

		 MINISTRY OF TRADE OF S.R. VIETNAM
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PRODUCTION, PROCESSING AND COMMERCIALIZATION OF VEGETABLES AND FRUITS IN VIETNAM

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I – General introduction

1- Context of study

Germany Technical Cooperation (GTZ), Metro Cash & Carry Vietnam and Ministry of Trade have launched project: “Development support of vegetables and fruits value chain of Vietnam” since early year 2005. At the same time, SME enterprises development program under cooperation between Vietnam and Germany conducted by MPI and GTZ also concentrates on developing some agricultural sub-sectors based on approach “global value chain development”

For building supporting plan in accordance with reality of vegetable and fruit value chain and measuring the impact level of support plan, above project and program decided to conduct the study by two parts: Part1 researches and collect basic information of vegetable and fruit over country, focusing on four provinces Hung Yen, Quang Nam, Daklak and An Giang; part 2 includes 18 researches of value chain of 12 kinds of vegetable and fruit conducting in 18 provinces.

2- Study objectives

The objectives are

1. Part I: researches and collect basic information of vegetable and fruit over country, focusing on four provinces Hung Yen, Quang Nam, Daklak and An Giang
2. Part II: collect database about specific value chain by region and product basing on requirements of study description, situation description and value chain analysis

As above, these works help to identify interventions of project and collect needed information for impact measurement.

3- Method of data collection

The database of study were collected from different information channels concentrating on some following basic sources:

- Statistical yearbook of GSO
- Annual statistics about cultivation, vegetable and fruit process of MARD
- Announced export and import database about vegetable and fruit of MOT
- Reports relate to activity of production, process and ex-import of some researchers and groups of researchers (*more detail in appendix*)
- Discuss with researcher, manager, specialist and producing association to collect information relate to production and processing of vegetable and fruit.

II – Overview on vegetable and fruit section on Vietnam

Ministry of agricultural and rural development (MARD) directed that vegetable and fruit production needed to concentrate on improving product quality in order to meet domestic demand and export. Specific works will be entrusted Institutes researching on agriculture, provincial department of agriculture, branch office of plant protection basing on localizing production area to control quality

1- Plan of vegetable sub- section development

According to MARD, vegetable development bases on advantages of climate and cultivated habits of different regions and area over country of which advantage of winter crop vegetable was identified Red river Delta and Dalat central highland. These two regions need to promote advantages to meet mostly demand of vegetable of country and export.

In addition, several development program of safe vegetable under MARD have conducted from 1998 to present and result in many successes in raising product quality. Safe vegetable has partly met consumer's demand in country, especially in big cities such as Hanoi and Ho chi minh. According to Ha noi department of agricultural and rural development, suburban districts of Hanoi have 770 ha safe vegetable mostly concentrates in Gia lam (240 ha), Dong anh (225 ha) and Tu liem (185 ha) with average of 3 crops per year and total yield of 137,225 tons and meets approximately 5% of vegetable demand of city. Some area such as urban district Thu duc (Ho chi minh city) and Da lat city are the famous area producing safe vegetable.

2- Plan of fruit sub- section development

* MARD proposed strategy for fruit development to the year 2010 for different regions:

- Mekong delta: mango, longan, sapodilla, star apple, pineapple, orange, pomelo, papaw, watermelon, durian, rambutan produced on rich land in Ben tre, Tien giang.
- Southeast region: durian, rambutan, mangosteen, jackfruit, pineapple, china pear, and bananas.
- Southern coastal: dragon fruit (Binh thuan province), grape (Ninh thuan province), mango (Khanh hoa province), and pineapple...
- Northern coast: orange, citrus, pomelo, pineapple
- North Mountain: seasonal fruits and tropical fruits such as litchi, apricot, plum, peach, China pear, persimmon, longan, citrus

Table 1: Target fruit trees areas, yield and production

	Fruit	Area (1.000 ha)	Yield (Ton per ha)	Production (1.000 ton per year)
1	Mango	150	15	2, 500
2	Citrus	200	20	4, 000
3	Longan	150	15	2, 500
4	Litchi	50	15	750

5	Apricot, plum, peach	150	8	400
6	Bananas	50	25	3,750
7	Durian	50	10	500
8	Rambuttan	50	10	500
9	Coconut	50	15	750
10	Other	100	8	800
	Total	1.000		12,000

Source: MARD, 1999

* Plan of production area of fruits is following:

- Mango: Tien giang, Dong thap, Can tho, Khanh hoa.
- Citrus: Dong nai, Binh duong, Vinh long, Ben tre, Can tho, Ha tinh, Hue...
- Longan: Tien giang, Ben tre, Vinh long, Dong thap, Soc trang, Bac lieu, Hung yen...
- Litchi: Bac giang, Hai duong...
- Papaw, bananas: Tien giang, Dong nai, Dong thap and Red river Delta
- Mangosteen, rambutan, durian: Binh duong, Dong nai, Tien giang, Ben tre, Lam dong, Daklak, Binh phuoc, Ba ria, Vung tau, Hue, Quang nam, Da nang
- Pineapple (Queen): Tien giang, Long an, Kien giang, Ca Mau, Ho chi minh city
- Pineapple (Cayenne): Lam dong, Dong nai, Ba ria, Vung tau, Binh phuoc, Ninh binh, Binh thuan, Phu yen, Khanh hoa
- China pear: Lam dong, Daklak, Phu tho...
- Dragon fruit: Binh thuan, Long an, Tien giang...
- Persimmon: Lam dong...

III – The development of Vietnam vegetable value chain

1- The situation of vegetable production in Vietnam

1.1 – Vegetable production.

In different regions of country, the growth rate of vegetable production was very divers depending on climatical condition and the dynamic of local demand. The vegetable is cultivated mostly in Red river and Mekong river delta. At Red river delta, in 2002, the total area of cultivated vegetable is 138.500 ha, representing 26,91% of vegetable total area of country. In Mekong river delta, the vegetable area is 108.400 ha representing 21.06% of country vegetable area.

Vegetable area has slowly been diminishing now due to urbanization, especially in sub-area of Hanoi and Ho Chi Minh cities

In recent years, the vegetable production in Vietnam is increasing in term of quantity and in term of quality demand. The objectives of Vietnam vegetable branch will increase the cultivated area from 450 000 ha at 2000 up to 600000 ha at 2005, will diversify the vegetable kinds. The objective orientation emphasizes on the hygienic and sanitary quality of majority of produced vegetables. The prognostic of consumed quantity per cap in 2005 is 80 kg and 100 kg in 2010

Table 2: Area, yield, production of all kinds of vegetable in Vietnam

	Area (1000 ha)	Yield (ton/ha)	Production (1000 ton)
2000	452.90	13.14	5,952.10
2001	514.60	13.17	6,776.60
2002	560.60	13.35	7,484.80
2003	577.72	14.16	8,193.82
2004	614.30	14.42	8,852.00

Source: The annual statistic of year 2003, Statistic of rural and agricultural of Vietnam in the periods of Renovation 1986-2000

In term of cultivated vegetable species, the water morning glory is the most expandable in different regions of country due to the strong capacity of climatical adaptation. The cabbage is more cultivated in the Nord, particularly in the middle and mountainous area due to the cool winter. In the Red river delta, the demand and climatical condition are also adapted for cabbage cultivation, so 35% of household cultivate this vegetable.

Table 3: The rate of vegetable cultivation household across regions

Unit: percentage

	Northern Mountain	Red river delta	Northern coast	Southern coast	High land	Southeast	Mekong river delta
Potato	17	15	5				
Cabbage, cauliflower	45	35	15	0	1	-	0
Other vegetable for leaves	45	30	41	10	4	5	9
Tomato	9	9	10	1	-	0	2
Water morning glory	55	52	52	16	5	15	20
Other vegetable	56	41	63	23	39	22	25

Source: VLSS 1998

The vegetable cultivation for the majority of household contributes to important income generation and to changing of cropping pattern at local level. The strongest development of vegetable is in the peri-urban area in order to response to rapid increasing of urban demand. In Hanoi region, even with the rapid urbanization, the vegetable area in peri-urban district is continuously increasing while the agricultural area is diminishing.

Table 4: The area of some kind of vegetable across regions

Unit: 1000 ha

1998	Red river delta	East of northern	West of northern	Northern coast	Southern coast	High land	South East	Mekong river delta	Total
Kohlrabi, cabbage	209,00	147,00	13,10	37,90	0,91	5,64	0,90	2,09	416,54
Other kind of cabbage	68,00	89,00	15,40	140,00	40,30	14,70	14,00	286,00	667,40
Tomato	40,40	37,90	2,32	5,30	1,28	0,00	0,20	64,20	151,60
Water morning glory	84,60	64,70	6,88	77,30	27,10	4,71	15,30	54,20	334,79
Other vegetable	130,00	172,00	12,30	106,00	84,30	112,00	302,00	803,00	1.721,6
2002									

Kohlrabi, cabbage	135,00	103,00	5,79	43,70	1,90	48,90	0,38	0,52	339,19
Other kind of cabbage	85,90	125,00	22,80	123,00	24,10	58,20	36,10	150,00	625,10
Tomato	35,60	14,00	0,82	5,53	1,04	9,81	4,81	6,37	77,99
Water morning glory	115,00	71,90	7,42	65,60	31,80	5,82	14,80	35,50	347,84
Other vegetable	0,00	0,00	0,00	0,00	0,00	0,00	0,00	0,00	0,00

Source: VLSS 1998 and VHLSS 2002

In the country level, some provincial specialization of vegetable zone are formed as cabbage regions in Hai phong, Ha noi, Hai duong, Hung yen, Dalat; onions in Nam dinh, Ha nam, Ninh binh, Vinh phuc, Bac ninh; garlic in Hai duong, Bac kan, Bac giang; chili in Quang binh, Quang tri, Hue, Quang nam, Danang, Thai binh, Bac ninh, Bac giang... In each province, the producing area is more concentrated in some specialized communes

Table 5: The area of some kind of vegetable across regions

Unit: 1000 ha

1998	Red river delta	East of northern	West of northern	Northern coast	Southern coast	High land	South East	Mekong river delta	Total
Kohlrabi, cabbage	209,00	147,00	13,10	37,90	0,91	5,64	0,90	2,09	416,54
Other kind of cabbage	68,00	89,00	15,40	140,00	40,30	14,70	14,00	286,00	667,40
Tomato	40,40	37,90	2,32	5,30	1,28	0,00	0,20	64,20	151,60
Water morning glory	84,60	64,70	6,88	77,30	27,10	4,71	15,30	54,20	334,79
Other vegetable	130,00	172,00	12,30	106,00	84,30	112,00	302,00	803,00	1.721,6
2002									
Kohlrabi, cabbage	135,00	103,00	5,79	43,70	1,90	48,90	0,38	0,52	339,19
Other kind of cabbage	85,90	125,00	22,80	123,00	24,10	58,20	36,10	150,00	625,10
Tomato	35,60	14,00	0,82	5,53	1,04	9,81	4,81	6,37	77,99
Water morning glory	115,00	71,90	7,42	65,60	31,80	5,82	14,80	35,50	347,84
Other vegetable	0,00	0,00	0,00	0,00	0,00	0,00	0,00	0,00	0,00

Source: VLSS 1998 and VHLSS 2002

The scale of vegetable cultivation at household level is changed rapidly across provinces in the country and by times between 1998 and 2002. According to VLSS 1998 and VHLSS 2002, the farmers in Red river delta and in Mekong river delta have the biggest area per household for vegetables.

Table 6: The average area of a vegetable producing household across regions

Unit: m²

1998	Red river delta	East of northern	West of northern	North ern coast	South ern coast	High land	South East	Meko ng river delta	Total
Kohlrabi, cabbage	209	159	88	124	223	1115	260	840	177
Other kind of cabbage	83	106	71	149	339	753	371	1285	224
Tomato	158	225	128	27	112		100	1509	222

Water morning glory	58	56	34	71	160	202	122	119	76
Other vegetable	105	184	43	81	337	638	1713	1297	418
2002									
Kohlrabi, cabbage	204	156	107	232	533	2173	260	150	211
Other kind of cabbage	123	139	108	160	361	527	1744	549	210
Tomato	216	128	54	75	89	1397	1359	674	229
Water morning glory	88	70	62	103	270	76	235	102	94
Other vegetable	-	-	-	-	-	-	-	-	-

Source: VLSS 1998 and VHLSS 2002

The average production of household is very different across regions in Viet nam. The household kohlrabi and cabbage production in Red river delta has tendency to increase from 328 kg/household/year to 352kg/household/year. The tomate production per household is increased from 262 kg/household to 440 kg/household in red river delta. While the tomate production per household is decreased rapidly from 1744 kg/ household to 962 kg/household in Mekong river delta

Table 7: The average production of a vegetable producing household across regions

	Unit: kg								
	Red river delta	East of northen	West of northen	Northern coast	Southern coast	High land	South East	Mekong river delta	Total
1998									
Kohlrabi, cabbage	328	186	96	180	50	5175	135	840	258
Other kind of cabbage	106	79	122	128	412	346	388	1229	215
Tomato	262	342	120	60	60		200	1744	302
Water morning glory	214	214	74	233	407	310	321	183	226
Other vegetable	279	161	54	154	606	650	1514	1682	521
2002									
Kohlrabi, cabbage	352	194	128	308	160	9565	77	132	412
Other kind of cabbage	194	149	173	171	322	1046	3062	743	291
Tomato	440	192	24	72	70	3221	1447	962	409
Water morning glory	211	128	130	229	551	108	374	178	196
Other vegetable									

Source: VLSS 1998 and VHLSS 2002

Vegetable yield has increased with the increase of advanced technologies for vegetable production. Vegetable average yield in whole country has significantly increased, the yield in 2002 increased 0.49% compared with 5 years before, which produced in large area to create large amount of products. North Central Coast region used to produce low yielding vegetables in the past, and it has increased 0.65% for the past 5 years. Some intensive vegetable regions in Lamdong - Central highland have created evident increase of yield that is, however, not stable. Whereas, in the Red River Delta and Central Coast, vegetable yield stably increases year by years. Below table reflects change of vegetable yield by regions and years

Table 8: Average yield of vegetables by regions

Unit: Quintal/ha

	1998	1999	2000	2001	2002	2003
Whole country	127.2	126.2	131.4	131.7	133.5	141.6
<i>North</i>	<i>121.7</i>	<i>127.2</i>	<i>123.3</i>	<i>128.3</i>	<i>131.3</i>	<i>133.1</i>
Red River Delta	148.4	159.4	152.3	158.5	162.8	165.2
Northeast	109.1	114.4	112.8	107.9	108.9	109.2
Northwest	86.0	94.4	96.9	95.3	102.2	110.6
North Central Coast	83.3	81.2	83.2	84.7	88.7	89.5
<i>South</i>	<i>134.6</i>	<i>125.0</i>	<i>141.0</i>	<i>135.4</i>	<i>137.5</i>	<i>150.7</i>
South Central Coast	106.2	109.0	113.2	115.3	122.1	123.7
Central highland	106.6	117.1	117.2	187.6	174.7	195.1
Of which: - Lamdong	210.8	217.5	228.8	233.2	232.9	242.7
Southeast	149.3	117.7	152.1	97.3	100.0	124.2
Mekong River Delta	137.9	136.7	146.6	148.2	146.0	155.9

Source: Statistical Department, 1999, 2000, 2001, 2002, 2003 and 2004

In term of vegetable yield of some main species, the household in Red river delta and Highland are the most intensives. By the time from 1998 to 2002, the intensification was the general tendency across regions

Table 9: The vegetable yield of household across regions

Unit: kg/360m²

	Red river delta	East of northen	West of northen	Northern coast	Southern coast	Highland	South East	Mekong river delta	Total
1998									
Kohlrabi, cabbage	566	423	392	523	81	1671	187	360	525
Other kind of cabbage	460	267	613	308	438	165	377	344	345
Tomato	596	547	339	794	193	-	720	416	490
Water morning glory	1334	1369	789	1187	915	552	948	554	1068
Other vegetable	955	315	450	687	647	367	318	467	448
2002									
Kohlrabi, cabbage	622	448	433	479	108	1584	107	317	701
Other kind of cabbage	566	384	576	384	321	715	632	488	498
Tomato	734	538	160	344	284	830	383	514	642
Water morning glory	860	658	749	800	736	509	573	626	747
Other vegetable	-	-	-	-	-	-	-	-	-

Source: VLSS 1998 and VHLSS 2002

1.2 – The situation of some main fruits production

In recent years, fruit production has strongly developed, especially since the programme on development of fruit, vegetable and flower in period of 1999-2010 were approved. Up to 2003, fruit production area in whole country reached 602,252 ha with productivity of 5.695 million tons. In comparison with 2000, yield, productivity and capita consumption increased 68.8%, 11.66%, 70-75 kg/ year, respectively.

In 2005, Vietnam has about 755000 ha of fruit tree and the production is about 6,5 million tons. In the total production of fruits, bananas represent the most important volume with 1,4 million tons, second place is citrus with about 800000 tons and longan about 590000 tons.

The perspective of 2006, Vietnam has program to increase the total area of fruits up to 760 000 ha, 5000 ha higher than 2005; and the exportation value will attend 330 million USD. The plan for 2010 for fruit tree will be 1,3 million ha with 20 millions tons and the exportation value will be 1 billion USD. For this purpose, MARD has plan to develop the fruit in the following concentrated regions:

- Orange, mandarin: Hagiang 20,000 tons, Nghean: 26,000 tons, Dongthap: 22,500 tons, Cantho 105,000 tons, Tiengiang: 79,200 tons, Bentre: 75,000 tons, Bentre: 75,000 tons, Vinhlong: 36,000 tons
- Pummelo: Tiengiang: 35,000 tons, Vinhlong: 36,000 tons, Hatinh: 5,000 tons, Hatay: 8,200 tons
- Pineapple: Ninhbinh: 35,000 tons, Nghean: 22,500 tons, Quangnam: 22,000 tons, Kiengiang: 99,337 tons, Tiengiang: 98,250 tons,
- Mango: Tiengiang: 44,300 tons, Vinhlong: 30,000 tons, Dongnai: 23,000 tons, Dongthap: 8,000 tons, Cantho: 18,000 tons, Khanhhoa: 10.000 tons,
- Longan: Bentre:134,000 tons, Tiengiang: 124,300 tons, Tayninh: 22,000 tons, Dongthap: 36,000 tons, Sonla: 14,000 tons, Hungyen: 12,800 tons,
- Lychee: Bac Giang: 58.000 tons (Year 2004 about 120.000 tons), Hai Duong: 30.000 tons
- Rambutant: Dongnai: 69,000 tons, Bentre: 48,000 tons
- Coconut: Bentre: 220,000 tons, Travin: 120,000 tons, Vinhlong: 90,000 tons,
- Dragon fruit: Binhthuan: 86,900 tons, Tiengiang: 20,000 tons.

The biggest specialized concentrated fruit region in Vietnam is in the Mekong river delta with 231000 ha and 34% of total area. In the plan of cropping system change, the perspective of 2006 will be 300000 ha with 3,3 million of tons and the prognostic for 2006 will be 420000 ha with 4,6 millions of tons. The other important regions for fruits is Northern East mountain with 19% and Southeast with 17% (source: Vneconomy 30/12/2005).

Table 10: Area and gross output of fruit tree

Year	Area		Gross output	
	Unit (1000 ha)	Growth rate (Previous year = 100) - %	Unit (billion VND)	Growth rate (Previous year = 100) - %
2000	565.0	110.2	6105.9	99.6
2001	609.6	107.9	6402.3	104.9
2002	677.5	111.1	6894.9	107.7

2003	724.5	106.9	7017.3	101.8
2004	747.8	103.2	7439.9	106.0

Source: Ministry of agricultural and rural development

Although area and productivity of fruit have increased, productivity is still insufficient and yield is low at regions that concentrated on producing materials for processing industry.

According to VLSS 98, in the Nord of Vietnam, the percentage of household plant fruit is more important. This is the small plantation as “home garden”. In the central part of country, the fruit plantation is less due to the frequent typhoon, who damages the plantation every year. In the South of Vietnam, the plantation of fruit is more specialized with the bigger area

Table 11: The rate of household planning fruit tree

Unit: percentage

	Northern mountain	Red river delta	Northern coast	Southern coast	High land	South East	Mekong river delta
Pineapple	8	1	7	8	8	3	1
Mango	4	1	5	6	4	14	16
Orange, mandarin	22	25	31	4	2	8	9
Dragon fruit							
Banana	53	60	58	43	33	36	37
Others	7	9	9	6	7	4	3
Average of all kind of fruit	77	75	79	67	68	60	57

Source: VLSS 1998

In term of area growth rate, from 1990 up to 2004, the Citrus, mango and pineapple have the most rapid growth with more than 4% per year. The dragon fruit is the new fruit due to the new market for exportation in recent years. The coconut has the decreasing area in recent years.

Table 12: The area of some main fruits

Unit: 1000 ha

Year	Orange Lemon Mandarin	Banana	Mango	Pineapple	Coconut	Longan, Litchi, Rambutan	Dragon fruit
2000	68.6	98.5	46.7	36.5	161,3	168.8	3,223
2001	75	102.4	45.2	35.8	155,8	181	-
2002	78	105	46.5	40	147,1	190	-
2003	79,2	99,7	67,9	42,4	135,7	-	-
2004	79,5	100	74,9	43,5	152,9	233.9	-

Source: Annual statistic of Vietnam in 2002, Statistic of rural, agricultural of Vietnam in the periods of 1986-2000 and FAO

The mango has most rapid annual growth rate of production in the period of 2000-2004 with 20%. This increase is due to the expansion of area. Farmer has applied new technology in the mango plantation in order to improve the yield.

From 1992 until now, the development of lychee has taken place in other regions, located in the northern mountains: Yen The, Son Dong – Bac Giang (20275 ha), Hoanh Bo – Quang Ninh (4925 ha), Dong Hy – Thai Nguyen and other places. The total area of cultivated area was about 35 300 ha in 2000 according to MARD's statistic. This is the result of different government programs for poverty reduction in mountainous areas. In Thanh Ha district the lychee area was double from 1998 to 2003.

The dragon fruit is a new fruit, but very expandable in the recent year with the possibility to export. The Binh thuan province is the production center for Dragon fruit. Over the past 10 years, the province's dragon fruit output increased by 33-38 percent a year. Last year, the output hit 87,000 tons, 40 to 50 percent qualified for export. Binh Thuan's export of the fruit rose 32 percent a year in terms of export turnover and 51 percent in terms of volume. The province has worked out a finely detailed strategy to expand the acreage to 11,000 ha by 2010. It plans to invest in building infrastructure in production areas, transferring farming and post harvest technologies and subsidising trade promotion activities. The province also plans to build a wholesale market for farm produce, mainly dealing in dragon fruit.

Table 13: Production of some main fruits

Unit: 1000 tons

Year	Orange, lemon, mandarin orange	Banana	Mango	Pineapple	Coconut	Longan, litchi, rambutan	Dragon fruit
2000	426	1124	177	291	884,8	616	45,76
2001	442	1248	178	284	892,0	654	-
2002	485	1365	186	360	838,0	694	-
2003	521	1221	306	338	920	-	-
2004	523	1220	337	346	950	1000	-

Source: Vietnam statistical yearbook 2002, Vietnam agricultural and rural statistics 2000 and FAO

The Mekong river delta is the most production of fruit in Vietnam. The following table shows the recent information about area and production in this region for different fruit trees. From 2001 to 2003, all kind of fruit was increased. This is a way to diversify the agricultural production out of rice in the Mekong delta. The rice field was transformed into fruit plantation in order to extract more added values from these lands. This tendency is still expandable in the coming years in Mekong delta.

Table 14: Area and production of main fruits in Mekong delta

STT	Fruits	Area (ha)			Production (Ton)
		2001	2003	2004	
1	Longan	41.000	43.000	92.915	351.918,3
2	Citrus	37.000	40.000	55.000	558.986,6
3	Banana	24.000	26.000	92.167	452.833,3

4	Mango	21.000	25.000	51.489	312.108,2
5	Pineapple	20.000	23.000	33.104	364.968,5
6	Rambutan	3.000	4.000	82.757	76.666,6
7	Durian	3.000	4.000		44.802,7
8	Mangosteen	1.500	2.300		9.448,2
9	Dragon fruit	2.000	3.000		49.333,3
10	Soursop	1.000	1.000		6.714,2
11	Jack fruit	50	50		804,8
12	Other fruit	80.450	97.421		1.096.011,2
Total		234.000	268.771	407.432	3.288.595,9

Source: Agricultural Department, MARD, 2005.

There is a difference in term of fruit yield across regions. Red river delta has the highest yield for almost of fruit, because the small area of plantation and the application of new technology for fruit tree. By the time, maybe the methods of yield evaluation and area measure were different between two surveys, so it is impossible to compare the yield across time.

Table 15: Yield of fruits per household across regions

Unit: kg/360m²

	Red river delta	East of northern	West of northern	Northern coast	Southern coast	High land	South East	Mekong river delta	Total
1998									
Orange, lemon, mandarin	1427	1497	758	571	347	2780	195	406	469
Pineapple	151	110	98	305	207	191	315	299	200
Banana	1494	1422	1850	1516	1075	2409	271	417	649
Mango	9205	1893	597	3963	1567	9256	1053	357	650
Longan, litchi	3112	439	1650	3021	0	10597	717	261	541
Other	4597	3956	874	2633	4483	411	667	512	713
2002									
Orange, lemon, mandarin	425	213	301	141	479	0	80	270	245
Pineapple	537	348	428	212	196	153	290	356	340
Banana	600	486	194	364	426	250	394	245	331
Mango	69	219	291	60	117	360	127	178	155
Longan, litchi	144	188	129	41	0	346	227	334	238
Other	0	0	0	0	0	0	0	0	0
2004									
Orange, lemon, mandarin	328	213	695	271	139	629	215	425	352
Pineapple	772	267	1237	359	283	287	581	522	459
Banana	773	455	2333	500	388	2132	501	477	529
Mango	275	109	548	210	1873	1606	316	316	220
Longan, litchi	205	123	398	147	129	972	200	453	204
Other	0	0	0	0	0	0	0	0	0

Source: VLSS 1998 and VHLSS 2002

2- Input collection for vegetable and fruit process

Contract of collecting vegetable and fruit between producers (co-operative, association, farm, large- scale households...) and buyers (vegetable and fruit processing factory, ex-import vegetable and fruit company, supermarket, trade center...) has developed over time. Types of contract, time of performance are relatively diversified depending on production scale. Short-term and medium- term contracts are popular (contract in crop only).

Contract between producer and supermarket, trade center, processing company, business, small-scale export company is commonly short-term. Meanwhile, large- scale processing and export company often selects medium- term contract.

Following table shows the percentage of input material that processing factory buy under contract

Table 16: Rate of fruit and vegetable transaction under contract between producer and processor.

Dimension	Rate (%)
Small	7,59
Medium	13,75
Big	23,17
Fruit	26,42
Vegetable	5,59
Mix	50,00
Northern	25,42
Southern	4,20
Total	14,94

Source: IFPRI, 2002

It is easy to find that the relation between producers and processing company is not close and permanent. There is only small rate of collecting products from producer under contract. According to processing factory, the reason that they do not want to sign contract with producer for input material supply is small- scale production of producer. Moreover, material price always change over time.

Table 17: Rate of collecting vegetable and fruit under contract, year 2000

Dimension	Rate %
Small	87
Medium	73
Big	64
Fruit	86
Vegetable	51
Mix	66
Northern	75
Southern	42

Source: IFPRI, 2002

For small-scale processing factory in the North, all contract between factory and producer from different sources increases fairly high, especially in term of vegetable.

3- Vegetable and fruit process

3.1 - The situation of fruit and vegetable processing sector

To the end of the year 2003, total capacity of vegetable and fruit process was 290,000 tons per year (this figure of 1999 was 150,000 tons per year). In comparison with 650,000 tons of 2010 plan, this capacity only accounts for 44.6%. The share of state-owned enterprise is 48,650 tons per year (making up 50%), non state- owned enterprise is 48,650 tons (making up 16%) and foreign invested one is 101,180 tons (making up 34%)

Vietnam vegetable and fruit corporation plays leading role in this sector with capacity of 100,000 tons per year (account for 34% of total capacity of country) in which 50% of factories was invested model technology and device. Most of these technology and device were imported from developed countries, remaining part was produced in domestic with international standard.

Over four years, thanks to domestic and foreign investing policy, many enterprises have invested in vegetable and fruit processing sector at different scale themselves. Thousands of small processing business preprocess and preserve vegetable and fruit using drying, fried- dry and frozen technology. According to statistic of 35 provinces, there are 25 state-owned, 7 joint-venture, 129 private and over 10,000 family- scale processing units.

However, for many reasons such as not enough material area, high seasonal characteristic, easy corruption and difficult preservation, most of factories do not operate highest capacity. According to preliminary report on four years of operating vegetable and fruit development program of steering committee belonging to MARD, processing factory only operates 20-25% of capacity and highest 40-50% of capacity (Dong giao pineapple processing company, Kien giang Dontower...) and even under 10% of capacity (Hai phong tomato factory, Bac giang vegetable and fruit processing factory).

The reasons of material shortage include that material area was not invested comprehensively and timely; determination of place and scale was not exact; some director of enterprises did not attach much importance to material area development and pass to locality.

Table 18: Raw material, value of raw material and value of processed product

Dimension	Raw material (Ton)	Value of raw material (1000 VND)	Value of processed product (1000 VND)
Small	98,97	150.569	160.748
Medium	255,16	632.495	650.460
Big	3.668,43	6.007.856	6.273.788
Fruit	1.189,59	1.852.900	1.952.842
Vegetable	1.079,16	1.926.690	1.970.117
Mix	3.506,53	5.821.364	5.989.339

Northern	592,07	1.208.720	1.276.785
Southern	2.158,00	3.480.832	3.551.383

Source: IFPRI, 2002

VEGETEXCO has 14 vegetable and fruit processing companies with capacity from 600 tons to 10,000 tons per year. These companies annually produce 11,000 tons processed vegetable and fruit including main products such as canned pineapple, canned fruits, bottled fruit juice and canned vegetable.

Recently, VEGETEXCO contributed money to Donatower Co. Ltd, of Hongkong to produce fruit juice under “Nature” label. Export turnover of VEGETEXCO is 22 millions USD per year, however, half of this is from vegetable and fruit. Hence, VEGETEXCO only accounts for 7-8% of 140 millions USD of Vietnam vegetable and fruit export.

In general, processing factory mainly gathers in the South with total input material of 98,97 to 3.668, tons per year, includes equivalent volume of vegetable and fruit. For above volume of input material, these factories annually create 160 millions to 6 billions VND of processed product.

3.2 – Rate of vegetable and fruit using for process

The volume of vegetable and fruit using for process only accounts for small proportion of total production every year (vegetable accounts for 1.3% and fruit does 2.4%). Most of processed product is to meet export market, domestic consumption is low and product is mainly sold through supermarket and shop...

Table 19: Processed product and total production ratio

	Vegetable and fruit production (Ton per year) (**)	Vegetable and fruit for processing (Ton per year) (*)	(*) and (**) ratio (%)
Vegetable	8,852,000	118,959	1.3
Fruit	4,425,000	107,916	2.4

Source: IFPRI, 2002

Above figures show that vegetable and fruit processing sector has not developed. Small proportion of production is processed.

The shortage of processing development is that investment of production line requires a great capital while processed product has not met demand of export market yet.

4- Processing company.

At present, there are over 150 processing companies- businesses over country, mainly concentrating in Ho Chi Minh City and Southeast. The North has 46 processing companies- businesses of which Hanoi has 26 (source: Hanoi and Ho chi minh Department of agricultural and rural development, MARD, MOT)

4.1 – Form of vegetable and fruit process

Form of vegetable and fruit process includes selection, classification and fresh products packing. It only includes vegetable and fruit preservation such as canning, freeze, drying and pickle.

Canning is to last service life from one to 2 years depending on kind of product. In term of canned fruits, Thieu litchi is the most important fruit; followings are rambutan, pineapple and mixed fruits. As for canned vegetable, popular products are mushroom, baby corn, bean and sweet maize. Other vegetable such as bean and general vegetable is sold in supermarket

Table 20: Share of each form in total

Form of process	Percentage
Canning	15,00
Acid pickle	7,31
Juice	2,50
Slice	1,54
Freeze	5,77
Drying	39,42
Powder	1,73
Jam	2,88
Sweet	3,08
Pickle	15,58
Frying	0,96
Fresh	4,23
Total	100,00

Source: IFPRI, 2002

Pickled- vegetable is not popular, however, some products such as onion, garlic, cucumber, beet...are produced by company and farmer. Most of pickled- vegetable is made for family demand without selling.

Table 21: Rate of all kinds of raw material and total material.

Raw material	Percentage
Longan	20,58
Litchi	15,96
Banana	4,62
Cucumber	4,42
Pineapple	4,23
Chili	4,04
Cabbage	3,46
Beet	3,06

Source: IFPRI, 2002

Food dried- preservation carries out by lessening water down under threshold of bacterium survival. Generally, drying goes down 95% of total water of fruit. There are diversify kinds such as drying room, vacuum tray, air compartment, vacuum pan...was used to dry fruit.

Freeze is to make water unavailable for bacterium operation. Frozen food has sold in Vietnam for recent year.

4.2 – Operation of vegetable and fruit processing factory

Material of these factories is collected from different sources of which main sources are direct buying from farmer, wholesaler and self-production. Import material is used with small proportion by large- scale factories.

Source of material is mainly fruit in the South. Total fruit area is 338,176 ha of which Mekong delta has 238,849 ha and Southeast plain has 99,327 ha. Tropical climate is natural advantage for developing fruit tree year around, planting different kinds of fruit (over 80 kinds of fruit) of which over 20 is widely cultivated. Each kind of fruit has many varieties and different productivity. With above area, total fruit production of the South is about 4,132,315 tons in year 2000, estimated productivity is about 12.2 tons per ha (average productivity is 9 tons per ha) (*according to data of seminar on export agro- product, 2000*).

Table 22: The rate of material support for vegetable and fruit processing enterprise by dimension and regions

Unit: percentage

Dimension	Self-support	Farmer	State farm	Wholesaler	Import	Other
Small	10,11	63,75	0,59	25,56	0	0
Medium	1,23	63,88	0,27	34,63	0	0
Big	1,07	51,45	4,43	41,85	0,2	0,99
Fruit	2,44	62,97	1,89	31,21	0	1,48
Vegetable	4,76	58,94	1,92	34,38	0	0
Mix	3,23	56,87	0,82	38,34	0,64	0,1
Northern	7,02	76,28	0,56	15,41	0,14	0,6
Southern	1,07	42,51	3,05	53,29	0	0,07

Source: IFPR, 2002

State- owned companies invested in vegetable and fruit processing sector with capacity of 500 to 10,000 tons per year.

Table 23: Rate of operational productivity of processing factories.

Unit: %

Dimension	Main season	Off-season	Medium
Small	81,63	29,43	55,53
Medium	82,56	29,88	56,22
Big	86,14	38,76	62,45
Vegetable	82,72	27,63	55,18
Fruit	83,81	35,06	59,44
Mix	82,96	34,29	58,63
Northern	82,12	23,74	52,93
Southern	84,96	39,75	62,36

Source: IFPR, 2002

Presently, vegetable and fruit processing factory only uses nearly 20-30% of capacity and concentrate on main crop. Lack of input material, constraints in the fresh fruit conservation and instable market are the answers of this situation.

Table 24: Processing capacity by scale, area and type of enterprise (kg per day)

Dimension	Production per hour	Maximum hour per day	Maximum production per day
Small	80,2	19	1.343,9
Medium	157,3	19	2.482,8
Big	1.817,0	19	22.051,1
Vegetable	684,9	13	8.297,9
Fruit	536,0	21	6.779,9
Mix	1.722,1	14	22.108,9
Northern	329,4	19	4.662,9
Southern	1.073,3	18	12.975,6
Total	696,7	19	8.767,5

Source: IFPR, 2002

For factory do not use maximum capacity, operating time in one year lasts maximum 39 weeks, minimum 17 weeks and average 28 weeks. Main crop operating time accounts for over 60% of total time equals to 18 weeks per year. This reality showed that processing factory had not used all days a year, therefore, led to waste of machine and infrastructure...(table 25)

Table 25: Average week operation of processing factory in one year

Dimension	Main season	Off-season	Total
Small	13.0	4.4	17.4
Medium	17.8	10.0	27.8
Big	22.3	16.5	38.9
Vegetable	24.4	8.3	32.6
Fruit	14.8	10.7	25.5
Mix	22.8	12.9	35.8
Northern	14.6	4.6	19.2
Southern	21.0	16.4	37.3
Total	17.8	10.4	28.2

Source: IFPRI, 2002

In vegetable and fruit processing sector, one of biggest joint venture is association between a Malaysia company and a state-owned enterprise of Dong nai to produce fruit juice under trademark “Wonderfarm”. There are 17 private vegetable processing businesses so far. Other example comes from vegetable and fruit company of Ho chi minh city (VEGFRUCO). This company processed and exported a great volume of products such as litchi, red dragon fruit, China cabbage and garlic. VEGFRUCO sold thousands tons of fresh and frozen vegetable and fruit to Japan, Taiwan and Europe market.

4.3 – Structure of labor in vegetable and fruit processing factory (Ho chi minh city only)

Ho Chi Minh city has 58 food, vegetable and fruit processing businesses with 9851 labors working for (*target program of vegetable and fruit processing sector of Ho chi minh city in period 2001-2005 conducted by Department of agricultural and rural development*)

Table 26- Structure of labor in vegetable and fruit processing sector

	Number of labor	Rate
Total number of labor of processing sector	24,465	100%
Of which		
Upper university education	13	0.05%
University, college education	1,910	7.81%
Intermediate education and technical worker	4,216	17.23%
Other education	18,326	74.91%
Of which		
+ <i>Direct labor</i>	3,756	15.35%
+ <i>Indirect labor</i>	20,709	84.65%

Source: Department of agricultural and rural development Ho chi minh

It is showed that level of labor working in vegetable and fruit processing sector of Ho Chi Minh City is not high. Intermediate education labor makes major part (74.91%) of total. Upper university, university and college education labor accounts for low rate (7.86%).

4.4 – Advantage and difficulty of processing sector

a. Advantage

- Tax rate will be cut down when Vietnam integrates into world and area economy. This encourage operation of enterprise and speed up economy more rapidly
- State has gave prior policies for investing programs and high technology projects of food chemical sector, microorganism and researches for processed sector
- Source of material for processing factory is profuse. Transportation is favorable whole country, including imported material source
- In recent years, enterprise has attached special importance to vegetable and fruit processing line, approached and inquired advanced technology. Besides, domestic industry has produced small and medium processing line with low price in order to replace import devices

- State, non state and foreign capital have invested much and more concentratively in vegetable and fruit processing sector than other sector
- Diversify and developed information system, especially Internet has created advantages forwarding domestic and foreign trade such as appealing for investing, business, seeking market

b. Difficulty

- Processing material is profuse but has not planned appropriately, especially specializing in the growing of off-season plants. Farmer is in the habit of planting kind of vegetable and fruit that was good sale in previous crop and chopping down or leaving to cultivate other when they cannot sell products. Processing material quality is not stable and out of food hygienic control
- A big rate of processed products has not met hygienic and safe food condition
- There is not a quality control office suitable to vegetable and fruit processing sector as well as lack of regulations about hygienic and safe standards. Science and technical level of processing sector is poor, old and backward and thus do not meet required quality. Many traditional processing businesses remain existence. Handy-crafts process occupies major part and hygiene issue has not taken much consideration.
- Policy on managing processing sector has not been consistent, administrative procedure is inconvenient, formalism and has not associated between state and market. The problems of processing enterprise were resolved slowly.
- Small- scale processing enterprise accounts for major part but its labor is at low level (making up 86%) and unbalanced in term of structure of labor level, especially advanced labor. Educational and re-educational task has not been appropriately interested in. Many enterprises have not annual plan and expense for education and training labor.
- Integration of Vietnam will forward competitiveness between domestic and foreign enterprise, among companies in the area and countries. However, constant natural calamity and polluted environment result in loses of crops or advantage. Market combat, backward technology, low productivity, unstable product quality, high rate of post-harvest lead to high cost and thus reduction of agro- product competitiveness of Vietnam in area and world market

4.5 – Prediction of development of vegetable and fruit processing section of Vietnam

** Orientation of vegetable and fruit processing sector*

- Promoting maximum advantages of each production area/region to supply processing factory material
- Forwarding production and distribution of vegetable and fruit that ensures safe and hygienic standard and high nutritional value aiming to meet maximum domestic demand.
- Forwarding quantity and quality of export vegetable and fruit import products

Building infrastructure for vegetable and fruit processing sector and interdisciplinary sectors (mechanic, packing, agriculture, industry, commerce, tourism, labor and human source training...)

** Facing to lack of competitiveness of vegetable and fruit processing sector, especially safe and hygienic food issue, the sector built target program as follow:*

- Stabilizing kinds of vegetable and fruit quality, particularly kinds for export in order to strengthen competitiveness
- Finding out processing- solutions to redundant vegetable and fruit in main crops.
- Improving products quality in order to achieve equal standard to import vegetable and fruit selling in domestic market and to promote competitive advantages and gradually replace import products.
- 100% of input processing material of enterprise have clearly origin and meet quality requirement.

Table 27 – Prediction of food processing sector of Ho Chi Minh City in 2005

Food sector	Unit	2005
Vegetable and fruit	<i>Ton</i>	450,000
Meat	<i>Ton</i>	155,000
Fish	<i>Ton</i>	186,000

Source: Ho Chi Minh statistical yearbooks

According to Ho Chi Minh statistic, forecast growth rate of food processing sector from 2001 to 2005 is 12-15% per year. Following this statistic, Ho Chi Minh city is in expectation of building area specializing in vegetable and fruit:

- Vegetable area: 10,000 ha, production is 230,000 tons per year.
- Fruit area: 10,000 ha, production is 110,000 tons per year.

Table 28 – Projects will be invested in processing sector in Ho Chi Minh City, 2005

Project	Invested capital (1,000,000)	National budget (1,000,000)	Operation	Note
Building center, station providing vegetable and fruit varieties	10,000	2,000	Associate with developing program: dairy cow, clean vegetable.	2004-2005
Treating vegetable and fruit under post-harvest, circulation and distribution process	20,000	6,000	Building infrastructure, depot, mean of transport for Ho chi minh and other localities	2002-2005
Establishing supermarket system and self-select food store	80,000	8,000	Calling for investment, tender and capital for loan	
Developing special food and function food	3,200	500	Studying food to support enterprise	
Strengthen infrastructure to analyze and assess safe and hygienic food	30,000	9,000	Upgrading and recognizing laboratory that has ability of evaluating safe and hygienic food	Increase number of laboratory
Deploying program GMP.HACCP	1,500	500	Continuously developing program of city	Applying for all export enterprise

Innovating technology and designing small packing device	10.000	3.000	Supporting enterprises in sector	2002-2005
Building vocational training and managing labor quality	2.000		Providing capital, and preferential tax	20 schools
Improve educational program and creating inter-program for food processing sector	500	500	Modeling two schools	50% of school of city

Source: Department of plan and investment Ho Chi Minh

In summary: vegetable and fruit processing sector produces not only to meet domestic demand but also export market. Nevertheless, processed products commonly have unstable market due to impact of input material and inconsistent output quality. For these reasons, solutions for next time should be: forming gathering material area, building expert staff and quick checking system, processing vegetable and fruit quality start from variety stage, production process, material after harvest, transportation, preprocess, refined process, preservation and consumption. Building new factory or project of improving and upgrading production line, old devices in order to stabilize output quality. Developing small packing system in production area and collection area.

5- Trademark and geographical indication for vegetable and fruit

Most of export vegetable and fruit of Vietnam sells under foreign trademark or brand name. Rate of export product under Vietnam brand name is low (account for 10-15%), mostly products are canned pineapple, jarred cucumber and dried banana exporting to Russia under VEGETEXCO label.

As for fresh vegetable and fruit for domestic market, trademark, label and geographical indication used for building private and collective brand name has not almost applied in specific value chain and closely organized from production to consumption.

In reality, building brand name is solution to determining quality indication and protecting product. However, this operation requires consensus of producer, processor and other intermediary stakeholders to conform compulsory process and being checked and monitored every stage. Besides, high cost is one of the factors for selecting suitable form.

Over last period, that institution and legal document has not completed to control vegetable and fruit quality was one of limitation. There are missing quality testing and certifying office.

For those reasons, Vietnam vegetable and fruit has not been officially registered at National Office Intellectual Property- Ministry of science and technology.

In 2005, after Intellectual Property Law, introducing documentation of geographical indication is building in order to forward brand name of vegetable and fruit.

5.1- Kinds of vegetable brand

There are two kinds of brand: trademark of producer or distributing company and quality brand (safe vegetable, clean vegetable, organic vegetable...)

Most of branded vegetable selling in the North market in general and Hanoi city in particular is produced under safe and organic vegetable process, a little under traditional process. However, most of these processes has not been checked and certified such domestic or foreign standards as GAP, EUREPGAP...

There is different in kind of vegetable brand. Brand is probably named by agricultural co-operative itself to connect with its products (Van Duc safe vegetable, Ba Chu safe vegetable...) or certified basing on cultivating formula and quality analyzing sample (safe vegetable of Hanoi vegetable and fruit company, organic vegetable of Hanoi organic vegetable company, Van noi safe vegetable...). According to survey of safe vegetable Fair on December 2003 by CIRAD, there are 30 different safe vegetable brands in Hanoi market now with sale of 10 tons per day, representing 5% of total vegetable. Developed production areas are commonly sub-urban districts. Especially, Dong Anh has nearly 20 cooperatives and companies producing branded safe vegetable. Besides, some companies, centers and Institutes also take apart in producing and building model of safe vegetable that was attached trade brand and quality brand.

However, quality-controlled institution is not clear during circulation. For this reason, the products have not gained belief of consumer. That unofficial brand is being diffused without control has taken away belief of consumer.

5.2- Kind of fruit brand

Different to vegetable, branded fruit is usually local special one that closely connect with geographical and ecology characteristic of locality and can be registered and protected geographical indication along with trademark and quality brand. This product quality is effected by soil, variety, environment, climate and production traditional formula of just locality. These are special fruits, thus, quality is reflected through trademark and market selling price (price of these products can be sold 5 times of even 10 times higher than same kind of fruit in the same time). Some famous and well-known names of Vietnamese fruits are Thanh ha litchi, Hung yen Long longan, Hoa loc mango, Bo ha orange, Nam roi pomelo, Phuc trach pomelo, Doan hung pomelo...

So far, no kind of fruits have been registered geographical indication despite of great potentiality. Vietnam Agricultural and Science Institute (VASI) has been building geographical indication for Thanh ha litchi (Hai duong province) and Cho don non-pip persimmon (Bac kan province) through developing local Association. Some localities were aware of building geographical indication such as Doan hung and Phuc trach...However, service consulting about this issue remains lack.

Some private companies also registered trademark for fruit such as Nam roi pomelo, however, this work violated usage of collective trademark of production households in the area.

In 2005, the first protected clean grape label was provided for Ba moi grape (Ninh thuan province) under combination between trademark and quality brand.

6.- Market of product

6.1 – Domestic market.

The fruits and vegetables consumed in Vietnam are majority of fresh form with 85-90%. The rest were processed under form of dry, jam, soled and siros. Otherwise, economy is higher and higher development, the industrialization has influence on trend of increasing fruit consumption,

processed food and drink. Product of processing industry in big city of country is distributed through supermarket, retail agent and especially through fair of Vietnamese high quality goods voted by consumer. Therefore, domestic market expanded and occupied big market share day by day.

Table 29 - Demand- supply balance of some foods in Ho Chi Minh city in 2002

	Unit (kg)	Production	Demand	Balance
Rice	1000	180.000	503.000	-323.000
Meat	1000	124.800	124.000	800
Fish	1000	162.200	161.200	1.000
Vegetable/fruit	1000	375.000	259.000	116.000

Source: Ho chi minh statistical yearbook, 2002

6.1 – Vegetable and fruit export

a- Export market

The best exporting achievement of Vietnam vegetable and fruit was sold in 42 countries and area over the world including some great market such as China, the biggest one (accounts for about 64% of total Vietnam export), the next are Taiwan (account for 10.4%), Japan (7%), Russia (4.4%) and Korea (4.1%). In 2005, some countries increase the fruit importation from Vietnam as France, Russia, Korea, Taiwan, Japan, Holland and China. However the China market is occupied 42% of exporation market for Vietnam. The main vegetables and fruits export are cabbage, cucumber, tomato, onion, potato, bean, cauliflower, dry chili, pineapple, banana, mango, litchi, watermelon, longan, dragon fruit and rambutan.

Table 30: Main export market

Unit: 1000 USD

Market	2000	2001	2002	2003	2004	2005
China	120351	142801	121529	67068	-	39000
Taiwan	20841	23319	20897	21584	-	-
Japan	11729	14527	14527	16710	-	-
Korea	13691	20194	7783	9660	-	4400
Russia	4654	5030	8506	8293	-	-
America	2178	1971	5318	8073	-	-
Netherlands	2160	2381	3870	5899	-	-
Cambodia	798	2276	4411	4651	-	-
Singapore	1226	13	3401	4454	-	-
Laos	2086	1626	4405	4300	-	-
HongKong	3316	4334	4581	3699	-	-
<i>Export turnover</i>	<i>213100</i>	<i>329972</i>	<i>201156</i>	<i>152470</i>	<i>167000</i>	<i>208000</i>

Source: Center for information and trade-GSO, 2003

According to forecast of FAO, world vegetable and fruit demand averagely increases 3.6% per year while supply has not met demand and only increases 2.8% per year. It is potential for vegetable and fruit export. Meanwhile, the number of vegetable and fruit export market of Vietnam has strongly reduced. There were 42 countries and areas in 2001, reducing to 39 in 2004 and remaining 36 in 2005. This situation originated from following reasons:

- Lost during post- harvest is high about 25-30% of total production; rate of processed vegetable and fruit is only 30% of total production
- Production is separated, quality and products specification is not equal and; product is not concentrated and high price.
- Due to misuse of pesticide, the level of excess of pesticide in fruit is important. In the international exposition in Can tho, they find 11% of fruit sampling having pesticide excess.

According to Ph.D Vo Mai, president of Vietnam fruit Association, fruit that meets export criteria only accounts for 10% of total production.

On the other hand, world population has trend of gradually concentrating in city (Rate of urban population of Vietnam is 26.4% in forecast in 2005; in 2004, this rate of the world is 48% of which America is 76.3%, Europe is 74%, Oceania is 72%, Asia is 39% and Africa is 35%. China the biggest population in the world, is even 39%). Resident will change habit of eating and drinking, go to supermarket more frequently to seek processed products with higher hygiene. Importer will not collect separately. Meanwhile, most of enterprises like buying cheap and unclear origin product; farmer would rather selling production to collector than enterprise

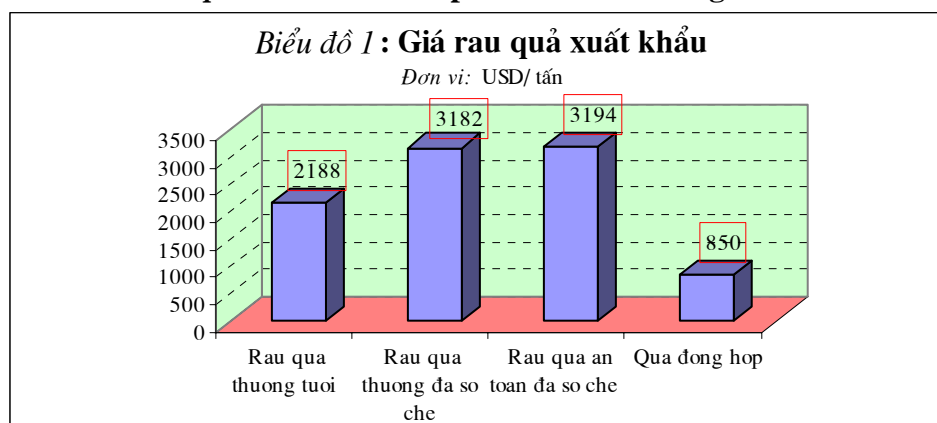
In order to promote vegetable and fruit export, the key solution is adjusting Land Law to encourage farmer assembling land and forming farm, then uniting farmer and farm to produce at large scale and create equal specification; improving product quality in accordance with international standards. Main problem is that excess of toxin beyond allowed standard is not suitable to hygienic and safe food criteria.

Vietnam has planned to diversify product and increase income from agro-product export. Hence, some suggestions were raised including: expanding research and strengthening service to introduce high productivity variety, popularizing information and providing preferential loan for farmer; developing preservative, processing system and condition of storage; encouraging domestic and foreign investment in vegetable and fruit production for export.

b- Price of vegetable and fruit export

Export vegetable and fruit was divided into some main products (*Chart 1*):

Graphic 1: Price of exported fruit and vegetable



Source: MARD

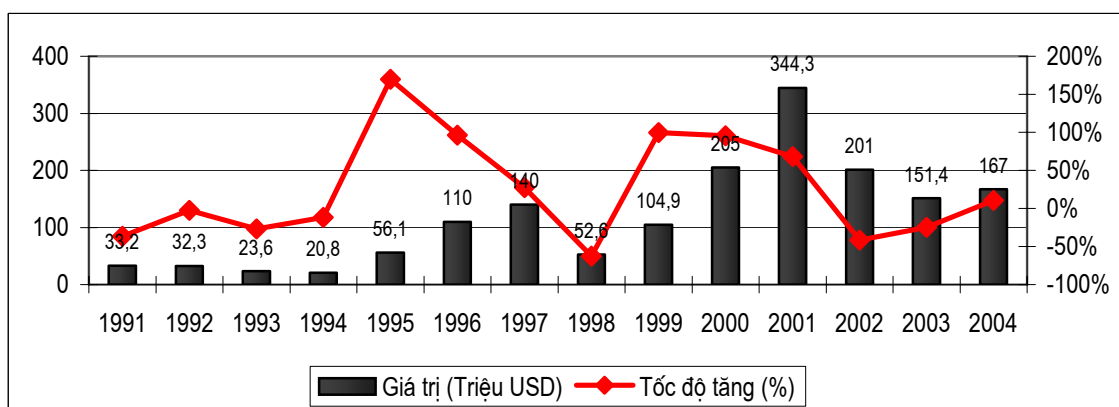
Price of export vegetable and fruit depends on time, market and quality requirement. However, it is recognized that there is not largely different between normal vegetable and clean vegetable, but price is different between fresh vegetable and processed vegetable, fruit and vegetable.

c- Value of Vietnam vegetable and fruit export

Of total cultivating production, vegetable, bean and fruit accounts for 15.1%. Fruit tree area is over 750,000 ha and exceeds 2010 plan, 2.7 times higher than year 1990, 2.2 times higher than year 1995 and over 1.3 times higher than year 2000 with vary kinds of special fruit being known in domestic and foreign (VnEconomy, 12th December 2005)

Graphic 2: Value and growth rate of vegetable export

Unit: million USD



Source: annual statistics of Vietnam, period 2000-2004 and IFPRI 2002

Export turnover of vegetable and fruit has experienced following period:

- In the period 1990- 2004: export turnover continuously reduced from 52.3 million USD in 1990 to 33.2 million in 1991, 32.3 million in 1992, 23.6 million in 1993 and 20.8 million in 1994. These following three reasons caused vegetable and fruit export decreasing:
- + The main export market of Vietnam, USSR and Eastern Europe, were closed after communist regime changed

- + Vietnam was blockaded and embargoed trade, thus, Vietnam production in general and vegetable and fruit export in particular was limited
- + Vietnam has focused on resolving food security in domestic and rice export, developing comprehensive agriculture to overcome the shortage of agro- product beside food. Therefore, Vietnam has not condition to promote vegetable and fruit production and export.
 - In the period 1995-1998: vegetable and fruit export fairly increased and reached peak in 1997 in comparison with previous, however, strongly went down in 1998
 - In the period 1998-2001: export turnover increased rapidly and continuously, reached peak in 2001. Export value increased significantly from 213 million USD in 2000 up to 330 million in 2001. The main reason is major increase of biggest market China and other market.
 - In the period 2001-2003: Export turnover strongly decreased in term of price and quantity and remained 219 million USD in 2002 and 151 million USD in 2003. The reason is reduction of China market.
 - From 2004 to present, export turnover has been indication of rehabilitation. In 11 month of 2005, the exported value was attended 210 million USD, and 31% higher than the same period in 2004.

According to RIFAV, out of previous reasons, the instability of exportation is due to the lack of concentrated production region with high competitiveness. The number of concentrated regions as litchi Bac giang, mangos teen Loren, grape Ninh thuan, dragon fruit Binh thuan were still few. So if clientele ask the big volume with limited time for delivery, it's will be difficult for exporters. Another hand, the non-homogenous in the variety and technical process between farmers will conduct to the heterogeneous quality of product.

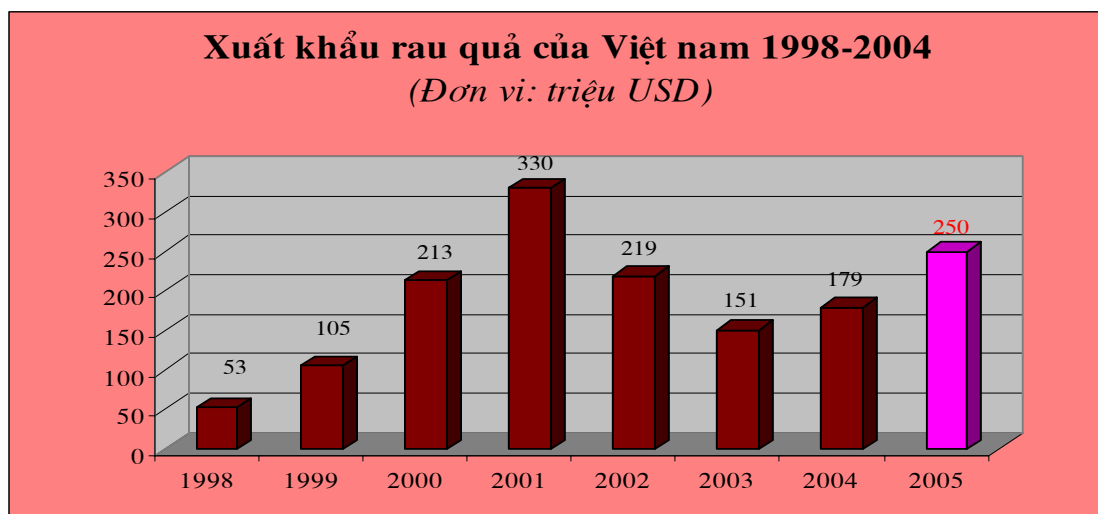
Table 31 - Integrating capacity of processing enterprise

Export market	1996 (%)	1997 (%)	1998 (%)
East Asia	17,21	8,61	6,87
North Asia	39,28	38,79	35,30
EU	18,57	6,72	12,24
Eastern Europe	10,45	19,52	23,37
North American	1,89	19,63	20,32
Oceania	12,57	7,30	1,90
Total	100	100	100
Total export turnover (USD)	96.174.834	120.966.535	121.138.848

Source: survey statistics of 41 food processing enterprise of Ho Chi Minh city

In Ho Chi Minh alone in 2000, quantity of vegetable and fruit export was 3,464 tons. In reality, however, private company looked for export market by itself or through introduction of relationship or friend (accounting for 89%). State organization or Association introduces export market to export company accounting for small rate. The result showed that role in forwarding export operation of State and Association was limited (*Table 31*).

Graphic 3: Vegetable and fruit export of Vietnam from 1998 to 2005

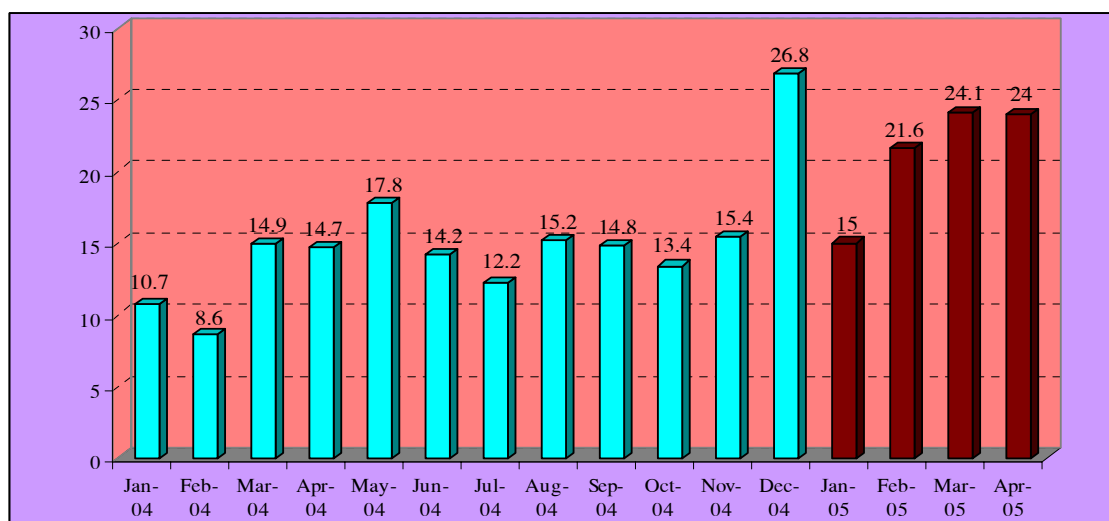


Source: GSO and General Customs Office of Vietnam

Vietnam is producing about 3.8 million tons fruit and 5 million tons vegetable every year. Even then, most of vegetable and fruit for domestic market was not processed and only 15-20% of production was exported.

Graphic 4: Vegetable and fruit export in 2004 and five months in 2005

(Unit: million USD)



Source: Vinanet

Vegetable and fruit changed over months in 2004, especially got high value on December and April. In 2005, export value of first 11 months increased 31.9% in comparison with the same period of 2004, 1.5 times higher than general growth rate, gained 210 million USD and estimated 250 million USD all year long (diagram 4).

IV – Programs and projects finance vegetable and fruit development

1- Inland programs

MARD, Ministry of science, technology and environment (MOSTE) financed programs, researches about production development, vegetable and fruit process, especially focusing on high quality product (organic, clean vegetable, special fruit...). Programs was carried out extensive area including different provinces of 3 regions the North, the Middle and the South, concentrating on sub-urban area of big city such as Hanoi and Ho chi minh city. Field activity started in 1996 and has strongly developed since recent 5 years. Offices directly carried out these program and researches are agricultural Institutes, agricultural research Centers, Department of agricultural and rural development of province, Department of science and technology of province, extension centers and Department of agricultural and rural development, Department of extension and economic Department of district. Following are some programs and researches carried out in sub-urban districts of Hanoi:

Name	Sponsor	Operator	Activity	Area
Project: Planning safe vegetable production area supplying Hanoi market	Hanoi people committee	<ul style="list-style-type: none"> – Department of agricultural and rural development of Hanoi – Extension Center of Hanoi – Department of plant protection of Hanoi 	<ul style="list-style-type: none"> – Localizing safe vegetable production area basing on communes that have traditional vegetable production and large vegetable area – Forming group of safe vegetable production through agricultural co-operative – Training group and co-operative members technique of safe vegetable production – Financing groups, co-operatives producing vegetable net house, watering system and fertilize 	Project was carried out 35 communes of 5 sub-urban districts (Gia lam, Dong anh, Tu liem, Thanh tri and Soc son). Average vegetable area is 200 ha per district, cultivating 3 crops a year Project started in 1999
Research: studying safe vegetable model	MARD	Hanoi vegetable and fruit technical Center	<ul style="list-style-type: none"> – Building safe vegetable model – Training technique of safe vegetable production – Building marketing system through shop and supermarket 	<ul style="list-style-type: none"> – Hanoi vegetable and fruit technical Center – Linh nam commune, Thanh tri district, Hanoi – Tu liem district, Hanoi
Research: studying vegetable and fruit production and process	MARD	Department of agricultural and rural development of Bac ninh	<ul style="list-style-type: none"> – Training technique of vegetable and fruit production and process – Marketing product 	Ngang lung multipurpose co-operative, Hien van commune, Tien du district, Bac ninh province
Project: safe vegetable production	Department of science and technology	Department of science and technology of Hanoi Son Duoc Co., Ltd	<ul style="list-style-type: none"> – Forming group of safe vegetable production – Training technique of safe vegetable production – Financing vegetable sample analysis and providing safe vegetable certification 	Van noi commune, Dong anh district, Hanoi
Research: studying safe vegetable model	MARD	Institute of vegetable and fruit research	Applying safe vegetable production technique into farmer condition	Dang xa commune, Gia lam district, Hanoi

2- International project

Beside above inland programs and researches, there were many programs, research and development programs of international organizations participated in vegetable and fruit production and process sector. Activity of these programs were relatively diversified but mainly focused on training, promoting production capacity to meet higher and higher quality demand of domestic and export market. Following are programs and projects that have been operated to assist farmer in producing vegetable and fruit.

Project, program	Sponsor	Operator	Activity	Area
ADDA project	ADDA project, Denmark Government	ADDA project Hanoi farmer association and local extension agents	<ul style="list-style-type: none"> – Forming farmer group of vegetable production – Training IPM technique for vegetable – Financing input material for vegetable production households – Providing loan for vegetable production households 	Carried out in 4 sub-urban districts: <ul style="list-style-type: none"> - Linh nam, Duyen ha- Thanh tri district - Van duc, Dong du, Dang xa- Gia lam district - Van noi, Bac hong, Nam hong- Dong anh district - Dong xuan, Thanh xuan- Tu liem district
SUPER project	CIRAD Institute, France	Institute of vegetable and fruit research Representation of CIRAD Institute in Vietnam	<ul style="list-style-type: none"> – Forming farmer group of off season vegetable production – Training technique of safe vegetable production (tomato and other off-season vegetables – Financing input material for vegetable production households – Providing information about vegetable market of Hanoi (retail price, kind of vegetable, consumer's demand...) for farmer. 	<ul style="list-style-type: none"> – Tien phong commune- Me linh district, Vinh phuc province – Vo cuong commune- Bac ninh town- Bac ninh province – Tien duong commune- Dong anh district- Hanoi – Dong du commune- Gia lam district- Hanoi
DIALOGS project	European Community	Agrarian System Department - VASI	<ul style="list-style-type: none"> – Establishing Thanh ha litchi Association – Forming farmer group of vegetable production – Forming non-pip persimmon Association in Bac can 	<ul style="list-style-type: none"> – Dang xa commune- Thanh ha district, Hai duong province – Tu ky district- Hai duong province – Bac ninh province – Bac can province

V – Policy and institution relating to vegetable and fruit development

- Resolution No182 approved vegetable, fruit, flower and decorative plant development program in period 1999-2010. Primer minister commissioned Ministry of Finance to promulgate prior policies. However, there has not any policy prioritizing vegetable and fruit production, process and export so far. Vegetable and fruit sector only received some prior policies for general agriculture. In detail:
 - Preferential loan in demand stimulating through investment
 - Project of moving, newly investing, upgrading and improving technology of plant and animal variety business was not paid 100% of loan interest, investing director only had to pay principal debt.
 - Project of renovating device and technology of biological field, producing export commodity and moving production business to industrial zone and planned area were financed loan interest 3% per year
 - Financing loan interest 5% per year for project of producing commodity that over 80% of production was exported
 - Investment preference
 - Decree 51/1999/N§-CP July 8th 1999 regulated that projects enjoyed preference including investing in purchasing model machine and device, additionally installing or renovating old machine, applying new technology into production; building new biological station or department researching on plant and animal variety to serve agricultural production. In detail, preferential policies are reducing land-renting payment used for project, favoring with time and enterprise income tax, exempting from machine, device import tax, personal income tax, preferential loan, standing security credit...
 - Circular 51/2001/TT-BTC June 28th 2001 by Ministry of Finance
 - Standing security credit
- Resolution of MARD on establishing orienting committee of project: “Combination to produce and marketing safe fruit in Tien river area”

Decree No 86/2003/ND-CP July 18 2003 of Government regulated organizational structure, responsibility and authority of MARD

Orienting committee has following responsibility and authority:

- Orienting, coordinating and monitoring activity of project
 - Inspecting performance of project, proposing necessary correction in order to ensure safe agriculture and promote competitiveness in domestic and foreign market.
 - Associating with other offices to build standard documentations on quality fruit, safe fruit production process, training and transferring new technology to farmer.
 - Advocating combination to produce
- Tax policy
 - *Enterprise income tax*: Ministry of finance promulgated Circular No 18/2002/TT-BTC conducting implement of Decree No 30/ 1998/ ND-CP and Decree No 26/2001/ND-CP of Government about enterprise income tax Law. According to the Law, production business put in investing preferential field was exempted tax for first 2 years since had taxed income and 50% of tax payment within next 3 years. For instance, planting perennial fruit tree on fallow land, bare hill, processing and

preserving vegetable and fruit, applying technology into seed production...New forming production business put in investing preferential list in Mountainous provinces was exempted enterprise income tax for first 4 years and 50% of tax payment within 7-9 years. Enterprise was also transferred loss within five years (if loss arising)

- VAT: Circular No 91/ 2000/ TT-BTC September 6th 2000 of Ministry of finance conducted implement of Resolution No 09/2000/NQ-CP, June 15th 2000 of Government about exemption of VAT and enterprise income tax during circulation to encourage agro-product marketing.
- *Agricultural land use tax Law*: on June 15th 2003, National Assembly enforced Decree No 15/2003/QH11 about exempting and reducing agricultural land use tax
- *Other fiscal policy*: Primer Minister enforced Decree No 80/2002/QĐ-TTg, June 24th 2002 encouraging selling and buying agro-product under contract

When vegetable and fruit export met difficult, Primer Minister had consideration and support through following particular actions: Supporting Vietnam vegetable and fruit Corporation (VVFC) and localities importing Cayen pineapple in order to improve productivity and meet demand of processing industry. Thirteen provinces and VVFC got total finance of 95 billion VND (period 1998-2000); financing processed pineapple export to USA because Vietnam has not received MFN tax like other countries exporting pineapple to this market (Thailand, Philippines...). Subsidizing vinegar-preserved cucumber export to Russia, Mongol during Russian financial crisis (2000-2001). From 2001 to present, vegetable and fruit export was all financed through policy such as Circular No 86/ 2002/ TT-BTC of Ministry of finance about supporting and promoting trade to speed up export of main point commodities; export recompense policy (in 2001, canned vegetable and fruit was recompensed complying with export turnover; in 2002 all vegetable and fruit export was recompensed complying with export turnover. From 2003, spending recompense only for export turnover exceed previous year.

- Government, in general, began taking care of trade system development of country and agro-product marketing in particular through series of policy such as
 - Decree No 02/ 2003/ NĐ-CP January 14th 2003 about developing and managing market
 - Resolution No 311/ 2003/ NĐ-CP March 20th 2003 of Primer Minister about approving project of market organization and rural trade development to the year 2010. One of main items is develop and consolidate commercial infrastructure, especially construct clue market and transaction floor for agro-product

Some provinces are positively carrying out these programs such as Tien giang investing in fruit wholesale market. Dalat planned to build auction center for fresh flower.

VI. Conclusion

1- Conclusion

1.1 – Production and vegetable, fruit quality requirement

- Productivity and quantity of vegetable of Vietnam continuously increases over years (from 1990-2004). Vegetable is cultivated in most of regions over country to meet demand of domestic and export, however, mostly cultivated in Red river delta with 138,500 ha and in Mekong Delta with 108,400 ha. Vegetable area of those 2 regions accounts for 47.97% of total country vegetable area.
- Living standard of Vietnamese people step by step increases, thus, higher and higher requirement of vegetable quality and safety. Demand of safe vegetable (clean vegetable) of urban and rural area is gradually developing and resulting in establishment of safe vegetable production center. Moreover, kinds of fruit have strongly increased since vegetable and fruit development program was approved and came into practice
- Better living standard also led to change in vegetable and fruit demand. According to figures of living standard of Vietnamese household, vegetable and fruit demand of big cities and high urbanization area is greater than other area. Today, people have demand of different kind of vegetable and fruit but some specific kinds of vegetable and fruit as previous
- Many products do not meet hygienic and safe food requirement. Government invested in different programs to improve quality but the result remains limitation due to lack of role of agro-product quality control offices. Without these offices, it is difficult to establish well safe vegetable and fruit marketing channel.

1.2 – Processing operation

Vegetable and fruit processing factory has small- scale, seasonal operation. Most of these factories belong to private sector, mostly use family labor and produce small quantity. Some main processing forms are drying, salting and canning. Input material was bought without contract (make up 85% of total production). Processed product was mainly marketed through domestic supermarket and export.

1.3 - Market

In recent years, Vietnam has participated dynamically in international economic cooperation. Vietnamese agro- product achieved many successes in exporting. Most of vegetable and fruit was produced to sell through different channel, both in domestic and foreign market. However, most of vegetable and fruit was not processed and was sold freshly. Main export markets are ASEAN countries and other market such as China and Taiwan...Nevertheless, scale of vegetable and fruit production for export only accounted for small proportion in term of both quantity and value

1.4 – Restriction

Above conclusions showed that along with achievements in production, process and export, vegetable and fruit sector of Vietnam has remained limitations

- Agricultural production has not exploited available potentiality of land, climate. Processing factory has not used maximum capacity. Export market was limited. Especially, it was deficient in specializing production and process.
- Craft- processing technology. Input material and processed product were not stable
- Application of science and technique into vegetable and fruit production and process was not popularized and remained many limitations

VII. Recommendations.

From above restrictions, we here proposed suggestions to build long- term mechanism, policy, develop vegetable and fruit value chain.

- More intensively developing science research and transferring vegetable, fruit cultivation and care technique to producer in order to improve input quality, supply stably, firmly and annually vegetable and fruit processing factory with material.
- State must have policy that encourage private sector investing in renovating and improving technology, production line in order to produce high quality, good-looking products and reduce production costs. Subsidizing a part of expenditure of cold storage investment aiming to overcome material shortage, reduce production cost and help processing factory to use maximum capacity. Besides, State needs to prioritize infrastructure improvement such as road, bridge at vegetable and fruit business center in order to collect material conveniently, circulate products rapidly and save transportation cost
- Encouraging application of model technology in vegetable and fruit processing sector to diversify product for better meeting demand of domestic and foreign market
- Promoting agricultural services such as extension work, plant protection; providing quality certification and information about vegetable and fruit market for farmer in order to reduce risks; establishing consultative service on standard production process used for Vietnam market such as GAP; developing educational and consultative services on building geographical indication.
- Developing local institution aiming to support establishment of co-operative, association; forming combination between producer and other stakeholders such as collector, processor, exporter for better market of product...These institutions aim to strengthen role of producer in controlling quality of value chain
- Promulgating mechanism that encourage farmer in signing marketing contract with processing factory in order to create equal products, stabilize quality and contribute to market stability. Material area should be planned and built by just processing factory
- Completing legal system of quality management and encouraging in set up private and state office that is responsible for certify vegetable and fruit quality.

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