# Third Party Monitoring and Evaluation of CAMPA Plantations and Other Activities

for the period
2009-2014

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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वन आनुवंशिकी एवं वृक्ष प्रजनन संस्थान
ICFRE - INSTITUTE OF FOREST GENETICS AND TREE BREEDING
भारतीय वानिकी अनुसंधान एवं शिक्षा परिषद्
Indian Council of Forestry Research & Education
पर्यावरण, वन एवं जलवायु परिवर्तन मंत्रालय, भारत सरकार
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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 to enhance the state's forest cover. The Kerala Forests & Wildlife Department prepared the Annual Plan of Operations (APO) for the years 2009-2010, 2010-11, 2011-12, 2012-13 and 2013-14, 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, was awarded the monitoring and evaluation of CAMPA activities undertaken. A team of IFGTB staff including forest officers, scientists and technical personnel 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. In total, 100 project sites were identified, and 141 activities for the first five years of CAMPA implementation from 2009 to 2014 were monitored and evaluated. Overall the CAMPA activities supported the forests and contributed in enhancing forest health in Kerala. I would like to acknowledge the Kerala Forests & Wildlife Department for their support and assistance in bringing out this document in a comprehensive manner.

( C. Kunhikannan )



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# Acknowledgements

We acknowledge the Kerala Forests & Wildlife Department for identifying ICFRE - IFGTB, Coimbatore, to evaluate the CAMPA activities carried out from 2009 to 2014. 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, who facilitated the evaluation work and extended valuable guidance in finalising the formats for assessment of different CAMPA activities in the state. We would like to 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 (2009-2014) |
| 2. | Period of evaluation work | Signing of MoU – March 2022<br>Field works – April to June 2022<br>Report preparation – July to September 2022 |
| 3. | Focus | Quality of conservation and development works.<br>Assessment of compensatory afforestation activities.<br>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.<br>• To evaluate the civil structures (buildings and soil & water conservation structures) established under CAMPA in different forest divisions of Kerala.<br>• To suggest for improvement in quality of plantations for future. |
| 6. | Area covered | 25 territorial forest divisions.<br>14 social forestry divisions.<br>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.<br>**Soil and Moisture Conservation(SMC) activities:** 20% of SMC works evaluated in each division based on random selection from measurement book (Mbook).<br>**Eradication of weeds:** Density assessment and plot transects.<br>**Forest protection:** 10% of all firelines evaluated in each division. |
| 8. | Findings | • The average survival rate in ecorestoration activities is 78%. Damage by wild animals is high in some divisions.<br>• The quality of other departmental works was rated as high (72%) .<br>• Check-dams and gullies are the major SMC works taken up.<br>• 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 Government of India released **Rs. 7,18,64,000** for the period 2009-10 to 2013-14 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 thirdparty 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 plans 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 MoEF & CC, 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 inpre-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), Section Forest Officers, Forest Beat Officers (FBOs), 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 2009-10 to 2013-14

- The total funds received from the adhoc CAMPA up to APO year 2013-14 stands at Rs. 7.18 crores and the expenditure ending March 2014 was 6.38 crores which is 88.73% of the funds received. The core activities undertaken with the CAMPA funds comprise plantations, creation of SMC structures, forest protection, wildlife management and assistance to tribal Vana Samrakshana Samidi .
- 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 of soil and moisture conservation activities were prioritised (70%). The VSS members were engaged in almost all the activities.
- Various SMC structures in CAMPA APOs includes 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 eco-restoration, planting and silvicultural operations were minimal (undertaken only in two circles) in the initial years of CAMPA implementation. Most activities were done departmentally, in an economical and time-saving approach. River bank stabilisation, vegetation barrier creation and eradication of weeds were taken up in one site.
- Inclusion of Vana Samrakshana Samidi members in patrolling, fire break creation, developing infrastructure in interior forest areas, has encouraged their active participation in conservation activities.

- Training and capacity development programmes were taken under CAMPA includes theme based trainings, strengthening communication and plantation skill development.
- Under infrastructure development, efforts were taken to repair / improve dilapidated structures. The major construction activities undertaken with the help of CAMPA funds were antipoaching campsheds.

## Recommendations & Suggestions

1. Species should be selected on the basis of floristic composition of the forest types and prevailing local soil conditions 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 is 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 frontline staff may be trained on seed handling and nursery technologies of native tree species.

# Monitoring and Evaluation of CAMPA Plantations and Other Activities (2009-2014)

## 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 9837.17sq km area under open forest.

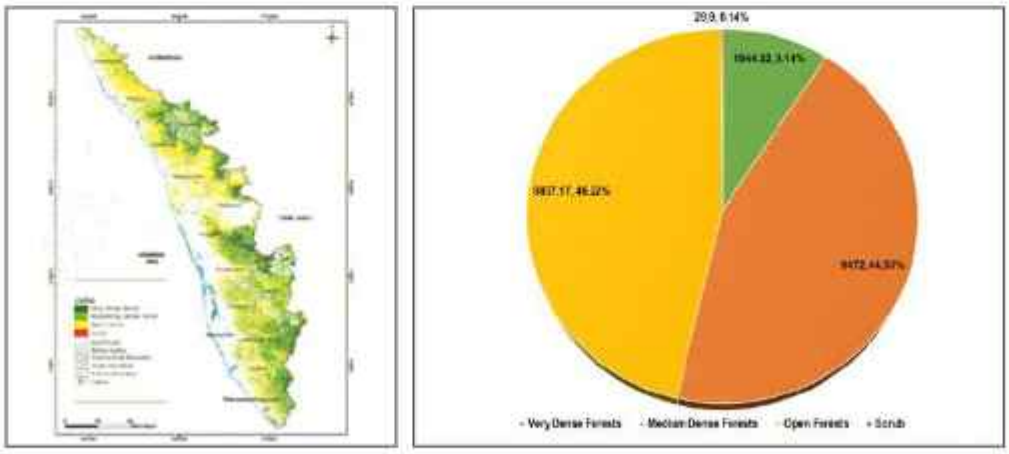
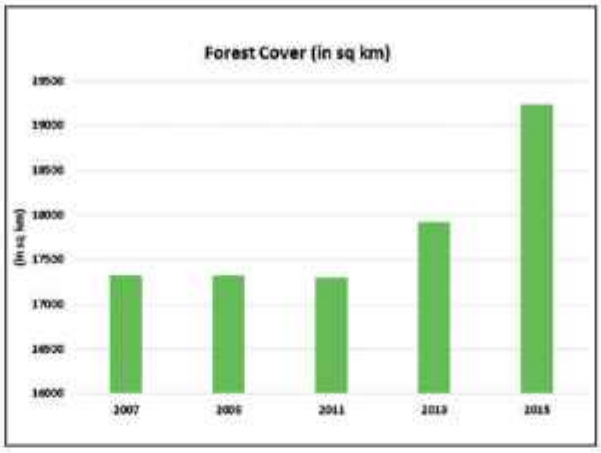



Fig. 1.1: Forest Distribution

***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.




## 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 1.1 provides the distribution across districts.

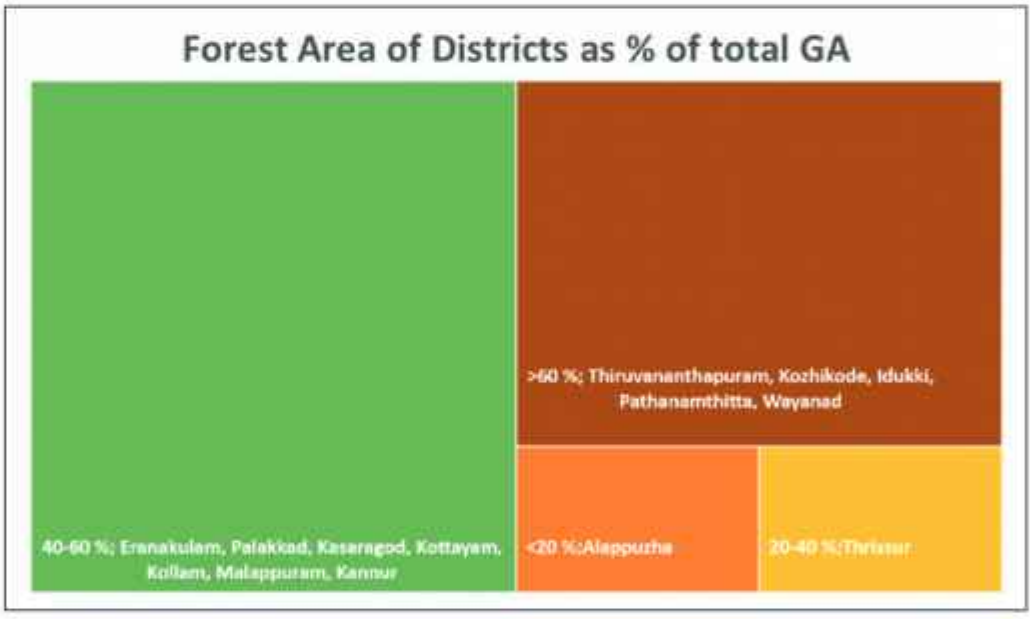



Table 1.1: District wise forest cover

| 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 |
| Kasaragod | 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 |
| Kottayam | 2206 | 11.31 | 525.73 | 562.01 | 1099.05 | 49.82 | 0 |

| District | Geo-graphical Area (GA) | VDF | MDF | OF | Total | %of GA | Scrub |
|---|---|---|---|---|---|---|---|
| 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 District Forest

Officers (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 2009 to 2014 is Rs. **7.18** 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 10$^{th}$ 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 30x30 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 M-Books from various divisions.

### III. Eradication of weeds

**Density assessment - plot counts**

- Three or more plots (quadrats) of size 10 x10 m (located randomly over the site) were marked, and the number of plants within the plots was counted.
- To get the actual number per hectare, multiplied the average number of plants in the plots by 100.

**Plot transects**

- Marked out 100m transects, keeping them parallel to one another (10m-50m 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 hectare).

### IV. Forest protection

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

## V. Qualitative Aspects

**Focussed group discussion (FGD):** 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' heading 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 were 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 while planting
- 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 Nemmara Forest Divisions |
| | Central Circle, Thrissur. | Thrissur, Chalakkudy, Vazhachal and Malayattoor Forest 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. |

| | Circles | 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 |

## Northern circle, Kannur (2009-2014)

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

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

Twelve 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 | South Wayanad |
| 2. | Cairns and boundary consolidation | South Wayanad |
| 3. | Compensation to victims | South Wayanad |
| 4. | Compensatory afforestation | North Wayanad |
| 5. | Construction and maintenance of campshed | South Wayanad |
| 6. | Construction of check dam | Kannur, Kozhikode, North Wayanad, South Wayanad |
| 7. | Construction of solar fencing | South Wayanad |
| 8. | Elephant proof trench | South Wayanad |
| 9. | Joint patrolling and raids | South Wayanad |
| 10. | Protection campshed and ration | South Wayanad |
| 11. | Purchase of equipment | South Wayanad |
| 12. | Soil and moisture conservation | North Wayanad, South Wayanad |

### 1. Assistance to Tribal Vana Samrakshana Samidi

The South Wayanad Division assisted the tribal VSS in the form of employment as mazdoor, fire watchers etc. The details pertaining to the payments were verified from records and found correct.

## 2. Cairns and boundary consolidation

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

## 3. Compensation to victims

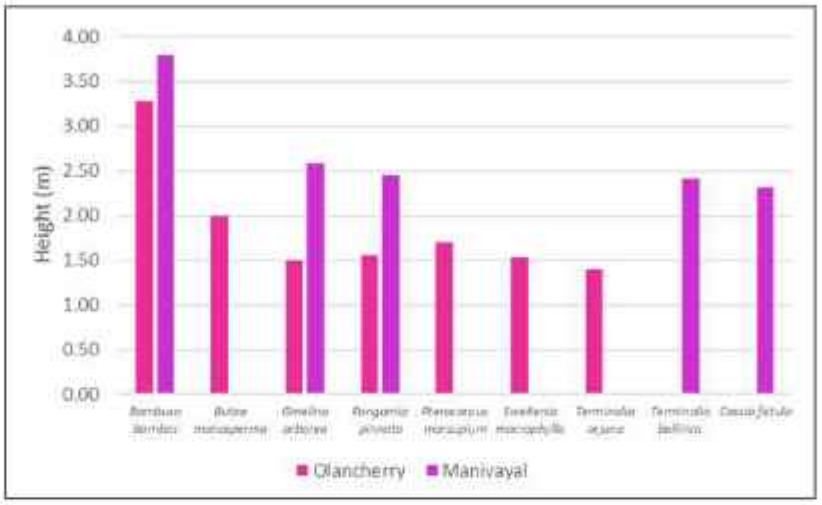
The documents were physically verified and found correct. It involves payments to victims of elephant infiltration into human settlements.

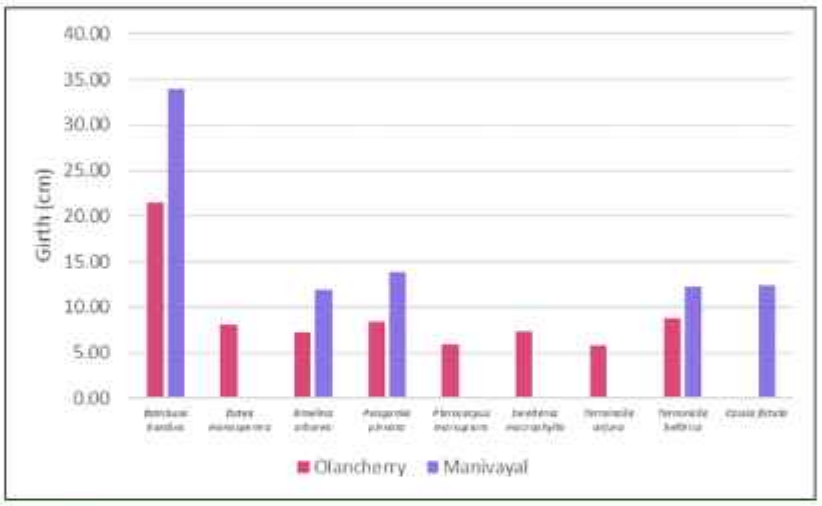
## 4. Compensatory afforestation

Compensatory afforestation was undertaken only in the North Wayanad Division in two locations.

Plant survival Rate: Plant survival rate varied between the two locations. Gap planting undertaken in Manivayal in Begur range showed the highest survival rates.

| S. No. | Divisions | Area (ha)/ Planting | Species | Survival (%) | Remarks |
|---|---|---|---|---|---|
| 1. | Olancherry | 29.1 / Gap planting | *Bambusa bambos, Butea monosperma, Gmelina arborea, Pongamia pinnata, Pterocarpus marsupium Sweitenia macrophylla, Terminalia arjuna, Terminalia bellirica* | 80 | Maintained subsequently for four years. Hence plantation established well. *Pterocarpus marsupium* did not perform well. |
| 2. | Manivayal | 6 ha/ Gap planting | *Cassia fistula, Gmelina arborea, Pongamia pinnata, Terminalia bellirica* | 86 | All the species established well. |




| S.No. | *Species planted in compensatory afforestation programmes* |
|---|---|
| 1. | *Bambusa bambos* |
| 2. | *Butea monosperma* |
| 3. | *Cassia fistula* |
| 4. | *Gmelina arborea* |
| 5. | *Pongamia pinnata* |
| 6. | *Pterocarpus marsupium* |
| 7. | *Sweitenia macrophylla* |
| 8. | *Terminalia arjuna* |
| 9. | *Terminalia bellirica* |

## 5. Construction and maintenance of campshed

| Sites | GPS Location | Year of Construction | Dimensions (m) | Remarks |
|---|---|---|---|---|
| 1 | N11°45'43.93" E76°06'11.51" | 2009-2010 | 7 x 2 x 6 | The condition of the structure is good. The activity was completed in 2012-2013. |

The works were evaluated for the physical existence and for the quality. The specifications were checked by verifying the old vouchers and the estimates. It is observed that, the building maintenance was found necessary in some cases and was very useful to the occupants.

**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/ Chedleth / Padiri / Ammani, Manalvayal | The shed is maintained well. | The shed is useful for the frontline staff. | 7 | High |

## 6. Construction of check dam

The work is reported to be executed during 2013-2014. However, no physical verification could be done.

## 7. Construction of solar fencing

| Location | Year | Remarks |
|---|---|---|
| Orkittammolla., Ammani | 2013-14 | The solar fencing was physically verified. There were minor damages to the fences. Records were verified and found correct. |
| Chakkitta, Ammani, Chedleth Range | 2013-14 | The solar fencing was physically verified. There were minor damages to the fences. Records were verified and found correct. |

## 8. Elephant Proof Trench

| Location | Year | Remarks |
|---|---|---|
| Punchakolly, Koodallor, Pambra Area | 2013-14 | The trenches were physically verified. |
| Maramala, Chedleth Range | 2013-14 | The trenches were physically verified. |
| Punchakolly, Chedleth Range | 2013-14 | The trenches were physically verified. |
| Maramala gate, Chedleth Range | 2013-14 | The trenches were physically verified. |

## 9. Joint patrolling and raids

Vouchers, bills and payments made towards mazdoors for joint patrolling and raids were verified and found correct.

## 10. Protection campshed and Ration

The work is reported to be executed during 2013-2014.

## 11. Purchase of equipment

The fire fighting and fire protection equipment procured by the divisions were verified from records and found correct.

## 12. Soil and moisture conservation

| S. No. | Asset /area details | Year | Volume ($m^3$) | Remarks |
|---|---|---|---|---|
| 1. | Gully plugging / Nariyamthode, Sugandhagiri Section, Kalpetta Range | 2013-14 | 5.27 | The structure is in good condition |
| 2. | Gully plugging / Kattimathode, Sugandhagiri Section, Kalpetta Range | 2013-14 | 51.39 | The structure is in good condition |
| 3. | Pond digging / Tower kunu, Begur Range (N11$^0$ 52' 33.20", E76$^0$ 03' 44.42"; Elevation-917m) | 2013-14 | - | The pond stores water at half capacity. |

Four activities were taken up during 2012-13; two during 2010-11 while just one activity was taken up during 2009-10 and 2011-12. The Cairns & Boundary Consolidation activity to be taken up in 2011-12 was taken up during 2013-14. Overall, an amount of Rs. 120.58 lakhs was allotted to the circle during the period of which 90 percent financial achievement was observed.

## Eastern circle, Palakkad (2009-2014)

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

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

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

| S. No. | Activity | Divisions |
|---|---|---|
| 1. | Assistance to tribal Vana Samrakshana Samidi | Nenmara, Nilambur North |
| 2. | Construction and maintenance of campshed | Nenmara, Palakkad |
| 3. | Construction of check dam/ pond | Mannarkkad, Nenmara, Nilambur North, Nilambur South, Palakkad |
| 4. | Contour bunds | Nenmara |
| 5. | Elephant proof trench | Nenmara |
| 6. | Improving connectivity | Mannarkkad |
| 7. | Interior campshed and ration | Nenmara, Nilambur South, Palakkad |
| 8. | Joint patrolling and raid | Nilambur North |
| 9. | Planting | Nenmara |
| 10. | Purchase of equipment | Nilambur South |
| 11. | Soil and moisture conservation | Nenmara, Palakkad |
| 12. | Soil and moisture Conservation dry rubble | Nenmara |
| 13. | Vegetation barrier by grass | Nenmara |

### 1. Assistance to tribal Vana Samrakshana Samidi

Discussions were held with two Vana Samrakshana Samidi groups in Mangalam dam (Nenmara) and Nilambur on the implementation of CAMPA activities in the Divisions. Employment through maintenance of plantations under compensatory afforestation, fire watchers, ecotourism activities, and facilities such as provision of skinwood door, door fittings, and fixing of doors has been done for their households. Both divisions have good rapport with the tribals in their divisions.

### 2. Construction and maintenance of campshed

| Sites | GPS Location | Year of Construction | Dimensions (m) | Remarks |
|---|---|---|---|---|
| 1 | N10$^0$ 28' 23.24" E76$^0$ 33' 11.85" | 2010-11 | 4.0 x 6.0 | The structure is in good condition. |
| 2 | N10$^0$ 34' 31.29" E76$^0$ 44' 31.19" | 2012-13 | 6.0 x 3.7 | The structure is in good condition. The activity was completed in 2014-15. |

The camp sheds were evaluated for their physical existence and the quality of the assets. The specifications of the campsheds were checked by physical measurements and verifying the old vouchers and estimates.

### Observations of the 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 / Alathur/ Kadappara | The structure is in good condition. | It is regularly used by the frontline staff. | 7 | High |
| 2. | Contour Bund/ Kollengode / Kalliyampara | The structure is in good condition. | It is regularly used by the frontline staff. | 7 | High |

## 3. Construction of Check Dam/ Pond

| Sites | GPS Location | Year of Construction | Dimensions ($m^3$) | Remarks |
|---|---|---|---|---|
| 1. | N11°0' 23.16" E76°31' 43.17" | 2012-13 | 210.0 | The structure is in good condition. |
| 2. | N10°34' 11.69" E76°39'6.31" | 2012-13 | 41.5 | The structure is in good condition. The activity was completed in 2014-15. |
| 3. | N 10°52'58.55" E 76°39'16.57" | 2011-12 | 72 | The structure is in good condition. |

| Sites | GPS Location | Year of Construction | Dimensions ($m^3$) | Remarks |
|---|---|---|---|---|
| 4. | N11°18' 57.97" E76°11'45.48" | 2012-13 | 354.66 | The structure is in good condition. The activity was completed in 2019-20. |
| 5. | N11°18' 47.6" E76°21' 38.8" | 2012-13 | Plastering: 14.0 $m^3$; Earthwork: 107.0$m^3$; Foundation: 155.0$m^3$ RCC: 79 $m^3$ | The structure is in good condition. |

The works were evaluated for the 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. | Check Dam / Mannarkkad/ Vattappara | The check dam is maintained well and appears healthy | The moisture content in surrounding areas is improved, as evidenced by the green vegetation. | 7 | High |

| 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 |
|---|---|---|---|---|---|
| 2. | Check Dam / Kollengode range Elavancheri | The check dam is maintained well and appears healthy | The moisture content in surrounding areas is improved, as evidenced by the green vegetation. | 8 | High |
| 3. | Check Dam / Olavakkode range / Elival section / Velampotta | The check dam is maintained well and appears healthy | The moisture content in surrounding areas is improved, as evidenced by the green vegetation. | 7 | High |
| 4. | Check Dam / Tharamattam/ Ottupalthodu | The check dam is maintained well and appears healthy | The moisture content in surrounding areas is improved, as evidenced by the green vegetation. | 8 | High |
| 5. | Check Dam / Nilambur South/ Karulai/ Moochikkala | The check dam is maintained well and appears healthy | The moisture content in surrounding areas is improved, as evidenced by the green vegetation. | 7 | High |

### 4. Contour Bunds

| Sites | GPS Location | Year of Construction | Dimensions (m) | Remarks |
|---|---|---|---|---|
| 1 | N10°34'27.42" E76°44'14.26" | 2014-15 | - | The structure is in good condition. |

The bunds have been physically verified and the specifications were checked by physical measurements and verifying the old vouchers and 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. | Contour Bund/ Kollengode / Kalliyampara | The structure is in good condition. | It supports the soil stabilisation. | 7 | High |

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

## 5. Improving connectivity

Records pertaining to maintenance of Patrolling routes in Mannarkkad Division - Ayyappan thavalam under Singappara forest station in Agali range (N10° 58' 10.413"; E76° 37' 54.89") were verified and found correct.

## 6. Interior campshed and ration

| Sites | GPS Location | Year of Construction | Dimensions (m) | Remarks |
|---|---|---|---|---|
| 1. | N11°18'25.92" E76°26'31.92" | 2009-10 | 72m$^2$ | The structure is in good condition. |
| 2. | N10°52'47.3" E76°48'09.0" | 2011-12 | 72m$^2$ | The structure is in good condition. |

The works were evaluated for the 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

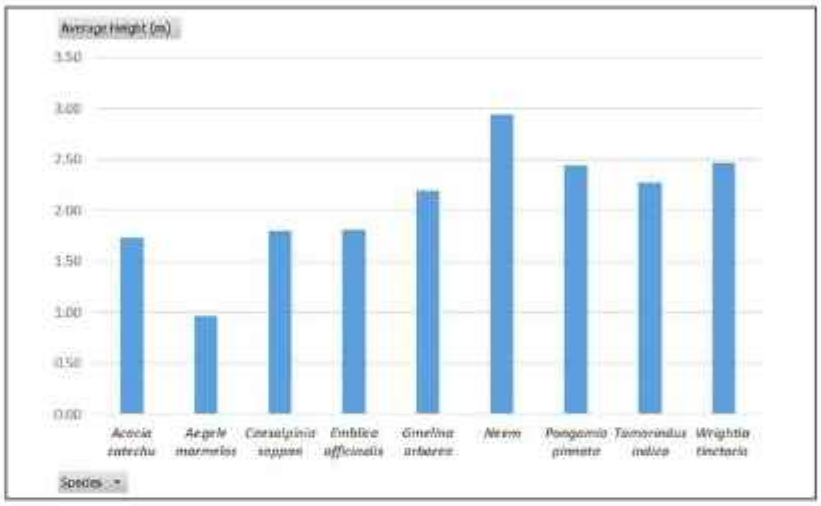
| Sl. No. | Type of Assets/ Division / Range | Type of current use/ Observations | Impact | Score (Low, < 3, Medium >3 to<7, High 7 to 10 | Assessment on the quality of the asset - Low, Medium or High |
|---|---|---|---|---|---|
| 1. | Camp shed / Nilambur South / Karulai / Panapuzha | Maintenance like tress work over the existing camp shed. | It is regularly used by the frontline staff. | 7 | High |
| 2. | Camp shed/ Walayar | The structure is in good condition. | It is regularly used by the frontline staff. | 7 | High |

## 7. Joint patrolling and raid

Joint patrolling activities were taken up in Edavanna, Vazhikkadavu ranges of Nilambur north division. The activities were verified through inspection of records and found correct.

## 8. Planting

Planting was envisaged in the APO 2012-2013 in Nenmara Division. However, the same could be achieved only during 2015-2016. Nine species were planted in Killimala in Kollengode, Nenmara division in 15 ha area. Plant survival rate was good but varies between species.




Growth performance of the different species in Killimala, Nenmara division

There was heavy undergrowth of grasses, and the field was completely infested with weeds such as Lantana and Eupatorium. The plantation was well stocked with a survival of 76 per cent.

### 9. Purchase of equipment

The records revealed that field equipment for antipoaching squad and watchers such as torches, emergency life saving equipments, solar charged lights were procured and distributed.

### 10. Soil and moisture conservation dry rubble

Gully plugging using dry rubble was carried out in Vellakkalthittu, Kollengode range in an area of 82.5 $m^3$ (N10°31'44.22",E76°37'59.40" and N10° 31'42.93" E76°37'59.31"). The gullies are in good condition.

Two activities were taken up during 2009-10 in the circle, four during 2010-11, five each during 2011-12 and 2012-13. The circle implemented all the activites listed in the APO. Spillovers were observed with regard to planting and construction of campshed. Overall, an amount of Rs. 93.81 lakhs was allotted to the circle during the period of which 70 percent financial achievement was observed.

### Central circle, Thrissur (2009-2014)

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

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

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 | Chalakkudy, Vazhachal |
| 2. | Cairns and boundary consolidation | Chalakkudy, Thrissur |
| 3. | Compensatory afforestation | Chalakkudy |
| 4. | Construction and maintenance of campshed | Chalakkudy |
| 5. | Construction of check Dam/ Pond | Chalakkudy, Malayattoor, Thrissur |
| 6. | Eradication of exotic weeds | Vazhachal |
| 7. | Interior campshed & Ration | Malayattoor |
| 8. | Joint patrolling and raid | Vazhachal |
| 9. | Soil and moisture conservation | Malayattoor |

## 1. Assistance to tribal Vana Samrakshana Samidi

Discussions were held with a Vana Samrakshana Samidi group on the implementation of CAMPA activities in Vazhachal Division. Employment through maintenance of plantations under compensatory afforestation, fire watchers, ecotourism activities, and skill development (tailoring units, honey processing) have been provided.

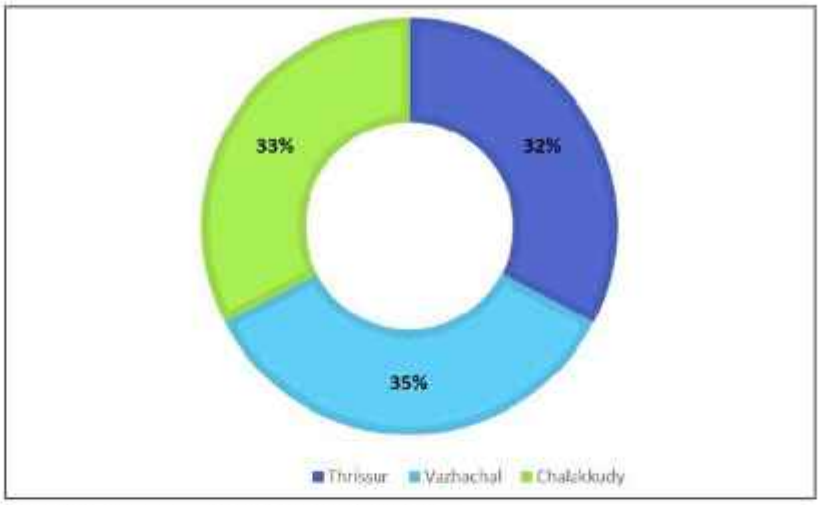
## 2. Cairns and boundary consolidation

The cairns at the boundary of forests in Mankuttipadam, Vellikulangara Range Chalakkudy were inspected and found damaged. This work was envisaged in 2011-12; however, it was completed in 2014-15.

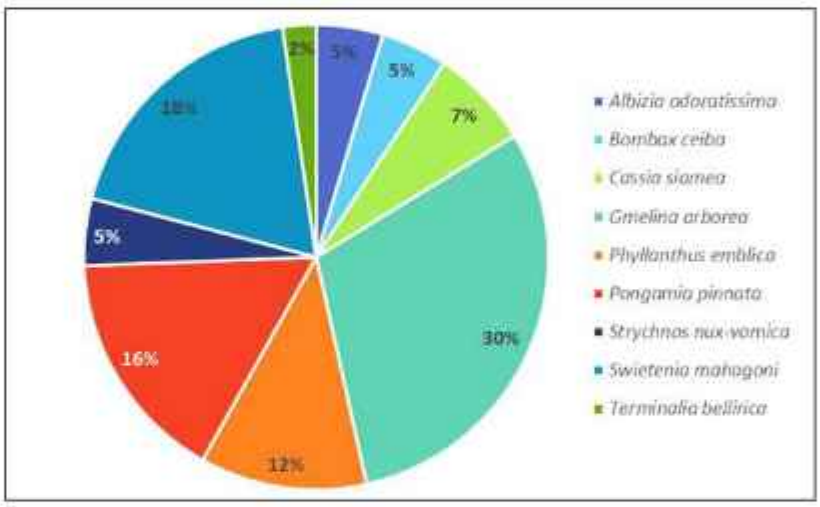
## 3. Compensatory afforestation

**Plant survival Rate:** Plant survival rates did not vary significantly between divisions; however, the species composition was different. *Gmelina arborea* was found to perform better in Thrissur and Vazhachal while *Artocarpus heterophyllus* survived better in Chalakudy.

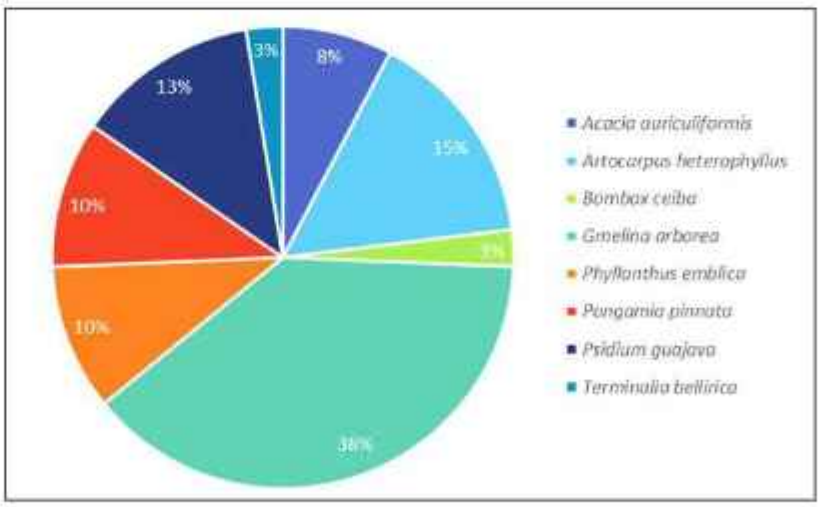
| S. No. | Divisions | Area (ha)/ Planting | Species | Survival (%) | Remarks |
|---|---|---|---|---|---|
| 1. | Thrissur | 18.0 / Gap planting | *Albizia odoratissima, Bombax ceiba, Cassia siamea, Gmelina arborea, Phyllanthus emblica, Pongamia pinnata, Strychnos nux-vomica , Swietenia mahagoni, Terminalia bellirica* | 80 | Pest: Leaf Defoliator Insect: Pungam Gall formation on leaves Leaf *spot:* Pungam, Leaf blight: Pungam Leaf scorching: Ailanthus (Yellow discolouration of leaves) |
| 2. | Vazhachal | 10.0 / Gap planting | *Acacia auriculiformis, Artocarpus heterophyllus, Bombax ceiba, Gmelina arborea, Phyllanthus emblica, Pongamia pinnata, Psidium guajava, Terminalia bellirica* | 85 | Pest Leaf Defoliator Insect Pungam Gall formation on leaves Leaf spot Pungam, Algal leaf spot Guava Leaf spot: Jack fruit |
| 3. | Chalakkudy | 2.12/ Gap planting | *Ailanthus excelsa, Artocarpus heterophyllus, Artocarpus hirsutus, Azadirachta indica, Dalbergia latifolia, Dendrocalamus strictus, Pongamia pinnata, Terminalia bellirica , Terminalia paniculata, Wrightia tinctoria* | 80 | 1. Emblica - Damaged by sambar deer andcaterpillar damage 2. Pungam -Leaf Gall |



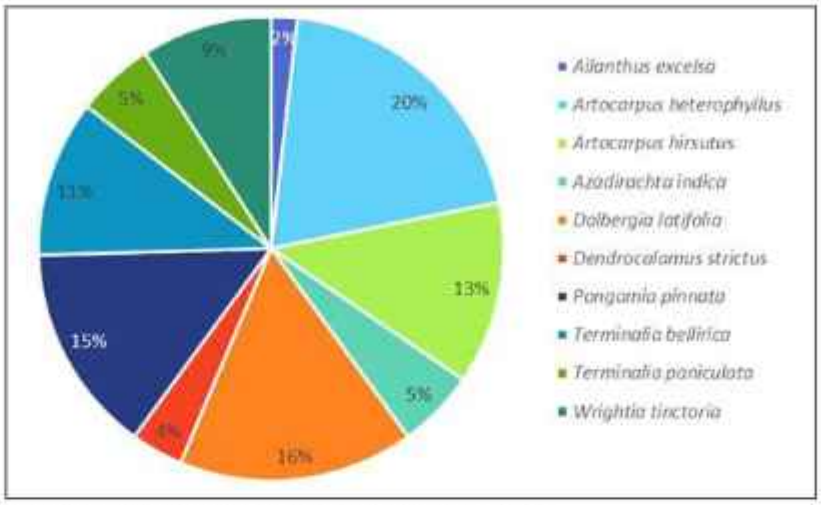

Overall survival rates (%) across divisions



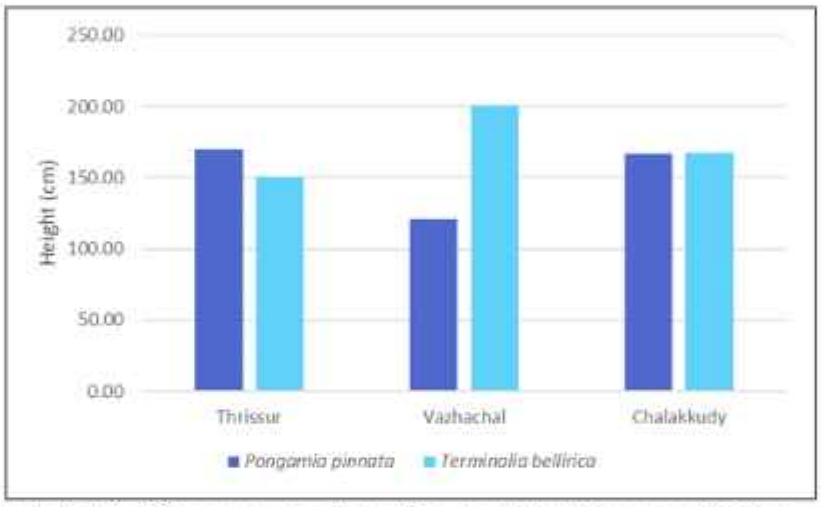

Survival pattern of species in Thrissur Division



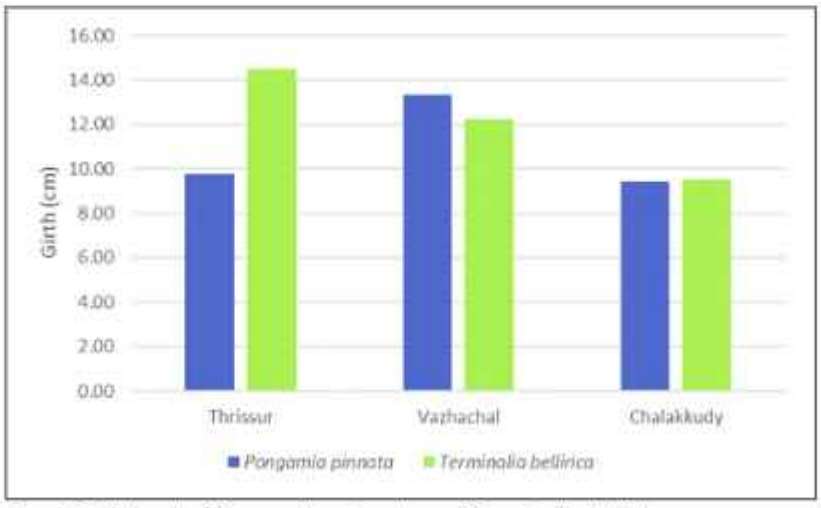

Survival pattern of species in Vazhachal Division




Survival pattern of species in Chalakkudy Division




Height (m) of Pongamia pinnata and *Terminalia bellirica* across divisions in Central Circle, Thrissur




Basal Girth (cm) of *Pongamia pinnata* and *Terminalia bellirica* across divisions in Central Circle,Thrissur

**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.

Since these plantations were raised during the period 2009-2014, watch and ward provision was made for three years, excluding the plantation year. 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 well maintained.

## 4. Construction and maintenance of campshed

The construction of collection shed at Chakkiparambu, Malambatty Colony of Palappilly Range was reported to be executed during 2013-2014. Records related to the work were verified.

## 5. Construction of check dam/ pond

| Sites | GPS Location | Year of Construction | Dimensions (m) | Remarks |
|---|---|---|---|---|
| 1 | N10°33'43" E76°18'44" | 2015 | 1.05 x 3.1x 33.45 | The activity was envisaged in 2012-13. The check dam is in good condition. |
| 2 | N10°10" 41.88" E76°39' 55.72" | 2015 | 0.8 x1.7 x 16.3 | The activity was envisaged in 2012-13. The check dam is in good condition. |
| 3 | N10°11'46.9" E76°33'43.5" | 2016 | 15.25 x 1.20 x 2 | The activity was envisaged in 2012-13. The check dam wast is partially damaged. |

The works were evaluated for the physical existence and for the quality. The specifications of all check dams were checked by verifying the old vouchers and the estimates. It is observed that, one of the check dams in Chalakudy was partially damaged.

### Observations of the 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/ Pattathipara / Thrissur | The check dam is maintained well and appears healthy | The moisture content in surrounding areas is improved, as evidenced by the green vegetation. | 7 | High |

| 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 |
|---|---|---|---|---|---|
| 2. | Check dam/ Chemminkuthu /Thundaththil/ Malayattoor | The check dam is maintained well and appears healthy | The moisture content in surrounding areas is improved, as evidenced by the green vegetation. | 8 | High |
| 3. | Check dam/ Vettilappara/ Chalakudy | The check dam has been partially damaged. | The check dam requires maintenance to improve moisture retention in adjoining areas. | 5 | Medium |

### 6. Eradication of exotic weeds

Eradication of Exotic weeds was undertaken in Vazhachal Division during 2014-15 against the APO 2011-2012, based on the records verified.

### 7. Interior campshed and ration

The work is reported to be executed during 2009-2010 in Malayatoor Division.

### 8. Joint patrolling and raid

Joint patrolling activities were taken up in Vazhachal division. The activities were verified through inspection of records and found correct.

### 9. Soil and moisture conservation

This activity was undertaken in the Malayattoor Division during 2014 -15 against the APO 2010-2011. The work is reported to be executed at Nediyapara in Pooyamkutty Forest Station, based on the records verified.

Four activities were planned during 2010-11 in the circle, two during 2011-12, one each during 2009-10, 2012-13 and 2013-14. Spillovers were observed in check dams, SMC activities. Overall, an amount of Rs. 54.81 lakhs was allotted to the circle during the period of which 97.8 percent financial achievement was observed.

## High Range circle, Kottayam (2009-2014)

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

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

Seven 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 | Kothamangalam, Munnar |
| 2. | Construction and maintenance of campshed | Kothamangalam |
| 3. | Construction of check dam/ pond | Kothamangalam, Kottayam, Mankulam, Marayoor, Munnar |
| 4. | Interior campshed and ration | Kothamangalam |
| 5. | Joint patrolling and raid | Marayur |
| 6. | Purchase of equipment | Kothamangalam |
| 7. | Soil and moisture conservation | Kothamangalam, Munnar |

## 1. Assistance to tribal Vana Samrakshana Samidi

Discussions were held with two Vana Samrakshana Samidi groups on the implementation of CAMPA activities in Kothamangalam and Munnar Divisions. The Tribal Vana Samrakshana Samidi were engaged in protection mazdoor, collection, protection and sale of MFP at Thommankuthu Eco- Tourism Centre in Neduvakkadu Section in Kaliyar Range.

## 2. Construction and maintenance of campshed

| Sites | GPS Location | Year of Construction | Dimensions ($m^2$) | Remarks |
|---|---|---|---|---|
| 1 | N09°91025° E76°88235° Elevation-569 m | 2010 -2011 | 33.8 | The work was carried out during 2013-2014 and completed in 2014-15. |

Campshed completely destroyed by elephants

### Observations of the 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. | Anti-Poaching Campshed/ Kothamangalam /Thodupuzha/ Keezhar | The campshed is completely destroyed by elephants. | Inconvenient for the anti-poaching squad. | Low | Low |

### 3. Construction of check dam/ pond

| Sites | GPS Location | Year of Construction | Dimensions ($m^3$) | Remarks |
|---|---|---|---|---|
| 1 | N10°02016°<br>E76°7338°<br>Elevation- 56 m | 2012-2013 | 12.75; 4.08; 2.04; 12.0 | Four check dams were assessed. The structures are in good condition. |
| 2 | N09°27.402'<br>E76°55.342'<br>Elevation- 147 m | 2012-2013 | 2.4; 7.68; 2.52; 2.52 | The structures are in good condition. The work was carried out during 2014-2015 and completed in 2015. |
| 3 | N10°14' 39.88"<br>E77°10' 39.96"<br>Elevation- 1023m | 2012-2013 | 9.408 | The structure is in good condition. |
| 4. | N10°04' 48.79"<br>E77°56' 12.75"<br>Elevation- 1056m | 2014-2015 | Plastering: 58.75<br>Earthwork: 58.05<br>Foundation: 33.15<br>RCC: 26.1 | The structure is in good condition. The work was carried out during 2014-2015. |

**Observations of the 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/ Kothamangalam / Mullaringad | Water is stored to half-capacity | The moisture content of surrounding areas improved, as evidenced by the dense vegetation growth. | 9 | High |
| 2. | Check dam/ Kottayam/ Erumely/ Kalaketty Parathode | Water is stored to full capacity. | The moisture content of surrounding areas improved, as evidenced by the dense vegetation growth. | 10 | High |
| 3. | Check dam/ Marayoor/ Kanakkayam /Kanthalloor | Water is stored to half-capacity | The moisture content of surrounding areas improved, as evidenced by the dense vegetation growth. | 9 | High |
| 4. | Check Dam/ Mankulam/ Mankulam/ Kambany Kudy | Water is stored to half-capacity | The moisture content of surrounding areas improved, as evidenced by the dense vegetation growth. | 9 | High |

### 4. Interior campshed and ration

| Sites | GPS Location | Year of Construction | Dimensions (m) | Remarks |
|---|---|---|---|---|
| 1 | N10°01621" E76°78644" Elevation- 78 m | 2009-2010 | Room: 5.0 x 4.0 Toilet : 1.25 x 1.5 | The camp shed was constructed with steel structure and covered with GI corrugated sheets. The work was carried out during 2012-2013. |

**Observations of the 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/ Kothamangalam / Mullaringad | The camp shed is maintained well and in use. | The shed is regularly used by the frontline staff. | 10 | High |

## 5. Joint patrolling and raid

Joint patrolling activities were taken up in Marayoor division. The activities were verified through inspection of records and found correct.

## 6. Soil and moisture conservation

Gully plugginng was carried out in Marayoor Division.

| Sites | GPS Location | Year of Construction | Dimensions (m) | Remarks |
|---|---|---|---|---|
| 1 | N10°15' 32.98" E77°08' 55.42" Elevation- 1018m | 2012-2013 | 7.6x 2.57 | The structure is in good condition. |
| 2. | N10°15' 11.72" E77°08' 57.77" Elevation- 967m | 2012-2013 | 7.6x 2.57 | The structure is in good condition. |

Present status of gully plugging at Pobson Oda Thodu at Marayoor

Present status of gully plugging at Kozhippanna Thodu at Marayoor

**Observations of the 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/ Marayoor/ Marayoor/ Nachivayal Sandal Reserve (NSR-II)/ Pobson Oda Thodu | The gully plugging structure is intact. | The gully plugs have enabled stabilisation of the soil to a large extent. | 8 | High |
| 2. | Gully Plugging/ Marayoor/ Marayoor/ Nachivayal Sandal Reserve (NSR-II)/ Kozhippanna Thodu | Four gully pluggings undertaken in Kuppanodu Thodu, Pobson Oda Thodu, Kozhippanna Thodu and Eco Point Thodu are intact. | The gully plugs have enabled stabilisation of the soil to a large extent. | 7 | High |

In Kottayam division, this work was carried out during 2017-18.

Two activities were taken up during 2009-10 in the circle, four during 2010-11, one during 2012-13. Construction of check dams was the major activity taken up in the Circle during the period. No new activities were taken up during 2013-14. Activites envisaged in 2012-13 were completed during this period. Check dam construction at Mankulam is reported to be executed during 2012-13 however, no physical verification was done. SMC works at Kothamangalam is reported to be executed during 2013-2014. The circle implemented all the activites listed in the APO. Overall, an amount of Rs. 43.5 lakhs was allotted to the circle during the period of which 92 percent financial achievement was observed.

## Southern circle, Kollam (2009-2014)

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

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

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 | Konni, Ranni |
| 2. | Interior campshed and ration | Konni, Ranni |
| 3. | Catchment area treatment | Ranni |
| 4. | Compensatory afforestation | Konni, Ranni, Punalur, Thenmala |
| 5. | Construction and maintenance of campshed | Achenkovil, Punalur |
| 6. | Construction of check dam/ pond | Konni, Ranni |
| 7. | Joint patrolling and raid | Konni, Ranni |
| 8. | Purchase of equipment | Ranni |
| 9. | Soil and moisture conservation | Achenkovil and Ranni |

## 1. Assistance to tribal Vana Samrakshana Samidi

Discussions were held with two Vana Samrakshana Samidi groups on the implementation of CAMPA activities in Konni and Ranni Divisions. Employment through maintenance of plantations under compensatory afforestation, fire watchers, ecotourism activities, and facilities such as gas connections, support for childrens' education, solar lights, skill development (tailoring units, hand made products) have been provided.

The Focussed Group Discussions revealed that the departmental interventions in these areas are in consultation with the people. In those areas, where there is scope for revenue from NTFPs, people have taken interest in the management and protection of the worked areas. The people have taken care to prevent fire and restrict grazing. In other areas, where usufructs are not forthcoming immediately, the people have not shown much interest about the management of the forest areas. The involvement of the Scheduled Tribes in the divisions was very evident. The department has taken sufficient care to address the interests of the Scheduled Tribes while developing management plans with sufficient flexibility.

## 2. Interior campshed and ration

Vouchers were verified and found correct. Ration was provided to Ranni and Konni division. The supply and items were verified through inspection of records and found correct.

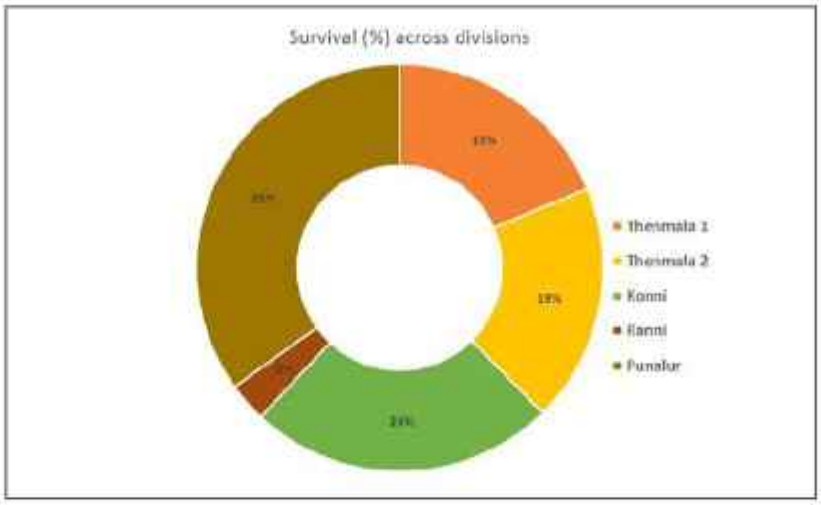
## 3. Catchment area treatment

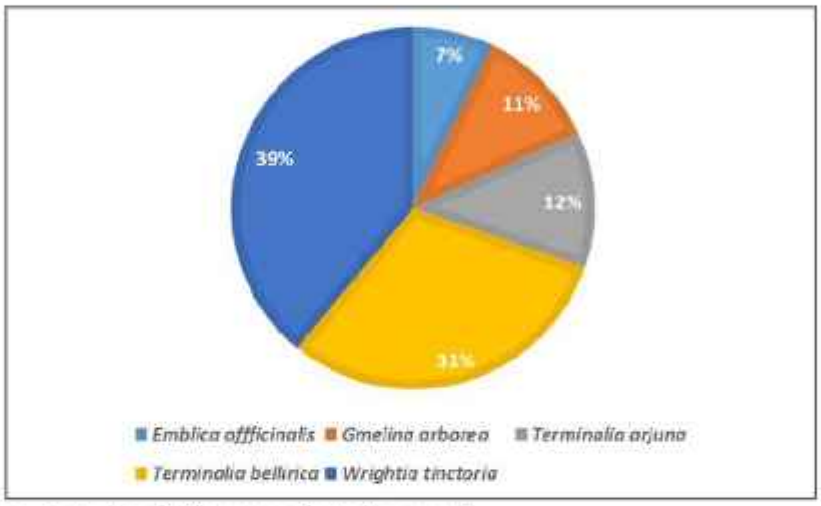
River bank stabilisation efforts were undertaken for a stretch of 2.5 km along the Kallar river. *Bambusa bambos* was planted as part of the stabilisation efforts, however, due to heavy and frequenting floods, most of the bamboos have been washed away. Natural vegetation has established in the area, acting as a vegetative cover.

## 4. Compensatory afforestation

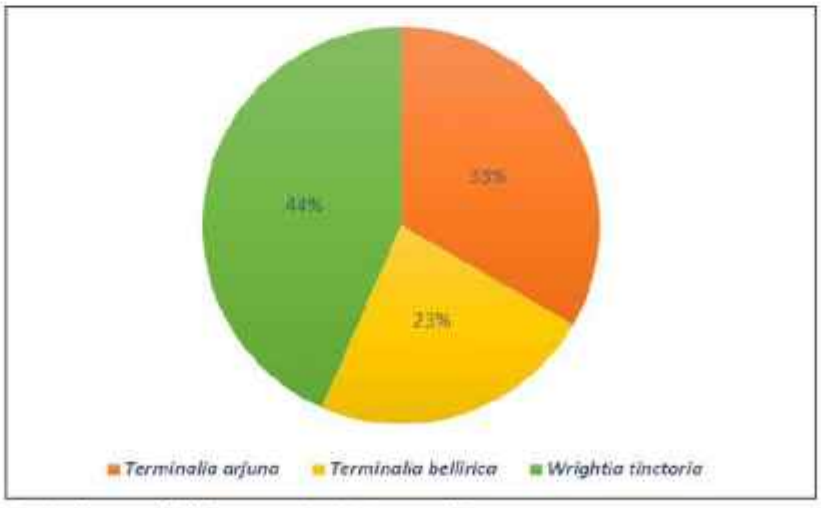
Plant survival Rate: Survival rate of different species varies between divisions. Within the same division (Thenmala), however, no differences were observed in the survival rate in two different sites. Gap planting undertaken in Punalur showed highest survival rates.

| S. No. | Divisions | Area (ha)/ Planting | Species | Survival (%) | Remarks |
|---|---|---|---|---|---|
| 1. | Konni | 4.25 / Gap planting | *Terminalia eliptica, Terminalia paniculata, Xylia xylocarpa, Lagerstroemia microcarpa, Terminalia bellarica, Dalbergia latifolia, Grewia tiliifolia* | 58 | Maintained subsequently for 4 years. Hence plantation established well. *Lagerstroemia microcarpa was not* not recorded. |
| 2. | Ranni | 10/ Gap planting | *Hopea parviflora, Dysoxylum malabaricum, Cassia fistula, Atrocarpus hirsutus, Dalbergia latifolia, Schleichera oleosa, Terminalia bellarica, Phyllanthus emblica, Syzygium cumini* | 7.0 | Heavy infestation of the invasive - Kurinji (*Strobilanthes* sp.) which prevented establishment of the planted saplings. *Cassia fistula, Dalbergia latifolia and Artocarpus hirsutus* established well. Further, as the planting was within adense forest, wild animals such as elephants, bear, wild boar and deer prevented effective plantation. **Replanting has been attempted.** |
| 3. | Punalur | 5 / Gap planting | *Terminalia bellirica, Hopea parviflora, Xylia xylocarpa, Schleichera oleosa, Artocarpus hirsutus* | 83.2 | The site was well stocked due to subsequent maintenance. Most of the species established well. Natural regeneration of species such as bamboos and *Macaranga peltata* was observed. |
| 4. | Thenmala | 125 / Gap planting | *Wrightia tinctoria, Emblica offficinalis, Swietenia mahagoni, Gmelina arborea, Terminalia bellirica, Tamarindus indica* | 45 | *Emblica offficinalis, Swietenia mahagoni, Gmelina arborea, Tamarindus indica* did not survive in the plantations. Heavy loss of plants recorded due to elephant trampling. |
| 5. | Thenmala | 235 / Gap planting | *Swietenia mahagoni, Gmelina arborea, Wrightia tinctoria, Terminalia bellirica, Terminailia arjuna* | 45 | Damage to the plantation due to grazing, sambar deer and elephant. |

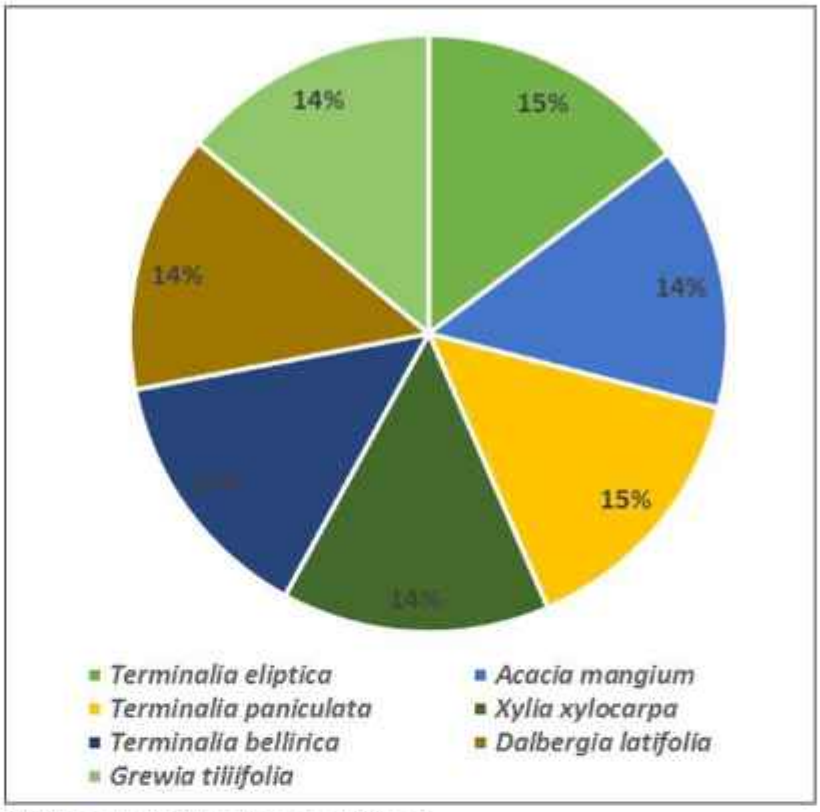


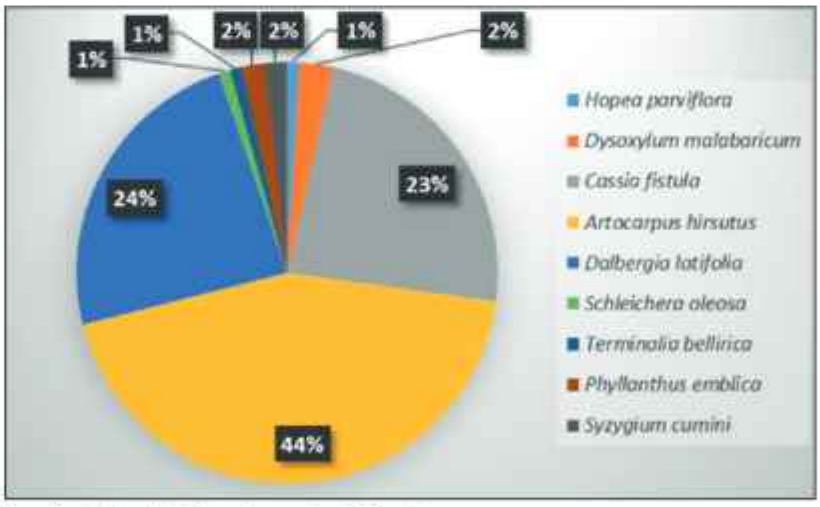

Survival rates of different species in Thenmala1



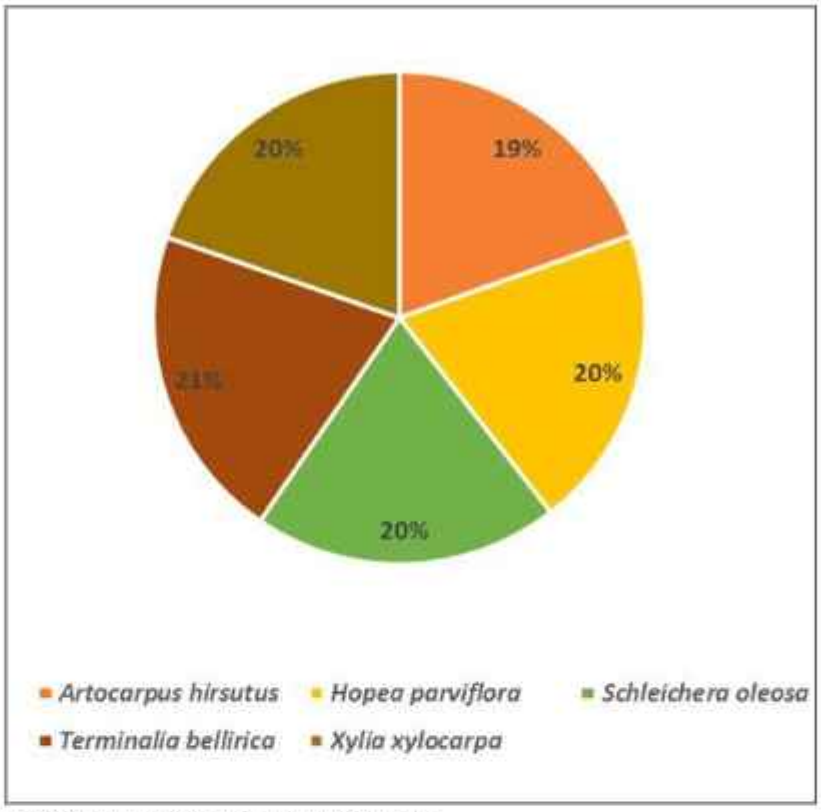

Survival rates of different species in Thenmala2




Survival rates of different species in Konni

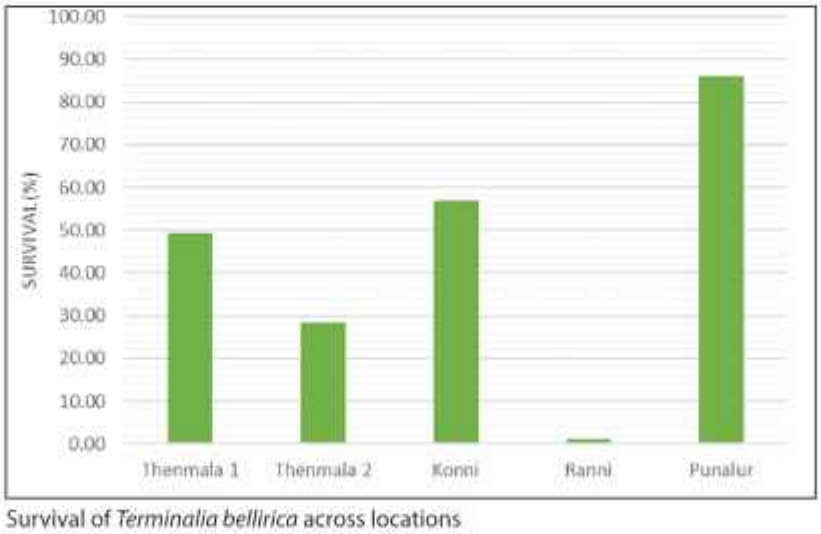



Survival rates of different species in Ranni

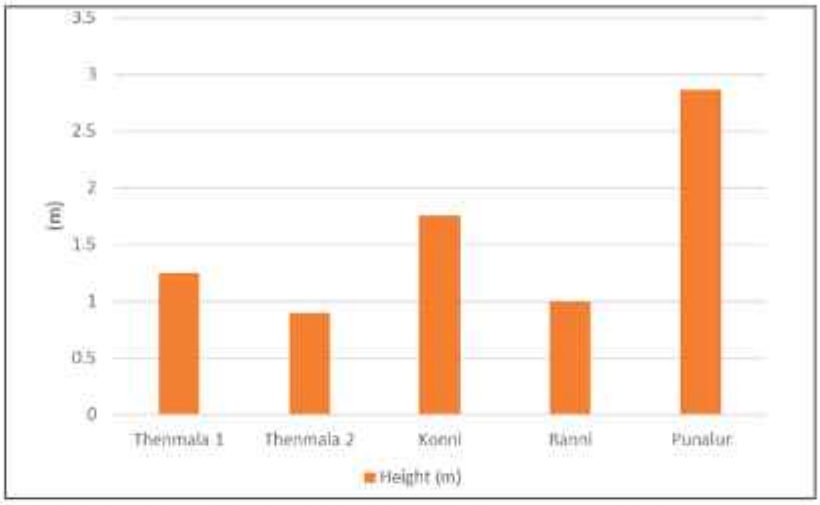



Survival rates of different species in Punalur

*Terminalia bellirica* was the only species planted across divisions. The species varied in survival and growth performance in different sites.




Survival of *Terminalia bellirica* across locations




Growth (Height in m) of *Terminalia bellirica* across divisions in SC Kollam

**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.

Since these plantations were raised during the period 2009-2014, watch and ward provision was made for three years, excluding the plantation year. 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 of the 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 grazing by Sambar deer and elephant lot of casualties reported in this plantation.

Current status of compensatory afforestation plantation at Nedungalloor Pacha, Edamon section (2014)


Current status of compensatory afforestation plantation at Nedungalloor Pacha, Edamon section (2014)


Current status of compensatory afforestation plantation at Nedungalloor Pacha, Edamon section (2014)


Review team of compensatory afforestation plantation at Nedungalloor Pacha, Edamon section (2014)

Review team at Gap Planting site at Pinangathodu, Kokkathodu Forest Station, Naduvathumoozhy, Konni (2014)

| S.No. | *Species Planted in Compensatory Afforestation Programmes* |
|---|---|
| 1. | *Acacia mangium* |
| 2. | *Artocarpus hirsutus* |
| 3. | *Cassia fistula* |
| 4. | *Dalbergia latifolia* |
| 5. | *Dysoxylum malabaricum* |
| 6. | *Emblica offficinalis* |
| 7. | *Gmelina arborea* |
| 8. | *Grewia tiliifolia* |
| 9. | *Hopea parviflora* |
| 10. | *Schleichera oleosa* |
| 11. | *Syzygium cumini* |
| 12. | *Terminalia arjuna* |
| 13. | *Terminalia bellirica* |
| 14. | *Terminalia eliptica* |
| 15. | *Terminalia paniculata* |
| 16. | *Wrightia tinctoria* |
| 17. | *Xylia xylocarpa* |

## 5. Construction and maintenance of campshed

| Sites | GPS Location | Year of Construction | Dimensions ($m^2$) | Remarks |
|---|---|---|---|---|
| 1 | N09°7'58.848" E77°11'55.518" | 2010 -2011 | 120 | The camp shed was constructed at Kattikuzhy for the convenience of the anti-poaching squad. The shed has an elephant trench of dimensions 20 x 3 x 2.5 m around it. Despite this, the camp shed has been damaged by elephants. The camp shed requires maintenance. |
| 2 | N08° 59' 47.48" E77° 03' 30.78" | 2010 -2011 | 46.96 | The camp shed constructed during 2010-2011 was damaged. It was refurbished later with funding from other sources. |

The works were evaluated for the physical existence and for the quality. The specifications of both camp sheds were checked by verifying the old vouchers and the estimates. It is observed that, the building maintenance was found necessary in Kattikuzhi, and is very useful to the frontline staff.

Camp Shed at Kattikuzhy with elephant trench

### Observations of the 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/** Achenkovil/ Kattikuzhi | The campshed has been established at Kattikuzhy. Temporarily used by Anti-Poaching squad. Solar panel installed in the camp shed. Though there is a protective EPT, the campshed has been damaged and requires maintenance. | Temporarily used by Anti Poaching squad in transit. | 5 | Medium |
| 2. | **Campshed/** Punalur/ Mambazhathara | The structure was damaged so it may demolished and rebuilt later using funds from other sources. | Presently in use by VSS. | 8 | High |

## 6. Construction of check dam/ pond

It was reported that heavy and recurrent floods completely damaged the check dams.

## 7. Joint patrolling and raid

Joint patrolling activities were taken up in Konni division. The activities were verified through inspection of records and found correct.

## 8. Purchase of equipment

The records revealed that field equipment for antipoaching squad and watchers such as torches, emergency life saving equipments, solar charged lights were procured and distributed.

## 9. Soil and moisture conservation

| Sites | GPS Location | Year of Construction | Dimensions (m) | Remarks |
|---|---|---|---|---|
| 1 | N09°7'26.58" E77°11'24.912" | 2010 -2011 | 7.8 x 1.26 x 1.65; 6 x 1.00 x 1.5; 5 x 1.0 x 1.0; 4 x 0.5 x 0.5; 7.0 x 1.5 x 1.0; 4 x 1.2 x 1.6; 5.6 x 1.45 x 1.0 | Inspected six gullies at Vazhaperiyar. They displayed minimal damage which the staff mentioned was due to washing away in floods. |
| 2 | N09°8'09.06" E77°12'0.006" | 2010-2011 | 3.8 x 1.5 x 0.65; 13.33 x 1.37 x 0.73; 0.55 x 1.6 x 0.35 | Inspected three gullies at Kattikuzhi. All the three gullies are in good condition. The frontline staff regularly inspect the gullies, as it is the breeding ground for endemic fishes. |

Gully plugging at Kattikuzhi

Three gullies in line at Kattikuzhi

Gully Plugging at Vakkalar

Gully plugging at Goodrickal

Two activities were taken up during 2009-10 in the circle, four during 2010-11, two each during 2011-12, 2012-13 and 2013-14. The circle implemented all the activites listed in the APO. No spillovers were observed. Overall, an amount of Rs. 103.9 lakhs was allotted to the circle during the period of which 95 percent financial achievement was observed.

## Wildlife circle, Palakkad (2009-2014)

The evaluation covered four divisions of the circle. They include

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

Seventeen 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 | Parambikulam, Peechi |
| 2. | Check dam | Wayanad, Parambikulam, Peechi |
| 3. | Construction and maintenance of campshed | Silent valley, Wayanad |
| 4. | Eco development | Peechi |
| 5. | Eco-Tourism and training | Peechi |
| 6. | Fire protection | Peechi |
| 7. | Habitat improvement | Peechi |
| 8. | Improving connectivity | Parambikulam, Peechi, Silent Valley, Wayanad |
| 9. | Infrastructure development | Peechi |
| 10. | Joint patrolling and raid | Silent valley |
| 11. | Mitigation man-animal conflict | Peechi |
| 12. | Protection and maintenance of antipoaching campshed | Parambikulam, Aaralam, Peechi, Silentvalley, Wayanad |
| 13. | Protection campshed and ration | Silent Valley, Wayanad |
| 14. | Publicity and awareness | Peechi |
| 15. | Research and development | Peechi |
| 16. | Road maintenance | Peechi |
| 17. | Soil and moisture conservation | Peechi, Silent valley, Wayanad |

### 1. Assistance to tribal Vana Samrakshana Samidi

Discussions were held with two Vana Samrakshana Samidi groups on the implementation of CAMPA activities in Parambikulam and Peechi Divisions. The Tribal VSS were engaged in Protection Mazdoor, for collection, protection and sale of MFP at Parambikulam Eco-Tourism Centres.

## 2. Check dam

| Sites | GPS Location | Year of Construction | Dimensions (m) | Remarks |
|---|---|---|---|---|
| 1 | N10°38654 E76°748424 | 2012-13 | 21 x 3 x 1 | The activity was carried out during 2014-15. |
| 2 | N10°38654 E76°748424 | 2012-13 | 13 x 1.2 x 3 | The activity was carried out during 2014-15. |
| 3 | N11°5'1.213" E76°28'50.35" | 2013-14 | 13.50 x 1 x 3.2 | The activity was carried out during 2014-15. |
| 4 | N11°3'5.4912" E76°30'52.121" | 2013-14 | 7 x 1.5 x 0.5 | The activity was carried out during 2014-15. |

The works were evaluated for their physical existence and their quality. The specifications of all check dams were checked by verifying the old vouchers and the estimates. It is observed that, one of the check dams in Chorakulam were partially damaged.

### Observations of the 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/ Parambikulam WLS / Karimala / Chorakulam | The structure is partially damaged (~ 10 per cent) and requires renovation. | The check dam requires maintenance to improve moisture retention in the adjoining areas. | 5 | Medium |
| 2. | Check dam/ Parambikulam WLS / Karimala / Chorakulam | The structure is in good condition. | The moisture content in surrounding areas is improved, as evidenced by the green vegetation. | 8 | High |
| 3. | Check dam/ Silent Valley NP /Bhavani/ Panthanthod | The structure is in good condition. | The moisture content in surrounding areas is improved, as evidenced by the green vegetation. | 8 | High |
| 4. | Check dam / Silent Valley NP /Bhavani/ Keeripara | The structure is in good condition. | The moisture content in surrounding areas is improved, as evidenced by the green vegetation. | | |

### 3. Construction and maintenance of campshed

| Sites | GPS Location | Year of Construction | Dimensions ($m^2$) | Remarks |
|---|---|---|---|---|
| 1 | N11°3"5.4912" E76°30'52.181" | 2009-2010 | 136.62 | The work was carried out during 2013-2014. |
| 2 | N11°5'1.213" E76°28'50.35" | 2013-2014 | 6.93 | The work was carried out during 2014-2015. |

The camp sheds were evaluated for their physical existence and quality. Vouchers and the estimates were verified and found correct.

**Observations of the 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. | Silent Valley National Park/ Bhavani / Keeripara | Only maintenance activities were taken up – Repair of ceiling, basement, replacement of door and windows should be done / carried out. | The shed is regularly used by the frontline staff. | 8 | High |
| 2. | Silent Valley National Park/ Silent Valley/ Panthanthode | Earthwork and excavation activities ertaining to maintenance were carried out. | The shed is regularly used by the frontline staff. | 8 | High |

### 4. Eco-Tourism and Training

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

### 5. Fire protection

The activities undertaken between Mampara and Kotikattipura, and Chamipallam to Mampara were verified through inspection of records and found correct.

### 6. Improving connectivity

Patrolling routes were cleared and maintained in Parambikulam, Peechi, Silent Valley and Wayanad . The activities were verified through inspection of records and found correct.

| Sites | GPS Location | Year of Construction | Dimensions (m) | Remarks |
|---|---|---|---|---|
| 1. | N11°55'46.058" E75°51'23.063" | 2011-12 | Width: 3.2m Length: 2.5km | Trek path-Chullikandam |
| 2. | N11°55'59.4474" E75°48'32.2303" | 2011-12 | Width: 3.2m Length: 5km | Trek path at Kariankappu Meenmutti |

### 7. Infrastructure development

Improvements were made to the division office and inspection bungalow at Peechi. The activities were verified through inspection of records and found correct.

### 8. Joint patrolling and raid

Joint patrolling activities were taken up in Silent Valley division. The activities were verified through inspection of records and found correct.

### 9. Protection and maintenance of antipoaching campshed

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

### 10. Protection campshed and ration

| Sites | GPS Location | Year of Construction | Dimensions (m) | Remarks |
|---|---|---|---|---|
| 1 | N11°09' 04.0" E76°31' 44.2" | 2009-2010 | 4.0 x 6.0 | The structure is in good condition. |
| 2 | N11°36' 28.1" E76°22' 52" | 2009-2010 | 6.0 x 3.7 | The structure is in good condition. |

The protection campsheds were evaluated for their physical existence and the quality of the assets. The specifications of the campsheds were checked by physical measurements and verifying the old vouchers and estimates.

Camp shed at Thudukki

**Observations of the 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. | Protection Camp shed / Thudukki/ Bhavani/Silent Valley | The structure is in good condition. | It is regularly used by the frontline staff. | 7 | High |
| 2. | Protection Camp shed / Cheeradankolli / Muthanga/ Wayanad | The structure is in good condition. | It is regularly used by the frontline staff. | 7 | HIgh |

## 11. Publicity and awareness

The activities carried out in Peechi were verified through inspection of records and found correct.

## 12. Road maintenance

It is reported that coupe road maintenance in Peechi-Vazhani WLS was taken up.

Coupe road in Peechi-Vazhani WLS

## 13. Soil and moisture conservation

| Sites | GPS Location | Year of Construction | Dimensions ($m^3$) | Remarks |
|---|---|---|---|---|
| 1. | N11°03' '29.48" E76°03"23.79" | 2013-14 | 6.14 | The activity was completed in 2015. |
| 2. | N11v03"29.40" E76°03"27.97" | 2013-14 | 6.85 | The activity was completed in 2015. |
| 3. | N11°03"29.46" E76°03'23.79" | 2013-14 | 6.54 | The activity was completed in 2015. |
| 4. | N11°43'42.222" E76°21'17.514" | 2013-14 | 124 | The creation of bunds was completed in 2015. |
| 5. | N11°38'31.2" E76°25'21.264" | 2013-14 | 118 | The creation of bunds was completed in 2015. |
| 6. | N11°47'52.416" E76°13'43.492" | 2013-14 | 440 | Maintenance works were carried out. |
| 7. | N11°46'11.002" E76°17'59.288" | 2013-14 | 377.60 | Maintenance works were carried out. |
| 8. | N10°26'39.24" E76°27'27.828" | 2013-14 | 9.8 | The activity was completed in 2015. |

The works were evaluated for the physical existence and for the quality. The specifications of all SMC activities were verified with measurement books and found correct.

| 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 pluggings/ Silent Valley NP/ Bhavani/ Keeripara | The gully is healthy | The gully has helped arrest soil erosion and rehabilitates surrounding areas | 8 | High |
| 2. | Gully pluggings/ Silent Valley NP/ Bhavani/ Paalichola | The gully is healthy | The gully has helped arrest soil erosion and rehabilitates surrounding areas | 8 | High |
| 3. | Gully pluggings/ Silent Valley NP/ Bhavani/ Paalichola | The gully is healthy | The gully has helped arrest soil erosion and rehabilitates surrounding areas | 8 | High |
| 4. | Contour bunding & Earthern bunding / Wayanad / Kalavayal | The bunds are in good condition. | Helps slow down the run-off in the hilly terrain. | 8 | High |
| 5. | Contour bunding & Earthern bunding / Wayanad/ Muthappan kuzhi | The bunds are in good condition. | Helps slow down the run-off in the hilly terrain. | 8 | High |
| 6. | Contour bunding & Earthern bunding / Wayanad/ Charakullasi | The bunds are in good condition. Only maintenance works were taken up. | Helps slow down the run-off in the hilly terrain. | 8 | High |
| 7. | Contour bunding & Earthern bunding / Wayanad / Golur | The bunds are in good condition. Only maintenance works were taken up. | Helps slow down the run-off in the hilly terrain. | 8 | High |
| 8. | Pond Desiltation/ Peechi WLS/ Aiyappangundu | The pond area has increased by 25 per cent. | Helps collect water, and prevents run-off. | 10 | High |

This circle undertook the highest number of activities during the period 2009-2014. Fourteen activities were carried out in Peechi. The circle implemented most activities listed in the APO. Spillovers were observed in many of the activites, ecpecially where structures were created / maintained. Overall, an amount of Rs. 148.85 lakhs was allotted to the circle during the period of which 81 percent financial achievement was observed.

## Field director project tiger, Kottayam (2009-2014)

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

1. Periyar East
2. Periyar West
3. Idukki Wildlife sanctuary (WLS)
4. Munnar Wildlife sanctuary (WLS)

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

| S. No. | Activity | Divisions |
|---|---|---|
| 1. | Anti poaching squad | Idukki WLS |
| 2. | Assistance to tribal Vana Samrakshana Samidi | Periyar East Division, Periyar West |
| 3. | Awareness and natural camp | Periyar West |
| 4. | Construction and maintenance of campshed | Periyar West |
| 5. | Construction of check dam | Idukki WL, Munnar WLS |
| 6. | Improving connectivity | Periyar East |
| 7. | Joint patrolling and raid | Periyar East |
| 8. | Protection campshed and ration | Periyar West |

## 1. Anti poaching squad

Provision of ration to the anti poaching squad was undertaken. The activities were verified through inspection of records and found correct.

## 2. Assistance to tribal Vana Samrakshana Samidi

Discussions were held with two Vana Samrakshana Samidi groups on the implementation of CAMPA activities in East and West Periyar Divisions. The Tribal Vana Samrakshana Samidi were engaged in protection related activities, for collection and sale of MFP.

## 3. Awareness and natural camp

The staff informed that the activites pertaining to awareness have been completed. However, it could not be verified through records.

## 4. Construction of check dam

| Sites | GPS Location | Year of Construction | Dimensions (m) | Remarks |
|---|---|---|---|---|
| 1 | N10°0745.35" E76°4458.25" | 2011-12 | 12 x 1.2 x 1.5 | The structure remains intact and in good condition. |
| 2 | N10°0739.10" E76°4509.56" | 2013-14 | 11 x 0.8 x 1 | The structure is in good condition. |

The works were evaluated for the physical existence and for the quality. The specifications of check dams were verified from the old vouchers and the estimates.


Urulanthanni Check dam

**Observations of the 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/ Idukki WL/ TBS/ Vettuthandu/ Bharnikuzhi | The structure is in good condition. Water is stored in full capacity. | Water is made available to neighbouring villages. | 9 | High |
| 2. | Check dam/ Idukki WL/ TBS/ Urulanthanni | The structure is in good condition. Water is stored in full capacity. | Water is made available to neighbouring villages. | 9 | High |

## 5. Improving connectivity

Patrolling routes were cleared and maintained in Periyar East Division. The activities were verified through inspection of records and found correct.

## 6. Joint patrolling and raid

Joint patrolling activities were taken up in Periyar East Division. The activities were verified through inspection of records and found correct.

## 7. Protection campshed and Ration

| Sites | GPS Location | Year of Construction | Dimensions (m) | Remarks |
|---|---|---|---|---|
| 1 | N09°27'51.22" E77°05'28.41" | 2009-2010 | 5 x 4.8 x 5 | Records verified for brick work, RCC Work roofing with AC, Flooring with concrete, engaging man mazdoor etc. |

The works were evaluated for the physical existence and for the quality. The specifications of the camp sheds were checked by verifying the old vouchers and the estimates. It is observed that, the building maintenance was found necessary; the APC is very useful to the frontline staff.

Protection Campshed at Uppupara with Forest Deaprtment staff

**Observations of the 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. | APC/ PTR (West)/ Azhutha/ Uppupara | The campshed has been established at Uppupara. Used by Anti-Poaching squad. Good structure requires minimal maintenance. | Used by Anti Poaching squad during transit. | 8 | High |

Four activities were taken up during 2009-10 in the circle, three during 2011-12, and one during 2012-13. No activities wer taken up in 2010-11 and 2013-14. The circle implemented all the activities listed in the APO. Overall, an amount of Rs. 26.60 lakhs was allotted to the circle during the period of which 99 percent financial achievement was observed.

## Agasthyavanam biological park circle, Thiruvananthapuram (2009-2014)

The evaluation covered both Shendurney and Thiruvananthapuram Wildlife Divisions of the circle. Three different activities were undertaken in the circle.

## 1. Construction and maintenance of campshed

| Sites | GPS Location | Year of Construction | Dimensions (m) | Remarks |
|---|---|---|---|---|
| 1 | N08° 32' 48.1" E77° 13' 03.5" | 2013 - 2014 | 5 x 4.8 x 5 | The camp shed was constructed during the financial year 2013 – 2014 using wooden poles, GI sheets and foundation was made with rocks. The walls and the roof are covered with GI sheets. Also, a watch tower has been constructed near it. |
| 2 | N08° 31' 38.9" E77° 13' 38.5" | 2010 -2011 | 5 x 4.8 x 5 | The camp shed was constructed during the financial year 2013 – 2014 using wooden poles, GI sheets over a foundation made with rocks. Four walls and the roof were covered with GI sheets. The structure was damaged so it should demolished and rebuilt later under using funds from other source. |
| 3 | N08° 52'22.517" E77° 7' 6.832" | 2010 -2011 | 2.6 x 1.55 x 2.5; 2.6 x 1.55 x 2.10 | The bathroom was constructed near the Rockwood camp shed site in the Rockwood estate using bricks and cement. The roof is covered with GI sheets. The interior is tiled and has water connection. The condition of the bathroom is excellent. |
| 4 | N08° 55'59.346" E77° 7' 35.6" | 2010 -2011 | 4.5 x 4.5 x 3 | There are two campsheds on the site and both are well maintained. |

The works were evaluated for the physical existence and for the quality. The specifications were checked by verifying the old vouchers and the estimates. It is observed that, the building maintenance was found necessary in some cases and was very useful to the occupants.

Campshed at Site 1

Campshed at Site 2

Debris of the Damaged structure at Site 2

Campshed at Site 3

Campshed at Site 4

Check Dam at Site 5

## 2. Construction of check dam

| Sites | GPS Location | Year of Construction | Dimensions (m) | Remarks |
|---|---|---|---|---|
| 1 | N08°33'35" E77°10'19" | 2012 -2013 | 8 x 1 x 0.90 | The check dam is well maintained and we could observe soil moisture and good vegetation in the surrounding areas. |

### 3. Joint patrolling and raid

Joint patrolling activities were taken up in both the wildlife divisions. The activities were verified through inspection of records and found correct.

### 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/** Thiruvanatha-puram Wildlife/ Neyyar, Kottoor section/ Uttaramkayam | The campshed has been established near the Aayiramkaal tribal settlement. Also, a watch tower has been constructed near it. | Presently supports the tribals. | 5 | Medium |
| 2. | **Campshed/** Thiruvanatha-puram Wildlife/ Neyyar, Klamala-I section/ Valliyar | The structure was damaged so it was demolished and rebuilt later under using funds from other source | Presently in use. | 8 | High |
| 3. | **Campshed/** Shenduruney Wildlife / Shenduruney Kalluvaranbu section / Rockwood estate | The bathroom was repaired. | Well maintained. | 8 | High |
| 4. | **Campshed/** Shenduruney Wildlife / Shenduruney Wildlife Kalamkunnu section / Idimu-zhanganpara | Two camp sheds are present. | Both camp sheds are well maintained and used. | 8 | High |
| 5. | **Check dam/** Thiruvanatha-puram Wildlife/ Agasthyavanam Biological Park Range Kottoor / Kadakamvetty | The check dam constructed in 2012-13 is well maintained. Due to silt deposition the depth of the check dam got reduced. | Enhanced soil moisture and good vegetation are observed in the area. | 5 | Medium |

Three activities were taken up during 2010-11 in the circle, while just one activity (check dam construction) was taken up during 2012-13. One camp shed which was to be constructed in 2010-11 was taken up only during 2013-14. Overall, an amount of Rs. 10.00 lakhs was allotted to the circle during the period of which 75 percent financial achievement was observed.

## Social Forestry, Ernakulam, Kozhikode and Kollam (2009-2014)

The social forestry wing has three circles operating at Ernakulam, Kozhikode and Kollam. During the period, Extension & Campaign activities were undertaken.

### 1. Extension and campaign activities

The staff report that the social forestrywing at Kollam carried out these activites at Thenmala division. Hence, no records were available in social forestry Kollam division. Similarly no records were available with the social forestry , Ernakulam division also.

The social forestry wing at Kozhikode conducted extension and campaign activities in five districts. Activities such as fire awareness camp, one-day classes on fire awareness nature camp, Seminar on World Water Day, Sea Turtle and Marine Bio-Diversity Conservation etc., were conducted. The evaluation team verified all the related documents such as vouchers and photographs.

**Extension and campaign activities**

| Sl. No. | Location/District | Activities carried out | Proof of verification |
|---|---|---|---|
| 1. | Thirunelli (Wayanad) | Fire awareness classes / camp. | ✓ Expenditure vouchers tallied. |
| 2. | Janaklkkad (Kozhikode) | One day nature camp and Fire awareness classes / camp. | ✓ Physical verification of each site and item purchased are verified. |
| 3. | Hosdurg (Kasaragod) | Fire awareness classes / camp. | ✓ Verified related images / documents. |
| 4. | Kasargod town (Kasaragod) | Fire awareness classes / camp. | |
| 5. | Thariyode (Wayanad) | One day nature camp, participated approx. 150 students and VSS members | |
| 6. | Kadalundi town (Kozhikode) | Two nature camp and Fire awareness classes / camp. | |
| 7. | Perinthalmanna (Malappuram) | Nature camp for the students of the ISS college of teacher education. | |
| 8. | S N College (Kannur) | One day seminar in connection with and World Water Day. | |
| 9. | Thalaserry town (Kannur) | One day seminar on World Forest Day. | |

| Sl. No. | Location/District | Activities carried out | Proof of verification |
|---|---|---|---|
| 10. | Malappuram town (Malappuram) | Members of Yuva Sakthi under Kerala state youth welfare board organised half day nature awareness camp. | |
| 11. | Thanur (Malappuram) | One day seminar on turtle and marine diversity conservation. | |

The work carried out under CAMPA was satisfactory. Overall, an amount of Rs. 3.00 lakhs was allotted to the wing during the period of which 98 percent financial achievement was observed.

## Forest headquarters, Thiruvananthapuram

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, 23 vehicles were purchased within the budget allotted against orders No. P3-5666/2011/03/11 dated 4/5/11 and P3-5666/2012/03/12 dated 3/5/12. The allotment orders, purchase orders, bank statements, utilisation certificates, cheque issue register and bills were verified and found correct. The Headquarters allocated funds to purchase equipment and minor implements for plantation work to different divisions. The details of fund utilisation, details of Items, quantity and rates of minor implements for forestry works, are with the concerned divisions.

## 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 theregions 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 were observed. The major reasons includes (i) heavy infestation of the invasives which prevents 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 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 condition, 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) 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 reported 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 of, 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 in appropriate conservation related works.

(p) Incentives to temporary staff associated with the department's activities 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.

# ANNEXURES

## Annexure I

**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 and 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

| Year | Component |
|---|---|
| 2009-10 | Assistance to tribal Vana Samrakshana Samidi |
| | Construction and maintenance of campshed |
| | Extension and campaign activities |
| | Monitoring and evaluation of implementation of APOs |
| | Interior campshed and ration |
| | Joint patrolling and raid |
| | Purchase of vehicle and maintenance |
| | Protection campshed and ration |
| | Purchase of equipment |
| | Purchase of equipments and machinary for protection works |
| 2010-11 | Assistance to tribal Vana Samrakshana Samidi |
| | Compensatory afforestation |
| | Construction and maintenance of campshed |
| | Joint patrolling and raid |
| | Soil and moisture conservation |
| 2011-12 | Anti poaching squad |
| | Awareness and natural camp |
| | Cairns and boundary consolidation |
| | Compensation to victims |
| | Compensatory afforestation |
| | Construction of cairns and boundary consolidation |
| | Construction of check dam/ pond |
| | Construction of solar fencing |
| | Elephant proof trench |
| | Eradication of exotic weeds |
| | Improvement of patrolling routes |
| | Interior campshed and ration |
| | Protection and maintenance of anti poaching campshed |
| | Soil and moisture conservation |
| 2012-13 | Check dam |
| | Compensatory afforestation |
| | Construction of checkdam/ pond |
| | Contour bunds |
| | Planting |
| | Soil and moisture conservation dry rubble |

| Year | Component |
|---|---|
| | Vegetation barrier by grass |
| **2013-14** | Catchment area treatment |
| | Compensatory afforestation |
| | Eco development |
| | Eco tourism and training |
| | Fire protection |
| | Habitat improvement |
| | Infrastructure development |
| | Mitigation man - animal conflict |
| | Protection and maintenance of anti poaching campshed |
| | Publicity and awareness |
| | Research and development |
| | Road maintenance |

| S.No. | ***Species Planted in Compensatory Afforestation Programmes*** |
|---|---|
| 1. | *Bambusa bambos* |
| 2. | *Butea monosperma* |
| 3. | *Cassia fistula* |
| 4. | *Gmelina arborea* |
| 5. | *Pongamia pinnata* |
| 6. | *Pterocarpus marsupium* |
| 7. | *Sweitenia macrophylla* |
| 8. | *Terminalia arjuna* |
| 9. | *Terminalia bellirica* |

| APOs | Divisions implemented |
|---|---|
| APO 2009-10 | 29 |
| APO 2010-11 | 29 |
| APO 2011-12 | 29 |
| APO 2012-13 | 29 |
| APO 2013-14 | 29 |

**Annexure IV**

## Monitoring and evaluation teams

| **Teams**<br>**Region** | **1**<br>**Southern Circle, Kollam (1)** | **2**<br>**Southern Circle, Kollam (2)** | **3**<br>**High Range Circle, Kottayam (1)** | **4**<br>**High Range Circle, Kottayam (2)** | **5**<br>**FD PT,**<br>**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**<br>**Region** | **6**<br>**FD PT, Kottayam (2)** | **7**<br>**Agasthyavanam biological park Circle** | **8**<br>**Social Forestry, Southern Region, Kollam** | **9**<br>**Central Circle, Thrissur** | **10**<br>**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<br>Region | 11<br>Social Forestry, Northern Region, Kannur | 12<br>Northern Circle, Kannur | 13<br>Eastern Circle, Palakkad | 14<br>Wildlife Circle, Palakkad | 15<br>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<br>T Radhan | Mishra Avinash | K. Rajasekaran | C. Kandasamy |
| Member | C.K. Suresh | M. Manikandan | S. Ajay | | T. Govindaraj |
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