



# Sectoral equations of sustainability: Narrative of plantation sector in India

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## Abstract

The present article narrates several pressing issues affecting the sustainability of the plantation sector in India and suggests an alternate frame for restructuring the sector towards achieving the goal of sustainability. The narration starts off with quickly traversing through the economic history of plantation crops in India and subsequently discusses the crucial issues to contemplate including cropping patterns, price instability, institutional arrangements, as well as preparedness for the ongoing free trade agreements. Further, sustainability and inclusive growth has been debated in light of existing labour market institutions and the collective bargaining power of the small and marginal holders. The aspect of environment sustainability in terms of loss of biodiversity and soil deterioration with specific crop wise detailing is also attempted in a separate session. The plantation sector in general is far off from inclusive growth, as most of the global value chains are buyer driven and the production node is characterized by the lowest value share accumulation. The article strongly argues for revamping the existing innovation system of the plantation sector in India.

**Keywords:** Sustainability, plantation sector, inclusive growth, value chain

## Introduction

Major plantation crops in India include coconut, arecanut, oil palm, cashew, tea, coffee, rubber and cocoa. India is the largest producer and consumer of cashewnut and arecanut (MOS and PI, 2018). Tea and coffee are the main and oldest industries in the country, which provide ample employment opportunities to the people and hold immense potential for export (Joseph, 2014). Above all, plantation crops like coconut and arecanut provides adequate interspaces for intercropping of seasonal crops and thus ensures the food security to a great extent. Nevertheless, in India, plantation crops have been continuously facing the problem of lack of investment and depressed yields, and are in great need of modernization. Their total coverage is comparatively less and they are mostly confined to small holdings. The plantation crops sector in India,

in recent times has been characterised by selective state intervention and the removal of tariff barriers wherein its survival depends on international competitiveness (Harilal and Eswaran, 2017). During the import substitution period, the role played by the plantation sector was very crucial in terms of foreign exchange earnings, but lately with a vibrant and dynamic service sector contributing a major chunk of export earnings, and a liberalized trade regime, the importance of plantation sector has declined. Nevertheless, plantation sector in the country, dominated by millions of small and marginal farmers and mainly confined to the economically and ecologically vulnerable regions, plays a crucial role as far as the issue of sustainability is concerned. In the present context, the major challenge is to develop an equitable and sustainable plantation sector ensuring the inclusive growth along with international competitiveness.

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### **Glimpses of historical evolution**

Forceful means of colonialism and imperialism conditioned the local farmers in the tropics to grow cash crops like tea, coffee, cocoa, pepper and cardamom to export. Emergence of plantations in India, indubitably was a part of the commercialization strategy adopted by the British planters (Kumar and Raychaudhuri, 1983). Geographical spread and development of plantations in the world was in tune with the expansion of colonialism and imperialism. Though tropical countries have been producing the entire world's plantations, its processing and marketing have been carried out by a few firms located in temperate zones of Europe and America. Plantation development in India is no way different from the expansion and development of the cocoa in West African countries. In both the instances, the developmental roots can be very well traced to the colonial autocracy (Jayasekhar and Isaac, 2018). In fact, the development of cocoa in India was categorized as dependent development. It is a matter of fact that the Western colonialists, who dominated over the Malabar Coast from time to time, conditioned the agriculture in India, and especially in Kerala to serve the interests of the metropolis (Mathew, 2006). But unfortunately, though colonialism has disappeared from the national scenario of Indian polity, the economic strings attached to it still persist through the large number of multinational companies operating in the country. They started operating in India in the post world war era and envisaged the agrarian economy of South India, particularly Kerala as a potential region for the production of raw materials required by them. Though plantation sector was a huge foreign exchange earner in the earlier times, of late, the role of the plantation sector in Indian economy and the institutional arrangements for plantation development has undergone major changes. Whereas the earlier regime was that of protection and state intervention in almost all spheres of plantation development, the current regime is characterized by selective state intervention and removal of tariff barriers. So the survival of the sector is dependent on maintaining its competitiveness both in the domestic and international market. This pressure to maintain its competitiveness can be expected to have intensified in the regime of new trading environment

resulting from formation of WTO and signing of various international free trade agreements.

### **Major issues to contemplate**

Historically, plantations have been organized as large estates with monocrops and over time, small holders have emerged as dominant players. Given the economics of small holder production, monocropping is unfavorable to small holders. But, the institutional arrangements are not conducive for mixed crop cultivation which is more environmental friendly as compared to mono cropping. Therefore, the majority of the plantation crops in the country fall into the monocropping pattern. Moreover, crops like cardamom have been subjected to the heavy usage of chemical fertilizers (Nelsino and Pritchard, 2010). These factors evidently point towards the inappropriate institutional innovation system evolved in the sector which takes a paradoxical stand against the economic and ecological sustainability. Issues such as sanitary and phytosanitary measures, implementation of emission reduction projects and clean development mechanism (CDM) are globally being implemented (Rahman and Kirkman, 2015) and would have its own stake in the Indian scenario as well.

Among many challenges confronted by the Indian plantation sector, those related to prices could be treated as one of the most significant. In India, plantation sector, of late has become highly domestic market oriented with a share in exports of around one per cent during 2010-11 (Anoop, 2012). Apart from the erosion of external markets, the sector currently faces import threats from other low cost producing competitors, especially after the new free trade agreements like the India-ASEAN FTA (Nagoor, 2010; Veeramani and Saini, 2011). Unlike in the past, when domestic markets were highly protected from outside competition, the scenario has completely changed resulting in greater integration of the domestic market with the world market (Brigit, 2004; UNCTAD, 2008; Sally and John, 2015). Though the role of plantation sector in the export basket of India declined over the years, the present role of plantation sector in India's national economy is more important than ever before. Today, plantation sector is a key sector in India's inclusive growth strategy which is being upheld from

11<sup>th</sup> five year plan onwards. This is on account of its significant contribution towards the livelihood of millions of plantation workers - especially women labour and marginalized sections - small and marginal growers, balanced regional development and addressing environmental concerns and global warming (Joseph, 2010).

### Livelihood and employment for small and marginal holders

Deceleration in agricultural growth in the recent decades had detrimentally affected the small and marginal holders in the country. In fact, the intensity of this marginalization is very well reflected in the steadily declining operational holding size which has become miniscule (0.52 ha at present). Inclusive growth envisaged by the government can become a reality if only there is a much faster growth realized in the agrarian sector. A glance to the history on evolution of plantation sector reveals that the sectoral development was in tune with the infrastructural development of the regions where the plantations were established. There has been a large scale participation of small holders in plantation commodities. The flexibility and economies associated with family based production has also contributed to the emergence of small holder domination in the plantation sector (Hayami and Damodaran, 2004). In India, plantations are concentrated in the backward states of North-East and backward districts of states like Kerala, Karnataka and Tamil Nadu. Hence, a strategy towards achieving spatial balance in development could hardly afford to ignore the plantation sector that is the main stay of development in some of the least developed regions in the country.

Most of the plantation crops in India are cultivated by small holder producers. For example 93 per cent of the total rubber production in the country is done by nearly 1.3 million of small farm holdings with an average holding size of 0.54 ha (Joseph and Ajithkumar, 2016). Holdings of less than two hectares constitute 81 per cent of the total number of holdings in coffee (Coffee Board, 2018). In the case of rubber plantations, the average daily employment increased from 0.16 million in 1976 to 0.46 million in 2012-13 (Joseph and Ajithkumar, 2016).

Similarly other plantation crops also provide productive employment to the significant number of workers. The indirect employment provided through the respective industries and its associated firms will be more than the direct employment as these crops require extensive post-harvest processing and value addition.

The labour market institution in the plantation sector certainly lack the collective bargaining power. A large number of trade unions are functioning in the sector with lack of focus and thereby not claiming much stake in the wage determination process of the sector. Apart from this, the women workers who contribute around 50 per cent of the work force are discriminated and do suffer from the sectoral decisions on wage, livelihood and work pattern. An analysis of last 20 years data shows that the real wage rate (although nominal wage rates increased) fell in the case of plantation sector, which indicates again the failure of collective bargaining power. A comparative analysis of three major sectors (mining, manufacturing, and plantations) reveals that the lowest average wage rate was in plantation sector (Table 1) which varied from ₹ 95 per day in tea to ₹ 229 per day in rubber sector (Table 2). The irony is that the all India average daily absolute wage rate stood at ₹ 272 which is much higher than that of the plantation sector.

Although women work force dominates the labour sphere of plantation sector (Table 3), both discrimination and deprivation occurs at

**Table 1. Average daily absolute wage rates**

Sector	Wages (₹)
Manufacturing	356
Mining	399
Plantations	102

Source: Labour Bureau, Govt. of India (2018)

**Table 2. Average daily absolute wage rates across plantation sector**

Sector	Wages (₹)
Coffee	136
Tea	95
Rubber	229
Plantations	102

Source: Labour Bureau, Govt. of India (2018)

various levels which has in a big way resulted in marginalization of the woman plantation labourers. It is also noteworthy that the participation of women in trade union activities has been very much constrained to organizing rather than leadership. On the otherhand, from the planter's perspective, they have no control on the prices of inputs other than labour and therefore, they do exert maximum possible efforts to curb any actions which leads to rise in wage rate.

**Table 3. Women work force across plantations (%)**

Coffee	Rubber	Tea	Other plantations	Total
62	37	53	47	53

Source: Labour Bureau, Govt. of India (2018)

### Aspects of environmental and social sustainability

The large-scale conversion of land to plantations (especially rubber) creates environmental problems such as channelization of rivers, soil erosion, as well as obstructing ecological connectivity for various native and endangered species of plants and animals. Rubber in India has historically been planted in frontier areas which harboured forests and sources of rivers and streams. Today, private rubber plantations are often in areas that are as important as protected areas for long-term conservation, since many wildlife corridors pass through crop production landscapes.

Producing rubber as a single crop is a viable option as long as the prices remained remunerative and marketing arrangements are efficient. The market uncertainties along with the prevailing contractual arrangements in rubber tapping, and the greater dependence on rubber for livelihoods among the households, appeared to make rubber farming system less viable in the long run. Therefore, the increasing importance of the emerging rubber integrated farming systems assumed greater significance. Evidence showed that various combinations of rubber and other crops or activities amply contributed to the households' capacity for resilience, ensured the sustainability of their livelihoods, in rubber-growing regions (Viswanathan, 2008). Viewed from this perspective, there is a strong case for further promoting and scaling up the rubber integrated farm livelihood systems in the smallholder dominated

rubber-producing regions to make significant and sustainable impacts on smallholder livelihoods.

In the case of tea, there is significant biodiversity loss when high biodiversity areas such as forests are converted to tea plantations. Energy consumption for tea processing is also high which is aggravated by often inefficient and outdated machinery. In India, abundant application of pesticides is also negatively affecting the local and wider environment (water pollution, reduced soil biodiversity). Problematic issues for smallholders include low farm gate prices, poor extension services, limited market channels, poor access to credit and low level of farmer organisation. The Indian tea industry is the second largest employment provider in the organised manufacturing sector giving direct employment to 1.3 million families in the estates (Van der val, 2008). However, there are more numbers of people who also work as casual workers or in the smallholdings and hence the industry indirectly generates employment for another ten million people. Ever since the onset of the price crisis at the end of the nineties, many tea estates have been closed or abandoned because they were deemed to be unprofitable.

The low rate of literacy and deprived health status among workers always stood as main constraints in giving them access to major health, educational and development initiatives and programmes of the state machineries, and other organisations. Soil fertility is negatively affected by the same plot being used continuously for a single crop and by erosion, which is magnified because tea is often grown on slopes. Both inorganic and organic fertilisers are applied to compensate for this loss. These all lead to a negative spiral in which increasing amounts of agrochemicals are needed in order to maintain production in inverse proportion to the decreasing soil quality. There is a great deal of concentration at the buying end wherein, a handful of companies dominate trade and retail sales. In India, there is consensus among various stakeholders, including buyers, that there is a high degree of collusion that prevails in auctions in order to keep the price down.

There is a need to form strong co-operatives at the small holder end to move further up in the value chain of tea. Plantation companies should plough the profits generated from the tea industry back into

the gardens in reasonable proportions, to make the industry more sustainable as well as profitable. The private tea processing factories should adopt HACCP, ISO 9000 for food safety aspects and should work together to develop a standard for social certification of the processing factories. The government should provide technical and marketing assistance and debt management services to the small and marginalized farmers.

The small holding size of coffee gardens in India is indeed (Table 4) detrimental to the upward movement of producers in the value chain. Value addition through production of specialty coffees, which requires smaller volumes, may be an attractive alternative proposition for groups of like-minded small growers but here too, there are constraints in terms of the stringent quality requirements and innovative relationship marketing. From the perspective of the small grower, and specifically the small coffee grower, the key issue would be, how to create conditions that will transform the nature of his participation in the value chain so as to derive such economic benefits that ensure a sustainable production system and livelihood.

In cashew plantations of India, a complex nexus of power relations between corporation officials, politicians, traders and village leaders seems to govern the benefits to communities. Employment in plantations is important for women and may provide a source of income over longer periods than other crops and in lean seasons when there is no other agricultural employment. Labour standards and working conditions in cashew processing seem to be deteriorating, particularly for women who

represent the overwhelming majority of workers. In Kerala, most public sector factories have closed and in private factories, employers have ‘casualised’ the workers and the numbers of days of employment per worker have declined over time (Jeyaranjan and Padmini, 2006). Given the choices they face, gender-based inequalities mean that women work for even lower wages than men in poor and health-threatening environments. It is a matter of fact that the Indian cashew industry is affected by a number of social issues such as poor working conditions, health and safety issues. The market is asking for traceability, transparency and good agricultural practices at farmer level, and the small holder cashew growers are hardly organized. On the other hand, cashew cultivation has a positive ecological impact in that it serves to protect, conserve and restore the soil. Cashew trees will prevent deforestation and are a tool to fight climate change and thereby assumes a very important role in the current regime of climate change. The best way is to improve the overall quality standards, which include the labour standards as well in the lower end of the cashew chain. This is very important since the upper end of the cashew chain is controlled by few global retailers.

Stagnating market prices and increasing cost of production, especially the skilled labour charges in the recent times have generated livelihood concerns of arecanut farmers in India. Surging imports, which is around 12 per cent of the domestic production, certainly has a significant role in price stickiness. Market studies reveal that around 75 per cent of the arecanut trade is in the hands of private traders, which has provided ample scope for hoarding and resulted

**Table 4. Area and share of coffee production under different holdings in India**

Sl. No.	Size of holdings (ha)	No. of holdings	% to total	Area (ha)	% to total	Share of production (%)
I	Small holdings					
	< 2	178585	80.9	144196	37.1	
	2 - 4	27731	12.6	71905	18.5	
	4 - 10	11800	5.3	73642	19.0	
	Sub total	218116	98.8	289743	74.6	70
II	Large holdings					
	10 - 25	1789	0.8	29829	7.7	
	>25	920	0.4	68623	17.7	
III	Sub total	2709	1.2	98452	25.4	30
	Total (India)	220825	100.0	388195	100.0	100

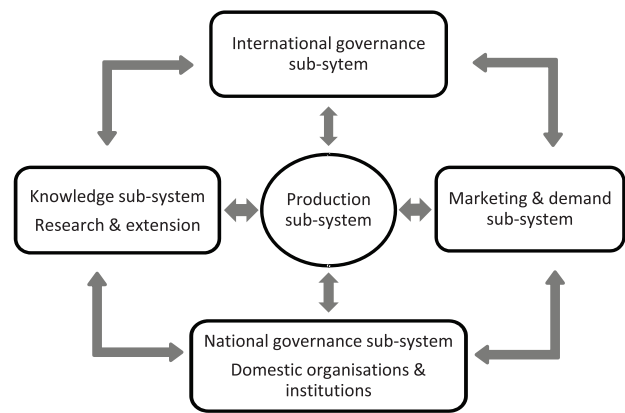
Source: Coffee Board, India (2018)

in market imperfections and low price realization (Jayasekhar *et al.*, 2015). A check in additional area expansion and encouraging the farmer to adopt arecanut based cropping system by strengthening the transfer of technology (ToT) activities by the state agriculture/horticulture departments would certainly benefit the arecanut farmers' in long run.

In the case of cocoa, domestic supply chain is still in rudimentary stages. CAMPCO and Cadbury India Ltd. (now Mondelez India) are the major procuring agencies, who are directly procuring the cocoa beans from farmers. The value share of the producer/farmer is a meager 32 per cent, because most of the farmers sell the produce as wet beans, even without doing minimal processing. Drying yards, primary processing facilities, and storage facilities are lacking in the case of most of the cocoa farmers. Since the stringent food safety standards and trace back systems are evolving in international arena, it is a real challenge to establish robust procuring system in the upstream end of the cocoa value chain in the country (ICAR, 2015). Urgent steps should be taken to establish village level primary processing units and capacity building for fermentation and drying of cocoa beans with the formation of strong farmer aggregates, women SHG's and rural youths. Development of exclusive market yards and assembling places for cocoa beans along with the adoption of high quality food safety standards would be a proactive step for better realization of bean prices. Assured buy-back systems developed in the frame of contract farming under the stake of government (tripartite arrangement) can help the growth of the sector.

### Innovation system and role of extension

It is widely recognized that innovation in general, and R&D and extension which contributes to innovation in particular, play a significant role in determining productivity and profitability along with international competitiveness especially in the current context of globalization. The schematic depiction of present innovation system of Indian plantation sector in a macro scale is provided in Figure 1. The extension activities fall in the knowledge subsystem component of the system and evidently linked with all other sub components.



**Fig. 1. Depiction of existing innovation system in plantation sector** Source (courtesy): Joseph (2013)

In the context of the inclusive development discourse to extend the benefits of economic growth to disadvantaged groups, it is evident that innovation is the key driver of development and that the underlying systems of innovation in general and the learning, innovation and competence-building process in particular should become inclusive. Innovation is generally assumed to apply to the industrial and high-tech sectors; however, in order to achieve inclusion, the knowledge intensification for innovation could strengthen and reach sectors that are labour-intensive and labour-extensive in developing countries. The case of innovation system in India's plantation sector, despite concerted policies, presents the empirical evidence for the prevalence of the varied forms of exclusion and throws light on the new forms of exclusion. As we have already seen the exclusion prevails in all facets of the system including rule settings, auctions (discriminatory), redundandancy and crowding in the R&D sector and the system even accommodates illusive inclusions (pseudo welfare measures). Besides the routine technology transfer, the extension sphere should function as a key instrument in garnering and updating the knowledge symmetry from other macro and micro sub components and properly place them, shape them and convert them into information, skills and capability builders. The extension activities should also assume a key role in synergizing the stakeholder's activities and thereby eliminating the redundancy in the system. Apart from this, the felt needs and unfelt needs from the upstream end of the production sphere should be effectively reflected in

the decision making process through the redefined extension activities. The heuristic approach of the extension concept in plantation sector should also aim to eliminate the existing marginalization in the sector. Incorporating all these, we put forth a desirable structural reorientation in the innovation system of the plantation sector and depicted in Figure 2.

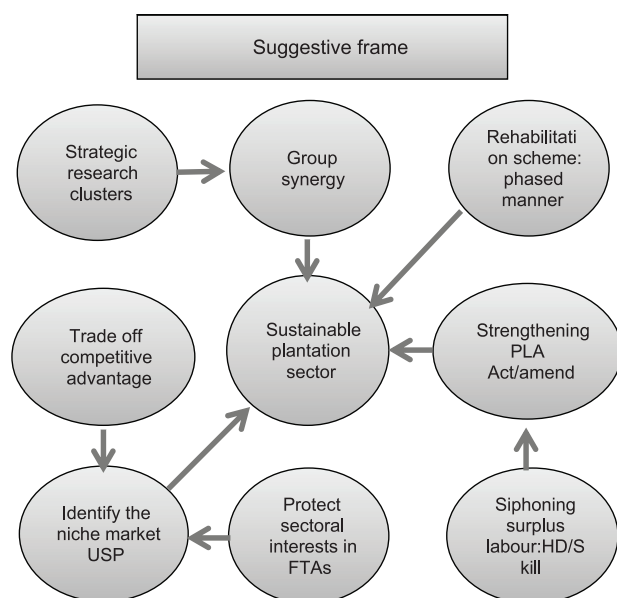


Fig. 2. A desirable restructured innovation system

## Conclusions

Given the importance of plantation sector as a foreign exchange earner, a vibrant innovation system has been evolved in a phased manner in India. Having said that, it should be noted that competitiveness was the key aspects kept at the forefront, while environment concerns were not given adequate importance. Over a period of time, there has been growing concern with its impact on sustainability. Although there had been some appreciable organizational level steps taken towards sustainability (estate to small holders, mono to mixed cropping), there appears to be an institutional inertia such that institutional innovations (rules, laws etc) are not coevolving with organizational innovations. The need of the time is to evolve a sustainability oriented innovation system, wherein various innovations coevolve in such a way that the plantation sector

is made sustainable. The employment potential generated by the intercropping programme is advantageous for the farmers in addition to the diversification of farm production as it opens up greater scope for better employment of the farmer and his family, and thereby strengthens the concept of family farm. The Indian plantation sector has inherent strengths of varied agro climatic conditions, huge domestic demand, highest productivity, strong research and development, and extension systems. However, so far the sector has not effectively utilized the possible linkage between them for increasing the production and marketing efficiencies.

Inclusive growth and sustainability of plantation economy could be achieved through integrated development of cultivation and industry coupled with a stable market. The programmes which has taken a shift in strategy like aggregation of farmers for group activities, collaborative research for production of high yielding and hybrid seedlings, creating more skilled labourers for farming, harvesting and processing operations along with the objective of triggering production, processing and value addition can place the Indian plantation sector at forefront in the world. Apart from all these, since food safety standards are becoming more stringent in the world, to be competitive in the trade, we must give adequate importance to the Good Management Practices (GMP) in the plantation sector.

The small holder perspective in research needs to be emphasized in plantation crops considering the structure of operational holdings in this sector. Technologies appropriate for small holdings need to be developed for faster and wider technology adoption in the crops. The synergy from the developmental efforts of the various institutions that exist for specific purposes and crops need to be channeled through better institutional linkages and cross disciplinary approach to address common challenges in the sector. The gender dimension should be mainstreamed in all programmes.

## References

- Anoop K.M. 2012. Commodity price instability under globalization, *National Research Programme on Plantation Development Discussion Paper 13*, NRPPD, Centre for Development Studies, Thiruvananthapuram. 56 p.

- Brigit, J. 2004. Trade liberalization and primary commodity prices: Empirical evidence from select tropical crops in Kerala. *GTAP No.1537*, available at [www.gtap.agecon.purdue.edu/resources/download/1799.pdf](http://www.gtap.agecon.purdue.edu/resources/download/1799.pdf) (Accessed April 5, 2018).
- Coffee Board. 2018. Statistics on coffee. <https://www.indiacoffee.org/coffee-statistics> (Accessed on 14 May 2018).
- Harilal, K.N. and Eswaran, K.K. 2017. Agrarian question and democratic decentralization in Kerala. *Agrarian South: Journal of Political Economy* 5(2): 292-324.
- Hayami, Y. and Damodaran, A. 2004. Towards an alternative agrarian reform: Tea plantations in South India. *Economic and Political Weekly* 39(36): 3992-3997.
- Hughes, S. A. and Kamea, J. 2015. *Pacific Islands Trade: 2010 to 2014*. Pacific Community, Noumea Cedex, New Caledonia, 216 p.
- ICAR. 2015. *Vision 2050-Central Plantation Crops Research Institute*, Indian Council of Agricultural Research, New Delhi. 88 p.
- Jayasekhar, S. and Isaac N. 2018. Review of economic history of cocoa with special reference to India. *Journal of Plantation Crops* 46 (2): 133-138.
- Jayasekhar, S., Chandran, K.P. and Jaganathan, D. 2015. Sectoral strengths, imperfections and coping up strategies: The case of arecanut and cocoa in Kerala. In: *Proceedings of Kerala Study Congress on Plantation Sector*. (Ed.) Harilal, K.N., AKG Center for Research and Studies, Thiruvananthapuram. pp. 87.
- Jeyaranjan, J. and Padmini, S. 2006. Revisiting the cashew industry in India: Combining insights from value chain and “social embeddedness” perspectives. *The Indian Journal of Labour Economics : A Quarterly Journal of Indian Society of Labour Economics* 49 (4): 625-642.
- Joseph, K.J. 2010. Towards a new paradigm for plantation development in India: An analysis of the system of production and innovation from an inclusive growth perspective. *National Research Programme on Plantation Development Discussion Paper 1*, NRPPD, Centre for Development Studies, Thiruvananthapuram, 47 p.
- Joseph, K.J. 2013. Towards sustainable system of innovation: The case of plantation sector in Kerala. *National Research Programme on Plantation Development Discussion Paper 28*, NRPPD, Centre for Development Studies, Thiruvananthapuram, 35 p.
- Joseph, K.J. 2014. Exploring exclusions in innovation system: The case of plantation agriculture in India. *Innovation and Development* 4(1): 73-90.
- Joseph, K.J. and Ajithkumar, C.E. 2016. Cost and returns of natural rubber production in Kerala. *National Research Programme on Plantation Development Discussion Paper 55*, NRPPD, Centre for Development Studies, Thiruvananthapuram, 52 p.
- Kumar, D. and Raychaudhuri, T. 1983. *The Cambridge Economic History of India*. Cambridge University Press, Cambridge. 1047 p.
- Labour Bureau. 2018. [http://labourbureau.gov.in/UserContent/WRI\\_July\\_2015.pdf](http://labourbureau.gov.in/UserContent/WRI_July_2015.pdf) (Accessed on 12 May 2018).
- Mathew, J. 2006. Plantation economy in colonial Malabar-with special reference to Wayanad. *Proceedings of the Indian History Congress* 67: 730-737.
- MOS & PI. 2018. Statistical yearbook of India 2018, Ministry of Statistics and Programme Implementation, available at <http://mospi.nic.in/publication/statistical-year-book-india> (Accessed on 19 June 2018).
- Nagoor, B.H. 2010. Trade aspect of plantation sector of India, *National Research Programme on Plantation Development Discussion Paper 8*, NRPPD, Centre for Development Studies, Thiruvananthapuram, 82 p.
- Nelsino, J. and Pritchard, B. 2010. Fairness and ethicality in their place: The regional dynamics of fair trade and ethical sourcing agendas in the plantation districts of South India. *Environment and Planning A: Economy and Space* 42(8): 1833-1851.
- Rahman, S.M. and Kirkman, G.A. 2015. Costs of certified emission reductions under the Clean Development Mechanism of the Kyoto Protocol. *Energy Economics* 47: 129-141.
- UNCTAD. 2008. Commodity price hikes and instability, Chapter 2, *Trade and Development Report UNCTAD/TDR/2008*, United Nations Conference on Trade and Development, Geneva. 34 p.
- Van der Wal, S. 2008. *Sustainability Issues in the tea sector: A comparative analysis of six leading producing countries*. Centre for Research on Multinational Corporations, Amsterdam, Netherlands. 108 p.
- Veeramani, C. and Saini, K.G. 2011. Impact of ASEAN-India Preferential Trade Agreement. *Economic and Political Weekly* 46(10): 83-92.
- Viswanathan, P.K. 2008. Emerging small holder rubber farming systems in India and Thailand: A comparative economic analysis. *Asian Journal of Agriculture and Development* 5(2): 1-19.