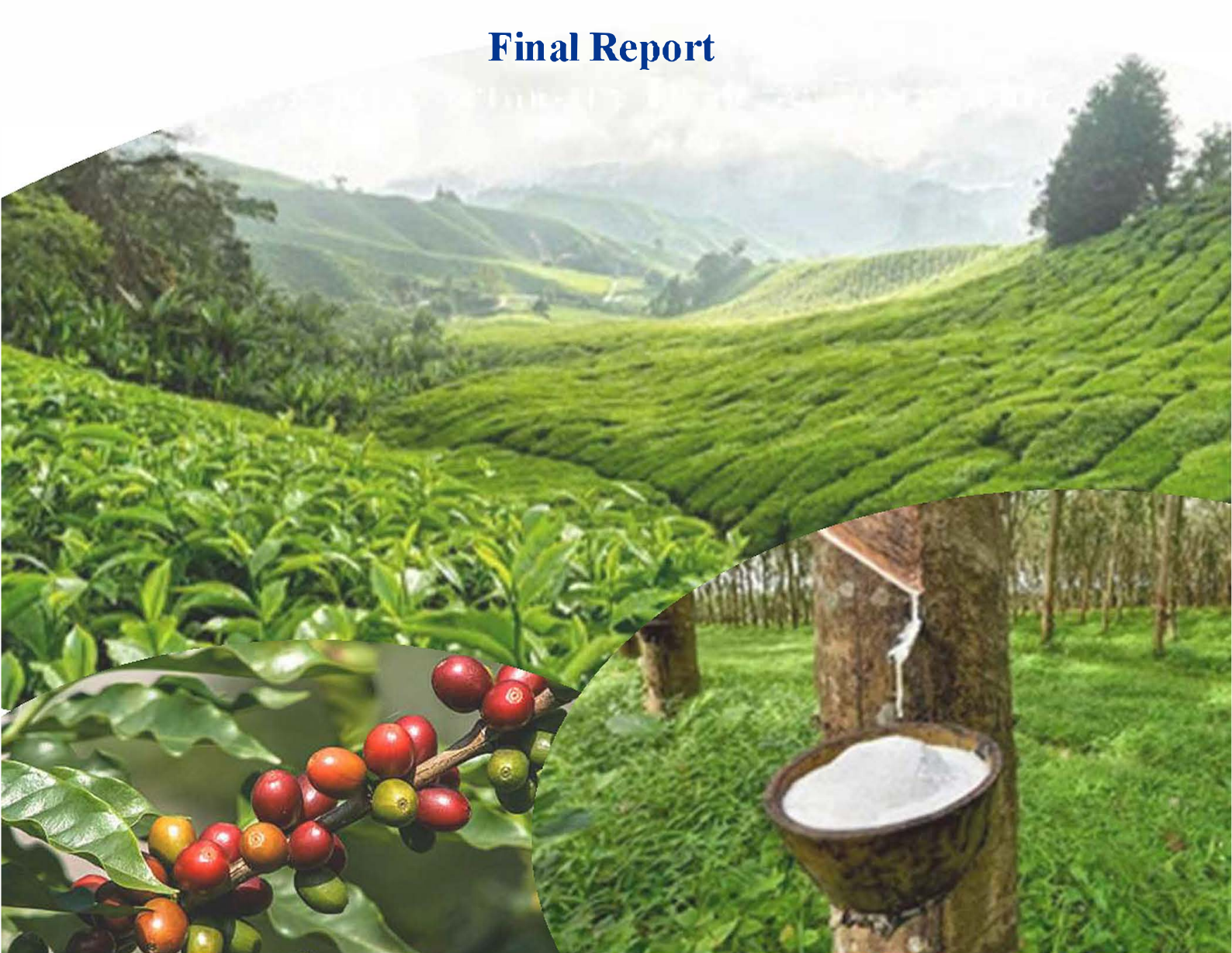




Department of Industries & Commerce
Government of Kerala

Study on Diversification and Modernization of the Plantation Sector in Kerala

Final Report



September 2024



भारतीय प्रबंध संस्थान कोषिकोड
Indian Institute of Management Kozhikode
Globalizing Indian Thought

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September 2024

Prof. Ashutosh Sarkar

Prof. Venkataraman S

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Executive Summary

The plantation industry has been a pillar of Kerala's economy and employment base for several decades. It also plays a crucial role in Kerala's environment sustainability map, having contributed to the maintenance of a relatively strong green cover for the state, significant in proportion to the overall land area, as compared to many others. In the backdrop of Kerala's ingrained and acknowledged orientation to being labour friendly state, the plantations also traditionally played a major role in being a major employer and thereby opportunities for many unskilled and skilled labour.

Some of the issues confronting the sector are chronic. But the generally more munificent external environment in the latter half of 1900s allowed many of the sector players sufficient margins to tide over these issues. However, the uncertainty and volatility in global prices of the plantation crops have significantly raised the business and financial risk exposure of this sector, leading to dwindling revenues and profitability, over the last decade or so. In addition, the sector's operating context in Kerala including labour related issues, inflexibilities in legal dispensations, and several ground-level administrative impediments, have combined to contribute to the sector's declining competitiveness. This context has also led to a vicious cycle – weak prospects leading to poor investment attractiveness and degradation in the produce and returns, further hindering the much-needed investments.

On account of sheer size and share of cultivation/production, Rubber is the most impactful of all the plantation crops for Kerala. So, Kerala plantation sector's overall economic fortunes are significantly and inextricably linked to the economic prospects and problems of its rubber plantations. While the plantation crops in Kerala have been impacted due to global market linkages as well as internal issues, the biggest impact in overall output and revenues has been on account of rubber. Individually taken, crops like tea and coffee have of course struggled over the past decade or more, and at times perhaps even more than rubber; however, considered in aggregate, Rubber is the key crop in Kerala that makes a difference. **Consequently, while all the crops are important and have their specific issues to be addressed, to make any significant difference to the overall sector economics, the issues pertaining to rubber plantations definitely need to be addressed.**

If this overall situation is allowed to continue, what was once a preferred and thriving sector will likely become a sunset sector. Such an eventuality can have disastrous consequences not just for plantation owners but for the whole state of Kerala. If the plantations go into a state of disuse and abandonment, large number of jobs could be lost and there will also be significant loss to the exchequer. Moreover, there could be severe environmental damage, as the Government is no condition to be able to operate these plantations in a viable manner, as the past has demonstrated. Therefore, **there is a dire imperative for a clear vision and a roadmap for the strategic revival of the Kerala plantation sector. The study team's recommendations are presented in this context.**

Key problem issues

The key issues identified in the case of Kerala plantation sector, can be summarized as follows:

1. The economics of plantations highlight that the core issue is fundamentally that of **reducing profitability, and increasing operating/ economic risk exposure**, rather than one of fundamental unviability. However, the current state of economics has had a significant impact on the sector's vulnerability and its ability to make continued investment that is critical for scale and modernization.
2. The sector players have become more of price takers rather than price setters, because of weak market connect, limited scale, and their inability to harness any uniqueness or go up the value chain. Lack of concerted and cooperative efforts towards brand building, or towards creating collective resources, has not helped build this competitive dimension.
3. **Archaic and inflexible legal provisions and the constraints of operating within a cumbersome operating framework**, further exacerbated by constant ground level interferences and bureaucratic activism combine to create a highly unattractive and invariably hostile business environment. While the need for maintaining checks and balances is necessary to weed out undesirable and illegal practices, or to prevent opportunism, are undeniable, there is equally also a need for a drastic mindset change in the administrative network relevant for plantations.
4. Only prosperity can beget prosperity. In the case of plantations however, rising costs of operations, on account of falling yields/productivity, labour costs and the unfriendly operating environment have led to a situation where despite mandatory requirements, the plantations may be driven to cut corners if they can. They may be constrained to operate in ways whereby, while they may be correct by the letter of the law, the spirit is missing, and overall labour welfare may be hampered. This also creates huge risks to jobs and far worse, even endanger lives. For strong labour welfare, labour prosperity and shared value creation to happen in plantations, the root causes need to be addressed.
5. **Preservation and conservation:** Many of the issues indicated above are directly or indirectly related to the aspect of ecological degradation – whether it is the issue of poor economics, regulatory issues, bureaucratic activism, lack of investment attractiveness, human-animal conflict, or the issue of mono-cropping. Therefore, any roadmap or recommendations for the future, need to also take into consideration centrally, the environmental aspects and impacts.
6. **Labour Welfare:** Labour is central to plantation operations, especially Kerala being a model state in the context of labour welfare. It needs to be ensured that the matter of revitalizing the plantation sector also ensures the continued welfare of labour. To this extent, the Government can also consider taking an active role in terms of allowing steps such as bringing the plantation workers under ESI schemes.

The IIMK study team's approach to forgoing recommendations are predicated on seeking to address the above key problem issues. To address the above issues, a concerted and holistic approach is required to moderate the sector's inherent risk exposure and elevate its economic prospects, to enable the Kerala plantation sector to live up to its potential of being a significant employment generator, and an environmental and social sustainability champion.

Principles Underlying Recommendations

To address the above issues that have led to a critical situation for the plantation sector, **a vision-driven strategic approach is the need of the hour**. Kerala has the potential to **reclaim a prominent competitive position** in many of the current plantation crops as well as new crops such as tropical/exotic fruits, where it enjoys a natural advantage. To achieve this vision, **the current policy dispensation and operating framework/dispensation needs review**, to bring it in harmony with the altered economic and social landscape. In line with the above vision, we recommend that the renewed policy recognize the **following principles underlying this study's recommendations**:

1. **Scale economies, balanced modernization and regular investments** are critical to enable plantations to operate with optimal costs and to reclaim competitiveness in the global markets.
2. The revised policy framework needs to **drive and facilitate economic flexibility, growth and competitiveness** while also **balancing protection of the environment, flora and fauna, and animals, and ensuring labour welfare**.
3. Further environmental degradation (than already done) must not be allowed, and **Government and plantations need to work collaboratively to ensure environmental restoration and well-being, and strong carbon sequestration, to help reduce risk of climate-linked disasters**.
4. Kerala's labour-welfare oriented social and political climate is a long-standing legacy and is progressive to the extent that it helps counter potential labour exploitation; but it also has unwittingly created a broader sense of entitlement and frequent hurdles for industrial advancement. For plantations, this welfare legacy and culture needs to be channeled in a positive and collaborative manner, to **correctly ensure healthy/safe working conditions and a progressive and non-exploitative remuneration/compensation framework that allows strong shared value creation**. However, **this legacy welfare culture also needs to be consciously balanced with near-full freedom for plantations to modernize operations and usher in efficiency and productivity improvements**. Otherwise, plantations will find it challenging to survive in a globally competitive context, if they are held to ransom at every turn, for every investment aimed at efficiency and modernization. This is a **delicate "tightrope walk", that requires the Government to take on a facilitating role** and is crucial.
5. Facilitation of enhanced operating efficiency needs to be supplemented **with a concerted and well-conceived branding programme**, to create a stronger positioning for Kerala produce,

especially in products like Tea, Coffee, and Cardamom. The same approach can also be extended to exotic tropical fruits, once there is the possibility of greater scale of production.

6. Greater value appropriation from farm produce needs to be encouraged **through a thrust on value-added products**, wherever relevant.
7. The implementation of the policy needs to be driven by a **strategic, state government-level consensus on a masterplan like approach**. The execution needs to cut across any potential biased departmental positions and ensure that resolution of issues balanced and swift.

Specific Recommendations

The revised policy framework for plantations may be grounded in the fundamental principle of the need for overall business resilience, as well as all around sustainability, including protection of ecology, social welfare and protection of all flora and fauna. Accordingly, the renewed policy may *inter alia consider* the aspects listed below:

Crop Diversification

1. Crop diversification, particularly regarding tropical/ exotic fruits may be allowed. For such diversification to be meaningful for risk diversification, growing at scale is critical and may be allowed.
2. Specific choices of fruit crops (within an allowed and declared list of crops) may be left to the farmers/plantation owners, giving them full freedom, to enable them to adapt in an agile manner to global market trends, without any micro-management by the Government. This flexibility that is accorded for the purpose of ensuring business agility and business risk diversification should not compromise environment/ ecology in any manner, including biodiversity. One principle that needs to be strongly considered is that such **diversification be allowed only for crops having a minimum life of 10 years; this will ensure sufficient carbon sequestration, and therefore contribute to environmental sustainability and net-zero goals.**
3. In line with the above recommendation, farmers/planters should also be allowed the freedom to switch between crops as they deem fit from time to time, without any needless bureaucratic interference, so long as such switching is within the already laid down choices of crops as above.
4. **Silviculture/Agroforestry to be encouraged as part of diversification, subject to checks related to any biological risks that may be posed by introduction/expansion of such wood varieties.** To facilitate timber trade and revenue to the Government exchequer, the seigniorage fee as practiced may be replaced with GST. Promoting silviculture would not only help Kerala economically but also increase carbon sequestration.
5. To facilitate the above, **the existing definition of plantation need to be expanded to include any crop having a minimum life of 10 years.** This will also facilitate multi-cropping and help sequester atmospheric carbon.

Leveraging Scale Economies & Value Addition

1. Encourage Diversification, Scale and Value Addition.
2. Introduce policies to encourage Farmer Co-operatives and Farmer Producer Organisation (FPOs) to create shared facilities for farmers with small holdings. This will enable small farmers to reap the benefit of scale without the need to individually invest in capital intensive facilities.
3. Encourage Public-Private Partnerships, especially for promoting a premium positioned and geographically tagged “Kerala brand” in products like fruits, spices etc. This will reduce the individual burden on small farmers, while allowing them to offer value added products, especially for the export markets.
4. Value addition and economies of scale needs to be encouraged but can be done creatively.
5. Sustainable farming and good agricultural practices may be hugely encouraged and non-sustainable practices/ heavy chemical need to be disincentivized.
6. **Government may provide brand building and support** and facilitate Geographical tagging to promote a **Kerala-linked brand** for several crops. Brand building and positioning to be promoted in a creative manner, and facilitated by the Govt. of Kerala, in conjunction with the farmers. The aim of such intervention should be facilitation, and not standardisation that curbs individual creativity.

Government in the Role of a Facilitator rather than an Administrator

1. The current bureaucratic interference is partly due to the 5% relaxation given for diversification. **If full freedom is granted to farmers for crop diversification, this issue of interreference can be significantly reduced.**
2. Single window clearances may be introduced to enhance ease of doing business.
3. **Reduce/ Eliminate** the possibility of **administrative interference at ground level. There can be well-conceived regulations**, which are clear, and detailed, **but they need to be administered with a light hand**, so that the business environment does not emerge as hostile.
4. One of the major bureaucratic interferences is due the efforts in identifying, assessing, and conversion of excess land that is exempt under KLRA because they are considered as plantation land (referred to as “excess plantation land” hereinafter). This not only creates difficulties and uncertainties for the planters but also adds to significant administrative efforts. To ensure that bureaucratic hassles are eliminated, and that exempted land remains as plantation, **it is recommended that a separate land classification be made for excess plantation land.** Classifying excess plantation land as separate from the ownership of such land would help easy identification and make implementation of the KLRA easy, with minimum administrative control and effort. **Such classification would also remove ambiguities about the identification of plantation land under the Kerala Forest Act 2003.** The ownership of plantation land, under such a dispensation would essentially mean buying of right to earn revenues by way of engaging

in plantation activities. **However, reasonable control may be put on conversion of such land (classified as plantation) for exceptional circumstances.** Conversion of such land could be allowed in exceptional instances, such as for projects of national importance after ensuring reasonable compensation to the planters as well as equivalent amount of afforestation.

Labour Welfare

1. The **scope of ESI may be extended to all plantation workers**, with due contributions maintained from both employers and employees.

Preservation and Conservation

1. The planters/farmers have faced harassment and arbitrary actions under the Kerala Forest Act 2003, which interestingly provided for exemption for plantation land. While the implementation of the recommendations of this report on a separate classification for plantation land would remove many bureaucratic hassles and arbitrary actions by Forest Department taken primarily on the argument of being a fallow land or abandonment of plantation activities, the greater concerns of the risks posed by an ecologically fragile areas would remain. Whereas the justification for protection of ecologically fragile land cannot be disputed, the arbitrary implementation and actions at the ground can threaten the economic viability and investments without seriously benefitting preservation and conservation. Thus, Government should ensure that while declaring a plantation land as ecologically fragile, such decisions are taken based on an objective and independent evaluation.
2. Preservation and conservation might not have been the focus of the law makers when the KLRA was originally enacted. However, with greater and legitimate concerns currently prevalent on account of the dangers of degradation of environmental and ecological balance, **preservation and conservation should also be at the forefront of policy making considerations.** So, this study recommends that an independent research institution be created with a mandate to regularly map the ecological environment of Kerala. The Government can seek help of such a research institution in formulating good practices for plantation activities including preservation of wildlife and rare and endangered species. As such, an institution of this kind would be a unique and serve as a model that can be emulated by other states, and the Kerala government may also seek funding support from the Union Government for establishing such an institution.
3. Government should **encourage multi-cropping on plantation land.** It is also recommended that reasonable restriction be put on clearcutting and promote the practice of optimal crop planning as part of agricultural best practices.
4. Kerala Government should take initiatives to earn carbon credits for its preservation and conservation efforts.

5. Kerala Government may seek monetary compensation from the Union Government for its preservation and conservation efforts at the cost of foregoing economic opportunities that can be received through industrialization and urbanization.
6. **Additional buffer zones may be created in a collaborative manner by planters and Government, that will allow a large area/ domain for wild animals than available at present**, especially in areas where there is significant human-animal conflict. While such a zone may be contiguous across parts of the state, multiple buffer zones may also have to be created. For this to happen, existing plantations, big and small may have to mandatorily sacrifice part of their land holdings in larger interest to create this new buffer zone. Such extraction of existing land may be reasonably compensated by the Government and the Government can further add on to the buffer substantially through its own plantation holdings.
7. If such additional buffer-forest zones are created and populated with the correct kind of flora, it can also introduce the possibility of a common resource of *wildlife safaris* - This can add an impetus to eco-tourism initiatives.
8. There is the risk of fragmentation of land that arises when the private plantation land gets passed down through natural succession and inheritance. This can ultimately lead to scale dis-economies and conversion of plantation land for non-plantation purposes, as they would be freed from the purview of land ceiling restrictions. **To reduce this risk, it may be ensured in the policy framework that even if plantation land gets distributed down generations, the use of such inherited land must be only for growing plantation crops**. This is because plantations serve a critical role of contributing to green cover and carbon sequestration - aspects that are much needed in today's context where climate change related risks threaten the very survival of humanity. Although this purpose may not have been explicitly articulated in the original Land reform Act / KLR dispensations that allowed special allowance for plantation lands to be exempted from the 15 acre land ceiling, it is imperative to recognise and impute this objective retrospectively to plantations. This is a complex issue involving multiple perspectives and finding perfect solutions to this issue is challenging. However, creative approaches may be considered to ensure this objective, while also maintaining the natural economic right of plantation owners and their heirs. Corporatisation of plantation holdings is one way of addressing this issue, wherein beneficial interest in the land can be maintained while the commercial and plantation-characteristics of the land stays unchanged.

Promoting Eco-tourism

1. **Eco-tourism may be encouraged as part of diversification - but within clear limits to ensure that the green cover and “character” of plantations are maintained.** However, in the name of eco-tourism, the allowances granted should not lead to “concretisation”, or competitive crowding/ degradation, as has already happened in locations like Munnar.
2. There are already certain allowances for eco-tourism in the current legal framework (10% of 5% of plantation holding, with a maximum 10-acre limit). While these appear to be reasonably adequate for medium to large sized farms, there is a case for reviewing the same, mainly to allow smaller farm holders to operate tourism facilities with a minimum scale. **However, any such review or relaxation of allowances from the present, need to be part of the development of a concerted tourism masterplan at the state level.** This is needed to ensure that the individual tourism related initiatives develop in a harmonious and synergistic manner, and that parts of plantations do not over time get converted to “concrete jungles”, depleting the green cover. If there are no checks and balances, there is a clear and present danger of such crowding and degradation, as also of haphazard development. **A tourism masterplan, with a clear mapping of plantation regions and localities, and the creation of enabling transport infrastructure etc. needs to first be in place, before any further allowances be granted,** as otherwise it would turn out to be arbitrary.
3. The principle underlying facilitation of ecotourism should be more about complementarity with plantation business and a facilitation of brand building for plantation produce, and not as much about revenue risk diversification, by foraying into the hospitality business. **Therefore, any ecotourism allowance must ensure that the fundamental character of plantations be maintained.**

Chapter 1: Introduction

1.1 BACKGROUND TO THE STUDY

The plantation sector in Kerala contributes substantially to the economic sustainability of the state of Kerala and provides employment opportunities to many people. In recent years, the cultivation of the above crops has been facing significant challenges due to global competition, unfriendly trade agreements, impact of climate change and regulations, and higher cost of cultivation including input and labour costs. There is also an increased concern for monocropping and protection of biodiversity. The challenges and difficulties of the industry is gradually getting reflected in the shrinking productivity and revenues. From the revenue highs of around Rs.21,000.00 crores in 2013-14, the industry is clocking only about Rs.9,360 crores as of 2021. The situation is potential beset by a multi-level and complex issues. The pandemic situation has further exacerbated some of the idiosyncratic issues faced by the sector.

Furthermore, there is also a significant change in the global market for many of these crops. There are shifts in consumption behaviour among consumers across the world as well as changes in the competitive dynamics. The sustainability challenges related to the sector are also looming – not just the economic dimension, but also issues related to environmental sustainability and social impact. Climate change in particular is mega trend that is expected to have huge implications for the plantation sector, as is true for agriculture and cash-crops in general. Some of the specific factors (indicative but not limited to) that are impinging on the current and future prospects, profitability and sustainability of the plantation sector in Kerala include:

- Declining yields, efficiency and profitability
- Economies of Scale
- Cropping patterns and need to move from monocrop to a possibility of integrated farming culture
- Global competitiveness
- Skilled labour availability and related Demographical trends
- Logistic support and infrastructure
- Impact of technological and scientific advances in plantations and agro-forestry
- Fragile Ecology
- Social Impacts
- Laws and Regulations
- Dwindling economic contribution to the Exchequer

On one hand, these issues pose serious strategic challenges for the future of Kerala plantations. However, they also present newer opportunities to be explored and the opportunity to revisit the strategic positioning of the sector, encompassing a holistic vision of the entire economic, environmental and social ecosystem pertaining to the sector. Apart from a clear inclusion of environmental, economic, and social sustainability impacts, some of the key aspects to explore include Agroforestry, Eco-tourism, Silviculture, Multi-cropping, Vertical and Horizontal integration etc. Further, the possibility of introduction of integrated farming culture in plantation rather than monocrop plantation practices for sustaining food and nutritional security for the State may be explored.

It was in the context, that the Government of Kerala, through the newly established Plantation Directorate, Department of Industries & Commerce commissioned an assignment to be conducted, to examine the aspect of “Diversification and Modernization of the Plantation Sector in the State of Kerala”. After a due and rigorous competitive bidding process, the Indian Institute of Management, Kozhikode (IIMK) was selected to undertake the study.

1.2 APPROACH TO THE STUDY

The IIMK team had an exploratory round of discussions with key members of the Plantation directorate, and key members and office bearers of the Association of Planters of Kerala (APK) to gain prima facie understanding of the background and the context of the exercise.

Based on the IIMKs preliminary understanding of key issues generated through these discussions, and in line with the objectives of the study, the IIMK team’s approach to the study was centered on the study having to address following as part the assignment:

- A comprehensive understanding and impact of the operating environment of the plantation sector including revenue models, regulations, operating constraints, cost structures, environmental issues, social issues, etc.
- An understanding of relevant domestic and global competitiveness and prospects pertaining to the Kerala plantation sector, emanating from an incisive understanding of relevant strengths, vulnerabilities, opportunities, and threats.
- The current level of preparedness of the sector regarding emergent issues
- The collective vision of various key stakeholders – including growers, labour and government.
- The potential to enhance the contribution to the state exchequer, concomitant with the sustainable growth of the sector and value accretion to all other stakeholders – including community and dependent social ecosystems.

The larger intention was that the IIMK study should help strategize for the future of the sector and suggest a roadmap to guide its development for the next one or two decades, with particular emphasis on identifying issues that may be critical for strengthening business relating to traditional crops, and an assessment of alternative revenue opportunities, while centrally integrating environmental sustainability, social sustainability, and shared value principles into the plan.

1.2.1 Study Components

The IIMK team adopted a comprehensive approach to the study that included wide ranging discussions across the state with a host of stakeholders. The components of the study included:

- Site visits to various plantation regions in Kerala
- Preliminary secondary research
- Discussions with large- and small-scale planters and farmers – corporate and non-corporate
- Govt. /Plantation directorate officials
- Trade union leaders
- Sector / Crop experts
- Data driven research - delving into secondary data for clarity.
- Visits to Thailand fruit farms for assessing prospects for the future.

Several discussions were held in workshop mode, to gather insights from differing perspectives and also to explore solution possibilities for pressing and chronic issues. Meetings were typically held in separate groups so as to not conflate potentially conflicting stakeholder perspectives. These included

- Preliminary Meeting with APK members at Kochi
- 1st workshop-mode discussions with APK members
- Discussions with Kerala Farmers Federation (KeFF) at Kochi
- Meetings with select planters at Kozhikode.
- 2nd workshop with APK at Kochi
- Field visits to Munnar and other plantation areas in Idukki District
- Field visits to Kottayam and Kanjirappally
- Field Visits/Meetings at Wayanad
- Meetings at Trivandrum & Ponmudi
 - Principal Secretary/ Secretary, Director, and Officials in charge of Plantation Directorate
 - Experts/ former policy makers
- Field visits to Neliyampathy
- Field visits and meetings at Kanjirapuzha (Malappuram Dist.)
- Field visits to Bangkok and nearby exotic fruit farms
- Discussions with trade unions

1.2.2 Crop Level Focus

The various site visits and meetings also were designed to elicit a crop-level perspectives as well as stakeholder-level perspectives as follows:

Focus: Tea and Cardamom

Munnar

- Meeting with KDPA, Visit to Lockhart Estate, Madupatty Estate, Gundumallay Estate
- Meeting with Small Holders Representatives at KDH Club

Vandamedu

- Visit to Cardamon Estates
- Meeting with Cardamon growers at Vandamendu

Vandiperiyar

- Visit through Ratan plantations, Malankara Plantations, AVT Pasuparai Estate, Peermade Tea Company, Hailleyburia Tea Estates, MMJ Plantations, Tyford Estate
- Interaction with the planters at the Vandiperiyar Club

Focus: Small Growers/Rubber/Exotic Fruits

- Meeting with the representatives of the small growers' association, Kerala Farmers Federation (KeFF) at IIMK Kochi campus
- Field visit to Kottayam/ Kanjirappally
- Visit to farms of exotic fruits such as, Rambutan, Mangosteen (also trial plots on Russel Avocado, Achacheru, Durian, Mix fruit and grapefruit) at Mundakayam.
- Visit to Home Grown Nursery
- Discussions with small and medium landowners

Focus: Coffee/Pepper

- Wayanad Coffee Growers Association
- Discussions with planters of north Wayanad
- Focus: Struggling Tea Estates
- Ponmudi Tea Estate
- Neliyampathy

Focus: Coffee/Tea/Organic

- Neliyampathy

Focus: Cocoa

- Meeting at Kochi with Mondelez

1.3. SYNTHESIS

The inputs generated from the various interactions listed above, and the team own research, were analyzed by the IIMK team to crystallize the key issues that conform the sector, and the key issues that needed to be addressed to create a promising future for the sector. Deliberating and debating these issues contributed to greater clarity on the options that could be explored for developing a strategic roadmap.

Based on the above deliberations, the preliminary findings of the IIMK team were presented to key policy makers in the Government. This interaction provided valuable inputs and feedback, and the same was then factored into these final recommendations presented in Chapter 7.

Chapter 2: The Kerala Plantation Sector

2.1 THE PLANTATION SECTOR IN KERALA: A CRITICAL OVERVIEW

Unlike many other countries where virgin forests are being increasingly converted for plantation activities, the plantation crops in Kerala are being cultivated for more than a century. What began in the late 19th and early 20th century as an economic venture (or even perhaps an adventure) of a few British individuals turned into a thriving industry over a period of time, post Indian independence. This transformation happened as many enterprising locals, typically former associates or employees of the original British owners virtually inherited the latter's holdings. Their enterprising spirits were rewarded considerably by thriving returns for the plantation crops. Along with the riches of these entrepreneurial businessmen, the local population also thrived through employment and other income-generating activities. Overall, the plantation sector was supporting Kerala's economy in a significant manner, till almost the turn of the new millennium.

Traditionally, the remunerative prices in the market, for its produces, also covered for several inefficiencies and lack of strategic approaches in the sector. However, the prosperity of the plantation sector started dwindling in recent years, over the last decade or two, highlighting the lacunae, threats, limitations and inefficiencies identifiable with the sector.

During the current study, the team visited many plantations area and interacted with a large number of stakeholders. Based on subsequent research, data analysis and the inputs received from the above interactions the team identified few most pressing issues (not necessarily exhaustive) facing the plantation sector. In order to set the context for the study, the operating environment and the overall business performance of the major plantation crops are described in the following subsections.

2.2 TEA

Tea is the most popular beverage in the world and an estimate of 3 billions of cups of tea is served every day [Business Standard, 2014]. Tea is grown in both tropical and subtropical countries with China and India being the major producer as well as consumer (See Table 2.1). In India, Tea is produced primarily in the states of Assam, West Bengal, Kerala, and Tamil Nadu with some cultivation also existing in states like, Karnataka, Arunachal Pradesh, and Tripura. In 2022, the world consumed 6,098 Million Kgs of tea while producing 6,423 Million Kgs. India is a leading tea producer as well as consumer of

tea. Over the years, while India’s production has marginally decreased (from approximately 35% in 2006 to 21% in 2022), consumption has remained more or less consistent except in the year 2020 when Covid-19 has hit the world.

Table 2.1: Production and Consumption of Tea in India and the World

Year	Production			Consumption			Export			Import*
	India*	World*	%	World*	India*	%	World*	India*	%	
2022	1365.23	6422.66	21.26	6098	1168.09	19.16	1830.97	226.98	12.40	29.84
2021	1343.06	6455.19	20.81	6173	1173.03	19.00	1924.10	196.54	10.21	26.51
2020	1257.53	6279.50	20.03	5949	1071.21	18.01	1831.21	209.72	11.45	23.40
2019	1390.08	6161.15	22.56	5895	1153.78	19.57	1909.34	252.15	13.21	15.85
2018	1338.63	5966.19	22.44	5681	1107.49	19.49	1867.37	256.06	13.71	24.92
2017	1321.76	5718.39	23.11	5487	1090.97	19.88	1797.01	251.91	14.02	21.12

Million Kgs; Source: Tea Board of India

In 2022, India produced 1,365.23 million Kgs of tea while consumed 1,168.00 million Kgs. Thus, most of the tea that is produced in India are primarily consumed in India with a very minimal quantity being exported. India’s total exports and its share of global export has also decreased consistently. China, on the other hand, has significantly increased its production over the years and has become a dominant player. Interestingly, China mainly produces and consumes green tea. The year-wise trends in tea production in some of the major tea-producing countries are given in Table 2.2.

Table 2.2: Distribution of World Production of Tea

Year	China**	India**	Kenya**	Sri Lanka**	Indonesia**	Total**	India as a % of World
2006	1020000	955907	310607	310822	139761	2737097	34.92%
2007	1094000	944912	369606	304613	149510	2862641	33.01%
2008	1160000	980818	345817	317695	143312	2947642	33.27%
2009	1310000	978999	314198	289778	136481	3029456	32.32%
2010	1370000	966403	399006	329382	129200	3193991	30.26%
2011	1550000	988328	377912	328370	123700	3368310	29.34%
2012	1915000	1111760	369562	326278	130500	3853100	28.85%
2013	1850000	1200040	432453	340229	134000	3956722	30.33%
2014	1980000	1184800	445105	338032	132000	4079937	29.04%
2015	2230000	1191000	399210	328961	129293	4278464	27.84%
2016	2350000	1239190	474808	292362	125500	4481860	27.65%
2017	2550000	1278830	439858	307080	124500	4700268	27.21%
2018	2616000	1311360	492999	303843	131000	4855202	27.01%
2019	2799382	1389700	458853	300134	128800	5076869	27.37%
2020	2740000	1255600	569536	278489	-	6012811	20.88%
2021	3120000	1329040	533000	299339	-	6469531	20.54%
2022	3181039	1365230	535043	251499	-	6476722	21.08%

*** Metric Tonnes; Source: <https://www.statista.com/statistics/264188/production-of-tea-by-main-producing-countries-since-2006/>

Although Sri Lanka’s production volume is not significantly higher than that of India and China, it has been able to make a mark of its own. Tea from Sri Lanka, more commonly known as Ceylon tea, has unique aroma and fetches a higher price in export markets. India, on the other hand, cannot be compared with the aroma of Ceylon tea (with the exception of Darjeeling Tea) and receives a moderate price in the auction markets (Table 2.3).

Table 2.3: Auction Prices in Some Tea Producing Countries (US\$/Kg)

Year	India	Sri Lanka	Kenya	Malawi	Bangladesh
2022	2.28	3.86	2.33	2.09	1.42
2021	2.35	3.11	1.97	1.38	2.32
2020	2.49	3.40	1.93	1.44	2.05
2019	2.00	3.05	2.04	1.46	2.31
2018	2.03	3.58	2.43	1.84	3.11
2017	2.04	4.06	2.81	1.84	2.45

Kerala's share in the tea production of the country is very small. It produced a meagre 5% of all tea produced in India (see Table 2.4). There a marginal increase in the area under cultivation. However, the production volume and the Gross Value of Output from Kerala's tea plantation sector has seen erratic changes. Although tea constitute about 9% of total output of the entire plantation sector, it contributed only 3.5-4.0% of the GVO.

Table 2.4: Tea Production in Kerala

Year	Tea Area		Tea Production		Tea GVO		India Production	Kerala's Share (%)
	Hectares	% of Total Crop	MT	% of Total	Rs. Lakhs	% of Total Crop		
2020-21	35,871	4.46%	66,850	9.71%			1283030	5.21
2019-20	35,871	4.68%	59,260	8.91%	349	3.66%	1360810	4.35
2018-19	36,474	4.77%	60,760	8.60%	400	4.84%	1350040	4.50
2017-18	30,205	3.98%	62,230	8.55%	378	3.95%	1325050	4.70
2016-17	30,205	3.97%	61,505	8.50%	394	4.42%	1250490	4.92
2015-16	30,205	3.96%	57,898	9.26%	248	3.90%	1233140	4.70
2014-15	30,205	3.95%	65,174	9.30%	281	3.51%	1197180	5.44
2013-14	30,205	3.94%	62,938	7.51%	363	3.11%	1208780	5.21
2012-13	30,205	3.96%	62,963	6.34%	270	1.80%	1135070	5.55

Source: Agricultural Statistics, Government of Kerala; Tea Board of India

In Kerala, tea is grown primarily in the district of Idukki (Munnar, Vandiperiyar, and other areas) and Wayanad. However, there are tea estates in Thrissur and Palakkad districts too. Tea is grown in approximately 21% and 8% of plantation areas in Idukki district and Wayanad district respectively. These areas, taken together, produce about 88% of all tea produced in Kerala.

Table 2.5: District wise Distribution of Tea Plantations for the Year 2021-22

Districts	Area Under Production (Hectares)	Production (MT)	Total Plantation Area (District)	% of Total District Area (Tea)	% of Kerala's Tea Area	% of Kerala's Plantation Area
Thiruvananthapuram	914	70	33993	2.69%	2.45%	0.12%
Kollam	547	100	39666	1.38%	1.47%	0.07%
Pathanamthitta	0	0	52248	0.00%	0.00%	0.00%
Alappuzha	0	0	6105	0.00%	0.00%	0.00%
Kottayam	27	0	115454	0.02%	0.07%	0.00%
Idukki	25508	50520	121078	21.07%	68.43%	3.33%
Ernakulam	0	0	61544	0.00%	0.00%	0.00%
Thrissur	530	2150	17243	3.07%	1.42%	0.07%
Palakkad	2250	2250	49223	4.57%	6.04%	0.29%
Malappuram	0	0	44571	0.00%	0.00%	0.00%
Kozhikode	0	0	24347	0.00%	0.00%	0.00%
Wayanad	7500	11760	90911	8.25%	20.12%	0.98%
Kannur	0	0	67756	0.00%	0.00%	0.00%
Kasaragod	0	0	41349	0.00%	0.00%	0.00%
Total	37276	66850	765488		100.00%	4.87%

The quality and taste of tea may be influenced by agro-climatic conditions of a geographic region and the manner in which they are processed. There are primarily four varieties of tea that are produced in India, namely, CTC, Green Tea, Orthodox Tea, and Darjeeling Tea. While Darjeeling tea refers to the tea grown in the Darjeeling district of West Bengal, the other varieties are determined by the choice of methods of cultivation and the manner in which they are processed. As is the case with almost all of India, Kerala produces mostly CTC and Orthodox tea. However, there is a great influence of the local agro-climatic zones on the specific quality and the aroma of the tea produced. This also has a bearing on the price commanded in the market. In general, North Indian tea commands a better price than South Indian tea (see Table 2.6). Around 41% of tea produced in Kerala are traded through the tea auction centre while others sell to marketing intermediaries directly.

Table 2.6: Varieties of Tea Produced by the Major Tea Producing States and the Average Price

State	Year	CTC		Green Tea		Orthodox		Total	
		Quantity (Tonnes)	Average Price	Quantity (Tonnes)	Average Price	Quantity (Tonnes)	Average Price	Quantity (Tonnes)	Average Price
Assam	2022-23	2,18,679	203.94	14	367.35	50,485	274.36	2,69,178	217.16
	2021-22	2,41,598	196.94	15	305.62	44,595	219.27	2,86,208	200.42
	2020-21	2,13,449	222.58	28	381.58	33,629	253.82	2,47,106	226.85
Kerala	2022-23	20,557	135.05	0	0	5,888	170.1	26,445	142.85
	2021-22	20,078	130.5	0	0	4,602	144.14	24,680	133.05
	2020-21	23,006	153.87	0	0	4,622	150.08	27,628	153.23
Tamil Nadu	2022-23	1,02,276	104.72	3	298.82	12,165	147.75	1,14,930	109.28
	2021-22	1,12,209	103.51	3	280.26	9,734	134.49	1,21,946	105.99
	2020-21	1,01,570	136.07	1	279.79	8,983	151.4	1,10,554	137.32
West Bengal	2022-23	1,64,481	174.24	0	0	244	212.92	1,66,424	175.96
	2021-22	1,62,020	174.38	0	757.91	154	178.4	1,63,769	176.32
	2020-21	1,48,494	199.1	0	0	385	202.28	1,50,457	200.49
All India	2022-23	5,17,702	171.3	19	352.97	69,444	242.12	5,88,864	180.14
	2021-22	5,48,978	174.38	31	311.26	59,787	198.87	6,10,391	171.21
	2020-21	4,97,062	193.98	38	366.2	48,365	223.15	5,47,043	196.97

Source: Tea Board of India

2.3 COFFEE

At an estimated market size of USD127 billion, coffee is one of most traded commodity in the world. Although India is not a dominant player in the global coffee market, it shares 3.56% of global production valued at about half a billion US dollar. However, coffee offers significant opportunities for growers in terms of market growth and increase in coffee consumption in non-traditional markets. Coffee is generally grown in tropical and sub-tropical areas where there temperature ranges between 15-28°C and have an annual rainfall of 1500-2000 mm. The Southern states of India fits the agro-climatic requirements of growing coffee. For the year 2023-24, India is estimated to have produced a total of 352,000MT of both Arabica and Robusta varieties. Karnataka, Kerala, and Tamil Nadu are the major coffee producing regions in India with Karnataka (70.46%) and Kerala (20.58) producing the lion's share. Interestingly, while other states produces arabica coffee in substantial quantities, Kerala is predominantly focused on producing Robusta variety (See Table 2.7)

Table 2.7: Estimated Production for 2023-24 in Major Coffee Growing Regions in India

Coffee Growing Regions	Coffee Variety (MT)					% of Total Production
	Arabica	% of Total	Robusta	% of Total	Total	
Karnataka	72,020	29.04	1,76,000	70.96	2,48,020	70.46
Kerala	1,975	2.73	70,450	97.27	72,425	20.58
Tamil Nadu	13,250	70.86	5,450	29.14	18,700	5.31
Andhra Pradesh	12,225	99.67	40	0.33	12,265	3.48
Orissa	465	100.00	0	0.00	465	0.13
NER	65	52.00	60	48.00	125	0.04
Total	1,00,000	28.41	2,52,000	71.59	3,52,000	100.00

Source: Coffee Board, India

Kerala produces about 21% of coffee that is produced in India. The coffee plantation is mostly concentrated in the districts of Wayanad, Idukki and Palakkad. In fact, coffee is a major plantation crop for Wayanad with 79% of its plantation area is used for growing coffee.

Table 2.8: Coffee Plantation in Various Districts of Kerala in 2020-21

Districts	Coffee Production Area (Ha)	Total Plantation Area (Ha)	% of District Plantation Area	% of Kerala's Coffee Area	% of Kerala's Plantation Area
Thiruvananthapuram	-	33993	-	-	-
Kollam	-	39666	-	-	-
Pathanamthitta	-	52248	-	-	-
Alappuzha	-	6105	-	-	-
Kottayam	-	115454	-	-	-
Idukki	13240	121078	10.94%	15.42%	1.73%
Ernakulam	-	61544	-	-	-
Thrissur	-	17243	-	-	-
Palakkad	4935	49223	10.03%	5.75%	0.64%
Malappuram	-	44571	-	-	-
Kozhikode	-	24347	-	-	-
Wayanad	67705	90911	74.47%	78.84%	8.84%
Kannur	-	67756	-	-	-
Kasaragod	-	41349	-	-	-
Total	85880	765488		100.00%	11.22%

Source: Agricultural Statistic 2023, Government of Kerala

Coffee accounts for approximately 11% of Kerala's total plantation area producing about 10% of total plantation crops produced in Kerala. Over the years, the coffee sector in Kerala has significantly improved in terms of total production as well as in terms of Gross Value of Output (GVO). Given that the total crop area has remained more or less similar, this suggests significant improvement in productivity and earnings per hectare. However, at only 5% of all plantation output, GVO of coffee is yet to catch up to its potential.

Coffee is a good source of foreign exchange earnings for India. In 2022, India exported coffee worth Rs.8,738.58 Cr. India's export earnings from coffee has continually increased over the years. However, India is a very small player in the global coffee market with its exports constituting approximately 5% of world exports. Brazil, Vietnam, Colombia, Indonesia, Ethiopia, Uganda, and Honduras are few countries which produces and exports more coffee bean than India. Despite being a small player, Indian

coffee is able to carve its own identity in the world market and fetch a very good price. Some of the top destination for Indian coffee are Italy, Germany, Russian Federation, Belgium, Turkey, Poland, and Jordan. Interestingly, the prominent importers of coffee beans are the European Union, United States, and Japan. This suggests that Indian coffee industry has to walk a longer mile in the future.

Table 2.9 Coffee Plantation in Proportion to Total Plantation Crops in Kerala

Year	Coffee Area		Coffee Production		Coffee GVO		Yield (MT/Hectare)
	Hectares	% of Total Crop	MT	% of Total Crop	Rs. Lakhs	% of Total Crop	
2020-21	85,880	10.68%	68,545	9.96%	-	-	798
2019-20	85,880	11.20%	65,459	9.84%	456.69	4.79%	762
2018-19	84,976	11.12%	64,676	9.15%	441.68	5.34%	761
2017-18	84,976	11.19%	66,465	9.13%	448.27	4.69%	782
2016-17	84,976	11.16%	63,476	8.78%	444.90	4.98%	747
2015-16	84,987	11.14%	69,230	11.07%	421.94	6.63%	815
2014-15	85,359	11.17%	67,700	9.66%	510.02	6.36%	793
2013-14	85,359	11.15%	66,645	7.96%	431.50	3.70%	781
2012-13	85,359	11.20%	68,175	6.87%	510.02	3.41%	799
2011-12	85,359	11.08%	68,175	6.91%	384.71	2.24%	799
2010-11	84,931	11.27%	65,650	6.95%	229.93	1.52%	773
2009-10	84,796	11.31%	59,820	6.55%	229.93	2.48%	705
2008-09	84,696	11.31%	57,200	6.01%	288.98	3.27%	675
2007-08	84,115	11.29%	48,650	5.27%	242.16	3.19%	578
2006-07	84,571	11.36%	59,475	6.13%	220.53	2.90%	703
2005-06	84,644	11.39%	60,175	6.41%	202.29	3.77%	711
2004-05	84,644	11.55%	54,300	6.25%	-	-	642
2003-04	84,684	11.47%	63,850	7.46%	-	-	754
2002-03	83,113	11.30%	63,322	7.98%	-	-	762

Source: Agricultural Statistics 2022 & 2023, Government of Kerala

Table 2.10: Share of India's Coffee Exports and Unit Value

Year	World Exports*	India Exports*	% Share	Value of Exports (Rs. Crores)	Unit Value (Rs/Ton)
2022	-	-	-	8,738.58	2,18,722
2021	1,28,924	6,562	5.11	6,984.67	1,77,407
2020	1,29,416	5,106	3.95	5,255.35	1,71,526
2019	1,31,694	5,807	4.41	5,549.27	1,59,262
2018	1,26,598	5,814	4.59	5,661.37	1,62,297
2017	1,19,519	6,315	5.28	6,105.21	1,61,126
2016	1,21,334	5,929	4.89	5,489.69	1,54,309
2015	1,16,396	4,971	4.27	5,076.71	1,70,207
2014	1,15,548	4,817	4.17	4,902.43	1,69,458
2013	1,08,567	5,025	4.63	4,624.60	1,53,399
2012	1,08,444	5,044	4.65	4,615.32	1,52,493
2011	1,04,449	5,414	5.18	4,470.99	1,37,636
2010	97,067	4,647	4.79	2,877.94	1,03,212

* '1,000 bags of 60 kg each

2.4 RUBBER

Although some varieties of the rubber tree is a native of Assam and the Calcutta Botanical Garden had grown rubber way back in 1873 on an experimental scale with the efforts of the European entrepreneurs such as J.J. Murphy, J.A. Hunter, K.E. Nicoll, and C.M.F. Ross, commercial plantation started only in the year 1902 with the establishment of Periyar Syndicate in Thattekkad, Ernakulam district (George et al, 1988). Uniform rainfall (125-150 days of rainfall a year) and consistent humidity (80%) and temperature (20-34°C) is conducive for growing rubber tree (Rubber Board). Given the agro-climatic conditions necessary for rubber plantations the state of Kerala is a natural home to rubber tree in India. Kerala produces a substantial part of the total rubber produced in India. The latex collected from the tree are processed into- and sold primarily as latex concentrate, sheet rubber, block rubber, and crepe rubber. They are further processed which are further converted into a large variety of end products. Most of the natural rubber consumed in India is used in the production of tyres (73%) while the remaining quantity is used for making rubber goods such as, adhesives, hand gloves, gaskets and other accessories.

India consumed about 1.35 lakh tonnes of Natural Rubber (NR) during the year 2022-23 and is the fifth largest producer of NR producing about 8.39 lakh tonnes. Although Kerala produces most of the NRs produced in India, as can be seen in Table 2.11 its share in India's rubber production has fallen over the last one decade. It is interesting to note that, despite regular increase in the plantation area, India's total production of rubber has significantly reduced. However, India's consumption of natural rubber is increasing consistently and the shortfall in domestic production is being met by cheaper imports from southeast Asian countries such as Indonesia, Malaysia, Thailand, Vietnam and others. With increasing market competition, the pressure on cost reduction, and the availability of supply, Indian tyre manufacturers have been preferring cheaper imported rubber available in abundance over costlier Indian rubber.

In 2022, world produced 14.609 million kgs and consumed 14.219 million kgs of NR. India is a major player both as a consumer as well as a producer of natural rubber. While India is the second largest consumer of NR after China, its production is much lower than countries such as Thailand, Indonesia, Vietnam, and Cote d' Ivoire. Barring 2019 and 2020 when the global demand took a dip, there was a moderate growth in both global demand and the production (Table 2.12 & 2.13). In fact, the last two years have seen a robust growth in both demand in India leading to some improvement in price. Interestingly, the increase in India's production since 2015-16 is not due to increase in production in Kerala but from other regions primarily from the Northeast. The growth in production in the Northeast is primarily due to the income guarantee scheme offered to the planters in the northeast.

Table 2.11: Some Basic Statistics on India's NR Production and Consumption

Year	Rubber Area (Ha)	Production India (Tonnes)	% Change	Consumption (Tonnes)	Import (Tonnes)	Export (Tonnes)	Average Price (Rs./100Kg)	Production Kerala (Tonnes)
2005-06	5,97,610	8,02,625		8,01,110	45,285	73,830	6,699	7,39,225
2006-07	6,15,200	8,52,895	6.26%	8,20,305	89,799	56,545	9,204	7,80,405
2007-08	6,35,400	8,25,345	-3.23%	8,61,455	86,394	60,353	9,085	7,53,153
2008-09	6,61,980	8,64,500	4.74%	8,71,720	77,762	46,926	10,112	7,83,485
2009-10	6,86,515	8,31,400	-3.83%	9,30,565	1,77,130	25,090	11,498	7,45,510
2010-11	7,11,560	8,61,950	3.67%	9,47,715	1,90,692	29,851	19,003	7,70,580
2011-12	7,34,780	9,03,700	4.84%	9,64,415	2,14,433	27,145	20,805	7,98,940
2012-13	7,57,520	9,13,700	1.11%	9,72,705	2,62,753	30,594	17,682	8,00,050
2013-14	7,78,400	7,74,000	15.29%	9,81,520	3,60,263	5,398	16,602	6,48,220
2014-15	7,95,135	6,45,000	-16.67%	10,20,910	4,42,130	1,002	13,257	5,07,700
2015-16	8,10,800	5,62,000	12.87%	9,94,415	4,58,374	865	11,306	4,38,630
2016-17	8,18,000	6,91,000	22.95%	10,44,075	4,26,188	20,920	13,549	5,40,400
2017-18	8,20,900	6,94,000	0.43%	11,12,210	4,69,760	5,072	12,980	5,40,775
2018-19	8,22,000	6,51,000	-6.20%	12,11,940	5,82,351	4,551	12,595	4,92,500
2019-20	8,22,300	7,12,000	9.37%	11,34,120	4,57,223	12,872	13,522	4,92,500
2020-21	8,23,000	7,15,000	0.42%	10,96,410	4,10,478	11,343	14,185	
2021-22	8,26,660	7,75,000	8.39%	12,38,000	5,46,369	3,560	17,101	
2022-23	8,50,000	8,39,000	8.26%	13,50,000	5,28,677	3,700	15,652	

Table 2.12: Leading Producer of NR in the World

Country Name	Year							
	2022	2021	2020	2019	2018	2017	2016	2015
Thailand	4753	4757	4787	4851	4973	4429	4469	4473.3
Indonesia	3135	3045	3037	3301	3630	3629	3208.1	3145.4
Vietnam	1292	1272	1226	1185	1142	1095	1032.1	1012.7
Cote d' Ivoire	1286	1047	950	808	624			
China	853	871	693	813	818	798	774	794
India	843	757	685	702	660	713	624	575
Malaysia	377	470	515	640	603	740	673.5	721.5
Oethr Countries	2070	1585	1172	1401	1442	2146	1620.3	1549.1
World	14,609	13804	13065	13008	13892	13550	12401	12271

Table 2.13: Leading Consumer of NR in the World

Country Name	Year							
	2022	2021	2020	2019	2018	2017	2016	2015
China	5708	5665	5441	5497	5504	5301	4863.2	4680
India	1325	1257	1040	1144	1220	1082	1033.5	993.3
USA	1001	956	802	1003	987	958	932	936.5
Thailand	957	903	764	800	752	685	649.9	600.6
Japan	682	678	581	714	706	679	677	691
Indonesia	596	585	573	625	618	608	583.3	509.4
Malaysia	424	502	517	501	515	489	497.2	474.7
Brazil	409	418	345	402	398	398	427.6	404.5
Rep. of Korea				354	367	384	381.3	387.7
Other Countries	3117	3105	2088	2600	2697	2635	2555	2462.3
World	14219	14069	12689	13640	13764	13219	12600	12140

In the case of Kerala, the fall in production is due to many reasons including reduction in productivity and yield. Increase in labour and the input costs combined with falling productivity and yield is making production of NR a non-remunerative proposition. Further, the price of rubber, from a peak in 2011-12 (barring some marginal recovery in the last years), has significantly fallen and such fall in prices led the planters not to tap their rubber trees. Cheaper imports from Thailand, Indonesia, Malaysia and other southeast Asian countries increased the availability of NR, thereby resisting a rise in the domestic price.

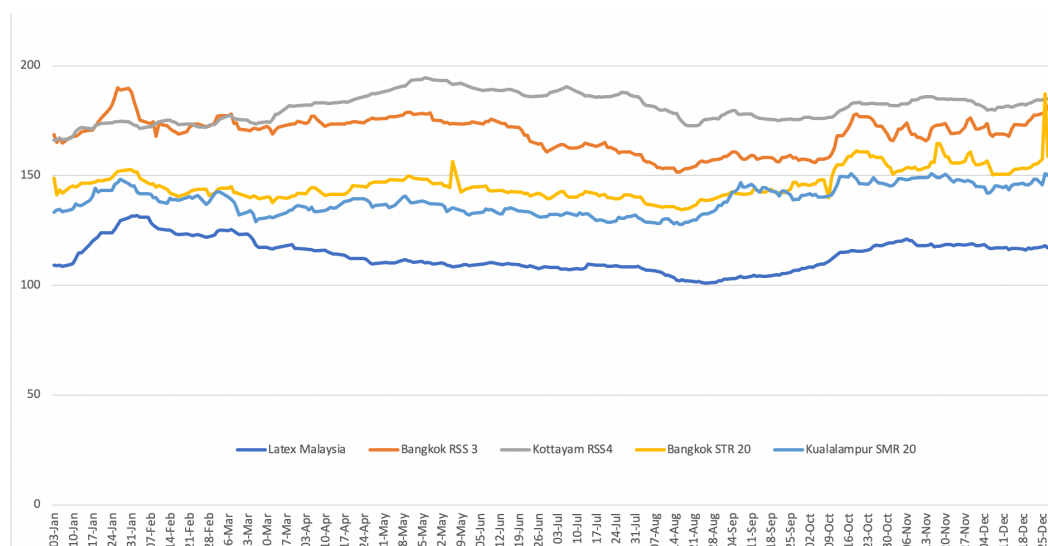


Figure 2.1 The NR prices at different markets (Source: Rubber Board of India)

Figure 2.1 presents a comparison of prices (RSS4) at Kottayam and other markets. Given the supply of NR and the present demand, the price is not expected to rise significantly in the near future. Further, the Governments in many Southeast Asian countries have proposed a number of schemes, including

income support to producers, that may increase supply of NR to the world market. For example, the Thailand government recently announced a \$218 Million price guarantee scheme for its 1.6 million rubber farmers (Rubber World, 2023). The scheme proposes a guaranteed compensation to farmers if the price falls below the benchmark of 60 baht per kg for raw rubber sheets, 57 baht per kg for latex, and 23 baht per kg for cup lump. Such schemes can have an adverse effect on Indian domestic producers and prevent them from getting a reasonably remunerative price, which may trigger a further slide in Kerala's share in India's rubber industry.

2.5 CARDAMOM

Cardamom has its origin in India and is grown specially in the western ghats for ages. Cardamom is a popular ingredient to add unique aroma to the foods prepared in India and many other parts of the world. It is believed to have medicinal properties and were mentioned in ancient texts. Cardamom from India was in high demand in the Roman empire and were mostly traded through the Silk Routes. Cardamom belong to the genus *Elattaria* and *Amomum* and the seed would be growing as green and brown capsules at the bottom of the bushy tree. The capsules has an elongated or long triangular shape and are dried and processed before they are sold in the market. Cardamom requires a warm and humid climate with a minimum rainfall of 1500mm. It has primarily two varieties: green and black. India is a leading producer of cardamom in the world. It produced approximately 41 million kgs of cardamom in 2022 which is about 22.31% of the world production (Table 2.14). The other major producers are Indonesia, Guatemala and Nepal. It is to be noted that both India and Indonesia have increased their production significantly over the last one decade while the other major producer Guatemala has remained stagnated.

Table 2.14: Top 10 Cardamom Producing Countries

Country	2022	2021	2020	2019	2018	2017	2016	2015	2014	2013	2012
	41	50	37	38	43	43	38	22	21	16.57	18.07
India	22.31%	25.81%	20.93%	27.40%	22.53%	24.62%	22.79%	14.82%	14.48%	12.14%	17.79%
Indonesia	40.57	40.64	38.15	40.69	44.1	32.84	33.31	34.3	32.7	28.1	25.2
Guatemala	36.41			36.21	36.99	36.17	35.48	34.51	38.46	37.8	35.19
Nepal	8.71			7.95	6.85	6.52	6.44	5.17	5.23	7	6.03
Sri Lanka	4.3			3.88	3.6	3.82	0.669	0.896	0.584	0.62	0.55
Laos	3.13			3.12	3.08	3.05	3.01	2.98	2.93	2.9	2.87
Bhutan	1.69			1.41	1.54	1.09	2.74	2.09	1.78	1.16	0.643
Tanzania	0.79			0.795	0.803	0.788	0.773	0.758	0.742	0.72	0.7
Hondurus	0.6			0.535	0.52	0.56	0.69	0.55	0.496	0.476	0.461
World	183.76	193.74	176.75	138.7	190.87	174.64	166.75	148.4	145.02	136.45	101.56

Source: <https://www.tridge.com/intelligences/cardamom/production>

All Production figures in million kgs

The western ghat areas of Southern India and the Idukki districts of Kerala makes the ideal climatic and soil conditions for growing the best quality cardamom in the world. Kerala is also the leader in terms of production volume. In 2021-22, Kerala produced about 15,540 tonnes which is about 58.64% of India's total production. The other major states are Sikkim, Nagaland, and Arunachal Pradesh.

Table 2.15: Production of Cardamom by Various States of India

Kerala	Production ('000 Tonnes)	15.54
	% Share	58.64
Sikkim	Production ('000 Tonnes)	5.24
	% Share	19.77
Nagaland	Production ('000 Tonnes)	2.23
	% Share	8.42
Arunachal Pradesh	Production ('000 Tonnes)	1.36
	% Share	5.13
Karnataka	Production ('000 Tonnes)	0.92
	% Share	3.47
West Bengal	Production ('000 Tonnes)	0.82
	% Share	3.09
Tamil Nadu	Production ('000 Tonnes)	0.35
	% Share	1.32
Uttarakhand	Production ('000 Tonnes)	0.05
	% Share	0.19

Source: APEDA. The data is for 2021-22

Cardamom is one of the most valuable plantation crops of Kerala which has done exceedingly well in the last few years both in terms of production quantity and Gross Value of Output (GVO). It is to be specially noted that the GVO from cardamom has increased from a meagre Rs.236.38Cr to Rs.2,683.37. This growth is due to increase in both production volumes and market prices. This has also contributed significantly to the farmers'/planters' incomes. While a typical Kerala farmer was earning only Rs.57,142.17 for an hectare of land in 2005-06, the earnings has gone up to Rs. 6,75,962.92 in 2019-20. This is much higher than what has been witnessed in the case of other plantation crops.

Table 2.16 : Basic Statistics on Cardamom Production in Kerala

Year	Area (Ha)	Production (Tonnes)	GVA (Cr.)	GVO/Ha	Yield (Tonnes/Ha)
2019-20	39,697	11,076	2,683.37	6,75,962.92	279
2018-19	38,882	11,535	1,220.60	3,13,924.18	297
2017-18	39,080	18,350	1,663.12	4,25,568.07	470
2016-17	39,080	17,147	1,528.80	3,91,197.54	439
2015-16	39,730	19,500	1,154.28	2,90,531.08	491
2014-15	39,730	16,000	1,177.78	2,96,446.01	403
2013-14	39,730	14,000	765.63	1,92,708.28	352
2012-13	41,600	10,222	721.63	1,73,468.75	246
2011-12	41,600	10,222	659.24	1,58,471.15	246
2010-11	41,242	7,935	875.78	2,12,351.49	192
2009-10	41,593	7,800	549.65	1,32,149.64	188
2008-09	41,588	8,550	422.23	1,01,526.88	206
2007-08	39,763	7,031	292.13	73,467.80	177
2006-07	41,362	8,545	250.87	60,652.29	207
2005-06	41,367	9,765	236.38	57,142.17	236

The total area that are under the cultivation of cardamom is 39,697Ha in 2019-20. A majority of these areas are in the Idukki districts. The Cardamom Hill Reserve (CHR) area is known for producing high quality cardamom and also the leading producing areas. Cardamom is being grown in other districts primarily in the Wayand, Pathanamthita, Palakkad, Kozhikode, and Kottayam. However, the productivity, quality, and the production volume is no match for the production in Idukki. Thus, the CHR area is very important for cardamom cultivation and also for Kerala's plantation economy.

Table 2.17: Major Districts where Cardamom is Cultivated

	Pathanamthitta	Kottayam	Idukki	Palakkad	Malappuram	Kozhikode	Wayanad
Area	664	86	31276	2754	65	195	4103
Production	64	1	19924	68	1	2	510
Productivity	96	12	637	25	15	10	124

Source: Agricultural Statistics, Government of Kerala

Like in most other commodity markets, cardamom prices have also fluctuated significantly over the years. Despite the fluctuations, there is an upward trend in the prices and that has made cardamom cultivation very attractive. It is expected that this positive price trend is going to hold for quite some time due to the unique position Kerala holds in the overall cardamom production and market.

Table 2.18: Average Annual Prices of Cardamom

	2024 (till June)	2023-24	2022-23	2021-22	2020-21	2019-20	2018-19
Average Annual Price	2,072.54	1,506.98	981.63	992.37	1,540.43	2,991.67	1,150.01

Source: Spices Board

Guatemala is a leading exporter of cardamom in the world exporting a total of 37.585 million kgs of cardamom valued at USD659.10 million. On the other hand, India exported 11.295 million kgs of cardamom valued at USD206.63 million and is the second largest exporting country. Despite India having an advantage of quality, Guatemala is able to export more primarily due to price cuts that Guatemala offers. The leading importer of cardamom is Saudi Arabia, who is currently importing about 10.24 million kgs of valued at USD223.27million.

Table 2.19: Top Exporting and Importing Countries

Export			Unit Price (USD/kg)	Import			Unit Price (USD/kg)
Country	Quantity (Kg)	Value ('000 USD)		Country	Quantity (Kg)	Value ('000 USD)	
Guatemala	3,75,84,800	6,59,102.28	0.0175	Saudi Arabia	1,02,46,300	2,23,270.00	0.0218
India	1,12,94,900	2,06,630.37	0.0183	UAE	90,15,310	1,47,305.34	0.0163
UAE	74,32,860	1,22,762.57	0.0165	China	85,05,690	87,202.81	0.0103
Indonesia	1,04,62,500	76,851.62	0.0073	India	80,11,350	60,920.74	0.0076
Nepal	68,20,610	47,196.15	0.0069	EU	26,74,150	50,240.56	0.0188
Netherlands	11,62,030	26,202.55	0.0225	Egypt	19,44,020	41,546.37	0.0214
Singapore	13,28,170	21,718.17	0.0164	USA	20,61,580	36,894.51	0.0179
Saudi Arabia	7,19,829	12,536.99	0.0174	Jordan	14,06,920	29,999.61	0.0213
EU	4,21,903	9,681.99	0.0229	Pakistan	38,31,340	25,814.08	0.0067
Lao	48,86,400	8,869.44	0.0018	Kuwait	11,80,920	24,943.93	0.0211

India's cardamom exports are primarily directed towards United Arab Emirates and Saudi Arabia. UAE imports about 4.01million kgs of cardamom valued at USD74.369 million while Saudi Arabia imports 1.38million kgs of Indian cardamom valued at USD29.73 million. India also imports a substantial quantity of cardamom from Nepal and Bhutan.

Table 2.20 : Countries where India Exporting to and Importing from

India Production Exported To			India Production Imported From		
Country	Quantity (Kg)	Value ('000 USD)	Country	Quantity (Kg)	Value ('000 USD)
World	1,12,94,000	2,06,630.37		80,11,350	60,920.74
UAE	40,09,450	74,368.78	Nepal	66,69,770	47,766.96
Saudi Arabia	13,80,560	29,726.94	Bhutan	10,86,820	7,603.05
USA	5,76,275	13,520.26	Guatemala	2,04,000	4,298.31
Bangladesh	7,56,249	11,684.20	Qatar	15,490	409.81
Kuwait	5,66,586	11,015.13	UAE	14,855	382.41
Jordan	3,39,510	5,666.99	Oman	12,500	265.47
Afghanistan	5,46,000	5,425.40	Canada	5,000	127.11
Canada	2,58,299	5,124.57	Turkey	1,000	22.18
Egypt	2,63,440	4,401.08	Uganda	704	13.14
UK	2,29,563	3,907.71	Korea	300	13.02

2.6 COCOA

Commercial production of cocoa in India began in 1965 with the initiatives of Cadbury India Private Limited. It is one of the important plantation crop that is grown in the states of Kerala, Andhra Pradesh, Tamil Nadu and Karnataka. Cocoa grows very well in regions where the temperature is in the range of 18-32°C and have an average rainfall of 1500 – 2000 mm. Cocoa has its origin in central and south America and carries the scientific name *Theobroma Cacao*. A cocoa tree would bear the long and oblong shaped fruit that can be harvested twice in a year. The main harvesting season in India is generally

during October-December. Cocoa beans are used predominantly for making chocolates, culinary usage, and cosmetics. It also has got some pharmaceutical and industrial usage also.

Table 2.21: Basic Statistics on Cocoa Cultivation in Kerala

Year	Area (Ha)	Production (Tonnes)	Yield
2019-20	14,276	17,325	1,284
2018-19	13,891	13,401	1,214
2017-18	14,522	14,533	965
2016-17	14,404	12,867	1,001
2015-16	13,924	15,349	893
2014-15	13,183	14,186	1,102
2013-14	13,257	12,323	1,076
2012-13	13,013	13,362	930
2011-12	12,764	14,317	1,027
2010-11	12,488	8,673	1,122
2009-10	12,113	6,198	695
2008-09	15,261	8,778	512
2007-08	14,404	9,447	575
2006-07	10,708	5,783	656
2005-06	9,570	5,362	540

In Kerala, cocoa is primarily grown as intercrop along with other plantation crops. A total of 14,276Ha of area is under the cultivation of cocoa in Kerala. While the total area under cocoa cultivation has increased marginally over the years, the production has substantially increased suggesting significant gain in productivity. Table 2.22 shows the district wise distribution of cocoa cultivation. Unlike other plantation crops, cocoa can be grown in almost all the districts of Kerala; however, the districts of Idukki, Ernakulam, Kottayam, and Kozhikode account for the maximum areas of cocoa farming in the state.

Table 2.22: District-wise Distribution of Cocoa Cultivation

Districts	Area (Ha)	Production (MT)	Total Plantation Area	% of Total District Area	% of Total Cocoa Area	% of Kerala's Plantation Area
Thiruvananthapuram	56	36	33993	0.16%	0.38%	0.01%
Kollam	13	14	39666	0.03%	0.09%	0.00%
Pathanamthitta	341	620	52248	0.65%	2.33%	0.04%
Alappuzha	60	68	6105	0.98%	0.41%	0.01%
Kottayam	951	1380	115454	0.82%	6.51%	0.12%
Idukki	9617	13716	121078	7.94%	65.81%	1.26%
Ernakulam	1148	579	61544	1.87%	7.86%	0.15%
Thrissur	48	25	17243	0.28%	0.33%	0.01%
Palakkad	190	318	49223	0.39%	1.30%	0.02%
Malappuram	167	176	44571	0.37%	1.14%	0.02%
Kozhikode	850	420	24347	3.49%	5.82%	0.11%
Wayanad	377	354	90911	0.41%	2.58%	0.05%
Kannur	452	372	67756	0.67%	3.09%	0.06%
Kasaragod	344	685	41349	0.83%	2.35%	0.04%

The climatic requirements make countries such as Côte d'Ivoire, Ghana, Cameroon, Ecuador, Brazil, Indonesia, Nigeria etc. as the dominant places for growing cocoa. In 2023, the value of cocoa that was traded in the global market is about US\$12 billion (<https://www.statista.com/outlook/cmo/hot-drinks/cocoa/worldwide#revenue>). The total world production of cocoa beans for the year 2022/23,

is estimated at 4,996 thousand tonnes. India, however, is an insignificant player in the global cocoa market and produced only about 27 thousand tonnes. This is only 0.5% of total World production.

Table 2.23: Country-wise Production of Cocoa Bean

Country	2023/24 (Estimates)	2022/23	2021/22	2020/21
Cote d'Ivoire	1,800	2,241	2,121	2,248
Ghana	580	654	683	1,047
Ecuador	430	354	365	365
Cameroon	300	290	295	292
Nigeria	270	280	280	290
Indonesia	160	180	180	170
Brazil	220	220	220	200
Papua New Guinea	42	41	42	42

Source: <https://www.statista.com/statistics/263855/cocoa-bean-production-worldwide-by-region/>
All figures are in '000MT

It can be seen that while the cocoa demand is rising, the major cocoa producers have faced problems in increasing production. In fact, cocoa production from the two top producing countries has significantly fallen. This has also led to increase in global prices. Table 2.24 shows a comparison of average nearby future prices in the month of January from 2020 to 2024 at the London and New York Futures markets. As shown in this table, the nearby future prices of cocoa beans has significantly increased this year. The demand-supply gaps for cocoa presents an opportunity for countries such as India whose cocoa production is very small at this point of time.

Table 2.24: Nearby Future Prices of Cocoa Beans

	Jan, 2024	Jan, 2023	Jan, 2022	Jan, 2021	Jan, 2020
London (\$/tonne)	4,540	2,488	2,324	2,516	2,579
New York (\$/tonne)	4,382	2,324	2,343	2,528	2,523

Source: International Cocoa Organization

2.7 CONCLUSION

From the foregoing data and description, it is relevant to note that on account of the sheer magnitude and proportion of area under cultivation, as well as relative position in the global market, Rubber is by far the most impactful of the plantation crops for Kerala. Accordingly, the Kerala plantation sector's overall economic fortunes are also significantly and inextricably linked to the economic prospects and problems of the rubber plantations.

Rubber accounts for about 74% of the area under cultivation as of 2020-21. This are has also increased from a level of about 66% in 2005-06. Similarly, although not a strictly comparable parameter, it is pertinent to note that Rubber accounted for about 72% of the total volume of production of plantation crops in Kerala (in Tonnes, 20-21), compared to all other crops discussed in this report, being in single digit per centages; but it is notable that for rubber, the current production output also represents a reduction, albeit small, from a level of approximately 79% in 2005-06.

An even more striking observation, relevant to the overall economics of Kerala's plantation sector, is that along with the drop in productivity (MT per Ha of cultivation), the relative Gross Value of Output (GVO) of rubber from Kerala has seen a significant reduction over the last two decades, from levels of 85% in 2005-06 to 61% in 2019-20.

Taking the above dominance of rubber into consideration, While the plantation crops in Kerala have been impacted due to global market linkages as well as internal issues, the biggest impact in overall output and revenues has been on account of rubber. Individually taken, crops like tea and coffee have of course struggled over the past decade or more, and at times perhaps even more than rubber; however, considered in aggregate, Rubber is the key crop in Kerala that makes a difference. By extension of this logic, while all the crops are important and have their specific issues to be addressed, to make any significant difference to the overall sector economics, the issues pertaining to the rubber plantations definitely need to be addressed.

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Chapter 3: An Analytical Review of the Kerala Plantation Landscape

This chapter presents an understanding of the Kerala plantation sector based on historical facts, events, data, and perspectives that emerged through various stakeholder interactions. Rather than as a set of facts and observations, this understanding is presented in the form of the study team's analytical perspectives, that in turn are essentially predicated on the principles of environmental, social and economic sustainability.

3.1 KERALA LAND REFORMS: A WATERSHED MOMENT FOR THE PLANTATION SECTOR

Immediately after formation of the state of Kerala in 1956, the communist government led by the then Chief Minister EMS Namboodiripad passed The Kerala Agrarian Relations Act, 1960 giving fixity of tenure to tenants and *kudikidappukar* through vesting of lands held by tenants to the Government and then assignment to the tenants. However, private forests and the plantation sector was kept out of the purview of the act. This paved the way for the introduction of the Kerala Land Reforms Act 1963 and the Kerala Land Reforms (Amendment) Act 1969. The Kerala Land Reforms Act 1963 was revolutionary, and aimed at achieving social justice by putting a ceiling on land holdings and redistributing surplus land to landless agriculturists. The law also aimed at increasing agricultural production by '*providing security of tenures and conferment of ownership of those who till the soil*' (Kerala State Economics and Statistics Department, Government of Kerala). According to the Act, an individual and an undivided family can hold 7.5 acres and 15 acres of land, respectively. Any land in excess of the above ceiling area would be treated as surplus land and hence, should be vested to the government for redistribution. However, Section 81 of the Act provided a relaxation from the above ceiling to plantation land and private forests. The primary motivation for such relaxation was the integrated nature of plantation activities. In order to achieve its economic potential and higher productivity, plantation required capital and an organized effort. Further, at the time of enacting the law, plantation was employing a large number workers and generating a significant revenue for the Kerala economy.

In spite of the clarity of the law, in-principle, the implementation of the exception granted to the plantation sector is quite challenging. It faced difficulties primarily in terms of the computations of the ceiling area and identification of the excess land. Some of common areas where the implementation of the KLRA resulted in a large of number of claims and counter-claims are:

- Qualification of a planted area under the exempted category
- Process of determination of exempted land and excess land
- Conversion from exempted category to non-exempted category
- Conversion of one exempted category to another exempted category

Although the law provisions exemptions for plantation land and private forests, however there are many litigations based on claims of the revenue department and counterclaims of the owners of the land. The study team noted that although the exemption status of a large part of the land area growing plantation crops are resolved, the outcome is mixed i.e. the final decision on exemption going in favour of either of the claims. The team also notes that the issue of determination of exempted land becomes more complicated as the classification of a plantation land and ownership of the land are interlinked and not separated.

The problems of determination of ceiling area and exemption area arises whenever a plantation area is divided between family members or sold, and the ownership is transferred to the new owner. Although the Kerala High Court ruled that the ceiling area and exemptions are to be reassessed for the new owner and not the declarant, the government and the revenue department appear to have a different perspective. The other view is that the exemptions are to be assessed for the declarant. Further, there is also a fear that by allowing exempted land for reassessment for every new owner, the exempted plantation land would be fragmented on a continual basis. Such fragmentation, at one point of time, would lead to more and more exempted land falling within the ceiling area of new owners. This would amount to an indirectly converting exempted land to a private land that could be likely or potentially used for non-plantation activities. If such fragmentation were to happen, it would actually violate the very basic premise of the land reforms, the objectives of the exemptions, and the very characteristics of the plantation. As the present law allows transfer of exempted plantation land and such transfers are viewed as a right of any individual, fragmentation of plantation land cannot be stopped as such; in effect, at some point or time or another, the exempted plantation areas are bound to be converted into non-plantation land. Such a scenario can be potentially considered as an injustice meted to those whose land were taken away as they were using their “excess” land for non-plantation activities. Further, such an eventuality of fragmentation may also alter the ecological balance. In the study team’s opinion, while property transfers are a matter of individual right that cannot be alienated, the critical implications of such potential fragmentation, especially those relating to ecological sustainability, need to be recognized by the Government and policy makers.

Another major point of contention between the Government and the planters is the conversion of an exempted land into another exempted category. The Government’s argument is that the exemption under Section 81 would be allowed for a converted plantation from one exempted category to another only if such conversion was executed on or before 01.04.1964 (*Aleykutty John v. Taluk Land Board*, 1981 KLT

738). However, many judgements, including the High Court judgement on the case *Thomaskutty vs State of Kerala*, 2019 KHC 848, viewed that conversion of a land is prohibited under Section 87 when the conversion is from one exempted category to non-exempted category. The court further noted that conversion of a land from one exempted class into another exempted class of land is not objectionable, even if it is executed after 01.01.1970.

Since the enactment of Kerala Land Reforms Act 1963, the KLRA has been amended a number of times. A significant amendment to the KLRA was passed by the Kerala assembly in 2005 and the President gave assent to the amendment in 2012 making the amendments part of the present law (Venugopal, 2012). This amendment permits using 5% of the plantation land for floriculture and cultivation of medicinal plants or vanilla or other agricultural crops. The amendment also permitted use of 5% of land for establishing hotels or resorts or tourism projects. However, a subsequent amendment of the provision, motivated by concerns about environmental protection, pollution control, conservation of forests, and large-scale conversion of plantation land for non-plantation activities, was brought in that empowered Government to impose restrictions and conditions on the use of 5% provision. Subsequently the Government published guidelines detailing how plantation land can be used for tourism activities. Some of the key features of the guideline is as follows (the New Indian Express, 2013):

- The scope of tourism has been now limited to farm tourism only and only a maximum of 10% of the 5% alienated land (with a cap of 10 acres) can be used for the purpose.
- The detailed plans and designs for such tourism projects must be assessed for environmental impact and be approved by both the District Collector and the State Land Bank Secretary.
- Any existing bungalows and heritage buildings can be renovated for tourism purposes.
- The landscape should not be altered and buildings could have up to two floors.

Despite the amendment in 2013, questions continue to be raised about violation of the spirit of the land redistribution (i.e. social justice through redistribution of land to the landless) and viewing the new provisions as indirect ways of getting relaxed land for private uses. Given the fact that the original exemption was granted due to the unique nature of plantation (and not as a matter of right), such relaxation may arguably be viewed as indirect means of obfuscating the spirit of the original land reforms movement. Many have also raised objection due to the possibility of rampant exploitation of the provisions and damage to the ecological balance. Thus, the new amendment is viewed by many as a serious threat to the preservation and conservation of the plantation areas.

However, legally or technically, preservation and conservation of ecology does not appear to have been the objective of the exemption granted to the plantation sector. Nevertheless, considering this issue in 2024, Government or the Law cannot ignore the current context - of the widely accepted concerns over

environmental degradation, climate change and the necessity of maintaining green cover and ecological balance and such. Notwithstanding the fact that this ecological concern was never articulated in the context or preamble of KLRA 1963 , it is undeniable that plantations have indeed contributed significantly to greater environmental well-being. Therefore, preserving the very nature of the plantation areas can continue contributing to such an objective of ecological well-being, by way of not letting further deterioration of the basic character of the plantation area. It is relevant here to mention the observation of the 12th five-year plan of India (2012-17) to emphasise the counterargument to the preservation and conservation demand. An excerpt of the relevant portion of the 12th five-year plan is given below:

As far as the allocation to alternative sectors is concerned, it is important to recognise that diversion of land from agriculture to non-agricultural uses is inevitable in any development process since industry must expand and cities must also expand and, in both cases, land needed for this expansion can only come from agriculture. Concern is often raised in this context about impact on food security. This problem is greatly exaggerated because of the productivity increases, which are feasible and have been seen in many other developing countries. We need a clearer articulation of a strategy for dealing with such shifts while ensuring the continuing increase in the supply of agricultural products of the appropriate mix of grains, horticulture products and cash crops.

While the above emphasis on industrial, productivity and food security are important for India as well as Kerala, a missing element in the above argument is the ecological balance. In fact, our ecological environment puts a limit on how much we can expect to exploit mother earth, purely with an economic motive. In fact, when it comes to plantation areas, it also includes a very sensitive biological ecosystem, adding to the green cover, and a net carbon sink. Thus, while charting out a development plan for a plantation area specifically in Kerala and in general anywhere in the world, one needs to trade-off among three contesting dimensions namely, the economic prosperity, ecological balance, and social justice (and welfare) (Figure 2.1). **Thus, the IIMK study team is of the opinion that, from the perspective of Kerala's overall welfare and development, there is ample room to redraw the balance among the above three dimensions and accordingly, a rearticulation of the portion of the KLRA relevant to the plantation sector, clearly articulating and emphasizing the importance of the ecological preservation.** Even if the original KLRA may not have imputed an ecological motive, the current climate change context makes it imperative for Govt. of Kerala to arrogate such a motive in common interest of the state and the planet.

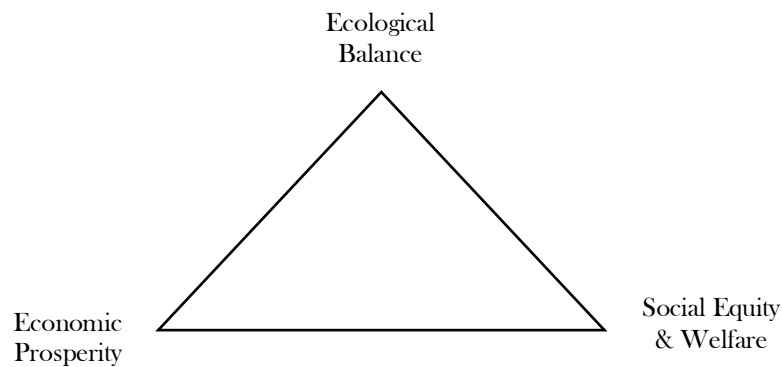


Figure 3.1 The Three Dimensions of Plantation Sector

3.2 ECOLOGICALLY FRAGILE LANDS

It is a fact that most plantation lands were forest lands earlier and, therefore, one would often find a plantation area either neighbouring or surrounded by forests. This is where Kerala Forest (Vesting and Management of Ecologically Fragile Lands) Act, 2003 becomes very relevant to the plantation sector, affecting many of them. The act was introduced in 2003 with the objective of preserving ecological balance and biodiversity in one of the bio-diversity hot spots in India. The act defines ecologically fragile land (EFL) in the following manner:

- (i) any forest land or any portion thereof held by any person and lying contiguous to or encircled by a reserved forest or a vested forest or any other forest land owned by the Government and predominantly supporting natural vegetation, and
- (ii) any land to be ecologically fragile land on the recommendation of the Advisory Committee appointed for the purpose.

It is important to note here that the word 'forest' is defined for the purpose of this act and also in many other references as:

... any land principally covered with naturally grown trees and under growth and includes any forest statutorily recognized and declared as reserved forest, protected forest or otherwise, but does not include any land which is used principally for the cultivation of crops of long duration such as tea, coffee, rubber, pepper, cardamom, coconut, arecanut or cashew or any other sites of residential buildings and surroundings essential for the convenient use of such buildings ...

Clearly, the act leaves aside the plantation land out of its purview. Interestingly, a large amount of plantation areas is actually encircled by forests and may have some natural vegetations. The study team observed that the latter fact has motivated many episodes of bureaucratic activism, leading to notification

of plantation areas as ecologically fragile areas. The study team noted primarily *four major issues with the way the EFL Act 2003 is implemented* and the consequences thereof to the plantation sector.

- (1) Although a plantation is exempted from the provisions of the Kerala Forest (Vesting and Management of Ecologically Fragile) Act 2003, often plantation land is being declared as Ecologically Fragile Areas. Such declarations are made primarily on the following grounds: (1) claims of the Forest department against a relaxation claim of a plantation on the basis of physical evidence (arguing that the area is actually not being used for plantation activities), (2) claims of abandonment (fallow land), and (3) claims that the area under consideration is an ecologically sensitive area. Based on the review of many court cases and field visits, the study team is of the opinion that there are several instances when declarations of plantation areas are made hastily, arbitrarily, and on the basis of anecdotal evidences and opinions.
- (2) Under the EFL Act, the forest department plays the role of (1) assessing and identifying an ecologically sensitive area, and (2) scrutinizing and examining such proposals. Thereby, the forest department plays the role of a police, investigator, examiner, judge, and the custodian of a land declared as EFL land. It is natural that under such circumstances the implementation would have only one perspective to any action under the act. Further, the act also gives immense power to forest officers leaving opportunities for taking actions that are based on non-objective assessments of the facts and the ground situation. Such biased actions are costly as when such actions are triggered. The only place where the planters and farmers can expect consideration of their side of the story and an objective evaluation of the facts is in the courts. However, in the process planters not only face loss of production but also very high litigation costs.
- (3) Large areas of plantation land are located very near the forest and/or biodiversity hot spots. Further, plantation areas also play an important role in maintaining the ecological balance of the area. Therefore, it is important that plantation contributes to strengthening the overall ecological balance. Such an objective would be to not only help the plantation to survive but also to avoid ecological and natural disasters. The recent landslides in Wayanad, killing more than 200 people, highlight the fact that preserving the environment is a necessity for everyone and plantations can play an important role in maintaining the ecological balance. That said, there also has to be reasonably objective and scientific ways of assessing environmental vulnerabilities, and prompt implementation of measures that mitigate the chances of environmental disasters. While the Kerala Forest (Vesting and Management of Ecologically Fragile) Act 2003 is an important step towards protecting our environment, this study team believes that environment can also be protected not just by vesting land with the Government but also through cooperative and coordinated actions of the Government agencies and the public.

There are many instances of conflicts between the Forest department and the plantation owners on the title of plantation property. Often, the forest department claims plantation lands adjoining forest areas as forest land and serves stop notices to all plantation activities in such land. Such claims are unilateral with no opportunities being given to planters to contest such claims. Planters, in such cases, either accept the diktat or fight it in the court. Most cases, planters who went to the court have received relieve from such claims from the court, the court proceedings are very costly for the planters. Further, there is a significant opportunity loss in terms of loss of crop, production, and revenue.

Although the law provides for exemption to plantation land, there is no identification or classification of plantation land in revenue records. However, the KLRA provides for a process of determination of exempted land for the owner of the plantation. So, any plantation is identified as plantation either through a physical verification or through historical records of the land. This makes the process very complicated specially if a plantation land has been transferred many times over the years.

Further, incomplete and faulty records causing serious frustration with the planters/farmers and causing serious problems in getting loans and transfer of property. There is a demand for a resurvey and joint survey of plantation land so as to update the Revenue Land Information System (ReLIS) and the information on it should be accessible to all. Planters/farmers have demanded that there should be limitation the handling of plantation land only by revenue department and not forest department.

3.3 CONSERVATION AND PRESERVATION OF PLANTATION LAND

Climate activists across the world often views that a plantation land has been created through deforestation of pristine forest land. In fact, there are plenty of examples where forests land has been occupied illegally or through legal loopholes in connivance with the local government. It is estimated that forests biomass stores about a trillion tonnes of carbon dioxide (CO₂) with an additional sequestration of approximately 4 billion tonnes every year. Thus, deforestation is catastrophic to the world environment. With climate change becoming a reality and natural disasters associated with climate change occurring more frequently, rampant deforestation is actually a cause of concern for the world. Virgin forests are found to sequestrate maximum amount of atmospheric carbon and any deforestation due to agriculture or any other purposes would release the otherwise sequestered carbon into the atmosphere contributing significantly to global warming, and climate change. Further, plantation is primarily a monocrop which may cause serious environmental damage such as, displacing a naturally stable ecosystem which would cause loss of many species, heightened use of fertilizers and pesticides leading to contamination water and other natural bodies, loss of soil nutrients, plantation crops without a deeper root system causing land erosions, greenhouse gas emissions etc.

The Kerala Forest Department administers and controls a total of 11,52,491.3 hectares which is 29.65% of Kerala's total geographic area of 38,86,287 hectares (Forest Statistics 2021). The total plantation area

is 8,04,080 Hectares (DADFW, 2023) which is 20.69% of the total land area. On the other hand, the total land area that is being used for agricultural purposes primarily for the cultivation of principal crops is 14,28,671 hectares which is 36.76 % of the total geographic area of Kerala (DADFW, 2023). Given the above land use pattern, Kerala's share of forest as a percentage of its geographic area may be viewed as reasonably well placed. Another important point to be noted in the above statistic is that the deforestation in Kerala is not necessarily due to plantation activities. Interestingly, unlike many African or Southeast Asian countries, the plantation in Kerala is not a result of deforestation of natural forests in present times but mostly during the British era. As the plantation crops have a longer life, often extending in the range 25 - 100 years, it has actually contributed to preserving the green cover of the state. If one compares with other states in India and specially with its neighbouring states, plantation in Kerala, due to its economic value, has prevented a large-scale conversion of forest land for commercial, residential, and agricultural purposes.

It is true that forests contribute significantly to the carbon sequestration. Atmospheric carbon is stored in the trees above the ground, roots under the ground, and in the organic matters present in the soil. Thus, the amount of carbon that is sequestered in the forests would vary from one place to another depending on the type of trees, age of forests, organic matters present, and other environmental factors. Global Forest Watch on Kerala estimated that, during the period from 2001 to 2023, Kerala released a total of 2,51MT of CO₂ every year primarily due to loss of tree cover while removing 15.3MT of CO₂, thus, having a net positive effect. Similarly, plantation crops being bushy in nature and have substantial wood content, they also sequester a good amount of carbon in it.

Mendelsohn et al (2012) argued that more carbon can be sequestered by adopting the following approaches: afforestation, forest management, and avoided deforestation. India being an economically developing country with more than one billion people, afforestation can be economically and socially costly. Any high-handed approach to afforestation would not only face resistance from the citizen but also not be very effective. Making forests more productive and adopting better forest management practices can actually increase the carbon stored in the forests. Promoting practices such as postponing timber harvests, planting trees, fertilizing etc. can be very effective. They argued that incentivising the owners for carbon storing activities can be very effective. When one looks at Kerala, deforestation is relative less. In fact, forest areas under the administration of the forest department are increasing, though very marginally. Rather, the risk of adding more carbon to the atmosphere is from conversion of plantation and agricultural land for urbanization (including residential purposes and for the use of public roads and other utilities), industries, and other commercial activities. Such conversion also destroys natural ecosystems. Rampant and unplanned conversion of such land damages the environment and disturbs the ecological balance in a significant way making it one of the major reasons for many natural disasters. Therefore, there are sufficient grounds for putting efforts in preserving the character of the plantation so that the ecological balance of one of the most biodiversity hot spots can be saved and protected.

3.4 HUMAN ANIMAL CONFLICT

Plantations adjoining the forest areas are increasingly facing intrusions from wild animals. The animals often destroy crops and, on occasions, have become a major safety hazard for the plantation workers. For the coffee growers in the Wayanad, their hard work and investment into growing coffee beans becomes a waste when flocks of monkeys destroy the beans before the harvest. Wild boars often uproot replanted saplings that increases cost of replants. Similarly, wild elephants are attracted by the food available in a plantation damaging crops enroute. There are also numerous instances of human injury, loss of domestic animals, damages to plantation property, and even loss of human life. However, more than the damages, the high-handedness of the forest officials is a serious problem for the plantation owners. By the Forest Act, any injury or death of an wild animal in the plantation areas would attract non-bailable arrests against the owner/executives of the plantation even if the injury or death is purely an accident.

Many plantation owners are fighting court cases against such charges. There is also a tug-of-war between the Forest Department and the plantation owners on perceptions of natural habitats for wild animals. In an interesting judgement, the Kerala High Court vide its judgement in the case of M.T. Thomas & Others Vs Principal Conservator of Forests, Thiruvananthapuram dated 05/02/2018 directed the state to take measures to prevent straying of wild animals and also suggested compensation for the damages caused. Subsequently, the state has distributed Rs.5 Cr. in the financial year 2020-21 as a compensation for the crop losses due to wild boars. The planters claim that due to conservation efforts the animal population has significantly increased over the years. This has made the forest areas insufficient for accommodating the rising animal population. The animal population as enumerated by the forest department is given in Table 4.1 which supports the claim of substantial increase in animal population. **However, the preservation efforts of the forest department must be appreciated and not criticised.** The question remains, how a greater animal population can be stopped from straying into plantation area or minimizing crop damages.

Table 4.1: Animal Population in Kerala

Name of the Animal	Category of Animal	Census Year			
		1993	1997	2002	2011
Elephant	Schedule I	4286	5737	6965	7490
Gaur	Schedule I	4840	5151	14,787	17,860
Malabar Giant Squirrel	Schedule I	1384	63,474	88,919	-
Nilgiri Langur	Schedule I	2987	24,809	51,517	
Sambar Deer	Schedule I	10,665	13,661	30,414	32,148
Spotted Deer	Schedule I	6,259	14,881	38,391	11,398
Wild Boar	Schedule I	40,963	40,425	60,940	48,034
Nilgiri Tahr	Schedule I	1,075	1,008	902	-
Tiger	Schedule I	76	73	71+/-7	-

Source: Kerala Forests & Wildlife Department, <https://forest.kerala.gov.in/index.php/about-us/wildlife/wildlife-enumeration>

The planters have represented before the team that the following measures be taken by the Government for solving the problems of human-animal conflict:

- Securing forest boundaries with trenches, fences, and walls so that the wild animals remain within the forests.
- Adoption of the scientific practice of culling of excess animals that constrain the existing capacities of the forest.
- Allowing planters/farmers to licensed weapons to protect themselves and their families from wild animals.
- Buffer zones to be created on forest lands and not plantation areas.

Animal-human conflict a very serious issue facing the plantations but is also a very complex issue that does not present easy solutions. For this reason, the suggestions as given by some planters above may be problematic for many reasons. There is a need for a cooperative and innovative ideas to solve the problem. There are, however, significant merits in exploring the other suggestions that were made by the planters/farmers:

3.5 LACK OF GOVERNMENT SUPPORT

There is a growing clamor on the inability or ineffective handling of extension activities. The grievance is that the government is more focused on granting subsidies and distribution of fertilizers. There is no efforts or initiatives in improving agricultural practices and market access. There have been many scientific and research institutions that focuses on finding more productive and disease resistant species and better agricultural methods. However, no organized efforts in passing the knowledge to the cultivators. There are also no efforts in building networks with promising markets abroad. Some of the critical issues that were brought to the notice of this study team are:

- Lack of regular and extensive mapping the geographic regions for climate change, soil quality, and appropriateness of various crops. Such mapping exercises would help formulation of best strategies to grow a crop in an efficient and in desired quality level.
- Carrying out studies on plantation inputs and creating knowledge on sourcing of planting materials, and reliable supply sources (within India as well as abroad). Government initiatives should also focus on creating and increasing access to knowhow on drip irrigation methods, water management, non-polluting plant protection methods etc.
- Crop failure is a regular phenomenon in plantation. Government has initiated crop insurance. However, there are claims that flawed methods are used in assessing the crop damages. So, there is a suggestion that discussion with all stakeholders be initiated so that a fair method of calculating crop damages is found out.

- There is a serious labor shortage in Kerala, in general, and the plantation sector in particular. Thus, use of machines and automation technologies has become a necessity. Use of technology in Indian agriculture is very limited when one compares with the farms abroad. Thus, there is a need for creating knowledge on the advancement of technology and mechanization of plantation activities and initiatives to be taken to adopt technology in plantation. Specially, mechanizations of basic plantation activities such as weeding, picking, drying, fertilizing, bagging, handling etc. need to be developed.

3.6 DIVERSIFICATION AND VALUE-ADDITION ACTIVITIES

The plantation crops from Kerala are primarily sold at the farm level where the harvested products goes through either no or a very minimal processing. As a result the planters/farmers are more a price takers rather primarily due to having no access or connect with the end market. The value of the harvested crop can be enhanced and price shocks can be absorbed significantly by way of engaging into downstream value-addition activities and connecting with the end consumers of plantation crops. The harvests from the traditional plantation crops of Kerala can be used to make value-added products such as flavoured teas, ready-to-eat beverages, iced tea, flavoured tea, instant coffee, chocolate chips, cocoa powder, cocoa butter etc. Similarly, rubber can be used to manufacture footwear, automotive parts, and other industrial products. Such efforts can not only enhance margin but also business predictability. Traditionally, the plantation crop would go through a number of processes before the harvested goods goes to the market. In addition, harvested products (value-added or not) go through a series of steps such as, sorting and grading, packaging, material handling, storage, quality and fair trade-certifications, freight documentations, and transportation and shipping etc. before they reach the end consumers. Unfortunately, the logistics infrastructure and support system for such value-addition processes is missing in Kerala. While the logistics and supply chain of downstream projects are to be built from something which is non-existent at this point of time, however, the entrepreneurial zeal of the Malayali planters/farmers can build it from scratch if the government extends a helping hand. Primarily, the planter/farmers seek the following support towards such a movement:

- Removing regulatory bottlenecks and providing freedom in initiating such projects through a simple and non-bureaucratic approval process and providing all support through bureaucratic non-interference into the operations.
- Taking initiatives in connecting with local governments and industry associations in potential market and working towards accessing international markets and removing hurdles of doing cross-border trades.
- Access to credit and creating an atmosphere of investment so that capital required for such value-addition projects can be accessed very easily.

- Assist formation of clusters and Farmer Producer Companies (FPOs) so that benefits of economies of scale can be leveraged from logistical infrastructure to be put in place for such initiatives. Support and facilitation is required for establishing cold storages, technology-based markets platforms, and logistics hubs.

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Chapter 4: Economics of Plantation

4.1 INTRODUCTION

The plantation sector in Kerala has traditionally employed a large section of the society and contributed immensely to the state exchequer. It has also played to the preservation of ecological balance through its green cover and been a great carbon sink. However, early signs of a decay of the flourishing plantation economy seems to be dwindling very recently. Farmers and plantation owners are increasingly abandoning plantation activities resulting in fall in production and revenue. Additionally, the younger generation of Keralite are not finding plantation activities as very rewarding and as a result leaving Kerala for more attractive professions primarily outside Kerala. Kerala is also losing its dominant position in few of the plantation crops such as Rubber.

The plantation sector in Kerala had its best year in 2012-13 when the total value of plantation crops was approximately Rs.21,000 Cr. Over the years, the total value of plantation crop in Kerala has dropped to approximately Rs.9,750 Cr. in 2016-17 with a minor recovery in 2020-21 to Rs.13,542 Cr. (Fourteenth Five-Year Plan (2022-2027), Government of Kerala). For any economic sector, such fall in total value of production is alarming and indicates some fundamental problems in the underlying economic structure and business models. Table 4.1 presents the Gross Value of Output (GVO) of few major plantation crops in Kerala since 2005-06.

Table 4.1: Gross Value of Output (GVO) of Major Plantation Crops (Year-wise)

Year	GVO of Major Plantation Crop					Total GVO	Total Plantation Area (Ha)
	Cardamon	Cashew	Tea	Coffee	Rubber		
2005-06	236.38	227.57	126.60	202.29	4,574.21	5,367.05	7,33,739
2006-07	250.87	184.32	162.28	220.53	6,786.72	7,604.72	7,34,001
2007-08	292.13	167.43	167.38	242.16	6,716.83	7,585.93	7,30,435
2008-09	422.23	160.54	213.58	288.98	7,763.79	8,849.12	7,33,323
2009-10	549.65	154.58	268.07	229.93	8,063.26	9,265.49	7,37,614
2010-11	875.78	174.44	210.85	229.93	13,677.17	15,168.17	7,41,216
2011-12	659.24	230.77	207.75	384.71	15,656.60	17,139.07	7,57,604
2012-13	721.63	238.92	270.21	510.02	13,235.21	14,975.99	7,48,815
2013-14	765.63	212.90	363.04	431.50	9,902.49	11,675.56	7,52,624
2014-15	1,177.78	212.91	280.94	510.02	5,832.36	8,014.01	7,50,685
2015-16	1,154.28	209.65	248.40	421.94	4,328.15	6,362.42	7,48,852
2016-17	1,528.80	334.68	394.28	444.90	6,226.96	8,929.62	7,46,972
2017-18	1,663.12	331.85	377.80	448.27	6,734.55	9,555.59	7,45,096
2018-19	1,220.60	180.26	400.30	441.68	6,022.58	8,265.42	7,50,228
2019-20	2,683.37	193.87	348.72	456.69	5,857.86	9,540.51	7,52,546

All figures in Rs. Crores

Source: Agricultural Statistics 2021, Government of Kerala

The table provides the following insights about the plantation sector:

- (1) The GVO of the plantation sector has reduced significantly over the last one decade. While the plantation area for these crops has increased marginally, the fall in output only suggests significant fall in the earnings of the farmers/planters and also to the Government exchequer.
- (2) Baring cardamon, the revenues for other crops has not significantly increased. Given the inflation, such stagnation only suggests reduction in margin for the farmers/planters.
- (3) The fall in GVO is primarily due to the fall in the production of rubber. Unattractive price and rising costs have caused rubber plantation not very attractive. Due to reduction in return, many farmers/planters are actually not tapping the trees for latex.

4.2 COST STRUCTURE OF MAJOR CROPS

Overall, the attractiveness of plantation activities in Kerala is increasingly becoming economically non-attractive. This is primarily due to falling prices, rising input costs, lack of investments, and agricultural practices and socio-economic reasons that adversely affect productivity and yield.

The cost of production for various plantation crops varies significantly depending on agricultural practice, geographic location, nature of soil, climatic conditions etc. and includes both direct and indirect costs. The primary cost components are: labour and material costs associated with planting, application of manures and fertilizers, weeding, pests and disease control, harvesting, and post-harvest processing. Additionally, there are also costs associated with upkeep and maintenance of the plantation area, supervision and administration costs, labour welfare, interests on borrowings, depreciation on fixed assets, logistic and marketing costs, and opportunity costs during the gestation period. Although the costs data is very difficult to obtain, there are efforts to estimate the cost of production of different crops. However, such assessment vary significantly depending on who has done the study and the sample that was selected for the assessment. While the assessment of the above costs and precise estimation of total costs of production would be an important exercise for a farmer/planter at the time of making investment, this study, rather, used indicative numbers to assess how remunerative plantation activities are. During the field trips, the study team explored these costs at granular level and noted that a number of factors influenced the final costs of production. Further, the team also had access to the annual statements of few large estates that were shared in confidence which gave an indicative assessment of the costs of production. Table 4.2 presents few samples of the cost of production that the study team has estimated based on the data collected during the field trips (the identity of the estates are anonymised). The table also relates the assessed cost with the production yield for the sample that is being assessed and the average yield for each plantation crops.

Table 4.2: Indicative Costs of Production of few Major Plantation Crops

	Rubber	Cardamon	Coffee	Tea
Indicative Costs of Production (Rs.)	170	1082	86	190
Corresponding Yield (Kg/Ha)	1351	332	1460	1665
Average Yield for the Crop	832	526	798	1864

The team noted that the cost of production of a crop is greatly influenced by production yield achieved. In order to highlight the relationship between the production yield and the cost of production. If one takes Table 4.2 as reference, then an average rubber estate would have a cost of production above Rs.170 per kilogram of finished products. Similarly, an average coffee growers would face a costs higher than Rs.86. However, the cost to an average farmer/planter would be lesser than the costs given in the table.

The estimated costs as indicated in Table 4.2 includes the following major components: labours costs, input costs, management costs, social costs, and taxes and duties (if any). The proportion of these cost components in the overall costs are given in the Table 4.3.

Table 4.3: Major cost components and their share in the overall Cost of Production (CoP)

	CoP	Labour (%)	Input Costs (%)	Management (%)	Labour Welfare (%)
Rubber	170	64.63	27.08	5.01	2.64
Cardamon	1082	43.37	52.90	2.29	1.44
Coffee	86	13.65	30.18	19.64	36.53
Tea	190	52.50	34.55	10.16	2.80

It is interesting to note that labour cost constitutes a significant portion of the cost of production for most farmer/planters to be followed by input costs of material, manures, and other farming requirements. However, a few large plantations, who are able to control the labour costs primarily by way of better planning, agricultural practices, and higher yield are spending significant portion of their earnings on the welfare of the workers working in those estates. Table 4.4 illustrates representative data from such estates who spend substantial amounts on labour welfare.

Table 4.4: Wages and Breakup of Social Cost

Wage Breakup	% of Base Wage	Crops			
		Tea (Rs.)	Rubber (Rs.)	Coffee (Rs.)	Cardamon (Rs.)
Basic		349.21	429.21	378.21	349.21
Dearness Pay		133.28	133.28	133.28	133.28
Incentives (if any)					
Base Wage		482.49	562.49	511.49	482.49
Provident Fund	13.29	64.11	74.74	67.97	64.11
Gratuity	7.39	35.67	41.58	37.81	35.67
Leave with Wages	4.81	23.21	27.06	24.60	23.21
Holiday Wages	4.16	20.07	23.40	21.28	20.07
Weather Protectives	0.18	0.89	1.03	0.94	0.89
Sickness Allowance	2.07	9.99	11.64	10.59	9.99
Child Welfare	1.65	7.98	9.30	8.46	7.98
Labour Welfare Fund	0.07	0.34	0.39	0.36	0.34
Bonus	8.96	43.25	50.42	45.85	43.25
Water Supply	2.37	11.42	13.31	12.10	11.42
Leave Travel Allowance	0.54	2.62	3.06	2.78	2.62
Accommodation	3.18	15.36	17.91	16.29	15.36
Medical	5.57	26.89	31.35	28.51	26.89
Total Allowance	49.55	261.80	305.21	277.53	261.80
Effective Wage		744.29	867.70	789.02	744.29

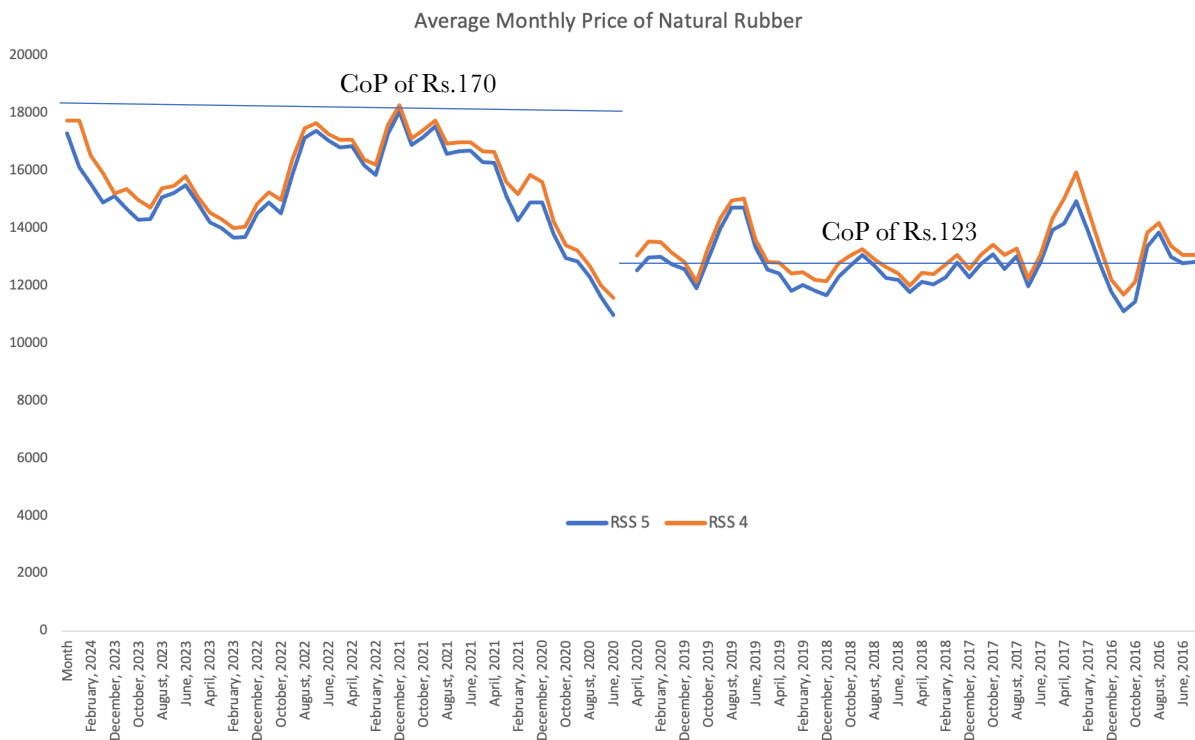
All calculations are carried out at standard output

One can observe in Table 4.4 that many large estates also spend a substantial amount (up to 49.5% of the basic wage for the samples collected) as social cost including labour welfare fund, medical, accommodation, provident fund etc. However, such social costs are not paid across all farmers/planters. Primarily, small and medium plantations engages workers on as-need basis and, in such cases, the farmers pay only the market rates or the minimum wage rates as agreed in the collective bargain. Such small and medium farmers also uses outsourcing labour contracts where the contract value is loaded onto the output produced by the labour contractor. It is important to note here that the labour costs in Kerala is one of the highest in India. Further, social benefits for workers are not widely enforced in other states. While these input and other cost components are consistently rising over the years, such cost differences across states make Kerala's plantation output as non-competitive. Under such cases profitability and attractiveness of the plantation sector in Kerala depends on the following:

- Price realization of the harvest
- Yield and productivity
- Better agricultural practices

4.2.1 Non-remunerative Prices

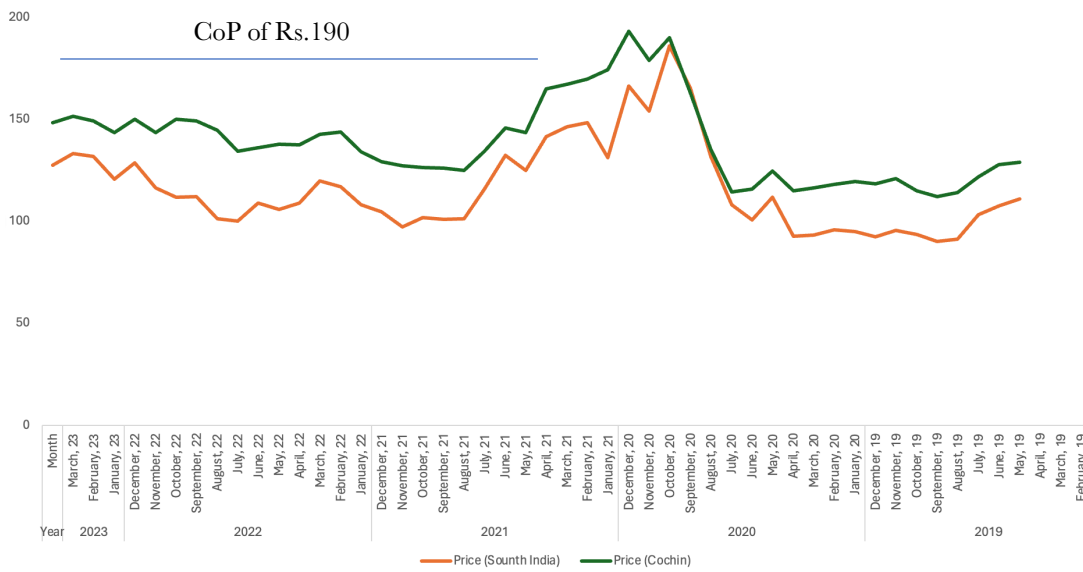
The harvests from Kerala's plantations are sold primarily as raw or semi-processed commodities. There are very few examples when Kerala's harvests from the plantation sector are used in the state for branding or further processing into value-added products. As a result, the plantation sector often faces the ups and down of price movements of these commodities. Thus, it is natural that there will be good and bad times for the plantation sector. Coincidentally, few of the plantation products are seeing lower market prices for quite some time and this has put pressure on the profits earned from these crops. It is important to particularly highlight rubber. From a high of Rs.24,500 in April, 2011 price of RSS 4 has come down to Rs.12000-13000 range by 2014. In addition to the indicated cost of production in Table 2.3, there were also other efforts to estimate the CoP for rubber. For example, George et. al. (2023) estimated a cost of sheet rubber production as Rs.123/Kg. Similarly, Balakrishnan et al. (2017) has estimated the cost at Rs.105/Kg. Although the above estimates are representative only and the costs are going to vary significantly from one farmer to another, it is clearly noted by this team that while the price of natural rubber has fallen the costs of production has gone up significantly. This has significantly reduced the profit of the rubber farmers/planters. It was further noted that, due to reduced profitability, many farmers are not tapping their trees, abandoning rubber plantation, and/or not replanting once the trees are felled. The above explains the drop in rubber production in Kerala as well as the revenue from the plantation sector as a whole.



Trading got disrupted due to Covid-19 Lockdown in March, 2020; Source: Monthly Rubber Statistical News, Rubber Board

Figure 4.1 Average Monthly Price (Rs./100Kg) of RSS4 and RSS5 at Kottayam

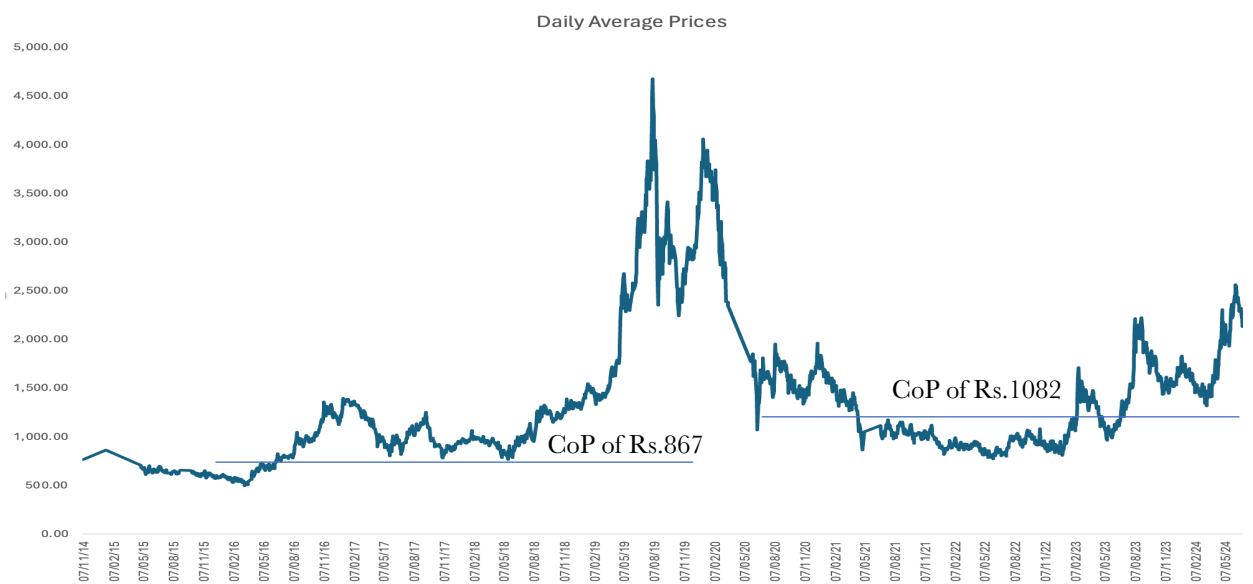
Another important plantation crop that has seen fall in prices over time is tea. As can be seen in Figure 4.2, the auction prices of South India tea is either falling or the increase, if any, has not matched the inflation. Further, the cost of production has significantly gone up over the years due to revision in wages and rise in input costs. While South India tea receives a lower price compared to the tea grown in the North East and West Bengal, the cost of production in Kerala is substantially higher. If one overlooks the product mix and other sources revenue through branding and retailing, one of the estimates of this study team, as shown in Table 4.3, suggests that the cost of production for one kg of CTC tea can be as high as Rs.190 per Kg. This suggests that growing tea in Kerala is gradually becoming economically unsustainable.



Source: Tea Board

Figure 4.2 Average Monthly Auction Price (Rs./Kg) of CTC Tea

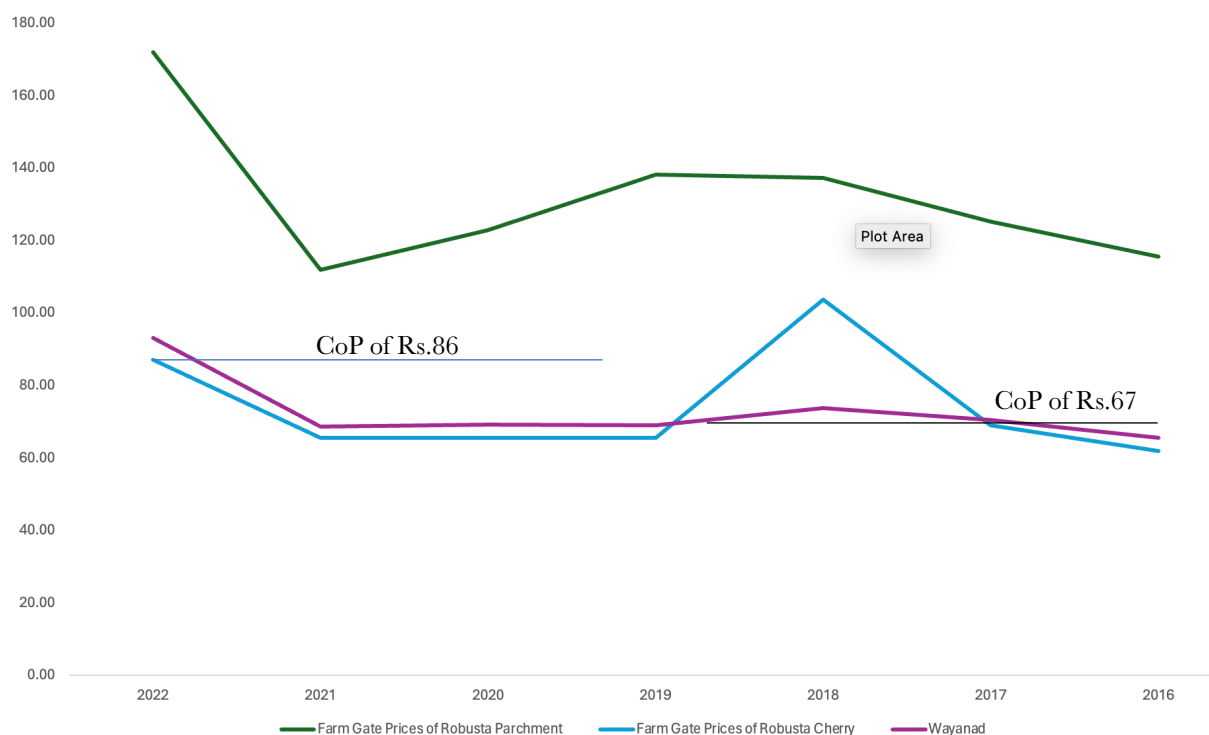
Unlike rubber, cashew, and tea, the story for other plantation crop is completely different. The price of Cardamom for instance has been very lucrative over a longer period of time. In 2019, the price has even touched Rs.4,000. An estimate by the Department of Economics and Statistics, Government of Kerala has estimated the cost of cardamom production (including imputed household labour and interest cost) for 2017-18 as Rs.407578.00 per hectare (for medium farmers). Taking an average productivity for the year at 470 Kgs per hectare we have the cost per kg of cardamom plantation as Rs.867.00. This cost in Idukki district (specially the Cardamom Hill Reserve Area (CHRA)) was as low as Rs.453.00. This makes cardamom as a very profitable plantation crop, however, limited to few districts of Kerala. In fact, cardamom yield and economics that works out in CHRA could not be replicated in other parts of Kerala.



Source: Spices Board

Figure 4.3 Average Daily Price (Rs./Kg) of Cardamom

The economics is also very promising for coffee and cocoa. As in July, 2024 the future prices of Arabica and Robusta coffee in New York and Europe market are Rs.423.64 and Rs.369.39 per Kg (Coffee Board). Figure 4.3 shows the average farm gate prices for Robusta Parchment and Robusta Cherry, the most commonly produced coffee in Kerala. In an study by Kerala Agricultural University, the cost of production is estimated at Rs.67 per Kg (Abhinav, MC, 2018). This suggests that coffee is quite promising plantation crop. However, given the climate and the topography requirements of growing coffee, coffee is grown in only a few places in Kerala with Wayanad being the major growing area. On the other hand, cocoa is a plantation crop that is grown across Kerala. The price of both dry cocoa and wet cocoa are very attractive. In May 2024, the price of dry cocoa reached as high as Rs.1,000.00 per kilo. In a study by Kerala Agricultural University, the cost of production for Cocoa was estimated as Rs.86,649.00 per hectare. Avg yield 1214Kg/hectare we have the cost of production as Rs.71/Kg. Thus, cocoa is a very profitable plantation for Kerala which is, presently, being not carried out to its potential. Similarly, Kerala's cinnamon that is specially grown in northern Kerala has unique aroma and fetches a very high price. Unfortunately, area under cultivation for cinnamon is very marginal.



Source: Coffee Board

Figure 4.4 Average Farm Gate Prices of Various Types of Coffee (Year-wise)

4.2.2 Yield and Productivity

As highlighted in Table 4.3, one of the major cost component in the cost of planting a crop is the labour cost. Therefore, it is natural that there would significant reduction in costs if one can improve labour productivity. Improvement in labour productivity needs to be emphasised specially because of the fact that the labour costs in Kerala is higher than other states in India. In the absence of such efforts Kerala's plantation sector, as a whole, faces the risk of being non-competitive in the market. While the living conditions of plantation workers has scopes of improvement, the team noted differences in the labour productivity (output per worker per day) between plantations that used complete outsourcing of the labour with those who employed workers on a regular basis in their roll. However, such examples may not be sufficient to make any conclusion that transferring risk of uncertainty in the output to the workers (to the outsourced contractors through a outsourcing contract) invariably lead to higher output and labour productivity. This is so because labour productivity is not solely dependent on worker's efforts and motivation. Further, there is a risk of worker's exploitation and denial of welfare benefits by the contractor. Therefore, such a focus is futile and worker's best effort is to be assumed while talking about labour productivity.

4.3 LACK OF INVESTMENTS AND UPGTADATION

Plantations require regular capital investments, especially when the yields start dropping over a period of time. the most productive of a tea bush is generally when its age is less than 70-80 years. Similarly, rubber trees' useful life start dipping after about 25 years. Therefore, in order to maintain yields at a remunerative and competitive level, plantations seek to replant the trees or bushes, from time to time, depending on their residual useful life.

However, these investments are pretty substantial. For instance, Rs.120 to Rs.200 per acre is cost of planting one rubber tree. There are also several other associated fixed costs. All considered, in order to expend such significant moneys, the economics of plantations need to be remunerative. This is currently not the case with most Kerala plantations.

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Chapter 5: Diversification Opportunities for the Plantation Sector

Economics related issues and the risks associated with highly single-crop focused business models have already been highlighted in earlier sections of this report as a key vulnerability of the Kerala plantation sector. This naturally opens up the need for considering areas of diversification potential. This chapter therefore explores in detail, the potential diversification opportunities that present itself for the sector, with a particular focus on exotic tropical fruits. It also discussed the diversification aspects of eco-tourism and silviculture.

5.1 BACKGROUND

A majority of the plantation owners are under severe economic stress primarily due to falling market prices and rising costs. The shrinkage in revenues and the margins have been consistent for quite some time forcing the government to be alarmed of an impending failure of an important sector of Kerala's economy. This motivated one and all to brainstorm on possible remedies to make the plantation sector in Kerala to thrive again. This is where the idea of exploring alternative cash crops to be grown on plantation land. With this motivation in mind, the Government brought in an amendment to the KLRA in 2005 that allowed five percent of plantation land for the use of cultivating non-plantation crops such as, medicinal plants, floriculture, vanilla, and for the establishment of hotels, resorts and others for tourism purposes. Receiving serious objection from all quarters to the relaxation given to tourism, the Government further put an additional clause restricting the use for tourism purposes to 10 percent of the 5 percent that is being relaxed for non-plantation activities. However, it was further realized that the five percent relaxation was not sufficient for the plantation to have alternative streams of revenue that can help it sail through the recent slide in the fortune for the plantation sector. The above motivated this study team to explore the possibility and feasibility of economically exploiting alternative cash crops. In the analysis presented here, the team primarily focussed on evaluating silviculture and the following exotic fruits: rambutan, durian, mangosteen, and longan. Further, the study also evaluated if there is any possibility of extending the relaxation for tourism initiatives.

5.2 POSSIBILITY AND FEASIBILITY OF CULTIVATING EXOTIC TROPICAL FRUITS

5.2.1 Rambutan

A typical sight of a rambutan fruit is of a yellow to crimson-coloured fruit having a soft outside cover and springy spines. The white and translucent flesh inside, covering the seed at the core, gives a Lychee-like look as well as taste. Rambutan is a tropical fruit and is native of Southeast Asia. The humid and warm weather with temperature in the ranges of 20 – 35°C and an average annual rainfall of 2000 mm and above is very conducive for Rambutan tree to grow. Loamy or laterite soil with appropriate organic

matter and water drainage is required for getting a commercially viable yield (Tripathi et al., 2019). The tropical areas of Western Ghats that includes a major part of Kerala meets the weather and soil conditions required for cultivating Rambutan. As the temperature in most parts of India falls below 18°C specially during the winter, the Western Ghat areas becomes among the very few places where Rambutan can be grown commercially. With demand for Rambutan is growing gradually, Kerala possesses an immense opportunity to have an exclusive dominance in the production and marketing of rambutan.

With a 6 × 6 spacings, 200-250 rambutan trees can be planted in a hectare of land. A 10-year tree in the western ghat is observed to have produced around 25-30KG which can go up to 60-70KG (Tripathi et al., 2019). At an average of 200 trees a hectare and 50 KGs a tree, the yield can go upto 100 quintals per hectare. With better agricultural practices and soil quality, the yield can easily go upward. Rambutan prices in the Vegetable and Fruit Promotion Council Keralam (VFPCCK) during a season would be around Rs.80-90 per Kilogram while the fruit would be retailing at around Rs.300-350 per Kilogram. Table 5.1 shows the prices of Rambutan in various VFPCCK markets in Kerala as on August 18, 2024. The table also shows the income per hectare for a farmer if they sale their harvest in that VFPCCK market. We can see that at an average price of Rs.80 per KG a farmer would earn many times than cultivating plantation crops such as rubber.

Table 5.1: Representative Prices of Rambutan at VFPCCK Markets in Kerala

Markets	VFPCCK Market Price		Income per Ha	Markets	VFPCCK Market Price		Income per Ha
	Per KG	Per Quintal			Per KG	Per Quintal	
Alengad	40.50	4050.00	405,000.00	Mezhuveli	62.00	6200.00	620,000.00
Anchal	54.38	5438.00	543,800.00	Medungapra	51.00	5100.00	510,000.00
Avarma	25.00	2500.00	250,000.00	Neervaram	46.00	4600.00	460,000.00
Chengannur	33.67	3367.00	336,700.00	Padinjarathara	45.00	4500.00	450,000.00
Cherthala	51.00	5100.00	510,000.00	Parassala	63.30	6330.00	633,000.00
Kanjirappally	73.27	7327.00	732,700.00	Pothencode	549.15	54915.00	54,91,500.00
Kattakkada	49.33	4933.00	493,300.00	Pramadom	114.67	11467.00	11,46,700.00
Kollengode	46.46	4646.00	464,600.00	Thottuva	32.00	3200.00	320,000.00
Kunnathukkal	62.00	6200.00	620,000.00	Vandiperiyar	70.83	7083.00	708,300.00
Marenelloor	47.25	4725.00	472,500.00				

All figures in Rs.

Source: Kisan Deals dated August 18, 2024, <https://www.kisandeals.com/mandiprices/RAMBUTAN/KERALA/ALL>

The harvesting season of rambutan begins in July and thus, doesn't overlaps with litchi - one of most popular fruit that is similar to rambutan which is generally harvested during April - June. Although there is no reliable data to quote exactly on the demand and production of rambutan in India, the demand for rambutan is picking up very fast. The fruit is primarily grown in Southeast Asian countries such as, Thailand, Malaysia, Indonesia, and Philippines. Thailand produced 215,390 tonnes of rambutan in 2023 which is mostly consumed in the country itself while about 4% of the fruit is exported to other countries. Presently, India imports rambutan from Thailand and few other Southeast Asian countries. The total value of rambutan imports from Thailand in 2023 was USD1.9M while exports from India was at USD40.14 (<https://www.tridge.com>). Interestingly, the imports to India has grown 334.37% over the last

three years and 75.75% over a five year period. The exports growth, however, is only at 26.60%. The above statistics, thus, suggest increase in domestic consumption while playing a very insignificant role in the export market. Kerala being in a unique position of producing rambutan it can surely play a dominant role in the rambutan market in India. A rambutan tree lives for more than 100 years. Thus, it can also help sequester a significant amount of atmospheric carbon.

5.2.2 Durian

Durian is a tropical fruit that is round or oblong in shape with its skin covered with sharp spines. The flesh inside is yellow to red and is often consumed as a fruit. A commoner in India would often confuse durian as jack fruit while it is often referred as ‘the king of fruit’ in the southeast Asian countries and China. Durian is known for its strong taste and smell. Durian is rich in carbohydrates and is mostly consumed as fresh fruits. The fruit is also contains vitamins A, B, and C, minerals such as potassium and iron, fibre, and good fat. A durian tree lives for about 80-150 years (International Tropical Fruit Networks).

It is very popular in Southeast Asian countries and China. In fact, China is the biggest consumer of Durian while Thailand is the major producer. Thailand, Vietnam, and Indonesia are the leading producers of durian. These three countries together produced about 3 million tonnes (FAO, 2023). With a total production of 1,123,593 tonnes in 2019, Thailand is the leading producer of durian in the world. Thailand has 115,957 Ha (724,730 rai) of area under durian cultivation. The average yield being 9,690 Kg/Ha. In 2021, the total traded volume of durian was 930,000 tonnes. With 94% of the total amount of durian traded in the world originating from Thailand, it is the leading exporter of durian. The other exporters like, Vietnam and Indonesia having a 3% of the trades. China is one the leading importer of durian and has imported consistently an average of 740,000 tonnes during 2020-22 (FAO, 2023). In 2023, the total value of durian imports to China was USD6.7Bn (Table 5.2).

Table 5.2: Top Importers of Durian (million USD)

	2023	2022	2021	2020	2019	2018
China	6,720.00	4,030.00	4,210.00	2,310.00	1,600.00	1,100.00
Hong Kong	404.60	513.64	717.37	628.55	482.36	352
Singapore	15.91	15.23	16.99	11.14	14.23	13.75
Malaysia	10.55	4.04	4.21	2.98	4.06	4.76
United States	9.51	11.41	15.03	10.34	8.98	8.12
Macao	7.70	6.17	5.67	5.46	4.47	3.08
Brunei	7.56	4.43	5.63	4.15	4.68	4.07
Canada	5.27	2.84	2.84	2.00	1.70	1.41
Japan	3.79	3.78	5.42	3.72	2.72	1.76
France	2.47	2.91	2.43	1.60	1.55	1.49

Source: <https://www.tridge.com/intelligences/durian/import>

The durian production and market in India is insignificant. There is an increase in consumption recently. A unverified reason due to which durian has seen some increase in consumption is the believe that it brings in fertility to women. However, there is a significant potential for exporting durian. Table 5.2 shows

the major importers of durian and the total value of imports over the last few years. It can be seen in the table that the demand for durian specially in China has increased 66% in 2023 as compared to 2022. The fresh durian market is presently valued at USD9.85Bn and likely to reach USD15.43Bn by 2029 (Mordor Intelligence). Thus, durian does present a very promising alternative crop for the plantation sector in Kerala. But, to do so India has to achieve a minimum scale. Further, China - the major importer of durian - has a very stringent regulatory requirements covering import of fruits and quality. Thus, the quality management practice and the logistics infrastructure and the support system needs to be built from scratch if Kerala has to aim for the export market.

5.2.3 Avocado

Avocado is a pear-shaped fruit that became a very famous fruit for its health benefits. The outer skin has a dark green colour. The flesh inside is slightly yellow and soft as cream. The flesh has good fat, fiber, minerals, and vitamins. Avocado contains good amounts of unsaturated fatty acid and that is why it is considered as a very good for one's health and controlling cholesterol. The health benefits have attracted people across the globe including, India to consume avocado in a significant way. Avocados are also used in salads, for making smoothies, sandwiches, tortilla chips, tacos, burritos, ice creams, and as dips and spreads (such as guacamole). An avocado tree lives for about 200-400 years. Due to its health benefits, avocado has received significant attention from consumers. Accordingly to Stealth Research, the fresh avocado market is expected to rise to USD29.78Bn by 2030. The growth would be primarily driven by the value-addition in the food and cosmetic industry.

Mexico is the major producer of avocado producing about 2.5 million tonnes. Columbia, Peru, and Dominican Republic are the other major producers of avocado producing, respectively, 1.1, 0.87, and 0.74 million tonnes. It can be seen in Table 5.3, that each major producers have consistently increased avocado production over the last one decade. This suggests that the avocado consumption has also increased in proportionate manner.

Table 5.3: Major Avocado Producing Countries ('000 MT)

	2022	2021	2020	2019	2018	2017	2016
Mexico	2,500.00	2,440.00	2,390.00	2,300.00	2,180.00	2,030.00	1,890.00
Colombia	1,100.00	979.62	829.15	535.02	445.08	308.17	294.39
Peru	866.50	776.65	672.23	571.99	504.84	466.80	455.39
Dominic Republic	737.20	634.37	620.09	665.65	644.60	637.69	601.35
Kenya	458.40	416.80	322.56	264.03	233.93	217.69	176.05
Indonesia	389.00	526.00	669.00	461.61	410.08	363.16	304.94

Source: <https://www.tridge.com/intelligences/avocado/production>

Like production, trade data suggests that Mexico is the leading exporter of avocado in terms of dollar value exporting about USD2.8Bn worth of avocados (Table 5.4). Interestingly, Netherlands and Spain are non-producing exporters of avocado. In fact, Netherlands has become the biggest hub of avocados in Europe. They are also the leading consumer of avocados.

Table 5.4: Top Exporters of Avocado (million USD)

	2023	2022	2021	2020	2019	2018	2017	2016
Mexico	2,800.00	3,140.00	3,050.00	2,670.00	2,910.00	2,410.00	2,700.00	2,070.00
Netherlands	1,100.00	905.03	1,160.00	1,060.00	886.30	730.30	631.39	481.61
Spain	413.90	415.79	462.01	442.89	384.65	353.58	348.13	272.68
Israel	260.80	100.76	58.96	62.86	76.89	59.78	69.37	41.68
Chile	246.40	247.81	290.03	276.88	377.77	327.57	503.48	371.93
Colombia	200.90	179.26	204.59	146.03	89.05	62.73	52.95	35.04

Source: <https://www.tridge.com/intelligences/avocado/export>

One the other hand, USA is the biggest importer of fresh avocado followed by European countries such as, Netherlands, France, Spain, Germany, and the UK (Table 5.5). The combined value of imports to these countries is USD5.22Bn.

Table 5.5: Top Importers of Avocado (million USD)

	2023	2022	2021	2020	2019	2018	2017	2016
USA	3,100.00	3,380.00	3,140.00	2,540.00	2,860.00	2,450.00	2,730.00	1,990.00
Netherlands	1,200.00	911.56	1,020.00	1,030.00	817.60	540.22	552.68	479.05
France	584.70	532.17	539.46	518.86	521.03	408.43	447.25	376.78
Spain	558.50	410.42	487.26	389.30	341.29	181.14	252.41	200.62
Germany	520.60	382.77	396.92	388.92	348.50	317.69	275.92	206.48
United Kingdom	287.40	260.03	312.22	348.39	342.47	267.40	282.43	242.37

Source: <https://www.tridge.com/intelligences/avocado/import>

5.2.4 Longan

Longan has its origin in South China and its juicy flesh tastes like a litchi or a rambutan. Longan has a thin brown-coloured outer skin and round in shape. While it is smaller than a average size litchi or a rambutan, the flesh inside is white, translucent, and juicy. The flesh is rich in fibre, minerals (such as Vitamin C, potassium, and iron), and antioxidants. It helps in boosting one's immunity and is consumed as fresh fruits, and used for making deserts, smoothies, jams, jellies, and ice creams. A longan tree can live for more than 400 years.

Longan is a very popular fruit specially in China and other Southeast Asian countries. In China, Longan is used in traditional medicines and is believed to have properties that help improve one's sleep and digestion. Although longan is being grown for a long time, it is considered as a new fruit to the modern world. Thailand, Vietnam and other southeast Asian countries has a sizeable share export market. In India, longan is grown in a very limited manner. Longan production in Kerala is gradually getting popularity. It is expected that, with more awareness, longan would be a popular fruit like litchi.

Table 5.6 shows the top importers of fresh longan over the last few years. As seen in the table, China is the major importer of fresh longan (HS Code: 081190) followed by USA, Germany, France, and Japan. The combined value of imports of these major importers is USD2.562Bn.

Table 5.6: Top Importers of Longan (million USD)

	2023	2022	2021	2020	2019	2018	2017	2016
China	1,100.00	915.16	589.03	385.60	309.82	213.09	130.14	118.15
USA	872.00	977.47	854.43	706.00	575.21	528.48	436.15	515.57
Germany	260.00	311.92	332.00	299.68	293.41	294.62	290.76	242.72
France	217.70	225.98	240.47	208.62	195.68	189.92	175.48	157.86
Japan	202.50	189.98	176.11	156.65	148.49	135.76	126.65	132.42

5.2.5 Dragon Fruit

A dragon fruits receives its name due to its scales which appear to be like a dragon. It's a tropical fruit which has its origin in Central and South America. It has a red, yellow, or pink appearance and is either round or slightly oval in shape. The fruit inside the cover is either white, red, or magenta and has very smaller seeds. They have a sweet and a mild acidic taste. Dragon fruit has gained popularity due to its nutritional value. The fruit has a good amount of vitamins C and B, and minerals such as, iron, calcium, and phosphorus. Dragon fruit has low-calorie content and is fibrous. It has antioxidants properties and is considered to boost immunity. The edible black seed also contains omega-3 fatty acids. Dragon fruit is consumed as raw fruit and also in fruit salads, smoothies, and desserts. The seed powder is also used as a natural food colouring agent. A dragon fruit tree lives for about 20 years. The fruit is generally harvested during June to October and starts yielding when the tree is 12-15 months old. A temperature range of 20-29°C is an appropriate weather for dragon fruits.

The demand for dragon fruit is consistently increasing over the last few years, primarily driven by growing awareness and availability. Mordor Intelligence estimates the world dragon fruit market at USD 14.73 Bn in 2024. The market size for the fruit is expected to grow at 4.40% to USD 18.27 billion by 2029. Vietnam, Thailand, China are the major producer of dragon fruit. It is also gaining popularity in other parts of the world including India. Production of dragon fruit in India is estimated at 52,470MT (Horticultural Statistics 2023-24, Government of India). Kerala produces about 540MT of dragon fruit. With growing demand there are room for more production both across India and Kerala.

5.2.6 Mangosteen

India is one of the biggest producer as well as consumer of fruits. However, fruit production and consumption is very limited to Indian traditional fruits. Recently, due to more exposure and health consciousness, consumption of exotic fruits such as mangosteen are increasing. A mangosteen has a dark purple cover and has chambered garlic-shaped white flesh inside. The flesh inside is sweet and juicy. The outer cover of mangosteens can also be yellow, purple, and red. It is a very common tropical fruit that is found in Southeast Asia. In India, they are primarily grown in the southern states. Mangosteen has many nutritional value and contains vitamins such as, B, C, and A. It also contains minerals such as, manganese and potassium, fibres, and possess antioxidant properties. Therefore, mangosteen derived products, in addition to consuming as a fresh fruit, are very popular and are often consumed by people for its medicinal properties. A mangosteen tree, generally, lives for about 30-45 years.

Mangosteen requires tropical weather with rainfall in the range of 180-250 cm and grows at an altitude of 400-900m. Generally, mangosteens are planted in a 6×6 m format. The tree starts flowering, generally, in 8 years. The harvesting season is July-August and a 15-year tree gives 40-60 kg/tree fruits. Thailand, Indonesia and other southeast Asian countries are the leading producers of mangosteen. Kerala is India's leading mangosteen producer followed by Tamil Nadu. Unfortunately, there is not much data available on mangosteen production in India. The harmonised code for mangosteen is shared with mangoes and guava. This makes isolating mangosteen data very difficult. Due to its medicinal and health benefits, there is also a tremendous opportunity for exploring value-addition projects. However, that would require well organized efforts covering promotion of entrepreneurial initiatives, building an efficient logistics infrastructure, and branding and marketing efforts.

5.2.7 Plantation Land for a Share in the Global Fruit Market

Due to the vast geographic areas and diverse climatic conditions bigger countries such as China, India, the United States, and Brazil produces a larger share of world's fruit. The size of the world fruit market is estimated at \$674.5 billion and is expected to grow at a rate of 6.79% (Immad, 2023). Geographic and climatic diversity gives each fruit producing area bringing their unique tastes and flavour. India is a leading producer of fruit in the world. Due to its large population leading to high consumption and the economic rewards associated, a large part of India's geographic area is used for fruit cultivation. A state wise distribution of land areas used for fruit production in various states are given in Table 5.7. Interestingly, despite being a major producer of fruits, India is not a significant player in the export market.

Table 5.7: Estimates of Fruit Production (2023-24) in Major Fruit Producing States

S. No.	Major Fruit Producing	Area	Production (in '000
1	ANDHRA PRADESH	796.19	17,790.45
2	ASSAM	149.19	2,367.97
3	BIHAR	366.82	4,671.73
4	CHHATISGARH	222.10	2,455.58
5	GUJARAT	430.03	8,226.55
6	HIMACHAL PRADESH	236.47	721.98
7	JAMMU & KASHMIR	344.29	2,631.69
8	JHARKHAND	113.00	1,268.44
9	KARNATAKA	394.81	7,477.10
10	KERALA	294.79	3,072.10
11	MADHYA PRADESH	456.96	9,611.12
12	MAHARASHTRA	860.01	15,174.55
13	ODISHA	386.23	2,948.41
14	PUNJAB	113.70	2,507.36
15	TAMIL NADU	334.25	7,528.63
16	TELANGANA	187.34	2,384.02
17	UTTAR PRADESH	570.97	13,166.24
18	WEST BENGAL	314.70	4,229.86
	All India Total	7,046.08	112,627.99

Source: Horticultural Statistics, Department of Agriculture and Farmers Welfare, Government of India

India produces a variety of fruits in its vast and diverse areas. Some areas are traditionally known for growing fruits that carry taste and flavours unique to the area. While mangoes, guavas, bananas, and papayas, are grown across the country, it also grows apples, grapes, pears, and tropical fruits such as, dragon fruits and kiwi in large quantities. Maharashtra, Andhra Pradesh, Uttar Pradesh, Gujarat and others are the leading fruit producing states in India. Kerala, if not among the top, has also a substantial area under fruit crops. Table 5.8 shows the major fruit crops production in India and Kerala. Although Kerala produces significant quantities of banana and jackfruit, it can be seen that Kerala doesn't have a dominance in any of the fruit crop.

Table 5.8: Estimates of Fruit Production (2023-24) for India and Kerala

S. No.	Major Fruit Crop	Area (in '000Ha)		Production (in '000MT)	
		India	Kerala	India	Kerala
1	Banana	995.19	113.73	37,474.18	3,121.97
2	Dragon Fruit	13.77	0.05	52.47	0.54
3	Guava	345.48	1.65	5,449.47	5.18
4	Jack Fruit	185.60	85.31	3,249.48	1,408.25
5	Kiwi	5.45	0.00	18.41	0.00
6	Litchi	98.56	0.00	764.64	0.00
7	Mango	2,405.88	74.30	22,547.70	504.91
8	Papaya	148.81	14.81	5,341.83	95.92
9	Passion Fruit	11.16	0.52	56.36	2.22
10	Pineapple	104.53	11.48	1,801.57	143.19
11	Pomegranate	234.57	0.01	2,933.85	0.08
12	Sapota	73.46	0.72	897.06	2.85
13	Strawberry	2.41	0.05	13.92	0.05
14	Watermelon	125.45	0.10	3,594.55	0.59

Source: Horticultural Statistics, Department of Agriculture and Farmers Welfare, Government of India

However, Kerala, due to its overlapping areas with the western ghats, possesses weather and geographic conditions that is very suitable for tropical fruits. In fact, Kerala possesses unique position when it comes to tropical fruits and, if such uniqueness can be leveraged, Kerala can be a major producer of tropical fruits in the country as well as can play an important role in exporting fruits. Given the fact that there is a growing awareness about tropical fruits and their health benefits. This is raising the demand for such fruits. They also fetches a very high price and a large part of the demand remains unmet or met from imports from the southeast Asian countries such as Thailand.

The National Sample Survey of 2022-23 suggests a significant change in the household expenditure pattern in India. People are now spending more on fresh and dry fruits and processed food as compared to a decade back. Many health surveys have noted that Indians consume very little of fruits and vegetables. However, with rising health awareness, especially in the urban areas, consumption of fruits is increasing. This awareness is also making health-conscious Indians pay a premium for nutritious and high-quality fruits. Tropical fruits can fill the rising demand for food nutrition and Kerala can play a very important role here. However, there are also concerns of excessive usage of pesticides and other chemicals in fruit cultivation. Awareness and training on good agricultural practices can significantly

optimize usage of pesticides and chemicals. Further, the demand for organic products and awareness on traceability to environmentally sustainable farms has increased. This would require farms to minimize pesticide and chemical usage in fruit farming. Additionally, the tropical fruits has a very long life having significant wood content. Thus, fruit cultivation would also contribute to a significant amount of carbon sequestration. Additional revenues can also be generated by effort to earn carbon credits for reducing greenhouse gas emissions into the atmosphere.

While tropical fruits may appear very attractive at this point of time, it is also subjected to many challenges. Like, any commodity, various tropical fruits are also going to face price fluctuations changing the economics of plantation from time to time. With India consuming more of tropical fruits, Indian growers would have to face stiff competition from many fruit exporting countries such as Thailand. India's post-harvest handling and management of fruits is very unorganized and the supply chain broken. The logistics infrastructure required for reducing loss of harvest and maintenance of quality is missing at this point in time. Therefore, if Kerala has to play a dominant role in the cultivation of tropical fruits, it has to significantly invest in post-harvest logistics infrastructure, adopt best quality management practices, and enhance efforts to connect with markets and branding. There is also a significant opportunity in downstream value-addition units. However, traditionally, manufacturing in Kerala has many hurdles. The hurdles are primarily related to mindset and non-cooperative attitude of the bureaucracy. Economic exploitation of the opportunity can be done along with conservation and preservation of the environment can be done through putting in place a clear and integrated regulatory framework and good agricultural practices. Government's initiatives along these dimensions can make Kerala's agriculture and plantation economy more stronger and rewarding. In fact, such initiatives has become very necessary for the Kerala Government, given the troubles being faced with many Kerala's major crops.

5.3 SILVICULTURE ON PLANTATION LAND - IS THERE A FIT ?

The climatic condition and soil quality varies from one location in Kerala to another. This differences in geographic and climatic conditions makes different regions/districts of Kerala suitable for certain crops only. For example, coffee is very suitable for Wayanad and Neliyampathy area while it may not be grown commercially in other districts. Similarly, cardamom quality and productivity is highest in the CHRA zone while rubber is a more fit in the lower and mid-altitude altitudes of Malappuram, Kottayam and Vandiperiyar. On the other hand, in high altitude areas such as Munnar, the options for alternative crops may be very limited. All of the plantation crops and the tropical fruits need not be appropriate for all areas. So, there is a need for exploring more alternatives for diversification. Agro-forestry and silviculture may be a very good alternative to explore that may be grown in the plantation areas of Kerala. It can also support the growth of a highly attractive timber industry in Kerala.

With good practices such as spatial arrangement of trees, natural and artificial regeneration, substantiable harvesting and banning clearcutting, growing trees in the plantation land for timber may not only be economically rewarding but also can help maintain ecological balance specially in plantation areas adjoining a forest. It can help extend the biodiversity beyond the reserve forests and sequester more atmospheric carbon. Exploiting silviculture in plantation land for wood can generate significant revenue for the state and can help develop wood-based industries. The demand for wood is increasing in India as well as across the globe. Woods are required for making furniture, plywood, and used in house construction, pulp and paper industry, pencil making, matchwood, and packaging industry. Wood may also be used as fuel and for bio-energy projects. India, presently important about

The global demand for wood has been increasing consistently over the last few years. This is primarily due to increase in demand from various industries such as, construction, furniture, paper, and pulp. As shown in Table 5.9, the total value of wood imports across the world is valued at USD485.98Bn. The Europe and the central Asian, East Asian and the Pacific countries are the major importers wood. In 2021, China imported about USD47.25Bn worth of wood and wood products making it the world's largest importer of wood. Germany, USA, and Canada are the other major importers of wood that are primarily used for furniture and construction. India imported about USD3.92Bn worth of wood and wood products. There are also significant trade-barriers such as, tariffs and quotas primarily motivated by protecting local timber industries and environmental concerns.

Table 5.9: Region wise Import of Wood (Thousand USD)

	2021	2020	2019	2018
World	48,59,78,292.34	38,89,78,257.21	41,83,45,409.87	45,32,58,035.31
Europe & Central Asia	24,58,17,468.22	19,71,99,311.07	20,76,55,504.38	22,24,38,388.27
East Asia & Pacific	10,62,68,048.85	8,67,01,778.79	9,52,19,358.96	10,05,84,476.28
North America	7,93,90,272.36	6,21,14,549.86	6,70,61,714.54	7,64,48,407.26
Latin America & Caribbean	3,52,76,895.60	2,79,16,940.03	3,06,49,682.39	3,52,45,440.24
Sub-Saharan Africa	64,89,564.56	52,92,823.00	66,62,466.19	74,17,711.19
Middle East & North Africa	48,86,811.71	40,64,061.18	49,70,318.19	47,57,189.08
South Asia	42,69,584.65	26,29,005.66	29,36,321.08	28,43,281.53
India	39,17,001.51	23,72,180.86	26,01,698.68	24,15,879.30

Source: https://wits.worldbank.org/CountryProfile/en/Country/WLD/Year/2021-2018/TradeFlow/Import/Partner/by-region/Product/44-49_Wood

The five top exporters of wood are USA, China, UK, Germany, and France. The exports from USA is valued at USD74.30Bn while that of next major exporters are, respectively, USD51.61Bn, USD35.65Bn, USD34.78Bn, USD20.21Bn (Table 5.10). USA sources wood from its vast area under forests. It also has an efficient wood supply chain making it to dominate the global wood market. China, on the other hand, processes woods imported into high-quality and price-sensitive wood products. Over the years, it has developed its wood processing industries and now a leading exporter of furniture and

then plywood. Canada and Russia is known for exporting softwood while Brazil and Indonesia for hardwood. India is an insignificant player both as an importer as well as exporter of wood. Along with an increasing volume, countries importing wood are also diversifying their sources primarily for mitigating supply uncertainties. There are also some concerns about rising wood demand leading to deforestation. However, scientific silviculture in agricultural and plantation areas along with sustainable practices can be very effective in achieving afforestation and carbon sequestration.

Table 5.10: Region wise Exports of Wood ('000 USD)

	2021	2020	2019	2018
World	55,11,40,316.81	43,99,27,172.41	45,49,76,873.60	48,80,29,628.53
Europe & Central Asia	25,45,12,656.48	20,15,35,963.57	20,19,21,321.75	21,67,82,762.28
East Asia & Pacific	12,09,52,621.74	10,21,23,251.52	10,70,63,864.35	11,59,07,881.27
North America	8,87,23,666.58	6,59,30,504.73	6,51,37,408.13	6,89,16,886.35
Middle East & North Africa	2,96,98,159.98	2,57,96,703.55	2,83,82,899.84	3,00,79,452.64
Latin America & Caribbean	2,76,55,810.94	2,13,50,491.99	2,46,99,600.35	2,67,78,662.69
South Asia	1,21,85,625.65	88,51,744.04	1,15,24,996.03	1,25,69,463.54
Sub-Saharan Africa	1,01,37,600.82	83,00,460.62	97,63,103.63	1,01,00,580.33
India	83,56,910.76	57,95,013.87	80,45,422.11	85,36,308.21

Source: https://wits.worldbank.org/CountryProfile/en/Country/WLD/Year/LTST/TradeFlow/Import/Partner/by-country/Product/44-49_Wood

5.4 TESTING THE LIMITS OF ECOTOURISM

The rapid increase in the tourism sector and the opportunity that exists in exploiting the beautiful landscapes presented by the plantation, the government considered, in its amendment of the KLRA, to permit a limited area of an estate for the use of eco-tourism. Ecotourism is a concept whereby tourism potential of an area is exploited with minimal impact on the environment and ecological balance. The ecotourism is gaining popularity and tourists are willing to pay a premium for such areas that can connect oneself to nature and local communities. Ecotourism projects primarily focuses on increasing awareness on environmental education among tourists and supporting conservation efforts. Typical ecotourism activities include watching animals in their natural habitat, adventurous activities such as, hiking and trekking, rafting and kayaking, angling, camping, and safari tours, participating in community activities etc. The beautiful landscapes and a lonely private life of the plantation of Kerala definitely has significant opportunities for ecotourism. A similar concept is farm tourism. In farm tourism, tourists stays in an agricultural firm and engage themselves into the various activities of the farm such as, learning farming practices, preparation of local cuisines, farm production processes, hiking, fishing etc. Farm tourism is aimed at increasing income of the local population and thus, reducing poverty and increasing employment opportunities, and promoting the unique cultural heritage of the area. A study by report by The Federation of Hotel and Restaurant Associations of India, KPMG,

and the PHD Chamber of Commerce and Industry, the ecotourism in India is expected to grow at a 19.3% to USD152 million by 2032 (Khosla, 2024).

When it comes to developing a place for tourism it is not all about beautiful landscapes and adventures but also about planning for roads connecting the site, lodging, boarding, vehicle parking, and recreation activities. With more people traveling to an earlier remote area cause rapid urbanization of the area. Such urbanization without a proper plan would create air and noise pollution, increase in garbage and plastic wastes, deforestation of green areas to meet the demand for more land, increased water crisis and soil erosion, and more importantly can lead to natural disasters such as the one happened very recently in Wayanad.

While economical reward of tourism is very tempting and valuable, the balance between such economic exploitation and the need for maintaining ecological balance is not well understood. Under such a case, there would always be a confusion and conflict on where to draw a line. While ecotourism in forests are primarily motivated by supporting conservation efforts, the concept of introducing tourism in the plantation is motivated by economic gains. So, it is not clear to what extent a liberal approach to allow tourism in the plantation would be used to disturb and damage the ecological balance. Further, every area has its own unique geographic characteristics and ecological balance, and thus, also the balance between economics and ecology is to be defined uniquely for an area. Significant amount of research understanding the balance for every geographic area is necessary before tourism can be pursued in plantation areas in a planned manner.

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Chapter 6: Summary of Key Issues Confronting the Sector

This chapter summarises the key issues that emerges out of the study team's interactions with various stakeholders and experts, and the team's analysis and deliberations around the current issues, that have been outlined in the preceding chapters.

Broadly four categories of issues can be identified with problems confronting the plantation sector. These are:

1. Economics related
2. Core Operational Issues
3. Labour Conditions
4. Other Issues

These issues have been largely explained in the earlier chapters, and here we present a summary of these issues as a prelude to the recommendations in Chapter 7

6.1 ECONOMICS RELATED

6.1.1 Declining Output and Revenues

In general, the plantation sector in Kerala has witnessed an era of declining output and revenues. For many plantations, this has been partly on account of declining yield and poor productivity, which in turn can also be attributed to ageing crops.

With plantation crops being lined to global prices, the other key factor contributing to dwindling revenues have been the volatility in global prices over the last couple of decades and as a consequence, often the lower price realised for their produce for many Kerala farms. In many crops like rubber and tea, the competitiveness of

6.1.2 Rising Costs

As a state that has generally provided greater labour welfare, the Kerala plantations have seen the context of steadily rising costs. While the labour welfare aspect can be considered a good feature from a social sustainability, reducing exploitation and shared value perspective, it has also created a general resistance for initiatives related to modernization in many sectors.

Plantations in Kerala particularly have the legal/regulatory mandate of having to provide for housing and related expenses and medical expenses of the plantation labour and staff, without any access or recourse

to the Employees' State Insurance (ESI) scheme, which further puts the plantations at a disadvantage. In conjunction with lower productivity and yield, this has contributed to overall rising costs.

General rising trend of labour unavailability/scarcity has been another issue in Kerala, and particularly for plantations. The MNREGA scheme assuring 100 days wages has also contributed to the labour shortage problem.

6.1.3 Limited Continued Investment Capacity

In almost all the plantation farms and crops, it can be witnessed that there has been limited investments being made over the past several decades, for re-cropping and replanting. Productivity naturally dwindles over time, especially in the absence of regular maintenance and replanting, and the context that emerges is that of a vicious cycle, where rising costs and declining revenues and profits lead to poor surpluses, in turn leading to poor productivity and higher costs, and so on.

In earlier decades, the Government of Kerala used to provide subsidies for replanting crops. However this facility has also now dried up. With the economic prospects looking uncertain, bankers are also reluctant to finance at affordable rates.

There are also additional issues such as lack of viable or attractive exit options for plantation owners, because the attractiveness for buyers is also limited, with stringent regulations that exist around plantations. The falling returns over the last two decades, and exposure to the general business uncertainty/volatility have been also key issues leading to the general reluctance by planters for making continued or regular capital investments. Furthermore several operational issues such as ground-level bureaucratic activism and other interferences have further created a negative atmosphere, wherein the planter cannot be sure of reaping returns, if any significant investments are made.

6.1.4 Limited Prospects for Diversifying Revenue Streams

Any business over time gets exposed to several risks, and plantations are no exception. However, whereas other business such as manufacturing or services have the option of diversifying, such a route is limited for Kerala plantations, under the dispensation of the KLRA 1967 and even after further amendments introduced in 2005.

On one hand, the 5% allowance for diversification provided to plantations is restrictive, because it cannot provide any meaningful diversification of revenues in a context when 95% of the produce may be potentially exposed to price or production risk; on the other hand it forces the farmers to continue with unremunerative conditions on the existing plantation crop in many instances, because of lack of possibility of exiting or cutting down significantly on the scale of operations.

6.2 CORE OPERATIONAL ISSUES

6.2.1 Significant Bureaucratic Hurdles

The study team has observed that many of the plantations face significant ground level interferences in many guises. For instance, the KLRA (Amendments) 2005 allowing 5% of the land for the use of other crops and tourism, appear to be fraught with several last-mile implementation issues, that effectively emerge in the form of harassment. There are several clearances to be obtained, and often the approaches of Panchayat level officials and forest level officials pose several hurdles in obtaining the same. Arbitrary Operational/Ground level hurdles, despite legal/regulatory entitlement are often encountered by the farmers. All in all, instead of creating a easy and conducive climate for operations, the processes end up creating a near-hostile investment climate.

6.2.2 Labour Availability Issues

As already indicated in section 6.1 above, operationally the plantations in Kerala have been materially affected by the evolving demographics in the region. Local labour is virtually non-available in Kerala. Even traditionally the plantations have been worked by labour from other south Indian states like Tamil Nadu - but over time, with growing prosperity in this segment, there has been shortage of such labour as well, with the result that almost all Kerala plantations are significantly dependent on labour from East/North Indian states like Bengal. Odisha etc.

With migrant labour being the mainstay, several operation issues have emerged for local plantations such as related to lack of a core trained pool of local workers, uncertainty in continuity of labour, rising cost etc. The depletion in the pool of local skilled labour also has contributed to reducing labour productivity.

6.2.3 Conflicts with Forest Department

The territorial and land demarcation issues faced by plantation owners have been legion, in almost all the plantation regions across Kerala. There remains a lot of confusion between 'forest cover' and 'forest area' leading to several boundary disputes. There are also several instances cited of arbitrary declaration of plantation land as Ecologically Fragile Land (EFL), as also instances of some arbitrary "Do's and Don'ts" prescribed from time to time. This has led to a situation of impending risk as well a lack of clarity for many plantation owners about the future of their holdings, which in turn leads to less than adequate investments and maintenance.

6.2.4 Human Animal Conflict

The instances of animal intrusion into most plantation areas are rampant across Kerala plantations, particularly as the plantations are invariably contiguous to or nearby forest lands. This has led to several intrusions into the human inhabited plantation areas, and unfortunate situations wherein crops are frequently damaged by animals. There are also instances of animals killing or injuring humans. However, if there are injuries or deaths of wild animals within an estate, whether accidentally, in defence or deliberately, this can lead to arrest with bail and/or filing of criminal cases against the plantation owner/manager.

The human-animal conflict issue is a very old one, and a very complex one, often investigated, and does not offer easy solutions. On one hand it is undeniable that it is the inexorable human development and urbanization/ semi-urbanization that has led to a situation where human settlement have virtually encroached into erstwhile animal territory. This is much akin to the manner in which human development has degraded general ecological balance. Over time, forest areas and the character of forests themselves have also changed, especially with traditional forest flora having been taken up for plantation crops like rubber, with the result that the remaining “forests” do not have adequate natural food and natural habitats for wild animals. As a result, animal encroachment into human settlements and plantation areas are to be expected. The practice of monoculture in the forest areas has over time further exacerbated the issue. On the other hand, especially when there is loss of produce and danger to human life, trauma is inevitable and there is a natural tendency on the part of the affected to plead and argue for the primacy of human life and property, at any cost, without heed to the root cause of the issues.

Irrespective of the philosophy one might assume, the reality confronting Kerala plantations is that this issue of human-animal conflict is a very live and grave one. In some regions, more than some others, the issue is acute, and even dominates over other economic issues. A case in point is the Palakkad-Malappuram area. Therefore, it is imperative to explore and seek a solution to this issue. It is also evident that such a solution will require trade-offs, if the principles of sustainability and justice to humans and animals alike need to prevail. Humans must find a peaceful way of co-existing with nature and must invest to create such harmonious conditions, rather than seek to master nature.

6.3 LABOUR CONDITIONS

While much of the discussions in earlier chapters has been dominated by the economic and operational issues facing plantation owners, there is also the important issue of how the state of plantations is impacting employees, particular labour class, as a critical stakeholder group.

6.4 OTHER RELATED ISSUES

Labour Perspectives

The context of labour has been a core issue related to plantations, right from the enactment of the KLRA, given that the plantations being a large employer was presumably a key consideration for them falling in the exempted category. From the study team's interaction with plantation companies, Government officials and labour unions, different issues have emerged.

On one hand the plantation companies, indicate that the entire onus of labour related expenses has been placed on them, and therefore has become a significant component of the costs. On the other hand, the labour unions have represented that many of the plantations have tended to cut corners with regard labour welfare related expenses, while they also acknowledge with satisfaction that a handful of large plantations have been ethical and proper in dealing with labour related aspects.

Seen in balance, the core issue is that the economics of plantations and the operational issues that the plantations face combine to create a context where the plantations may be challenged in providing all that is required to ensure safe and secure working conditions to labour, even as it is a critical issue. The issue is a complex one and can pose serious dangers in future too, as witnessed in Wayanad disaster recently. Therefore, this is an issue that needs to be addressed on a war footing.

Monocropping

At the time of passing the KLRA, the plantation sector was viewed as making significant economic contributions. This has motivated the then law makers to keep plantation outside the land ceiling. Although there were no specific restrictions were put by the law, the subsequent bureaucratic understanding was to keep the character of the plantation by identifying a plantation area by the crop being grown and not allowing any interchanging of the plantation crops. This led to the practice of mono cropping. There are several disadvantages to mono cropping. It causes loss of biodiversity, soil degradation, and leads to the growth of pests and diseases. The study team could not find any substantive arguments in favour of retaining the plantation land as a mono crop.

Monocropping also increases the risk of pests and diseases and reducing soil quality.

Preservation and Conservation of Ecology

Many of the issues related above are directly or indirectly related to the aspect of ecological degradation - whether it is the issue of poor economics, regulatory issues, bureaucratic activism, lack of investment attractiveness, human-animal conflict, or the issue of mono-cropping. Therefore, the recommendations need to also take the environmental aspects into consideration centrally.

Chapter 7: Recommendations

This chapter details the essential recommendations being proposed by the IIMK study team, based on the analysis and assessment of the key issues outlined in the earlier chapters. In arriving at these recommendations the study has deliberated deeply on the several complex issues that have emerged during the course of study, some of which are chronic in nature and possesses legacy characteristics that are challenging to untangle. In giving shape to these recommendations, the study team has also benefited greatly from interim deliberations that were held with key policy makers and ministry representatives.

7.1 PREAMBLE

The plantation industry has been a pillar of Kerala's economy and employment base for several decades. It also plays a crucial role in Kerala's environment sustainability map, having contributed to the maintenance of a relatively strong green cover for the state, significant in proportion to the overall land area, as compared to many others. In the backdrop of Kerala's ingrained and acknowledged orientation to being labour friendly state, the plantations also traditionally played a major role in being a major employer and thereby opportunities for many unskilled and skilled labour.

Some of the issues confronting the sector are chronic. But the generally more munificent external environment in the latter half of 1900s allowed many of the sector players sufficient margins to tide over these issues. However, the uncertainty and volatility in global prices of the plantation crops have significantly raised the business and financial risk exposure of this sector, leading to dwindling revenues and profitability, over the last decade or so. In addition, the sector's operating context in Kerala including labour related issues, inflexibilities in legal dispensations, and several ground-level administrative impediments, have combined to contribute to the sector's declining competitiveness. This context has also led to a vicious cycle – weak prospects leading to poor investment attractiveness and degradation in the produce and returns, further hindering the much-needed investments.

If this situation is allowed to continue, what was once a preferred and thriving sector will likely become a sunset industry. Such an eventuality can have disastrous consequences not just for the plantation owners but for the whole state of Kerala. If the plantations go into a state of disuse and abandonment, large number of jobs could be lost and there will be significant loss also to the exchequer. Moreover, there could be severe environmental damage, as the Government is no condition to be able to operate these plantations in a viable manner, as the past has proven. Therefore, **there is a dire imperative for a clear vision and a roadmap for the strategic revival of the Kerala plantation sector. The study team's recommendations are presented in this context.**

7.2 KEY PROBLEM ISSUES

The reducing attractiveness as a commercial proposition poses a huge risk to the sector in terms of a vicious cycle of lack of investments, lack of modernization, further decline in economic prospects, and eventually can lead to disuse, job losses, social losses, and environmental degradation.

The key issues identified in the preceding chapters that need to be addressed, can be summarized as follows:

1. The economics of plantations highlight that the core issue is fundamentally that of reducing profitability, and increasing operating/ economic risk exposure, rather than one of fundamental unviability. However, the current state of economics has had a significant impact on the sector's vulnerability and its ability to make continued investment that is critical for scale and modernization.
2. The sector players have become more of price takers rather than price setters, because of weak market connect, limited scale, and their inability to harness any uniqueness or go up the value chain. Lack of concerted and cooperative efforts towards brand building, or towards creating collective resources, has not helped build this competitive dimension.
3. Archaic and inflexible legal provisions and the necessity to operate within a cumbersome operating framework, further exacerbated by constant ground level interferences and bureaucratic activism combine to create a highly unattractive and invariably hostile business environment. While the need for maintaining checks and balances is necessary to weed out undesirable and illegal practices, or to prevent opportunism, are undeniable, there is equally also a need for a drastic mindset change in the administrative network relevant for plantations.
4. Only prosperity can beget prosperity. In the case of plantations however, rising costs of operations, on account of falling yields/productivity, labour costs and the unfriendly operating environment have led to a situation where despite mandatory requirements, the plantations may be driven to cut corners if they can. They may be constrained to operate in ways whereby while they may be right by the letter of the law, the spirit is lacking, and overall labour welfare may be hampered. This also creates huge risks to jobs and far worse, even endanger lives. For strong labour welfare, labour prosperity and shared value creation to happen in plantations, the root causes need to be addressed.
5. Preservation and conservation: Many of the issues related above are directly or indirectly related to the aspect of ecological degradation - whether it is the issue of poor economics, regulatory issues, bureaucratic activism, lack of investment attractiveness, human-animal conflict, or the issue of mono-cropping. Therefore, the recommendations need to also take the environmental aspects into consideration centrally.

6. **Labour Welfare:** Labour being central to plantation operations, and especially Kerala being a model state in the context of labour welfare, it needs to be ensured that the matter of revitalizing the plantation sector also ensures the continued welfare of labour. In the current business context, no enterprise can thrive unless a philosophy of shared value is adopted, and this includes creating enabling conditions for labour to be a partner in prosperity. To this extent, the Government can also consider taking an active role in terms of allowing steps such as bringing the plantation workers under ESI schemes.

The IIMK study team's approach to forgoing recommendations are predicated on seeking to address the above problem issues. To address the above issues, a concerted and holistic approach is required to moderate the sector's inherent risk exposure and elevate its economic prospects, to enable the Kerala plantation sector to live up to its potential of being a significant employment generator, and an environmental and social sustainability champion.

7.2 PRINCIPLES UNDERLYING RECOMMENDATIONS

To address the above issues that have led to a critical situation for the plantation sector, **a vision-driven strategic approach is the need of the hour**. Kerala has the potential to **reclaim a prominent competitive position** in many of the current plantation crops as well as new crops such as tropical/exotic fruits, where it enjoys a natural advantage. To achieve this vision, **the current policy dispensation and operating framework/dispensation needs review**, to bring it in harmony with the altered economic and social landscape. In line with the above vision, we recommend that the renewed policy recognize the **following principles underlying this study's recommendations**:

1. **Scale economies, balanced modernization and regular investments** are critical to enable plantations to operate with optimal costs and to reclaim competitiveness in the global markets.
2. The revised policy framework needs to **drive and facilitate economic flexibility, growth and competitiveness** while also **balancing protection of the environment, flora and fauna, and animals, and ensuring labour welfare**.
3. Further environmental degradation (than already done) must not be allowed, and **Government and plantations need to work collaboratively to ensure environmental restoration and well-being, and strong carbon sequestration, to help reduce risk of climate-linked disasters**.
4. Kerala's labour-welfare oriented social and political climate is a long-standing legacy and is progressive to the extent that it helps counter potential labour exploitation; but it also has unwittingly created a broader sense of entitlement and frequent hurdles for industrial advancement. For plantations, this welfare legacy and culture needs to be channeled in a positive and collaborative manner, to **correctly ensure healthy/safe working conditions and a progressive and non-exploitative remuneration/compensation framework that allows strong shared value creation**. However, this legacy welfare culture also needs to be consciously

balanced with near-full freedom for plantations to modernize operations and usher in efficiency and productivity improvements. Otherwise, plantations will find it challenging to survive in a globally competitive context, if they are held to ransom at every turn, for every investment aimed at efficiency and modernization. This is a **delicate “tightrope walk”, that requires the Government to take on a facilitating role** and is crucial.

5. Facilitation of enhanced operating efficiency needs to be supplemented **with a concerted and well-conceived branding programme**, to create a stronger positioning for Kerala produce, especially in products like Tea, Coffee, and Cardamom. The same approach can also be extended to exotic tropical fruits, once there is the possibility of greater scale of production.
6. Greater value appropriation from farm produce needs to be encouraged **through a thrust on value-added products**, wherever relevant.
7. The implementation of the policy needs to be driven by a **strategic, state government-level consensus on a masterplan** like approach. The execution needs to cut across any potential biased departmental positions and ensure that resolution of issues balanced and swift.

7.2 SPECIFIC RECOMMENDATIONS

The revised policy framework for plantations may be grounded in the fundamental principle of the need for overall business resilience, as well as all around sustainability, including protection of ecology, social welfare and protection of all flora and fauna. Accordingly, the renewed policy may *inter alia*:

Crop Diversification

1. Crop diversification, particularly regarding tropical/ exotic fruits may be allowed. For such diversification to be meaningful for risk diversification, growing at scale is critical and may be allowed.
2. Specific choices of fruit crops (within an allowed and declared list of crops) may be left to the farmers/plantation owners, giving them full freedom, to enable them to adapt in an agile manner to global market trends, without any micro-management by the Government. This flexibility that is accorded for the purpose of ensuring business agility and business risk diversification should not compromise environment/ ecology in any manner, including biodiversity. One principle that may be strongly considered is that diversification may be allowed only for crops having a minimum life of 10 years; this will ensure sufficient carbon sequestration, and therefore contribute to environmental sustainability and net-zero goals.
3. In line with the above recommendation, farmers/planters should also be allowed the freedom to switch between crops as they deem fit from time to time, without any needless bureaucratic interference, so long as such switching is within the already laid down choices of crops as above.
4. Silviculture/Agroforestry to be encouraged as part of diversification, subject to checks related to any biological risks that may be posed by introduction/expansion of such wood varieties. To

facilitate timber trade and revenue to the Government exchequer, the seigniorage fee as practiced should be replaced with GST. Promoting silviculture would not only help Kerala economically but also increase carbon sequestration.

5. To facilitate the above, the existing definition of plantation need to be expanded to include any crop having a minimum life of 10 years. This would also facilitate multi-cropping and sequester atmospheric carbon.

Leveraging Scale Economies & Value Addition

1. Encourage Diversification, Scale and Value Addition.
2. Introduce policies to encourage Farmer Co-operatives and Farmer Producer Organisation (FPOs) to create shared facilities for farmers with small holdings. This will enable small farmers to reap the benefit of scale without the need to individually invest in capital intensive facilities.
3. Encourage Public-Private Partnerships, especially for promoting a premium positioned and geographically tagged “Kerala brand” in products like fruits, spices etc. This will reduce the individual burden on small farmers, while allowing them to offer value added products, especially for the export markets.
4. Value addition and economies of scale needs to be encouraged but can be done creatively.
5. Sustainable farming and good agricultural practices may be hugely encouraged and non-sustainable practices/ heavy chemical need to be disincentivized.
6. **Government may provide brand building and support** and facilitate Geographical tagging to promote a **Kerala-linked brand** for several crops. Brand building and positioning to be promoted in a creative manner, and facilitated by the Govt. of Kerala, in conjunction with the farmers. The aim of such intervention should be facilitation, and not standardisation that curbs individual creativity.

Government in the Role of a Facilitator rather than an Administrator

1. The current bureaucratic interference is partly due to the 5% relaxation given for diversification. **If full freedom is granted to farmers for crop diversification, this issue of interference can be significantly reduced.**
2. Single window clearances may be introduced to enhance ease of doing business.
3. **Reduce/ Eliminate** the possibility of **administrative interference at ground level. There can be well-conceived regulations**, which are clear, and detailed, **but they need to be administered with a light hand**, so that the business environment does not emerge as hostile.
4. One of the major bureaucratic interferences is due the efforts in identifying, assessing, and conversion of excess plantation land. This not only creates difficulties and uncertainties for the planters but also adds to significant administrative efforts. To ensure that bureaucratic hassles are eliminated, and that exempted land remains as plantation, it is recommended that a separate land

classification be made for excess plantation land. Classifying excess plantation land as separate from the ownership of such land would help easy identification and make implementation of the KLRA easy, with minimum administrative control and effort. Such classification would also remove ambiguities about the identification of plantation land under the Kerala Forest Act 2003. The ownership of plantation land, under such a case would mean buying of right to earn profit by way of engaging in plantation activities. However, reasonable control may be put on conversion of such land (classified as plantation). Conversion of such land could be allowed in exceptional instances, such as for projects of national importance after ensuring reasonable compensation to the planters as well as equivalent amount of afforestation.

Labour Welfare

1. The scope of ESI may be extended to all plantation workers, with due contributions maintained from both employers and employees.

Preservation and Conservation

1. The planters/farmers have faced harassment and arbitrary actions under the Kerala Forest Act 2003, which interestingly provided for exemption for plantation land. While the implementation of the recommendations of this report on a separate classification for plantation land would remove many bureaucratic hassles and arbitrary actions by Forest Department taken primarily on the argument of being a fallow land or abandonment of plantation activities, the greater concerns of the risks posed by an ecologically fragile areas would remain. Whereas the justification for protection of ecologically fragile land cannot be disputed, the arbitrary implementation and actions at the ground can threaten the economic viability and investments without seriously benefitting preservation and conservation. Thus, Government should ensure that while declaring a plantation land as ecologically fragile, such decisions are taken based on an objective and independent evaluation.
2. Preservation and conservation might not be the focus of the law makers when the KLRA was originally enacted. However, with greater fear on account of the dangers of degradation of environmental and ecological balance, preservation and conservation should also be at the forefront of policy making considerations. So, this study recommends that an independent research institution be created with a mandate to regularly map the ecological environment of Kerala. The Government can seek help of this research institution in formulating good practices for plantation activities including preservation of wildlife and rare and endangered species. As such an institution would be a unique of its kind and serve as a model that can be emulated by other states, the Kerala government can also seek funding support from the Union Government for establishing such an institution.

3. Government should encourage multi-cropping on plantation land. It is also recommended that reasonable restriction be put on clearcutting and promote the practice of optimal crop planning as part of agricultural best practices.
4. Kerala Government should take initiatives to earn carbon credits for its preservation and conservation efforts.
5. Kerala Government may seek monetary compensation from the Union Government for its preservation and conservation efforts at the cost of foregoing economic opportunities that can be received through industrialization and urbanization.
6. Additional buffer zones may be created in a collaborative manner by planters and Government, that will allow a large area/ domain for wild animals than available at present, especially in areas where there is significant human-animal conflict. While such a zone may be contiguous across parts of the state, multiple buffer zones may also have to be created. For this to happen, existing plantations, big and small would have to mandatorily sacrifice part of their land holdings in larger interest to create this new buffer zone. Such extraction of existing land may be reasonably compensated by the Government and the Government can further add on to the buffer substantially through its own plantation holdings.
7. If such additional buffer-forest zones are created and populated with the correct kind of flora, it can also introduce the possibility of a common resource of wildlife *safaris*.
8. There is a risk of fragmentation of land that arises when the private plantation land gets passed down through natural succession and inheritance. This can ultimately lead scale dis-economies and conversion of plantation land for non-plantation purposes, as they would be freed from the purview of land ceiling restrictions. **To reduce this risk, it may be ensured in the policy framework that even if plantation land gets distributed down generations, the use of such inherited land must be only for growing plantation crops.** This is because plantations serve a critical role of contributing to green cover and carbon sequestration – aspects that are much needed in today’s context where climate change related risks threaten the very survival of humanity. Although this purpose may not have been explicitly articulated in the original Land reform Act / KLR dispensations that allowed special allowance for plantation lands to be exempted from the 15-acre land ceiling, it is imperative to recognise and impute this objective retrospectively to plantations. This is a complex issue involving multiple perspectives and finding perfect solutions to this issue is challenging. However, creative approaches may be considered to ensure this objective, while also maintaining the natural economic right of plantation owners and their heirs. Corporatisation of plantation holdings is one way of addressing this issue, wherein beneficial interest in the land can be maintained while the commercial and plantation-characteristics of the land stays unchanged.

Promoting Eco-tourism

1. Eco-tourism may be encouraged as part of diversification - but within clear limits to ensure that the green cover and “character” of plantations are maintained. However, in the name of eco-tourism, the allowances granted should not lead to “concretisation”, or competitive crowding/ degradation, as has already happened in locations like Munnar.
2. There are already certain allowances for eco-tourism in the current legal framework (10% of 5% of plantation holding, with a maximum 10-acre limit). While these appear to be reasonably adequate for medium to large sized farms, there is a case for reviewing the same, mainly to allow smaller farm holders to operate tourism facilities with a minimum scale. However, any such review or relaxation of allowances from the present, need to be part of the development of a concerted tourism masterplan at the state level. This is needed to ensure that the individual initiatives develop in a harmonious and synergistic manner, and that parts of plantations do not over time get converted to “concrete jungles”, depleting the green cover. If there are no checks and balances, there is a clear and present danger of such crowding and degradation, as also of haphazard development. A tourism masterplan, with a clear mapping of plantation regions and localities, and the creation of enabling transport infrastructure etc. needs to first be in place, before any further allowances be granted, as otherwise it would turn out to be arbitrary.
3. The principle underlying facilitation of ecotourism should be more about complementarity with plantation business and a facilitation of brand building for plantation produce, and not as much about revenue risk diversification, by foraying into the hospitality business. Therefore, any ecotourism allowance must ensure that the fundamental character of plantations be maintained.

7.3 SOME SUGGESTIONS FOR SPECIFIC ACTIONS

1. Government should assume a key role of a facilitator.
 - Government departments may facilitate economic exploitation of the plantation area by way of providing necessary approvals such as power connectivity, water availability, construction of worker quarters, post-harvest processing etc.
 - Government may support plantation activities by way of conducting research studies, market surveys, business networking and exhibitions, bringing out comprehensive plans for market connect and encouragement of downstream activities.
 - Support and facilitate public-private partnerships, especially where significant scale-economies are needed, and it may not be viable to set up facilities at the level of each individual farmer.

2. While the farmers engage in plantation activities, they should be bound by the following responsibilities.
 - Adopt best agricultural practices to enhance quality and productivity and reduce pesticide and chemical usage.
 - Adopt all means to preserve soil quality.
 - Maintain green cover and ecological balance through better planning of agricultural activities.
3. The oversight of the revenue department on plantation activities may be limited to:
 - Collect land taxes and duties.
 - Property transfer and settling matters of ownership rights.
 - Facilitate corporatization and entrepreneurship in the plantation sector (by way of land pooling and contract farming) and preserving the character of the plantation areas by way of clear framing of laws and procedures that ensure that plantation areas are used primarily and substantially for plantation related activities only.
 - Resolving land related disputes (with the Government)
4. Labour department's responsibilities
 - Declare minimum wages for plantation workers.
 - Ensure compliance of statutory dues of plantation workers
 - Extending government social welfare schemes including healthcare facilities, education opportunities, and other social empowerment of plantation workers
 - Facilitate (not by way of compliance related regulations) the overall welfare and improvement in the living conditions of the plantation workers by way of introducing schemes and support mechanisms (in addition to the efforts of the estate)
5. Forest Department
 - Facilitate and provide guidance in preserving biodiversity within plantation area.
 - Facilitate objective and independent evaluation and identification of ecologically sensitive areas and work with the plantations for devising a feasible plan to preserve them.
6. Scope and responsibilities of Plantation Directorate
 - Work very closely with farmers, scientists, and others to prepare agricultural best practices that focuses on productivity improvement, quality of produce, post-harvest control and management.
 - Initiate programs and schemes to encourage farmers to adopt best practices and economic exploitation of plantation crops.
 - Explore market opportunities (both domestic and global) and invest efforts in connecting farmers, especially small farmers, to attractive markets. Efforts here should also be to maximize revenue from plantation sector through better price realization.

- Liaison with all stakeholders, analyze market opportunities for value-added products, and explore know-how for creative exploitation from downstream projects.
 - Capacity and capability building across the agricultural supply chain focusing on creating newer markets, exploiting existing market opportunities, facilitating market access to farmers, removing logistical hurdles and constrains etc.
7. Issues and recommendations pertaining to the Kerala Forests (Vesting and Management of Ecologically Fragile Lands) Act 2003
- Fallow land - intention and not mere abandonment should be the criteria for assessing natural vegetation of a plantation area under the EFL Act
 - Preservation and conservation of ecological balance and forest cover is a public good. However, that should also not override any justifiable causes for social justice, individual rights, and economic prosperity.
 - While determining the ecological sensitivity of a plantation area (for protection of biodiversity hotspots, protection against natural disasters, protection against disturbance to natural habitat and ecological balance, and protection of engendered species) with an intention of vesting to the Government, the objectivity and independence of the process must be ensured. Hence, the Government may amend appropriate laws to define unambiguous and implementable processes to ensure objective and independent assessment of ecologically fragile land. Such processes should also provide scope for joint management of ecologically sensitive areas.
 - The definition of forests in various acts and orders (including the EFL Act) should exclude any land principally used for the new definition of plantations. This makes any vesting of plantation lands only for the purpose of protection of biodiversity and ecological protection to protect against natural disasters.
