Centre for Development Studies

(Under the aegis of Govt. of Kerala & ICSSR, Govt. of India)

Study on the Performance of Rubber Producer Societies and its impact on growers

National Research Programme on Plantation Development
Centre for Development Studies
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Vinoj Abraham

Chair Professor

Ministry of Commerce Chair

Centre for Development Studies

Thiruvananthapuram

Kerala

National Research Programme on Plantation Development
Centre for Development Studies
Thiruvananthapuram
Kerala, India

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Vinoj Abraham

CDS

1. Introduction

India is the sixth largest producer of natural rubber accounting for 5.8% of world production in 2022[1]. Natural rubber (NR) has been actively pursued and encouraged by the governments owing to its strategic importance in medical, industrial research and defence industries. NR also acquires economic significance as a prominent industrial input, most important of which is the tyre, but also includes a range of other products also, for instance hand gloves, contraceptives etc. Given the strategic and economic significance of NR its sustained growth is of national interest as envisaged in the National Rubber Policy 2019 (Dept of Commerce, 2019).

About 77 percent of the total volume of NR is purchased by the automobile industry. The automobile tyre producers consist of a small number of about 36 large automobile manufacturers. Approximately 89% of NR production takes place on smallholdings of less than 10 hectares (Amritha, 2020; Viswanathan, 2008). There are around 1.3 million rubber growers with average size of holding being the lowest in India among the major NR producing countries at 0.57 ha. Thus the market for NR shows the features of a typical *oligopsonistic market structure* with the buyers (automobile manufacturers) having potential market power. While the small growers who are fragmented have weak bargaining power in the output market implying adverse market outcomes, such as low prices, surplus quantity in market, poor quality, inability to diversify to other products *etc*.

While the final demand for NR arise largely from the automobile sector, the immediate buyers are the intermediaries, the licenced dealers. It is argued that the dealers do not receive a margin of over 5 percent in rubber dealership, considered to be reasonable. However, dealers are more prone to obscuring quality and thus distort prices. Moreover, they tend to distort weights and measures, in effect undervaluing the output for the farmers, reducing profitability and discouraging farmers to further invest. Dealers often double up as input sellers, including farm management tools, fertilisers and other farm inputs. Dealers and farmers enter into output credit arrangements, creating interlocked markets and distorting the price signals.

Rubber tapping still remain a labour-intensive task implying the large share of wage cost in rubber value added. Rising cost of labour in the sector, owing to declining family labour, a primary source of labour input among the small farmers and the rising share of non-farm employment in the rural and urban areas has implied increasing wage share and reducing profitability in rubber cultivation.

The quality of marketable NR depends mainly on the post-tapping processing of latex. Processing and generating dry rubber, and the form in which it is made available for sale, such as block rubber or ribbed smocked sheets of different qualities requires processing machineries and smoke houses. These require large investment that can be afforded by large estates but not by small growers. Depending on the market, usually the rubber dealers, for processing the

[1]The Rubber Board News Bulletin, July 2023

rubber would increase the cost of production, thus reducing profitability. Thus the small farmers may be forced to sell at lower costs due to the cost of processing latex.

The cooperative model for rubber marketing was introduced by the Rubber Board in the 1960s to overcome the problems of intermediation. However, political interference and bureaucratic capture of the cooperatives distanced the smallholders from these organisations.

To overcome this issue, the Rubber Board introduced the “Rubber Producer Societies” (RPS) in 1986. Rubber Producer Society is a voluntary association of small growers that are registered under the Charitable Societies Act. These democratically functioning collectives operate in small compact areas usually within a two to three kilometres radius and the membership ranges from 50-200. The major functions of RPS include assistance in the transfer of technology, undertaking common marketing, establishing processing facilities, provision of inputs, and promoting group approach for various activities. Growers are expected to receive economic benefits such as better prices and social benefits like cooperative spirit among them.

Studies show that RPS members when compared to non-members benefitted in terms of lesser cost of cultivation, better price realization through RPS marketing, better quality product through group processing, and collective bargaining power (Balakrishnan et al, 2018), income and welfare of the small growers (Hameedu, 2014).

Yet, RPS as an institution has been stagnating in the recent years. The Rubber Board introduced a grading scheme in 2016 whereby, according to the various performance parameters the RPS would be graded into best grade (grade A), lower grade (Grade B) and lowest Grade (Grade C). Finally, the board identified those that are defunct as well. According to this gradation about 20 percent of the RPSs were defunct as per Rubber Board records. About 35 percent of them were in grade C, or not well performing RPSs. Another 35 percent were in Grad B while only 11 percent were in Grade A. By the year 2000 there were 2093 RPSs all over India, mostly concentrated in Kerala. However, the decades of 2000s saw a drastically reduced growth in the RPS numbers. The cumulative number of the RPSs increased by only 900 RPSs during 2000-2018, while the increase during the 1986-2000 was by 2093. Further, the share of active members in the RPS had been declining. The RPS as an institution is gradually losing significance in the Rubber production and marketing eco-system of Kerala.

The Annual Report of The Rubber Board (Rubber Board, 2021-22,p 36) quotes thus “Despite efforts to revive RPSs, which could not accomplish the goals envisaged by the Rubber Board due to reasons such as lack of leadership qualities of the executive committee members, poor participation of the members in the activities of the RPS, geographical isolation from the mainland etc., continued to remain detrimental to the normal functioning of some RPSs. So, the withdrawal of approval of RPSs initiated during 2020-2021 continued in 2021-22 also. Accordingly, approval of 111 RPSs in ONE region has been withdrawn during 2021-22, reducing the number of RPSs to 2043.”

This raises the questions such as: Why are the RPSs weakening? What affects their performance? How to improve their sustenance? The performance can be understood from two angles, one is the internal functioning of the RPS; and other is to understand the relation between RPS and its members. Acordingly, the specific objectives are as follows

Objective 1: To examine the performance of RPSs in terms of their structure and functions

Objective 2 : To examine the relation between RPS and growers

2. Literature Review

Producer collectives: The neo-classical approach to collectives argues that, unlike privately-owned firms, cooperatives do not necessarily aim to maximize profits. Instead, their objectives reflect the diverse needs of their members. These may include: (i) maximization of cooperative net earnings, (ii) maximization of total member returns, (iii) maximization of the net raw product price, or (iv) maximization of total sales (LeVay, 1983a; Sexton, 1984; Cotterill, 1987).

Accordingly, the strategies and policies adopted by cooperatives vary depending on their chosen objective function. For example, a cooperative focused on maximizing members' net returns may establish high entry and exit barriers to ensure stable and clearly defined earnings among members. Conversely, a cooperative aiming to offer better product prices might prioritize larger sales volumes, thereby encouraging higher collective throughput.

Producer collectives, especially among small and fragmented farmers, offer numerous economic advantages. These include economies of scale in input procurement, enhanced bargaining power in marketing, mutual learning, adoption of improved technologies, shared processing infrastructure, and better risk management. Collectives are thus widely recognized as effective institutional arrangements for improving smallholder livelihoods. Moreover, they also benefit the broader market economy by increasing competition and improving efficiency, which is why many governments promote cooperative formations.

Despite being often grouped under the broad term *producer collectives,* these organizations can take diverse forms — including cooperatives, producer companies (non-profit or for-profit), and societies formed around common objectives. Even within a single sector, multiple collectives may exist with distinct functional focuses across different stages of production and value addition.

While cooperatives are socially desirable for enhancing market efficiency, literature also highlights several structural and operational challenges that often lead to their underperformance or failure. Key constraints identified include:

Adverse Selection: When asymmetric information regarding the cooperative’s benefits and obligations leads to unintended membership composition — often attracting low-commitment or low-quality producers while discouraging others (Saitone & Sexton, 2009).

Moral Hazard: Members may underperform or shirk responsibilities since outcomes are jointly shared.

Horizon Problem**:** Long-term investments may face opposition from older members nearing retirement, who prefer short-term gains. This intergenerational conflict hinders investments with longer gestation periods (Rey & Tirole, 2007; Giannakas et al., 2016).

Free Rider Problem**:** Non-contributing members may still benefit from collective actions, thereby reducing the incentive for individual effort.

Inadequate Incentive Structures**:** A misalignment between individual effort and collective benefit may weaken member motivation.

Farmer Heterogeneity**:** Differences in farm size, resources, risk preferences, and market access among members create divergent interests that complicate decision-making.

Legal Framework: Ambiguities or rigidities in cooperative law may constrain operational flexibility.

Market Structure: In imperfect markets, cooperatives may fail to exert competitive pressure or ensure fair returns due to structural disadvantages.

One critical institutional limitation of cooperatives is their inability to control member supply, especially under imperfect competition (Porter & Scully, 1987; Fulton, 1995; Notta & Vlachvei, 2007; Hirsch et al., 2020). Since individual members do not bear the full marginal cost of overproduction, there is often a tendency to oversupply. This is especially problematic when the cooperative is a price-maker in the final market, leading to inefficiencies (Albæk & Schultz, 1998).

Open membership in agricultural cooperatives, while democratic, can exacerbate adverse selection. The output-pooling mechanism may attract lower-quality producers who benefit from the average quality-based pricing, potentially degrading collective performance (Saitone & Sexton, 2009). However, some of this negative impact can be offset by the competitive yardstick effect — wherein the cooperative provides a benchmark for fair pricing and market discipline. Mérel et al. (2015) examine this trade-off between open and closed memberships in a differentiated product setting and conclude that while open memberships carry risks, they can also offer risk-reducing and price-enhancing advantages to members.

In the context of Rubber Producer Societies (RPSs), similar institutional issues are observed. For instance, adverse selection is evident when lower-grade materials (e.g., coagulum or unprocessed latex) are routed to RPSs while high-quality produce is diverted to private dealers. This weakens the collective's market reputation and pricing power. Similarly, horizon problems are relevant in RPSs, where younger members are more inclined toward long-term investments (e.g., smoke houses, land), while older members prefer projects with immediate returns due to their shorter planning horizons. This divergence can result in stalled or underfunded initiatives.

Farmer Heterogeneity and Institutional Challenges in Cooperatives: Farmer heterogeneity poses a significant challenge to the functioning and governance of agricultural cooperatives. As noted in the literature, such heterogeneity arises from a variety of factors including farm size, cost structures (Plakias & Goodhue, 2015), type and quality of produce (Mérel et al., 2015), and member characteristics such as age, risk preferences, and socio-economic status (Elliott et al., 2018; Höhler & Kühl, 2018). These diverse characteristics translate into varying objectives, decision-making patterns, and levels of participation among members, which can complicate cooperative governance and effectiveness (Hansmann, 1988; Hart & Moore, 1996; Zago, 1999; Deng & Hendrikse, 2015).

Observable differences in members' farm-level attributes—such as landholding size, debt levels, efficiency, and location—can cause divergence in priorities and benefit expectations. This heterogeneity often results in governance issues and reduces the collective's ability to function cohesively. The literature suggests that organizing collectives with relatively homogenous member characteristics, or at least similar economic goals, can significantly improve cooperative performance and decision-making coherence.

Although cooperatives aim to enhance member welfare and eliminate inefficiencies (e.g., double marginalization through elimination of intermediaries), member heterogeneity combined with structural weaknesses can lead to various organizational deficiencies. These include:

Investment Disincentives (Horizon Problem): When members differ in their investment horizons (e.g., older members nearing retirement vs. younger members seeking long-term returns), long-term investments are often under-prioritized (Giannakas et al., 2016).

Asymmetric Information and Free Riding: Cooperative structures are vulnerable to quality shirking. For instance, Pennerstorfer and Weiss (2013), in their study of the Austrian wine industry, find that cooperatives tend to deliver lower product quality compared to investor-owned firms due to free riding on quality by some members.

Limited Technology Adoption: Chavas and Nauges (2020) note that asymmetric information also constrains the adoption of innovations, as farmers often struggle to assess the long-term economic benefits of such practices.

In the case of Rubber Producer Societies (RPSs) in Kerala, heterogeneity among members manifests not only in farm size and resources but also in objectives and time horizons. For example, older members may prefer investments with immediate returns, while younger members may support investments like smokehouses or land development with longer-term benefits. This creates internal conflicts that hinder collective decision-making and long-term planning.

Principal-Agent Problem in RPSs: RPSs, though conceptualized as farmer-owned institutions, often function more as implementers of government policy than autonomous member-driven cooperatives. The Rubber Board, as the promoter of RPSs, primarily aims to ensure uninterrupted and cost-effective NR production to meet national strategic goals. However, the objectives of the smallholders (the principals) may not always align with those of the Rubber Board or the RPS executive committees (the agents).

This creates a principal-agent problem, where the agents may prioritize actions that serve institutional or personal interests rather than those of the growers. For instance, the RPS may aim to maximize its own revenue, potentially buying produce from members at lower prices while selling at higher prices — a distortion of the cooperative's core purpose. Further, since RPSs are often dependent on the Rubber Board for recognition, the tendency may shift toward aligning with the Board's priorities rather than the members'. This misalignment underscores the need for internal incentive structures that ensure accountability and alignment between members' interests and organizational goals.

Governance and Social Embeddedness: The nature of governance within cooperatives significantly influences outcomes. Democratic governance—where the leadership is elected and accountable—can help align organizational objectives with member goals. However, if governance is weak or captured by vested interests, member participation diminishes, further weakening the cooperative's legitimacy.

Moreover, cooperatives function not just as economic entities but as socially embedded institutions. Their success often hinges on the strength of social cohesion and democratic capacity at the local level. RPSs, too, reflect these dynamics — their functionality depends on local leadership, member engagement, and shared values.

A common challenge in RPSs is the free rider problem, where benefits generated by active members may spill over to non-members or inactive participants, thereby reducing the incentive for contribution. Similarly, adverse selection can occur when low-quality producers are attracted to open-membership RPSs to benefit from pooled sales, degrading overall quality and prices.

Broader Context: Collectivization in India: India has a long history of collectivization, beginning with credit cooperatives in the early 20th century and expanding into marketing, processing, and service cooperatives. While the movement gained momentum, it eventually weakened due to political interference, poor governance, free-riding, and lack of incentives (Tiwari & Ahirwar, 2017; Shah, 2020). Issues such as inadequate infrastructure, weak credit access, and bureaucratic management also hindered performance.

To overcome these limitations, Self-Help Groups (SHGs) and Farmer Producer Organizations (FPOs) were introduced. FPOs, promoted under the Companies Act, 1956, have been positioned as market-oriented alternatives to traditional cooperatives. As of 2020, India had over 6,000 FPOs, with around 3,200 registered as producer companies (NABARD, 2020). These collectives have been shown to enhance farmer incomes, improve input access, and facilitate technology adoption (Singh, 2019; Rao, 2019; Verma, 2019), though challenges such as weak financials, inadequate management capacity, and limited access to markets remain.

3. Analytical Framework, Methodology, Data and Survey design

To understand the structure, functioning, and challenges of RPSs, this study employs the Institutional Analysis and Development (IAD) Framework developed by Elinor Ostrom. The IAD framework is well-suited for analyzing how institutions operate, focusing on:

- Rules, norms, and institutional structures governing RPSs
- Incentive structures that shape the behavior of key actors (members, managers, the Rubber Board)
- Interlinkages between RPSs and other institutions in the NR ecosystem
- Internal governance mechanisms, including financial and decision-making arrangements
- Performance outcomes for RPS members, including income, market access, and participation levels

By applying the IAD framework, this study aims to explore why many RPSs have stagnated and how governance, member heterogeneity, and institutional linkages influence their sustainability.

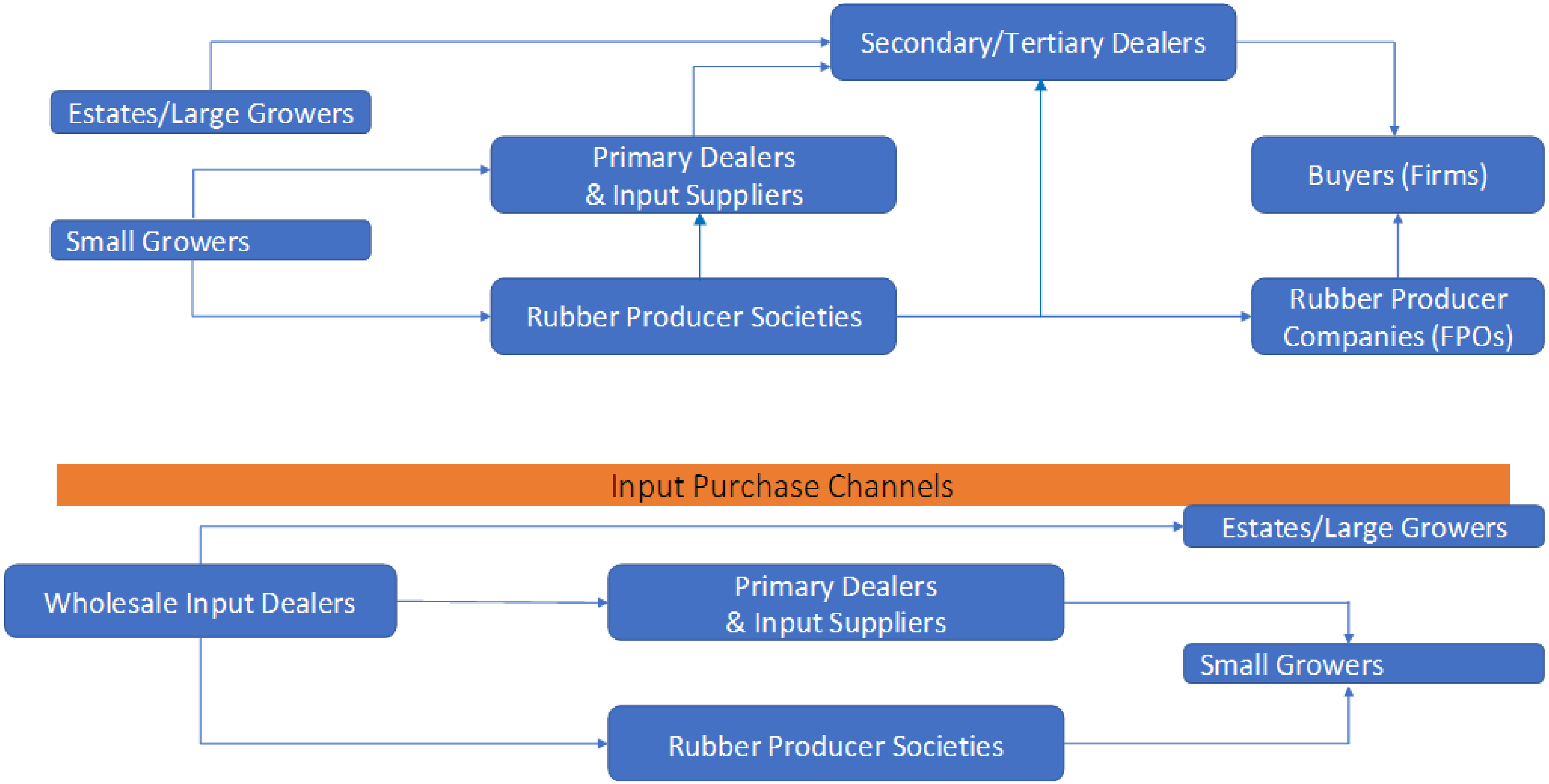
In this study the RPS is the specific organisation that we focus on. Firstly analyse the performance of RPS from various angles. Secondly, we analyse the institutional structure, its degree of independence, as an autonomous body to make decisions on its own, is a central focus. To do this, we need to understand its nature of relation with other organisations that has control or command over it. Thirdly, to understand its interlinkages with other organisations and actors we analyse the functional relation with other organisations and their strengths. Fourthly, we analyse the internal organisation of the RPSs and the governance structure of the RPSs and their financial structure. Fifthly, we analyse the performance of the beneficiaries, the members, whether the RPS members were performing better and if so, in what manner?

The study is based on primary data and case studies. Based on the objectives, the study design is in two interlinked parts.

Part One: The study follows a matching model, where RPSs, their members and non-member growers are covered. Randomly selected RPSs in different Rubber Zones are chosen for the study. A structured survey questionnaire is administered among the senior functionaries of these RPSs enquiring the structure and functions of the RPSs. Case studies are conducted among the RPS functionaries, members and non-members as well. To analyse institutional linkages rubber board officials are interviewed. The primary survey for RPSs was done among 100 randomly selected RPSs in 4 rubber zones (6 districts of Kerala, Kannur from northern Kerala, Palakkad from central Kerala, Kottayam, Pathanamthitta, Alappuzha, and Kollam from southern Kerala). For analysis, we have included Kollam and Alappuzha as part of Pathanamthitta, based on the zonal classification by The Rubber Board.

Part Two: To analyse the effectiveness of RPS a sample of farmers, both RPS members and non-members are studied. The analysis would be akin to a case control study, where members and non-members are compared in terms of their farming activities, and farming outcomes. The analysis would bring out whether RPS membership is effective in enhancing life chances of the farmers and their households. Members of the same RPSs as above are drawn randomly to analyse the relation between RPSs and members. Growers who are non-members are also drawn randomly from the same vicinity as that of the member and are surveyed. The growers belonging to the catchment area of these RPSs, of which 3 members and non-members respectively were attempted to be canvassed. After some dropouts a total of 572 samples were collected where the number of RPS members was296 and non-memberswere276. The Rubber Board supported in canvassing the questionnaires. Survey started during 2020-21, got affected by COVID and extended to 2021-22. The study consisted of primary data collected from two sources,

Figure 1 Rubber marketing channels



PART 1

4. Performance of RPSs in terms of their structure and functions

4.1 Rubber Producer Society: An overview

Recognising the highly fragmented nature of rubber production and sales, various committees were set up by the government to overcome problems of fragmentation. These growers operated without organization, leading to unscientific rubber processing and consequently, low-quality products fetching only nominal prices.As early as 1950s D V Reddy had recommended building cooperative smoke houses for rubber sheet processing, which would yield better prices in the market. To address this issue, the Rubber Board took the pioneering step in the 1960s by establishing Rubber Marketing Cooperative Societies. However, these initiatives struggled to effectively reach resource-poor growers in rural areas. The presence of political and bureaucratic control within these cooperatives acted as a barrier to promoting the self-help concept.

The conditions of small holders were studied by Small Holding Economics Enquiry Committee appointed by the Government of India in 1967 and it recommended to encourage the strengthening of Small Holding of Advisory Services including Rubber Marketing Societies. K. Ramakrishna Pillai, in 1974, in his study had identified that the response of the small growers towards the various aid schemes provided by the board was not satisfactory and suggested that the growers should form and join co-operatives in order to solve their problems (Kuriakose, 1995).

After a detailed study on the working and organization of Amul pattern of cooperatives, the establishment of a Rubber Small Holder Development Authority was recommended. To facilitate the smooth working of cooperative rubber processing factories, three Small Holder Development Centres were instituted by the Rubber Board for facilitating services of collection of latex and scrap rubber.Inspired by the positive outcomes of the pilot Small Holder Development Centers, and recognizing the need to address the challenges faced by small-scale growers in distributing and marketing their produce, the Rubber Board embarked on a significant initiative (Mathew, Stephen). This initiative involved establishing Rubber Latex Collection Centers in every village, drawing inspiration from the successful AMUL model. To foster the self-help concept, the Rubber Board advocated for the establishment of small voluntary associations of small growers in 1986. The centres formed as rubber latex collection centres in each village were later transformed into Rubber Producer Societies (Hameedu, 2014). These associations were registered under the Charitable Societies Act and were named Rubber Producers Societies (RPS). The concept of Rubber Producers' Societies was a contribution of The Rubber Board of India. These collection centers eventually evolved into Rubber Producers' Societies (RPSs). Mr. PC Cyriac, IAS, who served as the Chairman of the Rubber Board at the time was the one behind the formation of RPS.These societies were registered under the Charitable Societies Act with a vision to promote group management and self-help in all the activities of the small growers of the rubber industry. A hike in the number of such societies is visible since its inception in the year, 1986 and eventually helped to market their produce and also to distribute agricultural inputs to its members at reasonable rates (Thomas, 2004).

The typical objectives of an RPS[2] as placed in the Bye-Laws recommended by The Rubber Board as follows:

4.2 Objectives of the society:

To work for the prosperity and development of agricultural, social/economic conditions of the Rubber Growers within the jurisdiction, without any motive of profit making.

Without hindering the above objective, the society will work for the following:

a) To disseminate latest technical knowledge to the growers in the area of rubber planting, tapping, processing of crop and marketing.
b) To implement the agricultural technology transfer scheme of the Rubber Board, State Government along with other developmental programmes.
c) To liaison with Rubber Board, Rubber Processing Co-operative societies and the Companies sponsored by the Rubber Board and Rubber Producers societies and rubber growers for improving the productivity and thereby increasing the production and economy of the members.
d) To collect the produce of the growers like sheet rubber, scrap rubber, etc through collection centers and to market it collectively at a better price and thereby demonstrate the benefits of joint marketing to the growers. The benefits thus derived would be distributed among the members as cash or service
e) To improve the quality of the product, formulate and implement scheme for making smoke houses and joint community processing center, etc with or without assistance of State Government, Rubber Board, other organization etc.
f) To arrange and carry out leaf and soil analysis and other tests aimed at maximizing the utility value of soil testing and demonstrating it to the growers, and thereby reduced the cost of production and increase productivity.
g) To undertake other study programmes for the development of agriculture of the growers.
h) To liaison with the Rubber Board and other Rubber Processing Marketing societies, if necessary, get advices from board and to join for setting up for rubber product manufacturing units.
i) To raise funds by way of entrance fees, subscription fees from the members. To receive credit, loans, donation, advances to mobilize capital from the Rubber Board, Government Institutions, Cooperatives, individuals, etc. For meeting incidental expenditure conducive to attain the above narrated objectives.
j) To start nurseries for supplying good quality, high yielding planting materials to the needy growers.
k) To supply at reasonable cost the required agriculture inputs like fertilizers to the growers.
l) To undertake other activities for the uplift of the cultural and economic status of the member growers and the community

[2] https://www.google.com/url?sa=t&source=web&rct=j&opi=89978449&url=https://megsoil.gov.in/mccdb/rubberbylaws.pdf&ved=2ahUKEwja3rKhmbmFAxX5R2wGHTm6BroQFnoECBUQAQ&usg=AOvVaw21UYdD1c2KIO3Xv2WhdWRY

Table 1 Functions of the RPS and its interactive partners

Function	Economic activity	Interactive partners
Productivity Increase	Technology diffusion (new seedlings, new tapping techniques, rain 11nternal etc)	Rubber Board
Product differentiation	Value Added Products, Grading	Rubber Board, RPS companies, Rubber Board Cooperatives, State Cooperatives
Better Price for Output	Aggregation of Rubber, Group Sales, Price Information	RPS companies, Dealers, Rubber Board
Lower Cost of production	Group purchase of inputs, 11nternalization of input costs through labour banks and trainings	RPS companies, Rubber Board
Lower Cost of Processing	Group Processing, Storage, Transportation	Rubber Board
Risk reduction	livelihood diversification, intercropping etc, financial assistance	Rubber Board
Social reproduction function	welfare activities	Rubber Board

Table 2 Performance of RPS in terms of services provided

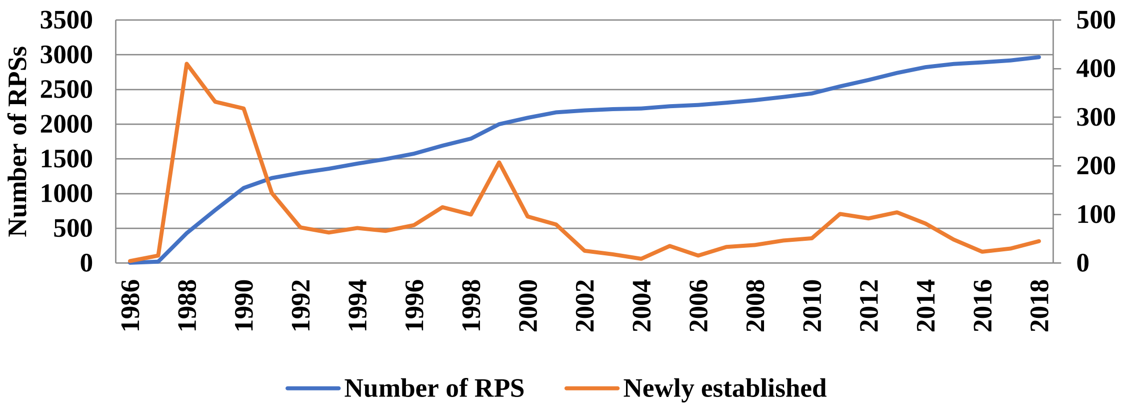
Functions	Activity	Services Provided	Service charged
Productivity	Provide skill training	70	2
	Assist in transfer of new technologies	83	5
	Information dissemination on new farming practices	81	5
Product Differentiation	Production of rubber based final or intermediate goods (excluding RS, latex and coagulates)	1	1
	Grading	0	0
Better Price for Output	Group Marketing	24	6
	Joint sales of Rubber with other RPSs	6	1
	Supply contracts with buyers	2	1
	Collect price information of different dealers	23	2
Lower Cost of Production	Group purchase of inputs	32	14
	Joint purchase of inputs with other RPSs	2	1
	Group approach for new planting and replanting	4	1
Lower Cost of Processing	Group processing	6	4
	Group Transportation	8	5
	Group Storage	3	1
Risk Reduction	Livelihood diversification through intercropping	12	0
	Assist group for availing bank credit	4	2
	Assist group for grants/subsidies from government	47	13
	Assist micro-credit for Self help groups	11	2
	Facilitating goods/service production of SHGs	8	2
Social Reproduction	Providing labour & social welfare services through own financial sources	14	3

The typical RPS have about 150 to 200 growers as members. RPSs are formed at the village level in each gram panchayat. Often about two or three villages or wards will have an RPS. Elected president and executive committee members are the implementing authorities, while the General Body is the decision-making body according to the byelaws of the RPSs. The Rubber Board's regional extension officer is an ex-officio member of the committee. The executive committee and the general body are to meet periodically. The RPSs interact with the Rubber Board and Rubber Producer Companies for its various functions.

The collection, processing and marketing of latex constitutes the main functions of RPS. Schemes providing assistance to such collection centres are facilitated by RPS. Schemes for financial grant for silt pit; soil and leaf analysis; community smoke house; demonstration activities are also provided.RPS also plays an important role in imparting training to its members. The RPS identified by the Rubber Board disseminates knowledge to the growers. Infrastructure facilities and technical advice are provided to them. With a view to strengthen the activities of RPS and to integrate them, seven processing companies and eleven trading companies are set up in the predominant rubber growing areas of Kerala, of which the major shares are owned by the board and remaining by RPS of the concerned areas (Kuriakose, 1995).

The positive role played by the RPSs in the 1980s and 1990s led to an expansion of the number of RPSs. By the year 2000 there were 2093 RPSs all over India, mostly concentrated in Kerala. However, the decades of 2000s saw a drastically reduced growth in the RPS numbers. The cumulative number of the RPSs increased by only 900 RPSs during 2000-2018, while the increase during the 1986-2000 was by 2093 (Figure 1).

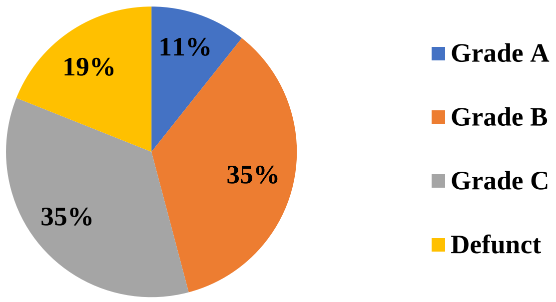
Figure 2 Rubber Producer Societies- cumulative and newly established



Source: Rubber Board, Kottayam

There is no provision to dissolve an RPS once it is formed. Therefore, some of these RPSs are defunct but counted. The Rubber Board introduced a grading scheme in 2016 whereby, according to the various performance parameters the RPS would be graded into best grade (grade A), lower grade (Grade B) and lowest Grade (Grade C). Finally, the board identified those that are defunct as well. According to this gradation about 20 percent of the RPSs were defunct as per Rubber Board records. About 35 percent of them were in grade C, or not well performing RPSs. Another 35 percent were in Grade B while only 11 percent were in Grade A.

Figure 3 RPS according to Grade during 2016-18



Source: Rubber Board, Kottayam

The above two statistic brings out the question of performance of RPSs in quantitative dimensions, i.e., the stagnation in number of RPSs and the stagnation in quality of RPSs. Whether the quality has declined is not clear as such categorization of RPSs were done only since 2016.

The Annual Report of The Rubber Board (Rubber Board, 2021-22,p 36) quotes thus "Despite efforts to revive RPSs, which could not accomplish the goals envisaged by the Rubber Board due to reasons such as lack of leadership qualities of the executive committee members, poor participation of the members in the activities of the RPS, geographical isolation from the mainland etc., continued to remain detrimental to the normal functioning of some RPSs. So, the withdrawal of approval of RPSs initiated during 2020-2021 continued in 2021-22also. Accordingly, approval of 111 RPSs in ONE region has been withdrawn during 2021-22, reducing the number of RPSs to 2043."

4.3 Membership profile of RPS

The median RPS had about 100 to 199 members. About 35.5% of the RPS had 100-199 members. Nearly 25% had 200 to 500 members, 6% had more than 500 members. There were also 6% RPS with less than 50 members. Thus there existed considerable variations among RPS in terms of membership size. **Among these members only about 48% of them were active members, implying more than half being absentee or sleeping members.** It is also noticeable that among the smaller RPSs the share of active members were even smaller. **Thus for the smaller RPSs, not only were they small they were also relatively inactive as well.**

Table 3 Total RPS membership by size

Size class by members	Percent	Average active members share in the size class
Less than 50	5.86	0.42
50-99	27.68	0.45
100-199	35.56	0.49
200-499	24.85	0.49
500 and above	6.06	0.49
Total	100	0.48

Source: primary survey 2019-20

From the table below it can be seen that over the years the share of small sized RPSs are declining, while that of the large sized ones are increasing. In 2014-15, more than 10% were having less than 50 members. This declined to 5.1% by 2018-19. While the size class 200-499 increased from 14% to 34% during the same period.

Table 4 Number of RPS by membership size and year

Year	Less than 50	50-99	100-199	200-499	500 and above	Total
2014-15	10.1	41.4	31.3	14.1	3.0	100
2015-16	6.1	31.3	36.4	20.2	6.1	100
2016-17	5.1	25.3	40.4	22.2	7.1	100
2017-18	3.0	22.2	34.3	33.3	7.1	100
2018-19	5.1	18.2	35.4	34.3	7.1	100
Total	5.9	27.7	35.6	24.9	6.1	100

Source: primary survey 2019-20

From the table below, it can be noted that on an average RPS has a fairly large penetration among the cultivators. Among the cultivators nearly 74% were members within the ward. Also, the coverage had increased from 64% in 2014-15 to about 80% in 2018-19, showing deepening coverage of RPSs among the cultivators. However, when it came to active membership, it remained below 50% most parts of the five-year period. **Thus, it can be noted that while overall membership is increasing in RPS, active membership remains stagnant. This implies that active membership, taking part in the activities of the RPS, or participating in RPS governance was not of interest to most members. Most members did not view RPS as a place of economic significance.**

The sudden addition in the new membership is due to the introduction of the Rubber Production Incentive Scheme (RPIS) introduced by the government of Kerala in the second half of 2015. The scheme provides a support price for the gap between the market price and the declared price of the state, currently Rs 150 per kilogram of Rubber. The scheme, though not specific to the RPS members, was used by the RPS functionaries to increase the RPS membership. The implementation of the scheme was through the RPSs. So in many places RPS functionaries encouraged RPS membership prior to applying for RPIS scheme. Concurrent to this we see the sudden increase in new membership in RPSs in all subsequent years.

Table 5 Share of RPS members in total cultivators

Year	Share of RPS members in total cultivators in the ward	Active members share
2014-15	0.64	0.47
2015-16	0.72	0.47
2016-17	0.77	0.47
2017-18	0.77	0.45
2018-19	0.80	0.51
Total	0.74	0.48

Source: primary survey 2019-20

The RPS s came into being in 1986. In the initial years of their formation they were formed in a campaign mode with the active encouragement of the Rubber Board to establish collection centres across the states. As we span through the registration year, it can be seen that the RPS membership is higher in RPSs that are older, with the RPSs registered in the first fifteen years accounted for nearly 87% of the members, while those that were established after 2001 accounted for only 13% of the members. This shows that the RPS established in the more recent years were probably smaller in size compared to the older ones. **However, it can be noted that the share of active members show an inverted U pattern with large share of active members in the early years and recent years, while low share in the middle years, especially during 2001-2005. This period seems to be a particularly weak period for RPS membership and active membership formation.**

Table 6 RPS membership by registration year

Year	Percent	share of active members
1985-1989	33.33	0.547
1990-1995	31.31	0.427
1996-2000	22.22	0.376
2001-2005	3.03	0.246
2006-2010	4.04	0.503
2011-2015	6.06	0.770
Total	100	0.476

Source: primary survey 2019-20

Table 7 Characteristics of RPS membership

Size class by members	Share of Members above age 50	Share of Members with Higher Secondary education	Share of female members	share of SCST members	Share of full time growers
Less than 50	0.85	0.28	0.11	0.05	0.49
50-99	0.78	0.48	0.16	0.01	0.53
100-199	0.72	0.38	0.16	0.02	0.58
200-499	0.68	0.31	0.15	0.02	0.56
500 and above	0.75	0.33	0.17	0.05	0.49
Total	0.72	0.37	0.16	0.02	0.56

Source: primary survey 2019-20

It can be seen that about 72 percent of the RPS members were above 50 years of age. Many of these farmers are retired employees either from government or private services[3]. Thus, the core RPS membership consisted of ageing people. Further, the presence of this older segment of the members was higher in the smaller units. For instance, RPSs with the average size being 50 members, had more than 85% as being above this age group. The share of older persons in the RPS seem to drop as the size increases. Nevertheless, the share does not fall below 68%. Among the members only 37 percent had education levels higher than 12th standard. Members with lower levels of education was highest in the RPSs with less than 50 members. In RPSs with larger sizes there is a greater presence of persons with education of atleast higher secondary level of education. Also, from the indicators share of scheduled caste and tribe members or women members it can be seen that there are very low levels of diversity

[3]As was expressed in field visits

in the membership patterns. Moreover, a large share of the members were part-time growers. About 44 percent were part-time while the full-time growers were only 56 percent. **Thus the profile of the members shows that the typical RPS member was an aged person with generally low levels of education** and was a part-time farmer.

1 Case Study 1 : Kurunji RPS – Balancing Tradition and Sustainability

Kurunji RPS, established in 1988, is a well-functioning society that began with basic latex collection. In 2004, with financial support from the Rubber Board and member loans, the society constructed a smoke house. Currently, it processes up to 1000 kg of latex and plans to expand capacity with a new ₹25 lakh facility. It employs 7 staff members who manage administration and processing independently.

The society has 364 members, though only 180–200 are active. The membership is dominated by elderly men (majority above 60 years), with women forming 18–20% but having limited participation. Most members reside within a 4 km radius and own 2–4 acres of land. The tapper bank is inactive, and most growers engage in self-tapping.

Daily latex procurement involves 90–100 farmers, with Dry Rubber Content (DRC) tested individually. Farmers bear the transport cost. Processing is charged at ₹15/kg, and billing occurs twice a month. Processed rubber is sold to Kavana Latex Ltd., although unprocessed latex is sometimes preserved using ammonia due to capacity constraints.

The RPS holds monthly committee meetings and 3–4 general body meetings annually. The elected president (unpaid, except TA/DA), field officer, and committee manage affairs closely. The RPS is financially self-sustaining, with strong leadership and minimal dependence on external funding for operations.

Challenges include falling rubber prices, limited processing capacity, and lack of state support. Although nearby RPSs exist, competition is minimal. Trust in the RPS is high among members compared to private dealers, who may offer cash but not long-term reliability.

4.4 Indicators of Performance of RPS

The survey was done in 6 districts of Kerala, Kannur from northern Kerala, Palakkad from central Kerala, Kottayam, Pathanamthitta, Alappuzha, and Kollam from southern Kerala during 2020-21. From all over the survey region 99 RPS were selected. The following analysis gives an assessment of the performance of RPSs across different parameters such as infrastructure availability, service provision, profitability, input, marketing, and output sales.

Infrastructure: The ownership of infrastructure is an indicator of how effective the RPSs are in meeting the needs of the growers. Having their own office buildings, either owned or rented, gave the RPSs physical operational space. Some RPSs were able to buy their own land, build their own office spaces, build storage spaces, have their own training halls and rubber nurseries. Having own storage spaces allow RPSs to stock NR, training halls make space for training growers and rubber nurseries for RPSs ensure good variety rubber saplings reaching their members. Thus, the immovable infrastructural facilities are indicative of the capacity of the RPSs to provide various essential services to its grower members. However, it can be seen that in our sample only 20.2 % had their own office, while 31.3% had rented their office space. The remaining 48.5% did not have any office space. About 25% had their own land. Less than 16%

had storage spaces or training halls and only 1% had nurseries. Thus, the data exposes the grossly inadequate infrastructure availability for most RPSs.

A large share of the RPSs were not having the basic physical equipment and assets required for an agency involved in buying of NR and selling of inputs and processing materials. More than half the RPSs did not have a weighing machine, which is a basic requirement for such agencies. Only 25% of the RPSs had Dry Rubber Content (DRC) testing facility, of which more than half of them were not in working condition. Weed cutters and Sprayers, which are required to clear the weeds and spray fertilisers, were only available with 33.3 % of the RPS. Moreover, both these equipments were not in working condition for more than 80% of the RPSs. Other equipments required for rubber processing and grading such as Roller, Smoke House and grading table were available only for 11 to 12% of the RPSs and within them only about half of them were in working condition. In case of transportation only 1% owned their own vehicles.

From the above, two aspects are clear. Firstly, most RPSs do not have the physical capacity to meet the needs of growers in terms of increasing the productivity of rubber, quality of rubber, storage, processing or transportation. Secondly, even among those RPSs who were able to procure some of the immovable or movable properties a large share of them are not functional. In other words, the distribution of immobile properties and movable equipments exhibit the weak and declining capacity of RPSs to meet the needs of the growers.

The sources of finances for acquiring such infrastructure mainly through two sources, loans that are taken by RPSs using collaterals; grants and subsidies that are provided by the Rubber Board; and accumulated profits. During the early phase of the RPSs, the Rubber Board had extended financial support mainly as subsidies and grants for purchasing land, and building offices. RPS also had provided loans for buying various machineries such as rollers, weed cutter, sprayers etc. These financial supports disappeared over time as the financial position of the Rubber Board became weaker.

Table 8 Infrastructure availability

Infrastructure	Percentage of RPS with infrastructure	Percentage RPS with infrastructure in working condition
Immovable properties		
Office building (owned)	20.2	16.2
Office building (rented)	31.3	29.3
Land owned	25.3	6.1
Storage space	15.2	12.1
Training/ seminar hall	11.1	10.1
Rubber Nursery	1	1
Movable properties		
DRC testing facility	25.3	12.1
Grading table	5.1	2
Truck/lorry/jeep	1	3
Weighing machine	47.5	42.4
Smokehouse	11.1	7.1
Roller	12.1	7.1
Weed cutter	31.3	15.2
Chain saw	5.1	3
sprayers	33.3	20.2

4.5 Revenue and Expenditure Profile of RPSs

Table 9 Revenue Sources and Share during 2016-17 to 2018-19 in Rs thousands

Item	Mean	Total	Share of Revenue
Membership fee	2.2	638.9	0.9
Annual subscription	6.2	1832.8	2.5
Rubber sales revenue	147.4	43773.1	59.1
Input sales	67.8	20135.3	27.2
Group processing revenue	8.5	2521.4	3.4
Member loans	24.3	7209.1	9.7
Bank loans	0.0	12.9	0.0
Rubber board subsidies & grants	6.3	1858.2	2.5
Government Subsidies & grants	9.2	2726.7	3.7
Interest received	8.1	2398.9	3.2
Others	15.6	4625.7	6.2
Estimated total	249.3	74037.0	100

The average RPS had an annual revenue of Rs 2.5 lakhs, with about 1.5 lakhs as rubber sales revenue and about Rs 67000 as revenue from sale of inputs to growers. The major sources of revenue for the RPSs were sales revenue from Rubber at 59.1 percent, followed by sale of inputs at 27.2 percent. Thus about 88% of the revenue were from sales activities of the RPSs. Group processing activities gave only 3.4% of the revenue. Another important component of the revenue was subsidies, grants and loans, which amounted to about 15% of the revenue.

From the analysis of revenue, it can be noted that revenue sources are largely narrowed into sales, while activities such as processing, value addition, extension services, farm diversification, training, labour banks etc are not figuring as major sources of revenue for most RPSs.

Another important feature of the revenue sources was the loans and grants. Loans and grants, though they appear as revenue to the RPS, they do not represent sustainable own revenue sources, rather they are liabilities for the RPSs in future. Table below (Table) shows that about 37 percent of the RPS had no loans, grants or subsidies in their revenue, while about 14% had less than 10% of the revenue from loans, grants and subsidies. Another 11 % had 10 to 25% as loans and grants. Similar was the case with 25 to 50% class as well. However about 27% of them had more than 50% of their revenue sources from loans, grants and subsidies.

Such high levels of loans and grants for 27% of the RPS point to the unsustainable revenue sources of these RPSs. These RPSs had their average revenue per year less than Rs 15000, much lower than the average of about Rs. 2.5 lakhs, showing the weak revenue collection among these loanees as well. RPSs with zero loans consists of 37**%. It cannot be claimed that zero loan position is desirable as it shows their lack of expansion in activities.** Again in this group too, the average revenue size (Rs 1.6 lakh per annum) is lower than the average for all RPS. There are three size classes, that belong to loans with less than 10%, 10 to 25% and 25 to 50% that have higher average revenue size than the overall average size. They tend to show that these RPSs are able to grow in a financially sustainable manner. **They are able to take loans, grants and then are able to expand their activities. However, as shown earlier, expansion seems to largely in terms of sales volume rather than diversification.**

Table 10 Loans and grants in Revenue Share

Share of loans and grants in Revenue	Average Revenue per RPS	Number of RPS	Share of RPS
No loans	163526.8	109.0	36.7
less than 10%	858037.1	41.0	13.8
10 to 25%	388058.4	33.0	11.1
25 to 50%	292712.4	33.0	11.1
50 to 75%	11554.7	30.0	10.1
75 to 100%	4072.1	25.0	8.4
greater than 100%	-46153.2	26.0	8.8
Total	251575.2	297	100

In terms of expenditure, the average RPS had an annual expenditure of about Rs 1.1 lakh. About 37 % of the expenditure incurred on buying agricultural inputs and rubber input machinery etc. Another 30.7% was on operational expenses, while salary and wage expenses were about 10.5%. Operational expenses consist of the expenses associated with operating the RPS including rent, equipment, inventory costs, transport, communication etc. The expenditure patterns too show the overwhelming dependence on purchase of inputs as the main source of expenditure. **This too reveals the almost singular activity of RPSs, namely as intermediaries to buy and sell inputs and rubber respectively.**

Table 11 Expenditure Sources and Share during 2016-17 to 2018-19 in Rs thousands

Items	Mean (Rs)	Total (Rs)	Share of Revenue
Operational expenses	34.9	10369.3	30.7
Interest payment	1.1	334.5	1.0
Salary	11.9	3526.6	10.5
Agri input tools purchase	35.2	10466.6	31.0
Rubber inputs machinery Purchase	6.4	1891.0	5.6
New infrastructure expenditure	8.3	2475.8	7.3
Donation	0.7	195.9	0.6
Tax statutory payments	1.9	578.9	1.7
Other expenses	9.3	2762.5	8.2
Reported total	98.6	32601.0	96.6
Untallied	0.0	1138.5	3.4
Estimated total	113.6	33739.5	100.0

In order to classify the RPSs by their size we use their revenue to classify as shown below in the Table . About 15.1% of the RPSs had only an annual revenue of less than Rs 5000, while about a quarter were in 5000-20000 Rupee class, and another 27% in the 20000-50000 range. About 22% were in the range above Rs 150000 annual revenue. To understand the expenditure pattern in terms of developmental and non-developmental activities, we sum up the recurring unavoidable expenses such as operational expenses, salary payments and interest payments and find their share in total expenditure. This indicator would give us a sense of how much development expenditure capacity is left with the RPS after having met its recurring costs. As can be seen about 51% of the total expenditure is on these recurring costs, the remaining can be spent on developmental activities.

Table 12 Operational Expenses and Size of RPS

Size class by Revenue (Rupee)	Share of Operational Expenses, Salary and Interest payment in Expenditure	Share of RPSs
Less than 5000	0.69	15.1
5000-20000	0.53	24.3
20000-50000	0.48	27.0
50000-75000	0.43	6.6
75000-150000	0.48	5.0
Above 150000	0.45	22.0
Total	0.51	100

However, size seems to be an indicator on the ability to spend on development activities. RPSs with less than Rs 5000 as revenue had nearly 70% of the expenditure falling into these recurring costs. For bigger ones at 5000-20000, such expenditure share was 53% and for the next size class it was lower at 48%. Beyond size of Rs 75000 per annum, the expenditure share remained around 43 to 45%. Thus, for the larger sized RPSs about 45% of their revenue was used for operational and other recurring expenses, and they were left about 55% of their revenue for non-recurring, development expenses. But for smaller sized RPSs such expansion was difficult due to the committed nature of their expenditure. This implied that the smaller sized RPSs did not have the financial capacity to expand or diversify. Instead they were dependent on loans and grants for their survival.

Expenditure to Revenue Ratio (ER Ratio)

Below given is the Expenditure to Revenue Ratio in RPS and categorised as below. Less than 0.50 implies that expenditure is less than 50% of the total revenue. It can be noted that 24 RPSs in 3 the years (72 data points) reported having a Expenditure to Revenue Ratio of 0.75 to 1, implying their expenditures and revenues almost tallied. However, about 27 such RPSs in the 3 years (81 observations) had expenditure less than 50% of the revenues. These RPSs had nearly 60% of the revenues generated from rubber sales, while only 17.6% came from input sales.

From the expenditure- revenue ratio it can be noted that as the share of revenue from Rubber sales increases the expenditure to revenue keeps declining. For RPSs with less than 0.50 ER ratio the rubber sales revenue was 60%. As the ER ratio increased to 50-75%, the Rubber revenue declined to 43%, at 0.75-1 ER ratio, the Rubber sales revenue declined further to 34% and at ER Ratio of 1-1.5 it further declined to 11.7%. Somewhat reversed is the pattern for input sales. As the ER ratio increased, the share of revenue from input sales increased. Thus, focussing on rubber sales ensured financial stability and may be even surplus that could allow for further activities, while focussing on input sales increased the expenditure to revenue ratio. So, for RPSs which were focussed on generating surplus, their primary interest would be increase the volume of rubber sales, while keep the input sales minimal. While for the RPSs whose primary interest is in providing cheaper inputs to the farmers, their expenditure seems to be high, but also has a high share of input sales.

Why are there these two archetypal RPSs? Is it possible that those RPSs which focus on Rubber Sales revenue, have growers who have bigger land size, more sales volume and would like to use the RPS channel for better prices? And those RPSs which focus on input sales revenue are the ones who cater to small growers, who are keen to buy cheaper inputs, through RPSs and may sell their products through dealers?

Table 13 Share of revenue by ER Ratio

	Less than 0.50	0.50 to 0.75	0.75 to 1	1 to 1.5	greater than 1.5
Membership fee	0.3	1.7	0.8	1.8	9.3
Annual subscription	0.5	1.0	7.4	4.7	17.1
Rubber sales revenue	59.8	42.8	33.9	11.7	31.3
Input sales	17.6	19.2	27.9	62.3	13.1
Group processing revenue	0.8	4.6	9.5	4.8	0.6
Member loans	7.6	21.7	2.4	7.5	3.1
Bank loans	0.0	0.0	0.1	0.0	0.0
Rubber board subsidies & grants	2.3	1.5	2.0	1.0	5.8
Government Subsidies and grants	3.7	2.4	2.2	1.2	2.8
Interest received	3.5	0.7	1.0	1.6	7.1
Others	3.8	4.2	12.8	3.4	9.6
Estimated total	100.0	100.0	100.0	100.0	100.0
Number of RPS	81	40	72	40	64

Table 14 Indicators used and their measurement

Revenue Expenditure Ratio	rev exp ratio = estimated total revenue/estimated total expenditure
Total Loans Grants	Member loans + 7 bank loans + 8 rboard sugsidies grants + 9 grants subsidies govt
Share of Loans and Grants in Revenue	loan revenue ratio = total loans grants/ estimated total revenue
Exp Revenue Minus Loans Ratio	= estimated total expenditure/ revenue minus total loans grants

4.6 Economic Activities of RPS

The major economic activities of the RPS are (1) Rubber Procurement and Sales, (2) Input Procurement and Sales, (3) Processing & Value-addedactivities, (4) Group Activities. Below is an analysis of the prevalence and intensity of these services of the RPSs to the growers.

1. Rubber Procurement and Sales

Rubber procurement from the growers and sales to the agents is one of the primary functions of the RPS. Collective procurement of rubber and sales through RPSs can enhance the bargaining power of the farmers.RPS procures different grades and varieties of rubber namely RSS 3, RSS4, RSS 5, Latex, and Field coagulates from the growers. It is not necessary that all NR procured are from RPS members only. In fact, a large volume of it could come from non-members as well. However, it can be noted that not all RPSs are active in NR procurement and sales. During 2016-17 to 2018-19 among the 99 surveyed RPSs only 46 were active in procuring NR and only 43 were engaged in Sales. Thus nearly half of all RPSs were inactive with no sales or procurement. Among these active RPSs most of them were involved in Latex collection and a few involved in collecting Field Coagulates. About 8 of them were involved in RSS 1V as well, remaining more or less absent. **This brings out the weak activity level of RPSs.**

Table 15 Number of RPS involved during 2016-17 to 2018-19

Particulars	RSS III	RSS IV	RSS V	Other Grade Sheet	Ungraded Sheet	Latex	field coagulate	Any channel	Total surveyed
Procurement	1	8	1	1	0	41	16	46	99
Sales	2	8	2	1	2	35	12	43	99

Table 16 Share of different varieties and grades of NR in the total procurement and sale (in value or volume) during 2016-17 to 2018-19

Particulars	2016-17		2017-18		2018-19	
	Procurement	Sale	Procurement	Sale	Procurement	Sale
RSS 3	1.2	1.1	2.7	0.8	1	0.5
RSS 4	8.4	4.3	8.8	3.4	11.2	3.7
RSS 5	0.7	0.4	0.2	0.1	1.5	0
Other graded	0	0	0	0	0	0
Ungraded	0	0	0	0	0	0
Latex	77.7	89.5	80.9	72.6	78.9	68.2
Field Coagulates	12	4.6	7.5	23	7.4	27.5
Total	100	100	100	100	100	100

Among the different gradesLatex has around 80% share in the total procurement every year. Field coagulates and RSS 4 have around 10% share on average. The share of RSS 3 and RSS 5 is marginal. There is no significant difference in the share of different qualities during different years. In total sales also, the share of Latex is the highest every year, about 70-80%. Even though the procurement of field coagulates is only about 7 to 12% yearly, the sales covered upto 24 % in at least two years. RSS 4 sales holds around 4% share on average each year.

The price of Latex and field coagulates are less compared to that of RSS varieties. For instance the average yearly price for one Kilogram of RSS 3 in Kottayam market was Rs 135.90, RSS 4 was Rs 133.22, RSS5 was Rs 129.7, Latex was Rs 92.77, and Field Coagulates (60%) was Rs 65.73.[4]Among the RSS varieties also, the share of RSS 3 which has the highest market value is very less in the total procurement. It can be thus noted that bulk of the procurement is in unprocessed Latex and field coagulates which has low market price. The low market prices for these products are due to lack of processing. Latex and field coagulates are unprocessed with larger water content and therefore fetch lower prices, while RSS varieties has lesser water content and with lesser impurities as they are converted to smoke sheets, which require the services of sheeting machines and smoke houses. **From the above table it is indicative that the products that are procured by RPSs are sold in almost the same condition without making any substantial value addition to be sold in the market. RPSs are working currently as pure substitutes to retail dealers, buying the product and selling the same without any value addition.**

The latex that is procured by RPS has the potential to be converted to RSS varieties, or even into higher variety Block Rubber. But this requires that such processing can be done by the RPS within their facilities. As discussed below very few RPSs have inhouse machines and smoke houses. **This in turn, is due to the fact that many RPSs do not have the financial capacity to have productive assets such as land, buildings and machinery.**

However, the fact that RPSs are not procuring higher quality rubber does not imply that the growers are also selling such NR to RPSs. In fact the current study shows that more 55% of the members sell RSS 4 in the market, but not to RPSs. The members differentiate the products to be sold by marketing channels. Most of the low value adding products, such as Latex and field coagulum is sold to the RPS, while most of the high value added products are sold through the private dealers who **fetch a higher price for the product than the RPSs. Thus the average farmer in RPS is profit maximising and view the RPS as an alternative marketing channel substitutable with private dealer.**

[4]Extracted from http://rubberboard.org.in/indianPrices on 21-03-2024

Table 17 Sales Network and distribution of Sales of RPSs during 2016-18 to 2018-19

Particulars	Share of RPSs in 2016-17 to 2018-19 (%)	Volume of NR (Tonnes) 2018	Share in 2018 (%)		
			NR	Latex	FC
RPS Companies	30	569.7	69.0	77.6	10.2
Domestic wholesale dealers	6	51.3	6.2	49.9	2.3
Domestic retail dealers	5	184.1	22.3	70.7	12.2
Exporters	0	0.0	0.0	0.0	0.0
Cooperatives/ federations	0	0.0	0.0	0.0	0.0
Private manufacturer	0	20.5	2.5	100.0	0.0
Government manufacturer	0	0.0	0.0	0.0	0.0
Total	41	825.6	100.0	74.9	9.9

RPSs can trade NR with agents such as RPS Companies, domestic wholesale dealers, domestic retail dealers, exporters, cooperatives/ federations, private manufacturers, and government manufacturers. Conventionally, the small growers would tend to send their product mostly to the retail dealers in NR. During the period 2016-17 to 2018-19 the average number of RPSs that had traded with one of the trading partners were 41 out of the 99 we surveyed, less than half. Of the 41, 30 are with RPS companies. The other important buyers were domestic wholesale and retail dealers, 6 and 5 respectively. The total volume traded through RPSs were 825.6 Tonnes, of which 69% were sold to RPS companies. Even though there were very few retail dealers trading with RPSs their share of trade with RPS was high at 22.3%.

Though RPS companies bought most of the NR, they purchased mostly Latex, consisting of 77.6% of their purchase and another 10% of Field Coagulates from RPS. For the domestic dealer too more than 70% of their purchase was latex. But for the wholesale dealer who bought only 6.2% of the total NR sales through RPS only 50% of NR was Latex, the remaining in other superior NR varieties and grades.

Thus it can be noted that there is differentiation in NR varieties according to the buyer. RPS companies are the principal buyers of RPSs followed by retail dealers, but they buy Latex and Field Coagulates. Wholesale Dealers have the potential to be buyers of higher-grade varieties of NR but volume of sales is low. Other buyers have only marginal presence.

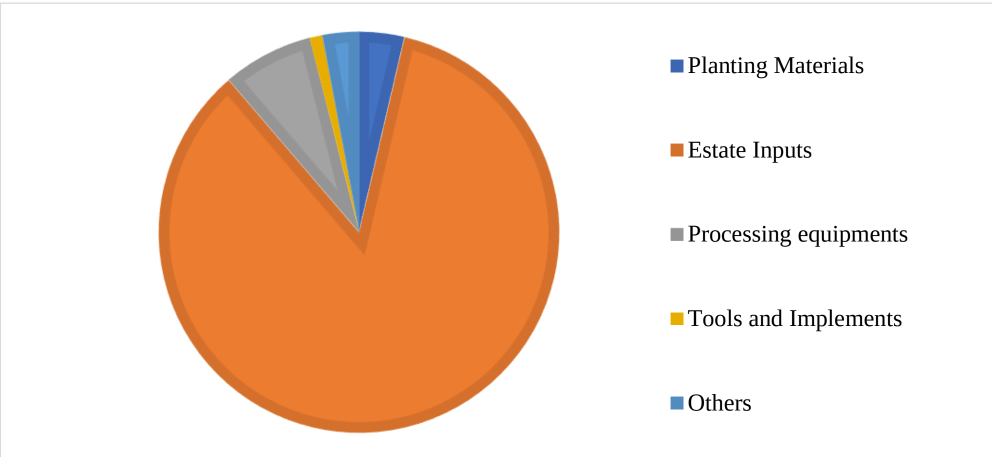
In order to promote rubber processing, value addition and sales, the Rubber Board established Rubber Producer Societies Companies, with the shares being subscribed by the RPSs and Rubber Board. 13 such companies were established in various parts of the state.As can be seen below, the average annual volume of sales of the RPS is about 1.4 lakh kg when the RPS has taken shares in the company, as against only about 70000 kgs when they were not a share subscriber to an RPS company.**Thus subscription to RPS company shares enhanced the sales of NR with the RPSs**. **However, as shown earlier, RPS companies are mainly buyers**

of Latex and FCs. Many of these companies had initiated processing and value addition, but had to shift operations. Currently most of them are into sales of rubber and allied tools.

2. Input Procurement and Sales

Another important function that RPSs conduct is bulk purchasing of inputs for the growers to take advantage of economies of scale and bargaining power in bulk purchase and transportation. Overall, the grower could benefit from the cheaper inputs. The grower, who is usually dependent on the input dealers would be able to increase the profitability by reducing cost of rubber production. **During the period 2016-17 to 2018-19 only 41 out of the 99 RPSs had made any input purchases**. Thus, as we had noted earlier, less than half of the RPSs are trying to fulfil this important function for the growers. The plot below shows that more than 85 percent of the total input purchases were for estate inputs, about 7% for processing equipment, about 4% were planting materials and 1% on tools and implements. The overwhelming input purchases were for enhancing productivity of Rubber, while there was very little equipment being purchased for processing or other value adding and diversification of activities. As we had seen earlier, most RPSs were not engaged in input purchases due to the fact that farmers did not seek inputs through RPSs. The RPSs were not able to provide these commodities at prices sufficiently cheaper than the local dealers**. The few RPSs which conduct this function depend mostly on the RPS companies to buy these inputs.**

Figure 4 Share of input purchases by RPS during 2016-17 to 2018-19



3. Processing and Value Addition

The RPS can engage in a number of activities to enhance its performance both financially and remaining relevant for the growers. From the interviews and discussions with growers, RPS and experts in the field we identified 20 different functions that various RPSs were providing or could provide. These 20 items can be classified under the following categories; output marketing (3 activities), Price Information (1), Input Purchase (3), Credit Facilitation (2), Processing, Transportation and Storage (3), Productivity/Innovation (2), Livelihood diversification and value addition (2), and Labour and Social Welfare (2) ; Convergence with other SHGs (2). Against this spectrum of 20 potential functions of an RPS, 8 out of the 99 did not do any of the above functions. Another 22 of them did only 1 to 3 of these functions; 41 of them did 4-5 functions; 19 did 6-7 functions and 9 of them did 8 or more functions. **Thus, the RPSs exhibits vide variations in their diversity of activities.**

Table 18 Distribution of RPS by Number of activities undertaken

Number of Activities of RPS	Number of RPS
0	8
1 to 3	22
4 to 5	41
6 to 7	19
8 or more	9

The major areas of service provision are output marketing, price information, input purchase, financial assistance facilitation, processing, transportation& storage, productivity, livelihood diversification, value addition, labour and social welfare and convergence with SHGs. Among these various segments of service provision, the function with the maximum coverage is productivity enhancing activities, such as skill training, transfer of new technologies and information on new farming practices. Among the 99 sampled RPSs, 70, 83 and 81 of them were engaged in these activities respectively during the period. Financial assistance facilitation was the next most widely provided services through RPS. Our of the 99 RPSs, 47 of them rendered this service to the growers. All of these are implementation of the Rubber Producer Incentive Scheme (RPIS) for the growers by the Kerala Government mediated through the RPSs. Group purchase of inputs was practiced by only one third of RPSs and group marketing of Rubber was practiced in only about a quarter of the RPSs.

Given the goals of livelihood diversification and value addition for rubber, some of the objectives of the RPSs is to reduce risks of rubber cultivation, increase the returns to rubber and encourage sustainable of rubber cultivation. These are long terms goals which could support the sustenance of rubber cultivation in an economically and ecologically sustainable manner. However, in our sample of 99 RPSs only 12 of them were engaged in any livelihood diversification activities through intercropping, and only one RPS was engaged in production of Rubber based final or intermediate products.

In all of the services detailed below, we can classify them into two types. One set of services are those that The Rubber Board is directly involved and initiative is taken by the Board to conduct these including the financial implications of such initiatives. The other set of services are those that are established or that require own effort of RPSs. **It can be noted that it is the services that are directly done by the Rubber Board through the RPSs that show high degree of presence in RPSs, such as skill training, new technology transfer, information on new farming practices, and assisting in grants and subsidies. These activities are done as extension services of the Rubber Board through the RPSs**. While for services which require considerable effort of the RPSs such as livelihood diversification, social welfare, group processing or transportation etc, the activities levels are considerably low. Thus the diversirty of activities seem to differ according to the RPS. Some basic services are provided through all RPSs, which is at the instance of the Board. Further, it indicates the dynamism of the RPSs is an important factor in disseminating services to its members. A large share of the RPSs are inactive beyond the Rubber Board initiated and maintained services. In other words, most RPSs seem to work as an extension service node of the Rubber Board facilitating service delivery for the Rubber Board, with little autonomy and own initiative.

Table 19 Functions and Activities of RPS with Service Provision and Charges

Functions	Activity	Services Provided	Service charged
Productivity	Provide skill training	70	2
	Assist in transfer of new technologies	83	5
	Information dissemination on new farming practices	81	5
Product Differentiation	Production of rubber based final or intermediate goods (excluding RS, latex and coagulates)	1	1
	Grading	0	0
Better Price for Output	Group Marketing	24	6
	Joint sales of Rubber with other RPSs	6	1
	Supply contracts with buyers	2	1
	Collect price information of different dealers	23	2
Lower Cost of Production	Group purchase of inputs	32	14
	Joint purchase of inputs with other RPSs	2	1
	Group approach for new planting and replanting	4	1
Lower Cost of Processing	Group processing	6	4
	Group Transportation	8	5
	Group Storage	3	1
Risk Reduction	Livelihood diversification through intercropping	12	0
	Assist group for availing bank credit	4	2
	Assist group for grants/subsidies from government bodies	47	13
	Assist micro-credit for Self help groups	11	2
	Facilitating goods/service production of Self help groups	8	2
Social Reproduction	Providing labour & social welfare services through own financial sources	14	3

Table 20 Activities of RPS by Functional Area

Area	Activity	Services Provided	Service charged
Output marketing	Group Marketing	24	6
	Joint sales of Rubber with other RPSs	6	1
	Supply contracts with buyers	2	1
Price Information	Collect price information of different dealers	23	2
Input Purchase	Group purchase of inputs	32	14
	Joint purchase of inputs with other RPSs	2	1
	Group approach for new planting and replanting	4	1
Financial assistance facilitation	Assist group for availing bank credit	4	2
	Assist group for grants/subsidies from government bodies	47	13
Processing, Transportation & storage	Group processing	6	4
	Group Transportation	8	5
	Group Storage	3	1
Productivity/ innovation	Provide skill training	70	2
	Assist in transfer of new technologies	83	5
	Information dissemination on new farming practices	81	5
Livelihood diversification and value addition	Livelihood diversification through intercropping	12	0
	Production of rubber based final or intermediate goods (excluding RS, latex and coagulates)	1	1
Labour &social Welfare	Providing labour & social welfare services through own financial sources	14	3
Convergence with other SHGs	Assist micro-credit for Self help groups	11	2
	Facilitating goods/service production of Self help groups	8	2

4. Group Activity

Group activities are undertaken to take advantage of collective activity. To meet the shortage of Rubber Tappers in Kerala, Tapper's Bank was created at the behest of the Rubber Board/ Tapper's Bank are an enlistment of certified or experienced tappers within the coverage of the RPS. The growers could use the tappers bank to tap their Rubber. Similarly, Labour group ensures laboursupplyfor the RPS members. There are also other common interest groups and other self help groups sucg as the Kudumbasree group. However the presence of such groups in RPSs are relatively low and even among the existing groups the activity levels are considerably low. 18.% of the total RPSs have self-help groups and 13.1% have Tapper's bank. The figures for common interest groups, all women's groups, labor groups, and Kudumbasree are 10%, 8%, 5%, and 4% respectively. 3% of RPSs have some other form of activity groups under them. But these activity groups are not active in many RPSs. None of all women's groups are active and around 80% of the common interest groups are not active.

Table 21 Group status and activity status

Group	**Percentage of RPS (out of 99)**
Tappers bank	13.1
Common interest group	10.1
Kudumbasree	4
Labour group	5.1
Self help group	18.2
All women's group	8.1
Others	3

Network of RPS across different agencies: Structure and Performance

Table shows that RPSs have strong engagement with government-guided agencies like the Rubber Board and RPS companies, particularly for training, management, price information, and marketing. Interaction with private, non-governmental, and local self-government actors is minimal, highlighting a narrow institutional network focused mainly around the Rubber Board structure.

Table 22 Number of RPS having interaction with the following organisations for the following activities of RPS

Organisation	Marketing	Price information	Purchase of Inputs	Processing of	Productivity, Innovation	Livelihood	Labour & Social Welfare	Convergence with	Training of	RPS management
Rubber Board	15	46	36	5	54	17	43	26	59	63
RPS companies	36	20	35	6	7	4	3	26	7	8
Farmer producer organisations	0	0	1	1	1	1	1	1	1	0
Central/state government	2	6	7	2	5	2	5	6	4	2
local self government(Panchayat)	0	0	0	0	0	3	3	9	1	0
SHGs such as Kudumbasree	0	0	0	0	0	0	1	0	0	0
Private companies	5	0	4	1	0	0	0	0	0	0
CSR wing of companies	0	0	1	0	1	0	0	1	0	0
Non-government organisation-	0	0	0	0	0	1	0	0	0	0
Labour Unions/Associations	0	0	0	0	0	0	1	0	1	0
Traders Associations	0	1	0	0	0	0	0	0	0	0
Political organisations	0	0	0	0	0	0	0	0	0	0
Community/Religious organisations	0	0	0	0	0	1	0	0	2	0
Others	0	0	0	0	0	0	0	0	0	1

Among 99 RPSs surveyed, 19 reported no activity with the Rubber Board, while 49 had no engagement with RPS companies. This indicates the Rubber Board still provides wider multi-activity support compared to RPS companies, though a significant share of RPSs remain outside these networks.

Table 23 Number of activities supported by Rubber Board and RPS Companies

Number of activities	Rubber Board (RPSs)	RPS Companies (RPSs)
0	19 (19.19)	49 (49.49)
1–3	27 (27.27)	41 (41.41)
4–6	35 (35.35)	6 (6.06)
7–10	18 (18.18)	3 (3.03)
Total	**99 (100.00)**	**99 (100.00)**

Note: Values in the parentheses shows the share to the total

Table 24 Trading Networks of RPSs

Trading agent	2016	2017	2018
RPS Companies	38	26	26
Domestic wholesale dealers	14	2	2
Domestic retail dealers	13	1	1
Exporters	1	0	0
Cooperatives/federations	0	0	0
Private manufacturer	0	0	0
Government manufacturer	0	0	0
Others	0	0	0

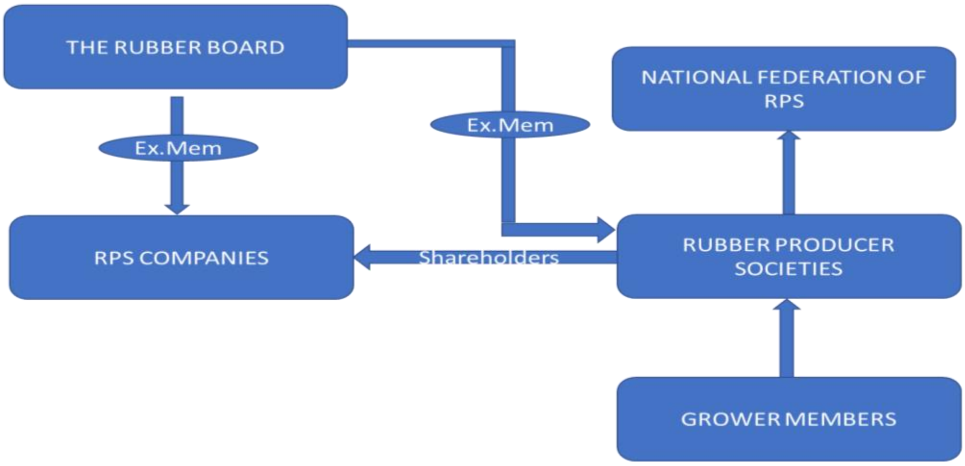
RPSs used to trade rubber with agents such as RPS companies, domestic wholesale dealers, domestic retail dealers, exporters, cooperatives/ federations, private manufacturers, and government manufacturers. Among these, RPS companies are the primary trading partners in all three years. Even though the absolute number of RPSs trading with RPS companies is decreasing, their share in the total number of RPSs who do trade with different agents is increasing significantly. In 2016, it was 57% while in 2017 and 2018 it was 89%. In 2016, domestic wholesale dealers and retail dealers were also having a good share of trade with RPSs with 21% and 19% shares respectively. However, in the following years, these figures came down drastically. Only two RPSs reported trade with domestic wholesale dealers while it was one with domestic retail dealers. Direct trade with exporters was reported by only one RPS in 2016. No trade was reported with cooperatives/ federations, private manufacturers, and government manufacturers. The highest share of trade with RPS companies in the total trade could be due to the market linkages. The majority of RPSs get inputs from RPS companies and the price and payment system follow a ‘non-market system’ which in most cases requires the selling of output to the source of input at a later stage.

Table 25 Impact of Network Engagement on RPS Functions

	Rubber marketing	Price information	Input purchase	Processing	Innovation	Skill training	Livelihood diversification	Labour welfare	Convergence with other departments
Rubber Board	0.076***	0.169***	0.145***	-0.009	0.135***	0.115***	0.039**	0.115***	0.125***
RPS Company	0.259***	0.108**	0.068	0.083***	0.091**	0.157***	0.074**	0.057	0.017
Other FPOs	-0.05	0.081	0.068	0.358***	0.069	-0.161	0.479***	-0.022	-0.21
Govt_Centre_State	-0.101	-0.076	0.101	-0.016	0.25***	0.144**	0.218***	0.041	0.323***
Govt_Local	-0.077	-0.127	-0.056	-0.015	-0.08	0.148	0.294***	0.494***	0.46***
Unions	0.409	0.702**	-0.404	0.015	-0.381*	0.177	-0.122	0.797***	0.177
Trade Associatons	-1.382*	2.247***	-0.035	0.084	2.278***	-0.645	0.258	2.276***	-3.956***
Private Companies	0.377***	-0.257	0.315*	0.101	0.019	0.084	0.06	0.177	-0.047
CSR_Pvt Companies	0.787	-0.067	0.812	-0.157	-0.582	0.015	-0.533	-0.056	1.782***
NGOs	0.021	0.555	-1.01	0.062	0.738	1.066**	0.321	1.512***	-1.292**
Community Networks	0.462	0.314	0.37	-0.002	-0.191	1.101**	-0.427	0.221	0.227
Others	-0.242	0.063	1.165*	0.673*	0.258	-1.013**	-0.282	0.52	-0.267
Constant	-0.021	-0.002	0.127	0.021	-0.027	0.04	-0.13*	-0.093	-0.175*
Mean dependent var	0.586	0.737	0.848	0.152	0.687	0.758	0.293	0.576	0.485
R-squared	0.607	0.592	0.538	0.552	0.728	0.697	0.751	0.738	0.681
F-test	11.085	10.417	8.346	8.835	19.15	16.454	21.57	20.211	15.294
Number of obs	99	99	99	99	99	99	99	99	99

*** p<.01, ** p<.05, * p<.1

Figure 5 Governance ecosystems of RPS



4.7 Governance of Rubber Producer Societies

Good governance of cooperatives emerges through the honest application of the existing laws (Chaudhry, 2009). Monitoring and control of managerial actions are key aspects of cooperative governance (Wakaisuka-Isingoma et al, 2016). Good governance improves the performance of community organizations (Dayanandan, 2014) whereas their effectiveness depends on governance practices, viz., participation, accountability, transparency, and participation in the general assembly meeting (Karthikeyan, 2008).Based on the insights derived from the literature, the different dimensions of good governance of RPSs were identified and used for the construction of the governance index. For representing each dimension, different indicators were identified from primary data.

The dimensions and indicators are:

Accountability: the indicators taken to represent this are regularity in keeping annual reports and auditing and accounting.

*Transparenc*y: Audited statements, monitoring cells for work in progress, and grievance cells in the RPS are part of this dimension.

Democratic Values: this is measured through variables such as the regularity in general body meetings, regularity in executive meetings, and elections.

Participation in decision-making: the decision-making mechanisms in the general body and executive committee are taken to represent this.

Participation in RPS: the share of RPS members in total growers is used to measure this.

Inclusiveness in membership: the share of female growers and SC ST growers is taken to identify the extent of inclusivity in RPS membership.

Governance and Administration of RPS

Rubber Producer Societies operate in a democratic way. Any rubber grower who has a minimum area of 0.2 ha of rubber under the area of production and who is willing to sell rubber through the society is eligible for membership. The absolute authority of the RPS is the general body. The first general body should be conducted within three months of registration and it can be conducted trimonthly. The general body is responsible for the evaluation of the previous activities and planning of the future activities. The management of RPS is done by the president and executive committee. Executive committee meetings should be held monthly.

Table 26 Participation in General Body Meetings and Executive Committee Meetings

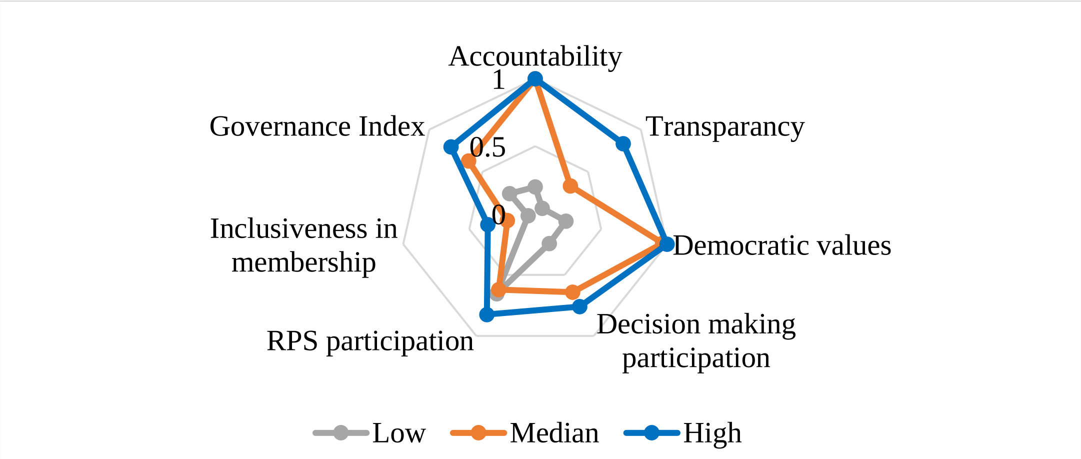
		Percentage of RPS
No. of General body meetings	None	4
	Atleast one	63
	More than one	21
Average attendance in general body meetings	Attendance percentage	
	Less than 20	13
	20-50	50
	Above 50	24
Year of the last election in executive committee	Year	
	2019-2020	40
	2017-2018	31
	2015-2016	6
	2013-2014	2
	On or before 2010	3
No. of executive committee meetings	Number of meetings	
	0	0
	1	3
	More than one	81
Average attendance in executive committee meetings	Attendance percentage	
	Less than 20	30
	20-50	2
	Above 50	53

During 2018–19, 4% of the RPSs didn't conducted any general body meetings, while 63% held one meeting and 21% held more than one. Among the 82 RPSs that reported data on executive committee elections, nearly half (48%) conducted elections in 2019–20, and 86% had elections after 2017; however, a small fraction (3.6%) had last held elections before 2010, with one society reporting its last election as far back as 2001. Regarding executive committee meetings, 97% of the 84 RPSs that provided information held more than one meeting. Of the 85 societies reporting attendance details, 53 recorded an average attendance above 50%, whereas 30 reported less than 20% attendance, indicating variability in participation and governance engagement across societies.

Governance Index

A governance index was created from these dimensions. The indicators were standardized. And then averaging out was done within dimensions. The final index was created by averaging out across dimensions. Based on the index value the RPSs were divided into three groups namely high performing, medium performing, and low performing.

Figure 6 Governance dimensions of RPSs – comparison across performance groups



The top-performing RPS category outshines the other two categories across all dimensions when assessed in terms of the governance index. However, their performance in the inclusiveness of the membership dimension is not satisfactory. Their high performance in the transparency dimension sets them apart from medium and low-performing RPSs. Medium-performing RPSs align closely with high-performing ones in terms of accountability and democratic values. They exhibit a noticeable divergence in their transparency performance, which makes the high-performing RPSs take a significant lead. Along with this, the inclusiveness in the membership dimension also shows low values.The low-performing RPSs exhibit the weakest performance across all dimensions, except for RPS participation. In this dimension, their variable value aligns with that of the medium-performing RPSs. Their overall activity level in all other dimensions remains notably lower, indicating that any increase in membership may have primarily resulted from government initiatives like the rubber production incentive scheme.

4.8 What impacts the performance of RPS?

Conflicting visions about RPSs: The Rubber Board had envisaged these RPSs as alternative arrangements to market intermediaries and enhanced scales of operation. For the board these RPSs were service delivery units that would increase efficiency of production and distribution. Also, the Board envisioned the survival of the small and marginal farmers through RPSs. However, in reality the membership in RPS is different from what Rubber Board had envisioned. The membership in RPSs as seen above consists of a set of part-time farmers, whose primary source of income is not from Rubber, presumably. To these farmers rubber cultivation is mainly to safeguard the land. From our interviews a few farmers mentioned that Rubber helped in reducing the invasion of forest into their land; it also helped in maintaining the claims over land ownership in areas where there was lack of clarity of ownership of property. This view of rubber cultivation has become sharper due to three factors, namely the fall in price of rubber since the 2000s, rise in cost of cultivation; and the rise in remittances as a major source of income across households in the rubber cultivating regions.

External factors

The fall in rubber prices have come about due to multiple reasons. Rubber prices in India are governed by the following external factors, oligopolistic demand conditions, substitutes for natural rubber and increasing import competition from other countries. About 70 percent of the demand for natural rubber arises from a handful of tyre manufacturers in India. This implies that the tyre manufacturers would be able to easily dictate prices of rubber in the market. Moreover, natural rubber is being increasingly substituted by synthetic rubber. Even though the current technology does not allow synthetic rubber substitution for large tyres, it is a matter of technological innovations in this direction which may replace natural rubber. Finally, a number of competing countries such as Malaysia and Srilanka are also becoming strong contenders for the natural rubber market in India. Import of rubber also have led to price fall in India. All these factors implied that the prices stagnated in the sector.

Rise in labour cost: Labour cost has been steadily increasing over the years despite the fall in rubber prices. The rise in labour cost is owing to the fact that alternative demand for labour, especially in the non-agricultural rural sector had dramatically risen in India, especially so in Kerala. This shrinkage of labour supply in the rural areas implied that the cost of cultivation kept increasing. In many farmers, a form of reverse share cropping exists, whereby the tapper enters into agreement with the crop owners for share cropping at the rate of about 50:50; and in some extreme cases even up to 70:30. The rise in labour cost and the fall in the rubber price has considerably reduced the profitability of Rubber.

The speculative demand for land: Even when the prices of rubber continued to fall there was not much of a shift in cultivation from rubber to other crops. Whatever shift was there, it was mostly to letting the land remain fallow. This was mainly due to the change in income source of the average household in Kerala. From agriculture being their primary source of Income, remittances and services became their primary source. With the flow of gulf remittances to the state land ownership has become a principal form of wealth hoarding. This holding of land is not for productive agriculture purposes but for speculative purposes to leverage the hike in land prices. This would imply that protection of land and its proprietorship is more important for the land owners than the productive returns from land.

Under such conditions inimical to rubber cultivation there was very little that would entice profit seeking farmers to continue in rubber, especially when alternate sources of income existed. The weak incentives for rubber cultivation drove out the main income earners from rubber to alternate sources. On the other hand, the land owners now, who were not dependent on rubber as their primary source of income, and saw the speculative value of land was not interested in the efficiency functions of the RPS.

If we look at the functions of the RPSs we could classify them into two types. One set of functions were aimed at increasing the efficiency of rubber cultivation and distribution through productivity enhancing techniques. Another set of functions, were aimed at increasing the income with the cultivators. In the first set of functions generate scale economies through group activities. It also aimed to increase innovation through group learning. The second set of functions were to increase the income by reducing costs, and increasing prices; within which were the labour banks initiative, and the government price subsidy such as RPIS. From the view point of the farmers, since the motive of rubber cultivation was more aligned to land protection rather than profits from rubber, they valued the income functions of the RPSs rather than the efficiency-enhancing functions of the RPS. Hence, we see that when the RPIS scheme was introduced in 2015, the membership had increased dramatically in RPS. Also, we see that the number of RPS societies remained stagnant since the 2000s mainly due to the declining funds available with the rubber board which provided various incentives and subsidies to the farmers. As soon as these stopped the RPS lost their steam, and when something similar appeared in 2015 the dynamism of RPS reappeared. While, several schemes that were started by the board and implemented through the RPS trough well well-intentioned and received well, did not bore fruit in terms of the growth of RPSs.

The relation between Rubber Consumers and producers: Studies show that the expansion of NR cultivation in non-traditional regions is aimed at expanding the production of NR such that there is adequate supply to meet the expanding tyre demand (Mohanakumar, 2016). This implies that such expansion may not lead to any particular good to the farmers. In fact this paper argues that farmers may get worse off than better off due to the shift in cultivation to products with greater price volatility.

4.9 Determinants of RPS Functional Performance: Insights from Logistic Regression Analysis

This table presents logistic regression estimates examining how structural, demographic, and governance-related variables influence the performance of Registered Producers' Societies (RPS) across six functional areas. Results show that a higher number of total growers positively affects sales and processing but constrains diversification, while a greater share of RPS members among total growers significantly boosts sales. Interestingly, higher active member shares reduce sales, suggesting possible concentration effects. Education emerges as a critical driver, with a higher share of educated members significantly improving sales and processing. Female member share shows a strong negative effect on sales, indicating structural barriers or underrepresentation. Better governance quality improves sales but appears to reduce focus on labour welfare, highlighting trade-offs between commercial and social objectives. Larger networks consistently enhance innovation and diversification, underscoring the importance of external linkages. Older societies show stronger performance in innovation and labour welfare, likely due to institutional maturity. Overall, these findings reveal how membership composition, governance, and networks collectively shape RPS effectiveness, offering insights for strengthening weaker functions and promoting balanced, inclusive growth.

Table 27 Results of Logistic Regression Estimating Determinants of RPS Functions (Sales, Input, Processing, Innovation, Diversification, Labour Welfare)

Logistic regression	**Sales**	**input**	**processing**	**innovation**	**diversification**	**Labour welfare**
Total growers in RPS region	0.003***	0	0.001*	0	-0.003**	0
Part time growers	-0.618	1.093	-0.766	-2.593*	-1.061	-1.131
RPS members to total growers	2.189***	-0.038	0.199	0.091	-0.703	0.263
Active RPS members	-3.944***	0.256	-0.544	-1.3	1.115	-1.645
Members above 50 age	3.235*	-0.835	0.514	-3.17	-1.471	-2.304
Edu12members	4.853***	0.59	5.342**	-1.639	-2.308	1.457
Mem_female	-16.51***	-1.238	-0.41	4.706	-5.046	-1.69
Scstmembers	1.481	3.956	-22.824**	-12.614	-10.555	-3.997
Governanceindex	3.102*	1.378	-2.773	-4.524	-6.158	-3.728**
Totalnetwork	0.081**	0.029	0.109***	0.606***	0.387***	0.372***
Total_no_rps_members	-0.008*	0.002	0.004	0.007	0.011**	0.003
Registration_year	-0.001	0.05	0.058	0.196*	0.054	0.144***
Constant	-4.345	-101.32	-122.104	-391.038*	-108.502	-288.327***
Mean dependent var	0.436	0.426	0.138	0.66	0.287	0.574
Pseudo r-squared	0.441	0.105	0.301	0.694	0.578	0.535
Chi-square	32.192	12.238	27.877	30.812	16.576	25.882
**** p<.01, ** p<.05, * p<.1*						

PART 2

5. Relation between RPS and growers

The significance of Rubber Producer Societies (RPS) need to be evaluated on the basis of its stated goal, namely, to enhance Natural Rubber (NR) production and life chances of rubber growers. RPSs were established under the aegis of The Rubber Board to encourage group activities among NR small growers, which could overcome the disadvantages of small scale production through better bargaining power due to joint sales, scale economies of common input purchase and common processing arrangements, productivity enhancement through common learning, innovation and diffusion including practices for sustainability.

However, the first part of the study showed that the RPS as an institution was weakening. Even though more than 2000 such RPSs exist across the state, nearly one fourth of them are not functional. Among the functional RPSs there exist considerable heterogeneity in terms of participation, governance, undertaking economic functions and their economic performance. Reluctance among growers to join RPS as members till recently, had stagnated the growth of number of RPSs and membership within RPSs. Among the existing members about half of them are inactive members.

Analytically, the stagnation of RPSs need to be studied in terms of its own performance; and also, the relation between RPS and its beneficiaries, the grower members. In the previous part we had analysed the performance of RPSs. In this part we focus on the relation between RPS and its member growers. We ask the following questions, did participation in RPS benefit the growers and if so, how? Are there substantial performance differences between members and non-members? Does the governance of RPS affect the benefits of members? Are the benefits of RPS limited to the members or do they spill over to non-members as well? Finally, We also look into the question whether grower characteristics influence membership criteria, and if so, whether the performance difference is due to skewed self-selection as members of RPSs rather than the RPS effect on members' NR growth performance.

5.1 Profile of Grower Households

Demographic profile: Among the members in the grower households about 21% were in the age group 16 to 30, 17.3% belonged to 31 to 45, 25% to 45-60 age group, and 21.2% in the 61-75 age group. About 50 % of the members were more than 45 years of age. Two factors, ageing of population due to demographic change and international migration of younger workers have contributed to this disproportionately larger share of older age group in the population. The grower households had about 50.68% males and 49.3% females. The average sex ratio in Kerala is 1084 females per 1000 males. For grower households, but the sex ratio is favouring males. The education profile exhibits a larger proportion of more than 40% of the population having undergone higher education. Nearly 60% of the sample had only 12th standard or lesser levels of education. The households were typically small with 4 members or less accounting for 75% of the households. Among the household members only 25.5% were fulltime growers, another 28 % were part time growers, while more than 45% of the members had no involvement in rubber cultivation. These were members who could be working, studying, doing care work, etc but were not involved with NR cultivation.

Table 28 Socio-demographic characteristics of respondents

Age group	Freq.	Percent
Less than or equal to 15	225	11.27
16 - 30	419	20.98
31-45	346	17.33
46-60	492	24.64
61-75	425	21.28
> 75	90	4.51
Total	1997	100.00
Sex	Freq.	Percent
Male	1012	50.68
Female	985	49.32
Total	1997	100.00
Level of Education		
Upto 7th Std	302	15.13
8th-10th Std	517	25.90
11-12th Std	376	18.84
Above 12th	801	40.13
Total	1996	100.00
HH size		
Number of Members	Freq.	Percent
1	34	5.86
2	159	27.41
3	92	15.86
4	150	25.86
5	91	15.69
6	36	6.21
7	18	3.10
Total	580	100.00
Involvement in NR cultivation		
	Freq.	Percent
Full time	529	26.53
Part time	559	28.03
No involvement	906	45.44
Total	1994	100.00

Involvement in NR cultivation: For persons above the age group 46 about 80 to 85% were either fully or partially involved in NR cultivation. But for persons in the age 16 to 45, more than 50% were not involved in NR. However, the maximum involvement was in the age group 61 to 75. The greater presence of older population in NR cultivation may be driven by multiple factors. Firstly, the older persons may have depended on agriculture as their source of livelihood in their younger age and they continue to do so. Secondly, the older persons may have retired from active wage labour and may be involved in NR cultivation as a post-retirement activity, with NR acting as a form of social security for the aged.

Table 29 Involvement in NR cultivation by age group

Age group	Involvement in NR			
	Full Time	Part time	Not involved	Total
Less than or equal to 15	0.44	5.78	93.78	100.00
16 - 30	3.36	18.23	78.42	100.00
31-45	17.63	31.79	50.58	100.00
46-60	41.87	40.85	17.28	100.00
61-75	51.42	30.90	17.69	100.00
> 75	32.22	31.11	36.67	100.00
Total	26.53	28.03	45.44	100.00

Thirdly, the property rights over land may be with the older members of the household, hence the returns to land also may be claimed by the land owners. This incentivizes the older members of the household to remain in NR cultivation, but it disincentivizes the younger members as they are uncertain about their property rights and returns from land. Given the price of land, there is a good chance that land gets sold off for some life course events. Without ownership rights over land, the product of their labour will not be remunerated. The income earned from the property will largely be kept by the owner of the property, namely, the head of the household. Table below shows the relationship with the head of the household and involvement. As can be noted nearly 95% of the Head of the household is involved either partially or fully in NR cultivation. By virtue of being the head, much of the inherited property, including land, would remain in the control of the head. Hence, they have a higher incentive to participate. However, we can see that the children or their spouse have very low level of participation. More than 70% had no involvement with NR cultivation.

Table 30 Relation to Head and Involvement in NR cultivation

Relation	Involvement			
	Full Time	Part time	Not involved	Total
Self_HoH	63.97	30.17	5.86	100.00
Spouse to HoH	21.87	46.12	32.01	100.00
Child to HoH	4.65	15.29	80.06	100.00
Spouse of Child	4.24	25.42	70.34	100.00
Others	9.52	15.87	74.60	100.00
Total	26.53	28.03	45.44	100.00

Fourthly, better education and prospects for occupational mobility and migration among the younger, encourages the youth to seek employment and remuneration outside of agriculture. As can be noted in table below persons who have higher levels of education had low levels of involvement. Only 14% of the persons who had higher education were full time growers. However, about 50% across all levels of education were involved in NR. Perhaps, education level is not a strong predictor of the level of involvement.

Table 31 Education level and Involvement in NR cultivation (age above 15 years)

Education	Involvement			
	Full Time	Part time	Not involved	Total
Upto 7th Std	47.02	17.88	35.10	100.00
8th-10th Std	48.44	31.11	20.44	100.00
11-12th Std	34.14	32.26	33.60	100.00
Above 12th	14.09	32.45	53.46	100.00
Total	29.86	30.83	39.31	100.00

Household characteristics: More than 87% of the growers belong to the general category while the share of SC and ST is insignificant. OBCs consisted of about 12%. The poor presence of SC and ST in NR cultivation as growers reflects the lack of access to land for ownership and cultivation among these groups. The traditional caste and spatial divides in access to resources have isolated these groups from access to land.

Table 32 Grower characteristics by type of social group

Social group	Number of HHs	Share of HHs
SC	2	0.35
ST	0	0.00
OBC	69	12.11
Others	499	87.54
Total	570	100%

The share of households where one member is a full-time grower is significant, about 69%. Only 20% of the households have more than one member as a full-time rubber grower. This points to the argument that income from rubber plantations as the only source of income for the household is risky and therefore, they try to engage in other economic activities as well. So, there is a shift from full-time growers to part-time growers. (*Viswanathan,2007) (George,1999*)

Table 33 Distribution of HHs by type of grower

Type of growers	Number of HHs	Share of HHs
No member is involved as full-time or part-time grower	10	1.73
All members are part-time growers	59	10.21
At least one member is a full-time grower	398	68.86
More than one member is a full-time grower	111	19.20

5.2 Member participation in RPS activities

The sample consisted of 572 growers. The RPS membership status is available only for 554 members. Of the 554, 348 were members of RPSs and 206 were non-members. Among them 348 members, 327 were currently active members, 21 were members who were not active currently. The membership statuses of 18 growers were not available.

Table 34 Number of RPS members

Number of RPS members	Freq.	Percent
Active members	327	59.03
Non-active members	21	3.79
Non-members	206	37.18
All	554	100
No information	18	
Total	572	

Among the RPS members, including both active and non-active members, about 33.43 % joined the RPS during the period 2015 to 2021, even though the RPS in these regions were in existence since the mid-1980s. On the decision to join RPS 21.43% reported that they joined the RPS to avail the Rubber Price Incentive Scheme (RPIS) which was introduced by the Government of Kerala in 2015. Under the scheme the growers are compensated to a shortfall in market price of Rubber and the Minimum price declared by the State government. The scheme is implemented through the RPSs. The implementation of RPIS through the RPS has reinvigorated the RPSs, with a large number of growers responding by joining the RPSs. About 18% of the members joined through membership drives conducted by The Rubber Board. The significant role played by the Rubber Board in keeping the RPSs active is visible thus.

Table 35 Decision to take membership

Decision to become an RPS member	Percent
Own decision to join	51.24
Through friends and relatives	9.01
Through a membership drive of the rubber board	18.32
To avail the price incentive scheme of the state government	21.43
Total	100.00

Members are mandated to participate in the general body meetings of the RPS. Such participation in the GBMs can be an indication of the level of participation of the grower members in the activities of the RPS. Nearly 81 % of the members had participated in the GBM during the reference year. For the members who joined prior to 2015 their participation rate was higher, ranging between 88% and 95%. But for the period 2015-2021 this declined to 61%. This points to the lesser level of commitment of the members who joined the RPS for receiving the RPIS benefits. It is indicative of a larger issue, i.e., when growers join RPS keeping the direct financial gains such as subsidiesor price incentives in mind, they may remain as passive members. In organizations that are designed to function through democratic governance structure low membership participation in governance can weaken the functionality of these organizations.

Table 36 Year of membership and participation in GB

Year of Registration as member	Participate at least one GB	Total members	Share (%)
1980-1989	24	26	92.3
1990-1999	74	84	88.1
2000-2009	57	62	91.9
2010-2014	37	39	94.9
2015-2021	68	111	61.3
Total	260	322	80.7

5.3 Social and economic differences between RPS members and non-members

Comparing members and non-members, there exists no particular difference between the two groups in terms of social group representation in each group. Among both RPS members and non-members, the share of growers belong to the category of "others" is the highest (88.62% and 86.12% respectively). Growers who belong to OBC category are 11.38% and 13.06% in RPS members and non-members respectively. There are no growers who belong to ST category irrespective of the membership status. There are 2 RPS members who belong to SC category. The relatively low representation of SCs and STs are perhaps indicative of the poor access to land for the socially marginalized communities in Kerala.

Table 36 Social group by membership status

Social group	RPS member	Non- member
SC	0.00	0.82
ST	0.00	0.00
OBC	11.38	13.06
Others	88.62	86.12
Total	100	100

However, significant difference was seen in income distribution between the members and non-members. It can be noted that the non-member HHs had a higher representation in lower income categories, compared to the member HHs. More than 60% of the non-member HHs belonged to income brackets less than one lakh per annum, while for member HHs it was only 43.1%. While in the income bracket one lakh to five lakhs, the member HHs consisted of more than 51 % of the HHs, for which the corresponding non-member HHs were only 31.2%.

However, it needs to be noted that in both the types, income levels about five lakhs pe annum was rather rare in both type of HHs. Thus, it can be seen that growers in general belonged to middle- or low-income groups, with a greater representation for the RPS members in the relatively richer groups. This also raises the important question as to whether such differences in annual income between members and non-members were created due to RPS membership or such differences existed before RPS membership itself. If so, the income differences may have influenced the membership decision itself.

Table 37 Annual Income category by membership status (2018-19)

(Income in Rs)	Total Share of HHs	RPS member HHs	Non-member HHs
< 50000	13.07	10.46	16.60
50000- One lakh	36.04	30.46	43.57
One lakh- Two Lakh	23.50	29.23	15.77
Two Lakh-Five Lakh	20.14	22.77	16.60
Five Lakh-Eight Lakh;	4.42	4.00	4.98
Eight Lakh-Ten Lakh	1.77	1.85	1.66
Ten Lakh - Fifteen Lakh	0.35	0.31	0.41
Fifteen Lakhs- Above	0.71	0.92	0.41
Total	100	100.00	100

The land ownership pattern among rubber growers in the non-estate segment is dominated by marginal and small holdings. Almost 90% of the total landholdingsare marginal or small holdings. However, there is a disproportionate share of marginal land holdings among the non-members. More than 80 % of the non-members were marginal holdings while the corresponding share was 59% for members. About 28% of the members had small holdings and 13% had medium holdings. For non-members the small holdings were only 14% and medium, only 5.7 %.

Table 38 Land ownership

Ownership type	Share of HH total	Share Member	Share Non-member
Marginal	68.53	58.72	80.18
Small	21.68	28.13	14.10
medium	9.79	13.15	5.73
Total	100.00	100.00	100.00

5.4 Comparing Cost, Production, Productivity and Profitability of Rubber Cultivation for members and Non-members

Cost of Production: The cost of production for Rubber, includes, inputs such as plantation materials, plant protection material, rain guarding, tapping, processing, testing, grading transportation and storage, insurance, rental and other service charges. The table below shows the average cost incurred by cultivators per acre of land for growing and tapping NR. The average cost per acre of NR cultivation in 2018-19 was around Rs 29500.00 of which tapping expenses accounted for 56% of the total cost. Costs incurred towards enhancing yield such as plantation materials, plant protection, rain guarding accounted for about 21% of the cost. Costs on quality improvement such as processing, testing storage and transportation consists of about 16.9% of the costs. Risk cover through insurance was only 0.16%.

Comparing RPS members with non-members, interestingly, the cost of cultivation for the RPS members was higher than the non-members. For the RPS members the mean cost was Rs 32110.4 per acre, while for the non-members it was Rs 24092.2. The higher average costs for members may be due to multiple factors. Being RPS members, the growers may be induced to adapt the various productivity increasing and processing techniques that are propagated through the RPS, which may not be the case with non-members. For instance, of the total number of non-members surveyed, 227 growers, only 53.7% purchased plantation materials, while 57.8% among the 327 purchased plantation materials. The largest difference between non-members and members was for rainguarding, 31.3% and 49.8% respectively. It can be noted that consistently across all items of cost of cultivation, a larger share of members incurred such costs compared to non-members. Secondly, it could also be noted that the average cost of cultivation for RPS members was higher due to the relatively higher expenditure on plantation material, rain guarding, tapping, processing, and rental charges. The higher cost of cultivation for members is due to better plant care. The higher cost of cultivation cost has led to better outcomes for members in terms of yield and revenue.

Table 39 Expenditure per acre of land under Rubber by membership status in 2018-19

Variable	Non-member		Member		All
	No. Growers	Avg cost per acre	No. Growers	Avg cost per acre	Avg cost per acre
Plantation materials	122	2043.5	189	2257.1	2187.8
Plant protection chemicals	118	1287.4	203	1227.0	1246.6
Rain guarding	71	2648.1	163	2777.4	2735.4
Tapping expenses	132	12432.6	238	18332.3	16417.6
Processing	127	3578.3	194	4154.0	3967.2
Testing	13	82.3	20	129.3	114.1
Grading	4	47.1	15	58.2	54.6
Transportation	139	826.3	243	769.9	788.2
Storage	10	67.5	18	62.8	64.3
Insurance	0	0.0	3	70.2	47.4
Rental charges	7	48.1	12	209.1	156.8
Service charges	24	111.6	28	130.9	124.7
Other	88	919.3	128	1932.1	1603.4

Total	216	24092.2	323	32110.4	29508.1

The average yield per acre of NR trees is 606 Kg per acre in 2018-19. Converted to hectares this would be 1460.46 Kg per hectare. This compares well with the Rubber Board estimate of 1472 Kg per hectare in 2021-22[5]. Of the total output, RSS4 which is used in Tire manufacturing, accounted for 55.37% of the total volume of NR. RSS5 accounted for another 20.1 percent of total output.

The average yield per acre varied between the RPS members and non-members. For the members the yield per acre was 648 Kg per acre, while for non-member growers it was 519 Kg per acre. This vast difference in yield between members and non-members may be arising out of the fact that members are incurring higher expenditure on yield/productivity enhancing inputs and services. Nevertheless, it is to be noted that RPS members have a much larger share of RSS4 variety, 58.4% of the total volume while for non-members it was 47.6%. The patterns seem to point to the RPS members oriented to respond to the tire manufacturers better than the non-members.

Table 40 Yield per acre by membership status (in kilogram) for 2018-19

Variable	Non-member			member			All
	No. Growers	Average output	Total output	No. Growers	Average output	Total output	total
Latex_DRC	26	611.0	15886	42	818.5	34376.0	50262
RSS3	0		0	0		0.0	0
RSS4	97	638.0	61884	189	1042.6	197051.2	258935
RSS5	82	386.6	31704	107	595.8	63753.5	95458
Other	7	298.4	2089	4	122.9	491.4	2580
ungraded	10	245.7	2457	8	486.5	3892.0	6349
Field Coagulum	184	86.5	15925	279	136.5	38093.3	54018
Total			129945			337657.4	467602
Land under NR (acre)	227	1.1	250.4	327	1.6	521.2	771.6
NR yield per acre per year			518.9			647.9	606

Apart from yield, there was also differences in average price of different varieties of NR, that gave members an advantage over the non-members. The members received an average price higher per Kg of NR for Latex-DRC, RSS5, and Field Coagulum compared to non-members. But for the most dominant variety, RSS4, the price received by the non-members was slightly higher than for the members. The average revenue per acre from different varieties of NR was Rs 72962.00 for the members, while for the non-members it was only Rs 57700.6. Comparing the cost of production per acre, the Gross Profit for the member was Rs 40852.00 per annum per acre, while for the non-member it was Rs 33608.4. Thus, the members enjoyed a much larger profit from NR cultivation compared to the non-members, even though the cost of

[5]https://www.google.com/url?sa=t&source=web&rct=j&opi=89978449&url=http://www.rubberboard.org.in/rbfilereader%3Ffileid%3D711&ved=2ahUKEwiimLqS2_qFAxX2fWwGHeD5CbIQFnoECB4QAQ&usg=AOvVaw3cxaf2Tg50cY3FceGOfSXQ

production is higher for the members. This higher profitability for members has come through the overall enhanced productivity route and price advantage in some varieties, even though cost of production was higher for members.

Table 41 Profitability of rubber by membership category

Variable	Non-member		Member	
	Average price per kg	**Total revenue**	**Average price per kg**	**Total revenue**
Latex_DRC	104.1	1653049.8	108.8	3739409.9
RSS3	115.0	0.0		
RSS4	120.7	7472177.6	119.3	23508426.2
RSS5	115.7	3668748.4	116.8	7443223.6
Other	114.7	239638.2	117.0	57493.8
Ungraded	108.0	265356.0	107.4	418000.8
Field Coagulum	72.2	1149833.5	75.0	2858202.6
Total revenue		14448803.5		38024756.9
Revenue per acre		57700.6		72962.4
Cost per acre		24092.2		32110.4
Revenue-Cost (Gross Profit) per acre		33608.4		40852.0

From the above analysis it can be concluded that growers who are RPS members perform better in terms of profitability of NR production compared to growers who are non-members. They are able to attain better profitability due to better productivity and better usage of productivity enhancing techniques and tools, with price advantage in some varieties of the NR.

5.5 Does RPS governance matter for profitability?

The above conclusion nevertheless needs to be unpacked to look closer to see whether membership produces uniform outcomes across the different types of RPSs. In the first part of this study we had created a governance index that accounted for governance differences across RPSs. We use this index to search for differences between growers belonging to different RPSs in terms of NR cultivation performance.

The governance index constructed has a lower and upper bound of 0 to 1. The actual index ranged from 0.16 to 0.85. Based on the Mean and Standard Deviations of the distribution, we classified the Index into four categories, less than 0.40, 0.40 to 0.60, 0.60 to 0.75 and greater than 0.75. We calculate the cost of cultivation for the RPS matched growers, both members and non-members for the corresponding category of Governance index. From the table below, it can be seen that governance index and cost of cultivation are associated. For growers who belonged to RPSs that had a Governance index value of less than 0.40, the total cost of cultivation per acre was Rs 24611 in 2018-19. For the growers that were matched to the RPSs that had their index scored between 0.40 – 0.60 the the average cost was higher at Rs 25075. For the next group, 0.6 to 0.75 it was even higher at Rs 34918.0 For the group above 0.75 there was a relative decline in cost at Rs 27561.

Better governance index was not only associated with higher overall costs, but also higher costs across all inputs and services. Thus, better governance of RPS seem to suggest higher expenditure on NR by the growers. This may be due to the fact that better governance may lead to better cropping practices and learning of new or better techniques for cultivation. However, at low governance index, the cost incurred on crop insurance is highest among all the index categories. This also seem to suggest that the poor governance of RPS may lead to heightened risk perception among the growers.

Table 42 Cost of Cultivation of Rubber per acre (in Rs) by Governance Index

Particulars	**Governance index**			
	less than 0.40	**0.40 to 0.60**	**0.60 to 0.75**	**greater than 0.75**
Plantation materials	1471	1869	2447	2827
Plant protection chemicals	550	957	1702	994
Rain guarding	1996	2404	3215	2747
Tapping expenses	17404	15515	17152	15667
Processing	1546	2384	6039	3165
Testing	7	41	70	421
Grading	0	20	87	72
Transportation	560	721	1006	527
Storage	0	35	72	136
Insurance	477	12	0	0
Rental charges	114	64	305	0
Service charges	14	28	267	31
Other	472	1023	2557	972
Total	24611	25075	34918	27561

The governance index was also associated with yield per acre as well. At the lowest class of governance index the yield was 509.6 Kg, at higher levels it was 580.4, at the next higher level it was 644.3 Kg and the highest level it was 613.8 kg. Thus, better governance of the RPS seem to cause better yield for the grower. The higher yield may be due to the fact that growers who were members of better governed RPSs tended to infuse a higher intensity of inputs in their plantations. This is turn may be producing higher yield. The growers using higher inputs may be due to better cropping knowledge and practices that is imparted through the RPSs. It may be also due to lower cost of purchase through group purchasing activities of the RPSs.

Table 43 Total output and Yield per acre in KG by Governance Index

Variable	**less than 0.4**	**0.4 to 0.6**	**0.6 to 0.75**	**greater than 0.75**
Latex_DRC	5100.0	22753.0	18555.3	6816.6
RSS3	0.0	0.0	0.0	0.0
RSS4	13126.0	97420.3	115099.0	35285.0
RSS5	8454.0	20241.5	41867.0	25930.0
Other	1140.0	1519.0	281.4	0.0
ungraded	3916.0	1983.0	1710.0	215.0
Field Coagulum	3874.9	16309.0	24139.9	10684.3
Total	35610.9	160225.8	201652.6	78930.9
Land under NR (acre)	69.9	276.0	313.0	128.6
NR yield per acre per year	509.6	580.4	644.3	613.8

Growers who were within the jurisdiction of well governed RPSs were able to get higher prices for some varieties of their output as well. The average price of Latex_DRC for the RPSs with less than 0.40 value as their governance index, the was 105.9 Rs per Kg. For the next one it was 107.6 Kg, for the group with 0.60 to 0.75 as their GI range, it was only 1058.2 Rs, while for the RPSs with more than 0.75 as their GI the price was 109 Rs. Such a gradient in price was visible across all varieties of NR with the lowest price for the lowest GI, and the highest price for the highest GI. The association between price and GI may be due to better bargaining by the better governed RPSs. Better governed RPSs are probably able to strategically intervene in the market for better prices. One of the functions of the RPS is to get better prices for the growers. RPSs can achieve this through multiple means. The bargaining power can be improved when the RPSs can have better price information, better storage and transportation facilities etc. Higher prices and better yield combined together provide higher revenue for the growers. The gross profit earned by the grower per acre is the highest for the growers in the best governed RPSs. The average estimated profit was Rs 41736 for the RPS in the GI range above 0.75 while the lowest profit was for the GI ranging less than 0.40 at Rs 30679 per acre. Thus, there seems to be a clear advantage for the grower to be in the vicinity of better governed RPSs.

Table 44 Revenue and Profitability per acre of NR by Governance Index

Variable	Less than 0.40		0.40 to 0.60		0.60 to 0.75		Greater than 0.75	
	Avg price /kg	Tot. revenue	Avg price /kg	Tot. revenue	Avg price /kg	Tot. revenue	Avg price /kg	Tot. revenue
Latex_DRC	105.9	539871.2	107.6	2448700.5	105.2	1952743.1	109.0	743306.3
RSS3		0.0		0.0	115.0	0.0		0.0
RSS4	118.6	1556368.1	118.2	11515978.1	120.3	13848931.0	121.8	4297455.6
RSS5	111.9	946059.2	116.4	2356051.8	116.3	4869488.0	117.2	3037847.3
Other	104.0	118560.0	114.7	174251.0	117.0	32923.8		0.0
Ungraded	105.8	414117.0	107.0	212181.0	118.0	201780.0	115.0	24725.0
Field coagulum	74.4	288474.9	74.5	1214385.5	73.0	1762996.7	75.6	807849.3
Total revenue		3863450.5		17921547.8		22668862.6		8911183.6
Revenue per acre		55290.9		64922.9		72428.7		69296.5
Cost per acre		24611.2		25074.5		34918.1		27560.5
Revenue-cost (gross profit) Per acre		30679.7		39848.4		37510.5		41736.0

5.6 Does good governance benefit non-members too?

Spillover of membership benefits to non-members is common in the RPS system. The benefits of input purchase, output sales and processing is not only available for the members but also for non-members of the RPS. The non-member growers can purchase inputs through the RPSs at lower prices than dealer, sell output through RPS along with members. RPSs also benefit from such arrangements which helps in larger scale benefits. However, the question remain, if there are spillover benefits to be enjoyed by non-**members , that is if there is a free-rider problem, then why do members join the RPS, what is the moral hazard problem? This needs to be understood. What is the benefit of being an RPS member then?**

To look at the spillover benefits we analyse the three indicators, input purchase, yield, and profitability for members and non-members across governance index. The difference in these indicators across low and high governance index for both members and non-members gives us the average gains in gains due to good governance. Similarly, the difference between members and non-members for both poor governance RPS and well governed RPS gives us the average difference between members and non-members.

From the table below it can be seen that a grower who belonged to a region where the RPS had low GI and if the grower was not a member then she would have incurred about Rs 17750 as input costs per acre per annum. In the same region if the grower was a member then her cost would be Rs. 27971. If the grower belonged to a region with high index of GI for RPS, but not a member then the cost would be Rs. 28609, and if the grower was member of an RPS with high index value for GI then her cost would be Rs 35341. Such estimations for each combination are made for yield and profits as well. From the table it can be noted that both governance and membership matters. A well governed RPS matters for the growers, and membership in RPS also mattered.

Table 45 Farm performance by governance index level and membership status of RPS

Particulars	Low governance index and non-member	Low governance index and Member	High governance index and non-member	High governance index and Member
Input costs per acre (Rs)	17750	27971	28609	35431
Yield per acre (Kg/Acre)	427.7	626.3	583.9	665.3
Revenue-Cost (Gross Profit) per acre (Rs)	29286.9	42184.6	36646.7	39086.9

To separate out the average effect of governance of RPS and membership in RPS in the three indicators we take the average difference between well governed and poorly governed RPS for both members and non-members separately. The average of members and non-members gives us the average difference between well governed and poorly governed. The difference in profits due to governance difference is Rs 2131.05. But the difference in the same due to the grower being a member or a non-member was higher at Rs 7668.8. Thus the benefit to the farmer was in terms of profit was largely on account of his membership, compared to the GI of the RPS. The sources of this differences in profit seem to arise from yield effect of being a member, while governance had a lesser effect. The input difference was somewhat similar between the two dimensions.

Table 46 Differences in farm performance by governance index and membership status of RPS

Particulars	Difference in governance (High GI-Low GI)			Difference in Membership (Member-Non-member)		
	Members	Non Members	Avg difference	High Governance	Low Governance	Avg difference
Input costs per acre (Rs)	7460	10859	9159.5	6822	10221	8521.5
Yield per acre (Kg/Acre)	39	156.2	97.6	80.8	198.6	139.6
Revenue-Cost (Gross Profit) per acre (Rs)	-3097.7	7359.8	2131.05	2440.2	12897.7	7668.8

5.7 Difference between RPS members and non-members in terms of input, output, and marketing

In the earlier sections we had noted that the members of RPS did benefit in terms of profitability and yield compared to non-members. Secondly, the quality of governance of RPS mattered in determining this yield and profitability gains. Thirdly, we had also noted that the gains from RPSs were not limited to members but also non-members, but the relative gains were higher for the members. What are the channels through which such gains reached the members? The important channels through which RPS contribute to growers is in terms of group purchase of inputs, group sales of rubber, and group processing. Group activities provide the growers with greater bargaining capacity in sales, and economies of scale in processing and input purchases. Now we analyse the degree of involvement of growers in each of these activities of RPSs such that the growers could make advantage of the RPSs.

Input purchase

Only 20% of the members and 10% of the non-members depended on RPS for input purchase. For members and non-members, the major source of input is private traders/dealers/service providers. However, among the members the dependence on these dealers is lower at 67% compared to 82% for the non-members growers.

Table 47 Sources of input by the growers (% Share)

Particulars	Members	Non-Members
Producer Societies (RPS)	20.5	9.7
Rubber Producer Companies	16.2	15.0
Other govt or cooperative agencies	8.6	6.2
Private traders/ dealers/service providers	66.7	81.9
Other farmers	0.9	0.9

Even within the members who purchased through RPS about 40% of them depended on RPS as a partial source for input purchases, with less than or equal to 50% of their spending on input purchases being made to an RPS. The remaining nearly 60% had more than 50% spending through RPS. In case of non-members among the 9.25% who did depend on the RPS for input purchases, 18 out of the 21 were spending more than 50% of their input purchase through RPS.

Table 48 Sources of input spending through RPS by the growers (number of growers)

Particulars	Non-member	Member	All
less than 0r -= 50%	3	30	33
50 to 75 %	6	9	15
more than 75%	12	29	41
total	21	68	89

Input purchase was less through RPS. But when the RPS were better performing, there was greater intake from the RPS, while their dependence on private traders reduced dramatically. When the GI was less than 0.4, the share of farmers depending on RPS for inputs were only 5.56%. This increased to 19.23 when the GI increased to the range 0.40 – 0.60. Though in the next two classes there is a fall in the share.

Rubber producer companies (RPC) are companies registered under the Companies Act, with capital investment from the Rubber Board, various share holding RPSs and the public. RPCs were also established at the behest of the Rubber Board to promote rubber procurement, sales and value-added activities. RPSs have strong trade ties with the RPCs. Better governing RPSs sell their output to RPCs mainly, apart from private dealers. Growers can directly sell to RPCs as well. It can be seen in our case that when both RPS and RPCs are taken together, the governance performance seem to have a substantial effect on the growers input sources. This is probably due to the exposure to RPCs that members of the RPS will have, which in turn may lead to greater input purchases from the RPCs.

Table 49 Governance Index and Sources of Inputs

Particulars	less than 0.40	0.40 to 0.60	0.60 to 0.75	greater than 0.75	Total
Producer Societies (RPS)	5.56	19.23	14.47	16.67	15.53
Rubber Producer Companies	1.85	9.89	22.13	15.69	15.18
RPS or RPCs	7.41	28.02	32.34	30.39	28.27
Other govt /coop agencies	7.41	4.95	8.94	7.84	7.33
Private traders/ dealers	85.19	72.53	70.21	59.80	70.51
Other farmers	0.00	0.00	2.13	0.00	0.87

As can be seen in the table below, private dependence reduces when governance is good and the farmer is a member. When GI was high and the grower a member nearly 37% of the growers used RPS or RPC as a source of input. But when the GI is low and the grower not a member, only 17% used these as sources of inputs. Also, as the GI improves and the grower is a member, the dependence on private dealers declines as can be seen from the table below.

Table 50 Sources of inputs by Governance Index (GI) and membership status

Particulars	High GI and RPS member	Low GI and RPS member	High GI and RPS non-member	Low GI and RPS non-member	Total
Producer Societies (RPS)	20.21	20.90	8.76	10.00	15.88
Rubber Producer Companies	20.73	9.70	19.71	6.67	15.52
RPS or RPCs	36.79	29.10	25.55	16.67	28.88
Other govt /coop agencies	9.84	6.72	6.57	4.44	7.40
Private traders/ dealers	61.66	73.88	75.91	76.67	70.58
Other farmers	1.55	0.00	1.46	0.00	0.90

Nevertheless, the key aspect to be noted is that there is still large dependence on the private dealers for inputs. The RPSs and RPCs are not the preferred channels for input purchase for most of the growers. So, the potential to improve input purchase through the RPCs and RPSs remain much unrealized. There is need to pass on these potential benefits for the farmers by improving the functioning of the RPS, increasing the presence of RPSs and the RPS becoming more inclusive in terms of membership.

Sales Channels

Very few members used RPS as their channel to sell their Rubber. Only 11.2% of the growers had used RPS as a source for the sale of Rubber. About 70 percent of the growers depended on the retail dealers and another 7.6 percent on wholesale dealers. The major channels of sales was with retail dealers, RPS played only a minor role. Within the members they were marginally more important than non-members, yet dealers continued to be the strongest marketing channel. So sales did not make any difference between member non-member or governance ranking. In effect , all depended on the dealers mainly and not on the RPS for sale of their NR.

Table 51 Marketing Channels for growers by RPS membership

Particulars	Non-Member	Member	All
Producer Societies (RPS)	8.4	13.1	11.2
Rubber Producer Companies	0.9	2.4	1.8
Other govtagencies	1.3	3.4	2.5
Retail dealers	69.2	70.9	70.2
Whole sale dealers	8.4	7.0	7.6
Export Traders	0.9	0.0	0.4
Manufacturers	0	0	0
Auction Centres	0	0	0

Processing and other value-added activities

The analysis highlights that although a wide range of production and marketing services is available to rubber growers, most still largely depend on their own arrangements. For example, a striking 67% of growers handle processing independently, while 25% do not use processing services at all, and none reported accessing this service from RPS companies. Similarly, 66.5% of growers manage transportation on their own, with 18% not availing the service and only 7.2% depending on privately owned providers. Storage follows a similar pattern: 68% arrange storage independently, whereas 28% do not use it. In the case of infrastructure-based services, 62.6% of growers maintain their own smokehouses and 58.7% own rollers; however, 31.8% and 26.2% respectively do not use these facilities at all.

Table 52 RPS Member's access to rubber production and marketing services

Particulars	% Share of availing the service	On my Own	Other farmers/family and friends	Producer Societies (RPS)	RPS companies	Rubber Board	Dealers/Privately owned service providers	Farmer producer organisations/NGO/ cooperative
		Share among those who availed the service						
Labour Bank/ Contract Labour	16.0	67.3	16.4	5.5	1.8	0.0	7.3	1.8
Processing	74.7	89.1	6.8	1.1		1.6	0.8	0.6
Transportation	81.3	82.1	5.1	3.4	0.7	0.0	8.7	0.0
Storage	71.9	95.2	1.5	1.5	0.3	0.9	0.3	0.3
planting and replanting	85.6	33.3	26.3	0.5	1.2	27.3	11.4	0.0
Price information of different markets	82.8	12.4	13.8	8.6	3.3	29.6	31.2	1.1
DRC testing	39.1	13.4	0.7	14.1	13.4	49.3	9.2	0.0
Grading	56.9	33.3	1.8	2.6	4.4	9.7	47.8	0.4
Smoke House	68.2	91.5	4.1	0.7	0.3	1.0	1.7	0.7
Roller	73.8	74.7	19.9	0.9	1.5	1.8	0.9	0.3
Skill training & enhancement	88.5	3.1	2.5	14.3	0.5	79.4	0.3	0.0
Information dissemination on new farming practices &	95.6	0.9	3.5	12.5	1.3	81.2	0.4	0.2
Intercropping	70.3	45.6	20.3	4.1	0.0	21.2	0.3	8.5
Production of rubber-based goods	20.5	16.9	0.0	7.0	0.0	74.7	0.0	1.4

Services requiring collective or institutional support, like labour bank and DRC testing, see very low uptake—84% and 60.9% of growers do not avail them—revealing gaps in institutional outreach. Among external providers, the Rubber Board plays a central role: it supports 68.7% of growers in skill training, 75.6% in information dissemination on new farming practices, and 28.9% in price information. Producer Societies (RPSs) also contribute, albeit modestly, serving about 14.8–15.6% of growers for training and technology dissemination. Farmer Producer Organisations and NGOs have an almost negligible presence, except in intercropping (8.5%). These figures underscore that while some growers benefit from institutional services, a significant proportion still operate in isolation, and overall engagement with RPSs remains limited. Strengthening the reach and effectiveness of RPSs and allied institutions is essential to transform these fragmented, individual strategies into coordinated, sustainable production and marketing systems.

The table 53 illustrates notable differences between members and non-members of Rubber Producer Societies (RPSs) in how they access critical support services. For price information, 25.9% of members rely on the Rubber Board compared to 19.6% of non-members, while 9.5% of members benefit directly from RPSs—significantly more than the 3.6% of non-members who do so. Private dealers remain an important informal channel, particularly for non-members (26.3%) compared to members (22.2%). When it comes to DRC testing, a large majority do not use the service at all (77.3% of non-members and 63.3% of members). Among those who do, 10% of members depend on the Rubber Board, while non-members rely much less (0%). RPSs and RPS companies each support 6.7% of members and 4.5% of non-members. Skill training shows the strongest institutional reach: the Rubber Board supports 67.2% of members and 56.2% of non-members, while RPSs serve 15.7% of members versus only 6% of non-members. Yet despite these differences, a significant portion of growers—21.9% overall—still do not participate in skill training. These figures point to a dual reality: members clearly have better access to formal institutional channels, especially the Rubber Board and RPSs, but many growers—especially non-members—remain disconnected, highlighting the need for strategies to extend the benefits of organised service delivery more inclusively across all growers.

The share of growers who do not have access to the service is higher than those who have access in the case of labor bank/ contract labor, DRC testing and production of rubber-based goods. Growers who have their own ways to access to the service are higher (more than 50%) in the case of processing, transportation, storage, smoke house, and roller. Among the service providers, rubber board holds a significant share on most of the services compared to others (even though for some services none of the growers depend on rubber board). Farmer producer organizations/ NGO/ cooperatives are the least depended source in many of the services (This acts as a significant provider in the case of intercropping only).The profitability of Rubber Producer Societies has been on a declining trajectory over the years, with some RPSs operating at a loss. Additionally, the ratio of liability to revenue has been consistently increasing. In contrast, their performance in terms of service delivery and infrastructure provision surpasses their profitability performance.The overall performance of Rubber producer societies is not satisfactory. A significant number of these societies fall short in terms of delivering adequate services and fostering active engagement among their members. The level of interaction between rubber growers and these producer societies for input, output, and marketing purposes continues to be minimal.

Table 53 Sources of price information, DRC testing, and skill training among members and non-members of rps

Particulars	Sources of price information			Sources of DRC testing			Sources of skill training		
	Non-members	Members	Total	Non-members	Members	Total	Non-members	Members	Total
On my own	9.4	9.9	9.6	4.5	10.0	7.7	1.7	3.0	2.4
Other farmers	10.7	8.2	9.4	0.0	0.0	0.0	2.6	1.5	2.0
RPS	3.6	9.5	6.6	4.5	6.7	5.8	6.0	15.7	11.1
RPS companies	1.8	3.3	2.6	4.5	6.7	5.8	0.0	0.7	0.4
Rubber board	19.6	25.9	22.9	0.0	10.0	5.8	56.2	67.2	62.0
Private dealers	26.3	22.2	24.2	9.1	3.3	5.8	0.4	0.0	0.2
FPO	0.4	1.2	0.9	0.0	0.0	0.0	0.0	0.0	0.0
Do not avail the service	28.1	19.8	23.8	77.3	63.3	69.2	33.2	11.9	21.9
Total	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0

Input usage, output sales and processing shows that while there were few takers among the growers for the RPS services, members tended to have relatively greater benefits from each of the above. The yield and profit premium received by the members were arising from the input, output and processing activities taken up by RPSs. However, the fact remains that these were limited to the very few growers that interacted with the RPSs and benefited from it. Because of the poor interaction between growers and RPSs the potential to achieve greater benefits were being limited. This lack of interaction between growers and RPS, in turn is a reflection of the lack of dynamism within RPSs. While growers stood to benefit from RPSs, RPSs themselves were not pro-active. Therefore there is need to activate the dynamism of RPSs and integrate the farmer with the RPSs.

5.8 Is there skewed self-selection as members of RPSs?

Testing for differences between the samples

The two-sample t-test with equal variance comparing the members and non-members across different important characteristics such as annual household income, land owned and area under cultivation show that there exists statistically significant mean difference between members and non-members. Moreover, all measured indicators are higher for the members than non-members, implying that the members differ from the non-members, and they do not belong to the same population.

Table 54 Comparison of Socio-economic Characteristics between Members and Non-members of RPS

Particulars	Member Mean	Non-Member Mean	Difference in mean	Difference in Std error	Pr (|T| > |t|)
Annual Household Income	2.922	2.607	0.315**	0.106	0.0030
Total Land Owned	2.703	1.631	1.072***	0.155	0.0000
Total Area Under Own Cultivation	1.011	0.562	0.449***	0.126	0.0004

The above test suggests that there exist systematic difference between members and non-members. Members are richer, with bigger land ownership and cultivation while non-members are worse off in all these dimensions. Are there entry barriers for marginal and small farmers to join the RPS?

6 Conclusions and Recommendations

The study reveals both their historical importance and the significant structural and functional challenges they face today. While RPSs have played a key role in improving market access, collective bargaining, and service delivery for smallholders, their current performance is marked by stagnation, uneven functionality, and heavy reliance on the Rubber Board for funding—a dependency that is itself vulnerable to fluctuations in state and central budget allocations. The reduction in subsidies and grants has already led to declining membership and weakened operational capacity.

Membership profiles further constrain effectiveness. Many RPS members are part-time farmers whose main incomes come from non-agricultural sources, reducing their incentive to actively participate in RPS activities. Active membership often remains below 50%, with decision-making concentrated among a small leadership group. Governance is further weakened by limited inclusiveness, with poorer and marginal farmers often underrepresented. Although members generally achieve higher productivity and profitability than non-members, these benefits are confined to a relatively small share of growers due to weak interaction and engagement between RPSs and their membership base.

Market and operational inefficiencies also undermine performance. The absence of standardized rubber quality determination systems creates persistent price uncertainty, even during periods of stable market prices, and limits farmers' bargaining power. Economic activities remain narrowly focused on the procurement and sale of unprocessed latex and field coagulates, leaving RPSs vulnerable to volatile rubber prices and missing opportunities in higher-value product segments. Infrastructure gaps—such as the lack of functional processing facilities, storage capacity, and quality testing equipment—further constrain their ability to add value, expand services, and compete effectively.

Finally, the lack of dynamism within many RPSs limits innovation, diversification, and youth engagement. With the majority of members over 50 years old, and younger farmers showing little interest in participation, leadership succession and long-term vitality are at risk. Weak inter-RPS linkages mean missed opportunities for economies of scale, shared investments, and stronger collective bargaining.

Despite these challenges, the study finds that RPSs retain strong potential to be revitalised as dynamic, self-sustaining institutions that deliver both economic and social benefits to rubber growers. This will require a strategic shift—towards economic independence through value addition and diversification, stronger governance and inclusivity, targeted infrastructure upgrades, improved market transparency, and active youth engagement. The Rubber Board's role must evolve from that of a direct financier to a facilitator that enables capacity building, market linkages, and investment in revenue-generating assets. Addressing these structural, operational, and market-related constraints will allow RPSs to transition from subsidy-driven bodies into resilient, competitive, and member-driven organisations. The recommendations that follow are designed to guide this transformation.

Recommendations

1. Enhance Economic Independence:

To enhance the economic independence of Rubber Producer Societies (RPSs), the study recommends a gradual transition toward autonomous, self-sustaining operations driven by income from paid services. Rather than relying heavily on subsidies, grants, and narrow revenue streams from raw rubber and input sales, RPSs should diversify into activities such as quality standardization, storage, transportation, and processing, which not only generate additional revenue but also add value to members' produce. Specialization across RPSs within a region—where some focus on processing, others on logistics, and others on value addition—can enable economies of scale, reduce duplication of effort, and foster inter-RPS cooperation. Such strategic differentiation, backed by investment in infrastructure and skills, would strengthen their bargaining power, improve market access, and secure financial resilience, thereby positioning RPSs as competitive, independent institutions capable of delivering sustained benefits to their members.

2. Promote Value Addition and Diversification:

The report highlights that most Rubber Producer Societies (RPSs) currently function as intermediaries, procuring and selling largely unprocessed latex and field coagulates—products with lower market value—while higher-grade rubber varieties are often sold by members directly to private dealers. This underlines a missed opportunity for value addition. To strengthen their market position and profitability, RPSs should expand into processing and manufacturing value-added rubber-based products, particularly in non-tyre segments such as gloves, mats, footwear, and industrial goods, where potential exists to capture a greater share of the final market value. Developing such capabilities would require investment in machinery, smokehouses, and skilled labour, which can be made more feasible through cooperative models and joint ventures among RPSs. Group marketing of processed and diversified products would enhance bargaining power, reduce transaction costs, and improve price realization. By moving beyond raw material sales into integrated value chains, RPSs can increase member incomes, reduce dependence on volatile raw rubber prices, and enhance long-term sustainability.

3. Strengthen Governance and Inclusiveness

Many Rubber Producer Societies (RPSs) face challenges of weak governance, declining active membership, and limited engagement from marginal and part-time farmers. Although overall membership has grown, active participation often remains below 50%, with governance in some societies dominated by a few individuals and lacking regular, transparent decision-making processes. Strengthening governance requires institutionalizing regular elections, clear accountability mechanisms, and transparent financial and operational reporting. Special attention should be given to ensuring the voices of smaller, marginal, and part-time farmers are represented in decision-making, as their interests may differ from larger producers. To boost member involvement and foster a stronger sense of ownership, RPSs could introduce low-cost but meaningful incentives—such as small rewards, recognition schemes, or prize events—for attending general body meetings. These measures can revitalize member engagement, improve trust in leadership, and enhance the societies' ability to function as truly democratic, member-driven institutions.

4. Support from the Rubber Board

The report indicates that a significant proportion of Rubber Producer Societies (RPSs) rely heavily on subsidies, grants, and loans from the Rubber Board, with some deriving over half of their annual revenue from such external support. While this assistance has been crucial in the early phases, prolonged dependency has limited the incentive for innovation, diversification, and financial self-sufficiency. The Rubber Board's role should evolve from being a direct financier to acting primarily as a facilitator—offering technical guidance, market linkages, and strategic advice to help RPSs develop sustainable business models. Initial loans or seed funding can still play a vital role, but they should be targeted toward building revenue-generating capacities such as processing facilities, storage infrastructure, and value-added product lines. By shifting focus toward enabling self-reliance rather than sustaining dependency, the Rubber Board can strengthen the long-term viability of RPSs and their ability to compete in the market without constant external financial support.

5. Address Quality and Market Uncertainty

The report shows that most RPSs trade in unprocessed latex and field coagulates, which fetch lower prices and are often sold without standardized quality grading. This lack of objective quality assessment creates price ambiguity, weakens farmers' bargaining power, and allows private dealers to dominate higher-value segments. Investing in modern, transparent quality assessment systems—such as Dry Rubber Content (DRC) testing and standardized grading facilities—would help RPSs offer credible quality verification, enabling farmers to secure fairer prices. In parallel, introducing e-auctions with RPSs acting as independent auctioneers could significantly improve price transparency, reduce reliance on intermediaries, and allow competitive bidding that reflects real market demand. Together, these measures would address quality-related inefficiencies, stabilize price expectations, and enhance growers' ability to negotiate better returns.

6. Attract Young Members and Build Dynamism

The report notes that RPS membership is dominated by older farmers—over 70% are above 50 years of age—with limited youth involvement, leading to reduced dynamism and long-term sustainability concerns. To attract younger members, RPSs must reposition themselves not merely as channels for rubber marketing but as hubs for business development, innovation, and diversified income opportunities. Showcasing the potential for ventures in value-added rubber products, agri-services, and allied businesses can make RPS participation more appealing to the younger generation. Additionally, creating a supportive environment for youth-led entrepreneurship—through mentorship, access to small business funding, incubation support, and decision-making roles within RPS governance—would inject fresh ideas and energy into these societies. Such steps can revitalize RPS structures, ensure leadership succession, and align the organization with modern market and technological trends.

7. Avoid Further Exclusion

The report cautions that as RPSs move toward commercialization and revenue-driven models, there is a risk that weaker and poorer farmers—often smallholders or part-time growers—may be sidelined if services and benefits are skewed toward larger producers. To avoid such exclusion, commercialization strategies must be paired with deliberate mechanisms to keep vulnerable members engaged, such as tiered service pricing, targeted training, and inclusive decision-making processes. Strengthening economic relevance through value addition, improving governance to ensure fair representation, and fostering inclusivity will enable RPSs to evolve from subsidy-dependent bodies into dynamic, self-sustaining organizations. By balancing commercial viability with social responsibility, RPSs can empower all categories of rubber growers and build a more resilient and equitable sector.

8. Bridge the Infrastructure Gap

The study shows that many RPSs lack essential infrastructure—only about 20% have their own offices, fewer than 16% possess storage or training facilities, and critical processing equipment such as smokehouses, rollers, and grading tables is rare and often non-functional. Even basic tools like weighing machines and DRC testing facilities are absent or in disrepair in a significant share of societies, limiting their ability to ensure quality, add value, or negotiate better prices. Bridging this gap requires targeted investment in shared facilities through cluster-based models, joint ventures, or public–private partnerships, supported by the Rubber Board via time-bound grants or low-interest loans tied to performance targets. Equally important is establishing maintenance systems and repair funds to keep assets operational. Strengthening infrastructure in this way would allow RPSs to expand services, improve product quality, and compete more effectively in the rubber value chain.

9. Revitalize Dormant and Weak RPSs

A substantial proportion of RPSs are currently defunct or operating well below their potential, reflecting issues such as weak leadership, poor financial health, and declining active membership. Rather than focusing on creating new societies—which risks replicating these structural weaknesses—priority should be given to revitalizing existing ones through targeted interventions. This could include intensive leadership development programs to strengthen governance capacity, financial restructuring plans to manage debt and improve cash flow, and tailored business plans to diversify revenue streams beyond raw rubber sales. Active member re-engagement is equally critical, which may involve outreach campaigns, participatory planning workshops, and linking tangible benefits (such as access to premium markets or input discounts) to active involvement. Strategic partnerships with well-functioning RPSs, federations, or private sector actors could also provide mentorship and operational support. By systematically addressing both governance and economic weaknesses, underperforming RPSs can be transformed into viable, competitive, and member-driven institutions.

10. Diversify Revenue Streams Beyond Rubber

Given the high volatility of natural rubber prices, over-reliance on a single commodity exposes RPSs and their members to significant income instability. Diversifying revenue streams is therefore essential for long-term sustainability. Beyond rubber marketing, RPSs can expand into allied agri-business activities such as offering intercropping advisory and implementation services, retailing agricultural inputs at competitive prices, and providing rural logistics solutions for transporting farm produce. They could also explore processing and marketing of other high-value crops cultivated in their regions, thereby tapping into additional markets and reducing dependence on a single commodity cycle. Such diversification would not only stabilise income but also make better use of existing infrastructure and organisational capacity. Partnerships with private enterprises, farmer producer organisations (FPOs), and cooperatives in related sectors could facilitate knowledge transfer, access to capital, and new market linkages. By building multiple, complementary income streams, RPSs can cushion the impact of rubber price fluctuations and create more resilient livelihoods for their members.

11. Strengthen Inter-RPS Linkages

Stronger collaboration between RPSs through federations or formal networks can significantly enhance their collective strength and market presence. By pooling resources, multiple RPSs can jointly invest in expensive infrastructure such as processing plants, storage facilities, or quality testing equipment, thereby reducing per-unit costs and improving utilisation rates. Such federated structures can also negotiate bulk contracts for both input procurement and rubber sales, securing better prices and terms than individual societies could achieve on their own. In addition, regular interaction within these networks would facilitate the exchange of best practices, technical know-how, and innovative business models, enabling weaker RPSs to learn from more successful peers. Federations could further act as a unified advocacy platform, representing member interests in policy discussions with the Rubber Board, government agencies, and large buyers. By institutionalising inter-RPS cooperation, the sector can achieve economies of scale, greater bargaining power, and more efficient use of resources, ultimately improving competitiveness and long-term sustainability.

12. Monitor and Evaluate Performance Regularly

Establishing a robust and regular performance monitoring system is essential to ensure that RPSs remain effective, accountable, and responsive to member needs. A structured framework should track key financial indicators such as revenue diversification, profitability, and debt levels; operational indicators including infrastructure utilisation, service delivery, and activity diversity; and member-centric measures such as participation rates, satisfaction levels, and perceived benefits. Data should be collected systematically—through internal records, periodic surveys, and third-party audits—and analysed to identify trends, strengths, and areas of concern. Early detection of issues like declining sales, reduced member engagement, or governance lapses would allow timely corrective action, preventing societies from sliding into dormancy or financial distress. Sharing performance results transparently with members can also enhance trust and encourage accountability among leadership. Over time, such a monitoring framework could be standardised across RPSs, enabling benchmarking, fostering healthy competition, and promoting continuous improvement within the network.

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APPENDIX

8. Case Studies

Discussion with growers, officials and functionaries of RPS

The points from the discussion with the growers (through telephone) are provided below.

- The Rubber board is providing grants through the societies.
- However small growers are not a member of any society. They are using the society for marketing their products and are not able to get the benefits from the society or rubber board.
- Competitions in the market reduce the demand of the society.
- Decrease in the price of the rubber force the small growers shift their cultivation to other profitable crops. Reduction of grants from the rubber board is another reason for shifting of cultivation.
- There is a misconception among many of the small growers that the members of the societies are corrupted.
- New cultivators in the rubber industry are not much aware of rules and regulations on the plantation of rubber. Therefore many of them fail to get benefits from the rubber board.
- It was pointed out that the rubber board took fewer efforts to convey the need and necessity for availing such benefits to the new growers.

1. Case studies

Discussion with Mss.Meenakumari (Field Officer)

- All kinds of benefit accessible to the members and non members of RPS
- RPS is functioning as a link between growers and rubber board
- RB easily can provide information, conduct meeting, introduce schemes, and smooth functioning through the RPS
- RPS suggestions are normally about training, extension and tapping gloves
- RPS external functions are buying estate inputs from RB and distribute to its members and non members, latex collection and sales
- Conducting audit in every two months gap
- RPS executive committee can claim TA, DA, sitting fee, etc according to the GB approval

Discussion with Kalamachal RPS Treasurer Premkumar(Ph: 9447267784)

- The filed officer is Mss.Meenakumari
- President of the Kalamachal RPS (Mr. Madhusudhan) is a Panchayat member and also a president of handloom society
- The earlier president was a government employ (Mr. Sabu). So he got resigned
- It is a small growers group with 180 members
- Registration fee is Rs.100 and annual subscription fee Rs. 50

- They are seven members of the executive committee
- Most of the members are pensioners
- Nobody is willing to become a president because it does not provide any financial benefits
- It is functioning to make benefits from the rubber board
- It is more or less functioning as Pangode RPS

RPS 2 :Karimannoor

The RPS was started with just 35 members in 1987, and has around 250 members now, where only 100 are active. The main activity of the RPS is to collect the latex, process and market it to potential buyers. The processing centre was built in 2005, with partial funding from rubber board. 90 % of all the members are male, where most of them are part time growers and they are also not active in the RPS. The RPS currently own 2 vechicle, 3 office space and 5 smoke houses. They employ around 8-9 daily workers. The inputs are bought from kanava latex, mainly sprayers and rain guards. Last year they were given subsidy from rubber board. They usually don't take up input distribution as there is not much profit they can earn from it. The tappers bank is not functional.

Processing is the most difficult part in the industry. There are not many tappers in the region, so they are dependent on RPS for processing. The only income they get is from the processing centre and the margin from selling the rubber. The RPS will collect Latex from the farmers with RPS own vehicle which they take a small amount as transportation fee, some of the farmers will directly take it to the RPS. Currently the RPS takes 8 rupees as processing fee, if the market price is 150 the RPS will buy the rubber sheet for Rs. 142 per KG from the farmers. Then they will make it into grade-1 sheet, and sell it for a premium amount. In some instance they couldn't hold it for so long that they were at loss. All smoke house uses, wood and bricket for processing. There is a heavy competition between the private dealers, but the RPS is not much affected from that because of the processing unit they own. They have currently a 10 lakhs overdraft and 3 lakhs loan from the members.

There is an annual general body meeting happening each year. The current president was in the board for the last 22 years, and he has been the president for 10 straight years. There are around 10-12 committee meeting every year.

Only a few people sell rubber sheets and field coagulum directly to RPS. There is 15 days gap in payment to their members but the members have no issue with that. The field coagulum is sold to kavana latex and the sheets to private dealers.

RPS 3 :Plamudy

The RPS registered in 1999 and got approved in 2001. There was no function till 2002. After that they started to collect latex for Periyar latex. Rubber board suggested Group Processing Centre (GPC), for this the RPS bought 20 cents of land, the GPC started functioning in 2003. 50% of the amount for setting up of GPC was given by the Rubber Board and the remaining money was taken on loan from the members, and it was later paid back within 5 years. There was around 46 members in 2001, now it has 198. Only active farmers are admitted as members, there are around 5-8% of women as members, and they are not much active after registration.

In 2012, they expanded to their 2nd smoke house. They don't provide any input to their members, as they cannot get any margin from that.

A lightning strike in 2016 severely damaged the office building. The calculated damage was 16 lakhs, but the insurance amount received was lesser due to depreciation.

A vehicle is hired for collecting the latex; it cost them very less because of the group coverage. Nearby growers directly come to the RPS with the latex. From 10-12 am the latex is collected, at the same time processing will also be done. They have an extra process where they drip the water from the sheet to make the drying process easier. There are around 14 processing labors; all of them are women.

Currently the RPS takes 10 rupees for processing 1KG of rubber. The RPS will buy the latex from the farmers on a market rate and process it into Grade -1 rubber sheets, which will be later sold on a better market rate and for a premium for Grade-1 rubber. They sell the products to both rubber board companies (TunchayathEzhuchathan, And Vempanayat Rubbers) and private dealers. A cooperation between RPS should happen for better bargaining power. Currently there is no government help for the RPS.

A small group of 10 people are in tappers bank, they are given schedule for the tapping and collecting latex. It is very difficult in going to fragmented land.

An annual general body meeting is held each year and committee meeting quarterly. Currently there are 7 members including the president. The president of the RPS was holding the position for the last 21 years. He was an ex-military and wanted to serve the village after his service in the army. Even though he says it's a service, it is seen that he is taking a small amount as honorarium. The RPS is sustainable by making a system, where the office staff can handle the functions, so even if the president retires the RPS will function.

- Annual body meeting and general body meeting are conducted, but changes in the committee are rare.
- Some RPS are sustaining just because of the enthusiasm of the president or committee members, whereas a system should be in place to make the RPS sustainable.
- Other than processing, a revenue generating activity by RPS is very minimal which will make it difficult to sustain in future.
- Cooperation between RPS in the same region can be thought, for better prices and bargain.
- Some changes in the laws of RPS can be made for better use of revenues and funds.

RPS 4: Peyad

Peyad RPS was started in 1990 with around 300 members, and now has 870 members. Some of the early members passed away, transferred the ownership or sold their land. The main activities of the RPS are selling of inputs on a subsidized rate and buying of latex from the farmer. Even though, there is a membership criterion, they don't exclude any of the non-members in the participating in the economic activity but they don't have any voting rights. They have share of RPC in which Rs.50000 is from Ponmudi Rubbers, Rs.25000 is from Ananthapuri Rubbers, and Rs.10000 from Rubtec India Rubbers. 90% of the members are part time growers.

Activities

They collect the latex from the farmers and sell them to Anantapuri Rubber Company. The tapped latex is collected in a tin which is placed in different collection points, when the tin is full it will be collected. The DRC is checked before fixing the rate.

They also provide all type of inputs to the farmers in a subsidised rate, as they are buying it in a wholesale rate from RPC like Anantapuri and Ponmudi. They buy in bulk quantity but the PRCs charge Transportation cost. Currently Peyad RPS is the largest buyer of Anantapuri. They also buy the inputs from private parties like Anna traders, as they provide quality products and they don't charge any transportation cost. There is a yearly sale of 9 lakhs to the farmers. Both members and non-members can buy the inputs from the RPS.

Their processing units are not being operational for the last 15 years, but decisions are made in the committee to restart the processing. In 2007 for processing 1 kg of rubber sheet, 2 rupees where charged. No changes in the processing fee were made when it was needed, even with the increase of the labour charge. This made the RPS to finally shut down the processing unit. Rubber board is not giving any assistance for any repairs or maintenance of the processing units.

Rubber board gives a small amount for starting tappers bank. The RPS started a tapper's bank with around 15 members. There is a welfare fund by taking a monthly 500 rupees. No new incentives for the tappers from the Rubber board. The members of the tapper bank are given a financial assistance in the time of any accident or disease to the affected member from RPS. These make members of tappers bank to feel connected to the RPS. Other than Tappers bank Peyad PRS also gives training to the members.

Executive Committee and members

Regular committee meetings and general body meetings are held, this make the RPS more transparent. In other RPSs, the committee meeting doesn't happen often, one reason for this maybe that the committee members are too old. For the last three years executive committee meetings were held regularly. Last year, 8 executive committee meetings were held. President, Vice president, public information officer, and 5 assistant development officers were part of the committee. A sitting fee of 150 was given to the committee members. The current President of the RPS is at the position for last 9 years, before that he held the position of vice president. RPS President had done many volunteering works, and held positions at Kerala *VyapariVyavasayiEkopanaSamithi* and Rubber Board. The RPS president is given a honorarium of Rs.3000 per month

Most of the members of the RPS are in the age group of 40-50. Women members are more than that of the male members, but the participation rate is very less. This is mainly because they are joined by the male counterparts of the family when the land is transferred, but have no interest in the RPS activities.

Takeaways

- The RPS tries to make the activities and financial matters as transparent as possible
- They conduct regular meetings
- They provide services for both members and non-members.
- The commitment and leadership skills of the RPS president is the main reason behind the better performance of this RPS.

One of the strong pillars of the RPS is the President of the RPS itself, the level of commitment is unmatchable. But the question is what if he is changed from the position? Will the RPS perform the same, or will it get shut down?

Key insights from case studies

- Even though people signup for the membership, over the years the active participation of the members reduces.
- Most of the members in the RPS are male and they are above the age of 60.
- Selling inputs is not profitable for the RPS in most of the case, as there is not much difference the price they are selling and from private players. RPS also has to take up the cost of transportation and storage.
- Tappers bank is not working properly
- Processing is the main Revenue gaining activity by the RPS, but for initial setup of the processing centre a huge amount and land is needed.
- There are two price system followed by the RPS for processing,

1. Risk free -

The RPS will take a fixed amount as processing fee (say 15), the rest of the amount from selling the Rubber will be given back to the farmer. For example, if the farmer has 1KG of rubber and the current market price is 150 Rupees, the RPS will give 135 to farmers after selling (after taking the processing fee).

2. Risk taker –

The RPS will buy the latex directly from the members by deducting a small amount (8-10 rupees) as processing fee and they will give the money within 15 days, the RPS will make Grade-1 rubber sheet out of it, and sell it for a more margin than the market rate. For example, if the farmer has 1KG of rubber and the current market price is 150 Rupees, the RPS will give 140 to farmers, then they will process grade-1 sheets and sell at a price more than that of market price or will stock till the market price increases.

9. APPENDIX

Table

	Low governance index and non-member			Low governance index and Member			High governance index and non-member			High governance index and Member		
Variable	**No. Growers**	**Average production (kg)**	**Total production (kg)**	**No. Growers**	**Average production (kg)**	**Total production (kg)**	**No. Growers**	**Average production (kg)**	**Total production (kg)**	**No. Growers**	**Average production (kg)**	**Total production (kg)**
Latex_DRC	13	558.5	7261.0	20	1009.8	20196.0	13	663.5	8624.9	22	644.5	14180.0
RSS3	0		0.0	0		0.0	0		0.0	0		0.0
RSS4	30	692.0	20760.0	76	1155.1	87791.3	67	613.8	41124.0	113	966.9	109260.0
RSS5	18	425.6	7660.0	31	645.2	20000.5	64	375.7	24044.0	76	575.7	43753.0
Other	7	298.4	2089.0	2	105.0	210.0	0		0.0	2	140.7	281.4
ungraded	8	254.0	2032.0	7	341.7	2392.0	2	212.5	425.0	1	1500.0	1500.0
Field Coagulum	63	75.4	4751.3	112	131.2	14692.6	121	92.3	11173.5	167	140.1	23400.7
total			44553.3			145282.4			85391.4			192375.1
Land (acre)	90	1.2	104.2	134	1.7	232.0	137	1.1	146.3	193	1.5	289.2
Yield (kg/acre)			427.7			626.3			583.9			665.3

Table Revenue and price

Variable	**Low governance index and non-member**		**Low governance index and Member**		**High governance index and non-member**		**High governance index and Member**	
	avg price (Rs./kg)	**Tot. revenue**	**avg price (Rs./kg)**	**Tot. revenue**	**avg price (Rs./kg)**	**Tot. revenue**	**avg price (Rs./kg)**	**Tot. revenue**
Latex_DRC	104.6	759293.0	109.7	2215363.9	103.4	891847.0	107.8	1528245.1
RSS3		0.0		0.0	115.0	0.0		0.0
RSS4	118.6	2462738.0	118.2	10377610.5	121.7	5005773.3	120.0	13112653.8
RSS5	115.3	883378.1	115.5	2310767.7	115.8	2784905.9	117.3	5131700.4
Other	114.7	239638.2		0.0		0.0	117.0	32923.8
ungraded	105.9	215138.0	107.4	256900.8	116.5	49512.5		0.0
Field Coagulum	71.4	339135.2	75.8	1114169.7	72.6	811715.3	74.5	1743115.2
total revenue		4899320.6		16274812.6		9543754.0		21548638.3
revenue per acre		47037.4		70156.0		65255.5		74517.6
cost per acre		17750.5		27971.4		28608.8		35430.8
Revenue-Cost (Gross Profit) per acre		29286.9		42184.6		36646.7		39086.9


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