

**A Study on Biodiversity Management Practices in Sri Lankan
Tea Plantation Sector**

Undergraduate Research Report

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February 2016

ACC 4355: Research Report in Accounting

Year 4 Semester II

CPM 9471 - MC 66394

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Abstract

Majority of the researches on biodiversity have been focused on micro level, thus, the broader context behind biodiversity conservation is not highlighted. Therefore there is a knowledge gap existing in corporate level, between the capability of conserving biodiversity and the ways it should be embedded into corporate management strategy. Having identified the gap, the business case for Sri Lankan tea plantation companies in the adoption of biodiversity management as a management tool was analyzed in this thesis using case study approach. Research further elaborates evolution of biodiversity management in the past with special reference to the tools that have been used by the ancient people of Sri Lanka.

Sri Lankan tea plantation companies were selected as the sample since tea industry plays a vital role in country's economy and it is exposed to world market conditions being a key player in the international market. Qualitative research method with a case study approach was used in the study. Semi structured interviews and on-site observations were used mainly for data collection. Similar perceptions on biodiversity management is identified through analysis of data. Three isomorphic factors discussed in new institutional theory were used to deliver the research findings.

Sri Lanka accounts for several number of upright biodiversity management tools from ancient times. With the arrival of European nations, the untouched and original forest areas were used for commercial plantations extinguishing the high biological diversity. However in recent days concern over biodiversity has significantly improved at individual as well as corporate levels. It is perceived that pressure impending from internal and external stakeholders drove plantation companies to undertake biodiversity management practices. This study suggests to conduct biodiversity research in broader perspective without limiting in to a micro level due to high contribution that can be made through broader perspective research. This study further recommends corporates to identify and develop competitive advantage over rivals through realizing business cases behind green philosophies such as biodiversity management.

Chapter 01 – Introduction

1.1 Background

Climatic change, global warming, sustainability of food, water and energy sources are key areas of concern in the 21st centuries. These have increasingly pressurized organizations to be environmental friendly and to refine their practices accordingly. The pressure has ultimately influenced in changing management view towards the business and towards society at large. Similarly large number of pressure groups also have emerged to address the world sustainability related objectives. As a result of global trends as well as increasing pressure, many organizations have embedded certain green conceptions within their organizations.

In line with the drastic changes in business landscape over the last few decades, business priorities also have been shifted from shareholder based perspective to the stakeholder based view (Freeman, 1984). Concern over society and impact on environment has now become an integrated philosophy in contemporary business management and hence managers are challenged to make decisions that are influenced by social and environmental aspects of business (Schaltegger and Zvezdov, 2015). Among the environmental aspects electricity, water, solid waste, waste water, emissions, pollution, bio diversity, etc. are some of the key environmental domains (Gunarathne, et al., 2015).

Nonetheless biodiversity has been discussed less in business management, its contemporary importance was predominantly raised in way back in 1992, in the Convention on Biological Diversity (CBD) which was a part of the “Earth Summit” (Convention text, 1992). The convention compelled partnering countries to establish rigid rules and laws as well as to establish organizations to tightly monitor the individual and corporate activities that could affect environment. This coupled with higher stakeholder pressure have immensely coerced organizations to develop and pursue biodiversity management practices.

Biodiversity is a global concept and there is an interdependence between biodiversity and the country development and global change (Ibisch et al., 2010). I observe that number of researches carried out in relation to biodiversity in developed countries are high compared to developing countries. However the level of contribution that can be made by developing countries towards the

biodiversity conservation is high owing to the availability of higher natural capital. The knowledge gap of developing countries in relation to biodiversity has hindered such potentialities. Sri Lanka (including Western Ghats of India), being one of 34 global biodiversity hotspots for conservation and one of the two on the Indian subcontinent, (Myers et al., 2007) has a lot of potential to exert biodiversity conservation activities.

Sri Lanka is a country which accounts for sustainability practices and developments from ancient period (De Silva, 2005). Many historical examples are available ranging from sustainable irrigation systems to sustainable agricultural practices throughout the Sri Lankan history. Similarly the Buddhist philosophy which teaches the harmony among nature and human beings also compelled the nation to move towards green philosophies in country development (De Silva, 2005). After the British rulers dominated the country, above practices were influenced drastically. British rulers commenced the commercial tea plantation in Sri Lanka and it is accepted that it was one of the greatest bio-diversity deteriorations occurred in Sri Lankan history. Zoyza (2001) argues that commercial plantation has reduced the forestry and biodiversity drastically.

“A drastic change in land use policy after foreign invasion resulted in denudation of the natural forest. The forest reserve of nearly 80% percent in 1886 was reduced to 70% percent in 1900, 44 percent in 1956, and is nearly 25 percent at present. Opening up of plantation crops, expansion of agriculture, land settlements, rising incomes, and changing life styles have caused over-exploitation of the forest.” (pp. 57-68)

However with the development in sustainability philosophies in the world owing to the stakeholder pressure, Ceylon tea industry has commenced practices to regain the demolished biodiversity.

Agricultural sector plays a vital role in the economies of developing countries in the world. Countries such as Sri Lanka highly depend on the commercial plantations in strengthening their economy. With the management and business environment change towards green philosophies commercial plantations also have been compelled to embed sustainability practices to their operations.

Today, tea industry plays a vital role in the Sri Lankan economy. In 2014, the tea industry's contribution towards GDP was 0.9% (CBSL, 2014). Tea also accounts for 14.6% of the total export

in 2014 (CBSL, 2014). It also provides employment to more than one million people in Sri Lanka. For more than a century, the tea industry has been the biggest provider of employment, export earnings and government revenue. Being an internationally giant exporter, Sri Lankan tea industry has to comply with many internationally accepted standards as well as laws.

Biodiversity management was informal but, integral part of ancient agricultural practices. However at present, obtaining international accreditations and high emphasize over biodiversity management can be observed. Rain Forest Alliance, Ethical Tea Partnership, and Fair Labeled Organization are some of such well accepted accreditations in the market. The compliance requirements create higher level of pressure on landscape of Ceylon tea industry either financially or non-financially.

In summary, this research was carried out in a backdrop of rising awareness over business sustainability especially over biodiversity conservation. Further research limited to the Sri Lankan plantation industry which is a key contributor to the country's economy. Many informal biodiversity management principles are practiced in this sector throughout the history and currently the industry is facing immense pressure from key stakeholders to conserve the biodiversity. Having identified the background, the next section was dedicated to identify research problem and the objectives.

1.2 Research problem and objectives

It was observed that the researches carried out in relation to biodiversity were mostly isolated from other areas and there were fewer attempts to build-up holistic picture. Therefore the outcome of many researches on biodiversity got less attention and created less impact on making a change in the society. Similarly there is minimal number of researchers that address the corporate level necessity, feasibility and the different dimensions of biodiversity management. Fischer et al., (2010) emphasize the need of functional biodiversity in the modern context and stresses the need of holistic approach for biodiversity research. Finally I observe that there is less theoretical base especially using social science to analyze the biodiversity management actions of corporates.

Furthermore, I observe that knowledge in biodiversity management is limited to developed countries mostly. However majority of the biodiversity conservation potentialities possessed by developing countries and such countries are struggling with lack of knowledge especially in Asian region.

Having identified this gap, the research pursues to identify

Why and how organizations concern over biodiversity management has evolved and increased recently and what the implications of it are in respect to Sri Lankan tea plantation companies.

Based on the above research question the research intend to achieve following objectives.

1. To identify how biodiversity management has evolved over time within the country and why
2. To demonstrate two cases on biodiversity management in the plantation sector
3. To identify the drivers of biodiversity management practices in the plantation companies which created high importance during the recent period and to analyze the same from a sociological perspective.

Research looks for fundamental reasons, and key drivers of adopting biodiversity management in Sri Lankan tea plantation companies as a part of their sustainability policy. Correspondingly research seeks the common perceptions of people in relation to biodiversity management and try to match it with social science literature to create a macro image on the same.

1.3 Contribution to knowledge

Contribution to the knowledge can be categorized into two broad areas as managerial and academic. These two aspects are discussed below.

Managerial Contribution

The findings of the study contribute to the existing literature by giving a holistic approach towards biodiversity management at corporate level. Similarly this will enable other industries to identify the business cases that are hidden under the sustainability practices. Further research intends to organize the dispersed knowledge into well-organized nature and to link it with corporate management strategies for a sustainable future. Moreover the research findings can be used in creating and updating national level tea plantation management policies and procedures.

Academic contribution

Considering the academic side of the research, this will provide evidence from practical scenarios to prove the arguments presented by DiMaggio and Powell (1983) in relation to institutionalization of practices specifically through isomorphic pressures. The corresponding nature of the research outcomes and the arguments of institutional theory will assist in substantiating the theoretical base. The accordance with social theory, can be used as a foundation to forecast the future direction of the industry.

Furthermore, as highlighted in introduction stage there is a deficiency of functional research in the field of biodiversity. Similarly there is a limited research in combining the corporate management and the biodiversity management. Therefore this research academically contributes to the above areas. Similarly this will fill the knowledge gap existing in developing countries especially related to biodiversity management.

List of Thesis Contents and Chapters

This research report will be consisted of following chapters. Chapters are divided into sub sections for a better understanding purpose.

- Abstract
- Introduction

- Literature review
- Research Methodology
- Analysis and Discussion
- Research Findings
- Summary And Conclusion
- References

The time frame of the research is listed below in Table 1.

Table 1: Research time frame

<i>Time Line</i>	<i>Activity</i>
05/10/2015	Submission of research proposal
20/10/2015	Completion of literature review
30/11/2015	Data collection by means of interviews and site visits
15/12/2015	Initial data analysis
15/01/2016	Thesis write up (1 st draft)
15/02/2016	Thesis write up (2 nd draft)
29/02/2016	Completion of thesis& Submission

Chapter 02 - Literature review

2.1 Introduction - Biodiversity management

Tajra (2009), argues that current world is controlled by neoclassical market economy thus the corporate play the leading role in exploiting cultural diversity, individual diversity as well as biodiversity to improve short-term financial profits and economic profits. However in the long run for the survival of the business it is vital to promote diversity since it enhances human wellbeing as well as the natural resources in the years to come.

The Convention on Biological Diversity (CBD), which was developed and signed by 157 governments at the 1992 Earth Summit and today has 193 Parties, defines biodiversity in the following manner:

“Biological diversity means the variability among living organisms from all sources including, inter alia, terrestrial, marine and other aquatic ecosystems and the ecological complexes of which they are part; this includes diversity within species, between species and of ecosystems” (The Convention Text-Convention on Biological Diversity, 1992, p.3).

The Convention Text (1992) further defines Ecosystem as of means a dynamic complex of plant, animal and micro-organism communities and their non-living environment interacting as a functional unit. 'Habitat' means the place or type of site where an organism or population naturally occurs.

Putz et al. (2000) argue that biodiversity refers to the natural variety and the physical organization or pattern of the variability among living organisms. In many occasions researchers adopt the definition agreed upon in the convention on biodiversity for the research purposes.

As per Tajra (2009) the most important aspect in the current world is the sustainable use of biodiversity resources for the current consumption. The CBD also emphasizes highly on sustainable use of biodiversity resources and Convention Text (1992) defines sustainable use of biodiversity as the use of components of biological diversity in a way and at a rate that does not lead to the long-term decline of biological diversity, thereby maintaining its potential to meet the needs and aspirations of present and future generations.

It is vital to define the scope of the term biodiversity. A research carried out by Putz et al. (2000) has developed the broader scope of the biodiversity and it is presented in the table 01 below.

Table 1: Components and attributes of biodiversity (Source: Putz et al. 2000)

Components	Structure	Composition	Function
Landscape	Size and spatial distribution of habitat patches (e.g., seral stage diversity and area); physiognomy; perimeter-area relations; patch juxtaposition and connectivity; fragmentation	Identity, distribution, and proportion of habitat types and multi-habitat landscape types; collective pattern of species distributions	Habitat patch persistence and turnover rates; energy flow rates; disturbance proposes (e.g., extent, frequency, and intensity of fires); human land use trends; erosion rates; geomorphic and hydrologic processes
Ecosystem	Soil (substrate) characteristics; vegetation biomass, basal area and vertical complexity; density and distribution of snags and fallen logs	Biogeochemical stocks; lifeform proportions	Biochemical and hydrological cycling; energy flux; productivity; flows of species between patches; local climate impacts.
Community	Foliage density and layering; canopy openness and gap proportions;	Relative abundance of species and guilds; richness and diversity indices; proportions of endemic, exotic,	Patch dynamics and other successional processes; colonization and extinction rates; pollination, herbivory,

	trophic and food web structures	threatened, and endangered species; proportions of specialists vs. generalists	parasitism, seed dispersal and predation rates; phenology
Species! Population	Sex and age/size ratios; range and dispersion;	Species abundance distributions, biomass, or density; frequency, importance or cover value	Demographic processes (e.g., survivorship, fertility, recruitment, and dispersal); growth rates; phenology
Genetic	Effective population size; depression; heterozygosity; polymorphisms; generation overlap; heritability	Allelic diversity; presence of rare alleles; Frequency of deleterious alleles	Gene flow; inbreeding depression; rates of outbreeding, genetic drift and mutation; selection intensity; dysgenic selection

The above chart demonstrates that ideal biodiversity management system should cover the above areas. However biodiversity management was not in traditional corporate management scope. Harald (1996), states that “Management” is by nature a holistic profession. Therefore the scope of the profession can change time to time depending on the market situation and the global trends. With the trend of sustainability management enter in to the picture, the fundamentals of it also integrated into the scope of general management (Harald, 1996)

I observe that the emergence of accreditation or technical support organizations are common in modern days, which are in par with latest business trends. For example when the sustainability concept become popular in the market it is observed the emergence of many sustainability accreditation organizations, sustainability guideline providers etc. There is a little literature on this area to identify why such relationship exist and consequence of it. However in a research carried out by Chow-Chua et al. (2003) found that the certification leads to better overall financial performance in the companies. Therefore certification has become a management tool. This is further elaborated by study carried out by Van Kuijk et al. (2009) which states that even though the value of certification as a management tool cannot be compromised with the outcome of the forestry biodiversity changers.

Van Kuijk et al. (2009) through their study emphasized the need of integrating biodiversity management and the business strategy.

“Today the conservation sector generally recognizes that the business sector’s active essential for the success of global biodiversity conservation, just as in the management of other critical global environmental issues. Conversely, for a business with direct and indirect impacts on natural habitats and biodiversity, the inclusion of conservation concerns into policies, management and operational practices is crucial for the public legitimacy of its operation.”(Van Kuijk et al., 2009, p.12)

In conclusion of all above, the results of discussions must be translated into practical management activities for achieving specific, measurable biodiversity objectives. These must be subject to periodic revision to accommodate changes in value perception and in the state of biodiversity (Van Kuijk et al., 2009)

2.2 The drivers of biodiversity management

Having identified the need of institutionalizing biodiversity management into business strategy, this chapter intends to review the literature on adopting such practices. There are limited number of research that has been carried out in this particular area and literature specifically available for

the biodiversity management is minimal. However this chapter intends to review the literature on similar researches and tries to confer theoretical background for biodiversity management practice in Sri Lankan plantation companies.

Environmental costs of the organizations are highly influenced by external parties rather than the economic concerns (Bouma and Van der Veen, 2002). Thus the case study carried out by Bouma and Van der Veen on exploring organizational change particularly relating to environmental costs, used the Institutional theory as the basis for analysis. Grab & Benn (2014) in their research on conceptualizing of sustainable procurement highlighted the lack of literature and rationale basis for the area of study and applied institutional theory perspective for the understanding of area of study better. The institutional theory has been used for to explain the application of CSR (Campbell, 2007; Matten & Moon, 2008), ecologically sustainable organization (Jennings & Zandbergens, 1995) and environmentally legitimate firms (Bansel & Clelland, 2004) as cited by Grab and Benn (2014) The institutional eye could widen researchers approach to study of a particular area of organizational behavior or performance (Brammer et al, 2011).

Institutional theory

Institutional theory states that organizations can increase their ability to grow and survive in a competitive environment by satisfying their stakeholders. It argues that Organizations are required to gain acceptability and legitimacy in the eyes of their stakeholders (Jones, 2001) Therefore organizations use structures, forms and shapes that best suits stakeholders view. In another view of Lapsley and Pallot (2000) confirmed that management shapes and influences its organizational practices with a view to gaining external legitimacy. Rowan & Meyer (1977) argued that as innovation spreads, a threshold is reached beyond which adoption provides legitimacy rather than improves performance.

New institutional theory

New institutional theory suggests that structural changes in organizations seem less driven by competition or by the need for efficiency. Instead forms of organizational change occur as the result of processes that make organizations more similar without necessarily making them more efficient. Therefore organizations try to imitate industry giants, peers or trendsetters in making

structural changes without looking for efficiency and productivity improvements. (DiMaggio & Powell, 1983, p. 147)

The concept known as the process of homogenization is isomorphism (DiMaggio and Powell, 1983, p.149) and it takes 3 forms namely coercive isomorphism, Mimetic isomorphism and normative isomorphism. The cohesive isomorphism results from both formal and informal pressures exerted on organizations by other organizations upon which they are dependent and by cultural expectations in the society within which organizations function. Mimetic isomorphism occurs when organizations models themselves on other organizations in times of uncertainty such as poorly understood or ambiguous goals. The normative isomorphic change stems primarily from the professionalization (DiMaggio & Powell, 1983)

There are different driving factors available for cohesive isomorphism. Wolf (2003) provides argument that customers, governments and nongovernmental organizations (NGO) can push organizations towards sustainability and CSR. Similarly the existence of a common legal environment affects many aspects of an organization's behavior and structure ((DiMaggio and Powell, 1983). Organizations will comply with such pressure exerted through more informal means such as self-regulation (Scott, 1995; Walton et al., 1998; Campbell, 2007).

Summary

In conclusion this literature review highlights that research in relation to biodiversity in a broader perspective is limited. Further findings of individual researchers summarized to identify the knowledge in the research area. Social sciences and applicability of social theories were identified through literature review. After identifying the existing knowledge in research area the next chapter dedicated identify research methodology and methods.

Chapter 3 -Research methodology and method

This chapter explains the methodological assumptions and methods of conducting the research. Biodiversity management has been a less stressed area in the context of corporates. A minimal number of academic researchers have been carried out combining the fields of biodiversity and the corporate management. Therefore in the designing stage of the methodology, the extensive consideration has been paid to the structure and the ways of data collection and analysis due to the subjective nature of the area of study.

3.1 Methodological Assumptions

It is assumed that there is no real world which is external to the individual's perception. World is created by individuals and meanings / concept about the world are subject to their knowledge (Burrell and Morgan, 1992). Therefore objective knowledge is rejected thus no one can achieve an absolute truth as there is no real objective. Similarly knowledge is the way people interpret certain things which become generalized in the society over the time. It is assumed that Human behavior is result of political, social, cultural influences and their responses can vary according to the changes in above factors. The above ontology, epistemology and human behavior are the key assumptions which provide the basis framework for the research.

The explanation provided on adoption and evolution of biodiversity management principles is highly subjective to the person who explains it. Therefore there is no absolute truth in relation to adoption and evolution biodiversity management principles. The research seeks for different perceptions of people on the reasons of adoption and evolution of biodiversity management over time and space at the corporate level and will provide conclusion on the same considering the overall perceptions.

3.2 Research methodology

This research intends to explain the status quo of biodiversity management in Sri Lankan plantation context and therefore research is an explanatory study. The research takes the mixed approach of mini case study coupled with theoretical review. The analysis of how and why the biodiversity management is embraced by corporates is researched through case study approach. In giving the conclusion I tried to blend the literature with the common outcomes of the case studies.

The research is limited to the Tea plantation sector of Sri Lanka. The direct contact between biodiversity and the business, long history of the industry, economic and social importance of the sector & the high exposure to international market trends due to global presence are some of the reasons to select this industry. On top of all, it is observed that Tea plantation companies have been pressurized by many internal and external parties to protect the biodiversity and to incorporate that to the business strategy.

The plantation sector was initially owned and managed by government. However in 1991, the estates were distributed among 22 plantation companies and termed them as regional plantation companies. Currently there are 22, Colombo Stock Exchange (CSE) listed regional plantation companies in Sri Lanka and majority of the companies are managed by large diversified conglomerates in the country. These companies account for 40% of Sri Lankan tea supply whereas 80% factories possessed by them (Ceylon Tea Board, 2014). A further analysis is provided in the chapter number 4 under the introduction to biodiversity management.

It was decided to carry out the data collection based on aforementioned regional plantation companies due to the organized nature of biodiversity management at corporate level and due to the easy access of data. Therefore I ignored the small scale tea manufacturers from the sample. However it is noteworthy that tea small holders are highly affected from the activities of regional plantation companies and they simply imitate the activities of the Regional Plantation companies (RPCs).

The convenient sampling technique has been used to select the sample considering the level of information accessibility. Capability of site seeing, on site observation and possibility of contacting and interviewing the management personnel are some of the other consideration that I checked when selecting sample. Based on that Maskeliya Plantations PLC (MPL) ;a concentrated

tea manufacturer and Watawala plantations PLC (WPL); a diversified crop Plantation company have been selected as sample out of the 22 RPCs. Sample is 9.09% of the total population. These two companies have tea plantations in high and medium elevation levels out of the 3 main categories of elevations namely high, medium and low grown.

There are 18 tea estates in the MPL and 16 tea estates in WPL. As explained above in the objectives the initial step was to carry out case study based on selected tea estates. For that purpose I selected Moray, Strathspey, Hapugastenna (representing MPL), Henfold and Dickoya (representing WPL) estates. The fundamental selection criteria was the standard of biodiversity management and the international accreditations on estate practices obtained by such estates. The key accreditation I looked at was Rainforest alliance (RA) certificate which will be discussed in later chapters. At the time of field visit Strathspey, henfold and Dickoya estates were rainforest alliance certified and other estates were in the process of getting the accreditation.

Prior to attend the data collection I reviewed literature on the fields of biodiversity, biodiversity management, biodiversity conservation, sustainability business management, triple bottom line principles, integrated thinking and about sustainability management accreditation systems such as rainforest alliance. I used university login access to international research article databases, newspaper articles on aforementioned areas, corporate websites, internet facility and guidelines issued by accreditation firms for data collection. Further I studied the history of the industry by having informal interviews with senior employees who were in the industry and by referring history books. I studied the market conditions, tea prices and global market developments through weekly tea auction reports, brokers' reports and through Ceylon tea board publications.

Field visit and observation of practices were the initial step of data collection. The field visit covered all the 5 estates mentioned above and observed their biodiversity management strategies and principles, biodiversity management related documentation, new innovations in relation to biodiversity conservation. The outcomes of these observations are analyzed in the chapter 04.

Parallel to the field visit, interviews were also carried out on location in order to get more clarifications on the practices. Field visit started with WPL, visiting Dickoya estate in Lindula region. The initial interview was with Senior Assistant manager – Dickoya estate who also worked as the sustainability compliance office for WPL. At the Dickoya estate I observed the fundamental

sustainability and biodiversity management practices and obtained overall understanding on the area of research. Next I visited enfold estate which is also located in Lindula region and I was able to interview Assistant Manager of the estate while observing the practices in the field. Correspondingly I observed the documentation, which had been prepared by estate management in relation to biodiversity management and obtained copies of the same for future reference.

Next, I visited estates belong to MPL, commencing from Hapugastenna estate followed by Moray Estate. However the strathspey estate visit was unable to concede as planned due to unavoidable reasons. One of the Key interviews was carried out at the Hapugastenna estate with the estate manager who has an academic background on biodiversity and plantation management. The onsite note taking and voice recording were two main techniques used for data management purposes.

The 2nd stage of the data collection focused on the corporate level management personnel in order to gain the insights and the rationale thinking process of implementing biodiversity management and reporting systems. A semi structured interviews were carried out with General Manager-MPL. Open ended questioned were asked in the interviews to gain deeper and descriptive information. Similarly I used snow bowling technique where the reference of one interview used to the next stage of the interview to gather information where possible.

The second phase of the research was to combine the outcomes of the above case studies and to identify the common features. As explained in the research assumptions the biodiversity management is social construct that different people interpret in different ways. Therefore common features were picked after vigilant analysis of interview outcomes. While identifying the common features of biodiversity management in Sri Lankan plantation companies I looked for literature in social research that would best explain the common features of the above. I observed that fundamentals of Institutional theory can be used to explain the common features of biodiversity management and the related analysis which is presented in the chapter 05 under research findings.

To improve the trustworthiness of the information I used triangulation method in carrying out the interviews. Further on sight observation, also assisted in improving the data validity. Video recording was another source that I relied on to increase the accuracy of the data gathering thus improved the trustworthiness of the research findings.

In conclusion this research is qualitative explanatory study and method was developed to match with research objectives. Sample selected was two out of twenty two RPCs and case study approach used to explain outcomes better. In the next chapter research outcomes are analyzed and presented.

Chapter 4 -Analysis

4.1 Introduction

In this chapter I try to highlight the agricultural history of Sri Lanka, the inception of commercial plantations by European nation and the current way of practices in Tea industry.

The written history of Sri Lanka dates back to the advent of Indo-Aryans from India in 543 BC. The unwritten history go far more beyond that to the *Yaksha, Naaga and Deva era*¹ where historians argue that highly civilized system was established even before the arrival of King Vijaya. According to *Mahawansa*² after the arrival of King Vijaya one minister named Anuradha built Anuradhapura which was the capital in Sri Lanka for 1200 years. The key consideration when establishing the town was that availability of water resources mainly for cultivation.

Commencing from that every town established was located nearby a river or a lake with the intention of getting easy access to the water resources. This emphasize the importance of agriculture. It was a fundamental duty of Sri Lankan kings' dynasty to support and provide infrastructure to the agricultural and plantation sector of the country. As a result of King's and government support Sri Lanka has become self-sufficient in terms of paddy cultivation.

Paddy cultivation and Chena cultivation were the modes of earning bread and butter for the ancient Sinhalese. King and the Government continuously supported the cultivation by providing infrastructure such as irrigation systems. It is considered that facilitating cultivation as a primary role of King and the government. This proves the importance placed on plantation and cultivation by ancient Sri Lankans.

¹ In the ancient Buddhist literature it is mentioned that there were aboriginal community lived in Sri Lanka even before the arrival of King Vijaya and they were belong to 3 different tribal namely Yaksha, Naaga and Deva.

²The Mahavamsa is a historical book written in Pali of the Kings of Sri Lanka. The first version of it covered the period from the coming of Prince Vijaya from India in 543 BCE to the reign of Mahasena of Anuradhapura.

In 1505 Portuguese were arrive in Sri Lanka and has concurred the coastal area of the country. In 1656 Dutch took over the control over coastal areas of Ceylon with the support of King Rajasinghethe second. Dutch were the foreign nation to start the commercial plantation in Sri Lanka and it was Cinnamon. Dutch grew cinnamon in Colombo area and made a monopoly by prohibiting private cinnamon plantation. Later Coffee plantation has been started and it was a failure due to disease called *Hemileia Vastatrix*.

In 1796 British acquired the coastal areas from Dutch and in 1815 Kandian kingdom was occupied, ending Sri Lankan independence. From 1815 until 1948 Sri Lanka remained as crown colony. British identified that Sri Lankan climatic and geographical factors well suit for the Tea plantation. Having identified that James Taylor marked the birth of the tea industry in Ceylon by starting a tea plantation in the *Loolecondera*³. The initial tea plantation was limited to 19 acres and later coffee cultivated lands were covert to the Tea plantations and Coffee shop converted into Tea factories.

With the increased demand for Ceylon tea the production has increased drastically and plantation extent became significant. Sinhalese were reluctant to work in the tea fields under the British people and therefore Planters had to bring workers from south Indian Tamils. Gradually Ceylon tea became world renown and finest brand an in 1965 Sri Lanka become the largest Tea exporter for the 1st time history.

When Sri Lanka gained the independence in 1948, Tea manufacturing and exporting was a major part of the Sri Lankan economy. British planters continued to operate the tea plantations despite British loose the administrative control over country. In 1970, the government of Sri Lanka has decided to nationalize the estate plantations and acquired all the land owing to the land ownership rule of maximum 50 acres.

From 1970s to 1990s most of the tea plantations were manage by state organizations. However the productivity and the profitability of the plantation companies declined during that period. Later

³Loolkandura is the 1st tea estate in Sri Lanka planted by James Taylor and located in Kandy district.

government decided to transfer the ownership of plantations to private companies on a 99 years lease basis. The research sample consist of 2 of such privatized plantation companies.

Today Tea planting, manufacturing and sales process is well organized, Regional plantation companies coupled with Tea small holders carry out the plantation activities. Government provide fertilizer subsidies, other infrastructure and technical support Tea growers. Manufacturing is carried out in factories located at large tea estates. Small holders and estates that do not possess tea factories will transfer their Tea green leaves to a manufacturing estate at a pre-determined transfer price.

Sales and marketing process is separate part from the plantation. The manufactured tea transport to Colombo Tea Auction (CTA). It is a legal requirement to sell all the tea manufactured via CTA. The auction proceedings are controlled by Tea Brokers. There are 6 registered brokers operate currently in the CTA and they provide brokering and warehousing facilities to plantation estates. The estate name has been used by tea estates to brand their products at CTA. Tea supply chain is provided below in Chart 01.

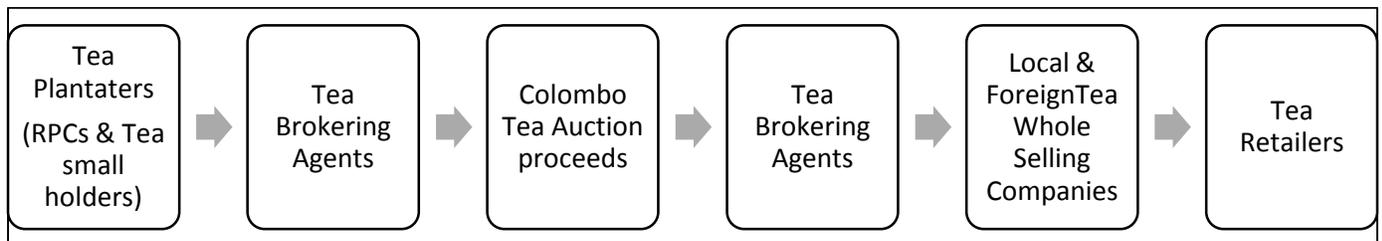


Figure 01: Tea Plantation & Distribution Value Chain

Buyers from all over the world place their bids at the CTA against the preferred estate/ brand name and for the grade via tea brokers as depicted in chart 1. Then the Tea prices will be determined at the auction based on the demand and supply. There is a gigantic competition among tea plantation companies as well as among individual tea estates to gain higher prices in the auction. Therefore estates use different techniques to increase their tea auction prices vary from increasing quality to capturing buyers' personal interests. Tea brokers also promote the competition among tea manufactures since they operate on commission structure.

The above mechanism has created situation where end customers can directly influence the activities of the estates. Customer power is comparatively high and I observed that this high power has been used immensely in the tea industry to move manufacturing companies towards socially responsible behavior. Empirical evidence prove that this mechanism played a vital role in eliminating use of child labor in estates via customer pressure as well as from the accreditation that reflect the customer demand.

In conclusion it is clear that Sri Lanka is nation who placed on agriculture from the ancient time. Arrival of European nation change the landscape of plantation in to different dimension. Tea industry has well developed over time and today practices are more exposed world market and thus influence from international buyers directly impact in changing the business scope.

4.2 Biodiversity management in Sri Lanka

In the previous chapter I have discussed the development of plantation history of Sri Lanka. Further to that this chapter dedicated to identify and to describe the biodiversity management principles in each phase of history.

Pre-colonial era

According to Mahawamsa before the arrival of King Vijaya and Aryans there were Yaksha, Naaga and Deva tribes lived in Sri Lanka. As argued by Edirisuriya (2015) in his article “Religion in ancient Sri Lanka” tribes worshipped natural phenomena, like tree deities and spirits. Worshiping of trees created a reverential feeling towards the nature, leading them to protect it. The survival of tribal community highly depend on the forestry and the nature, thus they prevent from damaging the nature.

With the migration of the King Vijaya and Aryans, the lodging settlements were establish in the river low-lying areas. Similarly the agricultural economy has been established with support of the King and the Government. There are a lot of practices developed in par with the development of Sri Lanka as an agricultural economy. Ancient agricultural practices were not merely focus on the

consumption basis, rather it promoted a culture of collectivity, hardworking and moreover sustainability of the nation. (Herath H.M.D.R, 2010) Sustainable agricultural practices and biodiversity conservation are not new topics to Sri Lankan agriculture industry. It was inherent and embedded in ancient Sri Lankan practice. Some of these practices are discussed later in this chapter.

In ancient forestry as well Elephants considered the property of crown. The king of the country was the ultimate owner of forest and Elephant hence citizens were afraid to do anything harmful to them. According to Delgoda (1997) as cited in the publication of Ministry of Forestry and Environment: Biodiversity Conservation in Sri Lanka-A Framework for Action (1999) during the time of the Sinhala Kings, forests and animal life were an important part of the social fabric. Kings preserve the forests using their power. "TahansiKalle", or "Forbidden Forests" is one good example where any kind of cultivation, felling of trees, hunting or fishing were strictly prohibited, and punishable by a heavy fine. This rule is virtuously to preserve the biodiversity and even today there are evidence of such forbidden forests such as "Udawattakelle" located in Kandy city area.

Further in order to ensure that King's rules are enforced, there was dedicated personnel named as "KalleKorale" or a forestry officer. His primary duty was to ensure that laws and regulation imposed by king in order to protect the forestry and animals are being adhered by general public. This demonstrate the level of commitment at state level to protect the biodiversity. D'Oyly (1809) states as cited by publication of Ministry of Forestry and Environment: Biodiversity Conservation in Sri Lanka-A Framework for Action (1999) all Elephants also considered as property of King and slaughter of especially of tusked and large elephants, are amongst heinous offences.

The year 247 BC marks the official introduction of Buddhism into Sri Lanka. The local chronicles, the Dipavamsa and the Mahavamsa give reliable information for the history of Buddhism in the island only for the period up to that date. Buddhism, which is the main religion of the country too contributed immensely to initiate and sustain environmental friendly agricultural and plantation practices. Lilly De Silva (2005) emphasize the impact from religion on environment and biodiversity protection as below.

Buddhism advocates a gentle non-aggressive attitude towards nature. According to the SigalovadaSutta a householder should accumulate wealth as a bee collects pollen from a flower.[18] The bee harms neither the fragrance nor the beauty of the flower, but gathers pollen to turn it into sweet honey. Similarly, man is expected to make legitimate use of nature so that he can rise above nature and realize his innate spiritual potential (pp 113-114).

This can be identified as the basis of sustainability principles. Further Buddhism admires the value of every living being. Similarly the religion promote the equality among living being including trees and plants. *Maithree Meditation*⁴ a commonly used meditation technique proves that to which extent Buddhism promote the equality among living beings. This meditation method teaches to spread the love towards creatures timid and steady, long and short, big and small, minute and great, visible and invisible, near and far, born and awaiting birth. Further Buddhists treat long standing gigantic trees with a reverential attitude since they believe that those are dynasties of gods. The deferential attitude towards Bo tree also strengthen the respectfulness towards nature by inherence. Therefore biodiversity of the country had been protected by these rituals in ancient days.

Rituals and the practices of the Sinhalese are nurtured by the Buddhism. Therefore most of the practices promote nonviolence, thus teach to maintain positive relationship with environment. Therefore even agricultural practices also promote nonviolence against pests and creatures hence promote the biodiversity. Followings are some of the examples to prove that.

In ancient paddy lands there was separate portion field purely dedicated to birds and animals “*KuruluPaaluwa*” Farmers never harvest the crop in that field and left it for enjoyment of birds. The objective behind that was allow birds and other animals to survive through harvest cultivated by farmers. In return farmers expect that birds will not destroy the other parts of the cultivation since they have dedicated land area.

Another example is using of “*Kem*” techniques to control pest diseases in cultivation. Today farmers use imported pesticides to control pest diseases. However in ancient days Sinhalese used

⁴ Also known as loving kindness meditation. It is one of the Lord Buddha’s teaching to gain mental relation through anamnesis of love and kindness.

a special technique called “Kem” The word “Kem” is probably derived from the Sanskrit word "Kshema", which denotes relief from difficulty (Herath, 2010, pp 68). “*HirimaPideema*” is one of the examples for such Kem techniques that protect the cultivation from pest disease while protecting the biodiversity. Hirima is the sun in Sinhalese and pideema is worship. This Kem is performed to get rid of pest disease called stem borer moths. When such disease is observed farmers set a date and venue for the ritual. They collectively prepare milked rice from collected raw paddy from each farmer’s house. After performing religious rituals each owner of a rice field gets some milked rice, which is made into small balls and they are thrown at random over the field. Finally all farmers clap together and go away. No farmer will visit field after performing the ritual and each owner of a rice field gets some milked rice, which is made into small balls and they are thrown at random over the field. This simple exercise provides powerful spiritual influence to control the pest without making any harm to the biodiversity. Therefore these techniques can be identified as Biodiversity management technique used in history of Sri Lanka.

Diya beraya, and *Takaya* are some other examples that can be given to prove that ancient Sri Lankans used biodiversity friendly plantation management systems. Both these instruments use sound to chase animals without harming their lives thus unknowingly promote biodiversity. There are many other examples available in order to prove the ancient agricultural practices have been nurtured with Buddhism, thus ensure the biodiversity existing in the eco system.

Colonial era

These practices were abolished with the coming of the Colonial era. The focus of European nations was not on paddy cultivation. They looked for commercially viable products that would bring economic benefits more rapidly.

“Sri Lanka’s natural forest cover decreased from 85 to 70 percent of land area during the period of British rule, which lasted from 1881 to 1900. The central hills were cleared for export crop plantations, while the dry zone forests were logged for valuable timber.”
(Zoysa, 2001, pp. 57)

The British rulers were motivated by economic incentive rather than having cultivations for their self-dependence. The only consideration was financial benefit thus they were compelled to do financially viable plantation at the cost of social and environment. Having identified that upcountry hills are

suitable for Tea plantations they harshly cleared the forestry cover in that area. This can be considered as one of the major hits on the biodiversity of the island nation.

The British attitude towards nature was not reverential as Sinhalese. The financial consideration detached business from the nature whereas Sinhalese philosophy was to be a part of the nature when doing plantation. The green hills of diversity in the central upcountry have been converted to one crop planted Tea estates. The diversity became zero overnight and moreover Europeans planted foreign trees that are strange to the local eco system such as Cypress trees and Eucalyptus. Later it is identified that these trees absorb a higher amount of water from soil and the tree leaves are non-degradable for years and that will hinder the growth of other plants thus the biodiversity.

Witane (2006) in his article "Massacre of elephants in Sri Lanka" states that British ruler *Samuel Baker* has extensively involved in hunting Sri Lankan Elephants as a sport. In certain days the number of elephants hunted were high as 40 to 50 by this single man. British, however, indulged in the shooting of elephants as a form of sport. As the elephant was a threat to the agricultural activities of the rural population, the British provided guns freely to villagers to keep away the marauding elephants from their cultivation. In an interview held with one of Estate managers it is mentioned that an endemic elephant called "*Kuru Aliya*"⁶ an elephant with small build body was extinct due to hunting. The above empirical evidence shows that Sri Lanka had lost vast range of biodiversity in the colonial period.

Post-independence period

The importance of biodiversity was not prominently highlighted in the years after the freedom. However the government intervention on biodiversity conservation started in early 1990s with the convention on biodiversity which took place in Rio parallel to the Earth Summit. Sri Lanka became a party by Ratification in the convention on 1994-6-21 (CBD, 2015)

The governments of 168 countries those who signed the convention have agreed to develop country action plans. As a result Sri Lanka also has developed an action plan to preserve the biodiversity exist within country. The increased awareness over growing demand for biodiversity conservation

pressurized government to strengthen the environmental protection establishments such as Central Environmental Authority.

The pressure on governments has increased over time with the adverse changes in the climate including global warming. Each and every government signed for Kyoto protocol held responsible for their action plan submitted. Government passed the pressure through local bodies such as CEA. Obtaining of environmental feasibility reports, obtaining environmental license were made compulsory as a result of above mentioned stimulus in order to protect the environment.

The role played by Non-governmental organizations (NGO) were become prominent during the early 2000. There is a trend of government partnering with NGOs to implement their programs while shaping policy and programs according to their inputs. NGOs also contributed in enhancing community awareness and participation in protecting biodiversity. The green pressure groups mainly consist of environmental NGOs played a significant role in lobbying global policy makers to drive the world towards conserving biodiversity. (Agarwal, 2008)

In conclusion, this section highlighted the biodiversity management practices in ancient Sri Lanka, how the biodiversity conservation has been nurtured by the Buddhist philosophy. Further it is analyzed that how biodiversity has declined during the Colonial era. Finally, how the NGOs become prominent in biodiversity conservation in Sri Lanka.

4.2 International accreditations and biodiversity management

In this section I intend to discuss the latest trends in biodiversity management in 21st century. The increased awareness of general public has compelled organizations to act responsible towards biodiversity. However unavailability of mechanism to monitor the practices became a problem to many stake holders. As a result many volunteering organizations emerged to provide 3rd party confirmation on biodiversity conservation. This chapter dedicated to identify the evaluation and implications of accreditation procedures.

The accreditations are common in ensuring quality standards such as Sri Lanka Standards (SLS) and International Standard Organization (ISO). However accreditations for biodiversity preservation and sustainability practices were uncommon in recent past. With the increase in importance place on sustainability practices it is observed that many international accreditation companies have been emerged over time.

Today these accreditation companies go beyond merely issuing certifications and possess the power to create impact on international market. The influence take the forms of financial as well as non-financial. Few such accreditation organizations and the respective scope of the same is briefed below.

Ethical Tea Partnership (ETP)

ETP is not for profit organization committed to improve tea sustainability, the lives and livelihoods of tea workers and smallholder farmers, and the environment in which tea is produced. This operate based on the vision of a thriving tea industry that is socially just and environmentally sustainable. The following fundamental issues are expected to be addressed by this organization under two categories Social and Environmental (Refer Table 3). (About ETP, n d)

Table 3: Key principals of ETP

Category	Principals
Social Provisions	<ul style="list-style-type: none"> • Freely Chosen Employment • Freedom of Association and the Right to Collective Bargaining • Health and Safety • Child Labour • Wages and Benefits • Disciplinary and Grievance Procedures

Environmental Provisions	<ul style="list-style-type: none"> • Environmental Management Systems • Agrochemicals • Soil Conservation • Ecosystem Conservation • Water Conservation • Energy Use • Waste Management
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The environmental management systems and eco system conservation specifically consider the biodiversity management processors of the estate. In order to gain the ethical tea partnership certificate estates have to establish proper biodiversity management systems. Tea estates are motivated to gain these certificate since this facilitates to access additional markets. For example, Sri Lankan tea estates who have obtained Ethical Tea Partnership certificate can easily access the European market whereas there are considerable restrictions ton those who haven't obtained it.

Fair Trade Labeling (FLO)

Fair trade labeling organization also similar to the Ethical tea partnership organization, however more focused on the social aspect Tea plantation. Fair Trade Labeling agreement, the estates concerned, are entitled for financial incentives, about US\$ 0.50 – 1.00 per kg of tea sold, from the buyers, towards improving conditions to meet CSR requirements. (Institute Of Social Development, 2008) This certification is mainly demanded by demanded mainly by countries from European Union (especially UK & Germany), North America and Japan.

Rainforest Alliance (RA)

The following quotes of Mission statement of rainforest alliance organization will describe reasons for existence of rainforest alliance organization best. “The rainforest alliance works to conserve biodiversity and ensure sustainable livelihoods by transforming land-use practices, business practices and consumer behavior.” The mission statement proves that the area of concern by this organization is directly linked with area of research. Rainforest alliance has become the latest trend in the Sri Lankan Tea market.

Many Sri Lankan Tea plantations mold their practices to conserve biodiversity in the respective plantation based on rainforest alliance guidelines. Rainforest alliance certificate compensate the tea estate those who obtain the certificate with high auction prices and increased marketability and access in overseas markets. I observe that there is a competition among Tea estates to obtain rainforest alliance certificate which ultimately drive them to develop biodiversity management strategies for their respective estates. This is further analyzed in the later chapters of this report. (About us-rainforest org, n d)

Global Report Initiative (GRI) and Integrated Reporting (IR)

The reporting initiatives too create an impact on biodiversity conservation. Many plantation companies in Sri Lanka has used biodiversity as a theme to present their annual reports. Under the GRI guidelines there is separate area to disclose biodiversity related issues. Biodiversity is covered under the “natural capital” out of six capital models discussed in integrated thinking and reporting. The disclosure requirements has made bottom up pressure on the organizational activities to preserve the Biodiversity. However research from critical perspective argue that the reporting of sustainability information, even when it is verified, is not sufficient on its own to demonstrate an organization’s actual commitment to environmental and social responsibility. It is typically considered that to limit the risk of greenwashing and decoupling from internal practices, the information reported downstream of the accountability process needs to be supported upstream by effective management systems and clear commitments (KPMG, 2008).

4.3 Drivers of biodiversity management in Sri Lankan tea plantation sector

In the previous sections I have discussed the history and the evolution of the biodiversity management. As mentioned in the introduction chapter, the concern over biodiversity management has drastically increased especially in the tea plantation sector. This section is dedicated to understand, how and why such importance came to light and what the drivers behind it are. This chapter will mainly address the research problem and research objectives.

Throughout the history there was a strong relationship between Tea plantation sector and Biodiversity management as explained in the previous chapters. The management philosophy towards biodiversity management has changed with the external influences. With the increased pressure from government, Tea companies started considering Biodiversity as a corporate social responsibility (CSR). Later on companies were compelled to think about biodiversity beyond the CSR and Government role also overtook by NGOs.

The following case studies will enable to know what exact reason that drove the companies to undertake biodiversity management as core area of business strategy.

Case Study 1 - Watawala Plantations PLC

As explained in research methodology and methods chapter in Watawala plantations I have observed Dickoya and Henfold estates in order to get insights about adopting biodiversity management principles. Both estates were accredited with ethical tea partnership, fair trade labeling and importantly rainforest alliance certificate.

The initial interview with estate management focused to find out reasons why biodiversity management practices have become prominent in current days in plantation sector.

history

In 1990's and early 2000 period Biodiversity management was primarily driven by estate managers personal views on environment and sustainability. With the cultural and religious background of the country many estate managers were tend to protect flora, fauna and species exist within the estate territory. However there were some exceptions as well where management tried to commercialize each and every land area available within the estate. There were regulations imposed by Central government and provincial governing authorities to protect the Biodiversity in the plantations which are not very closely monitored.

Recent Changes

However commencing from late 2000, NGO organizations became prominent in protecting environment and biodiversity. Today NGOs including accreditation and certification awarding organizations play a pivotal role within the scope of biodiversity management. One key player in Sri Lankan context specifically in relation to biodiversity management is rainforest alliance certificate. Rain forest alliance certification provide comprehensive guideline to protect biodiversity and develop sustainable business. Therefore in the field visit and in the interview high emphasize was placed on rain forest alliance certification and the consequence of adopting the same.

From the point of entrance to the above tea estates the notices of above accreditations are displayed with the intention of providing awareness to the employees and visitors as well as a compliance requirement of such accreditation organizations. Such display boards contained the details of biodiversity management principles adhered by estates in order to obtain aforementioned certificates. Further some display boards contained information on rare flora, fauna and species that can be observed in the estate.

In the field visit it is observed that biodiversity management has not been limited to display boards, but the practices also have been developed in order to protect the biodiversity. In the discussion with estate management it was mentioned that there were informal biodiversity management principles even before obtaining the accreditations. However after obtaining certifications from

international organizations biodiversity management has resulted in well organizing the procedures and making biodiversity management a responsibility of everyone's job role.

The mechanism

Employees compelled to protect biodiversity through rules and regulations imposed by estate management. Despite the free education established in estates, tea plantation workers belong to lower category in relation educational level. This has been a major problem for years face by plantation companies when improving worker productivity and efficiency. However considering the biodiversity conservation due to beliefs and rituals of the of estate workers who migrated from south India, they considered certain trees animals as reverential objects, thus scared to destroy even without having advance knowledge on the importance of the same. However today, with the awareness provide by authorities as a compliance requirement of certification programs, coupled with regulations imposed, employees contribute to conservation of biodiversity with higher level of interest.

In the Henfold estate it is observed that estate officials maintain sophisticated documentation process in relation to biodiversity conservation in the estate. Separate clerical staff has been appointed to maintain the documents with special training. In the interview it is revealed that these documents are mandatory to meet the annual audits of the rainforest alliance certification. Passing through the annual audit is compulsory to renew the certifications. The documents provide information about flora, fauna and species that can be seen in the estate, endemic status, whether it is endangered or not, the mechanisms established to protect them, number of sights of animals etc;

In the next stage of the interviews it is questioned to identify the key drivers that drove plantation companies to undertake the accreditations such as rainforest alliance. The direct cost associated with obtaining certificate was comparatively significant. Further company has to invest considerable amount to develop standards and procedures to protect biodiversity. Therefore based on economic rationality and self-interest theory there is no any motivation to undertake biodiversity management. The next phase of the case study dedicated to evaluate the drivers that

motivated tea plantation companies adopt biodiversity management despite the significant cost that they have to incur.

As explained in introduction section Sri Lankan Tea industry is highly exposed to the international market trends. Being a high profile exporter “Ceylon Tea” brand always tried to meet customer expectations in the world market. In the modern day’s world market concern over environmental friendly products have increased significantly. Owing to that customer tend to look for green products even at a premium price compared to average products. However customers faced the problem of finding real green products since they cannot directly observe the production process. As a result independent certification organizations have emerged such as rainforest alliance. These organizations have become influential in the market activities compelling organizations to become environmental friendly.

In the case of Watawala Plantations PLC European customers demanded tea produced without doing any harm to biodiversity and the environment. One of the key suppliers in the European region is Lipton who is also a powerful buyer in Colombo Tea Auction. Being identified the customer demand in the European region Lipton wanted to buy environmental friendly tea from Sri Lanka. Therefore Lipton pressurized local tea manufacturers to obtain rainforest alliance certificate which is a 3rd party confirmation to prove that tea is a green product. The pressure was created from different forms. The financial aspect of the pressure created through increasing market prices of the tea with rainforest alliance certificate. Lipton bid for a higher price knowing that premium can be compensated from end customers. Further buyers use their negotiation power to drive tea manufacturers to obtain rainforest alliance certificate warning them that purchases would be ceased if they do not obtain the certificate.

The outcome

With the introduction of the certification buyers created a hike in the tea prices for RA certified tea in the CTA. Therefore initial obtainers of RA certificate gained immensely from the premium prices artificially created by RA procedures. The success of initiators compelled other organizations to follow and imitate the early adopters of certification. Therefore each and every plantation company tried to adopt RA certification in order gain competitive advantage over their

rivals in the initial period. However with many companies obtaining the RA certificate super natural market prices converted to average prices over time and today RA certification has become survival requirement for tea manufacturers rather than creating competitive advantage over that.

Tea brokering firms played and pivotal role in communicating customer requirements and trickle downing the international pressure to the local tea manufacturers. Brokers are the distributors of information in relation to market fluctuations created by RA certificate and they provided the coordination between organizations. Today tea brokering organizations and accreditation organizations work closely to achieve environment related targets.

Case study 2 - Maskeliya Plantations PLC

The story of adopting biodiversity management by Maskeliya plantations is more similar to Watawala Plantations case study. Further it is observed that business use biodiversity as the mode of creating competitive advantage for certain business diversification. The outcome of on-site observations and interviews are briefed below.

The Mechanisms

The estates that I visited were in the process of obtaining Rainforest alliance certificate when the time I visit there. Therefore I was able to observe the changes in processes and procedures that estate authority make to manage the biodiversity exist within the estate. Currently both estates are certified with rainforest alliance certification.

In the initial interview of Superintendent of Hapugasthenna estate, he stressed on the requirement of considering the interdependencies of systems and need of establishing a system to protect such interdependencies. He emphasized that commercial tea plantation is part of environment and it has direct relationship with biological diversity. Therefore when doing the business, authorities need to exert proper management tools and mechanisms to create the balance between systems. Biodiversity management is such a mechanism that estate has to be developed in order maintain the balance between business objectives and environmental accountability.

Hapugastenna estate remained exceptional considering the biodiversity conservation and carrying out experiments in relation to environmental protection. The knowledge and the attitudes of estate manager towards biodiversity and management has resulted in creating culture within the estate to take proactive initiatives to protect environment.

However according to estate manager the latest boom in emphasize over biodiversity is driven by Rainforest alliance accreditation process as similar to Watawala Plantations PLC's case. Since every tea Plantation Company has to do the sales function through Colombo Tea Auction the influences coming from international market strike the players across the board. Being a key player/supplier in the CTA Maskeliya plantations also exposed to influences stem from key buyers such as Liptons.

Estate manager mentioned that tea buyer's (Mainly Liptons) pressure on Auction tea prices is the key driver for adopting biodiversity management as similar to all the other companies in the industry. However it is noteworthy that Tea buyers have just passed the influence to manufacturers whereas the origin of the pressure is from end customers basically from the European countries. As per the estate manager's view reasons for origination of such influences could be due increasing awareness over environmental issue such as global warming etc.

The imitation of successful players in the tea auction is also another reason to adopt biodiversity managemnt principles by Maskeliya plantations. Due to the price boom created by Rainforest alliance certification early adopters gain financial gains as well as their reputational gain also became high. By seen that Maskeliya Plantations also wanted to follow the successful competitors especially due to uncertainty prevailed during the price hike period.

Biodiversity as a competitive advantage

At the Moray estate which belongs to Maskeliya plantations I observed that biodiversity has been used to generate competitive advantage especially in making business diversification. Moray estate is a concentrate tea manufacturing estate located adjacent to peak wilderness sanctuary near to Adam's peak. This area has been identified as one of the highest biological hotspot exist within Sri Lanka. (Maskeliya Plantations annual Report, 2013/14) Therefor business has used this resource to create a tourism experience by setting up an eco-friendly cottage in the boundary of

the estate. This is an example for developing up new business structures and models utilizing biodiversity resources while preserving and protecting them.

The above two case studies demonstrate how and why tea plantation companies in Sri Lanka adopt biodiversity management principles and procedures drastically in the recent past. Moreover the analysis chapter provides overall understanding on the Sri Lankan biodiversity management history and key drivers of the current day biodiversity management principles. Based on the analysis in the next chapter conclusions and findings are provided while integrating all the outcomes.

Chapter 05 - Research Findings

This chapter organized to provide research findings based on the above analysis with a logical reasoning. Findings are organized to answer the primary research question of why and how biodiversity management has become prominent in Sri Lankan tea plantation context. Later drivers are identified in the back drop of institutional theory, specifically under the 3 key areas of institutional isomorphism.

Biodiversity management is a concept that different people define in different forms. Moreover in Sri Lankan context it is a social process that drives companies to conserve biological diversity. Intention of this chapter is to identify common features of above case studies and outcomes of interviews to develop an overall understanding on why, how and key drivers of adopting biodiversity principles in Sri Lankan plantation companies.

From the literature review it is identified that research on biodiversity management as management tool is less identified. There are many researchers focusing on micro factors such as specific flora, fauna or species. However research in holistic perspective, management perspective or either in corporate perspective is limited.

Based on the literature review and interviews it is identified that biodiversity management as a tool, is not novel to Sri Lanka. There are ample evidence available from history of Sri Lanka that Kings and higher authorities highly emphasized on protecting biological diversity. Further religious background and culture of the country backed up the biodiversity conservation.

Biodiversity was critically challenged during the Colonial era with introduction of commercial plantation. The attitudes dripped from Europe created a negative impact on the conservation of biological diversity. Biodiversity remained unnoticed within post-colonial period until 1990s where earth summit was organized.

With the pressure generated after signing the Kioto Protocol ⁵government of Sri Lanka compelled to set up authorities to oversee the organizational and individual commitment to conserve biodiversity. However surpassing the Government role today NGO has become predominant in providing directions to individuals and organizations to achieve biodiversity conservation goals. Individual's perception on biodiversity, environment and sustainability was the key driver of biodiversity management during this period. However biodiversity management was not very organized, formalized and not delegated to individual level as a management tool.

According to the two case studies and the industry information it is revealed that the current high emphasize over biological diversity is a result of external influences coming in the form of certification process. Common management perception on above as filtered through the interviews states that financial benefit created through paying extra premium for Tea is one of key factors that compelled companies to obtain rainforest certification.

Findings on the drivers of adopting biodiversity management in Sri Lankan tea plantation industry can be better explained using institutional theory specifically through process of Isomorphism. (DiMaggio and Powell, 1987) As explained in literature review Isomorphism explains how institutions become similar. Three Isomorphic factors are used here to describe the drivers of adopting biodiversity management in Sri Lankan plantation companies.

5.1 Coercive isomorphism

As explained in the analysis chapter, the increased concern over biodiversity is a result of influence by end customers. The inception of influences is a result of number of factors including increased

⁵Kioto Protocol is an international treaty signed in United Nations Framework Convention on Climatic Change to reduce the man-made damagers to environment with the intention of controlling global warming.

customer awareness on environmental factors, deforestation, global warming, sustainability of resources etc. These factors are not emerged over night and they were hot topics in the world context for decades. In the interview informant said he observed that due to non-availability of proper mechanisms, customers were unable to pass this pressure to the manufacturers. Further adding, estate manger mentioned that NGO emerged as a result of above consequence to play an independent role and to pass the pressure to manufacturers. Certification and offering premium pricing that customers would expect to undertake if the product is a greener product are the technique used by NGOs.

Considering summary of all interviews it is identified that aforementioned influence of direct customers were passed to retailers in the international market. Retailers in return passed that influence to bulk tea suppliers such as Liptons and tea suppliers delivered it to Tea brokers and manufacturers through the local auction proceedings. Throughout the process certification organization (Rainforest Alliance) commitment was visible as an independent party.

Further to the pressure from international customers even local authoritative bodies make pressure on plantation companies to be environmental friendly. “The pressure stemming from Central Environmental Authority and Ceylon Tea Board are examples for coerce that plantations need to comply with”, another informant added highlighting the external pressures towards his business. Further he mentioned that influence from the cultural and religious background of the country also create coerce to conserve biological diversity of the country.

The above mentioned forces has resulted in creating tea plantation companies similar as reflected in case study. Therefore findings are in line with arguments put forward by DiMaggio and Powell in their research article “The iron cage revisited: Institutional isomorphism and collective rationality in organizational fields”

5.2 Mimetic isomorphism

Informants mentioned that with the introduction of rain forest alliance certification, early adopters of certificate become successful in the forms of financial as well as from legitimacy. Mimetic isomorphism created when other companies tried to benchmark with successful players and imitate

them. As explained in the case study due to uncertainty created in the CTA prices players simply tried to imitate the successful player without considering the cost or efficiency. As a result biodiversity management principles were undertaken and processors were developed by all other plantations accordingly.

The imitating process not limited to company level. According to estate managers and assistant managers interviewed, even at the estate level, estate managers tend to follow successful players who have achieved higher auction prices at the CTA. Therefore even at the micro level mimetic process can be observed. The final result was majority of the estates became similar by undertaking Rainforest alliance certification and developing similar kind of mechanisms to conserve biodiversity.

5.3 Normative isomorphism.

As explained in literature review, normative isomorphism refers to becoming organizations similar as a result of professionalization. The application of this in Sri Lankan plantation context is minimal. Planters' association is the professional body of Sri Lankan tea planters. Similarly professional exams are also conducted through National Institute of Business Management specializing in estate management. However in the interview it is mentioned that adopting biodiversity management as a result of professionalization is minimal. Further informants added that academic side contribution to tea plantation management is still at a developing stage.

However through employee transferring there is an impact on biodiversity management processors where horizontal movement of employees provide opportunity to share knowledge and experience gained in previous estates. Employees try to apply the previous model and structures of biodiversity management in the new estate where he/she assumed duties. Therefore there is a chance of adopting biodiversity management principles in plantation companies as a result of normative isomorphism.

In conclusion this chapter organized to provide research findings to answer the research objectives. First two objectives are in detail analyzed in "chapter 4-Analysis" and based on the analysis,

findings for the final objective is primarily given in this chapter. Based on the findings conclusions and recommendations are provided in the next chapter.

Chapter 6 - Conclusions and Recommendation

In this chapter conclusions are provided based on the research findings. Based on the identified limitations in the study different recommendations are provided to overcome such limitations in the future researches.

6.1 Conclusions

Sri Lankan tea plantation industry possesses a long history as well as a world famous brand name. Similarly, tea sector contribute immensely to the country's export earnings. Larger community depends on the tea plantation industry either directly or indirectly. Therefore tea industry is vital for Sri Lanka as a developing country. As a key player in the world tea market, tea industry faces a lot of challenges since it is directly exposed to international market dynamic. Therefore business environment is highly vibrant compared to other businesses.

On the other hand plantation business has an un-detachable relationship with environment which creates opportunities as well as threats. New market trend of sustainability products and high environment concerns have resulted in driving plantation businesses into new dimensions. Biodiversity management and obtaining international accreditation is a new business trend that can be observed in current days.

This research was carried out in a backdrop of aforementioned situation prevail in Sri Lankan plantation industry. Further disclosure requirements such as integrated annual reports and sustainability reports also have been a forcing factor to increase the concern over biodiversity as well as the business sustainability. Research was carried out with the intention of identifying how the Sri Lankan companies adopt above challenges in a business management perspective and in a sociological perspective.

The conclusion on evolution of the biodiversity management states that it is directly linked with social, cultural situation of the country. Prior to colonial era it was nurtured by social and religious values of the country. During the colonial era conservation of biodiversity was challenged with the commercialized views of the British Rulers. In the recent past biodiversity was predominantly influenced by market trends and activities of accreditation organizations.

As a researcher I considered biodiversity management by companies as social construct. Therefore different people might have different perception on how and why companies undertake biodiversity management. Therefore different perceptions were brought in using case study approach and common perceptions were identified. Once the common perceptions were analyzed it was observed that outcomes were in line with some social science theories and theoretical base was mixed with outcome. Drivers of biodiversity management in plantation companies are mainly stemming from different pressure groups. The pressure can be categorized into three different areas according to social science especially based on the arguments presented by Di Maggio and Powell. The coercive, normative and mimetic pressures have been identified through case studies as the key drivers of adopting biodiversity management in plantation companies in Sri Lanka.

Special attention was paid to accreditation programs such as rainforest alliance and their impact on biodiversity management which emerged through NGOs and accreditation companies. The influence coming from external parties was also identified through the research.

6.2 Recommendations

The recommendation includes two perspectives i.e. academic perspective as well as corporate perspective.

Research on biodiversity is necessarily not limited to finding on specific species, flora and fauna. There are broader ways by which a researcher can consider about biodiversity conservation; such as looking from the corporate angle. Corporate perspective is important because corporates are liable mainly for biodiversity deterioration whereas some corporates have the strength to protect the biodiversity compared to an individual. This is a preliminary study and this research will open up opportunity to further carry out the researchers in this area based on a sociological perspective.

Businesses cannot depend on same competitive advantage in the long run. Since the business environment is dynamic, the sources that can create competitive advantage also change. Current trend towards biodiversity conservation and business sustainability is one good example where companies develop competitive edge over rivals using greener product and through marketing sustainability. In tea plantation industry biodiversity management practices along with rainforest

alliance certificate has created financial benefits as well as business legitimacy. Therefore it is recommended to identify the business case exists behind environmental challengers.

Further this research recommends incorporating these environmental strategies to plantation management curriculum such as Professional plantation management courses conducted by National Institute of plantation Management (NIPM) to provide comprehensive knowledge to the plantation professionals who enter in to estate management. As observed, academic contribution in this field is minimal. Therefore it is recommended to increase the academic involvement in this field in order to create more knowledge. This can be achieved through promoting learning culture through plantation employees and through government intervention.

In conclusion this research is focused to identify how biodiversity management has institutionalized in Sri Lankan plantation companies. This gives an explanatory outcome from the sociological perspective and has created an opportunity to further study the area.

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Appendix I: Interview check List

The following format was used when carrying out interviews to gather data. However interviews were not limited to the following questions. Depending on the situation open ended questions were raised to get in detail understanding.

- How do you define biodiversity management in commercial plantation context?
- Why do you want to obtain international accreditations such as RA certificate?
- What compels you to implement biodiversity management principles in your organization?
- What drivers caused to obtain international certificate?
- Who are the key stakeholders and why are they interested in implementing biodiversity management in your plantation companies?
- How did you get to know about these certifications?
- What are the benefits you have enjoyed after implementing biodiversity management principles?
- Are these practices newly introduced or did they evolve over time?
- Have you changed practices to obtain certification or have you just labeled the existing practices?
- How would you anticipate the future of biodiversity management in your companies?

Appendix II: Transcribed summary of key interviews

- Respondent : Assistant Superintendent-Dickoya Estate cum Sustainability Officer- Watawala Plantations PLC
- Date : 21st of June, 2015.
- Duration : Two hours and Thirty minutes
- Location : Dickoya and Henfold Estates

Key points identified in addition to the matters discussed in the structured questionnaire are listed as follows.

Business sustainability is not a new area for Watawala plantations. The top management commitment towards sustainability has resulted in changing management philosophy towards greener practices. Many estates in Watawala Plantations are certified with world famous accreditations such as RA, FLO, and ethical tea partnership. As a company Watawala always committed to protect environment and biodiversity.

In the history there was neither a particular business sustainability policy nor biodiversity management principals. Estate managers committed to protect biodiversity based on their personal views and knowledge. However in the recent past an immense pressure came from different stakeholder groups to implement biodiversity management systems and to get international certificates. Key pressure came from the Colombo Tea Auction where tea whole sellers through brokers compelled tea planters to obtain RA certificate. This took the form of financial benefits where those who obtained RA certificate enjoyed premium prices at tea auction.

Further Watawala Plantation management observed that those who obtained the RA certificate stand out from the other companies and they get special legitimacy in the eyes of stakeholders. Similarly those companies were financially successful due to the additional prices paid for RA certificate.

- Respondent : General Manager – Maskeliya Plantations
- Date : 9th of October, 2015.
- Duration : Thirty minutes
- Location : Colombo Head Office

In the history people only thought about profits when doing businesses. But today business is not always making profits, it is important to act responsibly as a part of the society. Therefore business as well as individuals need to focus on protecting environment.

Biodiversity management was formally started after deciding to apply for RA certificate. Until then there were informal practices. RA assisted in creating more formalized and précised biodiversity management principles. We actually changed the practices into biodiversity friendly manner rather than merely getting certificate through window dressing. We enjoy benefits today even though we had to incur millions to obtain this certificate. The most of the benefits will be passed to upcoming generations.

In creating an influence to obtain RA certificate, the actions of one major tea buyer become predominant in Sri Lankan market. Due to the large scale of the buyer coupled with pressure created through brokers compelled to adopt biodiversity conservation principles. The financial benefit too contributed in making a change.

The awareness on this kind of mechanisms is less in Sri Lankan context. Therefore a lot of organizations do not understand the business case behind this kind of sustainability programs. Therefore a lot of opportunities are missed by Sri Lankan corporates.

- Respondent : Superintendent- Hapugastenna Estate
- Date : Phase 1-22nd of June, 2015 / Phase 2-14th December 2015.
- Duration : 5 hours
- Location : Phase 1-Hapugastenna Estate / Phase 2-Colombo

The target of adopting biodiversity principles should not be getting certification. If you do proper agricultural practices without harming biodiversity, that is the most important thing whereas a certifications will come as a compliment to your practice. Hapugastenna estate is used as a part of research where estate manager experiments different sustainable plantation management tools.

As similar to other organizations Hapugastenna estate also applied for Ra certification and undertook many biodiversity management policies as result of coerce from different stakeholder groups. However the estate manager's argument is based on his personal views and his personal knowledge on plantation management, he has successfully implemented many biodiversity management principles even before these accreditations.

RA has created a business case with the influence from foreign as well as local pressure groups. Short term market hype also created to increase the demand for RA certificate. Ultimately many of Sri Lankan plantation companies fully accepted the certificate and started changing biodiversity management principles.

Sri Lankan history provides number of examples for ancient biodiversity management methods. Kings and rulers considered protecting biodiversity as a part of their role. Therefore these practices are inherited to Sri Lanka. However acquisition of Sri Lanka by British rulers has resulted in diminishing of such values placed on environment.

Obtaining certificate is not sufficient to conserve biodiversity, it should make a habit and a practice of the employees and a philosophy of the top management. For that stick method as well as the carrot method has to be used. Once the employees are used to the system it is a matter of maintaining it. Further the knowledge on the safes need to be transferred to next generations through professional courses and through professionalization of practices.