

**Diversification by
smallholder farmers:
Viet Nam
Robusta Coffee**



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by Anthony Marsh



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Preface

This paper presents a case study of the development of the Robusta coffee industry in Viet Nam. The paper focuses on the key factors that have influenced the growth of the industry. It is not an exhaustive study of the Viet Nam coffee sector; information presented is aimed at providing a characterization and analysis of the development of Robusta coffee in Viet Nam with a particular focus on farm risks. An understanding of the reasons for this growth holds important lessons for the future growth of the coffee industry in Viet Nam as well as for other similar cash crop diversifications around the world. This document draws from many sources, along with farmer interviews by the author in an attempt to characterize the industry, explain the growth and appraise the impact it has had on small farmers.

This working document is aimed at those working at ministries of agriculture and extension services, Non-Governmental Organizations (NGOs) and related projects concerned with agricultural development.

DEFINITIONS AND COFFEE TERMS

Robusta coffee passes through a range of states depending on its stage in processing. This can cause confusion in comparisons of pricing and costs. Fresh cherry converts to dry cherry at a ratio of 2 to 1 by weight. Fresh cherry converts to upgraded green bean at a ratio of 4.6 to 1 by weight. Listed here are some of the key definitions of the stages and states of Robusta coffee:

Cherry: Fresh ripe fruit picked from the Robusta coffee bush

Dry cherry: Cherry that is dried to 12 percent moisture

Ungraded green cherry: Dry coffee bean, 12 percent moisture, after the outer skin is removed, leaving only green bean

Ungraded green bean: The export coffee beans

Conversion rate

For this study the conversion rate VND16 000 to USD 1 was used

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Acronyms

BRC	Bavi Research Centre
FAO	Food and Agriculture Organization of the United Nations
FOB	Free On Board
GOV	Government Of Viet Nam
Ha	Hectares
ICA	International Coffee Agreement
ICARD	Information Centre for Agricultural and Rural Development
ICO	International Coffee Organization
IPSARD	Institute of Policy and Strategy for Agricultural and Rural Development
Kg	Kilogram
LRU	Land Rights Use
MARD	Ministry of Agriculture and Rural Development
M	Meters
MM	Millimeters
MT	Metric Tonnes
NEZ	New Economic Zone
NGO	Non-Governmental Organization
NPK	Nitrogen, Phosphorus, Potassium
OXFAM	Oxford Committee for Famine Relief, United Kingdom
SOE	State Owned Enterprise
USD	United States Dollar
VBARD	Viet Nam Bank for Agricultural and Rural Development
VFU	Vietnamese Farmers' Union
VICOFA	Viet Nam Coffee and Cocoa Association
VINACAFE	Viet Nam Coffee Corporation
VND	Vietnamese Dong
WASI	Western Highland Agroforestry Scientific and Technical Institute

Executive Summary

The diversification into Robusta coffee by Viet Nam has been successful, not only because of the size of the industry created, but also for the speed of growth over the last 20 years. From a humble start at reunification in 1975, when there were less than 10 000 ha of coffee planted, there were an estimated 29 500 ha of coffee planted in 1984. Most recent figures (VICOFA 2004) indicate there are now 506 500 ha of coffee planted in Viet Nam; 480 000 ha of Robusta coffee (*Coffea canephora*), representing 95 percent of total coffee planted and 26 500 ha of Arabica coffee (*Coffea arabica*), representing 5 percent of total coffee planted.

This case study focuses on Robusta coffee as it constitutes 95 percent of coffee production in Viet Nam. Beginning in 2006, the Government of Viet Nam (GOV) has been attempting to rebalance Arabica and Robusta production with programmes to increase Arabica plantings. Arabica production has a unique set of characteristics which make it a rather more complex crop than Robusta. (Arabica coffee will not be addressed in detail in this paper and will be dealt with only where comparisons with Robusta are required).

Viet Nam has developed a very successful monoculture model for Robusta. Very high yields have been the key to profitability, as Robusta is a relatively simple crop to grow and to process. The Viet Nam coffee industry is concentrated in five provinces known as the Central Highlands. In the 20 year period from 1980 to 2000 coffee production in Viet Nam grew from 8 400 tonnes to 900 000 tonnes, averaging more than 26 percent growth per year. Viet Nam is now the second largest coffee producer in the world and is the largest Robusta producer in the world. Viet Nam produces approximately 10 percent of the world's coffee. In the last 5 years, it has exported an average of 700 000 tonnes of coffee per year with export prices ranging between USD500 to USD1 000/tonne and the total export values ranging from USD350 million to USD700 million. Unfortunately high coffee prices in the mid 1990s led to a reinforcing of the monoculture Robusta coffee cropping system. When all-time low world coffee prices occurred in the years from 2000 to 2004, many coffee farmers were affected. World coffee prices for 2006 have recovered and are once again back at a point where Robusta coffee farming is profitable for most Vietnamese farmers.

Compared to Arabica, Robusta is a lower valued crop, often receiving about half the price that Arabica receives per kilogram (kg) at farm gate. However, Robusta can be profitable, if grown intensively, with large inputs of fertilizer, water and labour, to give large yields. Farmers also benefit from the very transparent and competitive Robusta marketing system in Viet Nam, where more than 90 percent of the Free On Board (FOB) price goes to farmers.

A combination of factors has created a successful coffee industry in Viet Nam. These factors are as follows :

- **Mass migrations:** Organized and free migrations of people to the underdeveloped, resource rich area of the Central Highlands of Viet Nam was encouraged by the GOV. The population of the Central Highlands increased from 1.5 million in 1975 to 4.2 million by 2000.
- **Land:** A large region with soil and water resources, which was largely undeveloped, was available for coffee planting. This is known as the Central Highland region and is a rich upland area which was sparsely populated by indigenous peoples following traditional lifestyles.
- **Government policy:** Government policy support, key planning and subsidies initiated the industry through collective farming systems during the late 1970s and early 1980s. When this was found to be restrictive to growth, the GOV, through market liberalization and land reforms during the late 1980s and 1990s, enabled the farmers to expand the industry and reap the benefits from the profits created.
- **Crop selection:** Selection of a 'farmer friendly' crop such as Robusta coffee; ideally suited to the land and climate, was relatively simple to grow, process, store, trade and transport and could easily displace other global producers.
- **Technology:** Harnessing technologies such as irrigation and understanding Robusta coffee physiology has enabled the Vietnamese farmers to become the most productive Robusta coffee growers in the world. Average yields per hectare (ha) in Viet Nam have more than doubled from less than 1 tonne to more than 2 tonnes per ha and are now more than twice the average of other producers in the region.
- **Coffee price boom:** High coffee market prices during the 1990s gave very strong market signals to farmers. Viet Nam's annual average export price jumped from USD800/tonne in the late 1980s to reach USD2 393/tonne in 1994. These prices slowly declined to USD1 200/tonne in 1999.

The Viet Nam coffee industry growth is not without costs, both human and environmental. Questions are raised on the equality of the industry growth, particularly for the ethnic minorities on the Central Highlands. The ethnic minority groups which inhabit the Central Highlands have not received their fair share of the economic benefits from the coffee boom. Their traditional social and farming systems do not adapt well to intensive farming practices required. They were limited in the ability to access finance to fund intensive farm practices which require up to 230 man-days per ha and 2 tonnes of fertilizer per ha for profitable production. Further deforestation, land degradation and depletion of water resources owed to coffee planting are also issues of concern. On a global scale, much of Viet Nam's spectacular growth has been largely achieved by taking market share from other producers, mostly African producers, rather than there being growth in the market per se.

Some lessons appear to have been learnt about the risk of monocropping. Many farmers are attempting to diversify their farms to reduce their risk to further price shocks on the coffee market. Long-term strategies are needed to enable protection for farmers regarding inevitable future fluctuations in world coffee prices. The challenge for the future of the Viet Nam coffee industry is to develop appropriate perennial crop strategies with a good technical basis. To do this effectively the industry must address issues like farm risk management through farm diversification and appropriate farm extension, sustainability of water and land resources and effective and efficient use of inputs like fertilizer and labour.

Figure 1. Typical coffee area in Dak Lak province.

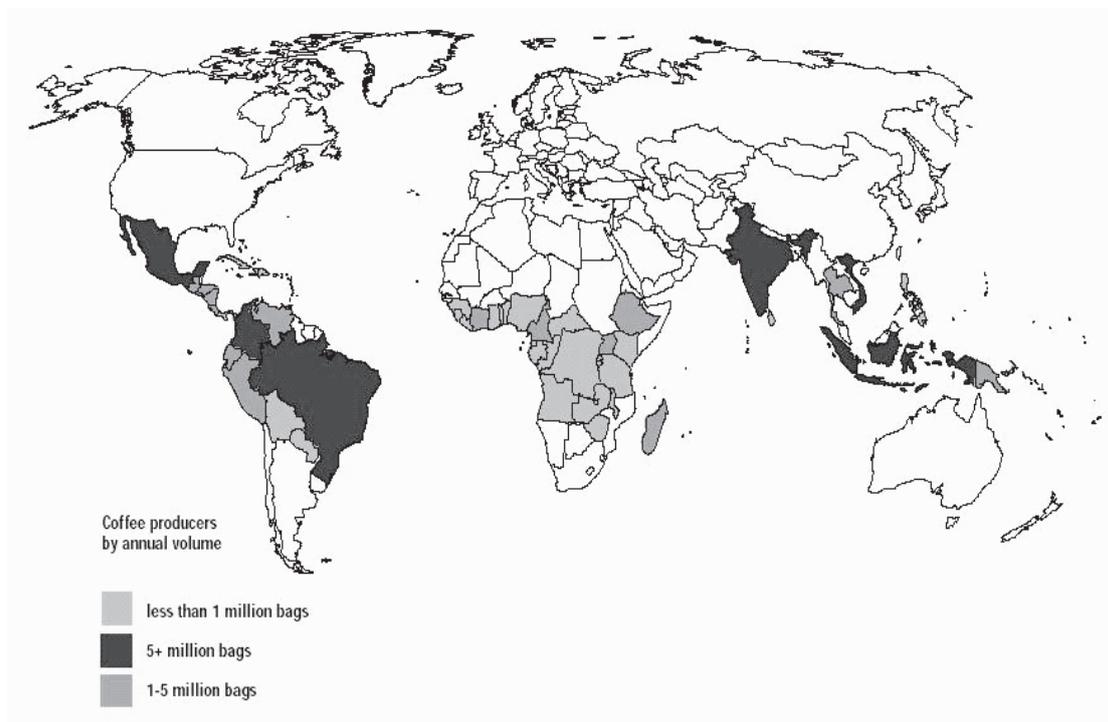


1. Background

WORLD COFFEE PRODUCTION

Global production now hovers around 110 million 60 kg bags (6.6 million tonnes) per year. This is divided between Arabica (70 percent) and Robusta (30 percent). Coffee is produced in more than 75 countries, mostly in the tropics. On average over the last 5 years, Viet Nam has been the second largest overall producer of coffee in the world. In 2005, it produced about 11 million 60 kg bags (660 000 tonnes) with 95 percent being Robusta and 5 percent being Arabica. Viet Nam is the largest producer of Robusta coffee accounting for approximately 40 percent of total world Robusta production. Brazil is the world's largest coffee producer producing 32 million bags (1.92 million tonnes) in 2005 with 70 percent being Arabica and 30 percent being Robusta. Columbia is the world's third major producer with 11.5 million bags (690 000 tonnes) produced in 2005, all of which is Arabica.

Figure 2. World coffee production areas



Source, Oxfam 2002

The following table presents the International Coffee Organization's (ICO) country production figures for the last five years in units of 60 kg bags. World production peaked in 2002 at 123 million bags. All are quoted as 'production years' with the actual period varying from country to country. Viet Nam's crop year is from November to October.

Table 1. Total production by exporting country (2001-2006)

(000 bags)			Crop year	2001	2002	2003	2004	2005	2006	
WORLD PRODUCTION				108 650	123 616	105 597	117 510	111 412	122 662	
TOTAL				107 475	121 922	103 732	115 945	110 348	121 601	
Angola	(R)	Apr-Mar		21	57	38	15	25	35	1/
Benin	(R)	Oct-Sep		0	0	0	0	0	1	2/
Bolivia	(A)	Apr-Mar		118	149	125	174	136	133	1/
Brazil	(A/R)	Apr-Mar		31 308	48 480	28 820	39 272	32 944	42 512	1/
Burundi	(A/R)	Apr-Mar		260	342	470	501	103	350	1/
Cameroon	(R/A)	Oct-Sep		686	801	900	727	849	750	2/
Central African Rep.	(R)	Oct-Sep		75	92	43	45	46	70	2/
Colombia	(A)	Oct-Sep		11 973	11 889	11 197	12 033	12 329	12 200	2/
Congo, Dem.Rep. of	(R/A)	Oct-Sep		420	319	427	360	335	400	2/
Congo, Rep. of	(R)	Jul-Jun		3	3	3	3	3	3	2/
Costa Rica	(A)	Oct-Sep		2 127	1 893	1 783	1 887	1 778	1 795	
Côte d'Ivoire	(R)	Oct-Sep		3 595	3 145	2 689	2 328	2 369	2 482	2/
Cuba	(A)	Jul-Jun		285	239	224	242	229	225	2/
Dominican Republic	(A)	Jul-Jun		387	455	361	481	471	420	2/
Ecuador	(A/R)	Apr-Mar		893	732	766	938	1 138	1 172	1/
El Salvador	(A)	Oct-Sep		1 686	1 438	1 477	1 437	1 502	1 242	2/
Ethiopia	(A)	Oct-Sep		3 756	3 693	3 874	5 000	4 527	5 000	2/
Gabon	(R)	Oct-Sep		1	1	0	0	1	2	2/
Ghana	(R)	Oct-Sep		13	34	18	20	20	25	2/
Guatemala	(A/R)	Oct-Sep		3 669	4 070	3 610	3 703	3 676	3 817	2/
Guinea	(R)	Oct-Sep		236	328	366	316	525	275	2/
Haiti	(A)	Jul-Jun		403	374	374	365	356	350	2/
Honduras	(A)	Oct-Sep		3 036	2 496	2 968	2 575	3 204	2 700	2/
India	(A/R)	Oct-Sep		5 010	4 588	4 508	4 672	4 617	4 750	2/
Indonesia	(R/A)	Apr-Mar		6 833	6 785	6 571	7 536	8 659	6 973	1/
Jamaica	(A)	Oct-Sep		31	37	37	21	34	40	2/
Kenya	(A)	Oct-Sep		991	945	673	756	685	817	2/
Madagascar	(R/A)	Apr-Mar		147	445	435	522	599	587	1/
Malawi	(A)	Apr-Mar		60	42	48	21	24	17	1/
Mexico	(A)	Oct-Sep		4 438	4 350	4 200	3 867	4 000	4 200	2/
Nicaragua	(A)	Oct-Sep		1 115	1 200	1 547	1 130	1 718	1 275	2/
Nigeria	(R)	Oct-Sep		44	50	46	45	70	45	2/
Panama	(A)	Oct-Sep		160	140	172	90	149	100	2/
Papua New Guinea	(A/R)	Apr-Mar		1 063	1 085	1 155	998	1 268	781	1/
Paraguay	(A)	Apr-Mar		19.6	26.0485	51.7261	26.2389	45.2364	19.557	1/
Peru	(A)	Apr-Mar		2 749	2 900	2 616	3 355	2 419	4 250	1/
Philippines	(R/A)	Jul-Jun		759	721	433	517	634	728	2/
Rwanda	(A)	Apr-Mar		296	320	266	450	300	275	1/

(000 bags)		Crop year	2001	2002	2003	2004	2005	2006	
Sierra Leone	(R)	Oct-Sep	79	42	34	15	60	25	3/
Sri Lanka	(R/A)	Oct-Sep	32	34	37	32	34	35	3/
Tanzania	(A/R)	Jul-Jun	624	824	612	763	721	750	2/
Thailand	(R)	Oct-Sep	715	732	827	884	999	975	2/
Togo	(R)	Oct-Sep	112	68	144	166	140	140	2/
Trinidad and Tobago	(R)	Oct-Sep	16	16	21	17	19	11	3/
Uganda	(R/A)	Oct-Sep	3 158	2 890	2 599	2 593	2 159	2 350	2/
Venezuela	(A)	Oct-Sep	721	865	746	644	761	850	2/
Viet Nam	(R)	Oct-Sep	13 132	11 555	15 231	14 174	13 499	15 500	
Zambia	(A)	Jul-Jun	100	119	100	110	103	100	2/
Zimbabwe	(A)	Apr-Mar	121	110	92	120	66	50	1/
Other producing countries 3/			1 175	1 694	1 865	1 565	1 064	1 061	

1/ Estimate to be confirmed by the Member

2/ Estimated

3/ Equatorial Guinea, Guyana, Laos, Liberia, Malaysia, New Caledonia and Yemen

WORLD COFFEE EXPORTS

Most coffee producing countries export a major proportion of their coffee production, with a minor part of production being consumed in country. Brazil is not only the largest coffee producer, but also a major coffee user, consuming up to 800 000 tonnes of coffee per year. Viet Nam, by contrast consumes approximately 60 000 tonnes per year. Consumption in producing countries accounts for the main difference between production and export figures. Production and export figures also differ owed to countries holding stock from year to year. As an example, world production in 2004 was just over 114 million bags while exports were just over 90 million bags.

The next table shows the dramatic increase in coffee exports from Viet Nam since 1990 from 1.1 million bags to 14.8 million bags in 2004.

Table 2. Exports for the top 15 coffee exporters for selected years (60 kg/bags)

	1990	1995	2000	2004
Brazil	16 971 237	14 411 435	18 015 506	26 421 252
Viet Nam	1 145 234	3 546 405	11 618 554	14 858 991
Colombia	13 943 870	9 814 197	9 175 370	10 194 315
Indonesia	6 903 227	3 946 585	5 193 534	5 455 599
Cote d' Ivoire	4 282 866	2 493 946	6 109 606	2 572 734
India	1 979 148	2 496 337	4 440 570	3 647 333
Guatemala	3 240 141	3 700 872	4 852 088	3 390 581
Uganda	2 352 680	3 079 261	2 513 272	2 627 011
Mexico	3 683 104	3 626 492	5 303 704	2 360 592
Peru	1 105 078	1 760 467	2 361 566	3 184 062
Honduras	1 735 093	1 795 963	2 879 133	2 779 189
Costa Rica	2 265 644	2 067 011	1 964 348	1 423 944
Ethiopia	1 074 101	1 276 118	1 981 856	2 490 944
El Salvador	2 509 873	1 807 498	2 536 389	1 327 533
Nicaragua	671 184	681 179	1 345 016	1 311 350
World Totals	80 561 589	67 572 526	89 001 030	90 702 563

Source ICO 2004

WORLD COFFEE PRICES

The world coffee market is dominated by Brazil, producing over 30 percent of the world's coffee. The world coffee industry closely monitors events in Brazil; frosts in Brazil in 1994 and 1996 sent prices up, triggering an increase in production in Viet Nam and other countries in the late 1990s. The result of this over supply was record low prices in the period from 2000 to 2004, but prices in 2006 were back to levels which were profitable for farmers in Viet Nam. The International Coffee Agreement (ICA) had provided some stability to world coffee prices by imposing export quotas on producing countries to control coffee volumes in the market. However since the demise of that agreement in 1989, the world coffee market is a free market, with few restrictions or controls, creating fluctuations in the world price.

USES OF ROBUSTA COFFEE

Robusta is generally considered a lower quality coffee compared to Arabica. The export price reflects this, being approximate half that of Arabica. Robusta does not have the fine and delicate flavours of Arabica and tends toward more harsh flavours. Robusta also tends to have twice the caffeine of Arabica. For these reasons, Robustas are normally used in the cheaper blends for less discerning markets and for instant coffees or mixed sparingly with Arabicas. Over the last 15 years, roasters have developed washing and steaming technology, which has allowed them to use more Robusta and a wider range of Robusta qualities in their blends.

COMMERCIAL COFFEE PRODUCTION

Only two out of the more than 80 species of coffee are grown commercially around the world. These are Arabica (*coffea arabica*) and Robusta (*coffea canephora*). Each requires slightly different agroclimatic conditions with some overlap. Arabica is grown at cooler, higher altitudes of 1000 to 2 000 meters (m) in tropical regions, while Robusta grows from sea level to 1000 m. Good rainfall of at least 1 600 millimeters (mm) per annum is required for both species. In general, Arabica is a more complex crop to grow and process than Robusta. Coffee, both Arabica and Robusta, can be grown in a range of production systems; from very intensive, requiring 230 man-days per ha and 2 tonnes of fertilizer per ha or as a passive system where farmers only visit the coffee farm annually to harvest the crop, with corresponding low yields. The system which farmers use depends on a range of social and economic factors. If good production, processing and marketing requirements are met, Arabica has the potential to achieve a higher price per kg at the farm gate and in the world market than Robusta. While Robusta is generally lower priced than Arabica it can yield up to twice as much green bean per ha than a comparable Arabica production system. Quality and marketing are key factors in Arabica profitability while high productivity and farm efficiency are the key factors in Robusta profitability.

Table 3. Key differences between Arabica and Robusta coffee

Robusta (<i>Coffea canephora</i>)	Arabica (<i>Coffea arabica</i>)
More robust/ fewer disease problems	Less tolerant to environmental fluctuations/ More prone to disease
Easy to grow and manage	More complex physiological management
Higher yielding (up to 3 tonnes/ha green bean possible for small holder production)	Lower yielding (up to 1.5 tonnes/ha green bean possible for small holder production)
Easy to process	More sophisticated processing needed
Dominates lower end of the market such as instant coffee and less discerning markets	Operates at the higher end of the market such as roasted and ground coffee
One third of world production	Two thirds of world production
Average world market price/kg approximately half of that of Arabica	Average world market price/kg approximately twice that of Robusta

Figure 3. Robusta coffee



Figure 4. Arabica coffee



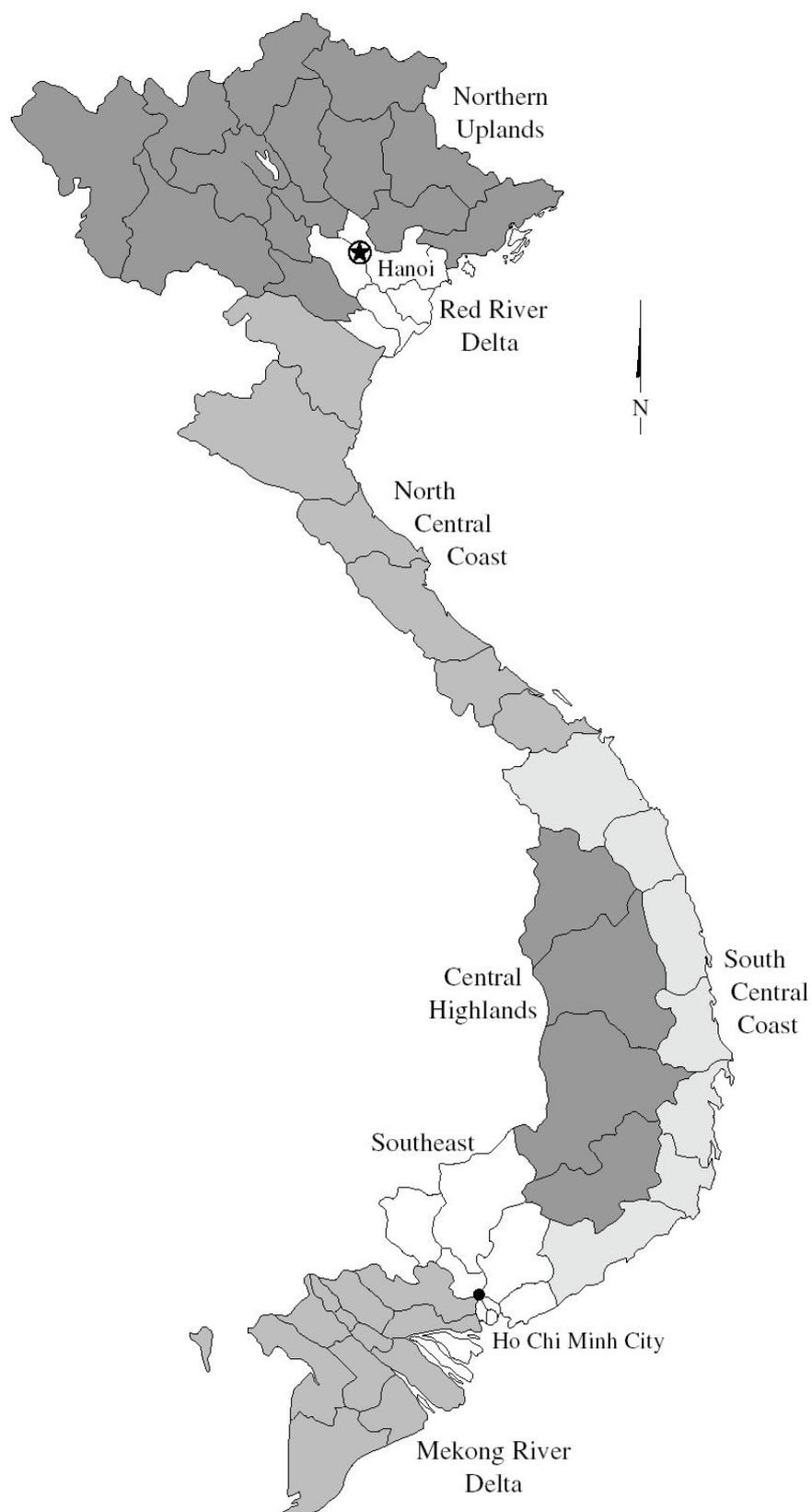
2. Viet Nam coffee industry

ROBUSTA PRODUCTION AREAS IN VIET NAM

Viet Nam can be divided into roughly two different regions separated by the Hai Van mountain range. This natural border splits Viet Nam into two climatic areas of north and south. The south goes from the Mekong Delta and lowlands to upland basaltic areas in the Central Highlands that have a moderate tropical climate. The north is characterized by limestone mountainous areas which are subject to major climatic effects from central Asia and have a much greater range of temperatures. The Viet Nam coffee industry encompasses a wide range of people, ranging from transmigrants from rice production areas who have experience with high yield and high performance rice systems to ethnic hill tribe minority groups who use low input, subsistence agricultural systems. (Marsh and Minh 2002).

The Central Highlands of Southern Viet Nam are the main Robusta coffee producing areas ranging from 300 m upwards and including some small areas up to 1500 m. The main Robusta coffee growing areas are at approximately 300 m to 500 m altitude. The area has a warm tropical climate, influenced by the south Asian monsoon with distinct dry and rainy seasons. The following map shows the main agro-ecological regions of Viet Nam.

Figure 5. Agro-ecological regions of Viet Nam



Source: Jones & Minot (2002)

HISTORY OF COFFEE IN VIET NAM

Coffee was first planted in Viet Nam in 1857. However, the coffee area remained less than 10 000 ha until the late 1970s. From the late 1970s to the early 1980s government structures were created to increase the coffee production and conduct trade with other communist block countries. Areas planted with coffee increased to 30 000 ha by the mid 1980s, but it was only in the early 1990s that production increased dramatically.

After reunification of Viet Nam in 1975, Viet Nam began to rebuild its economy along the communist collective models common to the eastern block countries of that era. Coffee was used as a barter trade commodity to these countries. A gradual liberalization of the communist collective policies saw the productive power of the Vietnamese people unleashed from the mid 1980s to the mid 1990s, enabling Viet Nam to become a major exporter of not only coffee, but also a range of other crops. For example in 2003, Viet Nam had become the second largest exporter of rice and pepper and the third largest exporter of cashews and straw mushrooms (World Bank 2004) along with a range of other agricultural products in the top ten exports in the world.

Table 4 shows a range of Viet Nam coffee industry data for the years 1979 to 2006. Key points to note are the price spikes in the period from 1993/94 to 1998/99 and the very low price in 2001/02. The stabilizing of planted areas and production since 2000 is also evident. The Viet Nam 'coffee year' is from 1 October (the start of the new crop harvest) to 30 September the following year.

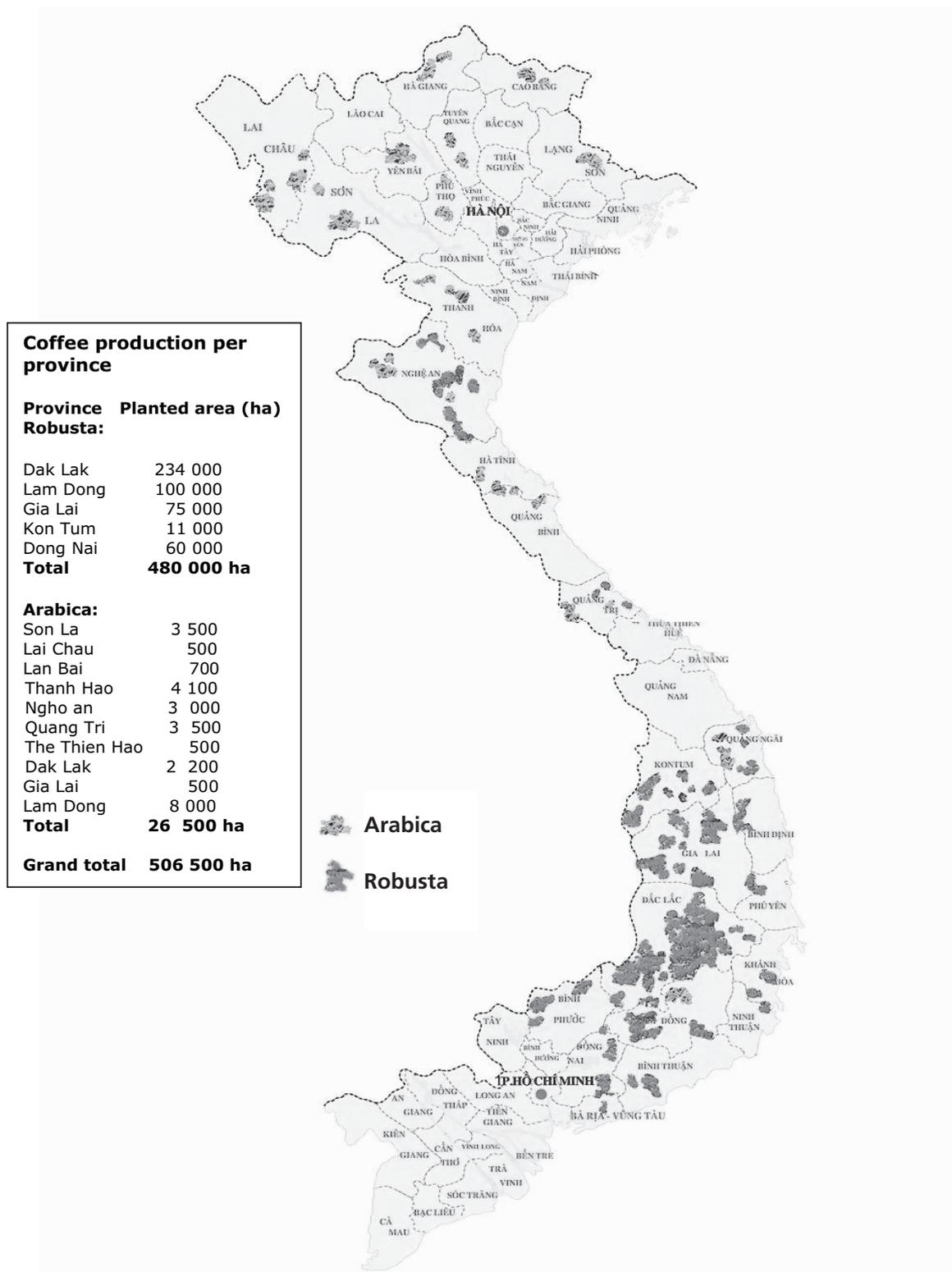
Robusta coffee production is concentrated in 5 key provinces of Dak Lak, Dong Noi, Gai Lai, Kun Tom and Lam Dong. These 5 provinces account for over 96 percent of the coffee area in Viet Nam (VICOFA 2004). Dak Lak province alone accounts for 46 percent of the coffee area in Viet Nam. The Viet Nam agricultural census of 2001 concluded that 79 percent of all coffee farmers were in these 5 provinces and 45 percent of rural households in the Central Highlands are involved in coffee. Two-thirds of the coffee farms are smaller than 1 ha and only 3 percent are larger than 3 ha. (Jones 2002). The coffee industry of Viet Nam is dominated by small holders with 85 percent of all farms in Viet Nam being under 1 ha and only 1 percent are larger than 5 ha. (World Bank 2004).

Table 4. Viet Nam coffee production and export data 1979/1980 to 2005/2006

Year	Total area (ha)	Harvested area (ha)	Average Yield (Tons/ha)	Total Production (Tons)	Exports (Tons)	Export Value US\$ (Mill)	Average Export Price US\$/Ton
1979/80	22 500	10 800	0.78	8 400	n/a	n/a	n/a
1980/81	19 100	9 500	0.49	4 630	4 600	n/a	n/a
1981/82	19 800	9 100	0.51	4 600	4 600	n/a	n/a
1982/83	26 500	9 100	0.44	4 000	3 400	n/a	n/a
1983/84	29 500	19 100	0.65	12 340	9 400	n/a	n/a
1984/85	44 600	19 800	1.03	20 400	23 500	n/a	n/a
1985/86	65 600	26 500	0.84	22 120	26 000	n/a	n/a
1986/87	92 300	29 400	1.15	33 820	30 000	n/a	n/a
1987/88	119 900	44 700	1.07	48 000	45 000	n/a	n/a
1988/89	123 100	65 600	0.95	62 100	56 900	n/a	n/a
1989/90	135 500	92 300	1	92 000	68 700	59.2	861
1990/91	135 000	111 900	1.06	119 000	76 800	65.4	852
1991/92	135 000	123 000	1.11	136 000	87 500	63.7	727
1992/93	140 000	135 500	1.04	140 500	124 300	113	909
1993/94	155 500	135 000	1.34	181 200	163 200	320	1 960
1994/95	205 000	135 000	1.81	245 000	222 900	533.5	2 393
1995/96	228 500	140 000	2	280 000	248 500	366.2	1 473
1996/97	385 000	155 500	2.57	400 000	375 600	479.1	1 275
1997/98	485 000	205 000	2	410 000	387 200	600.7	1 551
1998/99	529 000	285 000	1.75	500 000	464 400	563.4	1 213
1999/2000	533 000	385 000	1.87	720 000	705 300	464.3	658
2000/01	535 000	485 000	1.86	900 000	844 452	338.1	400
2001/02	500 000	450 000	2	750 000	702 017	300.3	428
2002/03	500 000	420 000	1.71	720 000	693 863	446.6	644
2003/04	506 500	420 000	2.1	900 000	870 000	567	649
2004/05	500 000	430 000	1.95	840 000	835 000	614	795
2005/06	n/a	n/a	n/a	n/a	700 000*	n/a	1 100**

The following map was produced by the Viet Nam Coffee and Cocoa Association (VICOFA) and shows the approximate locations of coffee production areas and amounts in Viet Nam.

Figure 6. Map of coffee production areas in Viet Nam



VIET NAM COFFEE INDUSTRY STRUCTURE

The production base of coffee in Viet Nam is now approximately 95 percent private run farms with the remaining 5 percent being state farms, which are also being gradually redistributed to small farmers. However, many of the collection, processing and export roles are still performed by State Owned Enterprises (SOEs). There are a number of key stakeholders in the Viet Nam coffee industry. A brief description of these are provided below;

- **MARD:** Ministry for Agricultural and Rural Development is the key ministry for coffee. There are a number of research and development institutions under MARD such as:
 - IPSARD: Institute of Policy and Strategy for Agriculture and Rural Development,
 - Dak Lak agricultural extension centre.
 - WASI: Western Agroforestry and Scientific Institute in Dak Lak.
 - BRC: Bavi Research Centre, specifically set up for Arabica research in North Viet Nam.
- **VINACAFE:** The Viet Nam Coffee Corporation is the SOE umbrella company under MARD that manages 59 SOEs that cover a range of industries including 40 state farms totaling 27 000 ha of coffee. These state farms work with 27 SOEs, including processors, traders, and service providers providing credit, fertilizer, irrigation, research and roasting. VINACAFE took over the supervision of the SOEs from MARD in 1995. It is now in a process of liberalizing and privatizing these enterprises. At present the government controls only 5 percent of the coffee production area in Viet Nam in the form of state farms.
- **VBARD:** The Vietnamese Bank of Agriculture and Rural Development is the main form of credit for coffee farmers, which is a government institution and has 1 600 branches in rural areas. VBARD estimates that it has 75 percent share of the credit market for coffee growers. In 2002 this market exceeded USD270 million.
- **VICOFA:** The Viet Nam Coffee and Cocoa Association (110 members which include 90 SOEs, 18 private companies and 2 scientific institutes). It was formed in the late 1980s to help organize the coffee sector and help government develop coffee policy. It is presented as an independent business association, but is in reality more of a government affiliated organization representing Viet Nam in overseas forums and is financed through its members and by government.
- **Processors and Exporters:** Viet Nam has over 100 registered coffee exporters, including a number of joint-venture processing and export operations with international partners. Most of the large multinational coffee businesses are directly represented in Viet Nam through direct investments or joint venture companies.
- **Private Business:** A growing range of private businesses focusing on local coffee trading, fertilizer importation, resale and general farm supplies.
- **Private coffee farms.** The majority of private coffee farms are smallholders which make up the bulk of the producers in the Viet Nam coffee industry. It is estimated that

85 percent of the 480 000 ha of coffee are small farms of 1 ha or less. This indicates that more than 450 000 small farming families are involved in coffee production in Viet Nam.

VIET NAM COFFEE EXPORTS

Viet Nam exports coffee to over 50 countries. The United States and Germany are the major markets with 10 percent to 15 percent going to each country annually. In the year 2004/2005, Germany and the United States remained the top importers of Vietnamese coffee with Italy, Spain and the Republic of Korea, completing the list of the top five buyer countries.

Table 5. Viet Nam's top coffee buyers in 2004/2005

Country	Volume (MT)	Value (US\$ Thousand)
Germany	127 853	90 189
USA	117 520	85 761
Italy	95 667	73 353
Spain	68 263	51 206
The Republic of Korea	34 512	23 808
United Kingdom	27 940	19 333
Philippines	26 865	19 255
France	26 265	18 575
Japan	25 800	21 126
India	22 908	15 823

Source : VICOFA and Gain 2005

3. Growth of the industry: influential factors

The growth of the coffee industry in Viet Nam is attributed to a range of factors. This is a classic example of the ‘drivers of change’ adage, which identifies four key factors required for successful development; ‘people, policies, resources and technology’. It is important to understand how each of these factors contributed to the development of the Viet Nam coffee industry.

MASS MIGRATIONS

The corner stone of the development of coffee in Viet Nam has been the mass migration programmes undertaken by the GOV after reunification in the late 1970s and early 1980s to solve unemployment and social unrest. New Economic Zones (NEZs) were established and people were encouraged to move from populated areas in the Mekong Delta in the south, the Red River Delta in the north and the major cities, particularly Ho Chi Min City. Sparsely populated areas like the Central Highlands province provided the location. Planned migration also provided the benefit of ‘stabilizing’ these upland areas dominated by ethnic minorities, as many settlers were demobilized soldiers from the north. The population of the Central Highlands (5 provinces) increased from 1.5 million in 1975 to 4.2 million in 2000. Initially, coffee was not the main focus for the resettlement programmes during the 1970s and 1980s. However by the late 1980s government institutions had a clearer understanding of the possibilities of coffee production (Jones 2002).

During the late 1970s through to the 1990s it is estimated that approximately 580 000 people were encouraged to migrate to 225 land development centres in the Dak Lak Province. Besides these official migration flows, free migrant movements to this area are estimated to be 350 000 (Ahmad, 2001). In 1975, indigenous minorities such as the E’de and the H’Mong made up 48 percent of Dak Lak’s population of approximately 350 000 people. By 1997, the local indigenous minority groups only comprised 20 percent of the province’s 1.5 million population with the new migrants (ethnic Kinh) comprising about 70 percent, with miscellaneous others, including ethnic minorities from the Northern Highlands, such as Tai and Nung, making up the remaining 10 percent. (D’Haeze 2004)

GOVERNMENT POLICIES AND INSTITUTIONS

After reunification, the Viet Nam coffee industry was re-established with government state farms and government institutions filling every niche of the farm-to-market chain. Coffee production was stabilized and subsidized by the GOV. While the production from state coffee farms was largely used for barter trade with communist block countries it provided a good testing ground for the establishment of the coffee industry and developed a base of knowledge and understanding of Robusta coffee production. By the mid 1980s coffee production had

reached 30 000 tonnes and covered approximately 40 000 ha. However average yields were still low.

The role of government policies

The key to successful policies have been the willingness of the GOV to change and adapt to market forces. Throughout the development of the coffee industry the GOV provided the key ingredients for the growth of the coffee industry, these being:

- **Agricultural incentives:** A move from a collective farming model to a market economy allowing profits earned to flow to farmers.
- **Access to capital:** Land reforms provided an asset base for individual farmers to access finance to fund further coffee expansion. A comprehensive rural banking system helped with this as much of the lending was made by state owned banks. The GOV has shown a willingness to ensure its banks froze loans or extended the lending periods in times of hardship and lower coffee prices.
- **Agricultural inputs:** Key agricultural inputs were provided, initially from locally produced fertilizers, but increased to large-scale importation at critical times to aid the industry's growth.
- **Technology:** High input models were developed on state farms and these were gradually improved over time. Farmers have taken these models and used them well.
- **Market access:** Marketing channels were developed by the state farms and SOEs involved in exporting coffee. Gradually the private sector has taken them over.

In the early 1980s productivity from the communal farm system was so low, that the GOV began a process where a step-by-step deregulation and liberalization of the coffee industry was begun. This allowed the gradual establishment of the private sector in coffee.

This shift from communal to private production and ownership also coincided with a major shift in other policy areas such as land reform. A range of reforms occurred in Viet Nam beginning in the early 1980s. These reforms were ratified in the pivotal 1986 party conference and were termed '*Doi Moi*' or 'Renovations'. In 1988, Viet Nam established a new system that gave farmers rights to keep and sell some of their farm production.

The reforms continued through the early 1990s and moved Viet Nam from a centrally planned economy to a market-based system. It was a gradual move away from the communal farm system, state quotas and low productivity, to a system which gave farmers rights over land and the right to sell farm outputs. It also allowed the private sector to be involved in the coffee industry. Farmers at this point were no longer constrained by production quotas and could benefit from a more free and liberalized market. The deregulation of import restrictions in 1991 allowed chemical fertilizers prices to drop by 50 percent over the next few years. This resulted in farmers moving from traditional organic and farm manure fertilizers to the imported chemical fertilizers which resulted in increased yields (World Bank 2004). Through the 1990s, the government created incentives for farmers to move to export crops

such as coffee by maintaining controls on basic food prices and commodities like rice. This period also had problems such as very high rates of inflation and a two tier system for controlled and uncontrolled agricultural production. Rice was strongly price controlled and so farmers moved into areas such as coffee that was uncontrolled. Through the 1990s, the GOV provided support to coffee development by opening up more land and providing loans through VBARD.

A key policy change occurred in 1993 where the land law was amended to allow for farmers' 'Land Rights Use' (LRU) to be traded, inherited and used as collateral, although actual ownership remained with the state (World Bank 2004). This simple change gave the incentive for farmers to be productive as they now had tenure on their land and had control over their farm outputs. Farmers with LRUs are able to access credit for farm production using their land as collateral.

The LRU comes in 2 forms known locally as either the Red Book or Green Book. Red Book LRU is for private land and is assigned for up to 50 years for perennial crops like coffee. Green Book LRUs are granted to farmers on liberalized state farms. They have a shorter time frame and have a limited right of transfer as the state farm must approve any transfer of ownership. In many situations, farmers who were free migrants and not part of the formal migration programmes cleared forest land and planted coffee. In the past, farmers were not able to register this land. Provisions are now being enacted under a 2003 land law to allow this forest and vacant land to be converted to agricultural land and registered under Red Book registration.

The role of government institutions

Along with the decisive role the government played in coffee development through policy and planning, public institutions have been essential to almost every part of the coffee industry growth. Initially public institutions formed SOEs that undertook all industry roles such as coffee production, the supply of agricultural inputs, rural credit, production, processing, marketing and export. This process has allowed the coffee industry to develop and stabilize under government guidance and subsidy. Over time these institutions have gradually been liberalized and many have been moved over to the private sector.

Providing credit for the coffee sector has been critical to its growth. The government has been able to manage this growth by supplying large amounts of credit in the critical growth years and being very lenient, even freezing repayments for up to 3 years during the low coffee prices of 2000 to 2004. The government has also been able to direct credit to specific areas and ethnic groups to stimulate growth. The main form of credit for coffee farmers has been VBARD, which is a government institution and has 1 600 branches in rural areas. VBARD estimates it has 75 percent share of the credit market for coffee growers. In 2002 this market exceeded USD270 million.

The key to government policies have been the willingness to change and adapt to market forces. The government has used its policy powers and institutions to provide signals to farmers while at the same time providing the requirements to keep growth moving. The process of developing Viet Nam's economy and coffee industry from a centrally planned economy to a free market is still on going.

RESOURCES

Coffee development in Viet Nam was aided by high land quality which was available for development. The Central Highlands provided a large area of fertile upland plateau, virtually as a 'clean-slate' for the coffee industry to develop.

- **Soils** on the Central Highlands are fertile and are well suited for Robusta coffee. Dak Lak has two main types of soils. These are deep, weathered soils derived from Basalt origins described as Rhodic-Humic Ferralsols and Acric Ferralsols (D'haeze 2004). In particular the Rhodic-Humic Ferralsols have a very low bulk-density and allow good water penetration. They are well aerated and ideal for the relatively shallow rooting perennial crops like Robusta coffee.
- **Water** resources have been essential for the high yields obtained by Robusta farmers in Viet Nam. The basaltic soils of the Central Highlands have provided this with their large stores of underground water which are replenished annually by the monsoon rains. Overall rainfall volume is sufficient for Robusta coffee, but uneven yearly distribution means Robusta coffee requires irrigation to achieve high yields. Studies in the Dak Lak province, where the coffee area planted is 234 000 ha and where 60 percent of all the coffee in Viet Nam is produced, have estimated that for every ha of Robusta coffee grown, the annual water requirements are between 1 500 m³ to 3 000 m³. This is based on 1100 trees/ha and 3 waterings of between 600 to 900 litres per tree. (D'haeze 2004). Water for irrigation is acquired from 3 main sources: man made ponds and reservoirs (20.8 percent), natural rivers, lakes and streams (28.5 percent) and from ground water (56.6 percent). Ground water is extracted from approximately 2 500 wells in the coffee areas at an approximate density of 1 well per 59 ha. (D'haeze 2004). Local estimates are that Dak Lak water resources are exploited up to 71 percent of their total capacity (Iuu, 2002). More than 95.5 percent of the extracted water is used for the irrigation of perennial crops, the main one being coffee, with 4 percent being for urban use and 0.2 percent being used in the industrial sector. D'haeze (2003) demonstrated that applications of only 320 litres per tree at each watering, rather than 600 litres to 900 litres, is sufficient to promote flower setting and that farmers were on average over-watering by 230 percent.
- **Climate** in the Central Highlands is ideal for Robusta production. The area has a warm tropical climate, influenced by the south Asian monsoon with distinct dry and rainy seasons. The dry season is typically 4 months and extends from mid-December until mid-April. During this period there is less than 25 mm rain per month. During the 8 month wet season from May to November, a monthly average of 200 mm is expected giving an average yearly rainfall of 1 600 to 1 800 mm. The average daily air temperature in the Robusta areas fluctuates between 18°C in December and 25°C in April. The maximum day temperature is 30°C in April and the minimum day temperature is 15°C in December.

ROBUSTA COFFEE: A 'FARMER FRIENDLY' CROP

Robusta is a flexible and forgiving crop. Yield can be controlled by varying the water and fertilizer inputs and farm management inputs like pruning. The Vietnamese farmers have adopted many successful strategies in order to maximize profits from Robusta. Viet Nam Robusta flowers in

the dry season, so irrigation is required to break the flower bud dormancy and induce flowering and then fruit set. The level of flowering depends largely on the volume and number of heavy waterings applied during the dry season from January to April. Vietnamese farmers use this strategy well. After the harvest in December and January they also prune to allow light into the Robusta bush, hence developing new bearing sites. The amount of water and fertilizer used will also depend on the farmers' finances and the likely price for coffee. Farmers use these strategies to manage inputs and to maximize yields when Robusta prices are profitable. They are able to reduce inputs without any major problems for the Robusta bush (unlike Arabica coffee

which has major issues if the management system is changed). To rejuvenate Robusta, the plant is simply cut off at knee level and this allows it to re-grow with vigour when water and fertilizer are applied. Robusta coffee has few pest and disease problems, hence the name 'Robusta'. Robusta coffee is very simple to process; it is storable, tradable, transportable and mostly non-perishable.

Figure 7 . Rejuvenating Robusta



TECHNOLOGY TO PRODUCE HIGH YIELDS

The Vietnamese Robusta industry has embraced a very intensive production system, which is one of the keys to the industry's success. Central to this has been an understanding of the physiology of Robusta. It may appear unremarkable, but Viet Nam is one of the few countries to systematically irrigate Robusta coffee. Robusta is grown in most South East Asian countries. Generally the returns from Robusta are not considered high enough to warrant intensive production and irrigation. The Vietnamese industry has taken the view that even a lower value

commodity can be profitable if grown intensively. The use of irrigation, balanced with the use of high levels of chemical fertilizer, have created world-class yields of coffee. Many Vietnamese farmers actually achieve over 3.5 tonnes /ha. Asian neighbours have much lower national Robusta average yields per ha such as Indonesia 0.5 tonnes/ha, Lao 0.4 tonnes/ha and Thailand 0.8 tonnes /ha.

Balanced rain distribution in the Central Highlands would promote reasonable fruit set, however as the dry season coincides nicely with flowering and as water is available for irrigation, farmers have been able to harness this to increase fruit set. Having a number of irrigation and dry cycles, increases the total amount of flowers and fruit produced. This coupled with skillful pruning to create a tree structure that maximizes fruiting nodes, leaf area, together with ample use of fertilizer, has created world class Robusta yields.

Robusta is irrigated using a micro-basin system. Robusta coffee is normally planted at 1 100 trees/ha at a spacing of 3.0 m x 3.0 m. An irrigation basin is constructed around each tree with the dimensions of 2.6 m x 2.6 m x 0.2 m deep. Farmers use a pump and hose system from their water source and apply up to 900 liters per tree. Irrigation commences in the Dak Lak region around the second half of January and continues for 20 to 25 day intervals, until the end of the dry season in April (D'haeze 2004).

Figure 8. Water well for coffee and irrigation



Box 1. The use of irrigation to increase food set

D'haeze (2003) provides the following account of the importance of irrigation in Robusta fruit set. "The variability in water requirements for coffee is strictly related to flower bud development and fruit growth. After initiation of the flower buds, they grow for several months reaching an average length of 4–6mm, before becoming dormant by the end of the rainy season. Continuous water stress for 1–4 months in the next stage slowly breaks this dormancy. Subsequent relief of water stress by rainfall or irrigation stimulates the flower buds to grow again. During the first 7–8 days after this stimulus, the water content in the flower buds increases rapidly and they grow in length three-to-fourfold, developing to blossom. A period of water stress therefore seems to be mandatory for normal flower bud development (Alvim, 1960, 1973). Pollination and fertilization is completed 24–48 hours after flower opening. From then the fruits undergo a rest period, remaining as so called 'pinheads', and crop water requirements decline. Sixty days after blossoming the fruits start swelling to reach their final size, hence increasing the crop water requirements again (Naidu, 2000). The latter period often coincides with the beginning of the rainy season in the Central Highlands, so that no further irrigation is required."

MARKET SIGNALS

Through the late 1980s and the early 1990s the GOV encouraged coffee planting by controlling prices on essential commodities like rice, while allowing farmers to reap the benefits of good world commodity prices for coffee. Frosts in Brazil in 1994 and 1997 created a major price peak where prices more than doubled from the previous decade. The farmers responded to this signal with vigour, planting even more coffee and increasing yields per ha.

Table 6. Viet Nam average export price/ tonne 1989/1990 to 2005/2006

Year	Price/ Tonne
1989/90	861
1990/91	852
1991/92	727
1992/93	909
1993/94	1 960
1994/95	2 393
1995/96	1 473
1996/97	1 275
1997/98	1 551
1998/99	1 213
1999/2000	658
2000/01	400
2001/02	428
2002/03	644
2003/04	649
2004/05	795
2005/06	1100

World Robusta coffee consumption trends are gradually increasing at this time, particularly as Arabica is approximately twice the cost of Robusta. Many roasters were experimenting with ways to increase the percentage of Robusta in their blends and subsequently developed a range of machines and techniques to wash, steam clean and sort Robusta coffee. Over time this has created a specific demand for Viet Nam Robusta coffee and has allowed the Viet Nam coffee to capture some of the low quality Arabica market share.

The local market situation has also been kind to farmers. Farmers in Viet Nam have a very extensive network of formal and informal price discovery. They use sources such as television, radio, newspaper and now mobile phones and Internet. Because of this highly transparent market, farmers regularly receive 90 percent to 95 percent of the FOB price of coffee. Margins for the exporters and processors are very narrow and they rely only on large volume to make meager profits.

4. Smallholder coffee farmers in Viet Nam

FARM OPERATIONS

- **Husbandry and production:** Robusta is a relatively easy crop to grow with seedlings planted out at 3 m x 3 m spacing at 1 100/ha. Ongoing field maintenance is required with fertilizer and irrigation until the crop comes to bearing at 3 years. Intensively grown Robusta coffee can require up to 230 man days/ha / year when in full production. Robusta yield has been shown to be very responsive to high farm inputs with inputs of 1 tonne/ha of NPK (Nitrogen, Phosphorus, Potassium) fertilizer, giving coffee yields of 1 tonne/ha. But with inputs of 1.5 tonnes/ha of NPK fertilizer, the output rose to 2.5 tonnes of coffee/ha and with 2.5 tonnes of NPK fertilizer the yields rose to 3.5 tonnes/ha. (World Bank 2004).
- **Harvest and processing:** Quality is less important for Robusta than Arabica, so harvesting and processing is a simple activity. Harvesting is done using a strip-pick approach where all cherry on a branch is removed when the majority are ripe rather than the preferred method for Arabica, which is the picking of each ripe cherry. Processing is a simple matter of drying the picked cherry without any further sorting. Ideally, drying is done on concrete patios, but many farmers use a range of surfaces that are available, even the bare ground. Quality is not a key factor for individual farmers as there are few price incentives to produce higher quality Robusta.

Figure 9 . Drying Robusta



- **Storage and marketing:** Once the cherry is dried to 12 percent, the coffee can be hulled to produce green bean or stored as dried cherry. Farmers can sell or store the dry cherry or ungraded green bean as either product can be stored for up to 6 months while the farmer awaits a market opportunity. There is generally a range of buyers for the farmer to choose from and there is a very transparent price system which reflects the international market. Typical intermediate traders who purchase coffee from farmers and who then sell to large processing factories expect to work on very slim margins of around USD10/tonne. There is a range of formal and informal options for farmers to forward contract their crop, enabling access to credit to finance their farm operations.

FACTORS IMPACTING ON FARMERS

- **Marketing of Robusta:** Coffee is exported from Viet Nam in 2 main grades (Grade 2 represents about 65 percent of total production and is allowed to have 5 percent black and broken bean, while Grade 1 which represents 35 percent of production, is allowed to have 2 percent black and broken beans). Apart from these basic defect count parameters there are few other quality factors to consider. There are continuing discussions about Viet Nam improving Robusta quality and gaining better prices, but there is a large amount of evidence to show that the major international buyers of Viet Nam Robusta are very happy with the price/quality mix at present. Therefore, improving quality may have little effect on price in the short or medium term.
- **Cost of production:** There are a range of figures quoted for the cost of production of Robusta coffee in Viet Nam. These vary from about USD300/tonne at farm gate to USD1 000. The range of figures is owed to the range of costs, which may or may not be considered in the cost calculation of production, such as land costs, establishment costs, debt servicing, overheads and personal labour. Typical costs of production figures for producing 2 tonne/ha green bean show that fertilizer costs can be from one-quarter to one-third of total costs and labour cost can be up to one-third of total costs. There are a range of other costs which vary depending on each farm situation such as irrigation, transport, pesticide, equipment, processing, overheads, and debt repayments. The World Bank (2004) found that the coffee price trigger point which showed an increase in a large number of farmers defaulting on their loan repayments was approximately USD450/tonne to USD500/tonne. A study by Marsh and Minh (2002) found that the farmer break-even price was considered approximately VND 9 000/kg which equated to USD600/tonne. The Oxford Committee for Famine Relief (Oxfam) in 2002 found production costs for 3 districts were VND 8 829/kg, VND 8 649/kg and VND 6 982/kg of green bean produced. When world coffee prices were at their lowest of \$400/tonne in early 2002 the farm gate price dipped to VND5 000 and farmers considered this below break-even.
- **Availability of technical and extension information:** The key problem arising for individual farmers is the lack of availability of technical information to help them make decisions on their production and processing. Most Robusta farmers have copied the high production systems developed on state farms over the last 10 to 15 years. Robusta is a relatively simple crop and farmers have learnt from each other as the industry has

grown. Technical information that has been provided to Robusta farmers has focused on yield maximization and monoculture cropping. Farm diversification and individual farm risk management has not been a focus of Robusta extension. The pathways for formal technical information to reach coffee farmers are complex and fragmented and not practically available to many farmers. The MARD is the key government ministry for coffee policy, information and training which for implementation passes this responsibility to provincial and then district level. Provincial governments have extension officers based in their district offices, provincial companies have their own extension agents and VINACAFE has extension officers for their own operations. The WASI and BRC also provide extension services directly to farmers where possible. The VICOFA has recently set up its own extension agency called Vicopex with a responsibility to coordinate aspects of extension work across the different agencies. Other players like the Vietnamese Farmers' Union (VFU) are also active at grass roots level and provide extension services to farmers.

- **Diversification and farm risk management:** Diversification is the main tool that farmers have to reduce their individual farm risk. However, farm diversification is not always easy as there are often no clear profitable options and the financial costs of changing crops are high. The GOV and MARD both support farm diversification and have an official diversification plan, which is disseminated from the provincial level down to the farm level. The VBARD has been asked to give preferential credit if farmers wish to follow diversification plans set up by local people committees to diversify out of coffee, particularly in areas which are not suitable for coffee. A range of diversification options are being promoted such as rubber, cashews, pepper or annual crops such as corn, cassava or cotton.

LESSONS FOR FARMERS

There are a number of lessons that farmers have learnt through the period of fluctuating prices. These are:

- **Diversification:** There is scope for Robusta coffee farmers to diversify their farms with crops that can be used to take the place of the border shade that surrounds each block of coffee to protect it from the wind. Specific crops that could replace these leguminous shade trees are fruit trees, nut trees, or high value crops that can be grown in the shade such as pepper or vanilla. Issues such as the timing of farm labour requirements will be important in developing diversification in the Robusta farm system. Farmers are interested in diversification of their Robusta, but not to reduce their potential Robusta yields. There are examples of pepper being planted as shade and windbreak trees. Typically these farms have 50 to 100 pepper vines per ha. Disease has been a problem of growing pepper intensively. There are other examples of intercropping with Robusta such as Durian over Robusta (see figure. 10). The difficulty is to develop a range of intercropping techniques so as not to overproduce any specific commodity, particularly with products for the domestic market. These crops and their system of use need to demonstrate economic success before farmers will change from their high yield monoculture Robusta farming practices.

Box 2. Robusta, a 'farmer friendly coffee'

Efficient monocrop: Robusta is largely grown as an intensive monocrop in Viet Nam. Viet Nam has developed a production system for Robusta that makes it one of the most efficient production systems for Robusta in the world. Robusta coffee (*Coffea Canephora*) is a very robust crop, as the name implies, and has few major pests and diseases in Viet Nam. Once established Robusta is a relatively simple crop to manage.

Fertilizer and irrigation is the key: Vietnamese farmers have developed systems to increase flowering and fruiting through large water and fertilizer input at correct times during the year. Farmers on good land with access to water (earth dams or wells) can easily produce over 3 tonnes of green bean/ha where Asian neighbours on average produce yields on average below 1 tonne/ha. Farming techniques for Robusta in Viet Nam have been refined so that production is very efficient, with closely controlled production costs.

High yield is the focus: The key factor for Robusta profitability is high yield per ha, which requires high farm inputs and good farm management skills. Robusta is a crop that if intensively managed can produce good returns per ha for farmers with limited land resources. However, it will provide low returns for poor farmers on small parcels of land without the capacity or resources to grow it intensively.

Flexible and forgiving crop: Robusta is a very flexible crop that allows farmers to vary inputs depending on coffee prices. Inputs such as fertilizer, irrigation and pruning can be increased with a corresponding increase in yields if prices increase. Increased production can be achieved in less than a year.

Storage and transport: Robusta can be processed and stored on farm, which allows the farmer to speculate on prices. As coffee is stored as dry cherry or as green bean, the crop does not damage easily and transport is simple. Because of the relatively high value and durability of the final product, remote farmers are not penalized unduly.

Quality is a small factor in price: Quality control is not a major factor in Robusta production. In general, even if the dry coffee cherry or green bean is handled very poorly there will only be minor price reductions.

Economics: Low prices in the seasons 2000-2004 caused great concern for farmers when they dropped below the cost of production of VND8 000/tonne (USD550/tonne) for farm gate ungraded green bean. However over the last 10 years Robusta coffee has provided an excellent income for small farmers with 1 or 2 ha of land. There is farmer loyalty to Robusta. Farmers who had invested heavily in the industry, just prior to the price fall, or who were on marginal land or lacked water resources have suffered. However, the general feeling with farmers is that Robusta is one of the most profitable crops they can grow. Many farmers have experience with a number of other crops, but prefer Robusta.

Marketing: Robusta farmers receive approximately 90 percent of the FOB price for Robusta coffee; this is an exceptionally high proportion. The processing and export component of the industry is very competitive and very efficient.

Updated from Marsh and Minh 2002

Figure 10. Robusta grown under Durian

- **Low prices are a time to rejuvenate:** Low Robusta prices have seen some farmers on marginal land, with immature coffee, or without access to financial resources move out of coffee to focus on perennial crops like cotton or food crops which have less up-front investment costs. It is unlikely that farmers with established Robusta, who have access to water and finance will move out of Robusta. A number of farmers have taken the low price period to ‘stump prune’ their coffee to rejuvenate the upper wood or to graft new varietal material on to the stump. While this appears as though farmers are removing their coffee, it is in fact a very appropriate time to invigorate the coffee, ready for the next high price coffee cycle.

Box 3. Robusta farm diversification case study

Mr Luyen and his 3 sons, Vu, Phon and Canh from No 4 Village, Hoa Thun Commune, Boun Me Thout (Dak Lak Province) have 2 ha of land. In 1989 and 1990 when other farmers were planting Robusta as a monoculture Mr Luyen planned a multicrop farm, which is quite rare. Mr Luyen has interplanted his 2 ha of Robusta with 350 Durian trees and 100 are now bearing fruit. He has developed a pruning system for the Durian, which provides filtered light to his Robusta. His Durians yield well also. The perimeter of his farm is planted with a mixture of Cassia and Leucaena trees commonly used in the area as a windbreak. He has planted 100 pepper vines around these border shade trees. Mr Luyen also harvested 1 tonne of ginger from the border crop area of his coffee this year. The farm perimeter is also planted with bananas. Mr Luyen has a high input farm and prunes his coffee to give the maximum number of bearing sites and high yields. He manages the irrigation schedule to get a very high yield from his coffee despite being shaded by Durians. Last year he harvested 5 tonnes per ha of green bean and 2.5 tonnes of Durian per ha. He hopes the Durian trees will increase production to 5 tonnes per ha when all are in full production. The pepper has not started to yield, but he hopes it will bring a sizeable income once it is in production. A number of farmers in the area have begun to plant Durians in their Robusta plantations in an attempt to copy Mr Luyen’s success in multicropping.

Source Marsh and Minn 2002

5. Issues affecting commercial viability and farmers' income

ETHNIC MINORITIES OF THE CENTRAL HIGHLANDS

Indigenous minorities such as the E'de and the H'Mong, who made up 48 percent of Dak Lak's population in 1975, only comprised 20 percent of the population by 1997. In 1997 the province's population was close to 1.5 million and ethnic Kinh account for about 70 percent, with miscellaneous others, including ethnic minorities from the Northern Highlands, such as Tai and Nung, making up the remaining 10 percent (D'Haeze 2004). Recent information on the situation of ethnic minorities in the coffee area is difficult to ascertain as it is a sensitive topic for the GOV.

- In 2002 Oxfam conducted a study of 175 farmers in two districts in Dak Lak. They found that high levels of poverty exist among these ethnic peoples and that they had not enjoyed the benefits of the coffee boom. Oxfam surveyed three key coffee growing communes covering good, medium and poor coffee growing areas in Dak Lak province district. Three villages were studied in each commune. Over 90 percent of the households interviewed were E'de and M'ngong ethnic minorities. The survey strategy covered an in-depth survey of 175 households and a broad based survey of 891 households.
- The average coffee yield of the Dak Lak Province in 2002 was estimated to be about 2.45 tonnes/ha. The average yield from the 3 areas under the Oxfam study was 1.9 tonnes/ha, 1.6 tonnes/ha and 1.1 tonnes/ha respectively. The Oxfam study found that the ethnic minority farmers had limited access to coffee production technology and limited access to funds to finance their coffee operation.
- Ethnic minorities who traditionally inhabited the Central Highlands have been slow to adapt to the new government process of Red Books and LRU. They traditionally use a system of customary and communal land rights, which generally were not understood and not recognized during the mass migrations of the 1970s and 1980s. Much of their traditional land has been taken for coffee development. The GOV is now considering recognizing a legal structure for communal ownership and communal land use rights.
- The Ethnic peoples of the Central Highlands have not been able to benefit from the fast development of the coffee sector as they have little formal education and few skills to interact in this new business environment. Many do not even have a good knowledge of the Vietnamese language.
- Ethnic farmers tend to have more diversified farm systems and have not turned their farms into monoculture coffee farms and so have been hurt less by the falling coffee

prices. However, they were not able to benefit from the higher prices during good times. These farmers need to obtain the balance of benefiting from high prices in coffee, but still being shielded from low prices through diversification strategies.

- The study showed that gender equity seemed acceptable with women doing most of the housework and with men doing most of the farm labour, with women helping when necessary. The Oxfam study found that the ethnic groups followed a matriarchal system where women inherited most of the family wealth. Contradictions still exist in areas such as land certification and education. Women were active in the coffee industry as well as men and were also beneficiaries of the wealth created.
- The study also showed that 60 percent of the households had a debt averaging about VND5 million to VND12 million which resulted in many ethnic peoples resorting to the short-term solution of selling their land as land sales (transfer the long term lease) can earn up to 10 million VND/ha (USD650/ha).

ISSUES AFFECTING INDIVIDUAL FARMERS

The key risk factors which farmers face are cost of production/yield risk and price risk. Farmers are now closely linked to the world market with little buffer from price fluctuations. Farm diversification is the main tool that farmers have to reduce their individual farm risk.

- **Cost of production:** Robusta responds well to good care and gives high yields. If farmers have adequate resources and inputs they can be one of the lowest cost producers of Robusta coffee in the world and run profitable farms. This model is reliant on high yields and to be successful requires relatively cheap farm inputs of chemical fertilizer and labour. Rising costs of these two key inputs may challenge the viability of the high input, high-yield Robusta model. Future research and extension in Viet Nam will require approaches focused on improving the efficiency of the use of fertilizer and labour.
- **Farm risk management:** Farm diversification is easily suggested as an option, but this is not always easy to achieve as there are often no clear profitable options and the financial costs of changing/adding crops are high. Well-researched farm diversification strategies are needed to guard against price shocks. Farmers follow market signals and need better extension advice which focuses on diversification strategies to ensure diversified farming systems which reduce risk. A range of diversification options are possible such as rubber, cashews, pepper or annual crops such as corn, cassava or cotton.
- **Farm management skills/ethnic minorities:** There have been clear winners and losers in the development of the Viet Nam coffee industry. The losers have largely been the ethnic minorities who have not been able to adapt to the high input, intensive coffee production systems. Clearly, the case of these minority groups needs to be specifically addressed to help them adapt to the Viet Nam Robusta farm system model.

ISSUES AFFECTING THE VIET NAM COFFEE INDUSTRY

Viet Nam has developed a very successful coffee industry over a very short period of time. Continued success will require focus on some key areas. Key factors affecting the coffee industry in the future are as follows:

- **Transition to private industry:** The support and establishment of the Viet Nam coffee industry through SOEs has been very successful. However the transition from SOEs to the private sector has been more difficult. The GOV has supported and subsidized the key stakeholder organizations for many years and it has been difficult for most private organizations to move into the market. Most private organizations cannot take on the commercial risks that SOEs were allowed to take in developing the coffee industry. In general, most private organizations are unable to compete side-by-side with SOEs in the present transition period, unless supported by the GOV.
- **Farmer and processor/exporters organizations:** As the GOV moves toward greater market-orientation of the coffee industry it should facilitate the building of a stronger private sector in the coffee industry, in particular by fostering representative farmer and trade organizations and stakeholder organizations. These types of groups will help to bring stakeholder information and problems to the public forum in a more rapid way. While non-government groups may generate criticisms, which the GOV may not enjoy, in the long run this will help the GOV and industry to be more aware and adaptable to stakeholder needs.
- **Price/quality mix:** There appears to be a well-established market for Viet Nam coffee with most large buyers happy with the price/quality mix. Most major buyers have invested in downstream sorting and washing/steaming plants to deal with the quality produced. Once a standard baseline quality is achieved there may be little benefit to strive for higher quality. Despite continuing discussion about improving quality to improve prices it is likely that any quality improvement programme will have a minor impact on price. Once basic and reasonable levels of consistency and reliability of delivery have been achieved, the focus for improving profitability for continued success for Viet Nam coffee in the world market is likely to lie in reducing farm level cost of production rather than quality improvement.
- **Water:** Water resources are a key factor in the success of the coffee industry of Viet Nam. There is evidence that these resources are now on the edge of sustainability. As water has been considered a free resource, little care has been taken to use it in an economical way or account for its cost. Integrated ground water management is required to maintain quantity and quality of water for everyone. Ways to manage and monitor extraction rates and ensure the true value and cost of water is required; integrated water management is needed to curb usage and give true value to water.

6. Conclusions and recommendations

The approach taken by the GOV to establish the Viet Nam coffee industry over the last 30 years has paid dividends. Establishing the SOE framework for the industry and then gradually liberalizing and privatizing it has proved successful. The process of liberalizing the industry has been difficult and farmers cannot always be protected from market shocks. A key weakness of the strategy has been that a monoculture approach was taken which maximized benefits in times of high prices, but created hardship for farmers in times of low prices.

Robusta coffee still offers good opportunities for small farmers if grown intensively. Farmers on marginal land or without access to finance to grow Robusta intensively will struggle. However they would struggle with most other crops under these conditions. Viet Nam farmers have one of the lowest cost/kg of Robusta coffee production in the world. Long-term prospects are still good. Even when prices are low, the Viet Nam coffee farmers can survive better than most coffee farmers in other countries.

KEY RECOMMENDATIONS FOR THE VIET NAM COFFEE INDUSTRIES ARE:

- 1. Farm extension/farm risk management:** Farm diversification is easily suggested as an option for farmers, but this is not always easy to achieve as there are often no clear profitable options and the financial costs of changing/adding crops are high. A well planned and implemented coffee extension programme is needed, engaging all agencies involved in research and extension, including a range of well-researched farm diversification strategies, such as rubber, cashews, pepper or annual crops such as corn, cassava or cotton.
- 2. Farm management skills/ethnic minorities:** There have been winners and losers in the development of the Viet Nam coffee industry. The losers have largely been the Central Highland ethnic minorities who have not been able to adapt to the high input, intensive coffee production systems. The needs of minority groups should be specifically addressed by the GOV to help them adapt to the Viet Nam Robusta farm system model.
- 3. Cost of production/farm inputs:** The present Viet Nam Robusta production model is reliant on high yields. Continued success requires relatively cheap farm inputs of chemical fertilizer, labour and water. Rising costs of the first two key inputs are a concern. Future research and extension in Viet Nam will require approaches focused on improving the efficiency of the use of fertilizer, labour and water.
- 4. Water:** Water resources are a key factor in the success of the coffee industry of Viet Nam. There is evidence that these resources are now on the edge of sustainability. As water has been considered a free resource, little care has been taken to use it in an economical way or account for its cost. Integrated management and monitoring of extraction rates is required to ensure

the true value and cost of water is recognized. The GOV needs to focus on the long-term environmental impacts (particularly water resources) of the coffee industry and to develop strategies to

monitor and evaluate environmental impact and so ultimately help the industry to become more sustainable.

5. Transition to private industry: The support and establishment of the Viet Nam coffee industry from production to export through SOEs has been very successful. However the transition from SOEs to the private sector has been more difficult. In the past the GOV has supported and subsidized many SOEs and it has been difficult for private organizations to move into many sectors of the coffee industry. Most private organizations cannot take on the commercial risks that SOEs were allowed to take in developing the coffee industry. The GOV needs a clear strategy to support private organizations to compete side-by-side with SOEs in the present transition period.

6. Farmer and processor/exporter organizations: As the GOV moves toward greater market-orientation of the coffee industry it should facilitate the building of a stronger private sector in the coffee industry, in particular by fostering representative farmer and trade organizations and stakeholder organizations. While non-government groups may generate criticisms which the GOV may not enjoy, in the long run this will help the industry be much more aware and adaptable to stakeholder needs. The GOV needs to encourage representative farmer and trade organizations and stakeholder organizations by creating an 'enabling environment' for them to grow.

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