CHAPTER 1

INTRODUCTION

1.1 INTRODUCTION

1.2 NATURAL HABITAT SUITABLE FOR THE CARDAMOM CULTIVATION

1.3 VARIETIES OF CARDAMOM

1.4 GRADES AND STANDARDS OF CARDAMOM

1.5 RESEARCH PROBLEM

1.6 SCOPE AND SIGNIFICANCE OF THE STUDY

1.7 OBJECTIVES OF THE STUDY

1.8 HYPOTHESES OF THE STUDY

1.9 PERIOD OF THE STUDY

1.10 RESEARCH GAP

1.11 METHODOLOGY

1.12 PROCESSING AND ANALYSIS OF DATA

1.13 LIMITATIONS OF THE STUDY

1.14 ORGANISATION OF THE RESEARCH REPORT
INTRODUCTION

1.1 Introduction

Spices, being low-volume and high value commercial crops, are playing an important role in the agricultural economy of India. The country with its varied agro-climatic regions produces about 63 spices, of which the economically important ones are chilies, black pepper, ginger, turmeric, cardamom, tree spices like clove, nutmeg, tamarind, cinnamon, cassia, etc. Cardamom, which is termed as the “queen of spices” for some time, lost its sheen in the international market. Now, it is inching to regain its lost position in international trade. This is evident from the upswing in spices exports in 2011-12. The value of spices exports crossed the $2 billion mark during the financial year 2011-2012. In India, spices exports for the year 2011-2012 showed an increase of nine per cent in volume and forty-three per cent in value (rupee terms) than the previous year. Cardamom export registered a phenomenal growth of 296 per cent in volume and 175 per cent in value. This unprecedented record rise in export of cardamom and sharp rise in the value of chili exports have contributed to the all time achievement in the exports of Spices from India.

There are two varieties of cardamom – small (green) and large (brown). The present study covers only the small cardamom, since it is the only variety produced in Kerala. It is the high quality and high valued variety and earn more foreign exchange vis-a-vis the large cardamom. The world production of cardamom is estimated to be around 55,000 MT (2014). Of the total, Guatemala accounts for nearly 30,000 MT following by India with about 15,000-18,000 MT annually. Until 1980’s India was the leader in the production and export of cardamom. However, today Guatemala leads
with two-thirds of the total global production and export of cardamom. India exports only nine to ten percent of cardamom production and the rest is domestically consumed. Among the Indian states, Kerala has a dominant role as a hub for cardamom production. Kerala accounts for 59 per cent of the cultivated area and 78 per cent of the total production of cardamom in India. Idukki district in Kerala accounts for 79 per cent of the cardamom area (32850 ha) and 90 per cent of the total production (9080 MT). The major consuming countries are Saudi Arabia, India, Pakistan, United Arab Emirates, Norway, Sweden, Denmark, Finland, Germany, Russia, England, U.S.A, and Japan. It is a low volume, high value commodity in domestic as well as in international trade and is one of the highly priced and expensive spices, and some call it “green gold”

1.2 Natural Habitat Suitable for the Cardamom Cultivation

“Elettaria cardamom maton” is the scientific name of cardamom and it is an important commercial crop of India. The name cardamom is used for the herbs within the genera of the ginger family, “Elettaria” (small cardamom) and “Amomum” (large cardamom). The aroma of cardamom had a decisive role in the search for a short ‘spices route’ to India. Small cardamom is grown mainly in hilly regions of South India. Other major cardamom producing countries are Guatemala, Tanzania, Sri Lanka, and Papua New Guinea. Large cardamom, known as Nepal cardamom, is cultivated in the sub-Himalayan state of Sikkim and West Bengal, northeastern India. Of the two, the production of small cardamom is higher at a ratio of 3:2 as of 2010 (USAID ACCESO project –November 8, 2013). Till 1990’s India was the main producer and exporter of the commodity. However, of now Guatemala has emerged as a keen competitor to cardamom in the international spices market.
The natural habitat of small cardamom is the evergreen forests of Western Ghats on the Malabar Coast of south-west India. This area is commonly known as the “cardamom hills.” Cardamom grows only in those areas where the rainfall is between 60" to 230" with a temperature of 50° to 95°F. It thrives in those lands where the direct sunlight available to the plant is only about 50 per cent. These requirements have restricted the growth of cardamom to the evergreen forest situated in the high mountain ranges of southern India.

1.3 Cardamom as a Plantation Crop

The Government of India on November 2015 allowed 100 per cent foreign direct investment (FDI) in five plantation crops - coffee, rubber, cardamom, palm oil tree and olive oil tree - via the automatic route. It also simplified certain conditions in the FDI norms for agriculture and allied sectors. At present, 100 per cent FDI is allowed only in tea plantations through the government approval route. D K Joshi, chief economist of CRISIL, opined that, "Opening up FDI in plantation sector might also bring in new technologies and not just more funds”.

The term Plantation crops refers to those crops which are cultivated on an extensive scale in a large contiguous area, owned and managed by an Individual or a company. The crops include tea, coffee, rubber, cocoa, coconut, arecanut, oil palm, cardamom, cashew, cinchona etc. These plantation crops are high value commercial crops of greater economic importance and play a vital role in our Indian economy. Fragmentation of area under cultivation is severe in the case of plantation (except Tea) which hinders the adoption of intensive cultivation.
The importance of cardamom as a plantation crop

The following are some of the points to be noted in this regard.

1. They contribute to national economy by way of export earnings.
2. India is the second largest producer of cardamom in the world and also a major consumer of cardamom.
3. They provide direct as well as indirect employment to thousands of people and play a vital role in the livelihood of many small and marginal farmers.
4. These crops help to conserve the soil and ecosystem.

Cardamom cultivation

Cardamom grows abundantly in altitudes ranging from 900 to 1370 m above sea level, with a warm humid atmosphere, evenly distributed rainfall, and humus-rich loamy soil. It thrives best under moderate shade. Two methods are generally used for cardamom propagation. They are vegetative propagation and second one is by using seeds. Vegetative propagation is by means of clones, a portion of the rhizome with one or two new tillers. Seeds from well-ripened fruits are sown in raised beds and when the seedlings attain a height of 25-30 cm they are transplanted into field or secondary nursery beds. Planting is normally done in June-July with the receipt of south-west monsoon rains.

The peak production of cardamom is occurred in the third year of planting. Harvesting is done at an interval of 30-40 days. Harvested fruits are dried by exposing them to sunlight or by heating or by flue curing. The next step is to clean, sort and grade the dried capsules based on bulk density, colour and size.
The chemical composition of cardamom varies considerably with variety, region, and age of the product. The principal quality of determinant is the content and composition of the volatile oil. Cardamom contains between 2 per cent and 10 per cent essential oil, out of which the major portion is in seeds. The volatile oil contains about 25 to 40 per cent cineole, 30 to 40 per cent aterpinyl acetate and about 1 to 2 per cent limonene.

The cardamom seeds have a warm, slightly pungent, and highly aromatic flavour. They are popular seasoning in oriental dishes, particularly curries and in Scandinavian pastries. In Middle East countries, it is used mostly in the preparation of 'Gahwa', a strong cardamom-coffee concoction.

The cardamom oil is an important ingredient in food preparations, Ayurvedic medicines, and beverages. It can be used to combat digestive ailments and support smooth digestion.

1.3 Varieties of Cardamom

Cardamom is a perennial, herbaceous, rhizomatous plant. Based on the nature of panicles, three varieties are recognized. They are:

(a) **Malabar with prostrate panicle:** Plants are of medium size (2 to 3 meter height) with pubescent leaves (on the dorsal side) and fruits globose.

(b) **Mysore with erect panicle:** Plant robust (3 to 4 meter height) with leaves glabrous on both sides with ovoid capsules.
(c) **Vazhukka with semi erect panicle:** It is a mix of both the above in physical characteristics.

Recently, a few planters isolated high-yielding plants and started multiplying them on a large scale. The most popular high-yielding variety is 'Njallani'. It is a unique high-yielding cardamom variety developed by a Kerala farmer, Mr. Sebastian Joseph, at Kattappana in the South Indian state of Kerala. K. J. Baby of Idukki district, Kerala, has developed a purely white flowered variety of type green cardamom, Vazhukka, having higher yield than Njallani. The variety has high adaptability to different shade conditions and can be grown in waterlogged areas.

### 1.4 Grades and Standards of Cardamom

Cardamom is graded based on colour, clipping (i.e. pods with the tips trimmed), size, whether bleached or unbleached, the proportion of extraneous matter present, and product origin. Grading is carried out in accordance with a relevant national standard.

**Common Grades**

In general, the weight in grams per liter and the colour are decisive in determining quality. The proportion of burst fruit pods also determines quality, as do colour (green or yellow) and drying method (mechanical or sun).

The following definitions refer to common Indian Grades:

a) **Bold** is a popular export grade where 90 percent of the cardamom pods have a diameter of 6.5mm or above. The product has a mature green coloration with a weight in grams per liter of 415 grams.
b) **Super Bold** is a high quality variety where all pods should have a diameter of 8mm or above. The product has a mature green coloration with a weight per liter of over 450 grams.

c) **Extra Bold** is also a popular export grade where all pods will have a diameter of 7 mm or above. The product has a mature green coloration with a weight in grams per liter of 435 grams.

d) **Bulk** is cardamom that has not been graded. As such, it contains all sizes, both mature and immature capsules, as well as black, yellow, and/or split cardamom.

e) **Small** is a grade with pods that measure between 5.5 mm and 6.5 mm in diameter. The weight in grams per liter is approximately 385 grams.

f) **Open/Splits** is lower quality cardamom where over 60 percent of the pods are “open” (i.e. seeds exposed) and the color of the pods may be greenish/pale yellow. All pods will be mature with a diameter of 6.5 mm or above.

g) **Seeds** are the black/brown seeds of the cardamom pods (i.e. husk fully removed). The weight in grams per liter is typically 550 to 600 grams.

h) **Fruit** are generally over matured pods with slight yellowish in color. The weight in grams per liter is 425 grams or above.

1.5 **Research Problem**

India had the world monopoly in cardamom trade once: but the trade declined from 1980’s onwards. Cardamom economy face serious challenges both in production and price trends also. The main actors in the supply chain of the cardamom are the farmers, traders, and exporters. They argue that the plight of the crop is mainly due to new economic reforms of Government of India. Once the leading producer and
exporter of cardamom, India has now become one of the major consumers and lost her glory in cardamom trade.

The researcher put forward the following issues as the base for her study. They are (a) the impact of new economic reforms on cardamom industry (b) the palpable factors playing in the field to make the cardamom economy at a vulnerable position (c) a comparative study between India and Guatemala to examine whether the latter a real threat to India (d) to identify the future prospects of the cardamom economy. In order to study the cardamom economy, the researcher, analyzes the important variables of cardamom economy, compare their performance both in pre, post reform period, and compile the results of the study by using both primary and secondary data. Based on area and production, Kerala holds the highest position among Indian States in the production of cardamom. Therefore, the researcher has chosen Kerala as the field of her study. The role played by Kerala in cardamom trade could be vivid from area it possess and its contribution to the total production. The following tables and figures reveal the prominence of Kerala in small cardamom industry in the country in area wise and production wise than the other two producers viz. Karnataka and Tamil Nadu.

(a) Total area of small cardamom in India and Kerala: The dominance of Kerala in the case of area holding is vivid from the following table and the figure.
Table 1.1

*Total area of cardamom (s) in India and Kerala from 1998-2012*

<table>
<thead>
<tr>
<th>Year</th>
<th>Area in Kerala (hectares)</th>
<th>Total Area (hectares)</th>
</tr>
</thead>
<tbody>
<tr>
<td>1998-99</td>
<td>41449</td>
<td>72135</td>
</tr>
<tr>
<td>1999-2000</td>
<td>41449</td>
<td>72429</td>
</tr>
<tr>
<td>2000-01</td>
<td>41288</td>
<td>72320</td>
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<td>2001-02</td>
<td>41336</td>
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<tr>
<td>2002-03</td>
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<td>73125</td>
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<td>2003-04</td>
<td>41332</td>
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<td>71012</td>
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<tr>
<td>2011-12</td>
<td>41425</td>
<td>71110</td>
</tr>
</tbody>
</table>

Source: ENVIS Centre, Kerala (20/08/2015), (State of Environment and Related Issues)

*Fig 1. Total area of cardamom (s) in India and Kerala from 1998-2012*
From the above table and diagram, it is clear that almost fifty-six percent of area of cardamom(s) is cultivated in Kerala. The rest of the area is shared between Karnataka and Tamil Nadu.

(b) Total production of small cardamom in India and Kerala: The dominance of Kerala in the case of production is clear from the following table and the figure.

Table 1.2

<table>
<thead>
<tr>
<th>Year</th>
<th>Kerala Production (Tonnes)</th>
<th>Total Production (tonnes)</th>
</tr>
</thead>
<tbody>
<tr>
<td>1998-1999</td>
<td>4990</td>
<td>7170</td>
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<tr>
<td>1999-2000</td>
<td>6585</td>
<td>9330</td>
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<td>2011-12</td>
<td>9240</td>
<td>11810</td>
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</tbody>
</table>

Source: ENVIS Centre, Kerala (20/08/2015)
State of Environment and Related Issues
From the above table and diagram, it is clear that almost seventy-six percent of production of cardamom is produced in Kerala. Karnataka and Tamil Nadu supply the rest. The data revealed why the researcher took Kerala as the case of her study.

1.6 Scope and Significance of the Study

Spices are the currency of developing countries. They are always in demand in advanced countries; the export of the same will earn valuable foreign exchange to the developing countries like India. India occupies a prominent position in the world of spices trade. It is the largest producer, consumer, as well as exporter of spices. It was true in the case of cardamom too till 1980’s. But, after that, Guatemala, a Latin American country, takes the place. Growers and traders alleged the liberal trade policy adopted by the Government of India resulted in the reduction in exportable surplus and price volatility. The declining percentage of exports can be attributed on the one hand to increasing domestic demand and on the other hand to supply
conditions in the cardamom economy. Increase in domestic consumption can be attributed to increase in income under *ceteribus paribus*, and the important factors affecting supply conditions are based on the price of the previous period in international market, demand pattern, climatic condition, up-gradation of technology, imports from the rest of the world, quality regulation imposed through W.T.O, attack of pests, availability of various inputs, increasing cost particularly labour cost. Price volatility of cardamom can be attributed to crop prospects in India and Guatemala, domestic as well as global demand for good quality cardamom, carry-over stocks with consuming countries, seasonal elements like Diwali and Dusserah festival season in Northern India, Ramdan period in Gulf countries.

As far as cardamom is concerned, before 1987-88, more than 55 percentage were exported, but after that it is significant to note that only 9 to 10 per cent of total production is exported and the rest is consumed domestically up to 2009-10. But since then around 21 percentage is the proportion of export. For example, during the financial year 2011-2012, cardamom export registered phenomenal growth of 296 per cent in volume and 175 per cent in value than the previous year. It should be read in tune with the fact that the main competitor, Guatemala’s production, and export also showed the same tendency. A major development that could be traced from the cardamom sector in India is the increased consumption of the commodity domestically and at the same time an increased international demand for high quality cardamom from both Gulf countries as well as European Union, Japan, U.S etc.

It is a fact that liberal trade policy permit the competing countries to enter in to the domestic country. As a signing member of W.T.O, India cannot stand aloof from the situation. Reaping the advantage of the high quality cardamom in the world and
also to utilize the “sui generis” and G.Is provision of AoA of W.T.O, India can withstand the competition from its rival part. In additions, quality improvement, value additions, and compliance with stipulations under W.T.O. agreement are of the prime concerns of the farming community and the initiatives from the part of the Government. in this respect is vital for Indian cardamom to become buoyant in international spice trade.

1.7 Objectives of the Study

Main Objective of the Study

An analysis of the trend of cardamom (Small) production and price both in the pre and post reform period.

Sub Objectives

1. To make a comparative study of the area, production, yield, price and trade of cardamom in the pre and post reform period in Kerala

2. To evaluate the opinion of farmers, traders, and exporters about the land area, production, yield and prices of cardamom in the pre and post reform period

3. To find out the major problems faced by the farmers, traders and exporters of cardamom.

4. To evaluate the level of satisfaction of the farmers, traders and exporters in terms of production, productivity, prices and the role played by the spices board of India.

5. To assess the role played by the Spices Board of India in the cardamom economy.
6. To analyze the future prospects of the cardamom economy in Kerala.

1.8 Hypotheses of the Study

1. The opinion of the farmers/traders/exporters in terms of i) land area, ii) production, iii) productivity, iv) price, v) spices boards assistance and vi) government policies and support differ significantly in the pre and post reform period.

2. The opinion of the farmers or traders or exporters in terms of cardamom production, marketing and price conditions differ between them according to their i) age, ii) size or experience and iii) level of education.

3. Farmers, traders and exporters differs significantly scale wise and education wise as regards the problems faced by them.

4. The role played by the spices board of India in terms of productivity enhancement, sustainable development, cost reduction, extension through capacity building and subsidies, crop improvement and plant protection and post harvest operations and marketing is not equal to average.

5. The overall level of satisfaction of the farmers or traders or exporters with regard to the production, productivity, prices, government policies and support, licensing policy etc., is not equal to average.

6. Farmers, traders, and exporters have good opinion about the future prospects of cardamom economy in Kerala.

1.9 Period of the Study

As far as the primary data is concerned, the period of study was from 2012-13 to 2013-14 and for the secondary data, the period was from 1970-71 to 2013-14.
order to understand the impact of the reform policies on cardamom economy of Kerala, reference period split into two sub-periods: Period I (1970-71 to 1990-91 as pre-reform period), Period II (1990-91 to 2013-14 as post reform period).

1.10 Research Gap

- There is no specific study on Cardamom economy, covering a period from 1970-71 to 2013-14.
- A comprehensive study including all the major variables affecting cardamom economy and a long period comparison of the changes in the trend of all the above variables is absent.
- Most of the studies done earlier had focused only on price volatility in national and international front as the reason behind the plight of cardamom economy.

1.11 Methodology

The research is mainly analytical in nature involving review of literature and conducting focus group interviews to identify key issues and key variables of the problem. So both primary and secondary data were used for the study. Primary data were collected from the respondents directly, using a structured interview schedule and the secondary data, from various sources including libraries, journals, newspapers, and websites. Since this study required information from cardamom farmers, domestic traders, the exporters, hence three sets of interview schedule were prepared. In order to obtain an overall view of the practical problems of the above-mentioned groups and to make the interview schedule more accurate and relevant, a pilot study was conducted. Twenty cardamom farmers, and five domestic traders, and two exporters (small, medium, and large) and two Spices Board Officials were interviewed during the pilot study. The responses and opinions collected from them
helped a lot to get an overview of the cardamom economy and to locate the major defects of the draft interview schedule. Based on the findings of the pilot study, the final interview schedule was prepared.

**Primary data**

They were collected through structured interview schedules. Below give the details of the population of the study and the sample of the study.

**Population of the study**

- Registered Farmers: 20,000
- Registered Domestic Traders: 247
- Registered Exporters: 372

(Source: Spices Board)

**Sample of the study**

Multistage random sampling technique– to pick the samples

Stage (I) Ten cardamom-cultivating districts are grouped into three on the basis of area under cardamom cultivation.

- Group I: Less than 500 hectares
- Group II: Between 500-10,000 hectares
- Group III: Above 10,000 hectares

Stage (II) One district from each group based on the largest area of cardamom cultivation is selected. The Districts are:

- (a) Kasargod
- (b) Wayanadu
- (c) Idukki
Introduction

Stage (III). One taluk from each district based on the largest area of cardamom cultivation is selected. The taluks are:

(a) Kasargod : 10 (12)
(b) Mananthavadi : 60 (80)
(c) Udumpanchola : 280 (14,000)

**Total No of Samples : 350**

(Figures in brackets show the number of registered farmers)

Simple random sampling is used for selecting samples from traders and exporters.

<table>
<thead>
<tr>
<th>Total Registered Number In Kerala</th>
<th>Samples Selected</th>
</tr>
</thead>
<tbody>
<tr>
<td>Traders</td>
<td>Exporters</td>
</tr>
<tr>
<td>247</td>
<td>372</td>
</tr>
</tbody>
</table>

Secondary Data

They were collected primarily from, Spices Board, Cochin. The various issues of periodicals from the spices Board - Spices Market, Spice India, Planters Chronicle - and the important handbook ‘Spice Statistics’, Journals like Journal of plantation crops, Financing Agriculture, Economic and Political Weekly, various publications and thesis related to the topic, Government records from the Directorate of Economics and Statistics, Ministry of Agriculture, Farm guide of various years were referred to analyze the secondary data.

1.12 Processing and Analysis of Data

Various statistical tools such as averages, percentages, ratios have been extensively used for the cross examination of the data. Correlation, paired sample t-
test, one sample t-test, Chi-square test, Friedman’s test, NOVA test are the various tools for analyzing tables drawn from the primary data. Time series, trend analysis, and CAGR have been applied for analyzing the secondary data. Along with these, Line Graphs, Charts, and Segmental representations have been used for analytical purposes. SPSS for MS WINDOWS was used for mathematical calculations and analysis of the data.

1.13 Limitations of the Study

The present study was confined to Kerala state and only 350 sample respondents overall were interviewed due to limitation in terms of time and resources available to the researcher. The study was divided into two times and there occurred difficulty in getting data related to the pre-reform period. Some of the farmers, exporters and traders of cardamom did not cooperate with the data collection as they were skeptical about the purpose of the study. Similarly, some of them especially exporters were unwilling to furnish the full details, particularly those relating to the income, the land ownership, real cost etc. Since the data, regarding to the illegal import was not available to get a proper judgment of the impact on the different variables of the cardamom economy.

The study was restricted to Kerala state. Therefore the universality and generality regarding results and findings are valid for Kerala only. However, the observations made and findings of the study could be used for reference purpose. The study is based on variables related to production conditions, which mainly depends on the benevolence of - nature’s ‘nature’ - climatic conditions, and so the future prospectus of the economy will depend on it. The normal errors inherent in social
surveys like, inadequacy of information, common limitations of statistical analysis etc. is also applicable to this study also.

1.14 Organization of the Research Report

The research report is organized in seven chapters. They are:

CHAPTER I: INTRODUCTION - This chapter describes an introduction to the topic of the research. The chief objective of the study is to find out the trend of price and production of small cardamom is elaborated with sub objectives. The hypotheses, research gap, methodology used are explained in detail in this chapter.

CHAPTER II: REVIEW OF LITERATURE - This chapter deals with literature study related to the cardamom economy made so far. Articles and papers related to the chief cardamom producing countries and the problems and prospects of cardamom in those countries are reviewed in this chapter to get an idea with regard to the nature of cardamom trade exist in the world. The chapter also examines the important studies made with respect to the cardamom studies in India and particularly in Kerala.

CHAPTER III: PRESENT GLOBAL SCENARIO OF THE CARDAMOM ECONOMY - This chapter examines the present scenario of the cardamom economy in the world with special reference to the chief cardamom producing country viz. Guatemala. An attempt was made to compare the cardamom trade and cultivation among the chief competing countries India and Guatemala.
CHAPTER IV: IMPACT OF WTO REFORMS ON INDIAN CARDAMOM -
This chapter explain in detail the important provisions which have either direct or an indirect impact on cardamom economy of Kerala.

CHAPTER V: A COMPARATIVE STUDY OF THE AREA, PRODUCTION, YIELD, PRICE, AND EXPORT TRENDS OF CARDAMOM(S) IN THE PRE AND POST REFORM PERIOD IN INDIA- A SECONDARY DATA ANALYSIS - This chapter made a comparative study of the area, production, productivity, and price trends of cardamom in the pre and post reform periods in India on the basis of secondary data collected.

CHAPTER VI: ANALYSIS AND INTERPRETATION OF PRIMARY DATA COLLECTED - This chapter made a comparative study of the area, production, productivity, and price trends of cardamom in the pre and post reform period in Kerala- A primary data analysis.

CHAPTER VII: FINDINGS, SUGGESTIONS AND CONCLUSION - This chapter gives a summary of major findings, suggestions and policy recommendations.

It is followed by Bibliography and Appendices.