Others			
Scale (numbers of household, area, volume, production time)	Household: 18, Area: 14 hectares, production volume: 500 – 600 tons, production time: year-round (main: winter-crop vegetables from September to March, wrong-crop vegetables in other months)	Household: 6, area: 11 hectares, production volume: 120 – 150 tons, production time: year-round (main: winter-crop vegetables from September to March, wrong-crop vegetables in other months)	Household: 11, area: 6.5 hectares, production volume: 400 – 500 tons, production time: year-round (main: winter-crop vegetables from September to March, wrong-crop vegetables in other months)
Main kinds of products	Sweet cabbage, tomato, green cauliflower, kohlrabi, cabbage and green cabbage	Sweet cabbage, green cabbage, tomato, salad and water morning glory	Tomato, cabbage, kohlrabi, green cabbage, sweet cabbage and salad
Production process (who trains)	Centre of encouraging agricultural expansion trains	Centre of encouraging agricultural expansion trains	Centre of encouraging agricultural expansion trains
How often is production process checked?	Not often	Not often	Not often
Places consume output (%)	Market in Hanoi (inner districts: 100%)	Market in Hanoi (inner and suburb districts)	Market in Hanoi (inner districts: 10%, suburb districts: 90%)
- Have contracts (forms of contracts)	Document contracts are signed between 2 sides on kinds, quality, volume, selling price, payment method and both sides are responsible if consumers are poisoned	Document contracts are signed between 2 sides on kinds, quality, volume, selling price, payment method and both sides are responsible if consumers are poisoned	Document contracts are signed between 2 sides on kinds, quality, volume, selling price, payment method and both sides are responsible if consumers are poisoned

- Not yet have contracts			
Products sold with labels (bags)	Name of clear vegetables stalls writes origin of vegetables Label is printed after selling for supermarkets and shops, not for schools, kitchens and others	Name of clear vegetables stalls writes origin of vegetables	Name of clear vegetables stalls writes origin of vegetable Not label because vegetables isn't come in supermarkets and big shops
Difficulties	<ul style="list-style-type: none"> - Consumers do not yet believe clear vegetables, selling price is 30% higher - Transport expense is high, selling price is high if packing, so it is difficult to consume - Traffic jam usually makes not deliver goods in time 	<ul style="list-style-type: none"> - Buyers complain not-clear vegetables, so mush have verbal undertaking on quality of products - Investing capita for one perch of clear vegetables is very high today, while selling products meet a lot of risk 	<ul style="list-style-type: none"> - Not yet help to introduce vegetables to big shops and supermarkets - Expense of renting shops is very high, interest isn't enough to pay all expense. While, consumers don't believe clear vegetables yet so sold volume is very low every day

Quota	Enclosed information:
Production region	Gia Lam district
List (Van Duc commune)	20 groups of safe vegetables production (20 households per group)
Form	Production group
Technological process	Clear vegetables isn't planted in net house
Organisations sponsor:	Centre of encouraging agricultural expansion in Hanoi-Agriculture office of district
- Investing capita	1000 000 Vnd/ production group (20 households)
- training	7 training moments (4 - Centre of encouraging agricultural expansion, 3 - Agriculture office of district)
- others	
Scale (numbers of household, area, volume, production time)	Households : 20 households/ group * 20 groups, total of area: 83 hectares, product volume, production time 50 % area of year-round, 50% area of winter crop (September to January)
Main kinds of products	Cabbage, white radish, sweet cabbage, cauliflower and kohlrabi
Technical itinary (who trains)	Centre of encouraging agricultural expansion in Hanoi-Agriculture office of district
How often is production process checked?	Commune has 1 group including 3 people who specialize to check using fertilizer and medicine on plants protection of farmers.

Places consume output (%)	Market in Hanoi 70% (night and day markets at inner districts), 30% of provinces of the Centre (from Nghe An to Da Nang)
- Have contracts (forms of contracts)	Selling for province of the Centre has agreement between local collectors and wholesaler on volume, kinds, delivering time and selling price
- Not yet have contracts	Selling in market in Hanoi don't need contracts
products sold with labels (bags)	Products don't create prestige yet, so not have labels
Difficulties	- Not yet have place to consume clear vegetables products, produced vegetables is today sold as usual vegetables - Difficulty in prevent pestilent insect (microorganism medicine isn't popular yet, not prevent some kinds of insects)

Quota	Enclosed information
Production region	Soc Son district
List (Thanh Xuan commune)	4 groups on safe vegetables production (8 households per group)
Foundation	2 groups was founded on May, 2001, 2 groups was founded on July, 2002
Form	Production group
Technological process	Clear vegetables isn't planted in net house
Organisations sponsor:	ADDA organization-Denmark, Agency of Phytosanitary protection in Hanoi
- Investing capita	
- training	Training on IPM
- others	Promote for meeting group: 5000 Vnd per moment per household (1 week per once – regularly 4 months)
Scale (numbers of household, area, volume, production time)	Households: 8 households/ group * 4 groups, Total of area : 3.2 hectares, product volume, production time 100 % area of year-round
Main kinds of products	Cabbage, sweet cabbage, kohlrabi, cucumber, melon and cucurbit.
Technical itinary (who trains)	ADDA project - Dan mach trains 2 farmers to give strength in the local
How often is production process checked?	Not check, members mainly self manage one another
Places consume output (%)	Market in Hanoi 2% sells with price of clear vegetables for collectors from Van Noi commune. Others 80% sells with price of usual vegetables at local markets and district markets
- Not yet have contracts	Selling in Hanoi market doesn't have contracts
products sold with labels (bags)	Products don't create prestige yet, so not have labels

Difficulties	<ul style="list-style-type: none">- Not yet have place to consume clear vegetables products, produced vegetables is today sold as usual vegetables- Difficulty in prevent pestilent insect (microorganism medicine isn't popular yet, not prevent some kinds of insects)- Kinds of vegetables are monotonous because of cultivated habits of the local
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Source: Survey data of DSA-VASI in 2005

9- Some difficulties of actors of safe vegetables value chain in Hanoi

9.1. Safe vegetables producers

Similar to most of the farmers today, the biggest difficulty of farmers who plant safe vegetables is to commercialize products. Safe vegetable products have enormous potential on market, but the matter for farmers is how to encourage consumers to believe in quality of vegetables selling on market now

In fact, consumers in Hanoi have been careful in using safe vegetables (about 15 tons per day - for products sold in shops, supermarkets). So, some farmers who plant safe vegetables don't have ability to sell all products produced at the price for safe vegetables. Investigation from producers shows expense for producing safe vegetables is at least 20% to 30% higher than for usual vegetables, so, if they pay higher for expense but sell products with price of usual vegetables, their income will be affected. Hence, vegetables planters can't comply with the process of producing safe vegetables

9.2. For intermediary actors

Today, commercialization channel of safe/clear vegetables is fairly new, consumers begin to have the habits of using safe vegetables. However, in fact, because of some difficulties as: there aren't enough information to help consumers believe in quality of vegetables, on other words, markets lack referee institutions, price of safe vegetables is higher than that of usual vegetables and it is not convenient to buy products because of lack of selling points (have to go to supermarkets or safe vegetables shops, etc); safe vegetables are still commercialized with limited volume

Collectors have few fellow traders, so they have to serve all requirements of fellow traders, even when those requirements don't have economic profit for collectors: supplying with little volume for each consuming point (eg. about 5 kg for kitchens or restaurants, shelling and packing vegetables for supermarkets (high rate of diminution, etc), which directly impact active effect of this actor. Besides, they are also responsible for volume of products according to contracts with retailers, while for producers, they still have verbal undertaking and mainly rely on "belief", not have the tools for checking and supervising

9.3. For retailers

Retailers haven't had tools to prove for consumers to believe quality of products, except present certification of safe vegetables production organization of district People's Committee, or contracts between them and suppliers, which limits vegetables volume consumed by retailed stalls. Because consumed volume is limited, they must raise price of products. Investigated result shows that consumers buy safe vegetables with 40 to 50%, sometimes 100% higher price than usual vegetables at the same time.

General comments

Above analysis also shows actors who participate safe vegetables value chain have had clear strategy as widening safe vegetables market to raise income

- Safe vegetables value chain in Hanoi is fairly close organized: actors build fairly close and regular relationship. Collectors play an important role in transmitting market's information to production regions, or in other words, combining producers with market

- Producers apply progress about seeds, investment (net houses, drilled wells) and choose kinds of vegetables which can promote effect of investment (leaf vegetables, short-day and wrong-crop vegetables). Farmers are trained, and planting vegetables here becomes a main industry, beginning of specializing vegetables production is expressed by investment about capital and technology

- Collectors try to widen consuming market, they develop market by participating customer conference, satisfying requirements of fellow traders (shell and pick vegetables according to requirement of fellow traders, supply vegetables even with few volume, etc) in order to make prestige to have opportunity to widen divided market
- Retailers in safe vegetables value chain (safe vegetables shops-stalls, supermarkets, shops of Food Company, etc) have more advantages in approaching consumers because they have tidy and sanitary selling-place which makes buyers more trustable. Thanks to that advantage, their selling price is sole, higher than usual vegetables. Retailers play an important and decisive role for making safe vegetables value chain. Because they are people who fix price, quantity and quality.
- Some actors in safe vegetables value chain have built relationship through economic contracts or legal agreements (relationship between collectors and retailers), however, other actors who still play an important role in the value chain and decide quality of supplying products, such as producers haven't had institutions to tie them yet; relationship between producers and collectors has just had verbal agreements
- In safe vegetables value chain, factors which make raise both price of transport and expense of renting selling points affect commerce of safe vegetables products, make raise selling price of products
- Payment method between collectors and retailers is realized according to agreement of 2 sides, such as once per week, or once per month on basis of bills or receipt on putting goods

VI. Conclusion and recommendations

1. Conclusion

- Safe vegetables value chain of Hanoi city begins to take shape factors which regulate product jet, in order to transmit information on requirement of a representative customer to production regions, which can be the point to solve difficulties in organization of safe vegetables value chain to supply for market of inner districts
- Relationship among actors in the value chain is fairly close, they usually exchange information on quantity, kinds and supplying time to be able to satisfy requirement of sides the best
- Besides some above constructive factors, there are still some shortcomings which need be made good earlier such as: safe vegetables production organizations haven't well realized internal test and supervision on quality from production to consumption; and actors as producers, intermediary actors and retailers haven't cared about quality of safe vegetables self-consciously

Problem of safe vegetables value chain today is how to help consumers believe quality of supplying products? This is also solution to promote development of value chain to best satisfy consumers' requirement in Hanoi

2. Recommendations for effect

2.1. Safe vegetables producers

- Safe vegetables production region project must associate with impacts as training on technological process of safe vegetables production, supervising farmers to plant vegetables and assisting product spread and consumption
- Establish farmer organizations which specialize in safe vegetables production, process and consumption (farmer groups, cooperatives, etc) in order to be easy to deploy collective production

process, check quality, build label of product and sign contracts with retailers about consuming products (safe vegetables shops, supermarkets, etc)

- Safe vegetables production organizations must build system on internal and general quality management in traffic phase

- Besides promoting the image and quality of safe vegetables through media means, we should promote a part of expense for members in groups and safe vegetables cooperatives to found safe vegetables shops in inner districts to sell vegetables for consumers directly. Because self producers will solve problems relating to safe vegetables quality for consumers the best

2.2. Intermediary actors

- Supply all timely information on media means about safe vegetables production occasion, scale, vegetables kinds in each moment so that they take the initiative in product collection, signing consuming contracts with retailers

- Propose the institutions to encourage to develop fruit and vegetables collection and trade such as reduce both tax and port-transport expense, especially, it is necessary to omit expense about legislating with police, market management, etc

2.3. Safe vegetables retailers

- It is necessary to have obligatory orders with safe vegetables trade points about standard of stalls and quality of sold fruit and vegetables. These orders can be concretized by some criterions such as scale of stall, stands, wrapping, production process, harvest, preliminary treatment, packing, transport and certificate of quality of jurisdictional offices

- Have sanction to punish suitably if safe vegetables selling points break quality, sell kinds of vegetables which don't have clear origin

- Jurisdictional offices must check, supervise quality of safe vegetables at retailers points regularly such as checking standard of stalls, quality of vegetables products at selling points and give vegetables sample to analyse

2.4. Other recommendations

- Fast urbanization leads to lose land area of safe vegetables at suburb districts, moreover, because these land areas are getting more and more polluted by air and water, they are difficult to ensure quality according to rules of safe vegetables (eg. Vegetables in Thanh Tri, etc). So, in the future, to be able to supply stable and quality safe vegetables source for Hanoi, we should think about widening vegetables production belts to close provinces such as Ha Tay, Hung Yen, Vinh Phuc, Bac Ninh, etc

- In safe vegetables trade and transport, actors in the value chain must build contracts which undertake to ensure product quality and set sanctions to punish infringement

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