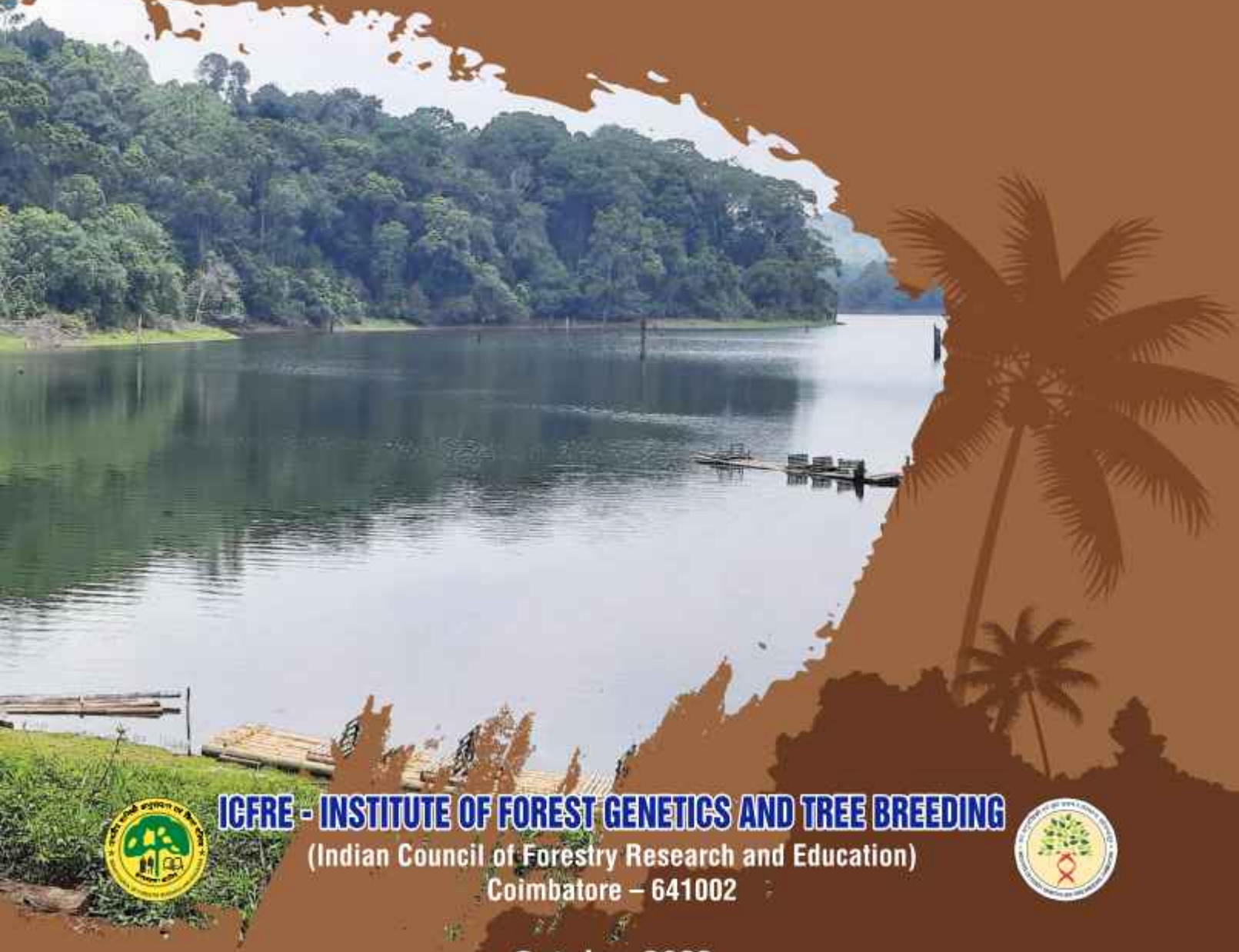
Third Party Monitoring and Evaluation of CAMPA Plantations and Other Activities

for the period
2014-2016

Submitted to
Kerala Forests & Wildlife Department (CAMPA)



ICFRE - INSTITUTE OF FOREST GENETICS AND TREE BREEDING
(Indian Council of Forestry Research and Education)
Coimbatore – 641002

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Preface

The State of Kerala established the Compensatory Afforestation Management and Planning Authority (CAMPA) Scheme in 2009 to encourage afforestation, reforestation and restoration/regeneration activities to compensate for forest land diverted for non-forest purposes, and enhance the state's forest cover. The Kerala Forests & Wildlife Department prepared the Annual Plan of Operations (APO) for the years 2014-2015 and 2015-16, which the MoEFCC, GoI approved. As per the APOs, the state planned various activities, including compensatory afforestation, soil and moisture conservation, biodiversity conservation, awareness campaigns on forests, wildlife and the environment, eradication of invasive alien weeds, river bank stabilisation, protection of research plots and seed production areas, creation of fire breaks and other essential maintenance activities towards forest conservation. All these activities were spread across the forest divisions of the state, including wildlife sanctuaries. The success and sustainability of these CAMPA activities, including structures established and plantations raised in terms of planning, implementation, the quantity of inputs, condition of health and survival, and outcomes, need to be evaluated and documented for monitoring purposes by an independent agency. Accordingly, ICFRE - IFGTB, Coimbatore, which was awarded the monitoring of CAMPA activities, have been involved in the work since March 2022. The sampling methodology approved by MoEFCC was broadly followed, and a detailed survey, monitoring and evaluation exercises were conducted to represent all the forest circles and plantation models adopted in a given year. Overall the CAMPA activities undertaken during 2014-16 supported the forests and contributed to enhancing forest health in Kerala. I gratefully acknowledge the Kerala Forests & Wildlife Department for their support and assistance in bringing out this document in a comprehensive manner.

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We acknowledge the Kerala Forests & Wildlife Department for identifying ICFRE - IFGTB, Coimbatore, to evaluate the CAMPA activities carried out from 2014 to 2016. We sincerely thank the PCCF & Head of Forest Force for facilitating this special assignment. We would like to express our gratitude to Shri. Rajesh Ravindran IFS, APCCF & Chief Executive Officer CAMPA, Kerala, for facilitating the evaluation work and extending valuable guidance in finalising the formats for assessment of different CAMPA activities in the state. We express our sincere thanks to all the Divisional Forest Officers, Range Forest Officers, Frontline Field Staff and Vana Samrakshana Samidi members for their assistance in providing the assessment teams with the essential logistics and information during the on-site evaluation.

ICFRE - IFGTB

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FACT SHEET

S. No.	Item	Details
1.	Scope of evaluation	Third-party monitoring and evaluation of the CAMPA Activities of Kerala Forests and Wildlife Department (2014-2016).
2.	Period of evaluation work	Signing of MoU – March 2022. Field works – April to June 2022. Report preparation – July to October 2022.
3.	Focus	Quality of conservation and development works. Assessment of compensatory afforestation activities. Public awareness campaigns.
4.	Number of evaluation teams	15 Evaluation Teams and one editorial team.
5.	Objectives	• To evaluate different plantations established under CAMPA in different forest divisions of Kerala. • To evaluate the civil structures (buildings and soil & water conservation structures) established under CAMPA in different forest divisions of Kerala. • To suggest for improvement in quality of plantations for future.
6.	Area covered	25 territorial forest divisions. 14 social forestry divisions. 11 wildlife divisions.
7.	Sample size	**Plantation:** 20% plantation randomly selected from various divisions. Sampling intensity for evaluation is nearly 10% for block plantations. For every hectare (ha) of plantation, the evaluation to be done on a 30 x 30 m plot. In the case of a linear plantation, evaluation of every 10th tree/planted sapling of each row for 25% of its length per running km basis. **Soil and Moisture Conservation(SMC) activities:** 20% of SMC works evaluated in each division based on random selection from measurement book (Mbook). **Eradication of weeds:** Density assessment and plot transects. **Forest protection:** 10% of all firelines evaluated in each division.
8.	Findings	• The average survival rate in ecorestoration activities is 45%. *Wrightia tinctoria* and *Hopea ponga* recorded more than 60 per cent survival in various locations. • The quality of other departmental works was rated as high (86%) • Check-dams and gullies are the major SMC works taken up. • The involvement of the Vana Samrakshana Samidi in various department activities has ensured a participatory approach to the protection and conservation of forests.

EXECUTIVE SUMMARY

The Forest (Conservation) Act 1980 was enforced to conserve and protect forest resources. The Act mandated that whenever forest land is diverted for non-forestry purposes usually the conditions relating to transfer, mutation and declaration as Reserve Forest/Protected Forest, the equivalent non-forest land for compensatory afforestation and funds for raising compensatory afforestation etc., are to be imposed. Additional conditions such as maintaining a safety zone area, fencing and regeneration etc., are prescribed for mining purposes, and catchment area treatment plans are stipulated for big and medium irrigation projects. Further, the Act provided that the non-forest land for Compensatory Afforestation (CA) was to be identified contiguous to or close to Reserved Forest or Protected Forest. The funds for CA are received from the user agencies based on the rates fixed by the State Forest Department, which are site-specific and vary according to the species, type of forest and site. The fund received for compensatory afforestation, additional compensatory afforestation etc., has to be used as per site-specific schemes submitted by the state along with the approved proposals for diversion of forest land. After receipt of the fund, State Forest Department has to accomplish the afforestation for which money is deposited in the CA fund within a period of one year or two growing seasons.

The Compensatory Afforestation Fund Management and Planning Authority (CAMPA) Kerala has been constituted with the objective of conservation, protection, regeneration and management of existing natural forests, wildlife and their habitat and raising site specific compensatory afforestation, penal compensatory afforestation etc. As per the provisions of CAMPA guidelines, the state CAMPA has been formulating Annual Plans of Operation (APO) since 2009-10. The APO for the period 2014-15 to 2015-16 were approved vide No. 15-2(18)/2017-CAMPA dated 18.12.2017.

The Government of India released **Rs. 14,65,00,000** for 2014- to 2016 to Kerala to implement the activities.

The Assignment

As a range of activities were taken up under CAMPA, a technical evaluation of the activities by a third party was considered essential. ICFRE - IFGTB was identified to carry out third party monitoring of all the CAMPA interventions since 2009-10 (File No. FC5-1433/2021 dated 28.01.2022). The broad scope of evaluation comprised all the components and sub-components of CAMPA implementation in Kerala.

Study Area

The evaluation study covered 50 forest divisions of Kerala (25 territorial, 14 social forestry and 11 wildlife divisions) under 11 forest circles. In addition works places and research divisions where CAMPA funds were utilised are also covered in the study.

Study Approach and Methodology

Various CAMPA interventions were evaluated using appropriate sampling criteria, data collection approaches and, in view of diversity, nature of component and stakeholders involved. The study approach and methodology have been adopted from the evaluation formats of the MoEFCC, GoI.

Details of Data Collection

- **Primary Data:** First hand information was obtained using specifically designed formats for different components and subcomponents.
- **Secondary Data:** Secondary data relating to various activities undertaken in CAMPA were collected from the circle, division and range offices in pre-designed formats and checklists.
- **Focussed Group Discussion (FGD):** FGDs with the members of the Vana Samrakshana Samidi were conducted to evaluate peoples' perceptions and participation levels in implementing CAMPA activities in a given locality.
- **Consultation with Forest Officials:** Consultations were undertaken with a range of forest officers involved at various stages such as planning and decision making, implementation, monitoring and evaluation. This includes Divisional Forest Officers (DFOs), Forest Range Officers (FROs), Forest Beat Officers (FBOs), Foresters, Forest Guards, etc.
- **Field Observation:** Data on survival, field measurements to assess growth in different plantations, condition of physical structures in SMC activities and weed density in plantation sites were collected. Notes were prepared on various activities under CAMPA implementation, which provides the basis for the entire evaluation process.

Performance of CAMPA during the period 2014 to 2016

- The total funds received from the adhoc CAMPA forthe APO years 2014-16 stands at Rs. 14.65 crores, and the expenditure ending March 2016 was 12.04 crores which is 82.18% of the funds received. The core activities undertaken with the CAMPA funds comprise plantations, the creation of SMC structures, forest protection, wildlife management and assistance to tribal VSS.
- The non-core activities comprised biodiversity conservation, capacity building, infrastructure development, forest information technology, monitoring, evaluation and accounting.
- During the initial years of CAMPA APOs, assistance to tribal VSS, improving the infrastructure for protection, soil and moisture conservation activities and capacity building were prioritised (80%).
- Various SMC structures in CAMPA APOs included check dams, contour trenches, gully plugging etc. SMC structures undertaken by frontline forest officers under CAMPA are site-specific as per the site requirement.
- Focus on ecorestoration, planting and silvicultural operations were higher than the initial years of CAMPA implementation. Most activities were done departmentally, an economical and time-saving approach. River bank stabilisation was taken up in one site.
- Turtle conservation and monitoring and use of microchip reader for captive elephant management was introduced during this period.

- This period witnessed many capacity development programmes for staff and VSS, including theme-based trainings, strengthening communication and plantation skill development. This has enabled inclusion of VSS members in patrolling, fire break creation, and developing infrastructure in interior forest areas, encouraging and ensuring their active participation in conservation activities.
- Under infrastructure development, efforts was taken to repair/improve dilapidated structures. The major construction activities undertaken with the help of CAMPA funds were antipoaching campsheds.
- Efforts were also taken to improve connectivity through roads, footbridges and culverts.

Recommendations & Suggestions

1. Species should be selected on the basis of floristic composition of the forest types and prevailing local soil condition of the afforestation / plantation site.
2. De-centaralized local nurseries for production of forest type-specific planting stocks may be promoted.
3. Maintenance and watch and ward may be continued for 4 to 5 years for better establishment.
4. Number of watchers should be increased proportionate to the size of the plantation site.
5. There should be a provision in CAMPA APOs for the periodic maintenance of SMC structures as most SMC structures are subject to heavy wear and tear due to recurrent floods.
6. Buildings / structures constructed during this period needs to be repaired and maintained. In some cases, renovation / refurbishing may also be done based on a fixed schedule.
7. It is better to avoid plantations deep inside forests, with heavy movement of wildlife, as monitoring of the plantations are difficult. Instead, manual seeding may be done by adopting seed ball technology. Seeds to be broadcast should match the floristic composition of the respective forest types.
8. The front line staff may be trained on seed handling and nursery technologies of native tree species.

Monitoring and Evaluation of CAMPA Plantations and Other Activities (2014 – 2016)

1. Introduction

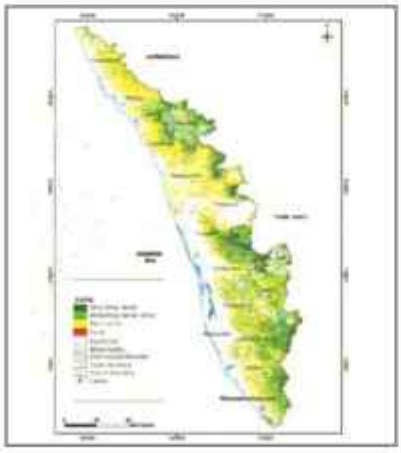
1.1 Background

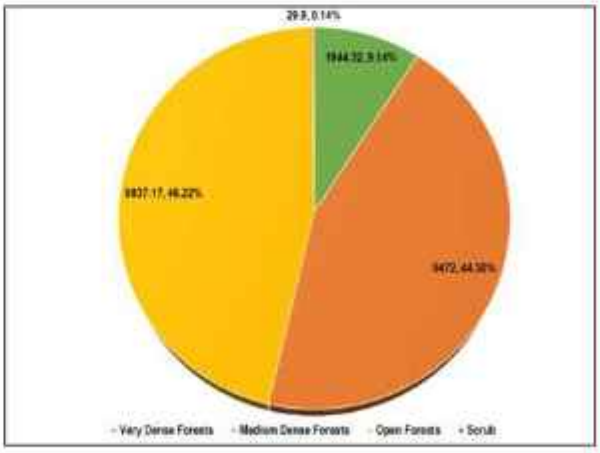
Forests in India comprise diverse forest types and reserved areas accounting for about 24.62% of the country's geographical area. Forest provides livelihood support to the people living in and neighborhood. Forests are the most significant natural carbon sinks and regulate water regimes. Given that the forest sector provides goods and services to humankind, forest land is diverted for developmental activities for non-forestry purposes, consequently leading to considerable shrinkage of forest cover.

Kerala is endowed with rich natural resources. The conducive tropical climate favours forests with rich biodiversity and endemism. The Western Ghats, one of the biodiversity hotspots, runs all along the eastern boundary of Kerala. Unfortunately, the increasing population and changing lifestyles exert tremendous pressure on forests. The greatest challenge today is to accommodate developmental needs by minimising the destruction of its pristine forests.

1.2 Forest Cover in Kerala

The forest cover in the state based on the interpretation of the Forest Survey of India (FSI) 2021 is 21,253.49 sq km which is 54.7% of the state's geographical area. Forest cover in the state has increased by 109 sq km compared to the previous assessment reported in ISFR 2019. Among forest canopy density classes, the state has 1944.32 sq km area under very dense forest, 9472 sq km area under moderately dense forest and 9837.17 sq km area under open forest.





Source: *ISFR, 2021*

1.3 Forest Cover In Kerala From 2007 To 2015

Forest cover in the state has been increasing over the years. Forest conservation and afforestation activities are the key reasons for the improvement.

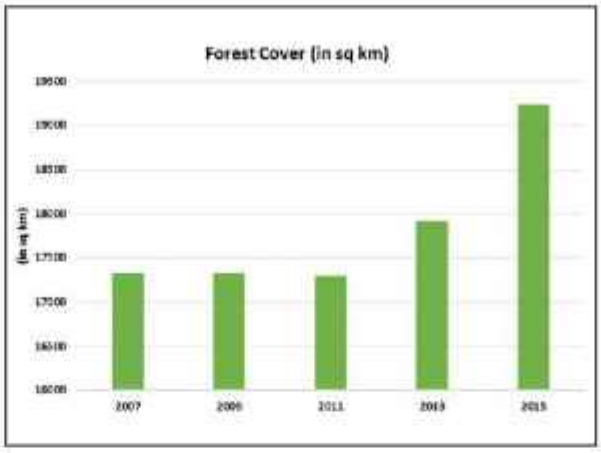


Figure 1.1 Forest Cover In Kerala From 2007 To 2015

1.4 District-wise Forest Coverage in Kerala

Table 1.1 provides the district-wise forest coverage in Kerala (Area in sq km), and the tree map at Fig 1.2 provides the distribution across districts.

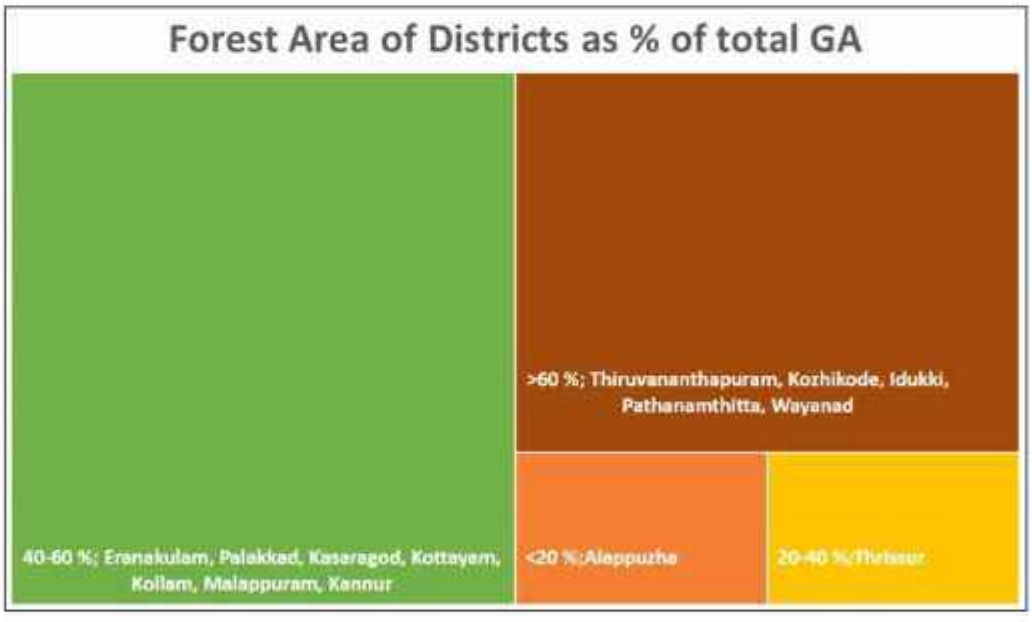


Figure 1.2 Forest area of districts in Kerala

Table 1.1 District-wise forest coverage in Kerala (Area in sq km)

District	Geo-graphical Area (GA)	VDF	MDF	OF	Total	%of GA	Scrub
Alappuzha	1415	0	27	53.54	80.54	5.69	0
Eranakulam	3063	165.52	614.4	604.56	1384.48	45.2	5.6
Idukki	4356	355.72	1783.33	1016.27	3155.32	72.44	2.51
Kannur	2961	58	489.63	1121.23	1668.86	56.36	0.18
Kasaragode	1989	1.9	288.7	692.97	983.57	49.45	0
Kollam	2483	104.4	656.88	572.5	1333.78	53.72	0

District	Geo-graphical Area (GA)	VDF	MDF	OF	Total	%of GA	Scrub
Kottayam	2206	11.31	525.73	562.01	1099.05	49.82	0
Kozhikode	2345	70.77	409.94	967.11	1447.82	61.74	0.8
Malappuram	3554	142.67	424.68	1416.32	1983.67	55.82	6.47
Palakkad	4482	402.14	637.77	1063.77	2103.68	46.94	12.71
Pathanamthitta	2652	164.92	1229.12	554.88	1948.92	73.49	0.51
Thiruvananthapuram	2189	59.12	702.42	555.5	1317.04	60.17	0.07
Thrissur	3027	218.86	477.79	469.6	1166.25	38.53	0.62
Wayanad	2130	188.99	1204.61	186.91	1580.51	74.2	0.43
Total	38852	1944.32	9472	9837.17	21253.5	54.7	29.9

Source: *Kerala ENVIS, 2022*

Comparing district-wise area cover in Kerala, Idukki has the largest forest cover (3155 sq km) in the state, followed by Palakkad (2104 sq km), Malappuram (1984 sq km), Pathanamthitta (1949 sq km) and Kannur (1669 sq km). In terms of percentage of forest cover concerning the total geographical area, Wayanad with 74.2% has the highest forest cover, followed by Pathanamthitta (73.49%), Idukki (72.44%), Kozhikode (61.74%) and Thiruvananthapuram (60.17%). The table reveals an increase in forest cover by 109 sq km compared to the previous assessment (in 2019).

Nearly 60 lakh ha of forest is degraded with less than 40% canopy density. This is the target area for the afforestation programmes. Forest plantations extend over 1.56 lakh ha, teak being the major species, covering almost 50% of the total plantation area, followed by mixed plantations and eucalypts. The natural forests, plantations and homestead gardens contribute to the state's green cover, and all these are required in forest management.

2. Project profile

Compensatory afforestation programmes in the state were initiated in 1993, and plantations were maintained until 2002-03. The Government of India notified the Compensatory Afforestation Fund Management and Planning Authority (CAMPA) in April, 2004. The state CAMPA receives funds collected from user agencies towards compensatory afforestation, additional compensatory afforestation, penal compensatory afforestation, Net Present Value (NPV) and all other amounts recovered from such agencies under the Forest (Conservation) Act, 1980. Kerala state CAMPA was constituted in November 2009.

Kerala Forests & Wildlife Department (KFD) has been receiving funds since 2009 from CAMPA, MoEFCC, GoI for various developmental activities such as afforestation programs, soil and moisture conservation works, capacity building for staff and local communities, the establishment of civil structures, etc., in various forest divisions of Kerala. The funds were spent for compensatory afforestation, biodiversity conservation, soil and moisture conservation, etc. The Chief Executive Officer, CAMPA, Kerala, is responsible for preparing the schemes, Annual Plan of Operations (APO) for CAMPA, and getting it approved by the Executive Committee, Steering Committee and the Government of India,

followed by implementation of the approved APO. After receiving the fund allotment under State CAMPA, the implementing officers, the DFOs execute the assigned activities as per the APO. Under each major heads, there are different subheads available, which vary according to site conditions and needs.

The total outlay of the CAMPA activities from 2014 to 2016 is Rs. **14.65** crores. The details of the divisions, and the number of activities against different years are in Annexure-III.

3. Methodology

Physical Verification of Activities

I. Plantation - *Methodology*

- 10% plantation randomly selected from various divisions.
- Sampling intensity for evaluation - 10% for block plantations.
- For every hectare of the plantation, the evaluation was done on a 30 x 30 m plot.
- Each plot was marked on a map of the plantation area, and GPS co-ordinates of all such (30 x 30 m) plots were collected.
- In case of linear plantation, every 10th tree/planted sapling of each row was evaluated for 25% of its length per running km basis (5 intermittent line transects – each for 5% of length per running km).
- The evaluation was done on 0.1 ha by laying a 30 x 30 m plot based on random sampling.

II. Soil and water conservation measures

(a) The teams obtained the norms and expenditure of SMC activities taken up in the plantation site from the respective offices.

(b) The teams assessed the quantity/ present condition/ treatment plans of the different SMC works. 20% sampling was carried out.

(c) For civil works, 50% M & E was carried out, based on random selection from measurement M-books from various divisions.

III. Eradication of weeds

Density assessment - plot counts

- Three or more plots (quadrats) of size 10 x 10 m (located randomly over the site) were marked, and the number of plants within the plots was counted.
- To get the actual number per ha, multiplied the average number of plants in the plots by 100.

Plot transects

- Marked out 100 m transects, keeping them parallel to one another (10m-50 m apart). Using a 2 x 2 m plot frame (using a rope) plots were placed at intervals along the transect.

- The number of plants within the plot was counted. The values were converted to density measure by averaging the number of plants in each of the plots (i.e. individuals per ha)

IV. Forest protection

- 10% of all firelines were evaluated in each division based on random selection from M-books from various divisions.

V. Qualitative Aspects

Focussed group discussion : FGD was conducted for 10% of the villages in which CAMPA works were undertaken with at least 15 villagers in a commonplace within the village. The group comprised office bearers of Joint Forest Management Committee, Below Poverty Line households, and village residents.

Ranking of individual projects

The criterion below was used to evaluate the project needs since the site parameters, species and inputs provided vary from site to site.

Site suitability	High	Medium	Low
Suitable area with favourable site condition rainfall, soil, etc.	7 to 10	>3 to<7	≤3
Medium quality forest sites	>5	2-5	≤2
Poor forest sites	> 4	2-4	≤2

Criteria for classifying a site into suitable site, medium site and poor site

(a) **Suitable site:** soil depth more than 61 cm, rainfall range between 1270 to 3810 mm, average prevalence of adverse biotic factors, gentle to moderate slopes.

(b) **Medium site:** Soil depth ranges between 30.4 cm to 61 cm, rainfall ranges between 889 to 1270 mm, average prevalence of adverse biotic factors, gentle to moderate slopes.

(c) **Poor site:** Soil depth less than 30.4 cm, rainfall less than 889 mm and excessive prevalence of mist and fog during monsoon, prevalence of adverse biotic factors and steep slopes.

This approach involved aggregating the percentage of readings falling into the three higher ratings (3-5) under the 'satisfactory' and the two lower ratings (1-2) under 'unsatisfactory'. The introduction of these two broad categories allowed better tracking of performance trends. The ranking table is provided below

Score	Assessment	Category
5	Highly satisfactory	Satisfactory
4	Satisfactory	
3	Moderately satisfactory	
2	Unsatisfactory	Unsatisfactory
1	Highly Unsatisfactory	

Physical verification

Each of the selected plots were visited by the monitoring team and the following details documented in the field.

- Plot location with GPS co-ordinates and area
- Plantation type and design (wherever available)
- Year of establishment
- Number of saplings planted initially (species wise)
- Height of the saplings when planted
- Number of plants surviving at the time of monitoring
- Average height of surviving plants
- Species composition and distribution
- Protection measures and maintenance
- Anthropogenic pressure, etc.

Parameters considered during M&E

- **For plantations**

a. **Qualitative** – site suitability (both climatic and edaphic factors), condition of the plantation, choice of species, etc.

b. **Quantitative** - Total seedling/tree height, collar girth/GBH, survival percentage, etc.

c. **Other parameters** – Management practices, biotic and abiotic factors, etc.

- **For civil constructions**

a. Verification (sketch and dimensions) based on the original documents and M-book.

Deliverables and time schedule

Work plan submission	One week after signing the agreement
Field Data Collection	Two - three months
Draft report submission	One month after field Data Collection
Final report submission	Two months after draft report submission
Total Duration	6 months

4. Evaluation Details of the Circles and Divisions

The details of various circles and divisions evaluated are presented below.

	Circles	Divisions
Territorial Circles and Divisions	Northern Circle, Kannur	Kannur, North Wayanad, South Wayanad and Kozhikode Forest Divisions
	Eastern Circle, Palakkad	Nilambur North, Nilambur South, Mannarkkad, Palakkad and Nenmara Forest Divisions
	Central Circle, Thrissur	Thrissur, Chalakkudy, Vazhachal and Malayattoor Forest Divisions

	Circles	Divisions
	High Range Circle, Kottayam	Kothamangalam, Mankulam, Munnar, Marayoor and Kottayam Forest Divisions
	Southern Circle, Kollam	Ranni, Konni, Punalur, Thenmala, Achenkovil and Thiruvananthapuram Forest Divisions
Wildlife Circles and Divisions	Wildlife, Palakkad	Aralam, Wayanad, Parambikulam, Peechi and Silent Valley National Park Wildlife Divisions
	Field Director Project Tiger, Kottayam	Munnar, Idukki, Periyar Tiger Reserve East & Periyar Tiger West Wildlife Divisions
	Agasthyavanam Biological Park, Thiruvananthapuram	Shendurney and Thiruvananthapuram Wildlife Divisions
Social Forestry Circles and Divisions	Social Forestry, Kozhikode	Kasargode, Kannur, Wayanad, Kozhikode and Malappuram Social Forestry Divisions
	Social Forestry, Ernakulam	Palakkad, Thrissur, Ernakulam and Idukki Social Forestry Divisions
	Social Forestry, Kollam	Alappuzha, Kottayam, Pathanamthitta, Kollam and Thiruvananthapuram Social Forestry Divisions
Research Circles & Research Divisions	Working Plan & Research	Kozhikode, Palakkad, Munnar, Punalur and Kollam Working Plan Divisions as well as Research Division, Thrissur Research Division

Eastern Circle, Palakkad (2014-2016)

The evaluation covered five forest divisions of the circle. They include

1. Mannarkkad
2. Nenmara
3. Nilambur North
4. Nilambur South
5. Palakkad

Five different activities have been undertaken in the circle. The distribution of activities is as follows:

S. No.	Activity	Divisions
1.	**Assistance to tribal VSS**	Nilambur, Nenmara , Mannarkkad and Palakkad
2.	**Construction & maintenance of campshed**	Nilambur, Nenmara , Mannarkkad
3.	**Improving connectivity**	Nilambur, Nenmara , Mannarkkad and Palakkad
4.	**Purchase of equipment**	Nilambur and Nenmara
5.	**Training to staff**	Nilambur, Nenmara , Mannarkkad and Palakkad

1. Assistance to tribal Vana Samrakshana Samidi

Tribal VSS were engaged as fire mazdoors during 2014-15 and 2015-16 in Forest stations of Kalikavu, Karulai ranges of Nilambur South; Alathur, Nelliampathy, Kollengode ranges of Nenmara and Nilambur North. The activities include effectively laying fire lines and fire control measures. In addition, basic infrastructure, including LPG connection,has been provided to the tribal families in Nilambur, Palakkad and Mannarkad. Solar street lights were provided to the tribal settlements in Mannarkad, Agali and Attapadi ranges. The records were verified and found correct.

LPG Cylinder provided at Nilambur and Solar lights at Attapadi

2. Construction & maintenance of campshed

Sites	GPS Location	Year of Construction	Dimensions (m)	Remarks
Kozhippara, Edavanna range/Nilambur North	N11°4'25.0" E76°04' 28.0"	2014-15	12x5x5	Physically verified the structure and the condition is good. Painting works were undertaken during the period.
Panapuzha/Karulai/ Nilambur South	N11°4'19" E76°4'26.0"	2014-15	7x5x3	Physically verified the structure and the condition of the structure is good. A water tank was fixed during the period.
Kadappara/Alathur/ Nenmara	N10°28'23.24" E76°33'11.84"	2014-15	6.0x 4.0	Physically verified the structure. It is in good condition.

Interior Campshed at Mezhukkumpara

The works were evaluated for physical existence and quality. The specifications of the camp sheds were checked with M-books and vouchers and verified the expenditure. At Mezhukkumpara in Mannarkkad range, the amount was used for consumables related to the shed.

Observations of the evaluation team

Sl. No.	Type of Assets/ Division / Range	Type of current use/ Observations	Impact	Score (Low,≤3, Medium >3 to<7, High 7 to 10	Assessment on the quality of the asset - Low, Medium or High
1.	Camp Shed/ Kozhippara, Edavanna range	The shed is maintained well.	The shed is useful for the frontline staff.	7	High
2.	Panapuzha/ Karulai Nilambur South	The shed is maintained well.	The shed is useful for the frontline staff.	7	High
3.	Kadappara/ Alathur/ Nenmara	The shed is maintained well.	The shed is useful for the frontline staff.	7	High

3. Purchase of equipment

During the evaluation period, the equipment procured by the divisions was physically verified, and records checked and found correct.

S. No.	Location / Range / Division	Items procured	Numbers	Present Status
1	Nilambur South	Steel cage	1	Good condition
2	Nilambur North	Snake catching equipment	2	Good condition
3	Nenmara	Snake catching equipment	4	Good condition
4	Mannarkad	Emergency life-saving equipment – mask, jackets and life-buoys	4	Good condition

Snake catching equipment

4. Improving connectivity

Trek paths were cleared and maintained well at Pudur in Attapady range of Mannarkkad division which is being regularly used by frontline staffs.

Location / Range / Division	GPS Location	Year of Construction	Dimensions
Pudur/ Attappady/ Mannarkkad (Aralikkonam to Edavani)	N11° 09' 46.38" E76° 35' 38.14"	2014-15	Width- 3.2 m, Distance- 6 kms

The activities were verified through inspection of records and found correct.

Trek paths at Pudur

Observations of the evaluation team

Sl. No.	Type of Assets/ Division / Range	Type of current use/ Observations	Impact	Score (Low,≤3, Medium >3 to<7, High 7 to 10	Assessment on the quality of the asset - Low, Medium or High
1	Trek path/ Pudur, Attappadi	The trek path is maintained well.	The path is used regularly by the frontline staff.	7	High

5. Training to protective staff

Trainings were imparted to staff in batches in the Nilambur and Mannarkad divisions during the period of the report. The vouchers were verified and found correct.

Five activities were taken up during 2014-16 as per the APO and all of them were completed. An amount of Rs. 47.41 lakhs was allotted to the circle during the period and100% financial achievement was observed.

Northern Circle, Kannur (2014-2016)

The evaluation covered four forest divisions of the circle. They include

1. Kannur
2. Kozhikode
3. North Wayanad
4. South Wayanad

Eight different activities were envisaged in the circle

1. Assistance to tribal Vana Samrakshana Samidi
2. Awareness programme
3. Compensatory afforestation works
4. Conducting nature camps
5. Construction, cleaning, desiltation of pond
6. Purchase of equipment
7. Soil and moisture conservation
8. Training to protective staff

Cairns & boundary consolidation

This activity, a spillover from 2009-14 was completed in 2014-15 in three different locations, Bharanikkunnu (10), Attuvaikunnu (12) and Kottapady (12) sections. The records were verified and found correct.

On perusal of records, it was observed that due to the delay in the release of funds, most activities were shifted to 2018-19.

The major activity taken up during 2014-16 was cairns and boundary consolidation, a spill over from 2009-2014 period. An amount of Rs. 65.44 lakhs was allotted to the circle during the period and 98% financial achievement was observed.

Central circle, Thrissur (2014-2016)

The evaluation covered four forest divisions of the circle. They include

1. Chalakkudy
2. Malayattoor
3. Thrissur
4. Vazhachal

Five different activities were undertaken in the circle based on the APO. The distribution of activities is as follows:

S. No.	Activity	Divisions
1.	Assistance to tribal VSS	Vazhachal
2.	Awareness programme	Vazhachal
3.	Compensatory afforestation works	Chalakkudy, Thrissur and Vazhachal
4.	Eradication of exotic weeds	Vazhachal
5.	Training to protective staff	Thrissur, Chalakkudy, Vazhachal, Malayattoor

In addition to the works mentioned in the APO, the circle also undertook spillover activities planned during 2009-2014. They include the construction & maintenance of campshed, SMC activities and cairns & boundary consolidation.

1. Assistance to tribal Vana Samrakshana Samidi

The Vazhachal Division assisted the tribal VSS in the form of employment through planting, maintenance of plantations under compensatory afforestation, fire watchers, ecotourism activities, and skill development (tailoring units, honey processing) have been provided.

The VSS group at Vazhachal involved in honey processing

2. Cairns & boundary consolidation

Id.No.	GPS Location	Year of Construction	Remarks
512	N10° 40'56.3" E 076° 14' 30.1"	2014 - 2015	This work was envisaged in 2011-12; however, it was completed in 2014-15.
513	N10° 40'56.5" E76° 14' 29.4"		
501	N10° 40'55.8" E76° 14' 38.4"		
503	N10° 40'56.0" E76° 14' 36.7"		

The cairns at the boundary of forests in Chalakudy were inspected and found damaged in some portions.

Observations of the evaluation team

Sl. No.	Type of Assets/ Division / Range	Type of current use/ Observations	Impact	Score (Low,≤3, Medium >3 to<7, High 7 to 10	Assessment on the quality of the asset - Low, Medium or High
1.	Construction of Cairns / Mullukara / Wadakencherry	The cairns are in good condition.	The boundary delineation is helpful to the frontline staff.	8	High
2.	Construction of Cairns / Mankuttipadam/ Vellikulangara	The cairns were in spected and found damaged.	The boundary delineation would be helpful to the frontline staff, if set right.	4	Medium

Cairns at Mankuttipadam

3. Construction & maintenance of campshed

Sites	GPS Location	Year of Construction	Dimensions (m)	Remarks
Palapilly	N10° 22'49" E 76° 20' 73.1"	2014-2015	6.6 x 7.3	This work was envisaged in 2010-2011; however, it was completed in 2014-15.

Observations of the evaluation team

Sl. No.	Type of Assets/ Division / Range	Type of current use/ Observations	Impact	Score (Low,≤3, Medium >3 to<7, High 7 to 10	Assessment on the quality of the asset - Low, Medium or High
1.	Camp Shed/ Chalakudy / Palapilly	The shed is maintained well.	The shed is useful for the frontline staff.	7	High

The camp shed was evaluated for its physical existence and the quality of the asset. The specifications of the camp shed was checked by physical measurements and verifying the old vouchers and estimates. The camp shed is well maintained which is useful for the frontline staff.

4. Soil and Moisture Conservation activities

Sites	GPS Location	Year of Construction	Dimensions (cm)	Remarks
Mankuttipadam	N10° 22' 0.84" E76°22' 15.60"	2015	Bottom: 120 x 120 Top: 60 x 60 Height: 120	This work was envisaged in 2011-12; however, it was completed in 2014-15.
Kavanad	N10° 28' 20.42" E76°26' 33.65"	2015	Bottom: 120 x 120 Top: 60 x 60 Height: 120	This work was envisaged in 2011-12; however, it was completed in 2014-15.
Elicode	N10° 22'49" E76°20' 73.1"	2015	Bottom: 120 x 120 Top: 60 x 60 Height: 120	This work was envisaged in 2011-12; however, it was completed in 2014-15.

Observations of the Evaluation Team

Sl. No.	Type of Assets/ Division / Range /Place	Type of current use/ Observations	Impact	Score (Low,≤3, Medium >3 to<7, High 7 to 10	Assessment on the quality of the asset - Low, Medium or High
1.	Contour bunding/ Chalakudy / Vellikulangara / Mankuttipadam	Damaged due to floods	Delivers 90 % of the envisaged effect.	7	Good
2.	Contour bunding/ Chalakudy / Vellikulangara / Kavanad	Damaged due to floods. Needs repairs.	Delivers 50 % of the envisaged effect.	5	Medium
3.	Contour bunding/ Chalakudy / Palappilly / Parakkadavu / Elicode	Damaged due to floods. Needs repairs.	Delivers 60 % of the envisaged effect.	5	Medium

The bunds have been physically verified and the specifications were checked by physical measurements and verifying the old vouchers and estimates. The bunds were damaged due to flood and needs repairs.

5. Compensatory Afforestation Works

Site/Divisions	GPS Coordinates of site	Activities carried out	Status (Verified / Not verified)
Chelur Porassery kunnu / Kandanchira / Poongodu / Wadakkanchery	N10°43' 24.0" E76°11' 24.1" N10°43' 24.0" E76°11' 24.1" N10°43' 24.0" E76°11' 24.1"	Initiated Preparatory work in 18 ha	Verified
Poringalkuthu/ Vazhachal	N10°18' 52.2" E76°37' 47.8"	Initiated Preparatory work in 10 ha	Verified
Chattilampadam / Vellikulangara	N10°22' 049" E76°20' 73.1" N10°22' 04.2" E76°20' 73.2"	Initiated Preparatory work in 2.12 ha	Verified
Areswaram/ Vellikulangara	N10°22' 023" E76°21' 0.89" N10°21' 86.7" E76°21' 33.5"	Maintenance of 2014 CA Plantation	Verified

The preparatory work for compensatory afforestation were verified from the records.

6. Eradication of exotic weeds

Based on the records verified, this activity was undertaken in Vazhachal Division during 2014-15 against the APO 2011-2012.

Five activities were planned during 2014-16 in the circle, while three of them were spillover activities of 2011-12. Overall, an amount of Rs. 15.55 lakhs was allotted to the circle during the period of which 92.66 percent financial achievement was observed.

High Range Circle, Kottayam (2014-2016)

The evaluation covered five forest divisions of the circle. They include

1. Kothamangalam
2. Kottayam
3. Mankulam
4. Marayoor
5. Munnar

Eight different activities were envisaged in the circle. The distribution of activities is as follows:

S. No.	Activity	Divisions
S. No.	Activity	Divisions
1.	Assistance to tribal Vana Samrakshana Samidi	Kottayam, Mankulam, Marayoor
2.	Compensatory afforestation works	Munnar
3.	Construction, cleaning, desiltation of Pond	Munnar

S. No.	Activity	Divisions
4.	Fire watch stations	Kothamangalam
5.	Improving Connectivity	Marayoor
6.	Purchase of Equipment	Kottayam, Mankulam, Marayoor, Munnar, Kothamangalam
7.	Soil & Moisture Conservation	Kottayam, Mankulam, Marayoor, Munnar, Kothamangalam
8.	Training to protective staff	Kottayam, Mankulam, Marayoor, Munnar, Kothamangalam

In most divisions, no funds were allocated during these years; hence, the activities were shifted to the subsequent years. SMC was the only one activity taken up in Munnar division.

1. Gully Plugging / Check Dam

Sites	GPS Location	Year of Construction	Dimensions (m^3)	Remarks
1	N10°04'48.79" E77°56'12.75" Elevation - 1056m	2014-2015	Plastering: 58.75 Earthwork: 58.05 Foundation: 33.15 RCC: 26.1	The structure is intact.
2	N10°19'57.38" E77°12' 52.62" Elevation - 513m	2014-2015	9.95	The structure is intact.
3	N10°20' 52.35" E77°13' 06.42" Elevation - 485m	2014-2015	10.12	The structure is intact.

Under this activity, check dams were created in 4 sites. These activities were verified physically and dimensions were measured and confirmed with the vouchers/records. All the structures were in healthy conditions and useful in soil moisture conservation as is evident from the lush green vegetation.

Check Dam at Kambany Kudy

Observations of the Evaluation Team

Sl. No.	Type of Assets/ Division / Range	Type of current use/ Observations	Impact	Score (Low,≤3, Medium >3 to<7, High 7 to 10	Assessment on the quality of the asset - Low, Medium or High
1.	Check Dam / Kambany Kudy/ Mankulam / Mankulam	For water storage	The moisture content in surrounding areas is improved, as evidenced by the green vegetation.	9	High
2.	Check Dam / Olimala Oda / Munnar WLS / Chinnar	For water storage	The moisture content in surrounding areas is improved, as evidenced by the green vegetation.	6	Medium
3.	Check Dam / Karakkadu-matha / Munnar WLS / Chinnar	For water storage	The moisture content in surrounding areas is improved, as evidenced by the green vegetation.	6	Medium

Though eight activities were envisaged, only SMC activities were taken up due to delay in fund release. Overall, an amount of Rs. 36.88 lakhs was allotted to the circle during the period of which 90.6 percent financial achievement was observed.

Southern circle, Kollam (2014-2016)

The evaluation covered six forest divisions of the circle. They include

1. Achenkovil
2. Konni
3. Punalur
4. Ranni
5. Thenmala
6. Thiruvananthapuram

Eight different activities were undertaken in the circle. The distribution of activities is as follows:

S. No.	Activity	Divisions
1.	Assistance to tribal Vana Samrakshana Samidi	Ranni, Trivandrum, Achencoil, Punalur, Thenmala
2.	Compensatory afforestation works	Thenmala, Ranni, Punalur
3.	Conducting nature camps	Konni
4.	Engaging fire gangs	Ranni, Trivandrum, Achencoil, Punalur, Thenmala
5.	Purchase of equipment	Ranni
6.	River bank stabilization/protection	
7.	Soil and moisture conservation	Ranni, Trivandrum, Achencoil, Punalur, Thenmala, Konni
8.	Training to protective staff	Ranni, Trivandrum, Achencoil, Punalur, Thenmala, Konni

1. Assistance to tribal Vana Samrakshana Samidi

1. The Focussed Group discussions with tribal VSS group on the implementation of CAMPA activities revealed that the departmental interventions in these areas are in consultation with the people and their involvement was very evident. The department has taken sufficient care to address the interests of the Scheduled Tribes while developing management plans. They have taken interest in the management and protection of the worked areas where there is scope for revenue from NTFPs and not in the areas where usufructs are not forthcoming immediately.

2. Tribal VSS were engaged as fire mazdoors, laying fire lines, laying solar fencing, laying fire break, watchers, effective fire control measures, removal of alien exotic weeds, gap planting and construction of staggered trenches in Ranni, Trivandrum, Achencoil, Punalur and Thenmala divisions. Basic infrastructure and LPG connections were provided to the tribal families in Ranni Division.

2. Compensatory Afforestation

Plant survival Rate: All activities were carried out in Thenmala Division. Plant survival rates varied with locations.

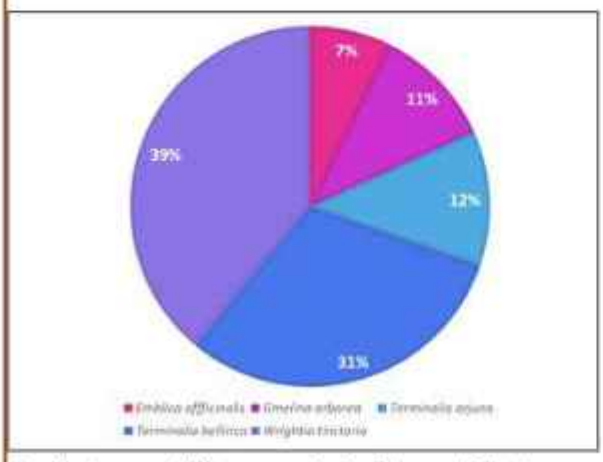
S. No.	Site	Year	Area of plantation (ha)	Plantation Model	Species	Remarks
1	Edamon	2014	35	Gap planting	*Emblica offficinalis, Gmelina arborea, Terminalia arjuna, Terminalia bellirica, Wrightia tinctoria*	✦ Plantation journal, records and bills are maintained well. ✦ Indigenous tree species that suitable for the plantation site are selected for planting.
						✦ It was learnt from the forest officials that this plantation activities were done only with the help of forest frontline officials without any

S. No.	Site	Year	Area of plantation (ha)	Plantation Model	Species	Remarks
						additional labour cost. Thereby no additional expenses were made for plantation activities under CAMPA fund. ✦ 1st year maintenance work was done with the help of VSS members. ✦ It was learnt from the forest officials that due to grazing by Sambar deer and elephant lot of casualties reported in this plantation.
2	Edamon	2014	25	Gap planting	*Terminalia arjuna, Terminalia bellirica, Wrightia tinctoria*	✦ Plantation journal, records and bills are maintained well. ✦ Indigenous tree species that suitable for the plantation site are selected for planting. ✦ It was learnt from the forest officials that this plantation activities were done only with the help of forest frontline officials without any additional labour cost. Thereby no additional expenses were made for plantation activities under CAMPA fund. ✦ 1st year maintenance work was done with the help of VSS members. ✦ It was learnt from the forest officials that due to grazing elephant lot of casualties reported in this plantation.
3	Nagamala	2014	25.2	Gap planting	*Emblica officinalis, Hopea ponga, Wrightia tinctoria*	✦ Plantation journal, records and bills are maintained well.

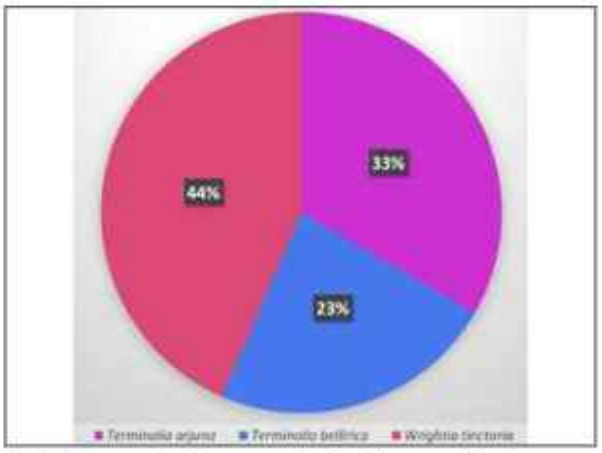
S. No.	Site	Year	Area of plantation (ha)	Plantation Model	Species	Remarks
						✦ Indigenous tree species suitable for the site is selected for plantation. ✦ Source of the seedlings are from Kulathupuzha central nursery, Kerala. ✦ It was learnt from the forest officials that this plantation activities were done only with the help of forest frontline officials without any additional labour or cost. Thereby no additional expenses were made for plantation activities under CAMPA fund. ✦ 1st year maintenance work was done with the help of VSS members. ✦ It was learnt from the forest officials that due to grassing elephant lot of casualties reported in this plantation.
4	Kaduva pallam	2015	36.53	Gap planting	*Caesalpinia sappan, Hopea ponga, Pongamia pinnata, Terminalia arjuna, Terminalia bellirica, Wrightia tinctoria*	✦ Plantation journal, records and bills are maintained well. ✦ Indigenous tree species suitable for the site is selected for plantation. ✦ Source of the seedlings are from Kulathupuzha central nursery, Kerala. ✦ It was learnt from the forest officials that this plantation activities were done only with the help of forest frontline officials without any additional labour or cost. Thereby no

S. No.	Site	Year	Area of plantation (ha)	Plantation Model	Species	Remarks
						additional expenses were made for plantation activities under CAMPA fund. ✦ 1st year maintenance work was done with the help of VSS members.
5	Ranni/ Vakkalar	Resche duled	30.0	Gap planting	-	✦ Approved in APO 2014 -15 & 15-16 scheduled for 2021-2022.
6	Punalur / Kulathu-rapacha	2014-16	*50.0*	Preparatory work	-	✦ Wages paid for raising plantation in 50 Ha. Vouchers and records verified and found correct.

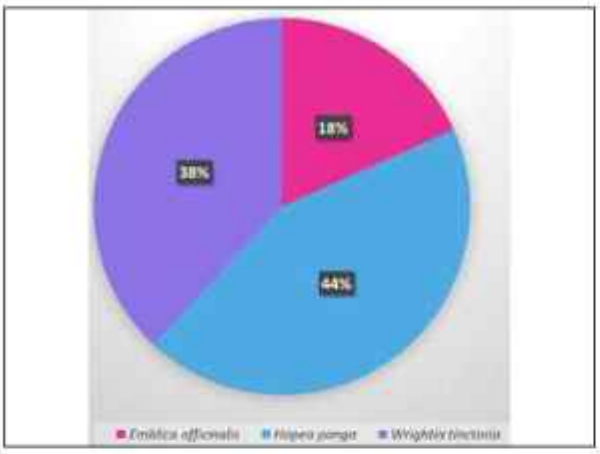
Survival percentage of species across sites



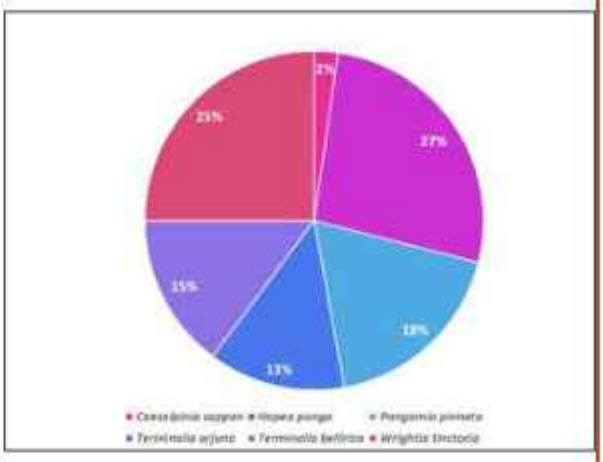
Survival rates of different species in Edamon (35 ha), Thenmala Forest Division



Survival rates of different species in Edamon (25 ha), Thenmala Forest Division

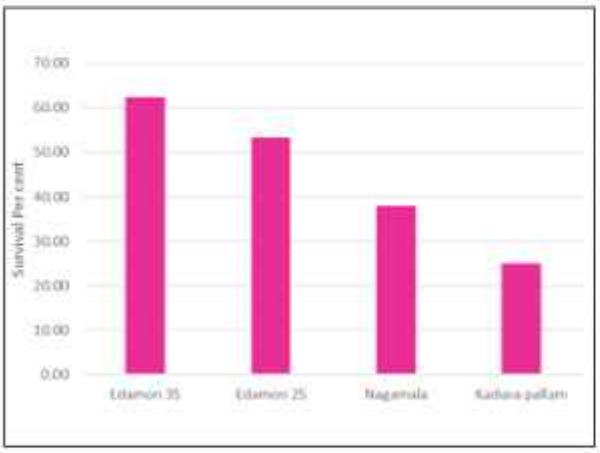


Survival rates of different species in Nagamala, Thenmala Forest Division

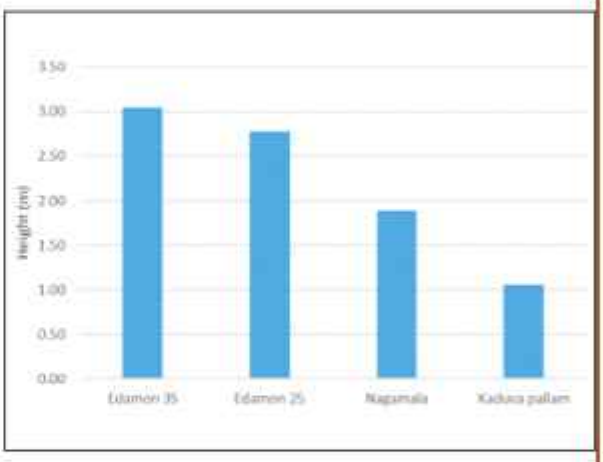


Survival rates of different species in Kaduva pallam, Thenmala, Thenmala Forest Division

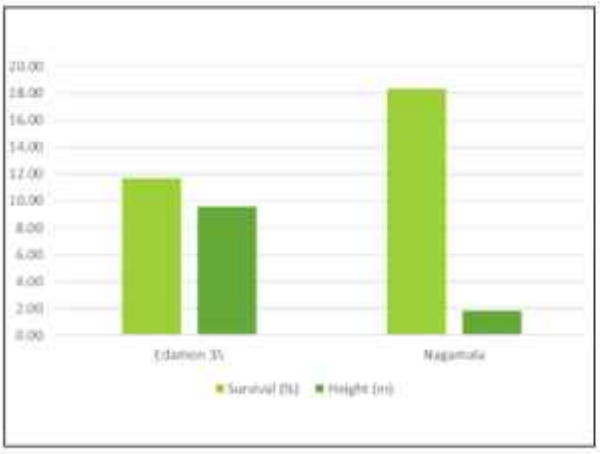
Wrightia tinctoria was the only species planted across divisions. The species varied in survival and growth performance in different sites.



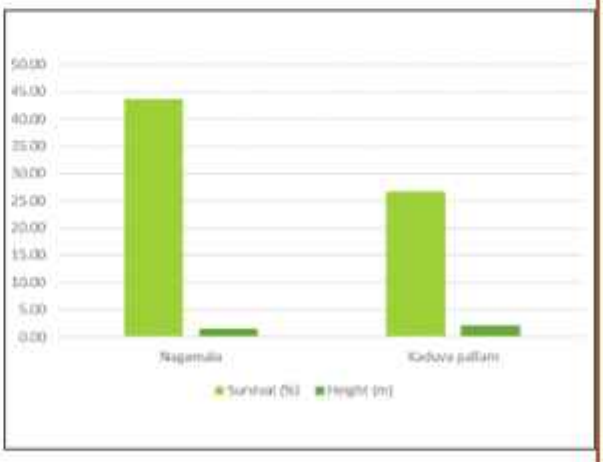
Wrightia tinctoria survival across the four sites



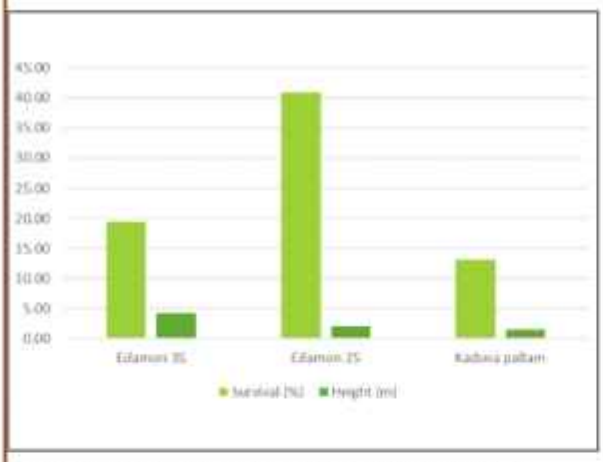
Performance of *Wrightia tinctoria* across the four sites



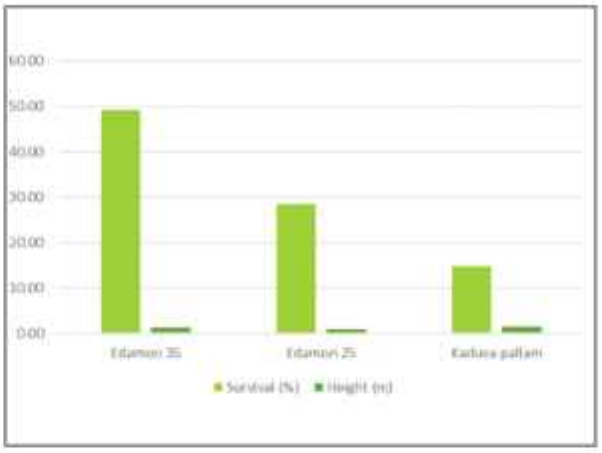
Performance of *Emblica officinalis* across two sites



Performance of *Hopea ponga* across two sites



Performance of *Terminalia arjuna* across three sites



Performance of *T. bellirica* across three sites

Current status of the Compensatory Afforestation 2015-16 activities at Thenmala Forest Division

Current status of the Compensatory Afforestation 2015-16 activities at Thenmala Forest Division

Expert team in evaluation of Compensatory Afforestation 2015-16 activities under CAMPA fund at Thenmala Forest Division

Plant protection measures: Different plant protection measures such as watch and ward, fire protection, weeding, etc have been taken in all the divisions to improve plant survival rate. In some cases, the VSS members were involved in maintaining the afforestation activities. Watch and ward was given priority over other protection measures. These plantations were raised during the period 2014-15; watch and ward provision has been made. As a result, the survival rates are good. In the later stage, the site was covered under general monitoring and supervision. This could have led to a low stocking in some of the afforested sites.

Record maintenance: Different records / documents are maintained at the range office with respect to plantations and silvicultural activities. The site map, treatment map and data on survival and growth have been recorded meticulously in the journal. The records and bills related to the plantations are maintained well.

Remarks

- Indigenous tree species are selected for planting.
- Most plantation activities were carried out by frontline officials without additional labour. Hence, no additional expenses were incurred.
- Maintenance work was done by the VSS members.
- It was learnt from the forest officials that due to elephant trampling, casualties were reported in Kaduva palam and Nagamala.

S.No.	*Species Planted in Compensatory Afforestation Programmes*
1.	*Caesalpinia sappan*
2.	*Emblica offficinalis*
3.	*Gmelina arborea*
4.	*Hopea ponga*
5.	*Pongamia pinnata*
6.	*Terminalia arjuna*
7.	*Terminalia bellirica*
8.	*Wrightia tinctoria*
9.	*Xylia xylocarpa*

3. Engaging Fire gang

S. No.	Location	Year	Remarks
1.	Palode Forest range, TVPM Division	2014-15 & 2015-16	✦ It was learnt from the members, president and secretary of the Vana Samrakshana Samidi, Palode that the forest officials are visiting VSS and discuss regarding the fire gang activities every week. ✦ VSS members meet once in every month to discuss about forest protection activities. ✦ VSS conducts Honey collection training programs. ✦ Human animal conflict is the major issue in Palode. ✦ VSS requested for increase the salary for the members engaged in fire gang activities.

S. No.	Location	Year	Remarks
			✦ VSS requested a campshed with all basic facilities, elephant trench and fire gang equipment ✦ VSS suggested restricting trespassers into forest areas during summer to avoid chance of forest fire.
2.	Arayankavu, Thenmala Forest Division	2014-15 & 2015-16	✦ It was learnt from the members, president and secretary of the Vana Samrakshana Samidi, Arayankavu Forest range that the forest officials are visiting VSS and discuss regarding the fire gang activities every week. ✦ Standard operating Protocol (SOP) for fire gang activities are being followed at Arayankavu Forest range, Thenmala Forest Division. ✦ VSS members meet once in every month to discuss about forest protection activities. ✦ VSS suggested restricting trespassers into forest areas during summer to avoid chance of forest fire. ✦ VSS members were happy and satisfied with the activities carried out under CAMPA fund.
3.	Paruthipally, TVPM Forest Division	2014-15 & 2015-16	✦ It was learnt from the members, president and secretary of the Vana Samrakshana Samidi, Pottankulichapara that the forest officials are visiting VSS and discuss regarding the fire gang activities every week. ✦ Human animal conflict is the major issue in Pottankulichapara. ✦ A camp shed with all basic facilities, elephant trench and fire gang equipment may be considered.

4. Gully Plugging / Chappath

Sites	GPS Location	Year of Construction	Dimensions (m)	Remarks
1	N09°8'09.06" E77°12'0.006"	2015 -2016	3.8 x 1.5 x 0.65 2.55 x 1.6 x 0.35 13.33 x 1.37 x 0.73	All gullies are healthy
2	N09.3634° N, E76.9881° E	2015 -2016	5 x 2 x 2	30% damaged due to heavy floods
3	N09°10'37.43" E76°55'32.483	2015 -2016	10 x 5 x 2	The structure is intact
4	N09°5'21.888" E77°7'55.47"	2015-2016	60 x 6 x 3	50% of the structure has been washed away.

Observations of the Evaluation Team

Sl. No.	Type of Assets/ Division / Range	Type of current use/ Observations	Impact	Score (Low,≤3, Medium >3 to<7, High 7 to 10	Assessment on the quality of the asset - Low, Medium or High
1.	Gully plugging / Kattikuzhy/ Achenkoil.	Three healthy gullies which harbour the famous fresh water Masheer breeding ground. The department takes extra efforts for the conservation of the species also.	The moisture content of surrounding areas improved, as is evident from the dense vegetation growth. The fish population is also high.	7	High
2.	Gully plugging / Naduvathu-moozhy/ Konni	Due to frequent floods 4 chappaths were totally damaged which restricts the transport, damages the gullies and trek paths established.	The floods have widened the expanse of streams leading to erosions.	4	Medium
3.	Gully plugging / Goodrikal/ Ranni	Inspected three gullies at Goodrikal, Ranni division and found good.	The moisture content of surrounding areas improved, as is evident from the dense vegetation growth.	7	High
4.	Chappath / Muthalathodu/ Achenkovil	Damage to the structure cuts off access to 3 ranges. Hence efforts to be made to create a more robust structure.	Heavy erosion along the sides.	3	Low

Gully plugging and chappath works were inspected as per records and for their quality and observed that gullies were in good condition except at Naduvathumoozhy, Konni. Damages were also observed at the chappaths at Muthalathodu,Achenkovil,which require special attention as heavy rains and floods cut off access to 3 ranges.

5. Training to protective staff

Awareness programmes and training programs were arranged in Punalur and Thiruvananthapuram.

Four out of eight activities were taken up during the evaluation period in the circle. Overall, an amount of Rs. 68.48 lakhs was allotted to the circle during the period of which 97.78 percent financial achievement was observed.

Gully at Konni Division

Wildlife circle Palakkad (2014-16)

The evaluation covered four divisions of the circle. They include

1. Peechi
2. Parambikulam
3. Silent Valley
4. Wayanad

Seven different activities were envisaged in the circle. The distribution of activities is as follows:

S. No.	Activity	Divisions
1.	Assistance to Tribal Vana Samrakshana Samidi	Silent Valley
2.	Construction & maintenance of Campshed	Parambikulam, Peechi, Aralum, Silent Valley
3.	Construction of solar fencing	Peechi, Silent Valley
4.	Interior campshed & ration	Parambikulam, Peechi, Aralum
5.	Purchase of equipment	Wayanad
6.	Eradication of exotic weeds	Peechi
7.	Soil & moisture conservation	Peechi, Wayanad

1. Assistance to tribal Vana Samrakshana Samidi

Discussion with the tribal VSS revealed that regular meetings with forest officials were made and, maintained the register at at Anapodi Division Office. Provided protection from wild animals in the tribal villages.

2. Construction & maintenance of campshed

Sites	GPS Location	Year of Construction	Dimensions (m)	Remarks
1	N10°35'73.12" E76°81'36.35"	2014-15	5.5x5.5x6.5	The condition of the structure is good.
2	N10°37'65.48" E76°69'04.20"	2014-15	6.5x5.3x2.0	The condition of the structure is good.
3	N10°27'12.7" E76°29'35.26"	2014-15	9x6x1	The condition of the structure is good.
4	N10°49'73.9" E76°47'07.87"	2014-15	4x5x3	The condition of the structure is good.
5.	N11°55'43.85" E75°52'35.17"	2015-16	4x3.5x2	The condition of the structure is good.
6.	N11°5'1.21" E76°28'50.3"	2015-16	11.25x3x5	The condition of the structure is good.

Observations of the evaluation team

Sl. No.	Type of Assets/ Division / Range	Type of current use/ Observations	Impact	Score (Low,≤3, Medium >3 to<7, High 7 to 10	Assessment on the quality of the asset - Low, Medium or High
1.	Camp Shed/ Parambikulam/ Karimala	The shed is maintained well.	The shed is useful for the frontline staff.	7	High
2.	Camp Shed/ Parambikulam/ Karimala	The shed is maintained well.	The shed is useful for the frontline staff.	7	High
3.	Camp Shed/ Peechi/ Chimmony	The shed is maintained well.	The shed is useful for the frontline staff.	7	High
4.	Camp Shed/ Peechi/ Chimmony	The shed is maintained well.	The shed is useful for the frontline staff.	7	High
5.	Camp Shed/ Aralum/ Aralum	The shed is maintained well.	The shed is useful for the frontline staff.	8	High
6.	Camp Shed/ Silent Valley/ Bhavani	The shed is maintained well.	The shed is useful for the frontline staff.	9	High

The works were evaluated for their physical existence and for quality. The specifications of both camp sheds were checked by verifying the old vouchers and the estimates. The condition of the campsheds are good and maintained well.

3. Construction of solar fencing

S. No.	Location	Year	Remarks
1.	Kakkinikkad, Chimony /Peechi	2014-15	The solar fencing was physically verified. There are minor damages to the fences. Records were verified and found correct.
2.	Mankuchy, Chimony /Peechi	2015-16	The solar fencing was physically verified. There are minor damages to the fences. Records were verified and found correct.
3.	Podhuvapadam, Silent Valley	2014-15	The solar fencing was physically verified. There are minor damages to the fences. Records were verified and found correct.
4.	Karadiyodu, Silent valley	2015-16	The solar fencing was physically verified. There are minor damages to the fences. Records were verified and found correct.

The solar fencings were evaluated for the physical existence and for the quality. The specifications were checked by verifying the vouchers and estimates.

4. Elephant proof trench

S. No.	Location	Year	Remarks
1.	Anaporu, Chimmony / Peechi	2015-16	The trenches were physically verified and found intact.
2.	Mangalamgera, Chimmony / Peechi	2014-15	The trenches were physically verified and found intact.

The trenches were evaluated for the physical existence and for the quality. The specifications of both the trenches were checked by verifying the vouchers and estimates.

5. Interior campshed & ration

Sites	GPS Location	Year of Construction	Dimensions (m)	Remarks
1	N10°35'73.12" E76°81'36.35"	2014-15	5.5x5.5x6.5	The condition of the structure is good.
2.	N10°37'65.48" E76°69'04.20"	2014-15	6.5x5.3x2.0	The condition of the structure is good.
3.	N10°27'12.7" E76°29'35.26"	2014-15	9x6x1	The condition of the structure is good.
4.	N10°49'73.9" E76°47'07.87"	2014-15	4x5x3	The condition of the structure is good.
5.	N11°55'43.85" E75°52'35.17"	2015-16	4x3.5x2	The condition of the structure is good.

The works were evaluated for the physical existence and for the quality. The specifications of all the camp sheds were checked by verifying the old vouchers and the estimates.

Observations of the evaluation team

Sl. No.	Type of Assets/ Division / Range	Type of current use/ Observations	Impact	Score (Low,≤3, Medium >3 to<7, High 7 to 10	Assessment on the quality of the asset - Low, Medium or High
1.	Campshed/ Parambikulam/ Karimala	The shed is maintained well.	The shed is useful for the frontline staff.	7	High
2.	Campshed/ Parambikulam/ Karimala	The shed is maintained well.	The shed is useful for the frontline staff.	7	High
3.	Campshed/ Peechi/ Chimmony	The shed is maintained well.	The shed is useful for the frontline staff.	7	High
4.	Campshed/ Peechi/ Chimmony	The shed is maintained well.	The shed is useful for the frontline staff.	7	High
5.	Campshed/ Aralum/ Aralum	The shed is maintained well.	The shed is useful for the frontline staff.	8	High

6. Purchase of equipment

Sl. No.	Location / Range / Division	Items procured	Numbers	Present Status
1.	Naiketty/Sulthan bathery / Wayanad	1. Snake catching unit 2. Tiger protection kit 3. Shield 4. Fire beater 5. Masks and helmets	2 4 2 5 5	All the equipment are in good condition to use.

The equipment purchased were evaluated for the physical existence and for the quality. They were checked by verifying the vouchers and observed all equipment are in good condition.

7. Eradication of exotic weeds

Eradication of exotic weeds was undertaken in Peechi Division during 2014-15 against the APO 2011-2012, based on the records verified. An area of 263.1 ha was worked. The major weed removed was *Senna spectablis*.

8. Soil and moisture conservation

A. Gully Plugging: This activity was carried out in Peechi Division.

Sites	GPS Location	Year of Construction	Dimensions (m)	Remarks
1	N10°34'44.5" E76° 24'33.9" N10°24'46.3' E76° 27'30.1" N10°25'3842" E76° 28'31.6"	2014-2016	8.19 x 1.73 x 0.73 5.5 x 1.63 x 0.685 6.53 x 1.34 x 0.6	The structures are in good condition.

Gully Plugging at Chimmony

Observations of the evaluation team

Sl. No.	Type of Assets/ Division / Range	Type of current use/ Observations	Impact	Score (Low,≤3, Medium >3 to<7, High 7 to 10	Assessment on the quality of the asset - Low, Medium or High
1.	Gully Plugging/ Peechi Division/ Chimony Range.	The gullies were constructed in 2014-16. They are in good condition.	The gully plugs have enabled stabilisation of the soil to a large extent.	7	High

The gullies were evaluated for the physical existence and for the quality. The specifications of the gullies were checked by verifying the vouchers and estimates.

B. Contour bunding: This activity was carried out in Wayanad Division.

Sites	GPS Location	Year of Construction	Dimensions (m)	Remarks
1.	N11°43'42" E76° 21'17"	2015 -2016	17.5 x 10 x 25	The structure is intact
2.	N11°38'3.7" E76° 24'22.59"	2014-2015	5 x 25	The structure is intact

Observations of the evaluation team

Sl. No.	Type of Assets/ Division / Range	Type of current use/ Observations	Impact	Score (Low,≤3, Medium >3 to<7, High 7 to 10	Assessment on the quality of the asset - Low, Medium or High
1.	Earthern bunding/ Wayanad / Sulthan battery	The Earthern bunding constructed in 2015-16 is good.	Earthern bunding facilitates water storage.	7	High
2.	Earthern bunding/ Wayanad / Muthanga	The Earthern bunding is good	Earthern bunding facilitates water storage.	7	High

The bunds were evaluated for their physical existence and quality. The specifications of the bunds were checked by verifying the vouchers and estimates.

All the seven activities envisaged were completed during 2014-16 in the circle. No activities were kept pending. Additionally, elephant proof trenches were also made. Overall, an amount of Rs. 79.85 lakhs was allotted to the circle during the period of which 98.21 percent financial achievement was observed.

Field director project tiger, Kottayam (2014-2016)

The evaluation covered four forest divisions of the circle. They include

1. Periyar East
2. Periyar West
3. Idukki Wildlife
4. Munnar Wildlife

Nine different activities were undertaken in the circle. The distribution of activities is as follows:

S. No.	Activity	Divisions
1.	Assistance to tribal Vana Samrakshana Samidi	Periyar East Division, Periyar West Division, Idukki WL, Munnar WL
2.	Awareness & nature camp	Periyar West Division, Idukki WL
3.	Construction, cleaning, desiltation of pond	Munnar WL
4.	Eradication of exotic weeds	Periyar East Division, Idukki WL, Munnar WL
5.	Improving connectivity	Periyar East Division, Periyar West Division
6.	Interior campshed & ration	Periyar East Division, Periyar West Division, Idukki WL, Munnar WL
7.	Purchase of equipment	Periyar East Division, Periyar West Division, Idukki WL, Munnar WL
8.	Soil and moisture conservation	Idukki WL
9.	Training to protective staff	Periyar East Division, Periyar West Division, Idukki WL, Munnar WL

1. Assistance to tribal Vana Samrakshana Samidi

Discussions were held with VSS groups on the implementation of CAMPA activities in the circle. The Tribal VSS were engaged in protection related activities, for collection and sale of MFP.

2. Awareness & natural camp

The staff informed that the activites pertaining to awareness have been completed. The details were verified through records.

3. Construction, cleaning, desiltation of pond

Sites	GPS Location	Year of Construction/ Maintenance	Dimensions (m)	Remarks
Paliyanpara, Nellikampetty section	N09°35'05.45" E77°12'57.97"	2014-2015	14.5 x 12.5 x 2.5	The asset is maintained well.
Kokkarakandam II Bit	N09°36'06.60" E77°11'02.20"	2014-2015	14.5 x 12.5 x 2.5	The asset is maintained well.
Kokkarakandam III Bit	N09°35'57.96" E77°11'05.50"	2014-2015	26.0 x 19.5 x 4.0	The asset is maintained well.

Observations of the evaluation team

Sl. No.	Type of Assets/ Division / Range	Type of current use/ Observations	Impact	Score (Low,≤3, Medium >3 to<7, High 7 to 10	Assessment on the quality of the asset - Low, Medium or High
1.	Pond/ Paliyanpara/ Thekkady/ Iddukki	Clearing of ground level vegetation grasses and weeds, earth work for excavation, wood fencing surrounding the pond, concrete working has been carried out.	This pond mostly used by domestic animals and wild animals for drinking purpose, water level maintained throughout the year.	7	High
2.	Pond/ Kokkarakandam II Bit /Thekkady/ Iddukki	Clearing of ground level vegetation grasses and weeds, earth work for excavation, wood fencing surrounding the pond, concrete working has been carried out.	This pond mostly used by domestic animals and wild animals for drinking purpose, water level maintained throughout the year.	7	High
3.	Pond/ Kokkarakandam III Bit /Thekkady / Iddukki	Clearing of ground level vegetation grasses and weeds, earth work for excavation, wood fencing surrounding the pond, concrete working has been carried out.	This pond mostly used by domestic animals and wild animals for drinking purpose, water level maintained throughout the year.	7	High

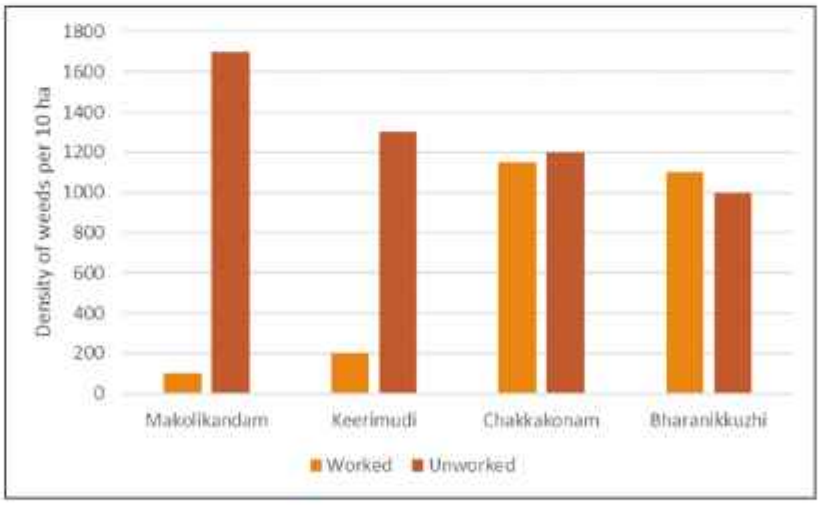
The ponds were evaluated for their physical existence and quality. The specifications of the ponds were checked by verifying the vouchers and estimates.

Desiltation of pond

4. Eradication of exotic weeds

Site	GPS Location of worked plot	Density of weeds in worked plot (per ha)	GPS Location of unworked plot	Density of weeds in unworked plot (per ha)	Effectiveness of work
Makolikandam/ Idukki WLS	N9°49'35.25" E76°58'52.80"	9612	N 09°48'30.47" E 76°59'42.80'	42889	22.42% Eradication was effective.
Keerimudi/ Idukki WLS	N9°49'15.47" E76°58.12.54"	15611	N 09°48'45.75" E 76°59.16.83"	30890	50.54% Very effective.
Chakkakonam/ Idukki WLS	N9°45'26.81" E76°58.31.06"	27057	N 09°46'31.08" E 76°59.35.01"	19334	- 39.94%;
Bharanikkuzhi/ Idukki WLS	N10°07'42.52" E76°45.03.01"	20483	N 09°46'31.08" E 76°59.35.01"	8482	- 41.49 %.
Anakkoodu/ Thekkady/ Iddukki	N09°35'30.01" E77°10'27.03"	-	-	-	-
Sakunthalakadu/ Thekkady/ Iddukki	N 09°35'44.02" E 77°10'04.01"	-	-	-	-

In Chakkakonam and Bharanikkuzhi, the density of weed infestation was higher in the worked plot due to higher exotic weed density. Wild animals regularly graze the palatable species; as a result,high density of weed infestation in the worked plot. A comparison of the density of *Lantana camara* in the four sites is presented below.



Weed growth assessment in Chakkonam

In Anakkoodu, 350 sandal plants have been protected in an area of 10 ha and in Sakunthalakadu, 741 sandal plants are protected in a 12 ha area. Every tree is numbered and trees with good girth (>10 cm) are protected with iron guards. Regular annual weeding mainly enable the natural regeneration of sandal. Grazing/browsing and mortality due to water logging is observed.

Sandal wood trees at Sakunthalakadu

Numbering of the trees in the sandalwwod plot

5. Improving connectivity

Trek paths, partolling routes and vistalines were cleared and maintained in the circle in PTR and Idukki WLS.

Location / Range / Division	GPS Location	Dimensions
Mannakkudi to Thondiyar	N09°35'57.2" E77°09'25.05"	7.5 ha Length -3.5km Width – 11 m
Anavachal to Anchuruli	N09°35'47.1" E77°09'20.04"	5 ha Length -3.5km Width – 11m
Entrance check post to Boat landing	N09°34'40.08" E77°10'49.06"	3 ha Length -3.0km Width – 10.5m
Karadikkavala to Methakanam	N09°34'25.56" E77°14'58.19"	9 ha Length -9km Width - 10m
Karadikkavala to Mangaladevi	N09°35'55.09" E77°13'17.21"	3 ha Length -6km Width - 10m
Azhutha	N09°29'43.58" E77°07'28.54"	10 km

The activities were verified through inspection of records and found correct except in Azutha.

Observations of the evaluation team

Sl. No.	Type of Assets/ Division / Range	Type of current use/ Observations	Impact	Score (Low,≤3, Medium >3 to<7, High 7 to 10	Assessment on the quality of the asset - Low, Medium or High
1.	Vistaline clearance/ Edapalayam / Thekkady/ Iddukki	The trek path is maintained well.	The path is used regularly by the frontline staff.	7	High
2.	Vistaline clearance/ Anchuruli APC Campshed / Thekkady/ Iddukki	The trek path is maintained well.	The path is used regularly by the frontline staff.	7	High
3.	Vistaline clearance/ Thekkady/ Iddukki	The trek path is maintained well.	The path is used regularly by the frontline staff.	7	High
4.	Vistaline clearance/ Karadikkavala / Thekkady/ Iddukki	The trek path is maintained well.	The path is used regularly by the frontline staff.	7	High
5.	Vistaline clearance/ Karadikkavala / Thekkady/ Iddukki	The trek path is maintained well.	The path is used regularly by the frontline staff.	7	High
6.	Uppupara / Azhutha/ Iddukki	-	-	-	-

Vistaline clearance in Azhutha

Tribal VSS were engaged in maintaining the vistalines to avoid fire incidence and also involved in clearing jungle growth, weeds, grasses without felling trees. Due to uncertainties in fund release, this activity is currently taken up with funds from other fund sources.

6. Interior campshed & ration

Sites	GPS Location	Year of Construction	Dimensions (m)	Remarks
Arackapadam campshed	N09°47 41.4" E76°59 09.4"	2014	-	The structure is in good condition.
Pachakkanam campshed	N09°23 07.27" E77°08.58.91"	2015-16	-	The activity was approved during 2009-2010

The works were evaluated for physical existence and quality. The specifications of both camp sheds were checked by verifying the old vouchers and the estimates.

Observations of the evaluation team

Sl. No.	Type of Assets/ Division / Range	Type of current use/ Observations	Impact	Score (Low,≤3, Medium >3 to<7, High 7 to 10	Assessment on the quality of the asset - Low, Medium or High
1.	Interior Campshed/ Idukki WL/ Idukki WLS	Camp shed is made of metal sheet, houses 3 rooms including kitchen and is equipped with utensils, vessels, and solar power.	The shed is maintained well. The shed is used by the watchers and forest official during patrolling duty.	9	High
2.	Renovation of building/ Pachakkanam station/ Pampaa/ Iddukki	Renovation of rest room in Duplex quarters at pachakanam section was seen. It was provided with wall tiles and shutters, doors, water closets.	The station is maintained well. The shed is used by the watchers and forest officials.	9	High

Duplex quarters at Pachakanam

7. Purchase of equipment

Sl. No.	Location / Range / Division	Items procured	Numbers	Present Status
1.	Peermed/Azhutha/ Iddukki	Snake tongs, trap cages Tiger and leopard trap cage (122 x 153 x 214 cm) Monkey trap cages (15 x 80 x 75 cm)	4 2 2	All the equipment are in good condition to use.

The equipment procured was evaluated for physical existence and quality and checked by verifying the old vouchers and the estimates.

8. Soil and moisture conservation

Sites	GPS Location	Year of Construction/ Maintenance	Dimensions (m)	Remarks
Kizhukkanam	N09°44'42.8" E76°59'09.2"	2014-16	11.5 x 2 x 2 12 x 2 x 3 10 x 2 x 3 7 x 1.6 x 1.1 10 x 2 x 2.5 14 x 2 x 3	Inspected six(6) gullies at Kizhukkanam. Floods have weakened them and needs strengthening and maintenance

Sites	GPS Location	Year of Construction/ Maintenance	Dimensions (m)	Remarks
Kathithappan kettuchira	N09°44 26.095" E77°00 04.41"	2014-16	12 x 2 x 3 10 x 1.5 x 2 10 x 2 x 3 12 x 3 x 4.5	Inspected Four(4) gullies at kathithappan kettuchira. Floods have weakened them and needs strengthening and maintenance.
Vagavanam	N09°43'24.06" E76°57'23.3"	2014-16	10 x 2 x 2 11 x 2 x 2.5 8.5 x 1.6 x 2.5 9 x 1.5 x 3	Inspected Four(4) gullies at Vagavanam. They displayed minimal damage. Floods have weakened them and needs strengthening and maintenance.
Vanmavu	N09°44'31.09" E76°59'09.6"	2014-16	8 x 2 x 3 10 x 1.5 x 3 8.5 x 1.8 x 2.8 10 x 1.6 x 3	Inspected Four(4) gullies at Vanmavu. Two gullies are damaged and others need some strengthening work.
Kallekkulam area	N09°43'29.08" E76°56'35.3"	2014-16	9 x 1.5 x 1.2 15 x 2 x 3 11 x 1.5 x 2 8 x 2 x 3	Inspected Four(4) gullies at Kallekkulam area. Floods have weakened them and needs strengthening and maintenance
Vettilapara	N09°48'16.3" E77°00'14.2"	2014-16	10 x 1.5 x 3 8.5 x 1.8 x 2.8 10 x 1.6 x 3 11 x 1.6 x 4 9 x 1.5 x 8	Inspected Five(5) gullies at Vettilapara. Floods have weakened them and needs strengthening and maintenance.
Matnai	N10°08'29.07" E76°40'47.25"	2014-16	10 x 1.3 x 1.5 7 x 2 x 1.5 8 x 1.3 x 1.2 10 x 1.3 x 1.25 10 x 1.25 x 1.25 10 x 1.3 x 1.25 8 x -1.3 x 1.25 7 x 1 x 1 7 x 1 x 1 7 x 1 x 1	Inspected Ten(10) gullies at Matnai. They displayed minimal damage. Floods have weakened them and needs strengthening and maintenance.
Chettipally	N10°07 26.60" E76°42 18.68"	2014-16	12 x 2 x 3 10 x 1.5 x 2 10 x 2 x 3 12 x 3 x 4.5 5 x 1.2 x 1 6 x 1.5 x 1.3 12 x 1.5 x 1	Inspected six(6) gullies at Chettipally. They displayed minimal damage which the staff mentioned was due to washing away in floods.

Sites	GPS Location	Year of Construction/ Maintenance	Dimensions (m)	Remarks
Anjilithandu	N09°4903.09" E76°5725.5"	2014-16	8 x 1.5 x 1.5 7 x 1.5 x 1.3 7 x 1.3 x 1.5	Inspected three(3) gullies at Anjilithandu. Although they are intact, they have been weakened due to floods.

The specifications of the gullies were checked by verifying the old vouchers and the estimates.

Gully Plugging at Idukki WLS

9. Training to protective staff

Training was provided during the period to protective staff of all four divisions. Expenditure vouchers were verified.

This circle undertook the highest number of activities during the period 2014-2016. The circle implemented most activities listed in the APO. Spillovers of earlier years were also taken up during this period. Overall, an amount of Rs. 50.75 lakhs was allotted to the circle during the period of which 98.4 percent financial achievement was observed.

Observations of the evaluation team

Sl. No.	Type of Assets/ Division / Range	Type of current use/ Observations	Impact	Score (Low,≤3, Medium >3 to<7, High 7 to 10	Assessment on the quality of the asset - Low, Medium or High
1.	Gully Plugging/ Idukki WL/ Idukki WLS/ Idukki/ Kizhukkanam, Kathithappan kettuchira, Vagavanam, Vanmavu, Kallekkulam area,Vettilapara, Matnai, Chettipally, Anjilithandu.	The gullies were constructed in 2014-16. They have weakened due to floods. Water retention is poor.	The gully needs to be strengthened. Presently it is able to deliver 75 % of the envisaged impacts	6	Medium

Agasthyavanam biological park circle, Thiruvananthapuram (2014-2016)

The evaluation covered both Shendurney and Thiruvananthapuram Wildlife Divisions of the circle. Six different activities were undertaken in the circle. The distribution of activities is as follows:

S. No.	Activities	Divisions
1.	Assistance to tribal Vana Samrakshana Samidi	Shendurney, Thiruvananthapuram
2.	Construction, cleaning, desiltation of pond	Shendurney
3.	Eradication of exotic weeds	Shendurney
4.	Improving connectivity	Shendurney
5.	Purchase of equipment	Shendurney, Thiruvananthapuram
6.	Training to protective staff	Shendurney, Thiruvananthapuram

Due to paucity of funds in the period 2014-2016, the activities were carried out during 2017-2018

Social forestry, central circle, Eranakulam (2014-2016)

Though the APO listed eight activities for the period, only two were undertaken. They include the Fire Awareness Campaign in Idukki, Ernakulam, Thrissur and Palakkadand training to protect staff. Microchip Reader for captive elephant management in Social Forestry Division, Ernakulam, was procured. The evaluation team verified all the related documents, such as expenditure vouchers and photographs.

Social forestry, southern circle, Kollam (2014-2016)

Though Fire Awareness Campaign was envisaged in Malappuram, Kozhikode, Wayanad, Kannur and Kasaragode, funds were received only in 2017-2018; hence, no activity was carried out during the evaluation period.

Social forestry, northern circle, Kozhikode (2014-2016)

During the years 2014-2015 and 2015-2016, under CAMPA, several activities had been conducted such as fire awareness rally (walk, cycle, bike etc., camps, plantations, plastic waste management etc., in different districts (Kasaragode, Kannur Wayanad, Kozhikode and Malappuram) of Northern Kerala.The evaluation team verified all the related documents such as expenditure vouchers and photographs and observed 88.7 % financial achievement.

Forest headquarters, Thiruvananthapuram (2014-16)

At the Forest Headquarters, the interests generated from the funds of the CAMPA account were utilised for secretarial assistance at the office of the nodal officer to support works related to monitoring and evaluating the implementation of APOs. Under the Net Present Value (NPV) of the forest land fund, sixteen 4-wheel-drive vehicles were purchased, for field officers / Rangers/Forest Stations, well within the budget. The allotment orders, purchase orders, bank statements, utilisation certificates, cheque issue register and bills were verified and found correct. The Headquarters also allocated funds to purchase customised vehicle for crisis management for rapid response teams to all districts.The fund allotted was fully utilised for the activities mentioned above.

4. Recommendations and suggestions

The proposed evaluation had multiple objectives. *Inter alia*, this evaluation examined the impact of various activities in terms of increase in vegetation spread, soil and water conservation measures , infrastructure development, capacity building and the extent to which the objectives of CAMPA were achieved. The qualitative data were used to support further analysis of variations across regions and categories. The following are the recommendations and suggestions arising out of this present monitoring and evaluation of CAMPA activities in Kerala

(a) The success rate of the plantations was high overall and species-wise survival rates with progressing age across the regions revealed suitability of certain species over others. Some of the species though were slow growing, had established well despite minimal or no maintenance. These species could be used in future planting programmes, subject to the fact that the species selected could be matching with floristic composition of the respective forest types. A striking feature was the involvement of the local communities in the selection of the species, especially in the fringe areas, followed by planting and watch and ward. In most cases, gap planting has been taken up, with contour trenches established in the sites. This has facilitated natural regeneration of many species. In some sites, very poor establishment was observed. The major reasons include (i) heavy infestation of the invasives which prevented establishment of the planted saplings (ii) trampling of saplings by wild animals such as elephants, bear, wild boar and deer. Regular maintenance enables better establishment. A provision of watch and ward

provision for 4 to 5 years, excluding the plantation year would ensure good survival rates and better stocking in afforested sites.

(b) Composition of species was observed to differ between divisions and within sites in a division too. The number of species selected for planting in each site was also low. Though efforts have been taken to match the species with sites, a larger native species mix would improve success rates, and enable better planning for future plantings. Proper assessment of soil quality and climate conditions, would be very helpful for establishment of the saplings. All planting sites require at least 5 years of maintenance. This investment must be done to ensure success of the plantations. In areas of high biotic interference, 8 years of maintenance is desirable.

(c) Regional and state level workshops could be organized for prioritation of species for afforestation / enrichment planting in the forest areas by involving local communities, field staff of SFDs, forestry research institutions, NGOs and other stakeholders.

(d) Technical support can be obtained from forestry research institutions for transferring/developing seed handling techniques and nursery technologies for indigenous species prioritized for afforestation / enrichment planting.

(e) In remote locations and in locations with high damages to the planted seedlings by wild animals, manual seeding of indigenous species using "seed ball technologies" can be attempted.

(f) Maintenance costs should be linked to survival rates and strict guidelines should be framed regarding replanting in failed sites.

(g) Protection measures were not effective in many places. It is essential to provide maintenance provisions for five years so that the purpose is well achieved.

(h) Fodder plantations should be prioritied in elephant corridors which would act as deterrents to their entry into human-habitation.

(I) Most SWC works carried out in the forest areas are effective. The SMC activities, in most places, have increased the vegetation, indicating the moisture retention impacts. However, certain SWC structures are very crucial as they connect different ranges within a division. Such chappaths deserve special attention. Due to frequent flooding, heavy wear and tear is observed in most chappaths. The depth and width of rivers has increased in many sections. Such chappaths need to be replaced with concrete structures with the support of the PWD. Some of the water-holding structures are old, and not capable of holding water to the designed potential. Such structures may be abandoned.

(j) Anti-Poaching Camps (APC) have been established throughout the state in almost all divisions. The APCs are sufficienfly equipped with staff and modern equipment for protection activities. There is a need to regularly support the staff with protective gears and field survival kits.

(k) GIS-based forest survey monitoring has been attempted in the state. The staff report that this has helped prevent, contain and douse forest fires in many places. All staff have to be provided basic training in the use of advanced methods of monitoring for protection. The procedures of fire management / fire protection can be extended to the forest fringe area inhabitants in addition to school/ college students.

(l) Provisions need to be made in the budget for procuring more field vehicles, as a dearth in availability of these was observed.

(m) In almost all divisions, the maintenance of buildings, roads, SMCs are taken up regulalry. A fixed cycle could be adopted for maintenance and repair of civil works, rather than taking a routine annual maintenance.

(n) A decentralised allotment to the social forestry wings may be considered, to meet the local needs for each division.

(o) Encourage more research on development of artificial breeding or incubation units for sea turtles. In addition to census, research on habitat, feeding, breeding and migratory patterns will help in the management of key stone faunal species. It will also help the managers in identifying appropriate conservation related works.

(p) Incentives to temporary staff associated with the department's activities may be provided for more than ten years.

(q) Digitisation of records would enable easy access to information.

(r) Internal evaluation needs to be strengthened and a database must be established to monitor the changes. This would enable regular assessment of seasonal works like protection camps, fire protection works etc. Further, this report should also be made available during third party monitoring and evaluation.

(s) Timely fund release is viewed to be more helpful for executing the plantation activities in the respective APO execution years.

(t) Permanent structures created should be acknowledged through suitable markings to ensure proper visibility of CAMPA-funded activities.

Minutes of meeting

Third Party Evaluation of State CAMPA Activities in Kerala

23rd November 2021

Venue: VC Hall, IFGTB

Participants:

IFGTB	Kerala Forest Department
Dr. C. Kunhikannan, Director IFGTB	Shri. Rajeesh Ravindran IFS, CEO
Dr. R. Yasodha, Scientist G & GCR	CAMPA & APCCF
Dr. JP Jacob, Scientist G – *on leave*	Ms P. T. Sreelekha, ACF, SA&NO,
Shri. Rajesh Gopalan IFS - *online*	CAMPA
Dr. C. Buvaneswaran, Scientist F	
Dr. Kannan CS Warrier, Scientist F	
Dr. A. Karthikeyan, Scientist F	
Dr. D.R.S. Sekar, Scientist F – *not attended*	
Dr. Rekha R Warrier, Scientist F	
Dr. S. Saravanan, Scientist F	
Dr. A. Rajasekaran, Scientist F	

An online meeting was held on 23rd November 2021 at 10.00 am to discuss the modalities of third party evaluation of CAMPA-related works undertaken in Kerala by Kerala Forest Department.

Under CAMPA, various activities have been taken up to accelerate preservation of natural forests, management of wildlife, infrastructure development in the sector and other allied works.

Shri Rajesh Ravindran, CEO-CAMPA listed the different circles where CAMPA activities have been taken up. He sought evaluation of different protection activities, labour deployed for watch and ward, fire protection, and site suitability, especially regarding

ecorestoration of monoculture plantations, the species planted and their performance, etc.

Dr. S. Saravanan, Scientist F, presented the need for third-party evaluation to assess the various activities taken under State CAMPA. He elaborated on the requirements of the National CAMPA Authority concerning the monitoring while carrying out the evaluation.He also detailed the methodology for the evaluation process and the extent of sampling for the different activities taken under CAMPA based on the guidelines provided by the IIFM, Bhopal with necessary modifications. He also informed that IFGTB has experience working towards the evaluation of NAP of the NAEB in Kerala and providing consultancies to various industries. A team has been formed for the execution of the work.

This was followed by a discussion on the modalities for execution of the evaluation. The following points emerged.

1. An MoU would be signed between the Kerala Forest Department and IFGTB towards the activity. IFGTB would complete the evaluation within a period of six months from the date of release of funds.
2. State CAMPA would provide information, plantation journals, maps, measurement books, and all relevant records pertaining to the CAMPA works from 2009 to the present. Co-ordination in the state, local travel, lodging, and field support of personnel would also be provided by the Department.
3. The Department looks forward to APO-wise reports. Thus, six reports are envisaged at the end of the evaluation.
4. The sampling intensity was agreed upon.
5. A proposal including financial requirements and draft MoU would be sent to the CEO-CAMPA for perusal.
6. The CEO-CAMPA would visit IFGTB during the last week of November, 2021 for a detailed discussion and finalising the proposal.

Annexure II

Timelines of the Evaluation

Milestone	Activity
September 2021	Identification of ICFRE - IFGTB for third party monitoring
November 2021	Finalisation of activities under the third party monitoring
January 2022	Acceptance of project proposal of ICFRE - IFGTB for monitoring & evaluation of CAMPA activities in Kerala. Approval of the MoU.
March 2022	Signing of the MoU and release of the first instalment
April to June 2022	Field works
July to September 2022	Report preparation
September 2022	Release of the second instalment
October 2022	Submission of final report

Annexure III

APO-wise components implemented in various Circles

Component	Circle
Assistance to tribal Vana Samrakshana Samidi	Agasthyavanam biological park circle, Thiruvananthapuram Central circle, Thrissur Eastern circle, Palakkad Field director project tiger, Kottayam High range circle, Kottayam Northern circle, Kannur Social forestry, central circle, Eranakulam Southern circle, Kollam Wildlife circle, Palakkad
Awareness programme	Central circle, Thrissur Northern circle, Kannur Southern circle, Kollam Wildlife circle, Palakkad
Better connectivity includes culverts/foot bridges, roads Compensatory Afforestation Works	Wildlife circle, Palakkad Central circle, Thrissur High range circle, Kottayam Northern circle, Kannur Southern circle, Kollam
Conducting Nature Camps	Field director project tiger, Kottayam Northern circle, Kannur Southern circle, Kollam Wildlife circle, Palakkad

Component	Circle
Construction, cleaning, Desiltation of Pond	Agasthyavanam biological park circle, Thiruvananthapuram Field director project tiger, Kottayam High range circle, Kottayam Northern circle, Kannur Social forestry, central circle, Eranakulam
Eradication of Exotic weeds	Agasthyavanam biological park circle, Thiruvananthapuram Central circle, Thrissur Field director project tiger, Kottayam Wildlife circle, Palakkad
Fire Awareness Campaign	Social forestry, central circle, Eranakulam Social Forestry, Northern Circle, Kozhikode Social Forestry, Southern Circle, Kollam
Fire Watch Stations	High range circle, Kottayam
Interior Camp Sheds	Eastern circle, Palakkad Field director project tiger, Kottayam Wildlife circle, Palakkad
Light System as in fire force (Tower Lights)	Wildlife circle, Palakkad
Maintenance of checkdams and desilting	Wildlife circle, Palakkad
Mtce of Patrolling Routes / Trek Paths	Agasthyavanam biological park circle, Thiruvananthapuram Eastern circle, Palakkad Field director project tiger, Kottayam High range circle, Kottayam Wildlife circle, Palakkad
Providing Vehicle	Forests headquarters, Thiruvananthapuram
Purchase of Equipment	Agasthyavanam biological park circle, Thiruvananthapuram Eastern circle, Palakkad Field director project tiger, Kottayam High range circle, Kottayam Social Forestry, Northern Circle, Kozhikode Social forestry, central circle, Eranakulam Southern circle, Kollam Wildlife circle, Palakkad
Purchase of Microchip Reader for captive elephant management	Social forestry, central circle, Eranakulam

Component	Circle
River Bank Stabilization/Protection	Southern circle, Kollam
Soil and moisture conservation	Field director project tiger, Kottayam High range circle, Kottayam Social Forestry, Northern Circle, Kozhikode Social forestry, central circle, Eranakulam Southern circle, Kollam Wildlife circle, Palakkad
Training to protective staff	Agasthyavanam biological park circle, Thiruvananthapuram Central circle, Thrissur Eastern circle, Palakkad Field director project tiger, Kottayam High range circle, Kottayam Social Forestry, Northern Circle, Kozhikode Social forestry, central circle, Eranakulam Southern circle, Kollam Wildlife circle, Palakkad
Turtle Conservation & Monitoring	Social forestry, central circle, Eranakulam

Annexure IV

Monitoring and evaluation teams

Teams Region	1 Southern Circle, Kollam (1)	2 Southern Circle, Kollam (2)	3 High Range Circle, Kottayam (1)	4 High Range Circle, Kottayam (2)	5 FD PT, Kottayam (1)
Team Co-ordinators (Dr/Mr/Ms)	C. Buvaneswaran	Rekha R Warrier	Kannan CS Warrier	K. Murali Shankar	S. Saravanan
Team Leaders (Dr/Mr/Ms)	A. Balasubra-manian	R. Sumathi	K. Gireesan	A. Mayavel	S.P. Subramani
Member	N. Sivadasan	L.Vivek	K. Sureshkumar	J. Soosairaj	K. Senthil
Member	V. Mareeswaran	S. Sudha	K. Gopalakrishnan	P. Vignesh	M. Suryaprakash
Member	S.S. Abijith	R.G. Anitha	T. Pradeep	K.R. Shankar	R.Ariharasuthan
Member			C. Muthumanikam	M. Vishnu	M. Mahalingam
Team Co-ordinator (KFD)	Fen Antony, ACF	Fen Antony, ACF	KS Subash, ACF	Subash, ACF	Sandeep.S, ACF

Teams Region	6 FD PT, Kottayam (2)	7 Agasthyavanam biological park circle	8 Social Forestry, Southern Region, Kollam	9 Central Circle, Thrissur	10 Social Forestry, Central Region, Thrissur
Team Co-ordinators (Dr/Mr/Ms)	N.V. Mathish	A. Rajasekaran	A.C. Surya Prabha	D. Raja Suguna Sekar	J. Sriram
Team Leaders (Dr/Mr/Ms)	S.P. Subramani	Muhammad Ali Noushad	P. Chandrasekar	B. Deeparaj	A. Mayavel
Member	K. Senthil	P. Manoharan	J. Soosairaj	P. Malliga	R. Abinaya
Member	M. Suryaprakash	L. Mahalingam	P. Vignesh	S. Pragadeesh	C.V. Vijayam
Member	R.Ariharasuthan	S. Selvakumar	K.R. Shankar	R. Kalaiselvi	R. Sathishkumar
Member	M. Mahalingam	N. Vijayanand	M. Vishnu	C. Thamotharan	Rudranath, V.R.
Team Co-ordinator (KFD)	Sandeep.S, ACF	Ajith.N , ACF	Rohini. GR, ACF	V.P. Jayaprakash, ACF	Chinnu Janardhanan, ACF

Teams Region	11 Social Forestry, Northern Region, Kannur	12 Northern Circle, Kannur	13 Eastern Circle, Palakkad	14 Wildlife Circle, Palakkad	15 Research Division N and S, & Head quarters
Team Co-ordinators (Dr/Mr/Ms)	Madhavraj G. R	A. Karthikeyan	Rekha R Warrier	Rekha R Warrier	JP Jacob
Team Leaders (Dr/Mr/Ms)	K.N. Ashirth	R. Archana	S.Lalitha	A. Shanthi	K. Shanthi & Muhammad Ali Noushad
Member	Srijita Ganguly	C. Rajesh	M. Ganesan	R. Velumani	M.V.Vineetha
Member	M. Jeyakumar	S.M. Paulraj	N. Sudha	A. Sathish	P. Vipin
Member	V. Abirami	Remya T Radhan	Mishra Avinash	K. Rajasekaran	C. Kandasamy
Member	C.K. Suresh	M. Manikandan	S. Ajay		T. Govindaraj
Team Co-ordinator (KFD)	Sunil Kumar. K, ACF	Ajith K Raman, ACF	K. Manoj, ACF	Sanall.P., ACF	Adersh.M, ACF

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