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Prosperity Initiative

Cardamom

Small-scale Review of Cardamom





Cardamom

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Short analysis of the cardamom sector as regards demand, competitiveness, impact and opportunities with the aim of helping to eradicate poverty in Vietnam through market forces

January 2009

Prepared by the Center for Agricultural Policy with Prosperity Initiative

Supported by: The Australian Government's Overseas Aid Programme (AusAID); The Swiss Agency for Development and Cooperation (SDC), Oxfam Hong Kong (OHK) and Oxfam America (OA).

Foreword

This is one of a group of studies carried out by staff from the Center for Agricultural Policy (CAP) of the Institute of Policy and Strategy for Agriculture and Rural Development ([IPSARD](#)), the think-tank associated with Viet Nam's Ministry of Agriculture and Rural Development (MARD, supported by managers from Prosperity Initiative (PI), a non-profit company which develops market sectors to create prosperity for large numbers of poor people in the Mekong Region.

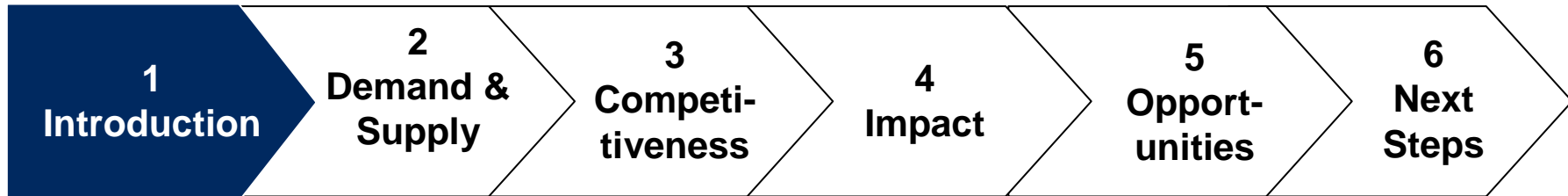
PI and its partners find and develop sectors that can reduce poverty for hundreds of thousands of people. It works with public, private and development organisations across the Mekong Region to identify and implement viable and sustainable ways of developing and growing a sector to achieve a measurable impact on poverty.

In the light of IPSARD's central role in rural policy development and its mandate to develop a commodity expert group, PI has been working with CAP-IPSARD to contribute to the development of appropriate skills and market knowledge. A group of staff from CAP has been working with a team of managers from PI since the beginning of 2008 and has been completing ten short sector studies during this first year. The work has also included contributing joint research on the coffee industry, and – arising out of one of the short studies – providing support to a continuing in-depth study by PI on the coconut industry. Other sectors covered have included honey, bananas, soybeans groundnuts, pomelo, chili, cardamom and cocoa. This joint work has been the context for technical skills development and capacity building of 9 staff from CAP-IPSARD during 2008.

The majority of the work in the studies was carried out by staff from CAP using both primary research in Vietnam and data from local and international secondary sources, with guidance and coaching from PI's managers. Samples of this work can be downloaded at <http://www.prosperityinitiative.org/>. During this work, appropriate efforts have been made to ensure accuracy and to acknowledge secondary data sources; any error of omission or commission or any misattribution is accidental.

For further information contact either: antony.feeny@pi-email.org or nguyen.anh.phong@pi-email.org

Chapter 1 – Introduction



- **PI / CAP approach to sector analysis**
- **Overview of the cardamom sector**
- **Segments and study focus**

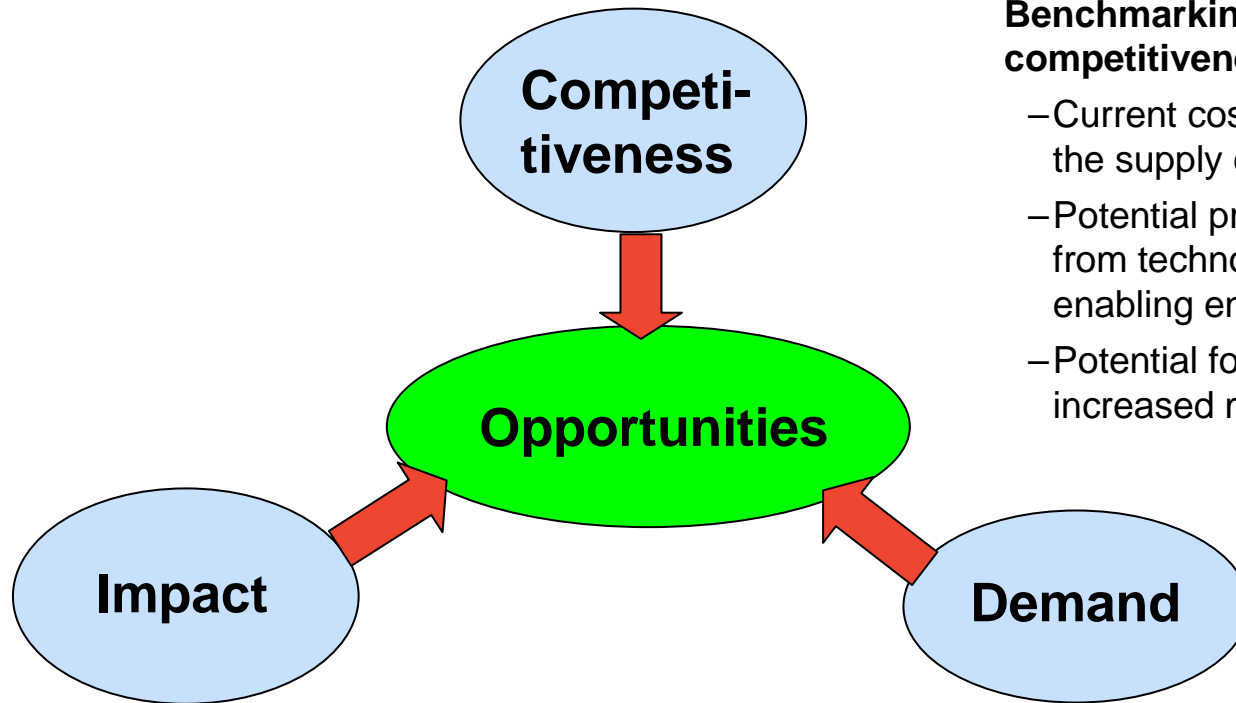
This is one of a series of small-scale studies carried out by the Center for Agricultural Policy* supported by Prosperity Initiative to identify opportunities to assist in eradicating poverty in rural Vietnam through market forces

While small in scope, these studies seeks to provide provisional answers to several questions:

- ❖ Is there likely to be sufficient future demand, i.e. a domestic or international market with the willingness and ability to spend on the relevant commodity?
- ❖ Are there international benchmarks to support the case for industry investment in Vietnam as against other countries?
- ❖ What other opportunities do there appear to be to enhance the competitiveness of the industry in favour of the target group of poorer people?
- ❖ How is development of the industry likely to benefit poor people in the rural areas of Vietnam?
- ❖ Why should a target poor group choose to make their livelihood from the commodity rather than an available alternative?
- ❖ Does the sector look sufficiently promising in terms of potential size and impact on rural poverty to merit more in-depth review/feasibility?
- ❖ If the sector presents opportunities for a reduction in poverty, are CAP and PI best placed to take this further or how should it otherwise be handled?

* The Center for Agricultural Policy (CAP) is a semi-autonomous center within the Institute of Policy and Strategy for Agricultural and Rural Development (IPSARD) within the Ministry of Agriculture and Rural Development (MARD) of the Government of Viet Nam

Achieving poverty reduction at scale through market forces requires an assessment of the demand and competitiveness in the sector with potential to have a positive impact on household incomes



Benchmarking and analysis of competitiveness

- Current costs of production along the supply chain
- Potential productivity gains, e.g. from technology, skills, sector-enabling environment, etc.
- Potential for market access and increased market share

Distribution of potential benefits

- Pro-poor economic impact
- Environmental impact
- Social implications

Understanding market dynamics

- Supply, demand, stocks and prices
- Market outlook
- Scale of production supportable by future demand

Chapter 1 – Introduction



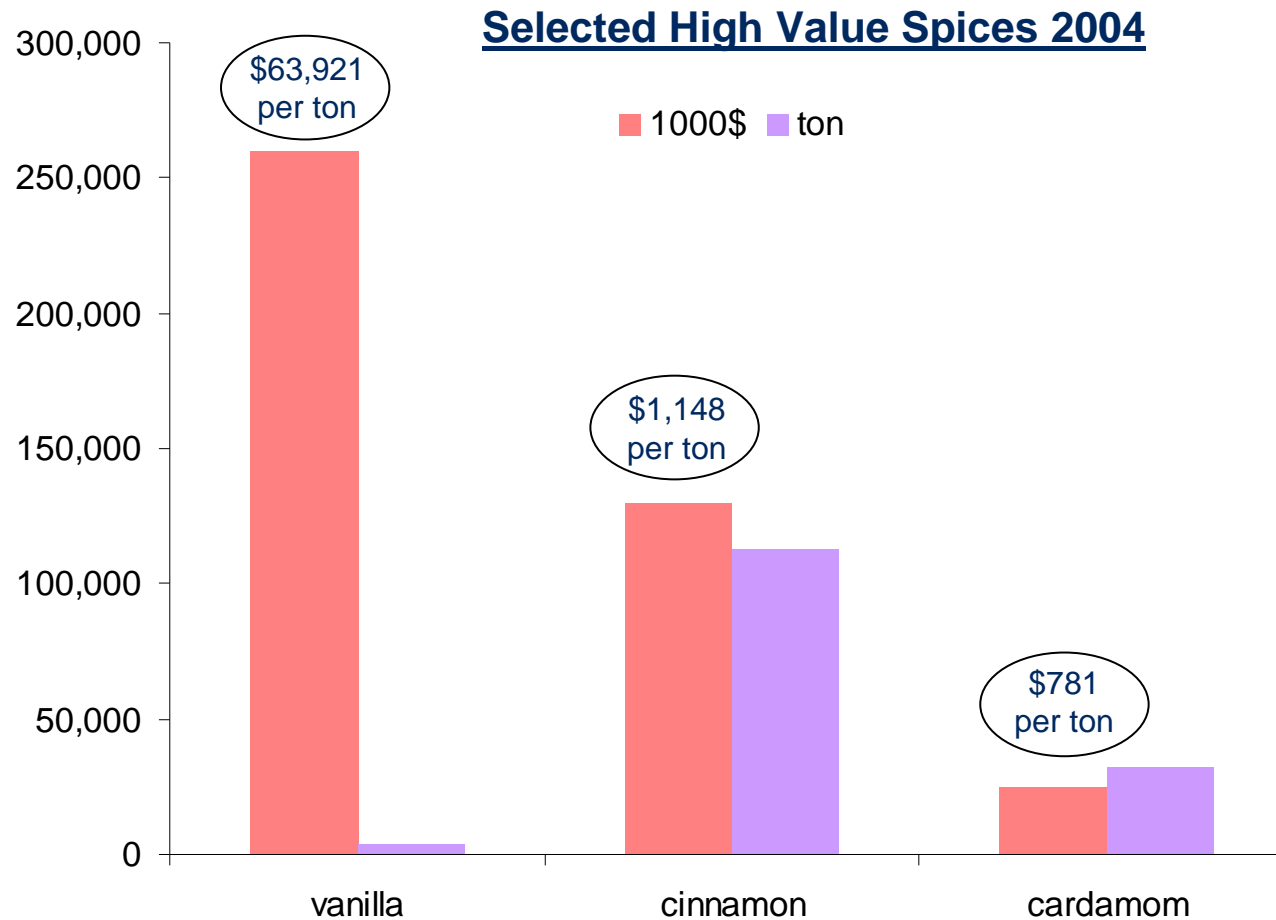
- **PI / CAP approach to sector analysis**
- **Overview of the spice industry and cardamom sector**
- **Segments and study focus**

Overview of cardamom market size in the world spice market

- The annual value of the **world spice** industry is estimated to be about **US\$ 100 billion**, including both internal consumption and traded products
- The annual world import/export trade in whole spices is a fraction of this total at around **US\$ 5 billion**, with an annual growth rate of some **5%**
- The world cardamom import/export trade was worth **US\$ 25 million** in 2004, or about **0.5%** of world spice trading
- Only a small portion of the whole spices which are traded is consumed raw. More than 90% is processed into intermediate products (e.g. essential oils, oleoresin, and aroma chemicals) and consumer products (spice blends, curry powder, flavours, fragrances, and pharmaceuticals). The **value added** during processing ranges from **3 fold – 30 fold**
- Most countries with a developed spice industry grow a variety of spices and allied spices, including India, Sri Lanka, Guatemala, etc.

Source: Taskforce report on spices & allied products industry, 2004

In terms of import/export value, cardamom is one of the highest value spices in the world



Source: FAO (2005), Taskforce report on spices & allied products Industry (2004)

There are two general types of cardamom: green/small and black/large; each has a distinct morphology and different taste – green is considered to be true cardamom while black is sometimes called “false” cardamom

- ❖ **Common Names:** Cardamom, Lesser Cardamom, cardamone, Kardamom, kapulaga, enasal, elam...
- ❖ **Family:** ginger
- ❖ **Botanical Name:** Elletaria Cardamomum (green or small cardamom), Amomum cardamomum (large, brown or black cardamom).
- ❖ **Perennial crop:** propagated either vegetatively from rhizome or by seedlings from sowing seeds.
- ❖ **Parts use:** whole capsules after drying



Source: Uganda Export Promotion Board

Altitude, rainfall and the shade of a tropical forest are necessary conditions for growing cardamom

Conditions	Green/Small	Black/Large
<i>Altitude</i>	600 – 1200m a.s.l	1000 -1200m a.s.l
<i>Rainfall</i>	1500 – 4000 mm	3000 - 3500 mm
<i>Temperature °</i>	10-35	
<i>Soil</i>	Rich in organic matter and nitrogen	
<i>Special niche habitat</i>	Growing under shade of tropical forest	
<i>Output dependence</i>	Sensitive with wind & drought during flowering → Predictable output based on understanding the weather variations of growing regions	
<i>Area</i>	Central America, South Central Asia, Eastern Africa	South Central Asia, South East Asia, China

There are a very limited number of countries which are able to farm cardamom because of the limited amount of suitable land available. Few countries are in a position to expand their cultivation of cardamom

Source: Indian Spice Board (2008)& collected papers



Cardamom, the “Queen of Spices”, has a range of uses

- ❖ **An ancient spice.** Cardamom is sweetly fragrant with a slightly pungent flavor, and is used to add a unique taste to rice, meat, vegetables and as an essential ingredient in cooking. Cardamom is added as flavouring to coffee, teas, confectionery and baked goods → ***These are the major uses of cardamom and have a long history***
- ❖ **Medicinal preparations.** Cardamom is used to treat indigestion and nausea. Cardamom is given to patients with bad breath in the form of chewing gum, and a capsule of cardamom taken with honey is reputed to improve eyesight. The traditional uses of cardamom also include treating skin conditions
- ❖ **Preservatives for food processing industry.** The oil of cardamom seeds is known to be antibacterial so is mainly used in the flavouring of processed foods and drinks such as cordials, bitters and liqueurs, and occasionally in perfumery
- ❖ **Cosmetic products.** Cardamom is also cited as an ingredient for making cosmetics and hand creams
- ❖ **Animal feed supplement:** Chinese and Mongolian people add cardamom to animal feed during winter to improve digestion and resistance ability for horses and oxen

Source: Plantculture & SNV (2006)



Cardamom products take different forms ...

Powder or whole seed: Whole seeds will be crushed when used, or ground to powder. Pre-processing is quite simple and costs little, but the product retains its flavour for a relatively short period of time (around one year). Cardamom in seed form is also relatively commonly traded, and the form of commodity for which most historical data is available

Value added products:

- *Spice drops:* 100% natural cardamom extracts from raw-spices. Cardamom spice in the form of liquid retains all the richness of pure and natural spice
- *Essential oil:* the volatile components are present in most of cardamom and provide the characteristic aroma of the cardamom, obtained by steam distillation of crushed fruits of cardamom
- *Oleo-resin:* the true essence of the cardamom and can replace whole/ground spices without impairing any flavour and aroma characteristic. Oleo-resins are obtained from cardamom by extraction of crushed fruits with a non-aqueous solvent followed by removal of the solvent by evaporation.

Value added products: have a longer shelf life (up to 2 years), with easy storage and beautiful packaging, and still retain their pure and true flavour; but incur additional costs and relative complexity of equipment application for extraction. These new forms of product are a relatively recent emerging trend.

Source: *plantculture & universaloleoresins*



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This report covers both small/green and large/black/brown cardamom

Small/green cardamom



Size: ~ 7 mm.

Character: green colour, flavour of more sweet fragrance

Main consuming markets:

- ✓ Middle East, India, others for coffee drink spicy recipes

Large/black cardamom



Size: ranges from 2-5 cm.

Character: brown/black colour, flavour is considered superior for spicy flavouring

Main consuming markets:

- ✓ South Central Asia, South East Asia, others for spicy recipes

Chapter 2 – Demand



- **Consumption and demand**

- Global consumption
- Main import market
- New products

- **Drivers for increased cardamom import**

- Spicy recipes
- Coffee consumption
- GDP increase of traditional markets
- Lower prices

- **World supply of cardamom**

Chapter 2 – Demand



- **Consumption and demand**

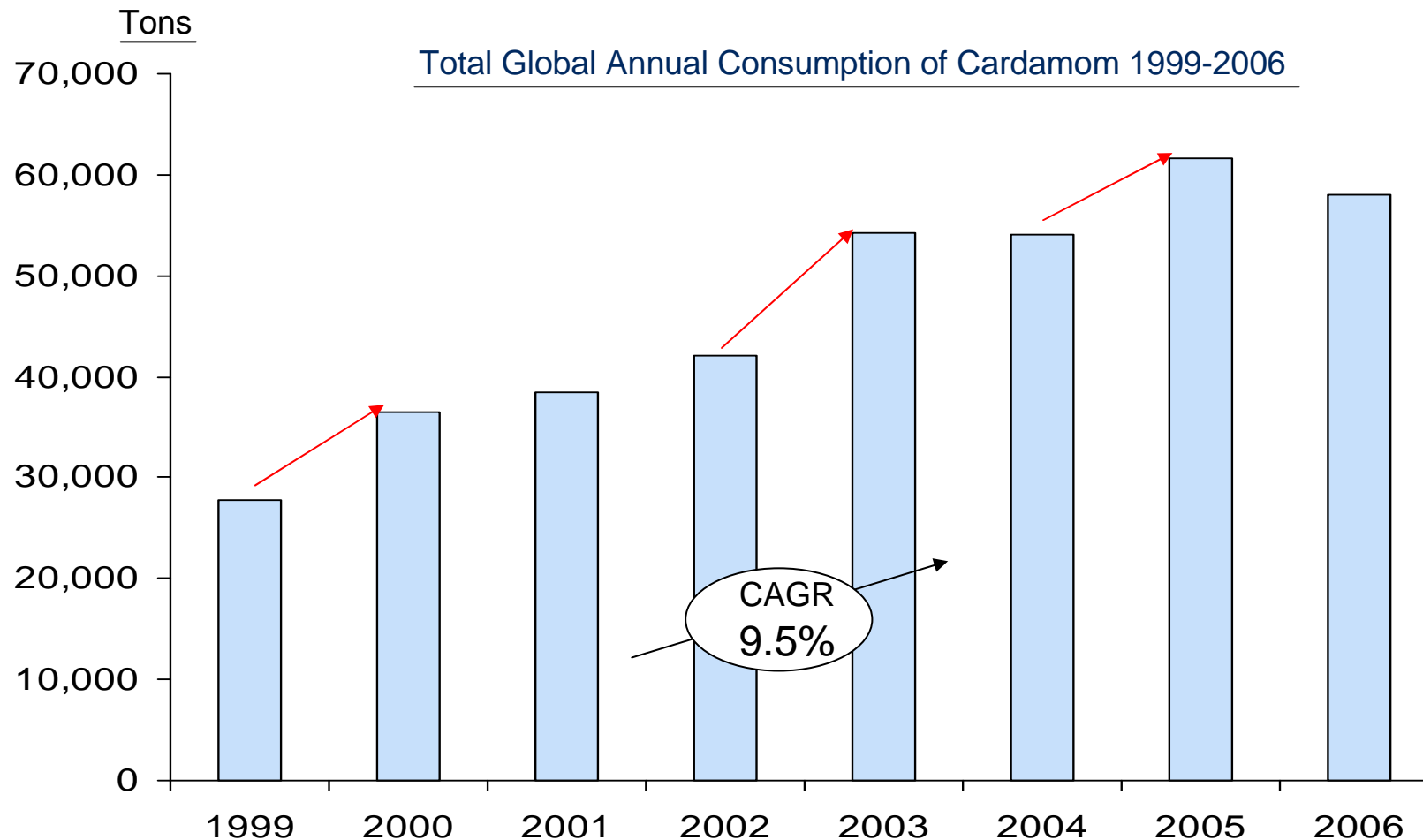
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Demand for cardamom increased at a CAGR of 9% from 1999 to 2006, although its consumption fluctuated – partly in line with the availability of supply from the main producers

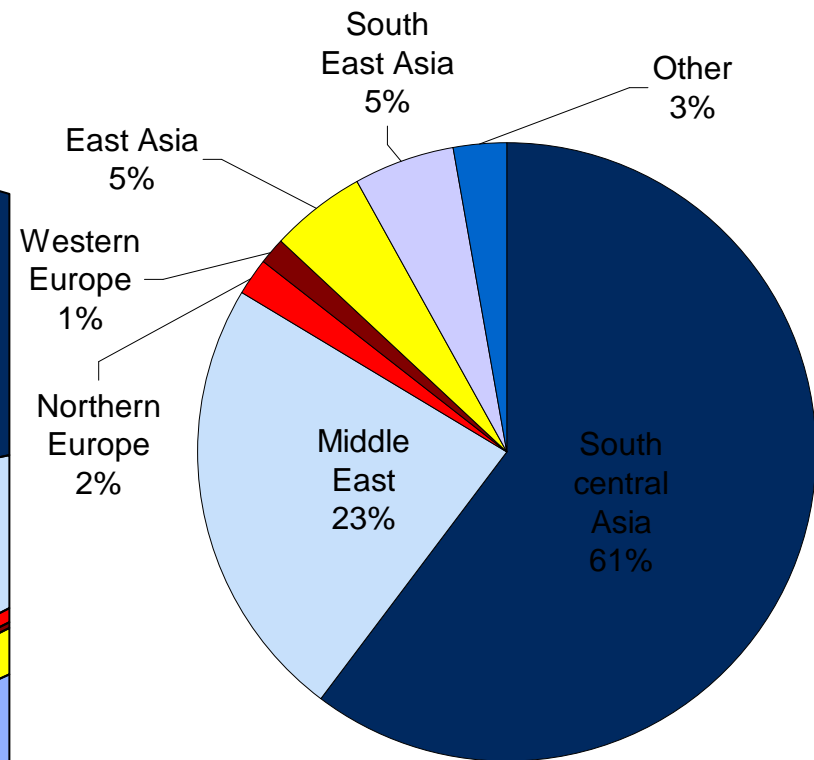
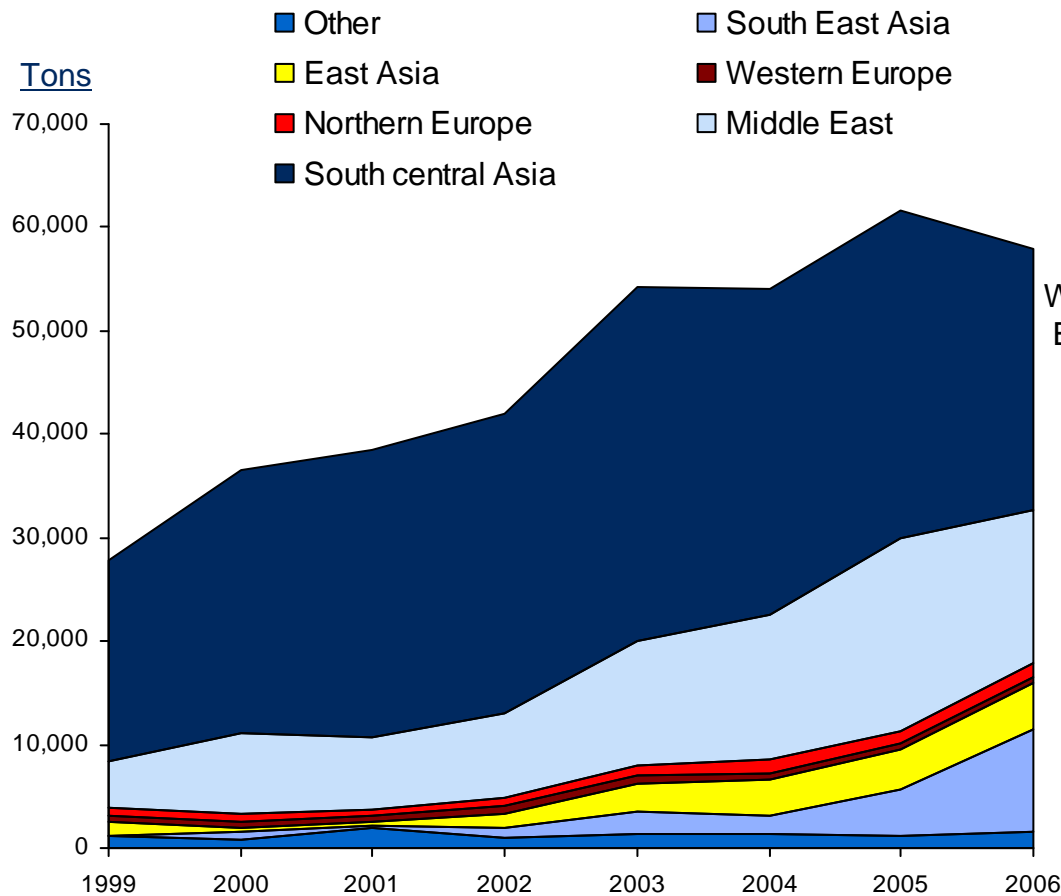


Sources: UN Comtrade (2008), Statistical Information of Nepalese Agriculture (2007), Indian Spices (2008), SNV (2008), Ministry of Agriculture of the Republic of Indonesia (2008), Ministry of Agriculture & Livestock of Guatemala (2008), Indian Horticulture Database (2008), Team analysis (2008)

South Central Asia and the Middle East are the biggest consumers and accounted for most of the increase in consumption of cardamom during 1999-2006, although growth in South East Asia has also been strong recently

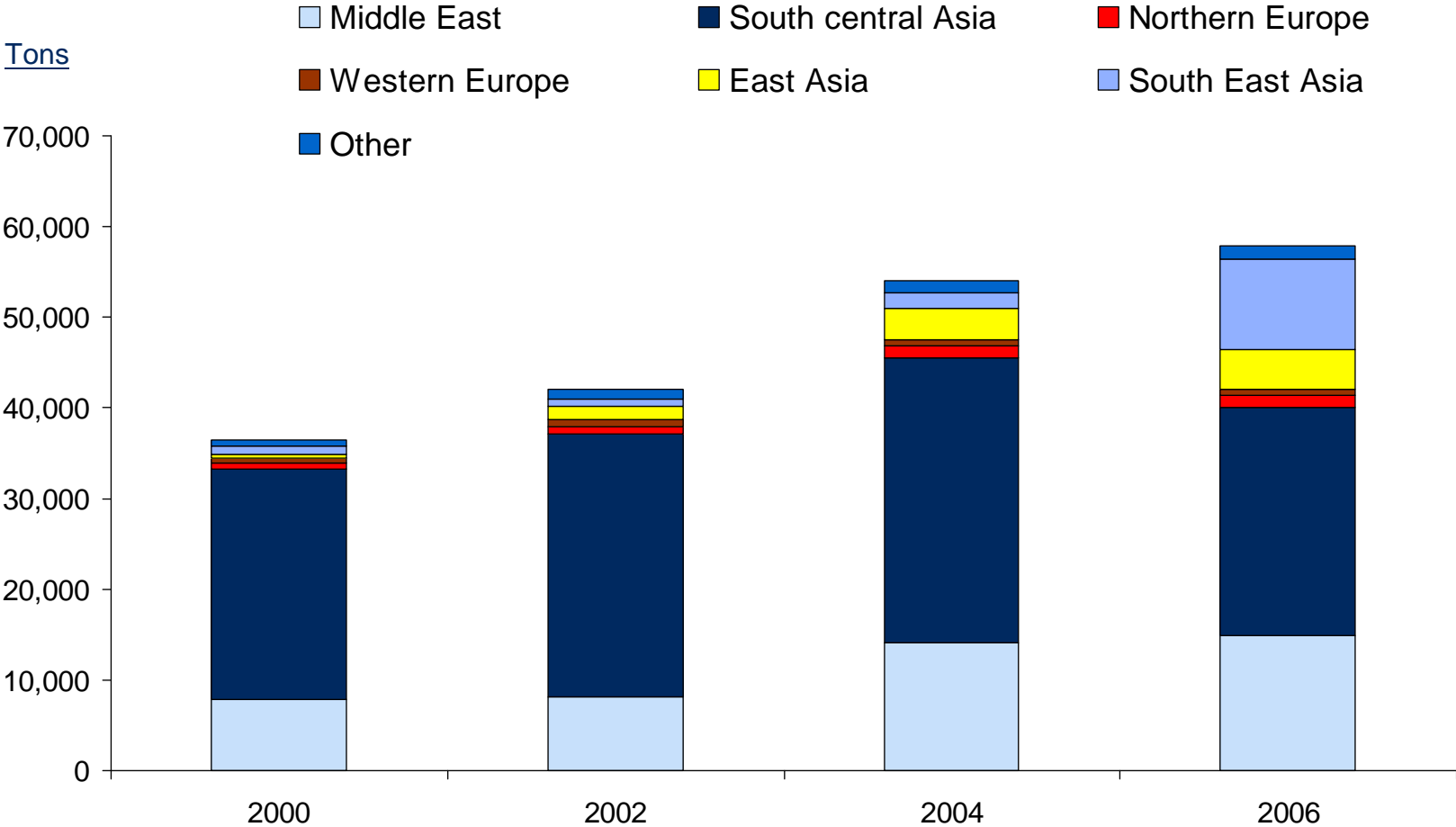
Total Annual Consumption of Cardamom 1999 -2006

Share of Average Consumption 1996 - 2006



Sources: UN Comtrade (2008), Statistical Information of Nepalese Agriculture (2007), Indian Spices (2008), SNV (2008), Ministry of Agriculture of the Republic of Indonesia (2008), Ministry of Agriculture & Livestock of Guatemala (2008), Indian Horticulture Database (2008), Team analysis (2008)
 Note: Among other countries South Central Asia includes India, Nepal, Sri Lanka, Bangladesh, Bhutan, etc.

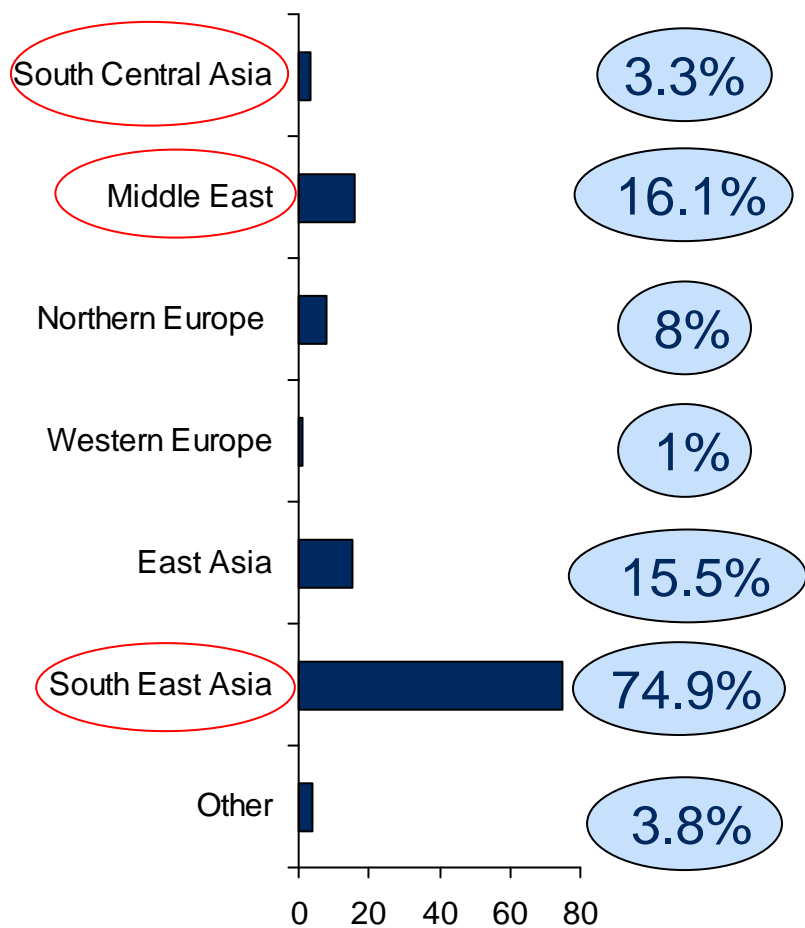
Although Middle Eastern consumption increased faster, South Central Asia still consumes more than 60% of cardamom production. Consumption is increasing in both East Asia and especially the newly emerging South East Asia



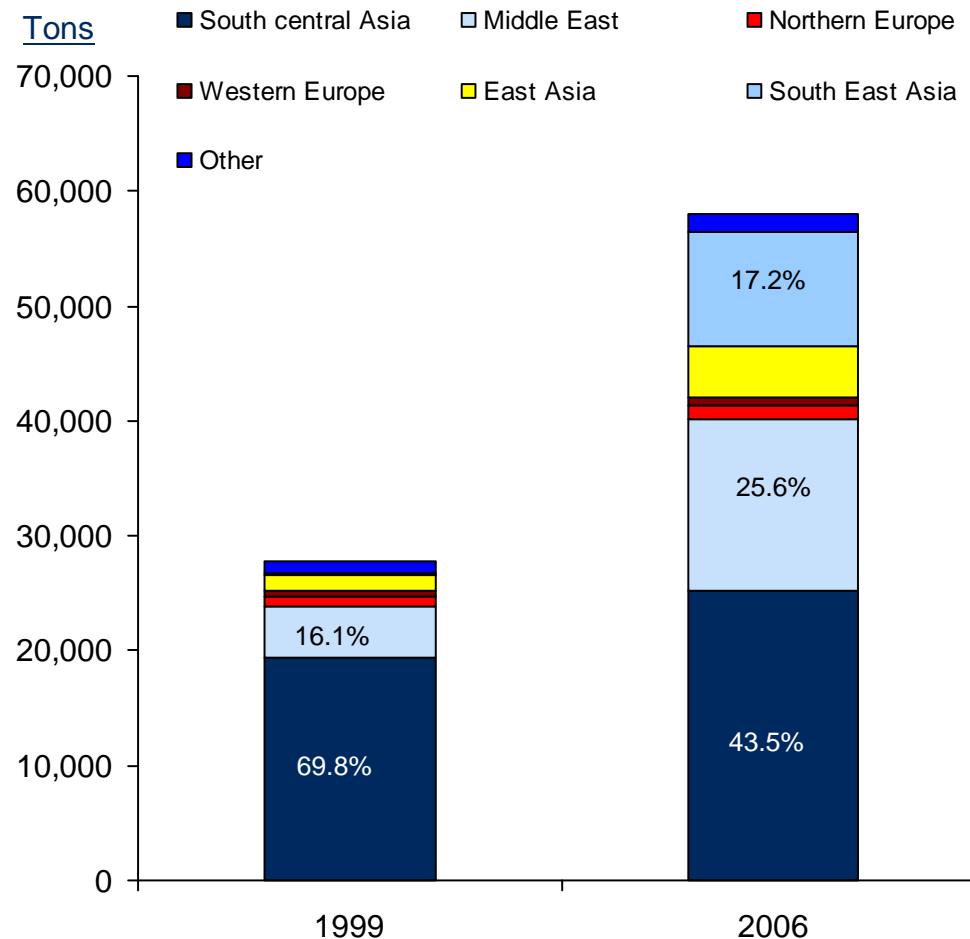
Source: UN Comtrade

The increasing importance of East and South East Asia is underlined by their strong growth rates, and they now have a significant market share

CAGR in Selected Regions 1999 - 2006



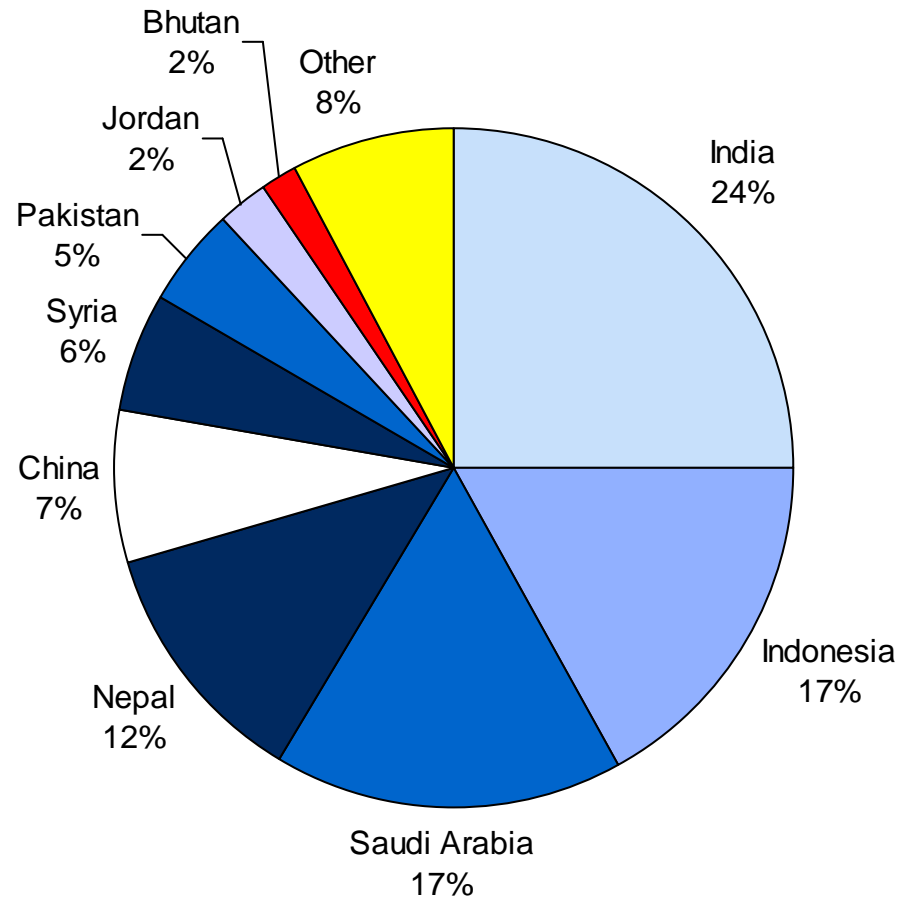
Consumption in Selected Regions 1999 -2006



Source: UN Comtrade

India, Indonesia and Saudi Arabia are the three countries which lead cardamom consumption

Share of Consumption in 2006



Sources: UN Comtrade, India Spice

Chapter 2 – Demand



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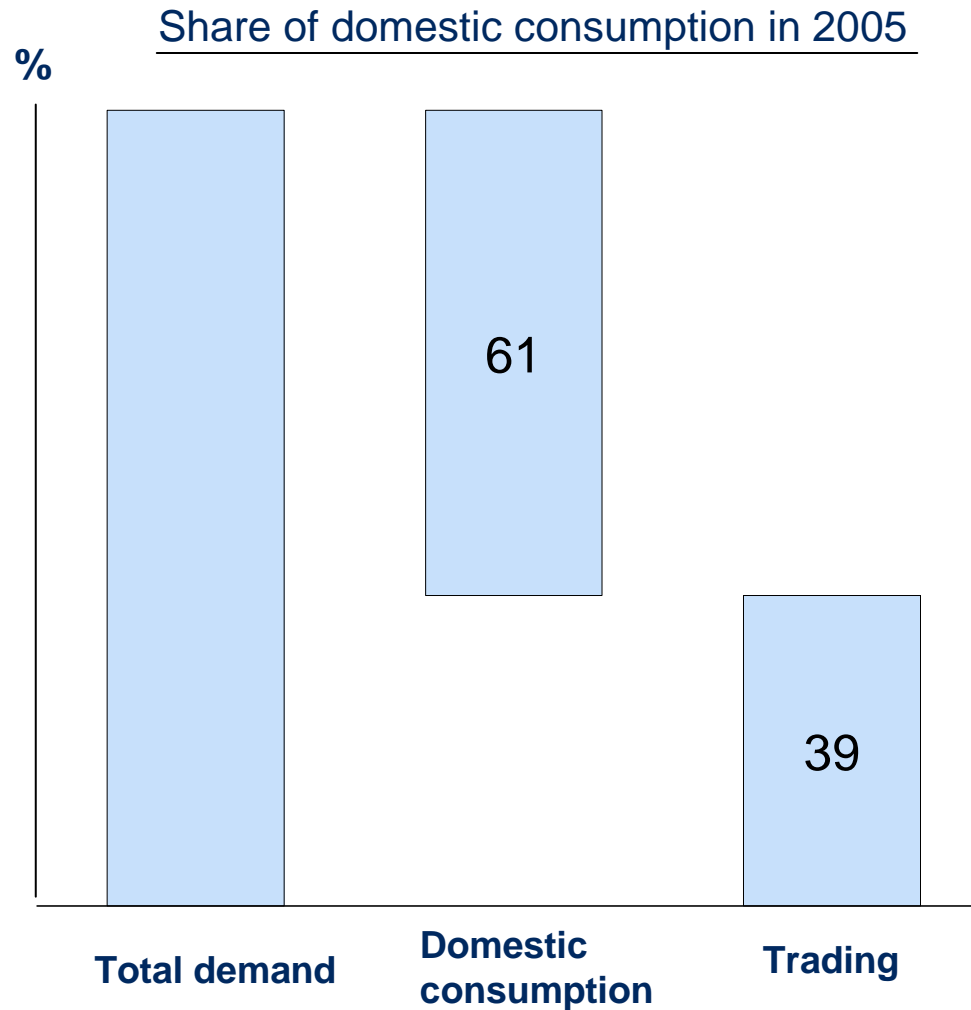
- Coffee consumption

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- **World supply of cardamom**

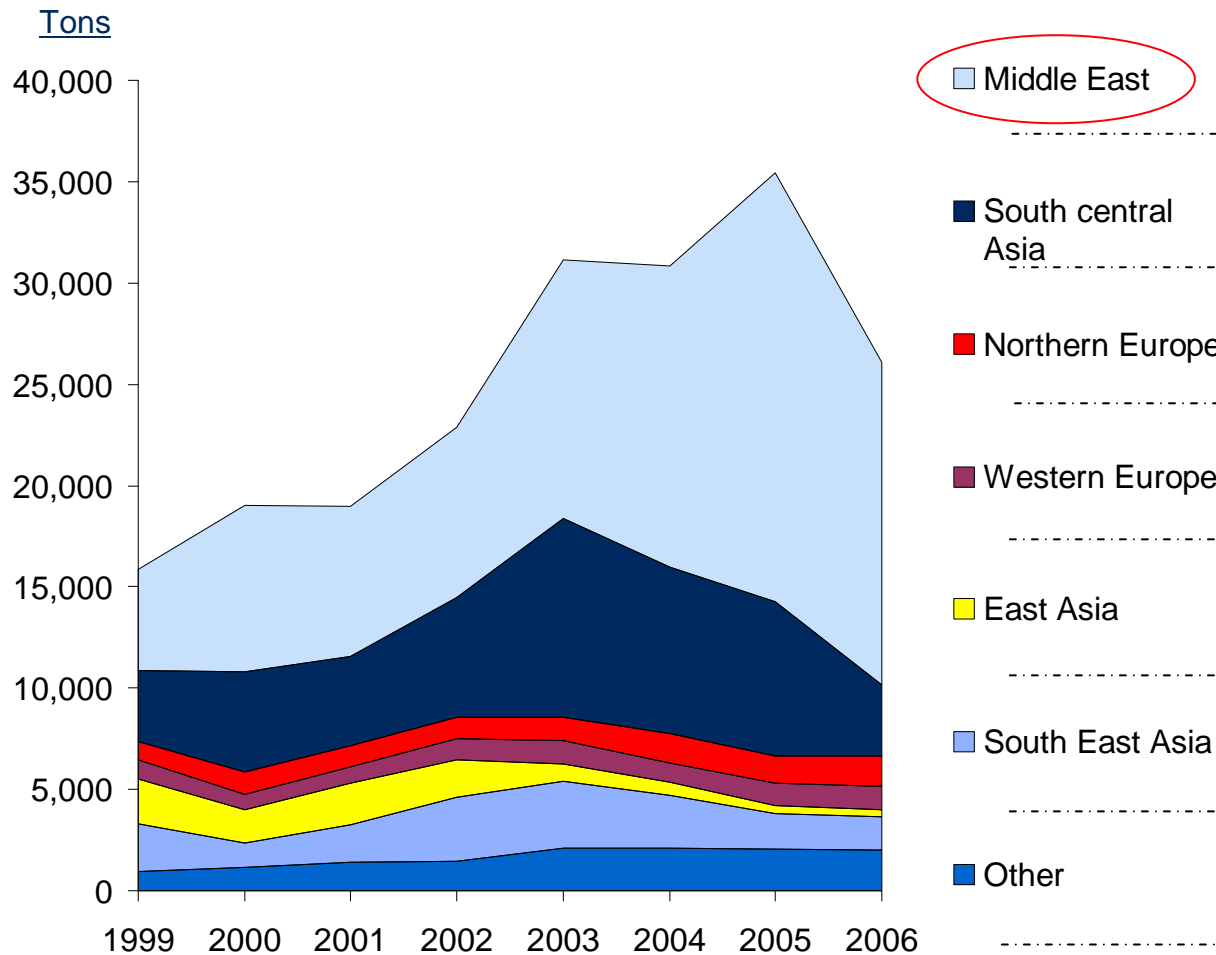
61% of cardamom produced was consumed in countries where it was grown, with 39% traded and consumed in importing countries so it is both an internationally traded commodity and one with a sizable domestic market



Source: UN Comtrade

The increase in imports has been driven mainly by the Middle East which has the highest growth and now accounts for 61% of import volume, while East and South East Asia appear to be shifting to domestic sources

Cardamom Imports 1999-2006



	Share in 2006	CAGR
Middle East	61.0	15.5
South central Asia	13.5	0.2
Northern Europe	5.6	5.7
Western Europe	4.4	2.9
East Asia	1.3	- 20.4
South East Asia	6.3	- 4.1
Other	7.6	9.4

Source: UN Comtrade

Different countries and regions have quite distinct preferences for either green or black cardamom

Preferences for Green and Black Cardamom

Green	Black
Middle East	India
India	Indonesia
Europe	Pakistan
USA	South Africa
Japan	China
Sri Lanka & other	Afghanistan & others

- The trade in black cardamom species is largely confined within Asia, with only very small volumes entering the Middle East, European and North American markets
- Indonesia and India produce and then enjoy consuming black cardamom
- Guatemala produces cardamom mainly for export

Source: UN Comtrade, Team analysis (2008), Article references

Chapter 2 – Demand



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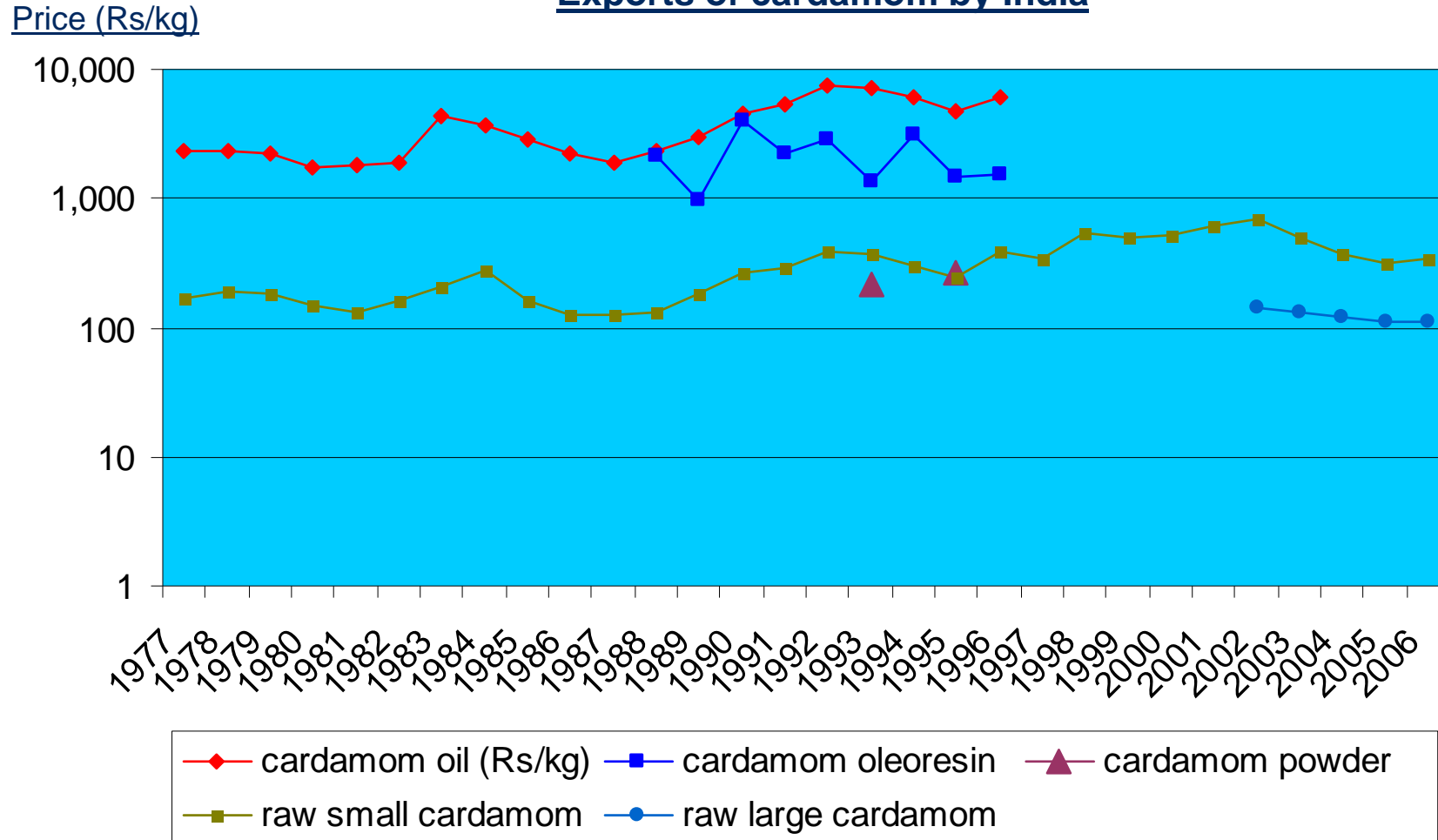
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Processed cardamom fetches a much higher unit value than the whole raw capsule

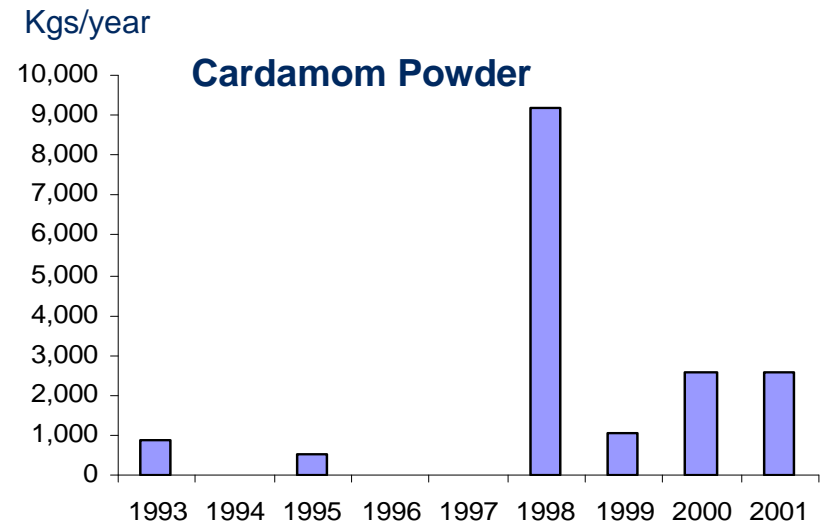
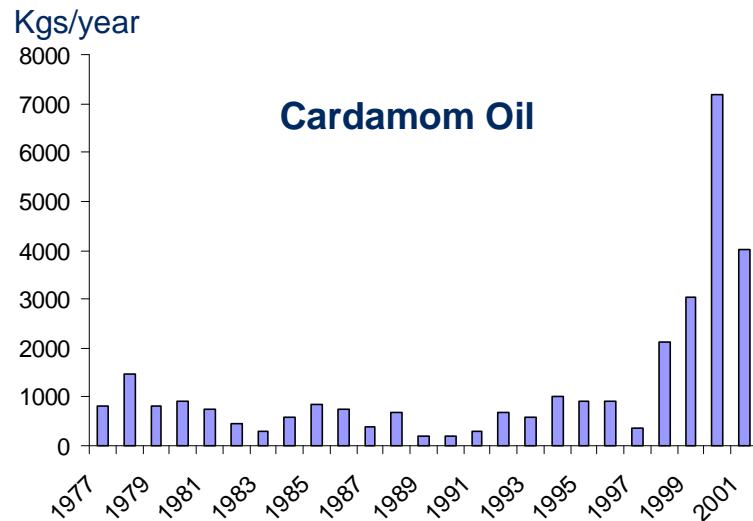
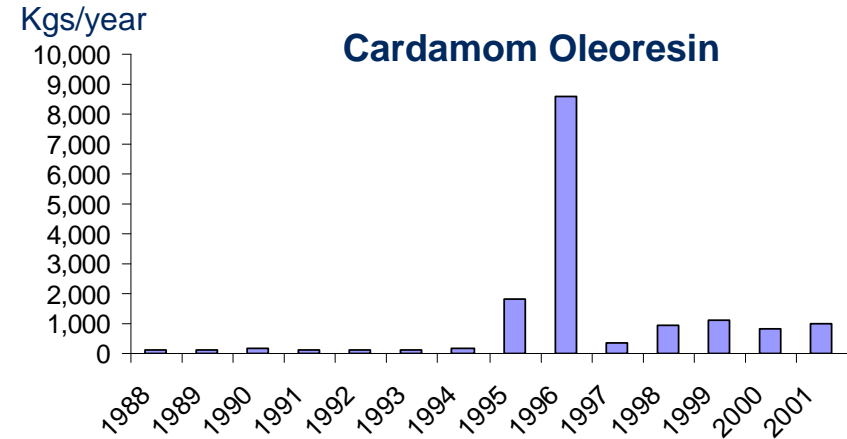
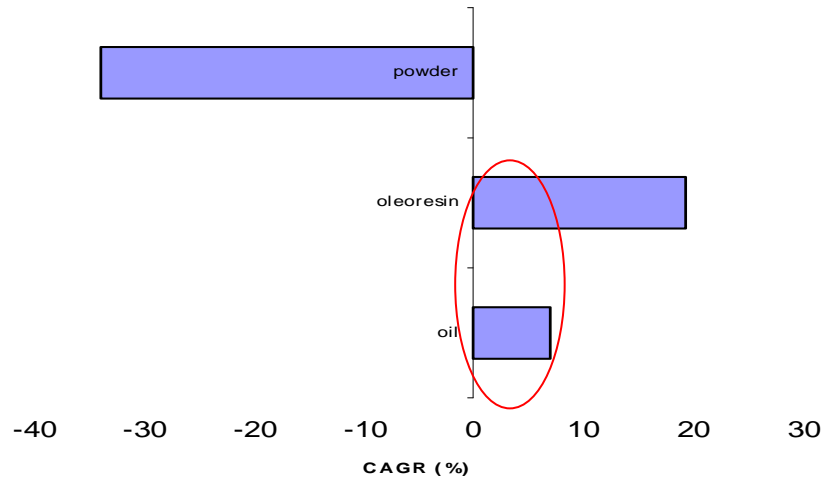
Exports of cardamom by India



Source: Narayanan, 2004

Note: The total demand for cardamom oil/oleoresin globally is insufficient. It has not been possible to source data other than from India, and these data are also not fully up to date

However, although demand for cardamom oil and intermediate products such as oleoresin is increasing, the market has experienced wild fluctuations – as illustrated in the example below drawn from exports by India



Source: Narayanan, 2004 & CAP, 2008

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A quick review of the likely forces driving growth in consumption indicates that the rising trend in demand should continue in the longer term

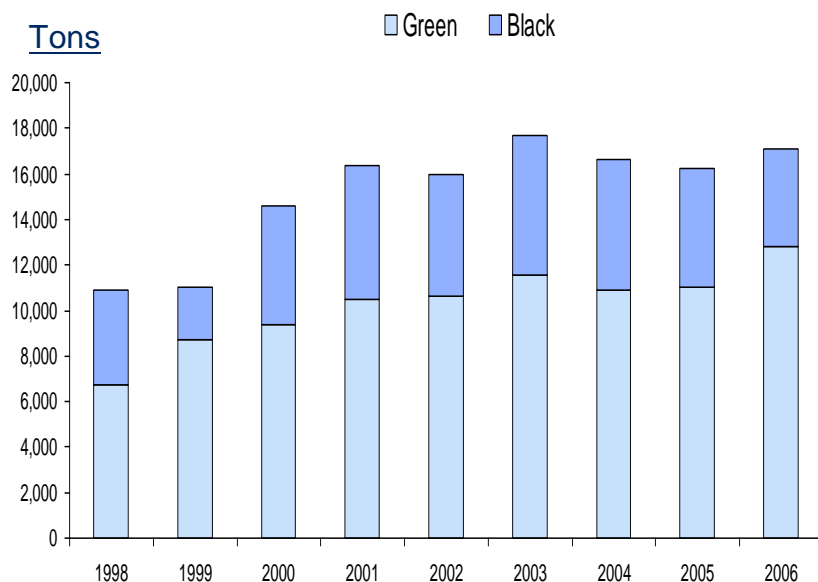
Drivers	Reasons
1. Food consumption habits	Both green and black cardamoms are key spice ingredients for curries in both India and other Asian countries
2. Coffee and tea consumption	Mixing green cardamom with tea and coffee is the crucial driver of consumption in the Middle East. As the use of these beverages in hospitality increase, so should the use of cardamom
3. Increase in GDP	An increase in income is likely to lead to an increase in demand for cardamom
4. Decrease in prices	Price decreases should be a driver for consumers on lower incomes
Other reasons	
Food processing industry	Growth in food processing especially in spicy products in western countries should impact cardamom
Product innovation	Growth in demand should be facilitated by new forms of product for more convenient use, such as oil and oleoresin, which still retain the taste of the original
	There are new forms of cardamom product being developed, e.g. oleoresin in small packets for gifts and ease of delivery

Note: The first four drivers are reviewed in more detail in the following pages

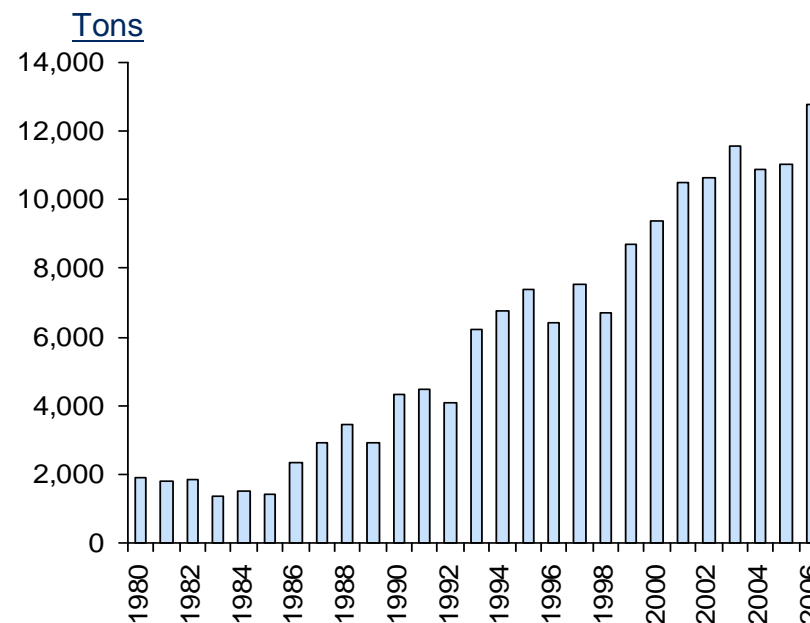
Sources: Narayanan 2004 and CAP-PI 2008

Drivers: 1. Domestic demand for cardamom in India seems to have stabilised recently, with possibly some substitution of green for black cardamom

Total Cardamom Consumption in India



Green Cardamom Consumption in India

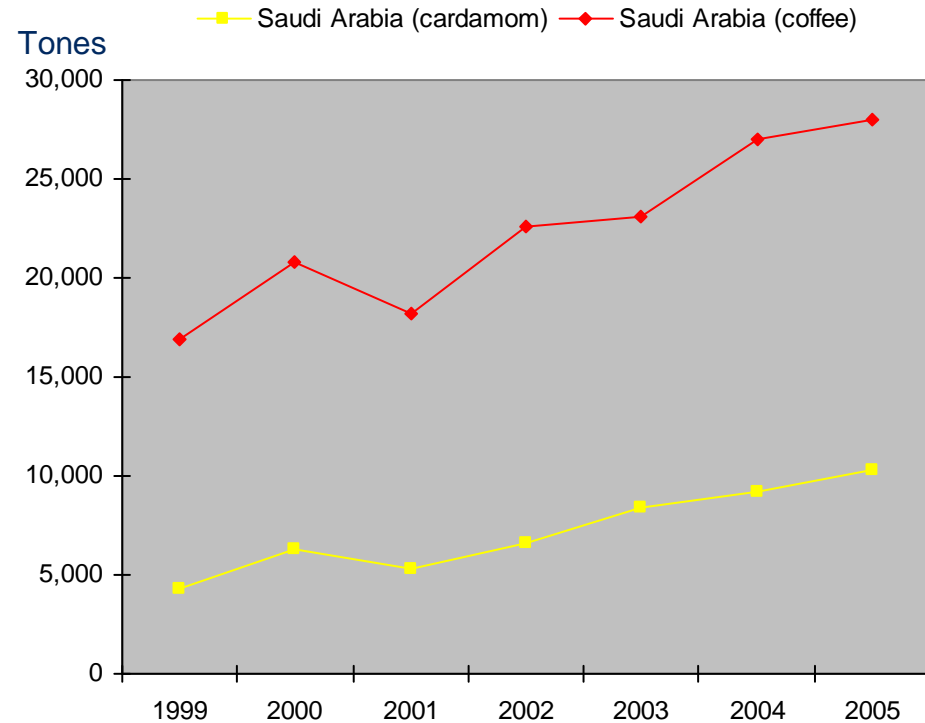
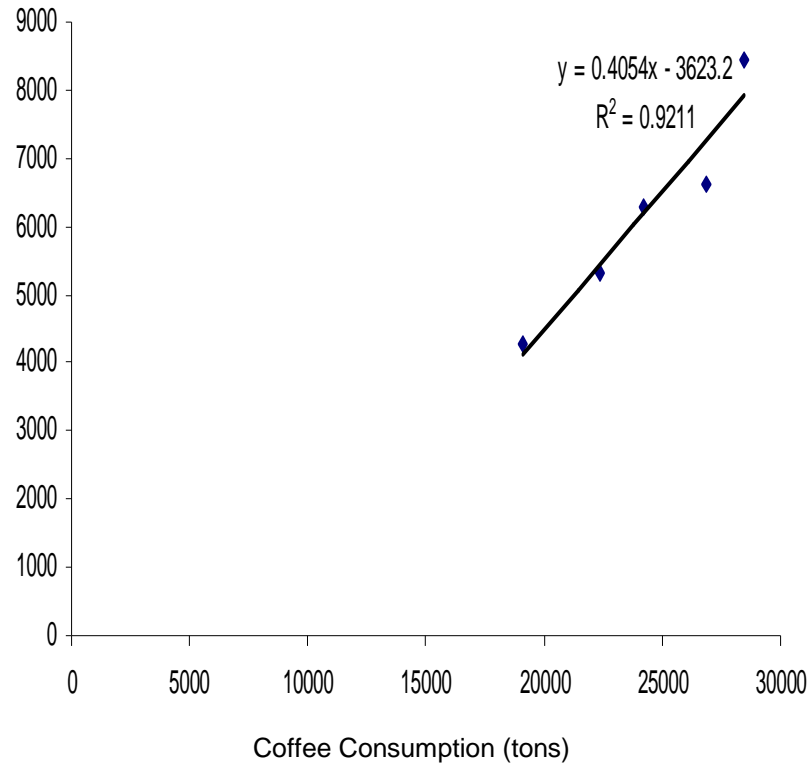


- The total demand for cardamom in India has been growing owing to the increase in the consumption of garam masala, pan masala, and other similar foods
- Masala (hot spice – curry) is an essential ingredient in Indian cuisine, and cardamom is one important ingredient of masala

Source: Narayanan (2004) , UNCOMTRADE, IndianSpice, Team estimates (2008)

Drivers: 2. Coffee consumption appears to be a strong driver of demand for cardamom in Saudi Arabia

Cardamom Consumption (tons)



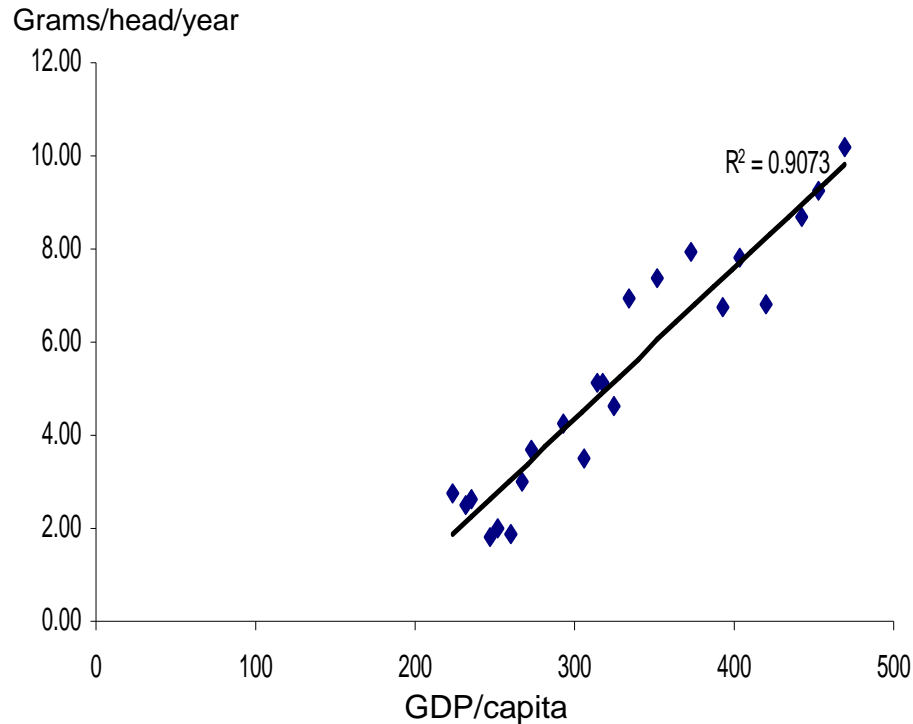
Note*: Islam prohibits the drinking of alcohol and taking of other intoxicating substances. When coffee first started becoming popular in the Middle East, it is said that there was debate as to whether it was 'halal' or 'haram' because coffee has an effect on the body. It is claimed that cardamom detoxifies the caffeine in coffee, thereby removing any misgivings about the effects of caffeine, although it has also been alleged that there is no scientific evidence for this

Sources: WB (2006), FAO (2003), Wikipedia, Team estimates (2008)

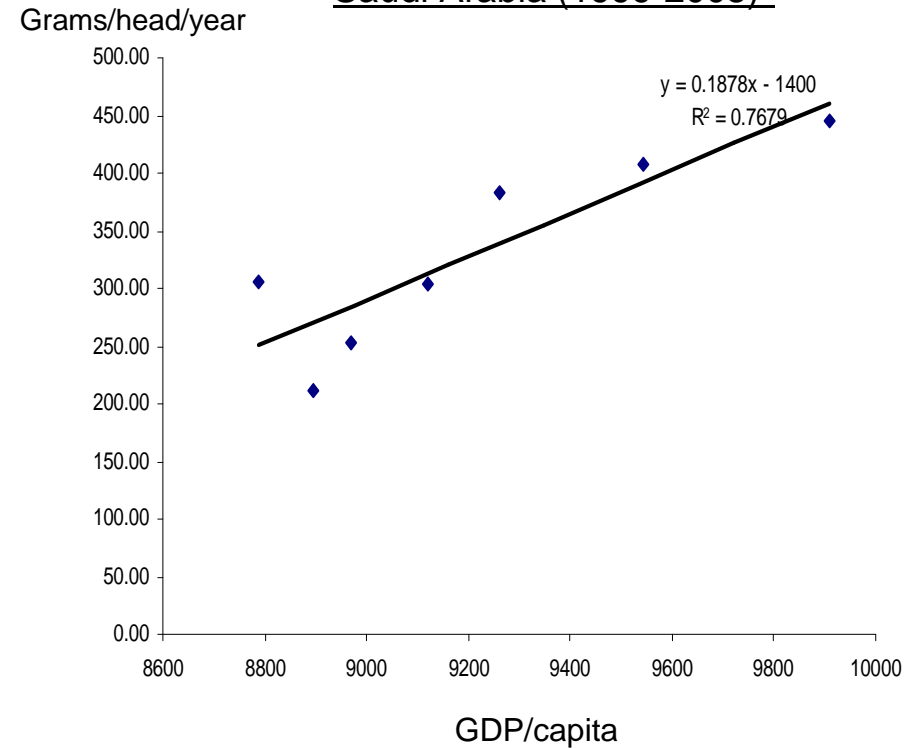
* "Demand for Cardamom: A Macro Analysis" by Grant Vinning, SNV Marketing Specialist, November 2004

Drivers: 3. Per capita consumption of green cardamom in India and Saudi Arabia is strongly correlated with GDP

India (1980-2001)*



Saudi Arabia (1999-2005)*

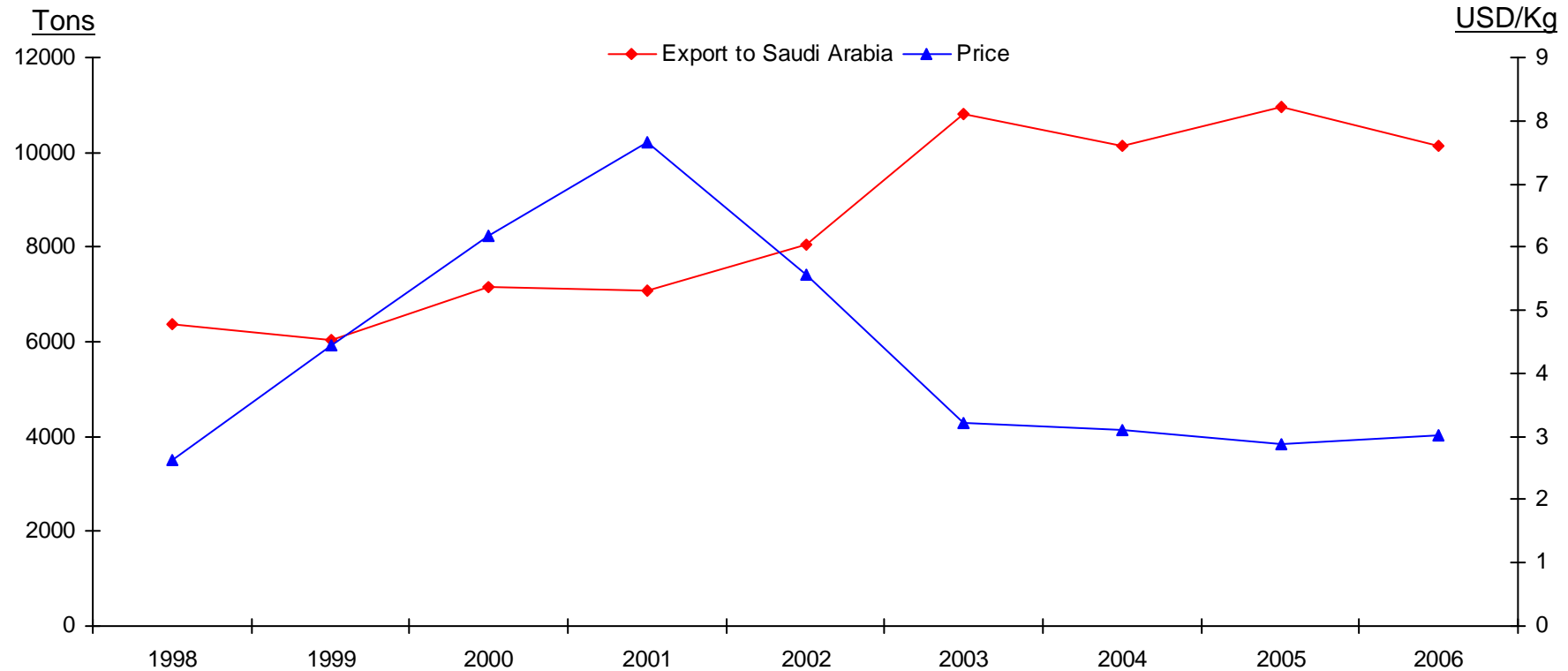


Cardamom is not a staple food and is considered to be an expensive spice so people would typically only buy it when they have higher incomes

Source: FAO (2008), Narayanan (2004), UNCOMTRADE (2008)

Note: Data for India are only available from 1980-2001, while data for Saudi Arabia are available for 1999-2005

Drivers: 4. Higher exports of cardamom to Saudi Arabia appear to have been related to lower prices suggesting that lower prices may also increase cardamom consumption in the longer term



- The rain and landslides caused by Hurricane Mitch in 1998 significantly **reduced** cardamom crop production.
- It takes 3 years to re-grow a new crop, so from 1999 – 2000 the production of cardamom from Guatemala was reduced. This may have been the main reason for the increase in price.

- Recovery of production of Guatemala and the start of the war in Iraq (Middle East) are likely to have been the main reasons for the downward trend in prices

Source: UN Comtrade

Chapter 2 – Demand



- **Consumption and demand**

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- Main import market
- New products

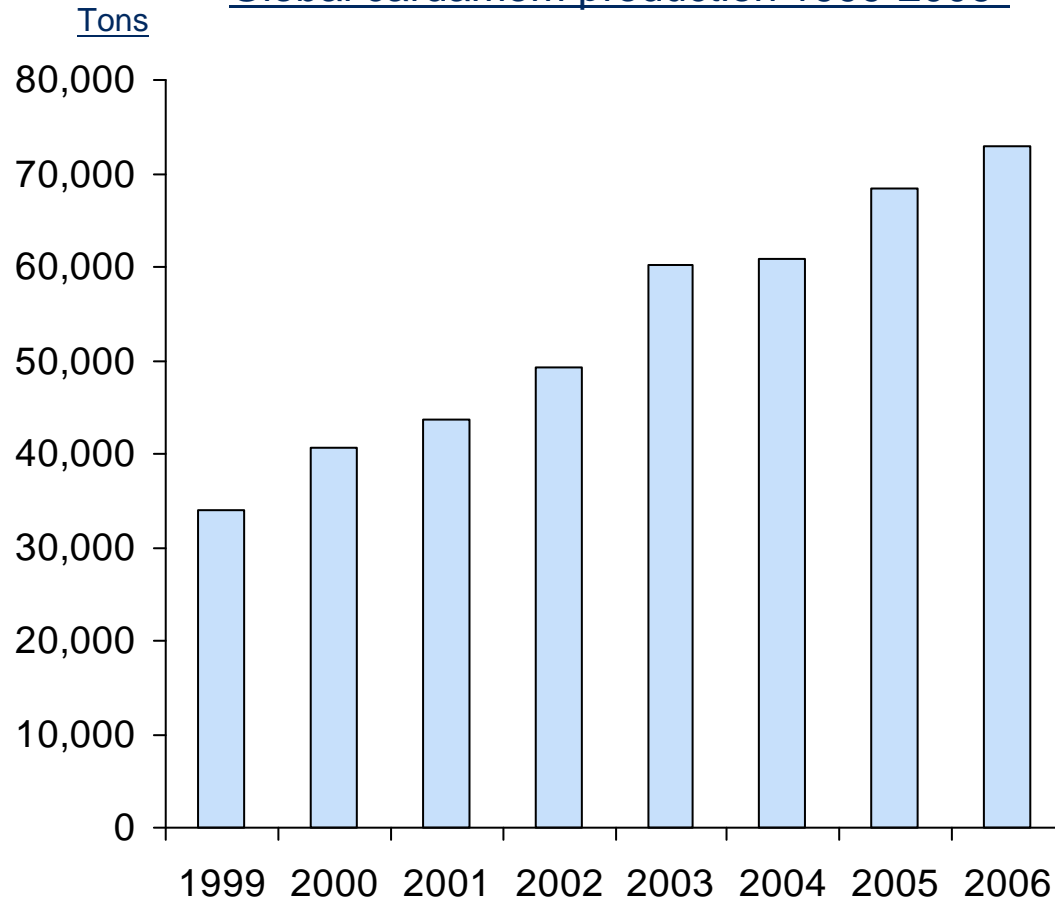
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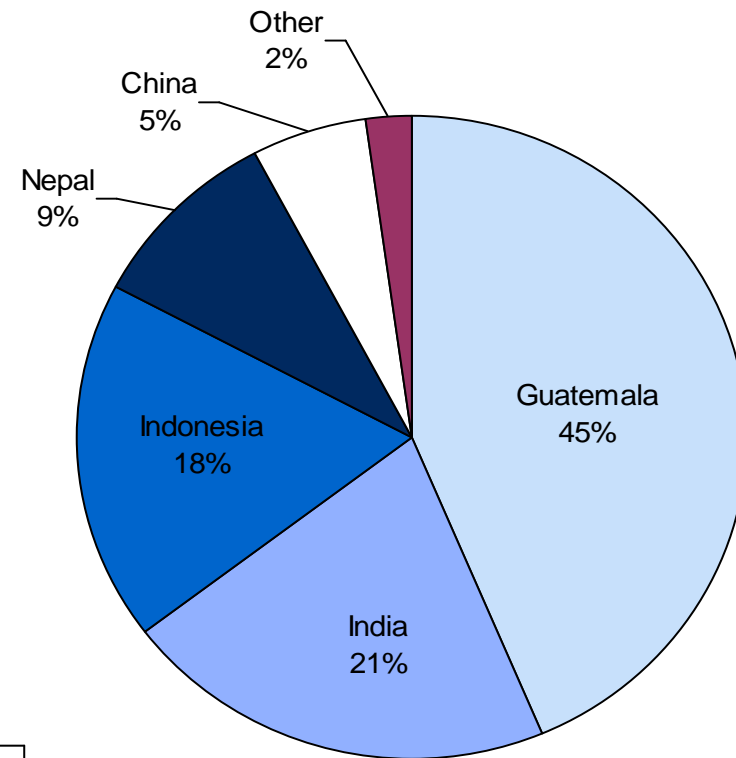
- **World supply of cardamom**

Guatemala and India have long been the main cardamom producers, but since 2003 Indonesia has emerged as an additional key producer

Global cardamom production 1999-2006*



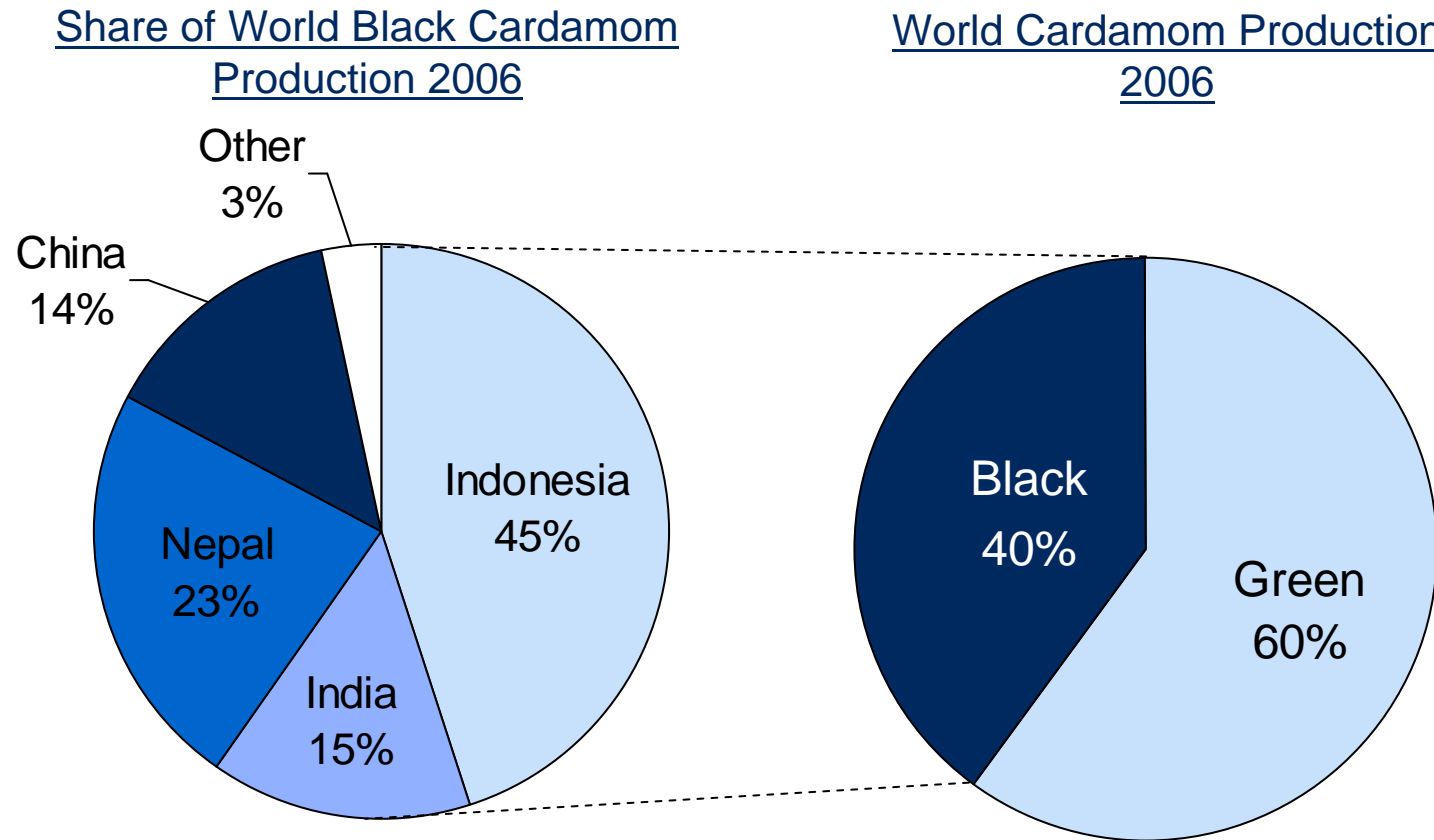
Share of cardamom production 2006



Source: Statistical Information of Nepalese Agriculture (2007), Indian Spices (2008), SNV (2008), Ministry of Agriculture Republic of Indonesia (2008), Ministry of Agriculture and Livestock of Guatemala (2008), Indian Horticulture Database (2008), Statistics Indonesia (2008), Team analysis (2008)

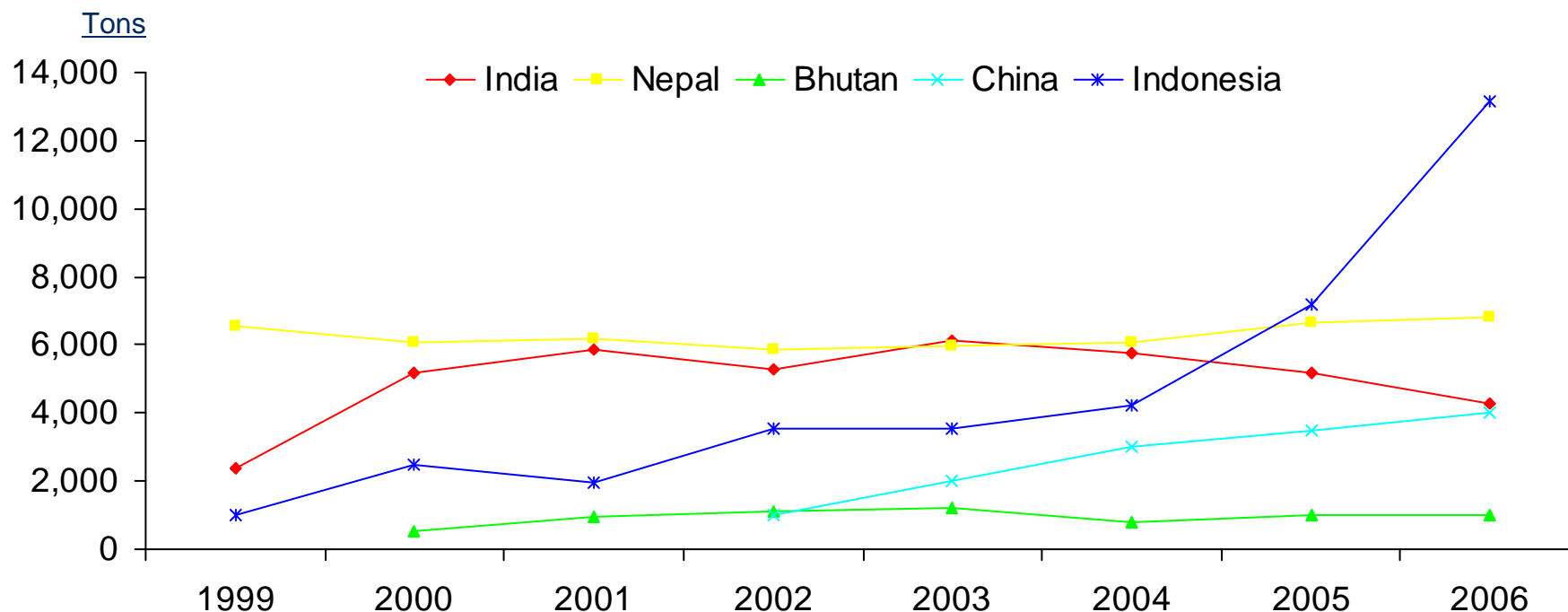
*Note: the world production of cardamom here includes both green and black cardamom; these figures may therefore appear much higher than the data mentioned in some studies and research which often refer only to green cardamom

The growing share of black cardamom in total production has been driven mainly by the increase in production of Indonesia



Sources: Statistical Information of Nepalese Agriculture (2007), Indian Spices (2008), SNV (2008), Ministry of Agriculture Republic of Indonesia (2008), and Team analysis (2008)

Since 2005 Indonesia has become the key producer of black cardamom in the world, nearly equaling the share of the remaining four main producers



- Large cardamom is an important cash crop in **Nepal**, with 37 out of the country's 75 district now growing cardamom. The eastern region of the country in particular is highly suitable for growing large cardamom, but in that area expansion of large cardamom has been taking place in an unplanned manner so growth has been limited
- **India** is not planning to expand its cultivation of black cardamom; the Indian government intends to replant the old trees and improve the technical issues to ensure stable volume of production
- **China** currently uses only about 10,000 hectares for cultivating black cardamom, and has the potential to expand its production
- **Indonesia** continues to expand its cultivation at a high rate

Sources: Statistical Information of Nepalese Agriculture (2007), Indian Spices (2008), SNV (2008), Ministry of Agriculture Republic of Indonesia (2008), Ministry of Agriculture and Livestock of Guatemala (2008), Indian Horticulture Database (2008)

Some conclusions about cardamom demand and supply

- Global demand for cardamom has been growing moderately, with consumption of green cardamom increasing its share in part as a substitute for black cardamom in India. This growth has been driven mainly by coffee-drinking, cooking, GDP increases, lower prices and the food industry
- The Middle East, South Asia, South East Asia and Northern Europe are the main markets for cardamom consumption and are still increasing their demand
- The ratio of green cardamom and black cardamom consumed is similar in volume. The volume of green traded globally is much higher, while black cardamom is mainly consumed domestically. A reasonably high quantity of cardamom is consumed in domestic markets with production of cardamom being driven by this local demand
- Countries with a preference for green cardamom include: India (South Asia) and Saudi Arabia (Middle East). Countries preferring black cardamom include: India, Pakistan, Afghanistan (South Asia); UAE (middle east); the UK (Northern Europe), and Indonesia (South East Asia) & China (East Asia)
- There has been an increasing but unpredictable demand for high quality and processed spices (oil, oleoresin). This trend for added value products offers new business opportunities in the spice trade internationally with the value-added product segment being more of an open market
- Guatemala and India have long been the main cardamom producers, but since 2003 Indonesia has emerged as an additional key producer. Indonesia's production has been driving the growing share of black cardamom in total production, and its production now nearly equals the share of the remaining four main producers

Source: Team conclusions from preceding data and analysis, 2008



Chapter 3 – Competitiveness



- **Green and Black cardamom**

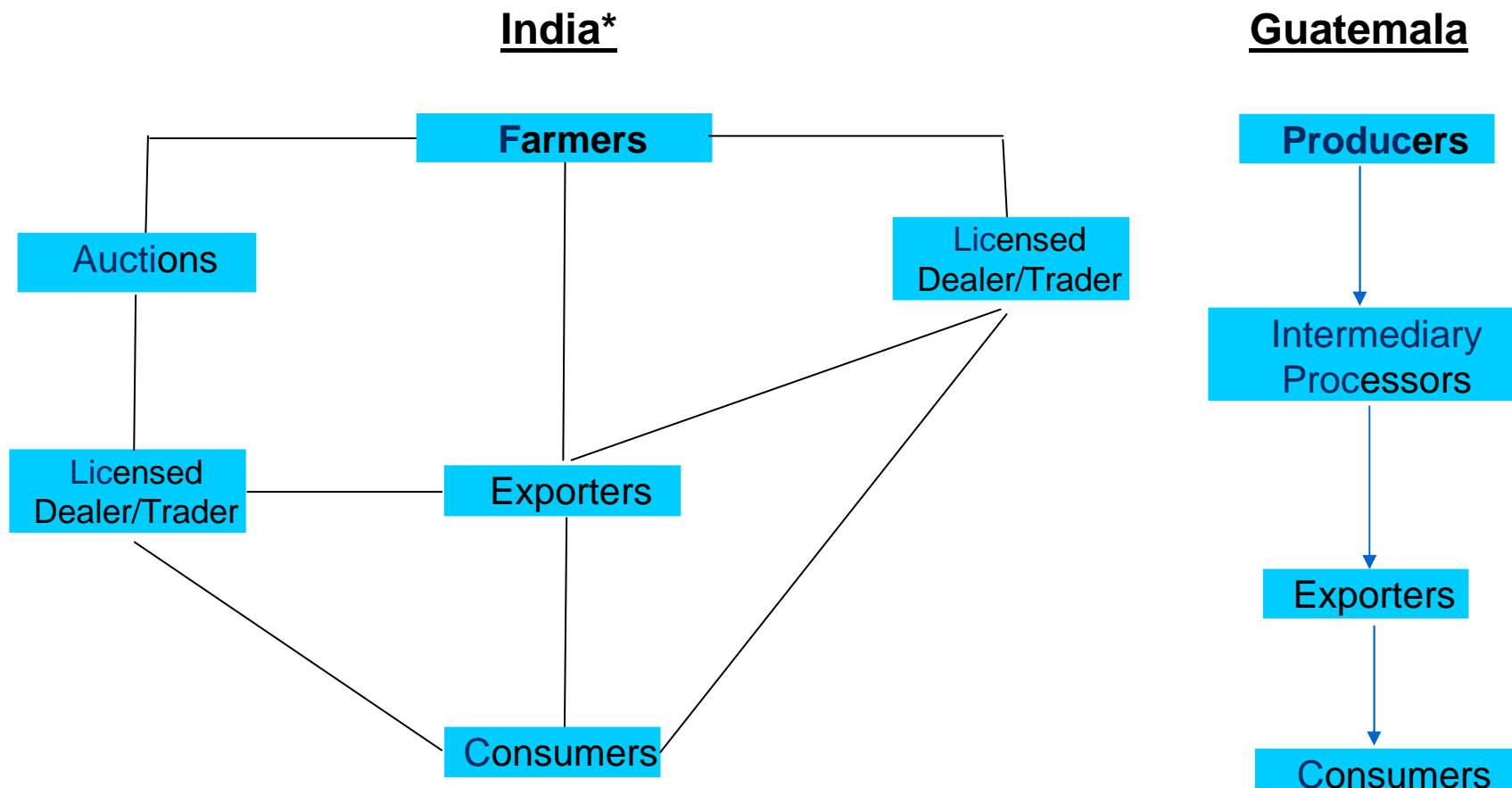
- Supply chain
- Price
- Production cost
- Processing

- **Performance of Vietnam in black cardamom sector**

- Comparative costs of supply
- Comparative quality of cardamom
- Comparative price
- Yield
- Seasonality

- **Conclusion**

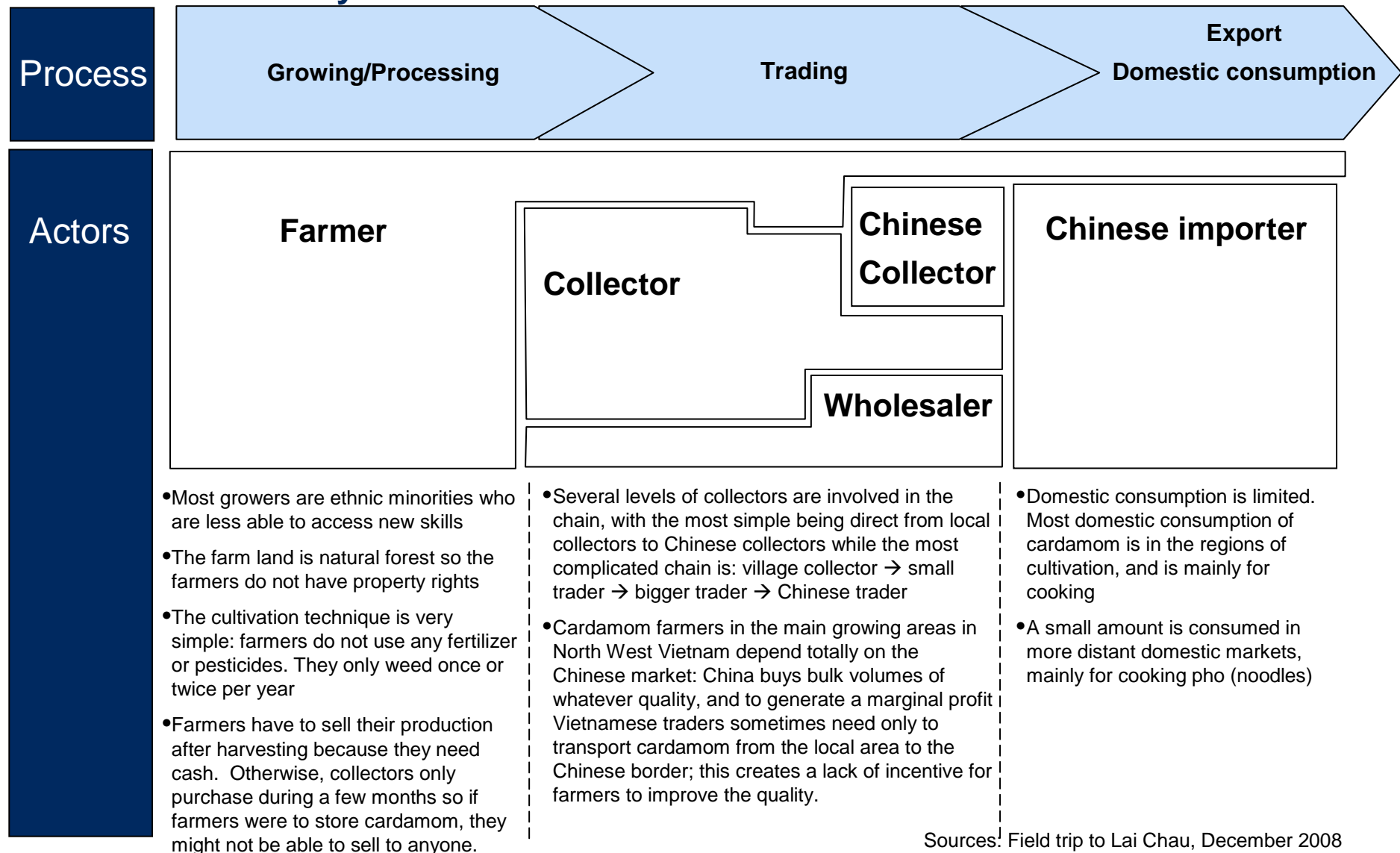
The supply chain of green cardamom in international markets is not complicated and is relatively efficient, and has been early in applying an electronic exchange



*India has an organized system of marketing from the start of production to the auction exchange floor. This results in transparent downward price signals so that farmers have clear information to make decision

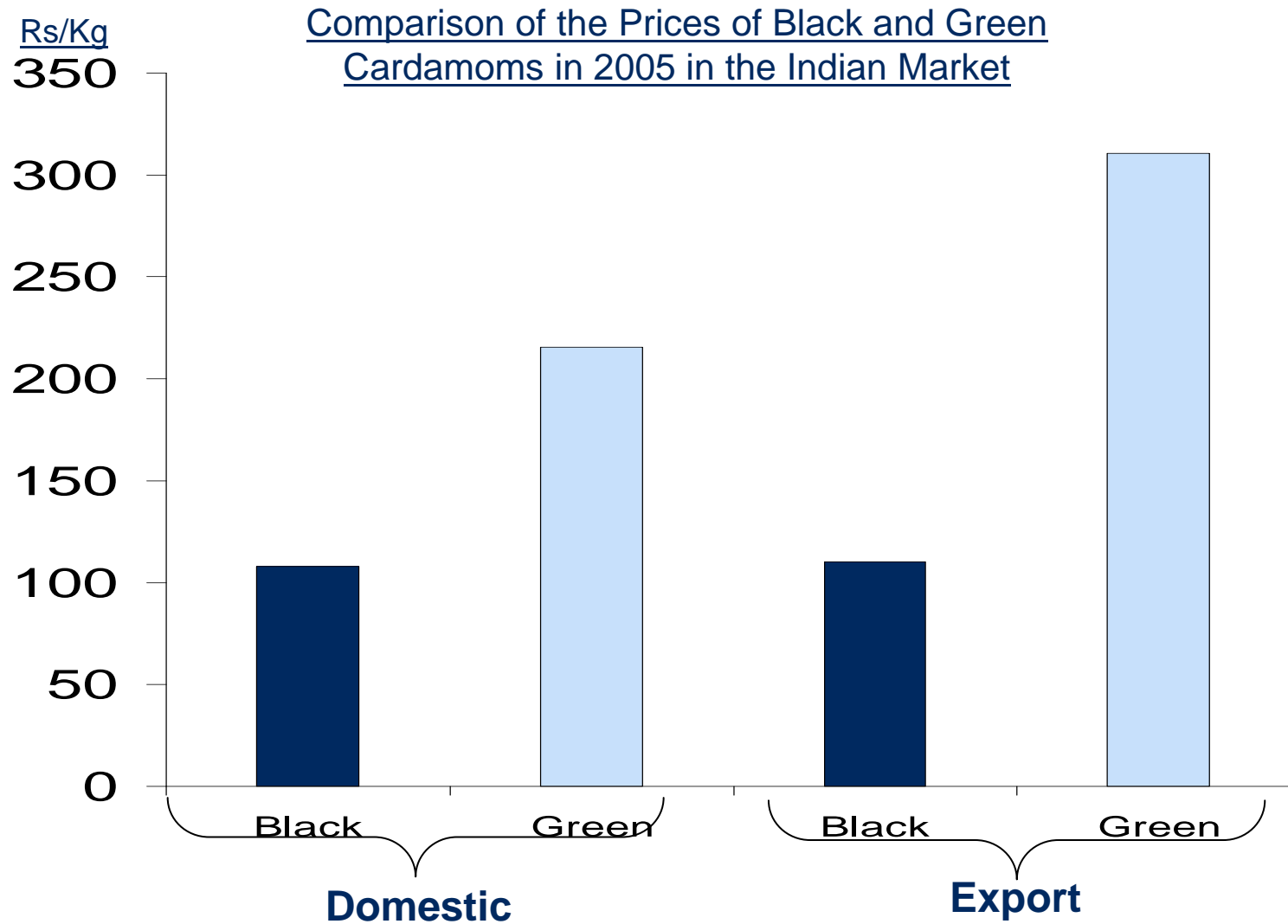
Sources: Narayanan (2004) & Ministry of Agriculture and Livestock of Guatemala (2006)

In contrast the global black cardamom chain is quite complicated and does not yet apply modern trading facilities. The Vietnamese black cardamom supply chain involves many middle men



Sources: Field trip to Lai Chau, December 2008

Green cardamom attracts a price premium compared with black cardamom



Source: Indianspice (2008)

This price premium is partly related to the more sophisticated category differentiation in the world market for green cardamom compared to the simple grading of black cardamom

Grade of Guatemala Cardamom

1. **Jumbo Green** (extra large green)
2. **Imperial Best Green** (large green)
3. **Fancy Green Extra** (Extra green)
4. **Fancy Green** (Medium size green)
5. **Imperial Mixed Green** (large pale green)
6. **Mixed green** (assorted colors)
7. **Mixed green split** (medium size open green pods)
8. **Yellow mixed** (yellow medium/large close pods)
9. **MYQ mixed yellow quality** (medium light brown color for grinding)
10. **Cardamom seeds** (decorticated)

Source: SNV, 2004

Grade Differentiation of Whole Small Indian Cardamom

No	Grade	Color	Diameter	Weight	Note
1	Bold	Greenish	6.5 mm	415 gm	Popular export
2	Super bold	Matured greenish	8 mm	450 gm	Special, rare
3	Extra bold	Matured greenish	7 mm	435 gm	Best in market
4	Bulk	Contain all size, color, splitted			To be graded
5	Small	black	5.5-6.5mm	385 gm	Cleaned, removed dust
6	Open/splits	Greenish/pale yellow	6.5 mm or above		
7	Seed	Black/brown		550-600 gm	Husk removed
8	Fruit	Slight yellowish		425 gm	Over matured

Source: Karvy, 2006

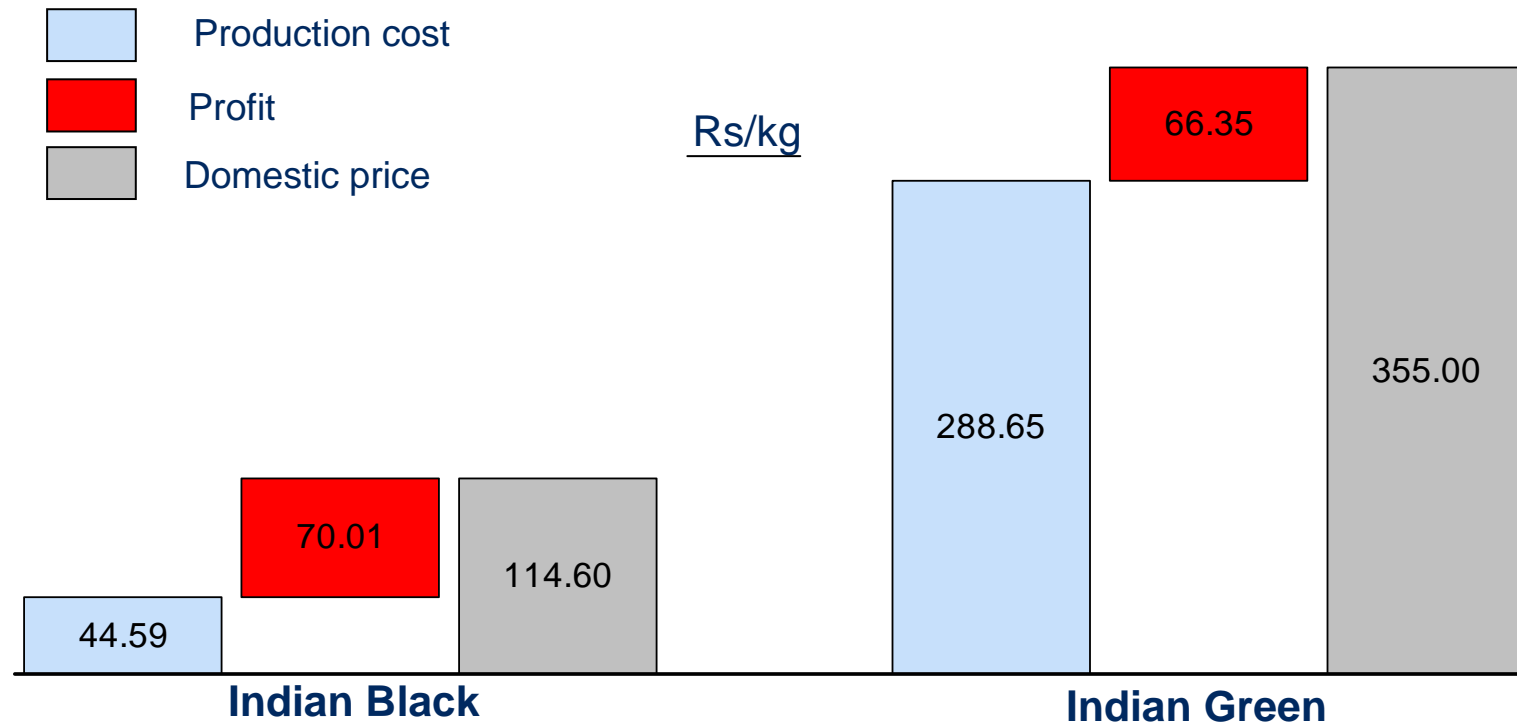
Grading of Vietnam Black Cardamom

Criteria	Grade 1	Grade 2
Shape	Round to oblong	Uneven shape
Size	Big (height of 3-4 cm, width of 2 cm)	Small
Harvesting time	On time (when it is ripe)	Harvested early in the season, before fruits are fully ripened
Shape of dried whole cardamom	Well dried but not too shrunk	Dried but few seeds inside the fruit
Colour and taste	Dark brown Spicy, fragrant	Light colored or with fungus Little fragrance and spice

Source: SNV, 2006



Although green sells for a higher price than black cardamom, in India the overall margin for black cardamom is slightly higher than for green cardamom since the production cost of green cardamom is much higher than for black cardamom



- Green cardamom requires considerable investment for cultivation. Post-harvest operations like primary processing are done at the farm level. Increasing productivity through intensive use of inputs and technological innovation especially at the farm level, also mean increases in the cost
- Black cardamom is mostly produced in an “organic” manner, growing mainly in the wild with no fertilizer applied and not monitored regularly.

Source: Narayanan (2004), Team analysis

This additional production cost results in part from the fact that the processing of green cardamom is more advanced than of the black type

Green (India)

Semi-modern processing facilities

- ✓ Has started applying modern drying methods by using kerosene/diesel/LPG heating systems and firewood for traditional curing
- ✓ Hand rubbering or using polishing machine to give the skin a better appearance
- ✓ Capsules are graded by sieving through sieves of different diameters

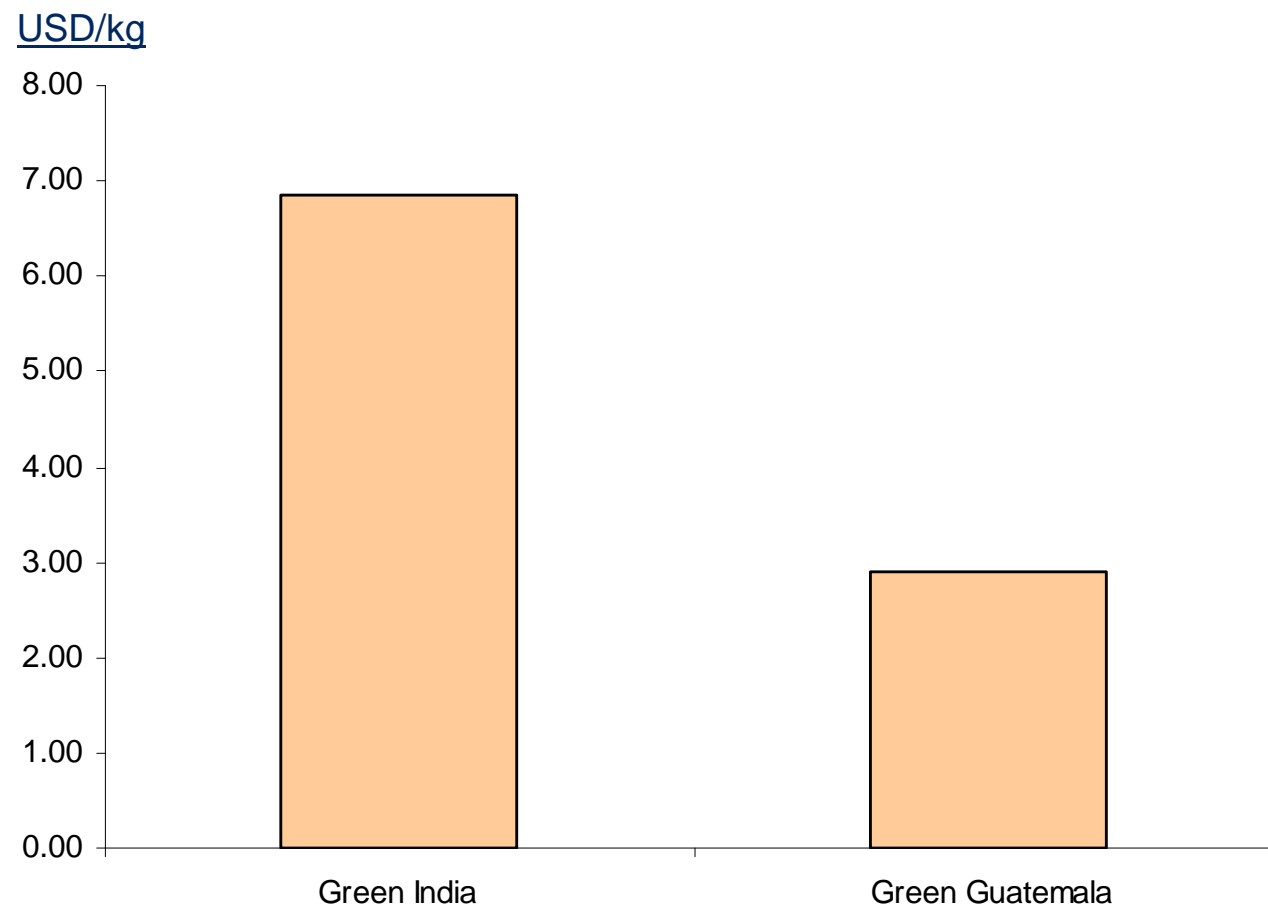
Black (India)

Simple processing technology

- ✓ Drying using a firewood system which is very low in thermal efficiency and leaves a high residue of sulphur
- ✓ No other processing procedure except cutting the tail
- ✓ Sold by bulk volume

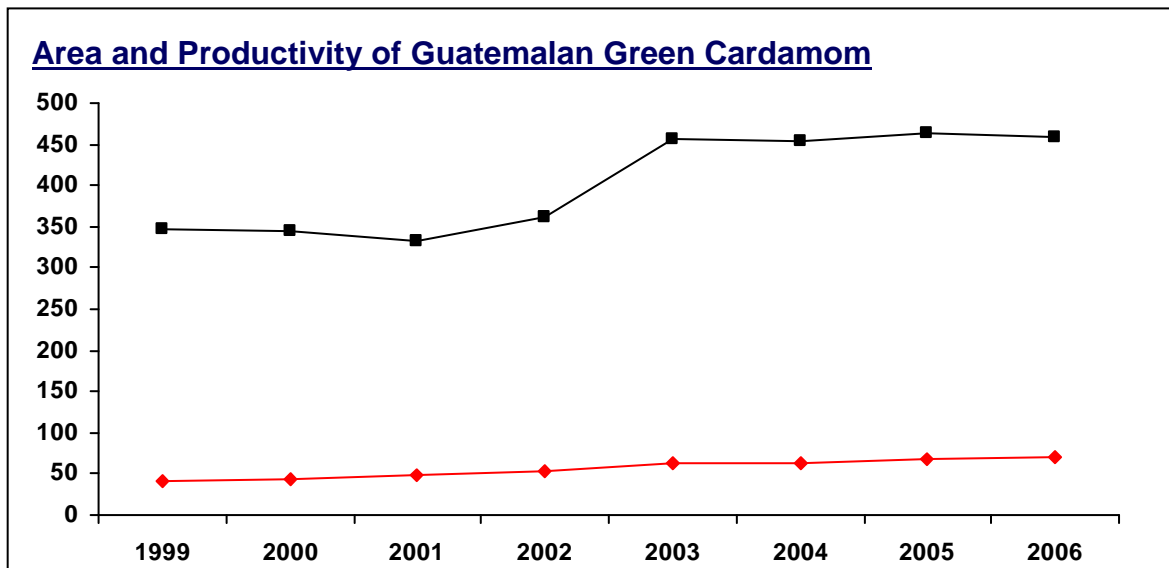
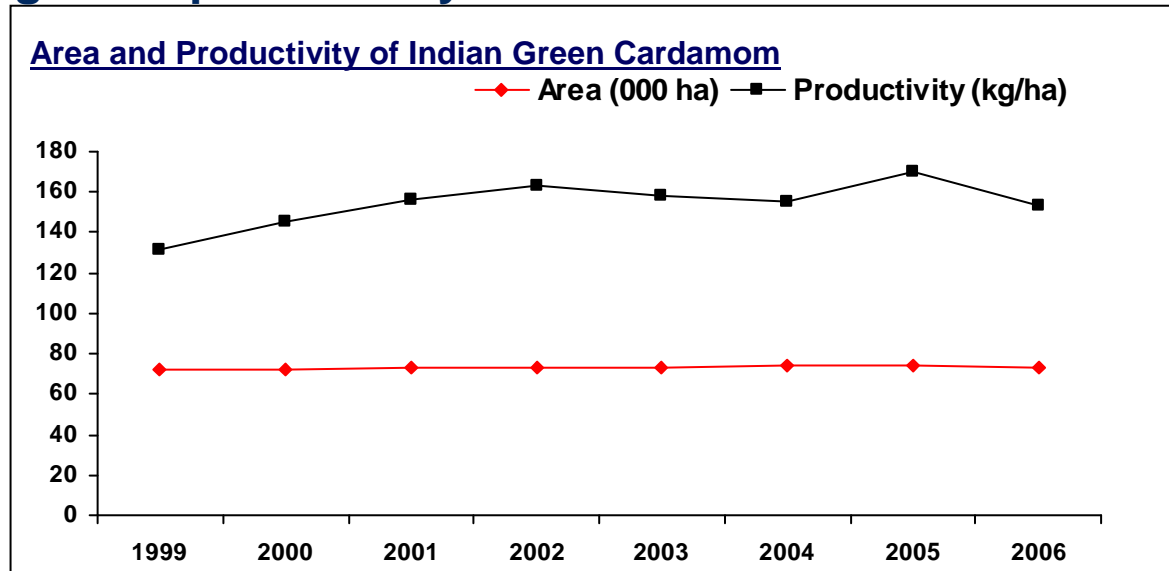
Source: Narayanan, 2004 & CAP-PI, 2008

While green cardamom is more costly than black cardamom, the production cost of India's green cardamom far exceeds that of Guatemala's



Source: Institute of Agricultural Sciences and Technology in Guatemala (2002)

Guatemala's green cardamom is far more competitive than India's by virtue of its greater productivity



Source: Indiaspice – MCX India, Ministry of Agriculture and Livestock of Guatemala (2006)

India

- India has the **largest** area under cardamom cultivation in the world but the **productivity** is **poor comparatively**.
- The yield in recent years has started to improve albeit slowly with an increase in the use of better planting materials by innovative cardamom growers and the installation of drip irrigation systems.

Guatemala

- Cardamom is cultivated at an altitude of 250 to 1500 meters. Annual rainfall is 1000 – 3500 mm and temperature 10 – 35°C. In higher altitudes and low temperature regimes it is cultivated in the open **without shade**

Chapter 3 – Competitiveness



- **Green and Black cardamom**

- Supply chain
- Price
- Production cost
- Processing

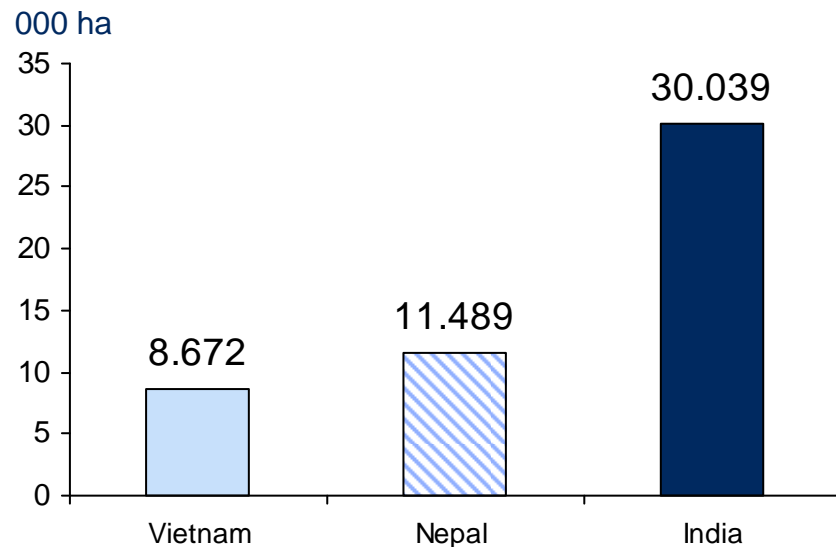
- **Performance of Vietnam in black cardamom sector**

- Yield
- Seasonality
- Comparative quality of cardamom
- Comparative costs of supply
- Comparative price

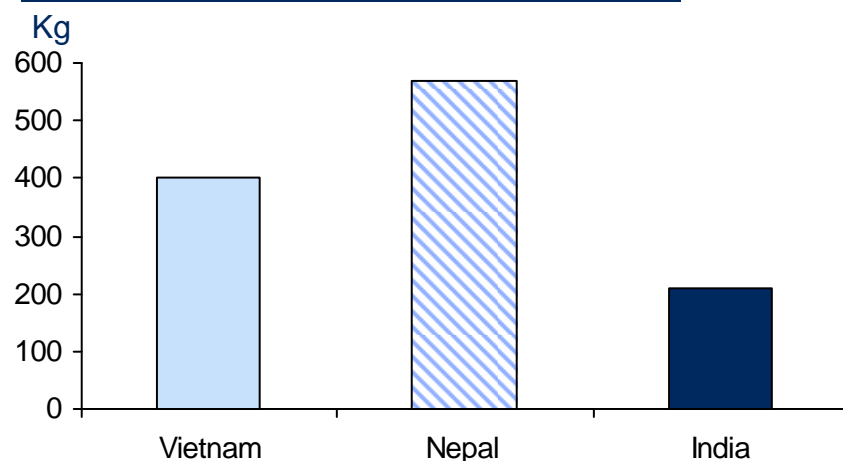
- **Conclusion**

Although Vietnam cultivates a smaller area of cardamom than its main competitors in India and Nepal, its average yield is much higher than India's

Cardamom Cultivation Area in 3 Countries in 2005



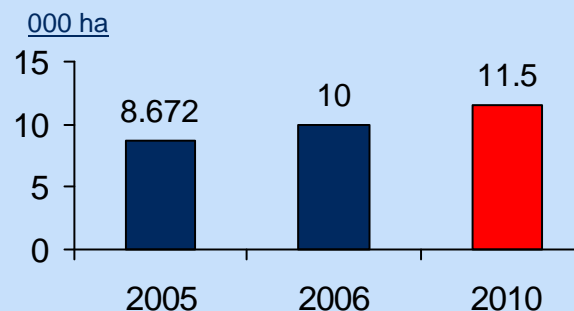
Cardamom Yield per Hectare in 3 Countries



Source: Indiaspice, Nepal CBS, SNV (2006), Team estimates (2008)

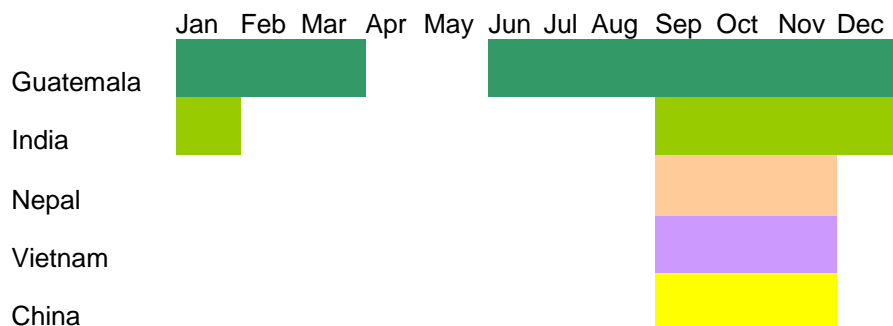
- There are several reasons cited for the low cardamom yield in India, including widespread incidence of viral diseases such as Chirkey and Furkey, and the appearance of a new fungal disease
- The area and productivity of cardamom have increased considerably in Nepal in recent year. Nepal still has scope to expand the area, however, although those new areas will be unable to get high productivity
- Cardamom in Vietnam is mainly planted in Lao Cai, Lai Chau, and Ha Giang in the North West with experiments now under way in Kontum. The area in Vietnam can be increased to 11,500 ha in 2010 though it takes 4 to 6 years to increase the production

Estimate cardamom area in Vietnam

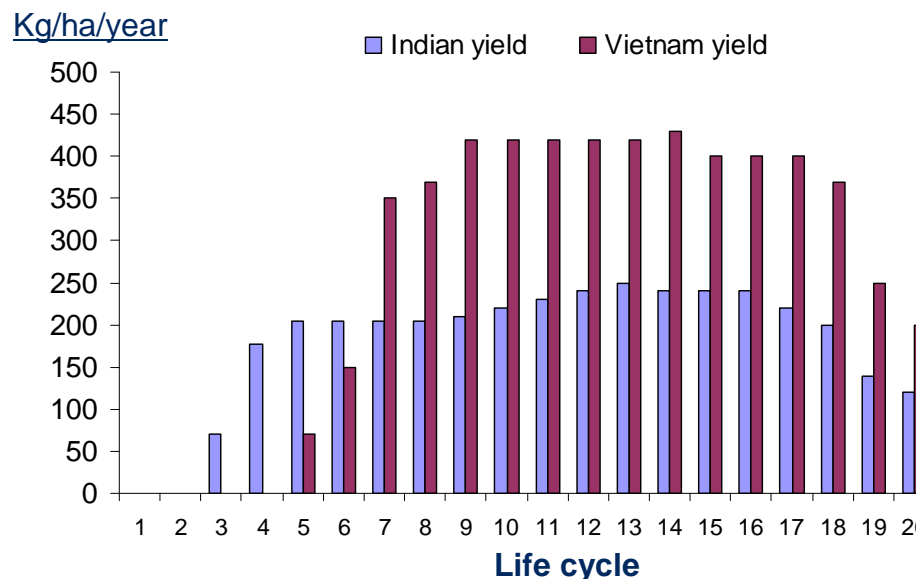


While Vietnam is strongly competitive with India in terms of productivity, its cardamom takes longer to come to maturity. Guatemala outperforms both in terms of the favourably long length of its growing season

Harvesting calendar



Yield comparison of black cardamom



- India and Nepal share similar climatic condition and harvesting calendars. Fluctuations in climate will substantially determine the output of cardamom
- The situation between China and Vietnam is the same in that dry weather and lack of rainfall will reduce cardamom production
- Guatemala with its favourable weather conditions is able to harvest cardamom all year-round and thus has advantages during the off-season compared with its competitors

Sources: Ministry of Agriculture & Livestock of Guatemala (2006), Indianspice (2008), SNV (2006), CAP Lai Chau fieldtrip (2008)

Vietnamese cardamom production often uses bad harvesting and inefficient processing practices ...

India	Vietnam
<ul style="list-style-type: none"> ✓ Harvested when fully ripened ✓ Semi-modern processing facilities • Has started to apply modern drying methods by using kerosene/diesel/LPG heating system and firewood for traditional curing • No other information about grading 	<ul style="list-style-type: none"> ✓ The majority of cardamom is harvested about 1 month before it is fully ripe as a result of farmers' fear of thieves and their need for money ✓ Simple processing technology • Drying by firewood system which is very low in thermal efficiency and results in high sulphur residues • No other processing procedures • Less concerned about hygiene • Sold as a bulk volume commodity



Sources: Narayanan 2004, CAP Field visit Lai Chau 2008

... which results in lower quality compared to Indian cardamom



Having tail, not uniform
in colour and size

Vietnam black cardamom

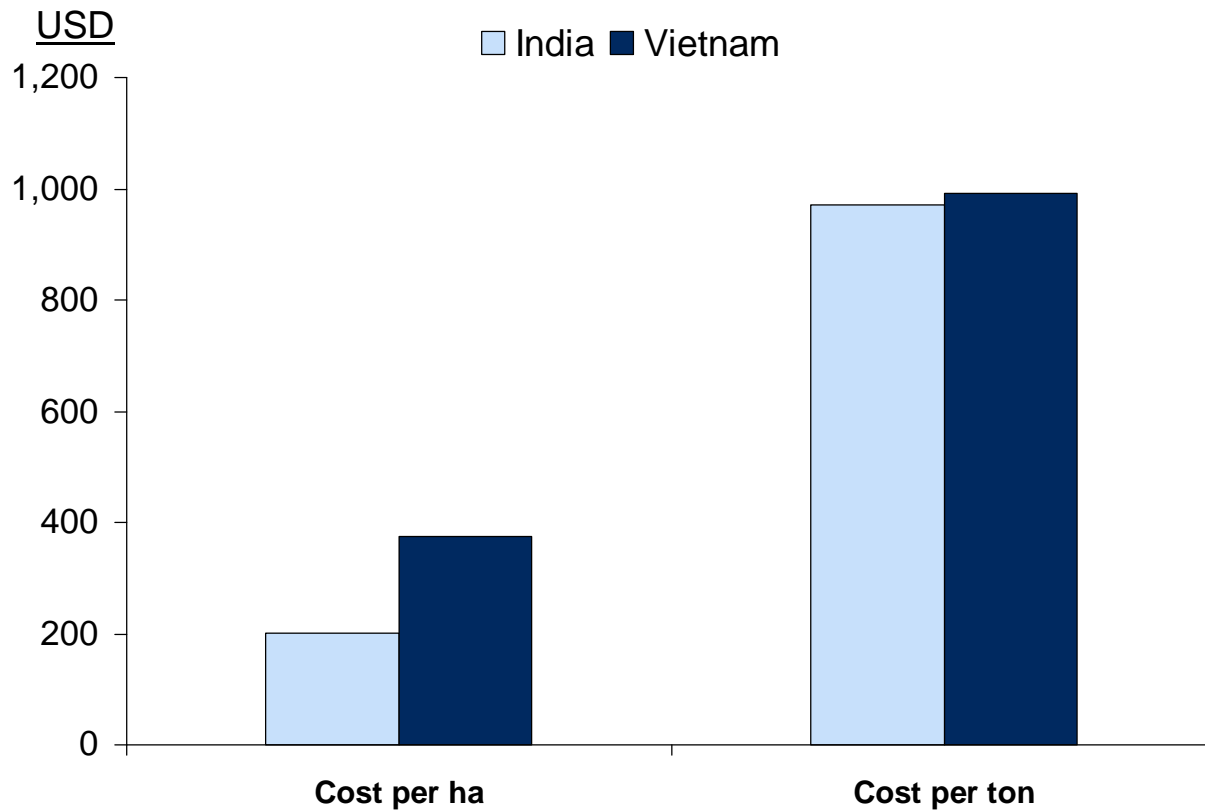


No tail, red brown colour

Indian black cardamom

Indian farmers have an advantage over Vietnamese farmers in terms of the cost per hectare, but this is offset by Vietnam's higher productivity so that the overall cost per ton of black cardamom is similar

Cardamom Production Cost per ha/ton of India and Vietnam* in 2004



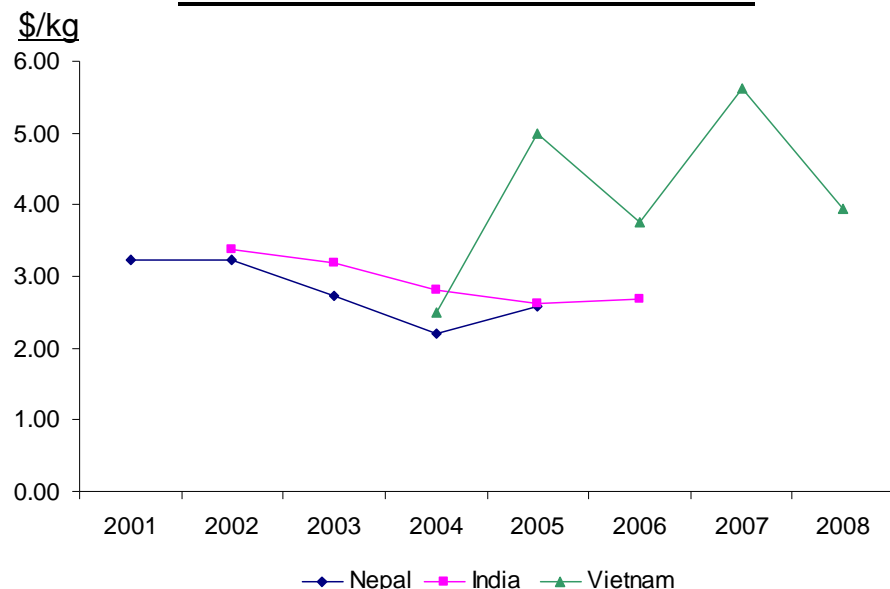
- Production cost per hectare of Vietnam is nearly **double** India's cost
- However, production cost per ton is similar because of the high yield of Vietnam's black cardamom
- The labour costs for guarding and transporting may be the main factors that make production cost per ha in Vietnam is higher than India
- Costs for Vietnam would be much lower if the need to guard against theft could be removed

*Note: The cost of Vietnam's black cardamom is estimated by using the 2008 cost deflated back to 2004 to enable more direct comparison with India. This is considered a reasonable proxy since Vietnam's farmers only use labour in production and not fertilizers

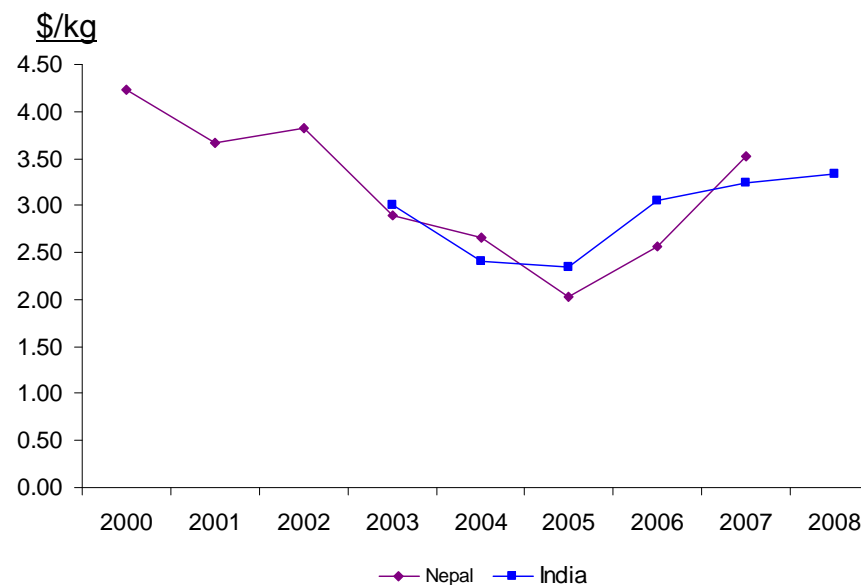
Sources: Narayanan 2004, Lai Chau fieldtrip (2008)

However, in the recent past the price of Vietnamese cardamom has been much less stable than the prices of its main competitors Nepal and India

FOB Prices for Black Cardamom



Domestic Prices for Black Cardamom



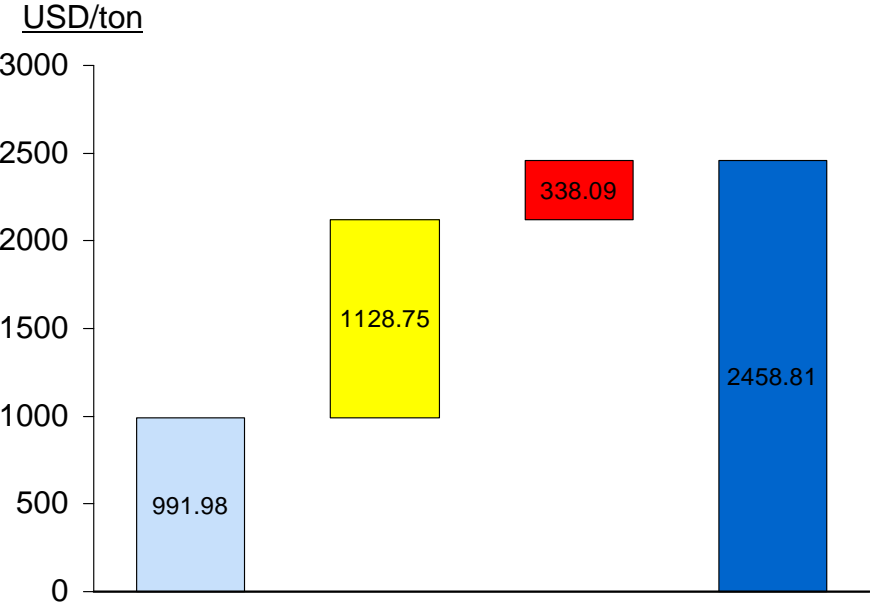
- While Vietnam's current FOB price for black cardamom appears to be higher than those for Nepal and India, it has been fluctuating wildly which may have contributed to a perception that it is less competitive
- Vietnamese cardamom is totally dependent on markets in the neighbouring provinces of China
- Price trends of Indian and Nepalese cardamom are similar since they are using a common exchange market based in India

Sources: Nepal Paper on Cardamom, Ministry of Agriculture & Livestock of Guatemala, Indianspices, SNV, Lai Chau fieldtrip

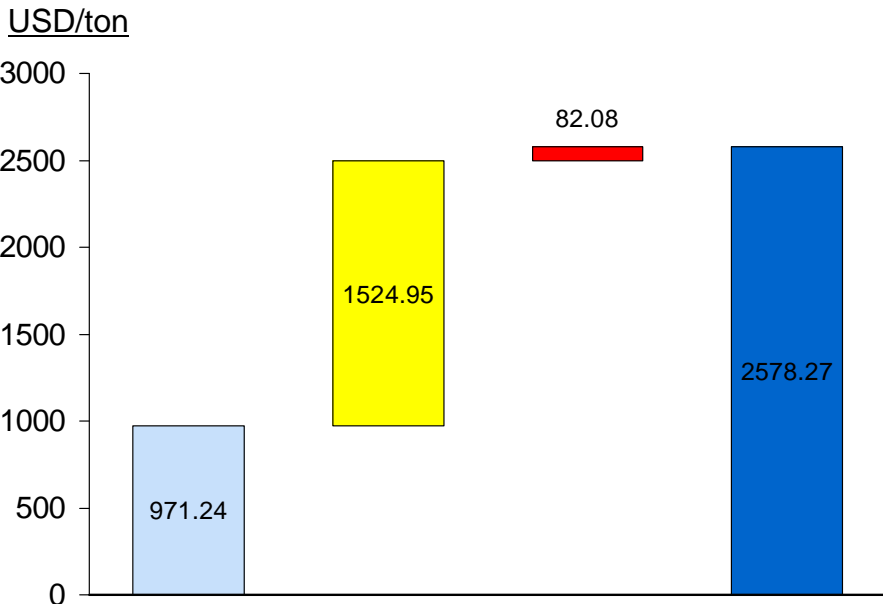
A less efficient supply chain with higher distribution costs is a major contributor to the lower competitiveness of Vietnamese cardamom

- Production cost
- Profit of farmers
- Intermediate cost*
- Export price

Compound of Vietnam’s Export Price in 2004



Compound of India’s Export Price in 2004



*Note: The high intermediate cost of Vietnam black cardamom results primarily from the difficulty in logistics and transport. In order to accumulate sufficient volume to export, exporters need to collect cardamoms from many widespread locations over a difficult road network and transport them to the border gates to China

Source: Field trip – Team analysis

Chapter 3 – Competitiveness



- **Green and Black cardamom**
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• Conclusion

Some conclusions about the competitiveness of Vietnamese cardamom (1)

- Green cardamom is more competitive globally than black cardamom owing to the more advanced processing procedures, the more systematic organisation of its supply chain, and the early application of more sophisticated trading and marketing techniques such as the electronic exchange and its more popular brand name. The more advanced processing for green cardamom contributes to its higher production costs, but it trades at a higher price than black cardamom. If the price of green cardamom were to become cheaper, it may well substitute for black cardamom. Guatemala is the most competitive producer of green cardamom with many advantages
- Key factors affecting the competitiveness of internationally tradable cardamom are the quality of the product, and the ability of a focused or multi-spice country producer to leverage both their long experience and their sophisticated technology to develop and process value-adding products. Vietnam with difficult domestic transportation, old fashioned processing, and the low education of farmers in the existing areas of cultivation, currently has no competitive advantage in global (as against regional) cardamom exports
- Vietnamese black cardamom is more competitive than its main regional competitors in India and Nepal with regard to yield and farm gate price leading to a lower export price compared to India. However, the quality of Vietnamese cardamom is lower than India's owing to a less advantageous harvesting time, and the more complicated supply chain in Vietnam lowers its cost efficiency.

Some conclusions about the competitiveness of Vietnamese cardamom (2)

- Vietnam has a potential advantage regionally, particularly in view of its long border with China which currently consumes only a small percentage of the total cardamom traded internationally but has a growing population and per capita income. The export market and price for Vietnam's black cardamom currently appear to be unstable and totally dependent on Chinese markets which are unpredictable and unreliable thus contributing to the risky nature of Vietnam's cardamom industry from the farmers' point of view. In view of its size and proximity, however, this market merits greater research
- Vietnam also has ports to access the potential markets in South Central Asia, but it may be only become price-competitive for these markets when it is able to reduce the intermediary cost in domestic trade and thus offset the addition of the long distance transport costs. Furthermore, some of these countries are very close together, and as in the case of Bhutan and India may not even need to pay trade-related taxes. Vietnam's dependence on foreign agents for trading has also weakened its marketing and customer contacts thus increasing its risks in addressing these markets
- Cardamom has successfully replaced narcotic-related cultivation in some areas of Vietnam, and it can compete well with some alternative crops in the challenging cultivation conditions of the mountainous north. It is competitive in terms of income earned by households; although income from cardamom is just slightly below the average income of households in Vietnam, it is significantly higher than average income of household in province.

Chapter 4 – Impact study of black cardamom



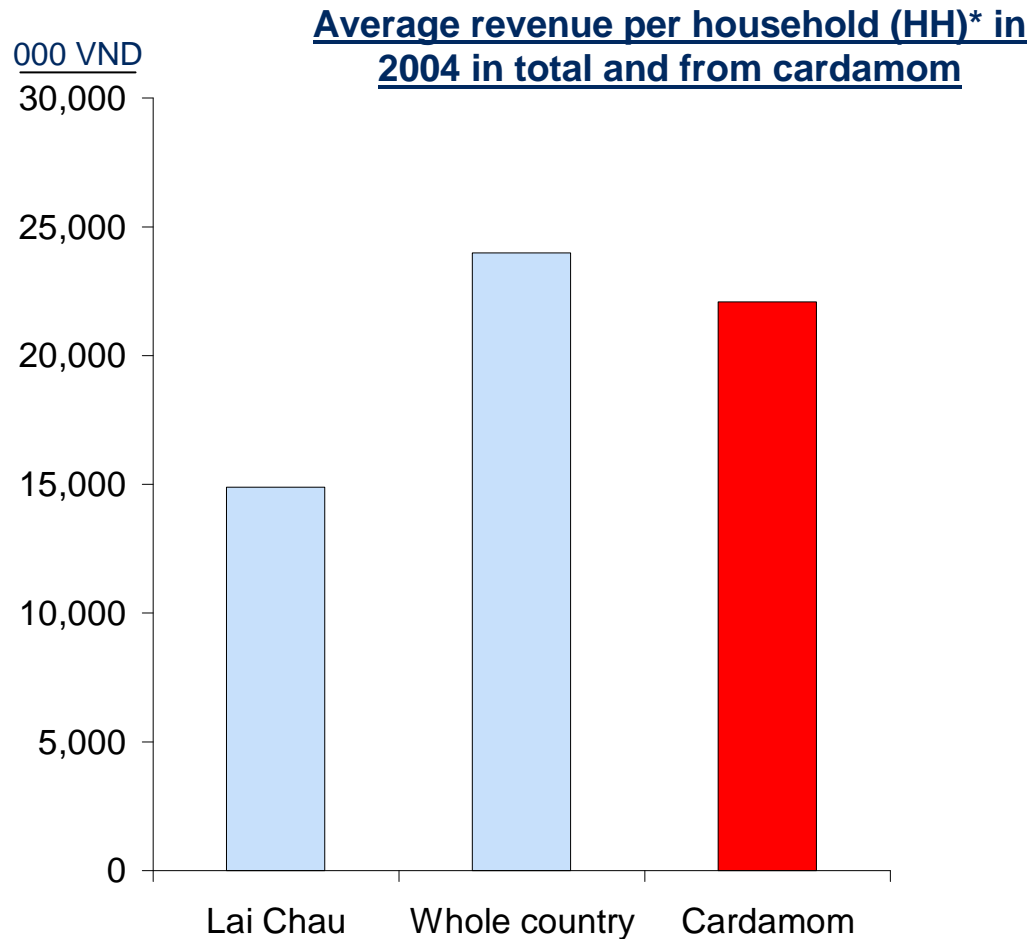
- **Economic impacts**
 - **Economic impact distributions**
 - **Benchmarking cost & benefits of cardamom to other crops**
 - **Cost & Benefits distribution through the supply chain**
- **Environmental impacts**
- **Social impacts**

Cardamom can bring a significant number of FTE jobs in Northern Upland areas of Vietnam: up to one year's work for one worker per hectare of cardamom grown

No. of labor days/ha (Average of one cycle)	Days
Slashing forest	0.8
Seedlings transplanting	1.5
Building drying oven/ temporal house in field	1.5
Weeding	39
Guarding	126
Harvesting	10.5
Drying	31.5
Transporting dry cardamom from field to HH	5.6
Selling labor for collectors	0.49
Selling labor for traders	0.21
Total of labour days/ha	217.1
Unit cost for labour day in Northern upland in 2008	50,000 đồng
Earning from being a worker for 1 ha of cardamom/year	~ 11 million đồng

Source: Field trip – Team estimates from fieldtrip, 2008

The net revenue from cardamom farming alone (~22.5 mn. đồng per 5-person household per year) can help lift households in Vietnam out of poverty



- For some ethnic people living in mountainous areas of Vietnam, cardamom is the only crop bringing **cash income** to the ethnic family
- Although they may also plant maize and rice, these crops are just enough for household consumption, and in any case land for maize and rice cultivation is limited in mountainous regions

Note: Figures above for Lai Chau and Whole Country are for all income; figure for cardamom is income from cardamom in district reviewed

Sources: Field trip, Lai Chau; VHLSS 2004 (*Average no. of people per HH in Lai Chau is 5.15, Average no. of people per HH in Vietnam is 4.13, Assume that HH has 1 ha. of cardamom under cultivation)

Growing cardamom can have an overall positive environmental impact if the negative impacts are dealt with

Positive impacts

- Cardamom fields help to maintain green cover on the forest floor that contributes to preventing soil erosion
- Cardamom is a crop that is ecologically adapted to farming on mountain slopes and under a forestry system which contributes to a “win-win” relationship

Negative impacts

- There can be adverse impact from farmers using firewood for drying: to dry 1 kg. of large cardamom requires 5 kg. of wood. This can be offset by building more efficient drying ovens or using alternative fuel
- Slashing forest without due care and attention may cut result in cutting down the forest under-storey and middle forest layers which would improve/enrich the forest canopy in following years. This can be offset by training farmers to reduce the loss of trees during land preparation

Sources: Field visit, 2008 & Nepal paper on cardamom, 2007

Cardamom cultivation can also be socially beneficial for poorer ethnic communities

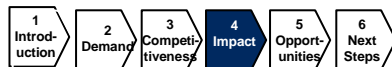
Positive impacts

- The cardamom sector is very important for poor ethnic communities and can have a direct impact on the economy of the small and excluded farmers in Northern areas of Vietnam. Thus its development contributes significantly to poverty alleviation in ethnic households in remote mountainous zones; cardamom can help improve social security and bring a better life for isolated people
- The replacement of opium trees by cardamom in northern areas during the 1980s and 1990s has contributed to social development; cardamom helps to reduce the opium/drug supply which has ruined or slowed down social improvements

Possible threat

- In Vietnam, forest land tenure for cardamom growing is not currently a problem since the forest is a community base: whoever comes first will be the first holder; however, in the future once the advantages of cardamom in terms of improving income have been demonstrated, people will ask for land holding rights or there may be land disputes regarding using forest land to grow cardamom. Advance action may be necessary to deal with this, particularly since it involves ethnic people along the border lands

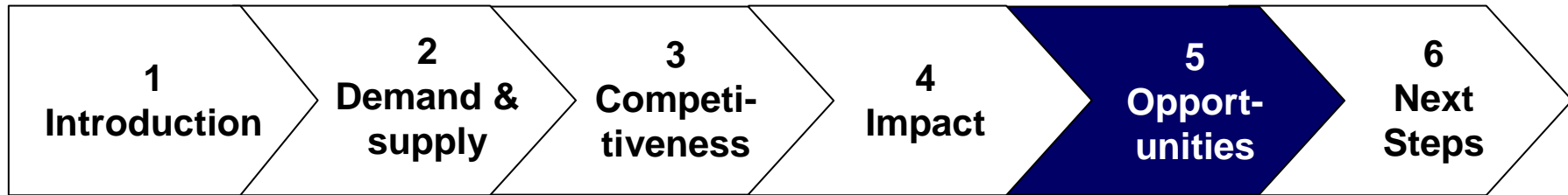
Sources: Field visit, 2008 & Nepal paper on cardamom, 2007



Some conclusions on the pro-poor and other social impact of black cardamom in Northern upland area of Vietnam

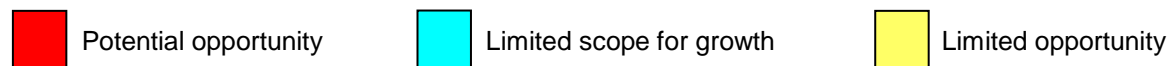
- ❖ For some ethnic people in upland areas of Vietnam, cardamom is the only cash crop and brings substantial income. It can be seen as a pro-poor crop since cardamom growers can earn cash and have low input costs with a relatively low risk of economic loss (e.g. since labour is only required for caring, harvesting and processing)
- ❖ While current production techniques in Vietnam have some environmental impacts (such as using wood for curing), a move towards large-scale, intensive cultivation could well have negative environmental impacts if farmers were to continue using old methods of drying and did not take sufficient care about chopping down the middle level of forest
- ❖ The only identified social impact which cardamom may bring relates to land tenure since growers do not have property rights; whoever comes first may “own” the land without an official certificate of land ownership.

5. Opportunities



- Opportunities for green cardamom
- Opportunities for black cardamom
- Opportunities for processed cardamom

While there may be some potential for increasing sales in the local market, there is likely to be a larger commercial opportunity for cardamom internationally

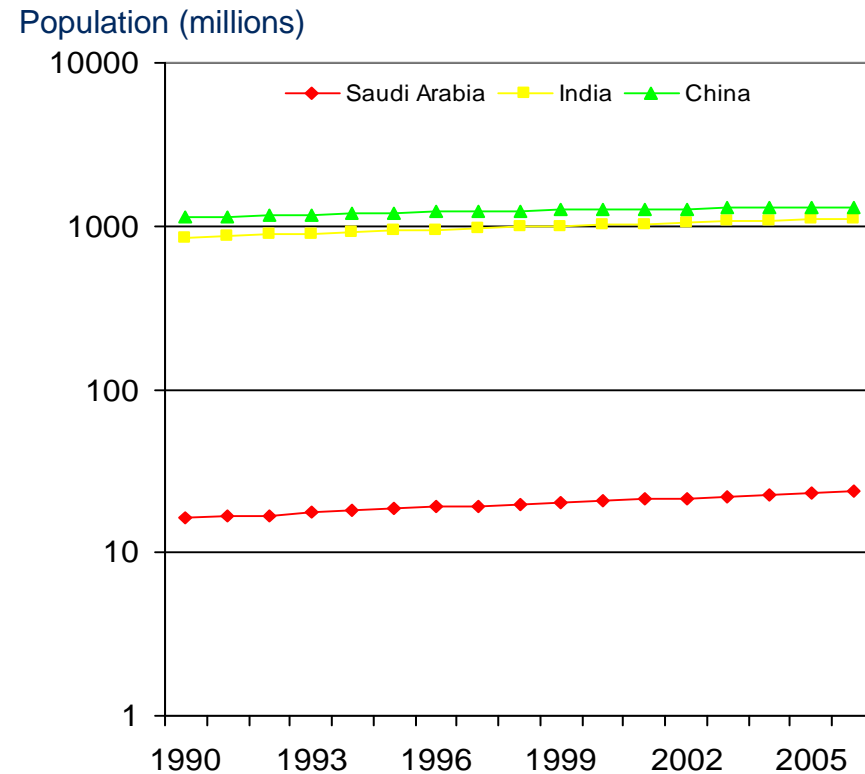
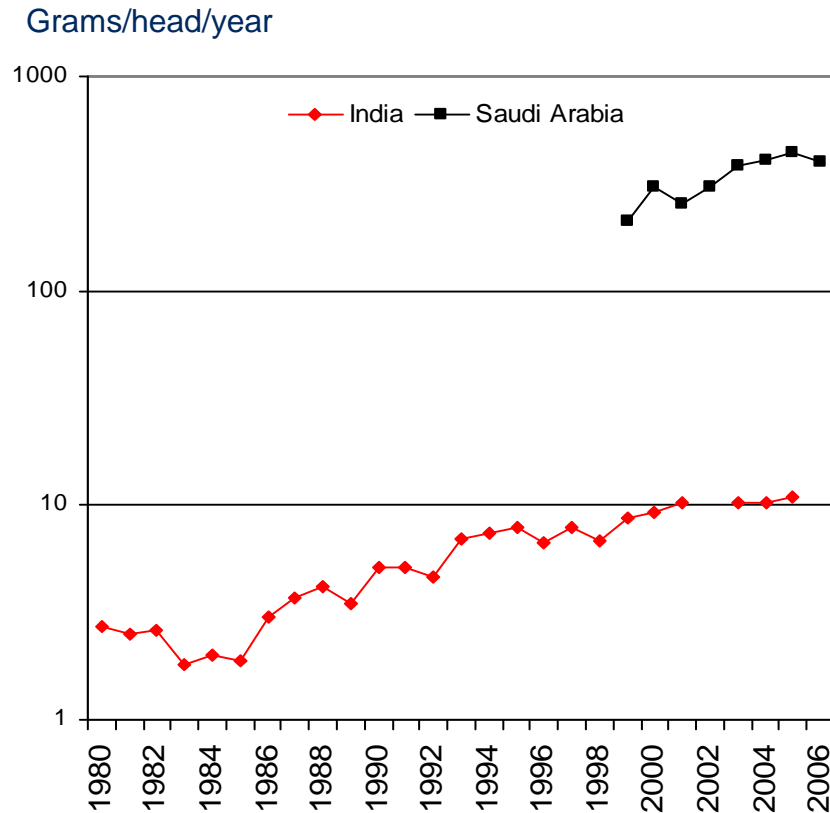


	Green Cardamom	Black Cardamom	Processed (oil/oleoresin)
Regional/Global	Potential opportunity <ul style="list-style-type: none"> • Moderate regional market • Clear growth prospects • ... but: <ul style="list-style-type: none"> - Guatemala is a very strong competitive supplier of green cardamom and enlarging green cardamom cultivation at significant rate) - No scientific proof of how ecologically adaptable green cardamom may be in Vietnam 	Potential opportunity <ul style="list-style-type: none"> • Moderate regional market • ... but: <ul style="list-style-type: none"> - Unclear growth prospects - High competition from green cardamom (and green cardamom may be getting cheaper from main suppliers) - Currently very dependent on cross-border demand from China 	Small potential opportunity? <p>Data unclear but probably:</p> <ul style="list-style-type: none"> • Limited market size • Unclear growth prospects
Local	Limited opportunity <ul style="list-style-type: none"> • Currently insufficient data 	Limited scope for growth in short to medium terms <ul style="list-style-type: none"> • Market requires significant development 	Limited opportunity <ul style="list-style-type: none"> • Currently insufficient data • Investment required in processing

Source: Team analysis, 2008



Green global: In view of the growing per capita consumption of green cardamom in India and Saudi Arabia, and the significant annual increase in the Indian population, regional market opportunities may emerge for green cardamom



The continuing increases in the populations of India and China are an important factor which may lead to a greater demand for black cardamom and opportunities for an expanded regional market in both green and black cardamom. However, more in-depth research will be required to validate the potential for Vietnam to sell black cardamom into these markets.

Source: WB (2006), Narayanan (2004), Team analysis (2008)



Black global: A rapid SWOT analysis of the competitive position of Vietnam's black cardamom indicates a mixed starting point for leveraging potential regional opportunities

Strengths

- Low cost investment, mainly labour at production level
- Generates considerable number of FTE jobs with low know-how requirements
- Sizable areas suitable for growing black cardamom
- No competition with other crops in such habitat
- Geographical proximity to moderate and expanding markets in China and India

Opportunities

- Green cardamom
- Leveraging traditional links to regional markets
- Introduction of technology (e.g. tissue culture, ripening) and other productivity improvements
- New varieties, different uses and product innovation
- Improvements in local supply chains
- Creation of jobs & income for poor/ethnic/isolated people

Weaknesses

- Simple technologies for planting, harvesting, transporting, processing, storage, and packing
- Grown in very isolated regions with poor infrastructure so difficult to transport to markets other than China
- Harvesting when cherry is not fully ripe
- Lack of branding and trademarks
- Lack of investments and organised support
- No specific product standards for except visual recognition
- Limited and unorganised marketing, missing opportunities such as Pakistan, Afghanistan, etc.
- Producers are ethnic, isolated people with low education so less easy access to market and technical information

Threats

- High competition from cardamom produced in India, Guatemala, China, etc.
- Low cost of black cardamom from India and Nepal
- Recently climate change (too cold, drought) causing loss of harvests
- Loose quality requirements for Chinese market undermines incentives for improving quality
- Demand requirements on environmental, hygiene and traceability issues
- Land tenure is common property, may have land dispute among growers
- Preference for green cardamom over black type

Source: Team analysis (2008)



Local market: The local market for cardamom is currently small and mainly confined to northern areas so considerable effort is likely to be required in the medium term to develop a significant national demand

Some Issues Affecting Local Market Potential

- Current market size appears to be very small
- Opportunities likely to lie in making ingredients for cooking Pho – which at the moment consumes a very small amount of cardamom in Vietnam
- Other uses of cardamom in Vietnam include stewing meat and curing stomach aches by ethnic people living in northern mountainous areas
- Transport to bring cardamom from the areas of cultivation to the villages (i.e. closer to collecting points) takes a long time, ranging from a few hours to a full day, and can currently be done only by walking in the forest; this limits the potential for growing the sector industrially

Source: Fieldtrip to Lai Chau, Team analysis 2008

Chapter 6 – Next steps



- **Potential next steps**
- **Conclusions and recommendations for CAP-PI in the cardamom sector**
- **Lessons learned during this review**

There are four main options covering potential next steps for the sectors being reviewed by CAP with PI

Potential Next Step

Associated Action

Decision Criteria

Further review/ Feasibility

- If the product/sector appears to offer strong potential for CAP and PI, a more in-depth feasibility study should be undertaken

- Clear pro-poor potential, e.g. a “significant” portion of the value accrues to poorer people
- Scale opportunity, e.g. at least 20,000 people likely to benefit from developing the product/sector
- Clear link to skills/networks of PI

Discussion with other NGOs

- If the product/sector does not meet CAP-PI’s criteria for further action but might be of interest to another NGO, then the report can be sent to, and discussions initiated with, other NGO(s)

- Limited scale opportunity, but sufficient evidence of pro-poor impact (e.g. some value for poorer people) to be of interest to an NGO
- Knowledge of NGO(s) who might be interested in the product/sector to support or extend existing activities in relevant sector or location

Discussion with private sector

- If the product/sector does not meet CAP-PI’s criteria for further action but might be of commercial relevance, then the report can be sent to, and discussions initiated with, commercial companies with minimal further involvement from PI

- Some evidence of commercial opportunity but requires investment or commercial expertise not available to PI or NGO sector
- May or may not have significant pro-poor impact
- No clear link to skills/networks of PI

No further action

- If the product/sector is unlikely to be of interest to either CAP-PI, other NGOs or the private sector then no further action should be taken apart from possibly posting the report on PI’s website

- Not promising: very limited pro-poor impact, scale opportunity or commercial potential

In the case of cardamom, three potential next steps have been considered ...

Further review/ Feasibility

- Data from the research and field surveys indicate that:
 - While domestic demand is currently small, there may be moderate growth potential for both green and black cardamom in regional markets
 - While Vietnam can grow the black type while there is not yet scientific approval of green cardamom farming in Vietnam
 - Although the processed market is small but growing, in the absence of sufficient volume of this and other spices to increase economic efficiency and reduce risk, Vietnam cannot compete to enter this part of the industry
 - When compared with other crops, cardamom may only offer potential for long-term poverty impact in remote upland areas affecting a fairly limited number of people, albeit particularly ethnic and excluded people
- It is therefore considered that at this stage the small size and nature of the potential in the immediate future do not at this stage justify further review by CAP and PI

Discussion with other NGOs

- SNV has made a strong and continuing commitment to the development of cardamom in the North West of Vietnam, and has similar pro-poor economic objectives to CAP and PI
- SNV's project includes commitment from relevant local governments, who take seriously the opportunities associated with cardamom
- While discussions may continue with SNV, it remains to be seen whether CAP and PI can materially add to the successful work already being done by SNV

No further action

- The above considerations suggest that, although discussions may continue with SNV, no further action to promote cardamom should be taken at this stage by CAP and PI

Appendix 1: The major trading centres in India for cardamom

- Vandanmedu (Kerala)
- Bodinayakanur (Tamil Nadu)
- Kumily (Kerala)
- Thekkady (Kerala)
- Cumbum (Andhra Pradesh)
- Pattiveeranpatti (Tamil Nadu)
- Cochin (Kerala)
- Thodupuzha (Kerala)
- Saklashpur (Karnataka)
- Mercara (Karnataka)
- Medikeri (Karnataka)
- Mangalore (Karnataka)
- Mumbai (Maharashtra)
- Virudhunagar (Tamil Nadu)
- Thevaram (Tamil Nadu)
- Also, cardamom is traded in Indian commodity exchanges namely, **National Multi Commodity Exchange of India** and **Multi Commodity Exchange of India Ltd.**

Source: Indianspice, 2008

Appendix 2: References

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