

Sustainable Management of Natural Resources in Central Vietnam



Report

Value Chain Analysis for Rubber Sub-sector in Quang Binh province

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OVERVIEW OF RUBBER SUBSECTOR IN VIETNAM AND QUANG BINH

- a. Overview of Rubber sub-sector in Vietnam
- b. International Rubber production and market
- c. Vietnam Rubber imports exports
- d. Rubber sub-sector in Quang Binh

a. Overview of Rubber sub-sector in Vietnam¹

The first commercial rubber estate was established in 1906 in the south of the country to commence the natural rubber industry in Vietnam. In the highland, rubber tree was first tried in 1923 and the development of rubber plantations reached the peak in the period of 1960 - 1962 before the long recession of the industry due to the civil war. In the north, state-owned rubber estates were developed between 1958 and 1963 with the total area of 6,000 ha. After the civil war, a massive program of rubber rehabilitation and expansion has been launched in the south, then in the highlands and recently in the central coastal region of the country. In 2005, the total area under rubber cultivation was approximately 465,000 ha, producing 510,000 tons of rubber, compared to 77,000 ha and 39,000 tons in 1976. Regarding the value of export, rubber took over the position of coffee as the second position in agricultural crops after rice in 2005. The final target of the rubber development in Vietnam is 700,000 ha.

Until 1980s, most of rubber areas in Vietnam were run by state owned rubber companies, smallholding sector accounted for a small share only. However, since 1990 rubber smallholding sector has been developed tremendously throughout the country. The rubber area in Vietnam was increased to 454,075 ha in 2004 from 394,900 ha in 1999. The area of the estate sector was slightly declined (from 287,342 ha down to 284,995 ha), in contrast the area of the smallholding sector was increased rapidly (from 107,468 ha up to 169,080 ha or 57% in growth) (see Table 1 below).

Table 1: Area (ha) under rubber cultivation by sectors

Sector	1999	2000	2001	2002	2003	2004	2005 ²
State owned estates	287,432	277,285	274,748	281,159	285,382	284,995	
Percentage (%)	72.79	67.3	66.08	65.57	64.74	62.76	
Smallholdings	107,468	134,705	141,035	147,635	155,409	169,080	
Percentage (%)	27.21	32.70	33.92	34.43	35.26	37.24	
Total area	394,900	411,990	415,783	428,794	440,791	454,075	464,875
Total production (ton)	248,700	290,800	312,600	331,400	363,500	402,207	509,800

¹ Le Gia Trung Phuc, Rubber Research Institute of Vietnam, 2006

² Estimation of Vietnam Rubber Association, October 2006

The development of rubber area in Vietnam during this period could be totally attributed to the expansion of the smallholding sector and its share in total rubber area was also increased to 37.2% in 2004 from 27.2% in 1999. With the target of 700,000 ha of rubber in 2020, the proportion of the rubber smallholdings to estates will be reversed in the future because of:

- (i) government policy to encourage the development of smallholdings,
- (ii) high prices in recent years fostering farmers to plant more rubber, and
- (iii) shortage of land for large estates.

In 2005, Vietnam rubber continued to be number three in the world in terms of production and export value. Among Vietnamese products, rubber is second only to rice in terms of export value. According to the General Rubber Corporation (GERUCO), thanks to the high price of rubber in the world market, the Vietnamese rubber sector got a record profit of VND 3 trillion in 2005, nearly VND786 billion more than the year before and 17 times that of 2001. GERUCO member companies have been applying new techniques to increase rubber productivity. GERUCO harvested more than 1.7 tonnes of rubber per hectare and nine companies in the southeastern region got 1.81 tonnes per hectare.

Since 2002, the increased demand for natural rubber has more or less followed the upward growth of economies around the world. The relatively recent disruptions to the international petroleum industry with the resultant higher prices of crude oil has caused a concurrent rise in the price of natural rubber - and a drop in the demand for synthetic rubber. Higher prices for natural rubber on the world market has created conditions under which Vietnamese rubber exports and profits could increase. In 2004-2005, the price of natural rubber was twice that of 2001. Vietnamese raw rubber sold for VND10 million per tonne from 1985-1990 is now getting about VND 30 million per tonne. At the end of 2004, Vietnam had a total of 454,075 ha in rubber trees (five times that of 1980), which yielded 402,207 tonnes of rubber, 10 times more than in 1980. There are more than 100,000 people working in Vietnam's rubber sector and, the average salary is VND 2.5 million per person per month.

Players of the subsector

Big enterprises in the subsector to mention include Vietnam Rubber Corporation (with thirty-six (36) subsidiary companies, located in some provinces of the Central Zone and South-Eastern Area of Viet Nam); Vietnam Chemical Corporation (including large members such as CASUMINA - HCM City, Danang Rubber Company - DRC, Sao Vang Rubber Company - Hanoi, YOKOHAMA Tyres JV, INOUE Rubber Vietnam); Dau Tieng Rubber Company (Binh Duong Province); Dak Lak Rubber Company (Daklak); Joint Venture Company Visorutex (HCM); Binh Long Rubber Company; RUBICO; GERUSPORT company; Kym Dan Rubber JSC (HCM); Tay Ninh Co., Ltd (Tay Ninh Province)...

Besides big these players, there is a number of smallholdings, planting and processing latex and private traders/exporters.

Majors products of the subsector

Products of the rubber subsector in Vietnam can be classified into sub-groups as follows:

- (i) Rubber clone (tree) & rubber planting materials;
- (ii) Latex Concentrates³

³ See National Standards of SVR in Appendix 1

- (iii) Technically Specified Rubber (TSR)⁴ - mostly known as Standard Vietnamese Rubber (SVR - see Box 1 for descriptions). This is major product category of the subsector;
- (iv) Rubber Wood-based products: table, chair, bed etc.;
- (v) Tyres & tubes: for car, motobike and bicycle;
- (vi) Non-tyre products: Rubber boots, gloves, rubber pipes, condom, conveyor belts, medical equipments, etc.

Box 1 - TSR Product Grade in Raw Form and End Uses

SVR-10: The raw material for SVR10 is a mixture of cuplump (the dried latex left in the bottom of tapping cups), tree lace (the strings of dried Rubber left along the tapping groove of the trees after tapping) and sometimes field coagulum (any latex coagulated by a small holder either in a collection vessel or on the ground). SVR10 is a quality natural rubber that is commonly used in carbon black reinforced, molded products.

SVR-10CV: is a Natural Rubber produced from estate cuplump and smallholders field coagulum. Cuplump consists of the soft-coagulated left in the bottom of tapping cups and field coagulum is any latex coagulated by a small holder either in a collection vessel or on the ground. SVR 10CV is being used in SVR 10 applications where a lower initial Mooney can result in a one-pass mix, increasing the consumer's mixer throughput. SVR 10CV is currently used throughout the tire industry in carbon black reinforced compounds.

SVR-20: The raw material for SVR20 is a mixture of cuplump (the dried latex left in the bottom of tapping cups) and field coagulum (any latex coagulated by a small holder either in a collection vessel or on the ground). Small holders collect this raw material and sell it to remillers who have the processing equipment to process into SVR Rubber. SVR 20 is a grade generally used in carbon black reinforced compounds, such as those commonly found in tire production.

SVR20CV: is a Natural Rubber produced from smallholders' field coagulum. Field coagulum is any latex coagulated by small holder either in a collection vessel or on the ground.

SVR-5: is a Natural Rubber that is produced from the processing of intentionally coagulated latex or in some cases fresh cup lump. Malaysian produced SVR5 is slightly than other SVR5's, in that the raw material is defined as smoked sheet, air dried sheets, or partially dried sheets produced by smallholders. SVR 5 is typically used in molded carbon black reinforced compounds to produce anti-vibration devices for the automotive industry.

SVR-CV: is a Mooney Viscosity stabilized Natural Rubber that is produced from the intentional coagulation of whole field latex under controlled estate conditions. The plantation carefully selects the trees used in the production of CV for their low Mooney characteristics. SVR CV type Rubbers are used in compounds where raw polymer consistency is of the utmost importance. SVR CVs using companies manufacture wiper blades, adhesives, poultry finders and other products where dirt and Mooney Viscosity are important.

SVR-GP: (general purpose) is a viscosity stabilized Natural Rubber made up of a mixture of 60% deliberately coagulated latex Rubber and 40% field coagulum. At least 20% of the deliberately coagulated material must be from a SVR factory or SVR group processing center. The balance can be made up of either smoked or unsmoked sheets or combination of both acquired from small holders or estates. SVR GP is used in many compounds similar to SVR 10CV. Customers looking for a controlled initial low Mooney, low dirt content Rubber often use SVR GP. SVR GP is currently used in the tire industry, tennis ball manufacturing, and in molded carbon black reinforced compounds.

⁴ See National Standards of Latex Concentrate in Appendix 2

SVR-L: is a light colored Natural Rubber produced from the intentional coagulation of field latex under controlled estate conditions. The field that goes into the production of this colored Rubber generally is selected because it has low carotene content which upon coagulation will yield either a light amber or yellow colored Natural Rubber which has pass the Lovibond specification for color. SVR L is a premium grade of Natural Rubber that is free of any visual contamination and light in color. SVR L is commonly used in extruded and solution processes, where light color is required and contamination in the Rubber increases the scrap rate of the process.

Source: Viet Nam General Rubber Corporation

Around 90% of TSR products are exported and only 10% are domestically consumed. TSR is input for other products:

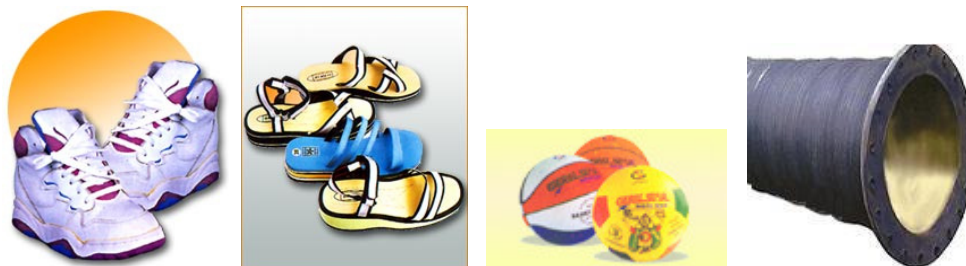
- Tyres and tubes: CASUMINA, DRC, Sao Vang, YOKOHAMA, INOUE... are among majors players in Vietnam market;

Figure 1. Tyre and tubes products sample



- Non-tyre products (rubber boots, gloves, rubber pipes, condom, conveyor belts, medical equipments, etc.): some big players such as Vietnam General Rubber Corporation, Vietnam Chemical Corporation have their own factories producing some of items within this category.

Figure 2. Non-tyre products sample



Rubber trees, after 25-30 years of age, will be used for manufacturing rubber wood-based products such as table, chair, bed etc.

Figure 3. Rubber wood-based products sample



b. International rubber production and market

According to statistics of the International Rubber Study Group (IRSG), world rubber production and consumption (both natural and synthetic rubber) grew quite stably for the last 10 years. Table 2 below shows the data on world rubber production and consumption from 1996 to 2005. Data of 2006 includes consumption only. Forecasts for consumption in 2007 and 2008 are made by the IRSG.

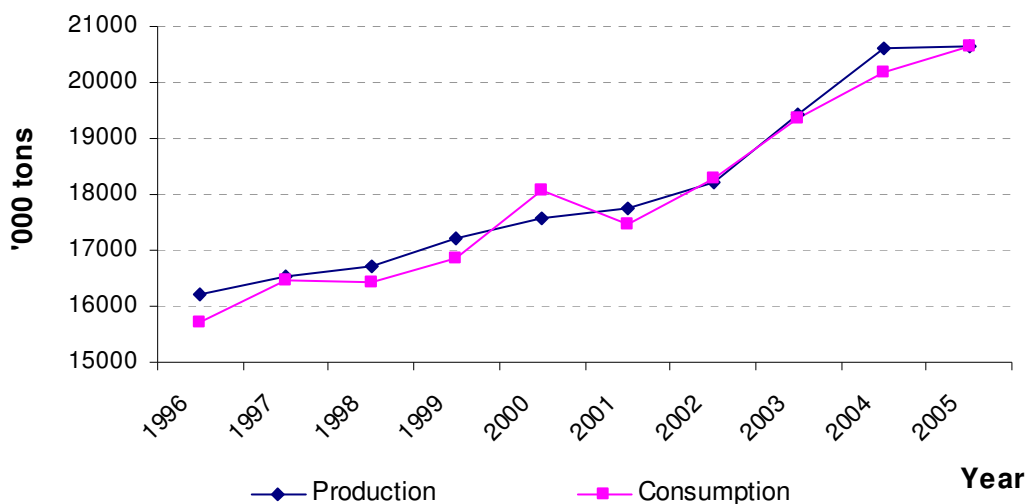
Table 2 - World Rubber Production and Consumption (unit: '000 tonnes)

Year	Production			Consumption		
	Natural Rubber	Synthetic Rubber	Total Rubber	Natural Rubber	Synthetic Rubber	Total Rubber
1996	6,440	9,760	16,200	6,110	9,590	15,700
1997	6,470	10,080	16,550	6,470	10,010	16,480
1998	6,850	9,880	16,730	6,570	9,870	16,440
1999	6,872	10,336	17,208	6,646	10,196	16,842
2000	6,739	10,819	17,558	7,315	10,764	18,079
2001	7,261	10,485	17,746	7,223	10,253	17,476
2002	7,345	10,882	18,227	7,546	10,723	18,269
2003	7,992	11,448	19,440	7,967	11,381	19,348
2004	8,645	11,978	20,623	8,319	11,860	20,179
2005	8,682	11,965	20,647	8,742	11,917	20,659
2006				8,920	12,570	21,490
2007 (est.)				9,390	13,520	22,910
2008 (est.)				10,030	14,120	24,150

Source: International Rubber Study Group various issues and International Rubber Study Group (IRSG) vol. 60 No. 6-7, March/April 2006

The data can be represented in the graph below and it is easy to see that only in 2000, consumption exceeded production.

Figure 4. World Rubber Production and Consumption 1996-2005



Global rubber exports and imports

The US is the world largest natural rubber importer and second biggest importer of synthetic rubber (after China). China ranks number one in importing natural and number two in synthetic rubber. Other leading importers include mostly developed countries like Japan, Korea, Germany, France... Tables 3a and 3b below illustrate top ten world importers of natural and synthetic rubber.

Table 3a - World leading natural rubber importers (unit: USD '000)

#	Country	2000	2001	2002	2003	2004
1	USA	944,154	703,698	843,391	1,143,719	1,572,358
2	CHINA	584,323	592,311	694,497	1,155,101	1,524,504
3	JAPAN	578,660	501,023	560,618	798,372	1,055,333
4	KOREA REP.	240,279	206,240	233,976	338,739	455,632
5	MALAYSIA	332,145	280,684	279,896	339,463	379,094
6	GERMANY	208,987	181,071	193,245	302,215	356,021
7	FRANCE	240,068	201,080	197,475	327,667	337,470
8	SPAIN	132,793	135,062	143,258	200,573	272,235
9	BRAZIL	111,661	92,772	114,206	165,578	252,050
10	ITALY	120,125	114,242	122,646	174,146	237,181

Table 3b - World leading synthetic rubber importers (unit: USD '000)

#	Country	2000	2001	2002	2003	2004
1	CHINA	736,202	800,390	962,011	1,188,043	1,426,191
2	USA	901,482	858,441	841,713	833,669	919,725
3	GERMANY	529,483	571,329	556,246	653,527	816,261
4	BELGIUM	533,616	468,644	444,554	504,036	596,243
5	FRANCE	439,482	403,830	409,555	505,257	575,419
6	ITALY	398,341	402,386	397,774	469,160	529,108
7	CANADA	434,081	420,392	405,048	415,655	464,373
8	NETHERLANDS	240,523	224,131	231,977	248,871	310,808
9	INDIA	148,340	146,224	160,372	230,373	303,943
10	UK	242,792	218,280	236,505	265,147	302,468

Source: International Trade Center/UNTAD/WTO (www.intracen.org)

In term of export, Thailand is the biggest exporters of the world with value amounted to USD 3.4 billion in 2004. Indonesia and Malaysia follows with number 2 and 3. The total export value of these two countries amounted to around USD 3.6 billion in 2004. Since 2001 to date, Viet Nam started to be the world number 4 in export of natural rubber (see Table 4a). However, the value of Vietnam export so far is still under one billion USD (see Table 5a and 5b for 2006 import-export statistics).

While Asian countries dominate natural rubber production, developed countries like the US, Japan, Germany... play strong positions in synthetic rubber production. These countries rank top positions in world export of synthetic rubber (see Table 4b).

Table 4a - World leading natural rubber exporters (unit: USD '000)

#	Country	2000	2001	2002	2003	2004
1	THAILAND	1,510,091	1,321,163		2,796,774	3,400,000
2	INDONESIA	889,302	786,615	1,038,387	1,494,625	2,181,251
3	MALAYSIA	676,675	496,454	655,775	942,848	1,367,891
4	VIET NAM	166,019	165,970	270,890	377,693	579,000
5	SINGAPORE	208,671	146,579	159,419	194,593	285,649
6	COTE DIVOIRE	78,040		86,155	122,623	
7	GUATEMALA	28,259	25,090		36,659	58,737
8	SRI LANKA		23,736	26,358	38,507	50,938
9	INDIA	3,216	3,403	29,230	55,247	46,142
10	GERMANY	23,550	18,096	22,788	28,817	43,189

Table 4b - World leading synthetic rubber exporters (unit: USD '000)

#	Country	2000	2001	2002	2003	2004
1	USA	1,367,021	1,341,998	1,326,190	1,477,668	1,766,954
2	JAPAN	875,872	808,338	887,000	946,441	1,112,221
3	GERMANY	423,043	424,924	602,198	584,829	724,909
4	RUSSIAN FED	301,563	307,095	368,451	517,172	715,426
5	FRANCE	354,678	376,332	362,074	474,669	647,570
6	KOREA REP.	368,597	348,746	363,103	473,151	612,652
7	BELGIUM	463,384	389,093	387,229	511,901	611,179
8	NETHERLANDS	86,298	265,947	271,057	291,107	575,201
9	CANADA	364,260	323,629	337,509	256,182	329,410
10	UK	264,991	256,511	255,705	222,428	240,661

Source: International Trade Center/UNTAD/WTO (www.intracen.org)

c. Vietnam rubber imports exports

According to Ministry of Trade, export of rubber in the first 9 months of 2006 reached USD 946,308,096.00 (equivalent to 501,731 tons). Biggest importer of Vietnamese rubber is China, with 338,688 tons, accounted for 68,6% of total export volume. Germany and Korea ranks number two and three respectively in term of value (see Table 5a below).

Table 5a. Top 10 importers of Vietnamese Rubber in 2006

Importers	September 2006		First 9 months of 2006	
	Volume (ton)	Value (USD)	Volume (ton)	Value (USD)
Chian	47.961	85.005.936	338.688	633.014.879
Germany	3.910	8.145.629	19.809	40.272.787
Korea	2.535	4.056.920	22.741	37.411.088
Taiwan	2.757	5.642.396	16.934	34.720.251
Russia	1.925	3.455.217	15.304	32.846.300

Japan	1.046	2.444.098	8.564	17.971.143
US	2.415	4.127.601	9.375	16.506.796
Belgium	2.095	3.421.624	9.735	15.382.040
Malaysia	1.729	3.050.946	6.876	14.140.678
France	710	1.453.604	6.281	12.752.742

Source: Ministry of Trade

While Vietnam ranks number 4 in world export of natural rubber, ironically, the country has to import a considerable amount of rubber for domestic use. According to Ministry of Trade, Vietnam had to import 164,090 tons, equivalent to USD 289.29 million for the first 8 months of 2006. Most imported rubber came from Thailand, Campuchia and Indonesia (see Table 5b below).

Table 5b. Top 10 exporters of Rubber to Vietnam in 2006

Importers	September 2006		First 9 months of 2006	
	Volume (ton)	Value (USD)	Volume (ton)	Value (USD)
Thailand	3.431	6.130.193	40.833	67.712.531
Campuchia	2.642	5.401.574	25.437	50.814.787
Indonesia	3.741	7.362.868	20.648	37.122.843
China	2.046	3.388.942	17.387	29.238.865
Korea	1.054	1.974.450	9.854	16.178.697
Taiwan	890	1.763.492	8.242	15.123.579
Japan	55	1.136.852	6.944	13.894.693
Malaysia	190	347.969	8.367	13.483.355
India	873	2.021.106	4.023	8.478.303

Source: Ministry of Trade

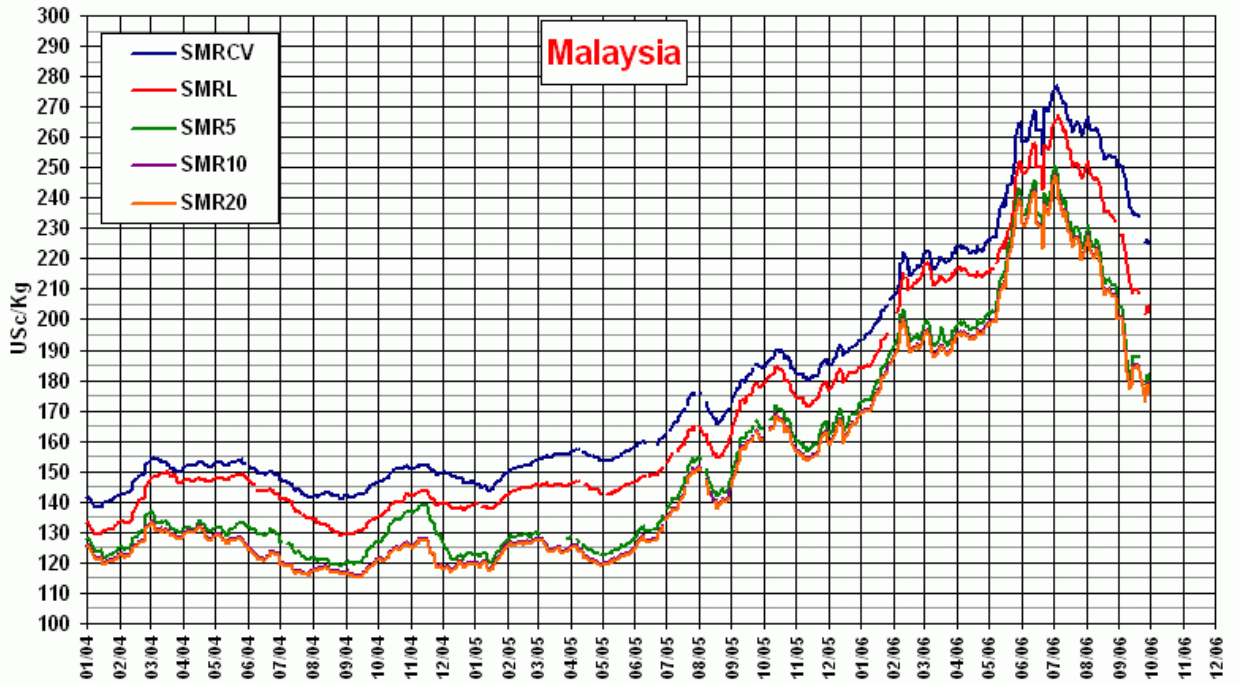
This is considered as a dilemma of the subsector. The situation happened the same in 2005: Vietnam exported 574,000 tons of natural rubber, with value of USD 787 million but at the same time, the country had to import 140,000 tons at USD 213 millions. Clearly, this lead to a waste for the country in term of resources:

- Average price for export = \$787 million/574,000 tons = \$1,371 per ton
- Average price for import = \$213 million/140,000 tons = \$1,522 per ton
- Thus, the difference of price is \$151 per ton. This leads to a lost of (140,000 x 151) = \$21,14 million for the year 2005 only. The lost tends to be continued this year (2006) due to the fact that import growth is higher than export growth.

Rubber price trends

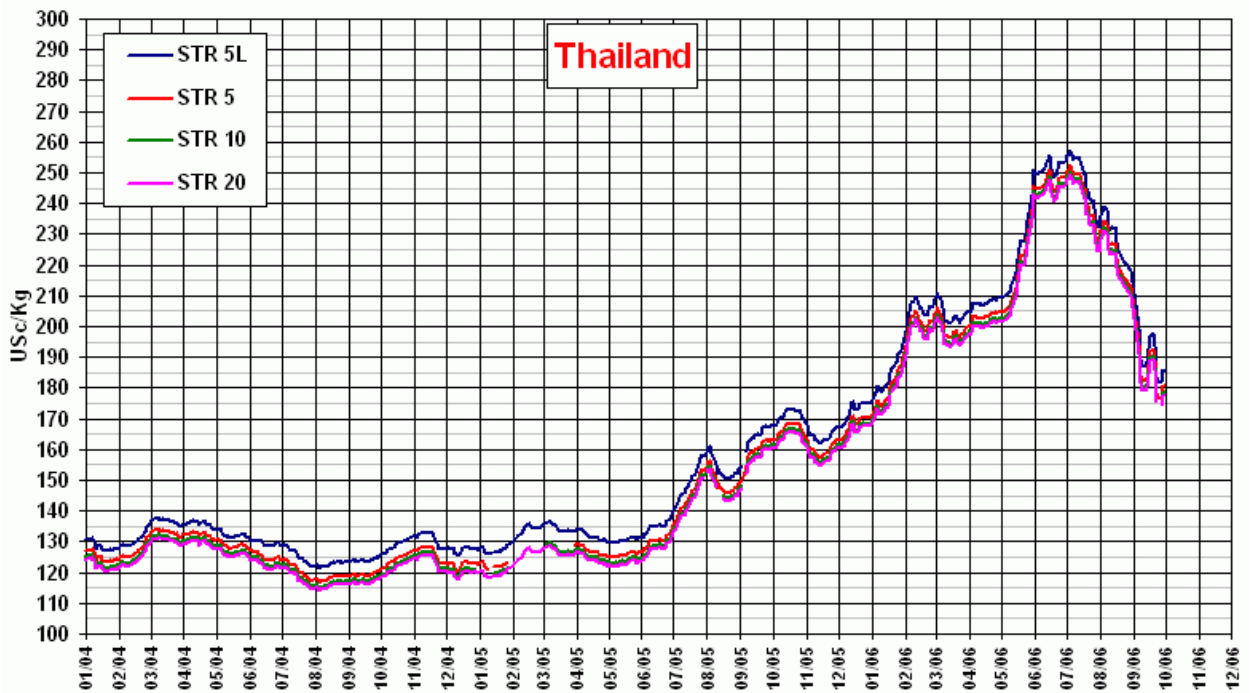
There was a big rise of rubber price since early this year: around USD 2,000 per ton in international market. But the real peak was in June and July 2006 when price was at around \$2,600 - \$2,700 per ton on average (see Figure 5a, b and c for rubber monthly price changes in Malaysia, Thailand and Singapore markets during the last three years). However, the price tends to drop since late August 2006. To date (November 2006), international price is about \$170-\$180 per ton.

Figure 5a. Rubber price trend in Malaysia 2004-2006



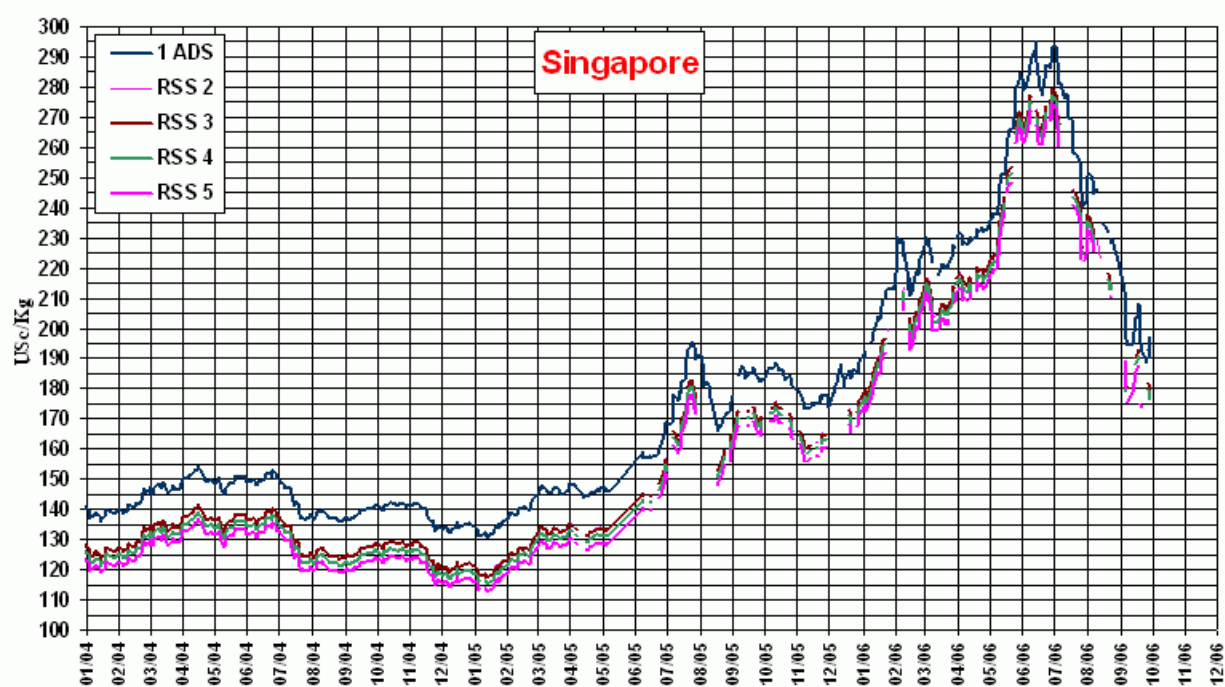
Source: Vietnam General Rubber Corporation

Figure 5b. Rubber price trend in Thailand 2004-2006



Source: Vietnam General Rubber Corporation

Figure 5c. Rubber price trend in Singapore 2004-2006



Source: Vietnam General Rubber Corporation

d. Rubber sub-sector in Quang Binh⁵

Total rubber cultivation in Quang Binh now is 7,413 ha with production of 3,836 tons. The distribution cultivation areas, types of actors (SOE or smallholdings), productivity and production are presented in the Table 6 below.

Table 6. Rubber subsector in Quang Binh 2006

Sector	Areas (ha)			Productivity (kg/ha/year)	Production (tons)
	KTCB*	KD**	Total		
State own estates	1,677	2,484	4,161	1,100	2,732
<i>Percentage (%)</i>	<i>43.5</i>	<i>67.2</i>	<i>55.1</i>	-	<i>71.2</i>
Smallholdings	2071	1181	3252	910	1,104
<i>Percentage (%)</i>	<i>56.5</i>	<i>32.8</i>	<i>44.9</i>	-	<i>28.8</i>
Total	3,748	3,665	7,413	-	3,836

* KTCB: newly planted tree under 6 years old

** KD: tree over 6 years old and we can collect latex

There are 5 districts of the province cultivating rubber. Table 7 illustrates the areas, number of households involved in plantation and average areas per household in the 5 districts of Quang Binh.

⁵ Adapted from GFA Report on Rubber in Quang Binh, done by Mr. Phuc, 2006

Table 7. Areas and number of households planting rubber in Quang Binh

Districts	Areas (ha) in 2006			# of households	Average area per household
	KTCB	KD	Total		
Minh Hóa	214	-	214	390	0.55
Tuyên Hóa	523	16	501	742	0.70
Bố Trạch	1,248	966	2,091	1,131	1.19
Quảng Ninh	-	97	97	-	-
Lệ Thủy	86	102	174	54	1.59
Total	2,071	1,181	3,252	2,317	0.94

Source: Project on Agricultural Diversification of Quang Binh

Adapted from GFA Report done by Mr. Phuc (2006)

There are two state companies (under Quang Binh People Committee) operating in rubber subsector: Viet Trung and Le Ninh. These two companies were established since 1960s and both of them currently occupies an area of 4,161 ha, as shown in the Table 8 below:

Table 8. Cultivation areas of rubber SOE in Quang Binh 2006

SOE	Areas (ha)		
	KTCB	KD	Total
Việt Trung	919	1,712	2,631
Lệ Ninh	758	772	1,530
Total	1,677	2,484	4,161

Source: Phuc (2006)

In term of rubber clone (varieties), the major kind of varieties include: GT 1 (32.6%); VM 515 (22.3%); RIM 600 (16%) and PB 235 (12.8%). These four kinds accounted for 83.7% of total clone categories used in Quang Binh.

Regarding production and distribution, as mentioned in the Table 6, SOE firms produce 71.2% (2,732 tons) of the total production of the locality. Among these two players, Viet Trung company processes latex into SVR3L and SVR 10L. The company then sell products to private traders coming from different provinces. Le Ninh company processes RSS 3 only (the company is currently investing in processing plant for SVR3L and SVR 10L products). RSS 3 is also sold to private traders after that. Since there is no companies specifying in manufacturing final products in Quang binh, all products of these two companies are exported by the traders.

Natural crude latex produced by households, accounted for 28.8% (1,104 tons - Table 6), are sold to private traders in Quang Binh and even other surrounding provinces. Those traders then process latex into SVR 10 and SVR 20 to export to China, too.

About price, according to Le Ninh company, price of both crude and processed rubber (SVR, RSS) in Quang Binh increased over the last five years (see Table 9).

Table 9. Rubber price in Quang Binh 2002-2006 (VND per kg)

Types	2002	2003	2004	2005	2006 *
Processed rubber	9.973	14.377	18.306	19.757	25.421
Crude natural latex	3.417	5.624	6.957	8.429	12.528

* Average of the first 9 months

Adapted from Phuc (2006)

Apart from rubber, rubber wood is another product of the subsector (rubber trees after 25-30 years are no longer being collected latex). As smallholdings are mostly new to Quang Binh, all rubber wood belong to two SOE. Rubber wood is priced at VND 150,000 per tree. There are about 280 tree per ha so on average, one ha gives a revenues of VND 42 million.

Further characteristics of the subsector will be analyzed in the VC map in Part 3 of this report.

SUBSECTOR PROMOTION & DEVELOPMENT POLICIES

- a. Institutions involved in rubber subsector promotion
- b. Some policies affecting the development of the subsector

a. Institutions involved in rubber subsector promotion

These institutions include the Ministry of Agriculture and Rural Development; Provincial Departments of Agriculture and Rural Development; District People Committees; Research institutions such as Vietnam Rubber Research Institute (VRRI); Vietnam Rubber Association; Provincial Associations of Rubber (e.g. Ho Chi Minh Rubber and Plastic Association); and Vietnam General Rubber Corporation (VIGERUCO):

Ministry of Agriculture and Rural Development: This is state administration agency in agricultural sector. The role of the Ministry is to formulate macro policies for the agriculture in general and rubber subsector in particular.

Vietnam Rubber Research Institute (VRRI): This is the main research body of the subsector, belonging to the Ministry of Agriculture and Rural Development. The main functions of the Institute are research on development of rubber plants and rubber related products, specifically:

- Research and create new rubber varieties; rubber planting techniques and transfer the techniques and technology of the subsector to the beneficiaries such as traditional villages, companies and other organizations working in the subsector;
- Developing processing technology and assist key players in the subsector to apply new techniques and technology in order to get higher productivity;
- Training, technical coaching for students, enterprises or villages upon requests on all techniques relating to the development of subsector.

Provincial Departments of Agriculture and Rural Development; District People Committees: These are the most important agencies to promote the development of the subsector. They can directly influence on the development of the subsector in the locality. Different provinces will have different policies to promote the subsector, through different measures.

Vietnam Rubber Association: this institution plays an important role in providing updates on price in international market through its own website, www.vra.com.vn. However, accessibility to this resources is limited to its members only. Other players in the subsector have no way to get information.

Provincial Associations of Rubber: Not all provinces having rubber association. Few locals have their own association but its role remains very limited. There is almost no specific supports for the development of the subsector within the local;

Besides those above institutions, **Vietnam General Rubber Corporation (VIGERUCO)** plays the leading role to promote the development of the subsector as it is one of the most important SOEs belonging directly to the Government.

Table 8 - Name and Address of institutions involving in the subsector promotion

Stt	Name	Address	Tel	Fax
1	Ministry of Agriculture and Rural Development Minister: Cao Đức Phát	2 Ngọc Hà, Ba đình, Hà nội	04.8468160	04.8454319
2	Departments of Agriculture and Rural Development of Quảng Bình Director: Nguyễn Xuân Dung	15 Quang Trung, Đồng Hới - Quảng Bình	052.820543	052.821673
3	Vietnam Rubber Research Institute Director: Mai Van Son	177 Hai Ba Trung St., Ward 6, St. 3, Hochiminh City	(84-8) 8294139	
4	Vietnam Rubber Association Secretatry General: Ms. Tran Thi Thuy Hoa	236 Nam Kỳ Khởi Nghĩa, Q.3, TP. Hồ Chí Minh, Việt Nam	9322605	9320372
5	Vietnam Agriculture Newspaper Chief Editor: Lê Nam Sơn	14 Ngô Quyền - Hà Nội	048256492	048252923
6	Vietnam General Rubber Corporation Director: Le Quang Thung	236 Nam Ky Khoi Nghia Rd., Dist.3, Hochiminh City	(84-8) 9325234	

b. Policy affecting the development of the subsector

At macro level, the Prime Minister just approved a Master Plan for Vietnam rubber industry from 2006 to 2020, which focuses on development of 50% smallholding sector.

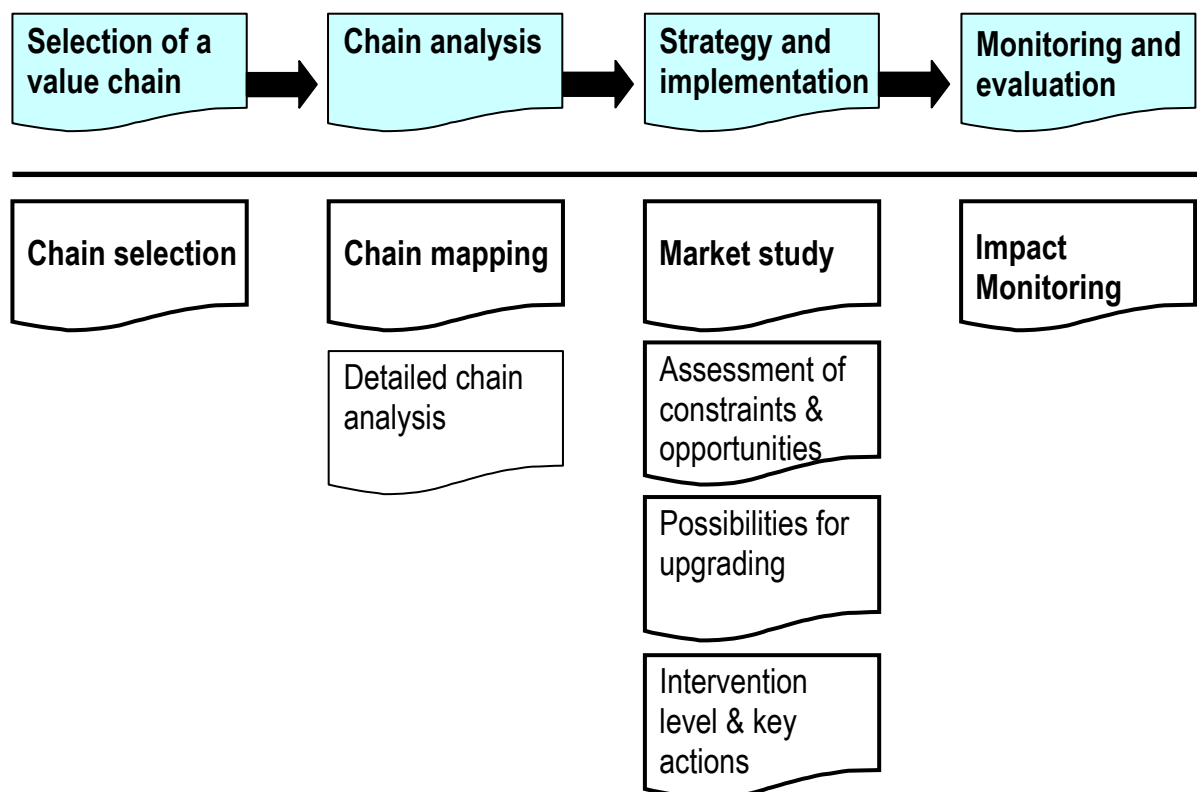
Being aware of the importance of the rubber tree in the country's agriculture, the government started the Agricultural Diversification Project (ADP) financed by International Development Association / World Bank (IDA/WB) and French Development Agency (AFD) in 1998. The overall project objective is to diversify and intensify agricultural production and thereby increase and stabilize farmers' incomes and rural employment, principally through establishing a private smallholder rubber sector and upgrading livestock production activities, in the poor central highland and coastal provinces of Vietnam. In the project, an adaptive research component for rubber smallholding development has been carried out by the Rubber Research Institute of Vietnam on various aspects, out of which, rubber-based farming systems suitable for immature smallholdings have been an important topic in the research program.

VALUE CHAIN ANALYSIS OF RUBBER SUBSECTOR IN QUANG BINH

- a. Functional chain mapping
- b. Categories of actors in value chains and their relations
- c. Constraints of the subsector
- d. Some preliminary recommendations for subsector promotion

The methodology used in this part to analyze the subsector is value chain. The purpose of value chain analysis is to identify the opportunities and constraints of the subsector, to identify the possible solutions/strategies to promote the development of subsector and also the level of intervention to the strategies implementation. The figure 6 illustrates the stages of analysis. The reasons of subsector selection were presented in previous parts. This part will focus primarily on value chain analysis, the actors of the chain and the links between them.

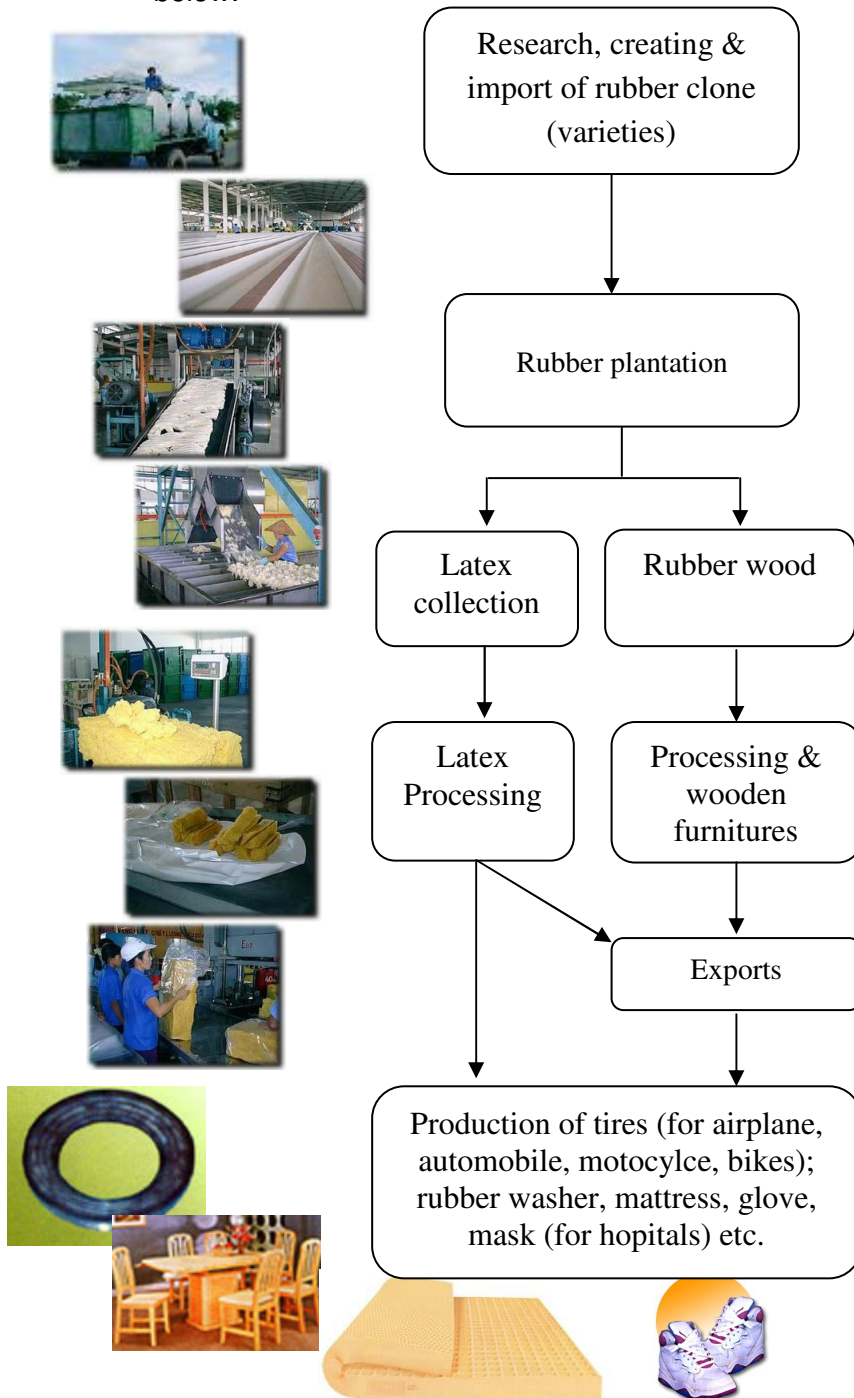
Figure 6 - Value chain analysis



Source: GTZ materials, 2005

a. Functional chain mapping

The manufacturing procedure of the subsector can be described in the simple flow chart below:



There are different kinds of varieties: RRIV 4, RRIV 4 (most popularly accepted, created by Institute of Rubber - Vietnam Rubber Corp.); PB 235,255,260 (Malaysia); RRIC 121 (Sri Lanka); GT 1; RIM 600; VM 515; RRII 105.

Rubber latex collection from the rubber tree begins when it reaches 6 years of age. Latex is continuously harvested until the tree reaches 30 years. Rubber trees are at their latex production peak at 12 years. In Vietnam, the highest latex yield is obtained from October to December, during the months immediately following the rainy season.

Latex is collected daily between 4 & 5 am. The cool hours of the early morning is when rubber trees are at their latex production peak. After collection, the latex is screened to remove foreign debris (leaves, dirt etc.). After rubber latex is collected at the plantation, it is transported by tank truck to the factory for processing.

Before being ready for shipment, rubber latex is coagulated with either Acetic or Formic Acid in clean ceramic troughs then is kneaded several times before it is chopped and shredded to have bale shape. The bale shaped forms are then baked at 110-112 C (230-234 F) for 8 to 9 minutes, weighed and then hydraulically compressed for 40 seconds.

In Vietnam, most natural rubber are exported. There are quite few producers of final products.

Input suppliers: inputs supplies of the subsector include mainly two things: rubber clone and fertilisers. There is no suppliers of rubber clone in Quang Binh currently. Most varieties are bought from Dong Nai or Daklak provinces. Fertilisers are easily bought in market in Quang Binh;

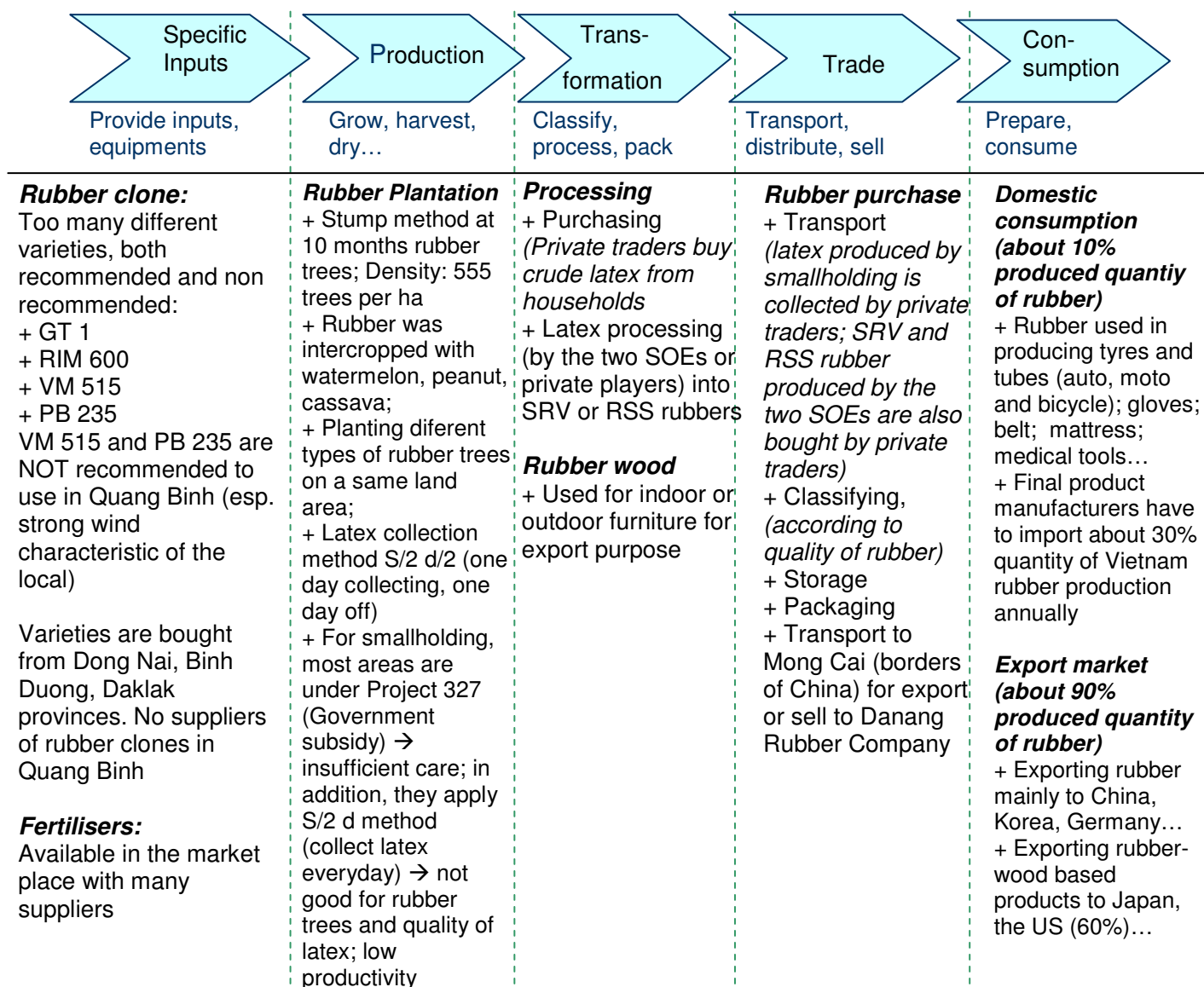
Latex plantators: As mentioned in the first part, key players of the subsector in Quang Binh include two SOEs (Viet Trung and Le Ninh companies), which have 55.1% of plantation areas and smallholding, which cover 44.9% areas of the province (see Table 6 in part 1). Those players grow rubber trees and collect crude natural latex;

Processors: These groups include the two mentioned SOEs and one private players (i.e. Lam Thanh company) in Quang Binh. Latex after being collected will be processed into SRV (by Viet Trung) and RSS (by Le Ninh). Lam Thanh companies and other private traders from other provinces buy crude latex from households and process SRV rubber by themselves;

Traders and Exporters: As mentioned in previous parts, most of natural rubber produced domestically are exported. In Quang Binh, almost all rubber produced by processors in the province are purchased by private traders. Those traders export rubber to China or sell to Da Nang Rubber Company - a tyres producer belonging to Vietnam Chemical Corporation;

Producers of final products: In Quang Binh, there is no manufacturer of rubber final products, such as tyres, medical gloves, tubes, mattress, condom etc. Even in Vietnam, there are quite few players in this field. However, Viet Trung and Le Ninh companies have their own rubber-wood processing factories. These factories produce tables, chairs and other wood-based products to export to Japan and some other countries with value of approximately USD 1 million per year.

In the **value chain map**, which is presented below, details and characteristics of each process are revealed more visually.



b. Value addition analysis of the subsector in Quang Binh (2003 basis)

The economics of rubber can be calculated on the basis of price given by Mr. Phuc (Appendix 5 on cost of the first 7 years of rubber tree planting in 1 ha).

For plantators and processors

Total cost of 1 ha is **VND 16,445,767** (in 2003). This cost is added up to the time tree can be collected latex, so it can be considered as initial investment and will be subject to depreciated over time of latex collection.

Life cycle of rubber tree, on average, is 25 years. So a simple linear depreciation would give a cost of (VND 16,445,767/25) = VND 657,831 per year per ha (price 2003).

Production cost (processing latex into exportable rubbers) is averaged at VND 1.5 mil. per ton (in which, 40% for labor cost; 40% for fertilisers, chemical, water...; and 20% for other cost). From the Table 6, productivity of SOE companies is 1,100 kg per ha per year while households' is only 910 kg per ha per year. More over, smallholding sell crude latex instead of processed rubber like the SOEs. Thus, value addition created by these two groups is different:

Applying rubber price 2003 (Table 9) at VND14,377/kg, value created by SOEs per ha per year is as follows:

Revenues	1,100 x 14,377 =	VND 15,814,700
- Production cost	1.5 mil/1.1 =	VND 1,650,000
- Depreciation		VND 657,831
Margin		VND 13,506,869

In addition, after 25 years, each ha provide 280 trees at VND 150,000/tree. So total value of 1 ha trees is (280 x 150,000) = VND 42,000,000. Therefore, each year plantator can add up (VND 42 ml./25) = **VND 1,680,000 per ha**.

Thus, total value addition of SOE plantators is (13,506,869 + 1,680,000) = **VND 15,186,869 per ha per year**.

For smallholdings, with intercrop of watermelon, peanut or cassava during the first 4 year of rubber tree life cycle, households get about VND 20 mil. Thus, each year households have income of VND 5 mil. from intercrop. However, these players sell crude latex without processing cost. They will create an added value as follows:

Revenues	910 x 5,624 =	VND 5,117,840
+ Intercrop income		VND 5,000,000
+ Rubber wood income		VND 1,680,000
- Depreciation		VND 657,831
Value added		VND 11,140,009 per ha per year

For private processors

For those who buy crude latex from smallholding for processing, the price of latex in 2003 is VND 5,624/kg (Table 9). Most of them process and then export rubber. Processing and transportation cost is VND 1,700/kg. So total cost is (5,624 + 1,700) = VND7,324 per kg.

International rubber price at the end of 2003 is USD 1.25 per kg (equivalent to around VND18,125/kg in 2003). Therefore, value added of these players is:

$$(18,125 - 7,324) = \text{VND } 10,801 \text{ per kg.}$$

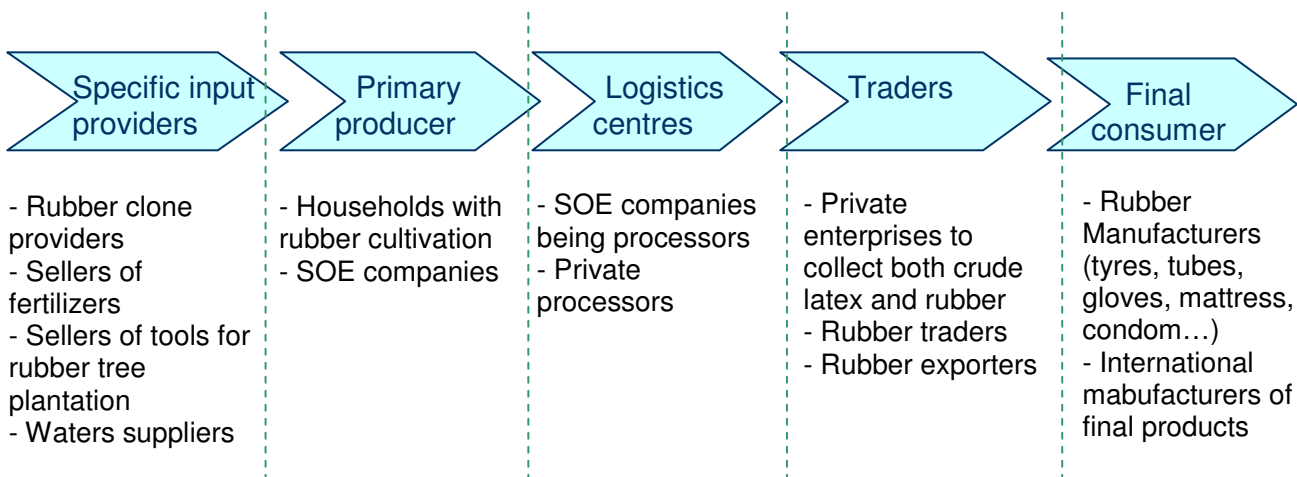
This is really a motivator for these players to collect crude latex, process and export directly rubber products.

For traders/exporters

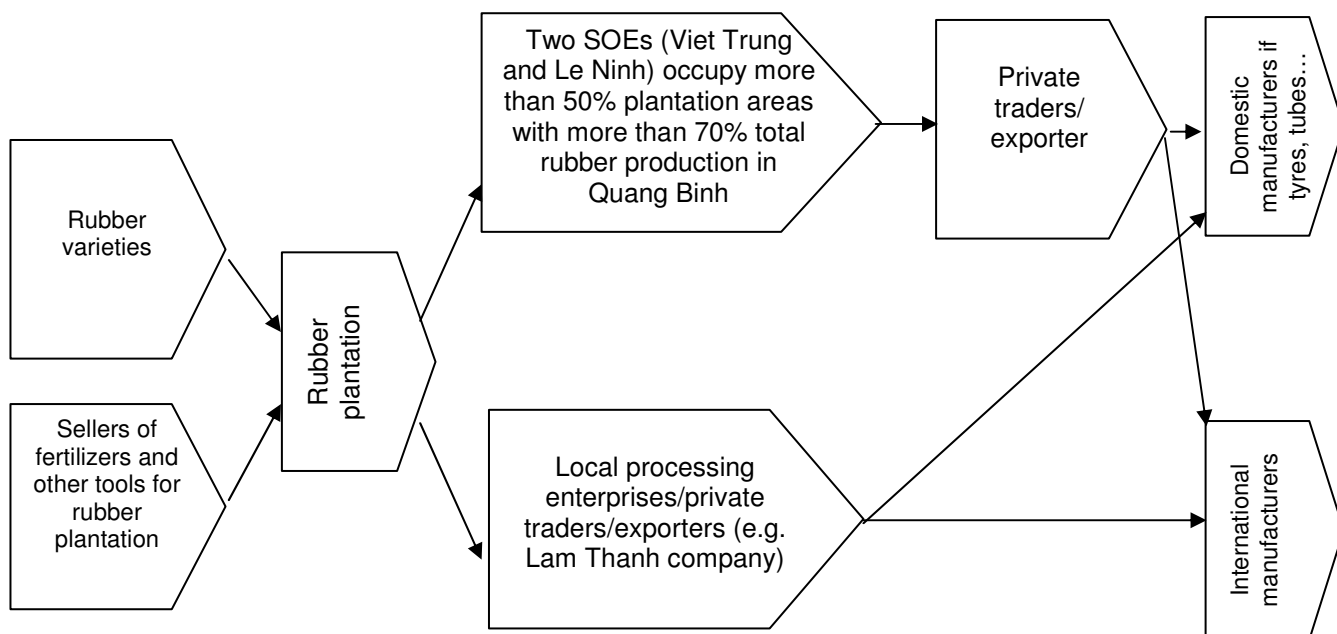
Those players are the one who buy rubbers from two SOEs and export. Buying price (2003) is VND14,377/kg. Transportation and other cost associated to export is around VND 500/kg. This makes up a total cost of VND.14,877/kg. So value created by these players is:

$$(18,125 - 14,877) = \text{VND } 3,248 \text{ per kg}$$

c. Chain mapping of actors (micro level) - categories of actors in value chains and their relations

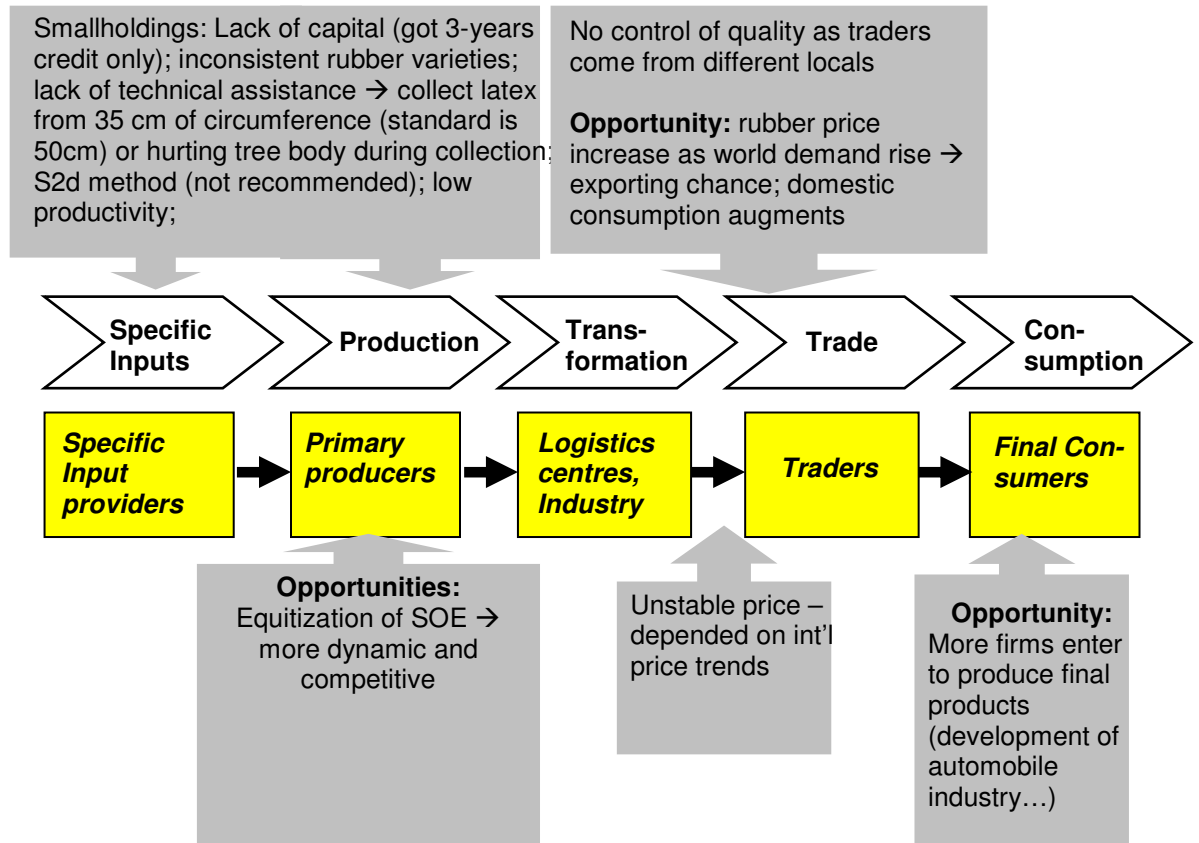


Circuits of the chain

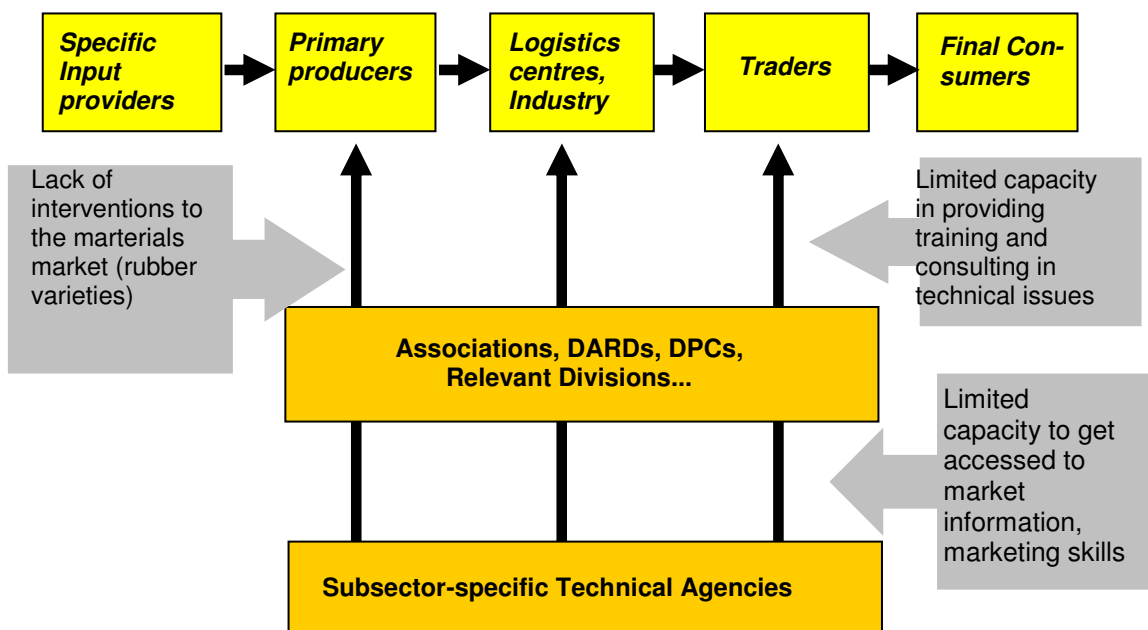


d. Constraints and opportunities of the subsector

At Micro level:



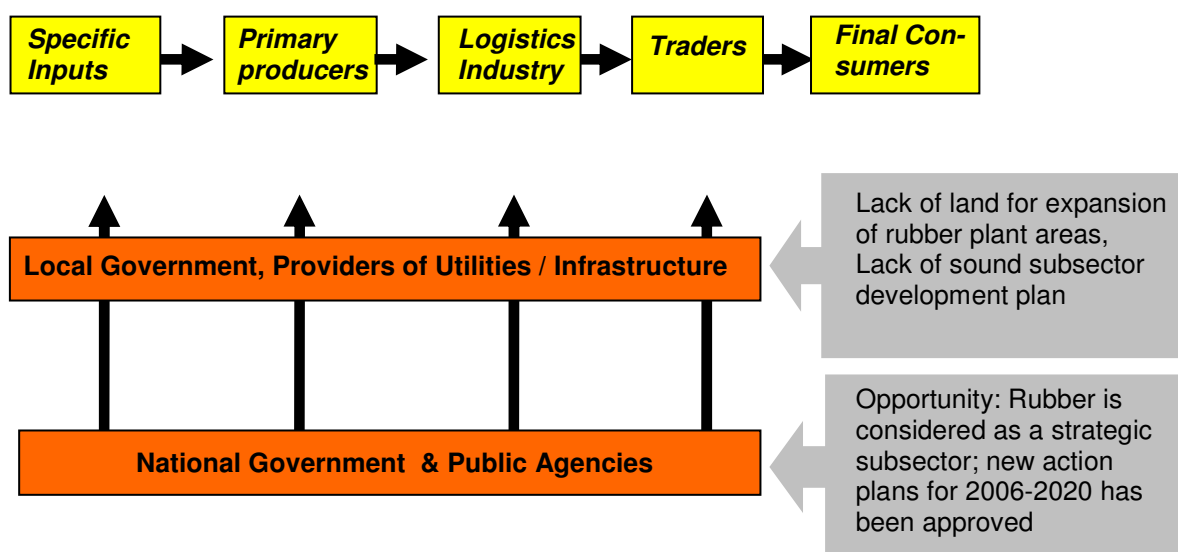
At Meso level:



As mentioned, the role of Vietnam Rubber Association (VRA). There is no provincial association of rubber in Quang Binh either. The VRA does not have any specific supporting activities to support the development of the subsector. There is no intervention from the association in term of market for specific inputs or other processes of the chain.

Subsector-specific Technical Agencies include GTZ/GFA and research institutions such as Rubber Research Institute of Vietnam (RRIV). GTZ/GFA is now actively facilitating the development of the subsector specifically in Quang Binh province. RRIV has no specific activities to support Quang Binh's rubber subsector. Survey conducted by GFA in 2006 (Mr. Phuc) showed that the reasons leading to low productivity include: limited techniques applied; lack of appropriate supporting policies; limited extension activities, capacity and performance and no effective management by local authorities towards the subsector.

At Macro level:



The local government of Quang Binh had set some supporting programs to promote the development of the subsector. During the past years, the supports in term of subsidy of VND500,000 to VND1,000,000/ha. In addition, land planning is considered at provincial level to expand plantation area in coming years.

The central Government, specifically relating bodies such as MARD and VIGERUCO, has set strategic plan for development of the subsector from 2006 to 2020. This is a really opportunity for the subsector in the coming times.

e. Proposed solutions for addressing identified constraints and opportunities

Strategic solutions with detailed action plans to promote rubber subsector in Quang Binh will be elaborated in discussion with relevant stakeholders during a workshop (tentatively held in early December 2006) in the province. Below are just few recommendations which are based upon above analyses:

Constraints	Solutions	Doer	Supporting organisations	Remarks
- Limited technical skills for plantation of rubber trees and collecting latex	- Apply appropriate techniques through on topic technical training - Strengthen technical capacity of District commune extension officers	Households	- Viet Trung and Le Ninh Companies, Economic Division, District Agri. Extension Station, SMNR - CV, ADB...	
- Wrong selection of rubber clones (i.e. VM 515 and PB 235)	- Buy recommended varieties that appropriate for Quang Binh weather - Varieties incubators in Quang Binh	Households and Economic Division	- Economic Division	Recommended varieties such as GT 1 and RIM 600 Evaluate possibility to have rubber clone supplier in QB
- Low investment to production → low productivity for smallholding group	- Spend sufficient care taking, fertilisers for mulberry plantation	Households	- Two SOEs, fertiliser stockiest	
- Limited access to new markets	- Enhance capacity in searching new markets, marketing skills...	SOEs and households	Economic Division, ADB, SMNR-CV ...	Access to update market information, learn negotiation skills, marketing skills.
- Lack of detailed land use planning for rubber plantation areas expansion	- Work out comprehensive planning, specific planning for rubber plantation at commune level	DPC	DONRE, Economic Division, Finance and Planning Division, Infrastructure Division	
Lack of manufacturers of final products	- Inviting investment projects in tyres, tubes production - Focusing on design of rubber wood based products; - Looking for export market of final products	PPC SOE and private processors	PPC	

APPENDIX 01 - NATIONAL STANDARD OF SVR (TCVN 3769:2004)

Parameter *	Grade								
	SVR CV 60	SVR CV 50	SVR L	SVR 3L	SVR 5	SVR 10CV	SVR 10	SVR 20CV	SVR 20
	Field latex material			Field latex or sheet material			Field grade material		
1. Dirt content, % wt. Max	0.02	0.02	0.02	0.03	0.05	0.08	0.08	0.16	0.16
2. Volatile matter, % wt. Max	0.80	0.80	0.80	0.80	0.80	0.80	0.80	0.80	0.80
3. Ash content, % wt. Max	0.40	0.40	0.40	0.50	0.60	0.60	0.60	0.80	0.80
4. Nitrogen content, % wt. Max	0.60	0.60	0.60	0.60	0.60	0.60	0.60	0.60	0.60
5. Initial plasticity (PO). Min	-	-	35	35	30	-	30	-	30
6. Plasticity retention index (PRI). Min	60	60	60	60	60	50	50	40	40
7. Colour index. Max	-	-	4	6	-	-	-	-	-
8. Mooney viscosity ML (1' + 4') 100°C	60 ± 5	50 ± 5	-	-	-	60 +7,-5	-	65 +7,-5	-
9. Cure **	R	R	R	R	-	R	-	R	-
10. Color coding strip	Orange			Transparent			White opaque		
11. Color coding marker	Black	Light green		Magenta		Brown	Yellow	Red	

* Testing for compliance shall follow ISO test methods

** Cure information is provided in the form of rheograph (R)

APPENDIX 02 - NATIONAL STANDARD OF LATEX (TCVN 6314:1997)

Properties	Limits				
	HA	LA	XA	Creamed HA	Creamed LA
Total solids content, (TSC), % wt. Min	61.5	61.5	61.5	66.0	66.0
Dry Rubber Content (DRC), % wt. Min	60.0	60.0	60.0	64.0	64.0
Non - rubber content % wt. Max (TSC minus DRC)	2.0	2.0	2.0	2.0	2.0
Total Alkalinity (NH3) % wt					
Min	0.60	-	0.3	0.55	-
Ma	-	0.29	-	-	0.35
Mechanical Stability Time (MST) sec. Min	650	650	650	650	650
Coagulum content % wt of TSC. Max	0.05	0.05	0.05	0.05	0.05
Copper content, mg/kg, % of TSC. Max	8	8	8	8	8
Manganese content, mg/kg, % of TSC. Max	8	8	8	8	8
Sludge content, % wt of TSC. Max	0.10	0.10	0.10	0.10	0.10
Volatile fatty acid (VFA). Max	0.20	0.20	0.20	0.20	0.20
KOH number. Max	1.0	1.0	1.0	1.0	1.0