EVALUATION OF COMPENSATORY AFFORESTATION FUND MANAGEMENT AND PLANNING AUTHORITY (CAMPA)

2013 - 14 TO 2015 - 16

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Foreword

Development has always displacement cost involving loss of natural resources and environment security to mitigate it an alternative regeneration and rehabilitation strategy is essential. **Compensatory Afforestation Fund Management and Planning Authority (CAMPA)** is a focused approach to promote afforestation and regeneration activities as a way of compensating for forest land diverted to non-forest uses and ensure sustainable environmental services. In this context, the basic objectives of CAMPA are conservation, projection and management of Forest Green Cover, Wildlife, Provision of environmental services and research training and capacity building of the implementing staff. The evaluation study was initiated by the Forest Department through KEA to assess the success of the programme in achieving these objectives and the protection and generation of green cover. The study was carried out by The Energy Resource Institute (TERI) under the guidance and monitoring of KEA.

The study is based on secondary data and primary data collected from 10 percent sample works across different categories from 14 circles. The major findings of the study include that the targets in advance works, plantations, and maintenance works were achieved, mixed plantations were observed that have intangible environmental benefits. Thus, the basic objectives of resource management are largely achieved. But the average survival rate is 61%, there is delay in approval rate & soil moisture conservation works were not on priority list. Training and capacity building is a regular activity. The major recommendations are to develop benchmarks and ratings for success and performance assessment, revision of cost norms, ICT component to be strengthened, participatory need assessment, decentralisation of planning activity, augmentation of mixed native species, convergence with other similar schemes, expanding the reach of JFMCs

and to take up forest boundary demarcation and strengthening of research wing in the long run.

I expect that the findings and recommendations of the study will be useful to the Government and Karnataka Forest Department.

The study received support and guidance of the Additional Chief Secretary Planning, Programme Monitoring and Statistics Department, Government of Karnataka. The report was approved in 49th Technical Committee meeting. The review of the draft report by KEA, members of the Technical Committee and an Independent Assessor, has provided useful comments and inputs to improve the report. I duly acknowledge the assistance rendered by all in successful completion of the study.

Chief Evaluation Officer
Karnataka Evaluation Authority

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We are thankful to Karnataka Evaluation Authority (KEA) and Karnataka Forest Department (KFD) for assigning this evaluation to the Energy and Resources Institute (TERI), Bengaluru. Visiting several forestry plantations and other works like soil moisture conservation, wildlife protection and management, habitat improvement works, infrastructure, working plan, research, training and interaction with field staff and officers of Karnataka Forest Department was an enriching and inspiring experience. We would like to acknowledge the guidance, support and cooperation of Mr. G. Sudarshan, IFS, Chief Evaluation Officer, KEA, Dr. Chaya Degaonkar, Additional Chief Evaluation Officer, KEA and Dr. Manjunath, Director (Evaluation), KEA and Ms. Jyothi Jenni, Associate Director, KEA and the entire staff team of KEA.

This study was possible only due to the cooperation and facilitation of officers of KFD, especially Mr. Punati Sridhar, PCCF and HoFF, Mr. Sanjai Mohan, PCCF and HoFF, Wildlife and Chief Wildlife Warden (erstwhile), Mr. Ajay Mishra, PCCF (Development), Ms. Ritu Kakkar, PCCF, (EWPRT & CC), Mr. Shiv Raj Singh, PCCF (Publicity and Communication), Mr. Puneet Pathak, APCCF (CAMPA), Mr. Brijesh Kumar, APCCF (TFC), Mr. R. K. Srivastava, APCCF (NBM), Mr. Hari Kumar Jha, APCCF (EWPRT I/C), Ms.Seema Garg, APCCF (Evaluation), and Mr. Bishwajit Mishra, CCF (ICT Cell). Our gratitude is due to the excellent assistance of RFOs, software developers and staff of Evaluation Wing and ICT Cell of KFD. The cooperation and coordination of all the Circle, Division and Range offices was crucial in completing the field work.

TERI would like to place on record the timely advice of Mr. Amit Kumar, Senior Director, Social Transformation, Dr. Debajit Palit, Director, Rural Energy and Livelihoods, Mr. D.N. Naramsimha Raju, Director, SRC. The study has been carried out with the excellent and committed efforts of the study team comprising of:

Core Team

- Dr. B. Shivaraju, IFS, APCCF (Rtd.), Principal Investigator
- Dr. Lasya Gopal, Co- Principal Investigator
- Dr. Nagraj Patil, Civil Engineering Expert
- Dr. Krishnamurthy, Statistician
- Mr. Ashwathaiah, DCF (Rtd.), Team Member
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- Mr. H.H. Ninga Setty, Team Member
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- Mr. Arjun Shetty, Team Member
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- Mr. Manjunath Jadhav, Team Member
- Mr. Mahendra Math, Team Member

IT and Secretarial Support

- Mr. T. Saravana, IT Manager
- Ms. Shobha M.P., Executive Secretary
- Ms. Jyothi. S. Secretary
- Ms. Manjula, Secretary
- Ms. Christina Preethi, Secretary

The assignment has provided interesting insights into the efforts of the KFD in forest and wildlife protection and conservation. Interactions with field staff and officers at various levels and individual beneficiaries gave an understanding of how the processes could be simplified and pointers for improving effective delivery of the schemes, which have been brought into the recommendations of this report. TERI hopes to work with the KEA in future too.

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ABBREVIATIONS

ACF	Assistant Conservator of Forests
ANR	Assisted Natural Regeneration
APCCF	Additional Principal Chief Conservator of Forests
APO	Annual Plan of Operation
AR	Artificial Regeneration
ATMA	Agricultural Technology Management Agency
CAMPA	Compensatory Afforestation Fund Management and Planning
CCEA	Cabinet Committee on Economic Affairs
CCF	Chief Conservator of Forests
CF	Conservator of Forests
CPT	Cattle Proof Trench
DAC	Department of Agriculture & Cooperation
DCF	Deputy Chief Conservator of Forests
DRFO	Deputy Range Forest Officer
EPT	Elephant Proof Trench
ER	Eco Restoration
FDA	Forest Development Agency
FG	Forest Guard
FNB	Field Note Book
FPO	Farmer Producers' Organization
GoI	Government of India
GoK	Government of Karnataka
GPS	Geographic Positioning System
HoFF	Head of Forest Force
HRD	Human Resource Development
ICT	Information and Communications Technology
IDI	In-depth Interview
IPRTI	Indian Plywood Research and Training Institute
JFM	Joint Forest Management
JFMC	Joint Forest Management Committee
KEA	Karnataka Evaluation Authority
KFD	Karnataka Forest Department
LPG	Liquefied Petroleum Gas
MGNREGS	Mahatma Gandhi National Rural Employment Guarantee Scheme
MIDH	Mission for Integrated Development of Horticulture
NAP	National Afforestation Programme
NBM	National Bamboo Mission
NGOs	Non-governmental Organizations
NTFP	Non-timber Forest Produce
PCCF	Principal Chief Conservator of Forests

R	Rural
RFO	Range Forest Officer
SCP	Special Component Plan
SHGs	Self Help Groups
SMC	Soil moisture conservation
T	Territorial
TERI	The Energy and Resources Institute
TFC	13th Finance Commission
ToR	Terms of Reference
TSP	Tribal Sub Plan
U	Urban
VFC	Village Forest Committee
WF	Wildlife

EXECUTIVE SUMMARY

The Evaluation of Compensatory Afforestation Fund Management and Planning Authority (CAMPA) for the years 2013 - 14, 2014 -15 and 2015 – 16 was assigned to TERI in August 2019 by Karnataka Evaluation Authority (KEA) at the behest of the Karnataka Forest Department (KFD), Government of Karnataka. The study was a summative evaluation wherein the scheme was evaluated post implementation to understand the overall effectiveness of the program/ scheme in terms of the objectives set out. The purpose was to assess the overall impact of the scheme, while also studying the effectiveness of the process/ delivery mechanism followed and to make suitable recommendations thereof to enhance the effectiveness and impact. Multi-dimensional approach including scientific, interactive/ consultative, objective-oriented, analytical, practical and participatory approach using appropriate methods were followed to gather qualitative and quantitative data. The primary data on plantations was gathered using the web based android application developed by Karnataka Forest Department.

During the period of evaluation Rs. 20,194.00 lakhs was the financial target of which Rs. 16,715 lakhs has been expended, i.e. 83% achievement. In terms of physical plantation activities (raising, maintenance and advance works), 109,783.34 ha was the achievement against the target of 110,473.52 (99%). During the evaluation study, 574 plantations works were carried out, of which 61 plantations were sampled across nine forest circles covering a gross area of plantation of 1070 ha (average of 17.54 ha/ plantation) and net area of plantation of 1006 ha (average of 16.49 ha/ plantation).

During the period of evaluation, advance works were taken up in 9459.04 ha (96% achievement), plantations were raised in 9992.82 ha (102% achievement) and maintenance works were carried out in 58,956.90 ha (99% achievement).

Scrutiny of the planning process revealed delay in approving APOs and sanctioning of estimates, where nearly 60% were approved after September. The plantation journals were updated in 89% plantations.

Soil moisture conservation works were implemented in 51% of plantations sampled, with an average expenditure of 7%, indicating that this activity was not given due priority. Monitoring visits by supervisory officers were seen in 46% of the plantations sampled. Joint Forest Management Committees (JFMCs) were involved in some of the planting and maintenance activities in two cases, indicating much scope for the participation of the community. Majority of the plantations sampled (57%) followed the ANR-I (B) model as denoted in the respective plantation journals, followed by ER Model – III in 20% of plantations and AR Model II (A) was followed in 15% of plantations.

About 90 species of plants were noticed during the study of which Honge was the most frequently occurring species followed by Nerale, Tapsi, Nelli, Honne, Mathi etc. all of which are native species and known for their NTFP value. It is noteworthy to mention here that the department was making an earnest attempt to encourage mixed plantations of native species which will enhance the biodiversity value of the forests and its intangible benefits to the environment.

Out of plantations sampled, 51% had boundary protection measures, only 28% of them were in good condition indicating that majority of the protection measures were becoming ineffective within 3-6 years after establishment/ installation.

The overall survival observed was 61%, ranging from 92% in Hassan circle to 31% in Kodagu circle. Out of the plantations sampled, 33% plantations were damaged by grazing, wildlife and fire which maybe the cause of low survival rate. NTFP Model-III showed highest percentage of survival (80%) mainly due to trench and mound method of planting, which was effective in soil moisture conservation and hence the better survival rate. Only one plantation of AR Model II (C) was sampled which indicated survival of 25% perhaps due to steep terrain, pit planting, lack of SMC measures, breached boundary protection and damage due to wildlife. Mathi *(Terminalia alata)* recorded the highest percentage of survival 77%, followed by Nandi *(Legarstroemia lanceolata)* and Tapsi *(Holoptelia integrifolia)* 76% each, Honne *(Pterocarpus marsupium)* 75%. The least survival was seen in Dhoopa *(Vateria indica)* at 42 per cent.

Of the 1834 other works carried out during the period of evaluation, a total of 180 works were sampled across 14 circles. Various types of other works such as boundary consolidation, soil moisture conservation works, wildlife protection works, infrastructure, etc. were evaluated. Approved APOs were present in 82% of the other works sampled, however, the date of approval revealed that 45% of the works were sanctioned between January and March, indicating delay in sanctioning process. Scrutiny of field note books and completion certificates showed that check measurement with date in the field note books were not available in 29% of works and 80% of works did not have completion certificates at the time of field visit.

Protected areas were managed in accordance with the approved management plans to ensure protection of forests and wildlife. Solar fencing and elephant proof trenches were installed in appropriate locations to mitigate human animal conflict. However, much work needs to be done to reduce further conflicts. Habitat improvement works were also being undertaken. Wildlife protection and forest conservation measures such as anti-poaching camps (APCs) and fire protection camps were established.

It was observed that in majority of the cases, the waterholes and other soil conservation works were filled with silt from adjoining areas since desilting was usually carried out once in 4-5 years, hence sufficient water could not be stored for longer period. It was understood that anti-poaching camps were located in vantage points, had adequate staff, but need modern communication devices, arms and ammunition and higher capacity battery back-up for effective functioning.

Infrastructure works of the KFD serves various purposes such as office and residential quarters for staff, training facilities, forest rest houses, eco-tourism etc. All the works sampled were in functional condition at the time of visit and serving the intended purpose. It was learnt that the green building code was not followed in the planning and design phase, which offer the scope to make the buildings green and sustainable.

Efforts were made to improve the mobility of the field staff through induction of vehicles. In this regard, a total of Rs. 588.76 lakhs was expended against a target of Rs. 681.80 (86% achievement). However, it was observed that only 50% of the amount allocated for purchase of two-wheelers for Deputy Range Forest Officers was spent. The reasons for underutilisation of funds were not forthcoming.

As per the data provided by the Working plan wing, 12,85,139 ha (40%) of the forest area in the State was yet to be surveyed and demarcated. The Training activities of Karnataka Forest Department were carried out through a well-established network of Training centres located across the state. Training wing of the department was well equipped with state of the art equipment and technology to impart induction and on-the-job training. Comprehensive training needs assessment, a crucial step in human resource development, does not seem to be a systemic process of the training wing.

At the time of study the research wing was not being utilised to its optimum potential. There was much scope to provide comprehensive support to the functioning and execution of planting related activities of the KFD.

It was observed that the ICT wing has put in tremendous efforts to digitize and automate data and processes, which is one of the kinds in the country, by using modern technologies including GIS. The ICT wing has supported the functioning of KFD in multiple ways. Various android applications developed were helpful in ease of functioning, providing fire alerts, simplifying processes, monitoring work of the staff, etc. The website had a user friendly interface and was organized in an accessible manner. However, it was observed that the recruiting a senior, User interface and User experience Engineer may help in increasing the usability and efficiency of the functioning of IT wing.

To reduce the dependency of forest fringe communities on firewood, energy saving devices were distributed to benefit over 2920 people. During the period of study an amount of Rs. 148.44 lakhs were expended out of Rs. 222.5 lakhs (66%).The LPG stoves and cylinders distributed to individual beneficiaries were used regularly by the recipients and they

articulated various benefits of the same. In case of solar lanterns, only 49% of the beneficiaries were using it regularly. There were no systems in place for repair and maintenance of the lanterns which has led to disuse of the device in some cases. Under community benefits, two solar fencing works, one each in Bengaluru and Chikkamagaluru circle and one cattle proof trench work in Hassan circle were evaluated. Focus group discussion revealed that these works were effective in the initial period for about 2-3 years subsequently, their effectiveness reduced due to lack of maintenance.

The cost norms of the present plantation models are to be re-worked by involving the representatives from the field in order to fine tune the models and adopting the same. The present practice of augmenting mixed native species in degraded natural forests should be encouraged in all future afforestation activities of the department in order to increase the biodiversity value and the ecological services potential of the forests.The department could develop comprehensive definitions, benchmarks and rating indices to determine the success and performance of plantations. Five year plan mode could be adopted while planning new plantations with decentralised planning at circle level with approval of annual plan of operations well in advance. Timely approval of estimates coupled with regular monitoring by senior officers will go a long way in raising quality nurseries and plantations.

There should be a regular provision for desilting and maintaining of waterholes/ tanks/ percolation ponds. The anti-poaching camps should be located in vantage points with adequate manpower, basic facilities, well equipped with modern arms and ammunition and night vision binoculars. In addition, mapping of the requirements of new APCs will enhance effective protection. Regular maintenance of EPTs, CPTs, solar fencing, ensuring water resources within forests, eviction of encroachments and ensuring adequate staff at wildlife ranges will help in reducing the incidences of human animal conflict. The funds allocated for the mobility of the field staff, purchase of arms and ammunition and communication devices should be utilised in total for the purpose.

Forestry operations, soil moisture conservation works, benefits to community and individuals can be dovetailed and converged with other ongoing government schemes/ programmes such as MGNREGS, Watershed Development Programmes, Krishi Bhagya, Ujwala etc. Participatory need assessment has to be done prior to distributing individual / community benefits, along with proper documentation of the same.

The functioning of the research wing can further be strengthened with adequate funding and recruitment of qualified manpower and have regular interactions with other wings of the department to support them appropriately. A systematic training need assessment of the serving officers and incorporating more practical aspects in trainings, will enhance the knowledge and skill of staff through concerted human resource development. Proper transfer policies should be developed to retain the trained specialist personnel in appropriate wings at least for three years tenure after completion of training.

Brainstorming on further possibilities for process automation, making software/ application more user friendly with appropriate field level testing along with the developers, making the content on website more comprehensive especially for the general public will further enhance the effectiveness of the ICT wing.

1 INTRODUCTION

1.1 Background

Forests have a significant role to play in mitigating climate change, conserving natural biodiversity and preserving the watershed functions of the region besides meeting the consumptive needs of human beings. Sustainable development and management of forests have intergenerational implications, which are enshrined in Sustainable Development Goals defined by United Nations. The goal number 15 states that *'Protect, restore and promote sustainable use of terrestrial ecosystems, sustainably manage forests, combat desertification, and halt and reverse land degradation and halt biodiversity loss'*[1]. The National Forest Policy of 1988 also set an objective of increasing the tree cover to 33% in the country as a whole. Karnataka state has 20.11% of the state's geographical area[2] and has been making sincere efforts to meet the national forest policy objectives. Existing forests are conserved and green cover is sought to be extended to other government lands and also to private lands through as many as 50 different schemes/programs approximately. Karnataka Forest Department has afforested 2,65,714 ha during the years 2013-14 to 2016-17[3] in forest and non-forest areas under various plan and non-plan programmes.

Forest Cover in Karnataka State is 38,575.48 sq km which is 20.11% of the State's geographical area. The forest cover in Karnataka has enhanced by 1025.48 sq. kms as per the India State of Forest Report, Forest Survey of India, 2019, Ministry of Environment, Forest and Climate Change, Government of India[4] as compared to the previous report in 2017. Tree cover in Karnataka is 6,257 sq. km which has increased by 544 sq km as compared to the previous assessment report of 2017, which may be attributed to afforestation in non-forest areas. The Karnataka Forest Department is implementing various schemes to protect and conserve the forest resources, biodiversity and wildlife across the state. The activities include site specific activities such as safety zone plantation, compensatory afforestation,

[1]https://www.un.org/development/desa/disabilities/envision2030-goal15.html
[2]India State of Forest Report, Forest Survey of India, 2019, Ministry of Environment, Forest and Climate Change, Government of India http://fsi.nic.in/forest-report-2019
[3]Annual Reports, 2013-14, 2014-15, 2015-16 and 2016-17 of Karnataka Forest Department
[4]http://fsi.nic.in/forest-report-2019

consolidation and protection of forests, consolidation and regeneration of forests, wildlife protection and management, infrastructure development and forest produce saving devices and other activities.

Compensatory Afforestation Fund Management and Planning Authority (CAMPA)

While the overarching purpose of the scheme is forest protection and conservation, the specific context and objective is as follows:

The Forest Conservation Act 1980 governs diversion or use of forest land for non-forest purpose such as industrial/ developmental projects. Since forests are an important natural resource, the Act mandates that non-forest land, equal to the size of the forest being diverted be afforested. The newly afforested land will take around 50 years to start delivering the comparable goods and services which the diverted land gave just before diversion. To compensate the losses suffered in the interim, the Net Present Value (NPV) of the diverted forest are computed for a period of 50 years, and recovered from the "user agency" that is diverting the forests.

The Bonn Challenge is a global effort to bring 150 million hectares of the world's deforested and degraded land into restoration by 2020, and 350 million hectares by 2030[5]. India has committed to restore 21 million hectares (13 million hectares of degraded land by 2020 and an additional 8 million hectares by 2030)[6]. India has already brought an area of 9.8 million hectares under restoration since 2011[7]. By integrating forest landscape restoration into ongoing environment and development programmes, countries can maximize the impact of their investment. In India most of these targets are integrated into the umbrella of Twenty Point Programme 2006, which is being monitored by the Ministry of Statistics and

[5] https://www.bonnchallenge.org/content/challenge
[6] The Bonn Challenge in Asia: Driving leadership on forest landscape restoration. IUCN Forest Brief, No. 17. April 2017. Accessed at https://www.bonnchallenge.org/sites/default/files/20170502_iucn-forest-brief-no-17-bonn-challenge-asia_web.pdf
[7] Bonn Challenge and India, Progress on restoration efforts across states and landscapes, 2018. International Union for Conservation of Nature, New Delhi, India, and the Ministry of Environment, Forest and Climate Change, Government of India

Programme Implementation, Government of India[8]. The targets of plantations in CAMPA are not explicitly aligned to this challenge. These are all included under the umbrella of the Twenty Point Programme.

This study covered the activities carried out under CAMPA for the years 2013-14, 2014-15 and 2015-16

1.2 Stated Objective of the Scheme

The main objective of the scheme is to promote afforestation and regeneration activities as a way of compensating for forest land diverted to non-forest uses.

State CAMPA seeks to promote[9]:

a) Conservation, protection, regeneration and management of existing natural forests
b) Conservation, protection and management of wildlife and its habitat within and outside protected area including the consolidation of the protected areas
c) Compensatory afforestation
d) Environmental services, which include:
    a. Provision of goods such as wood, timber, non-timber forest products, fuel, fodder and water, and provision of services such as grazing, tourism, wildlife protection and life support
    b. Regulating services such as climate regulation, disease control, flood moderation, detoxification, carbon sequestration and health of soils, air and water regimes
    c. Non-material benefits obtained from ecosystems, spiritual, recreational, aesthetic, inspirational, educational and symbolic and
    d. Supporting such other services necessary for the production of ecosystem services, biodiversity, nutrient cycling and primary production
e) Research, training and capacity building

1.3 Scheme Structure

An authority called as the "State Compensatory Afforestation Fund Management and Planning Authority" is intended as an instrument to accelerate activities for the preservation

[8] http://mospi.nic.in/sites/default/files/twenty_point_programme_2006/tpp_2006a_background/A_%20Brief_Description_TPP_2006_14may15.pdf?status=1&menu_id=162
[9] The Guidelines on State Compensatory Afforestation Fund Management and Planning Authority (State CAMPA), Ministry of Environment and Forests, Government of India, July 2009

of natural forests, management of wildlife, infrastructure development in the sector and other allied works. The State CAMPA receives the monies 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 and presently lying with the adhoc CAMPA.

As per the guidelines issued by the Ministry of Environment and Forests, Government of India, State CAMPA would administer and utilize the monies for undertaking compensatory afforestation, assisted natural regeneration, conservation and protection of forests, infrastructure development, wildlife conservation and protection and other related activities within and outside protected areas. The mission has taken up project specific activities which include compensatory afforestation, site specific activities and activities for utilization of net present value (NPV).

State CAMPA consists of a Governing Body, a Steering Committee and an Executive Committee. The Governing Body encompassing ten members is chaired by the Chief Minister and comprises of the Ministers of Forests, Planning, Finance, Chief Secretary and respective Principal Secretaries, Head of Forest Force, Chief Wildlife Warden and Secretary (Forests). This Body lays down the broad policy framework for the functioning of the scheme and reviews its working from time to time.

The Steering Committee has ten members, is chaired by the Chief Secretary and comprises Principal Secretaries of Forests, Planning and Finance, Chief Wildlife Warden, representative of MoEF, NGO representatives, Chief Conservator of Forests (Plan/ Schemes). The Committee lays down/ approves the rules/ procedures for the functioning of the body and its Executive Committee, monitors the progress of utilisation of funds, approves annual plan of operation, ensures inter-departmental coordination and meets twice a year.

The Executive Committee has six members, is chaired by Head of Forest Force and comprises the Chief Wildlife Warden, Chief Conservator of Forests (Plan/ Schemes), Financial Controller /Financial Adviser and NGO representatives. Reporting to the Steering

Committee, this Committee takes steps in giving effect to the scheme in accordance with the set rules/ procedures, prepares the annual plan of operation, supervises the works implemented, is responsible for auditing and preparing the annual report.

1.4 Scheme Components

The scheme includes three main components, under which several activities are undertaken as mentioned below:

1.4.1 Project Specific Activities

A. Compensatory Afforestation in Forest and Non-forest Areas
B. Site specific activities: This component covers the following activities

a. Safety zone plantation
b. Reclamation of quarry area
c. Canal plantation
d. Fuel wood plantation
e. Roadside plantation
f. Catchment Area Treatment Plan
g. Afforestation in degraded forest area 1.5 times of safety zone plantation
h. Dwarf and medicinal plantation
i. Penal compensatory afforestation
j. Strip plantation
k. Fencing in safety zone
l. Soil moisture conservation works
m. Supplying energy saving device to concerned villages (out of one time lease rent collected from user agencies for wind power projects)

1.4.2 Activities for Utilisation of NPV

This component covers the following activities

a. Consolidation and protection of forests
b. Consolidation and Regeneration of Forests
c. Wildlife Protection and Management
d. Infrastructure Development
e. Other activities

1.4.3 Performance of the Scheme

The main objective of the scheme is to promote afforestation and regeneration activities as a way of compensating for forest land diverted to non-forest uses. From 1981-82 to 2018-19,

29566.94 ha of forest land has been diverted for non-forestry purposes in 713 cases. The details are given:

Table 1: Abstract showing details of approved projects under Forest Conservation Act, 1980 (Data for the period 1981-82 to 2018-19)

Sl. No.	Category	No. of projects	Extent in ha	Percentage
1	Irrigation	63	2079.97	7
2	Hydel and Wind Power	73	7443.28	25
3	Mining and Quarry	139	9320.03	32
4	Roads	60	320.90	1
5	Railways	10	398.77	1
6	Transmission lines	112	1366.74	5
7	Others	256	8637.26	29
	Total	**713**	**29566.95**	**100**

Source: Secondary data from KFD

It may be seen from the above table that large extent (32%) of forest land was diverted for mining and quarry purposes, followed by 25% for hydel and wind power projects, while relatively least area was diverted for roads and railway purposes (1%) each.

As per the 20 point programme Progress reports of 2013-14, 2014-15, 2015-16, Ministry of Statistics and Programme Implementation, Government of India[10], the afforestation (in public and forest lands) target of area fixed under plantations for Karnataka was 1,92,850 ha, while achievement was 2,04,823 ha (106%).

Table 2:Twenty Point Programme Afforestation (in Public and Forest Lands) Progress of Karnataka

Year	Seedlings Planted (no.)			Area covered under Plantation (ha)		
	T	A	%	T	A	%
2013-14	51844000	77717000	150%	79760	82925	104%
2014-15	44300000	51929000	117%	47000	52805	112%
2015-16	42959000	43538000	101%	66090	69093	105%
Total	**139103000**	**173184000**	**125%**	**192850**	**204823**	**106%**

Source: Secondary data from KFD

T = Target A = Achievement

The stipulated physical and financial targets and achievements for the period of evaluation were collected from the concerned section of the Karnataka Forest Department and are

[10] http://mospi.nic.in/sites/default/files/twenty_point_programme_2006/annual_report_of_tpp2006/QPR%20of%20TPP.pdf

presented in table 4. Scrutiny of the data for 2013-14, 2014-15 and 2015-16 revealed that during the period of evaluation Rs. 20,194.00 lakhs was the financial target of which Rs. 16,715 lakhs has been expended, i.e. 83% achievement. In terms of physical plantation activities (raising, maintenance and advance works), 109,783.34 ha was the achievement against the target of 110,473.52 (99%). The details of physical targets and achievements for plantations are as below:

Table 3:Summary of Progress of Plantation Activities

Plantation Activity	Detail	Compensatory afforestation	Site specific Activities	Conservation and Regeneration	Total
Advance	**T**	2869.87	470.157	9,980.00	13320.03
	A	2570.75	288.153	10,006.80	12865.70
	P	90%	61%	100%	97%
Raising plantation	**T**	2178.99	1112.581	13,668.00	16959.57
	A	2237.31	1112.58	13,763.80	17113.69
	P	103%	100%	101%	101%
Maintenance	**T**	13,649.11	7168.281	59,376.53	80,193.92
	A	13,651.14	7168.281	58,984.53	79,803.95
	P	100%	100%	99%	100%
Total	**T**	18,697.97	8,751.02	83,024.53	110,473.52
	A	18,459.20	8,569.01	82,755.13	109,783.34
	P	99%	98%	100%	99%

Source: Secondary data from KFD

Note: T -Target in ha, A – Achievement in ha, P = Progress in Percentage

During the period of evaluation, advance works were taken up in 12865.70 ha (97% achievement), plantations were raised in 17113.69 ha (101% achievement) and maintenance works were carried out in 79,803.95 ha (100% achievement).

In terms of physical activities, under Compensatory Afforestation, during the period of evaluation, 12,019.89 ha of non-forest area was treated (advance works 2388.02 ha, raising plantations 2100.64 ha and maintenance 7531.23 ha) with an expenditure of Rs. 1500 lakhs (73% achievement).

Similarly, 6439.31 ha of forest area was treated (advance works 182.73 ha, raising plantations 136.67 ha and maintenance 6119.91 ha) with an expenditure of Rs.662.91 lakhs (92% achievement).

Besides these, 12 types of site specific activities such as safety zone plantation, reclamation of quarry area, canal plantation, fuel wood plantation, roadside plantation, fencing of safety zone, supply of energy saving devices to concerned villages etc were carried out in 7759.16 ha with a budgetary achievement of Rs. 918.97 lakhs (84% achievement) including 8.4 kms of roadside plantation and distribution of 669 units of energy saving devices.

Various works taken under conservation and regeneration of forests included assisted natural regeneration, promotion for sandal regeneration, catchment area treatment plan, coastal zone plantation, development of herbal garden, besides raising quality seedlings by research wing. As against the target of 59,821 ha of enrichment planting, 59,581 ha were achieved by expending Rs. 5266.91 lakhs under NPV as against the financial target of Rs. 5987.56 lakhs, i.e. 89% achievement.

Consolidation and protection of forests included survey and demarcation, planting on cattle proof trenches, forest boundary consolidation, RF boards, fire protection works and construction of retaining walls. During the period of evaluation, these activities were carried out with an expenditure of Rs.1,524.3 lakhs lakhs as against a target of Rs. 1692.1, i.e. 90% achievement.

Wildlife protection and management measures such as maintenance of road network (1212.55 km), elephant human conflict mitigation measures (109.19 km EPT, 79.51 km planting on EPT, 158.29 km solar fencing), wildlife habitat improvement and management measures (203 desilting of tanks, 47 check dams works and maintenance of 163 APCs/ elephant depredation camps), assistance to Zoo Authority of Karnataka and maintenance of Nature Camps were carried out with an expenditure of Rs. 323.50 lakhs as against the target of Rs. 450 lakhs, i.e. 72% achievement.

Around 21 training programs, workshops, environmental education program etc. were carried out with an expenditure of Rs.3.12 lakhs as against a target of Rs. 4.19. lakhs i.e. 74% achievement. Youth and students were involved in conservation of forests and wildlife through awareness programs with an expenditure of Rs. 34.75 lakhs as against Rs. 61.00 lakhs (57% achievement.). Larger publicity and awareness programs in the department were conducted with an expenditure of Rs. 38.60 lakhs against a financial target of Rs. 105.58 lakhs (37% achievement) indicating inadequate planning of activities in this regard. Rs. 2.16

lakhs was expended for skill upgradation as against Rs. 58.00 lakhs (4% achievement), physical details of which were not made available.

Training Institutes infrastructure enhancement was done at a cost of Rs. 419.73 lakhs as against a target of Rs. 643.55 lakhs (65% achievement). Around 29 refresher courses were conducted for staff of the department with an expenditure of Rs. 41. 11 lakhs as against a financial target of Rs. 79.00 lakhs (52%) indicating that there is much scope to address the training needs of the staff. Providing ample opportunity for staff to participate in sports activities, Rs. 50 lakhs was spent on participation of department staff in All India Sports Meet.

Enhancing the mobility of the field staff and supervisory officers is crucial to monitoring the project. The vehicles purchased include 90 four wheelers for RFOs, 150 two wheelers for DRFOs and 15 cars for senior officers. In this regard, a total of Rs. 597.62 lakhs was expended against a target of Rs. 694.80 (86% achievement). However, it was observed that only 50% of the amount allocated for purchase of two-wheelers for Deputy Range Forest Officers was spent. The funds allocated for the mobility of the field staff, purchase of arms and ammunition and communication devices were not utilised in total for the purpose.

Eco-tourism activities were given due importance by carrying out works worth Rs. 48.10 lakhs against the plan of Rs. 50.00 lakhs (96% achievement). To reduce the dependency of forest fringe communities on firewood, energy saving devices were distributed to benefit over 2920 people during the period of evaluation. During the period of study an amount of Rs. 169.56 lakhs were expended out of Rs. 248.98 lakhs (68%).

Table 4: Physical Targets and Achievements 2013-14, 2014-15 to 2015-16

Note: PT –Physical target, PA – Physical achievement

Activities	Unit	2013-14		2014-15		2015-16		Total		
		PT	P A	PT	P A	P T	P A	PT	P A	P
Project Specific Activities										
Compensatory Afforestation:										
On Forest Area										
Advance Pitting / Trenching (including Raising of Nursery)		7.48	7.48	41.25	41.25	134	134	182.73	182.73	100%
Raising of plantations		87.94	87.94	7.48	7.48	41.25	41.25	136.67	136.67	100%
Maintenance of One year old Plantations raised under CAMPA during 2012-13, 2014-15	ha	756.51	756.51	96.94	96.94	7.48	7.48	860.93	860.93	100%
Maintenance of two year old plantations raised under CAMPA during 2011-12, 2012-13	ha	692.55	692.55	756.51	757.51	96.94	96.94	1546	1547	100%
Maintenance of three year old plantations raised under CAMPA during 2010-11, 2011-12	ha	519.93	519.93	692.55	692.55	757.51	757.51	1969.99	1969.99	100%
Maintenance of four year old plantations raised under CAMPA during 2010-11	ha			520.18	519.72	692.55	692.55	1,212.73	1,212.27	100%
Maintenance of five year old plantations raised under CAMPA during 2010-11	ha					519.72	519.72	519.72	519.72	100%
Monsoon work in Mangalore Division (Advance work + Raising of Plantation)	ha	10	10					10	10	100%
On Non-Forest Area										
Advance Pitting / Trenching (including Raising of Nursery)	ha	1326.2	1308.82	560.94	502.12	800	577.08	2,687.14	2,388.02	89%
Raising of plantations	ha	231.38	231.38	1,308.82	1,367.14	502.12	502.12	2,042.32	2,100.64	103%

Activities	Unit	2013-14		2014-15		2015-16		Total		
		PT	P A	PT	P A	P T	P A	PT	P A	P
Maintenance of One year old Plantations raised under CAMPA during 2012-13, 2014-15	ha	564.24	564.24	231.38	232.43	1367.141	1367.141	2,162.76	2,163.81	100%
Maintenance of Two year old plantations raised under CAMPA during 2011-12, 2012-13	ha	979.95	979.95	558.3	557.69	231.38	232.43	1769.63	1770.07	100%
Maintenance of three year old plantations raised under CAMPA during 2010-11, 2011-12	ha	359.92	359.92	979.95	979.95	557.69	557.69	1,897.56	1,897.56	100%
Maintenance of four year old plantations raised under CAMPA during 2010-11	ha			359.92	359.92	979.95	979.95	1,339.87	1,339.87	100%
Maintenance of five year old plantations raised under CAMPA during 2010-11						359.92	359.92	359.92	359.92	100%
Sub Total		**5536.1**	**5518.72**	**6114.22**	**6114.7**	**7047.651**	**6825.781**	**18697.971**	**18459.201**	**99%**
Site Specific Activities:										
Safety Zone Plantation										
Advance work for raising Safety Zone Plantation.	ha.			1.12	1.12	17.797	5.433	18.917	6.553	35%
Maintenance of one year old plantations raised under CAMPA during 2010-11	ha	319.2	319.2					319.2	319.2	100%
Maintenance of two year old plantations raised under CAMPA during 2011-12, 2012-13	ha	13.5	13.5	319.2	319.2	1.12	1.12	333.82	333.82	100%
Maintenance of three year old plantations raised under CAMPA during 2011-12	ha			13.5	13.5	319.2	319.2	332.7	332.7	100%
Maintenance of four year old plantations raised under CAMPA during 2011-12						13.5	13.5	13.5	13.5	100%

Activities	Unit	2013-14		2014-15		2015-16		Total		
		PT	P A	PT	P A	P T	P A	PT	P A	P
Reclamation of query area in STR Project										
Maintenance of two year old plantations raised under CAMPA during 2011-12	ha	125	125					125	125	100%
Maintenance of three year old plantations raised under CAMPA during 2010-11, 2011-12	ha	25	25	125	125			150	150	100%
Maintenance of four year old plantations raised under CAMPA during 2010-11	ha			25	25	125	125	150	150	100%
Maintenance of five year old plantations raised under CAMPA during 2010-11						25	25	25	25	100%
Canal Plantation										
One year old plantations raised under CAMPA during 2012-13	ha	121.78	121.78					121.78	121.78	100%
Two year old plantations raised under CAMPA during 2012-13	ha			121.78	121.78			121.78	121.78	100%
Three year old plantations raised under CAMPA during 2012-13						121.78	121.78	121.78	121.78	100%
Fuel wood Plantation										
One year old canal side monsoon fuel wood plantation raised under CAMPA during 2012-13	ha	47	47					47	47	100%
One year old canal side monsoon fuel wood plantation raised under CAMPA during 2012-13	ha	8.4	8.4					8.4	8.4	100%
Two year old canal side monsoon Fuel wood plantation raised under CAMPA during 2012-13	ha			47	47			47	47	100%

Activities	Unit	2013-14		2014-15		2015-16		Total		
		PT	P A	PT	P A	P T	P A	PT	P A	P
Third year old canal side monsoon Fuel wood plantation raised under CAMPA during 2012-13						47	47	47	47	100%
Road Side Plantation										
Two year old canal side monsoon Fuelwood plantation raised under CAMPA during 2012-13	kms			8.4	8.4			8.4	8.4	100%
Third year old canal side monsoon Fuelwood plantation raised under CAMPA during 2012-13						8.4	8.4	8.4	8.4	100%
CATP										
Advance Pitting / Trenching (including Raising of Nursery)				2.1	2.1	0	0	2.1	2.1	100%
Raising of Plantations under Catchment Area Treatment Plan (CATP)	ha	30	30	62.07	62.07	0	0	92.07	92.07	100%
Maintenance of One year old Plantations raised under CAMPA during 2012-13, 2013-14	ha	80	80	30	30	62.07	62.07	172.07	172.07	100%
Maintenance of two year old plantations raised under CAMPA during 2011-12, 2012-13	ha	112.04	112.04	80	80	30	30	222.04	222.04	100%
Maintenance of three year old plantations raised under CAMPA during 2011-12	ha			112.04	112.04	80	80	192.04	192.04	100%
Maintenance of three year old plantations raised under CAMPA during 2011-13	ha			7	7	112.036	112.036	119.036	119.036	100%
Maintenance of four year old plantations raised under CAMPA during 2011-12						7	7	7	7	100%
Catchment Area Treatment Plan (CATP) (Fresh)	ha	62.07	62.07					62.07	62.07	100%

Activities	Unit	2013-14		2014-15		2015-16		Total		
		PT	P A	PT	P A	P T	P A	PT	P A	P
Maintenance of two year old Medicinal Plantations	ha	7	7					7	7	100%
Afforestation in Degraded forest area 1 1/2 times of safety zone area										
Advance Pitting / Trenching (including Raising of Nursery)		42.82	40.36					42.82	40.36	94%
Raising of Plantations.	ha	123	123	40.36	40.36	0	0	163.36	163.36	100%
Maintenance of one year old plantations raised under CAMPA during 2012-13, 2013-14 (Block Plantation)	ha	79.01	79.01	123	123	40.36	40.36	242.37	242.37	100%
Maintenance of Two year old plantations raised under CAMPA during 2011-12, 2012-13	ha	92.34	92.34	79	79	123	123	294.34	294.34	100%
Maintenance of Three year old plantations raised under CAMPA during 2011-12	ha			92.34	92.34	79.005	79.005	171.345	171.345	100%
Maintenance of four year old plantations raised under CAMPA during 2011-12						92.34	92.34	92.34	92.34	100%
Others if any (Specify ACA, PCA, Dwarf Trees etc.)										
Advance work for Raising Dwarf / Medicinal Plantations.				277.13	146.13	91.18	55	368.31	201.13	55%
Raising of Dwarf / Medicinal Plantations	ha	308.2	308.2	111	111	146.131	146.13	565.331	565.33	100%
One year old plantations raised under CAMPA during 2012-13 (Block plantation)	ha	167.5	167.5					167.5	167.5	100%
Maintenance of One year old plantations raised under CAMPA during 2012-13 (Dwarf / Medicinal Plants)	ha	20	20	40.28	40.28	111	111	171.28	171.28	100%

Activities	Unit	2013-14		2014-15		2015-16		Total		
		PT	P A	PT	P A	P T	P A	PT	P A	P
Maintenance of Two year old Dwarf/ Medicinal plantations raised under CAMPA during 2011-12, 2012-13 (Block Plantation-)	ha	651.68	651.68	167.5	167.5	40.28	40.28	859.46	859.46	100%
Maintenance of Two year old plantations raised under CAMPA during 2012-13 (Dwarf / Medicinal Plantation)	ha			20	20	167.5	167.5	187.5	187.5	100%
Maintenance of Three year old plantations raised under CAMPA during 2010-11, 2012-13 (Dwarf / Medicinal Plantation)	ha	80	80					80	80	100%
Maintenance of four year old plantations raised under CAMPA during 2010-11	ha			80	80	20	20	100	100	100%
Maintenance of five year old plantations raised under CAMPA during 2010-11 (Dwarf / Medicinal)						80	80	80	80	100%
Penal Compensatory Afforestation (PCA)/ Addl. CA (ACA)										
Raising of Plantations (PCA)	ha			52.92	52.92			52.92	52.92	100%
Maintenance of One year old plantations raised under CAMPA during 2013-14 (PCA)	ha			308.2	308.2	52.92	52.92	361.12	361.12	100%
Maintenance of Two year old plantations raised under CAMPA during 2013-14 (PCA)						308.2	308.2	308.2	308.2	100%
Maintenance of three year old plantations raised under CAMPA during 2011-12	ha			345.64	345.64			345.64	345.64	100%
Maintenance of three year old plantations raised under CAMPA during 2011-13	ha			305.8	305.8			305.8	305.8	100%
Maintenance of Four year old plantations raised under CAMPA during 2011-12 (PCA)						345.64	345.64	345.64	345.64	100%

Activities	Unit	2013-14		2014-15		2015-16		Total		
		PT	P A	PT	P A	P T	P A	PT	P A	P
Maintenance of four year old plantations raised under CAMPA during 2011-12 (ACA)						305.8	305.8	305.8	305.8	100%
Strip Plantation										
Advance work for Raising Strip Plantation.	ha			36.55	36.55	1.46	1.46	38.01	38.01	100%
Raising of Strip Plantations.	ha	50	50	50	50	36.55	36.55	136.55	136.55	100%
Dwarf trees	ha	111	111					111	111	100%
PCA	ha	52.92	52.92					52.92	52.92	100%
Raising of Dwarf/Medicinal plantations (including Nursery Development)	ha	40.28	40.28					40.28	40.28	100%
Maintenance of One year old plantations raised under CAMPA during 2014-15						50	50	50	50	100%
Fencing of Safety Zone.	kms			2.1		36.436	13.616	38.536	13.616	35%
SMC works						2	2	2	2	100%
Others if any (Specify) LR on MW from Wind Power Projects, supplying energy saving devices, to the concerned villages, etc.,	ha				624	45	45	45	669	1487%
Sub Total		**2769.74**	**2767.28**	**3086.03**	**3576.93**	**3144.705**	**3073.34**	**9000.475**	**9417.55**	**105%**
Activities for utilization of NPV amount										
Consolidation and Protection of Forests										
Survey and Demarcation	LS				387.56	0	33.23	0	420.79	
Planting on CPT (spill over work)	kms.			97.4	66.9	300.82	252.62	398	319.52	80%
Forest boundary consolidation through CPT	Kms	103	100	307	300.82	300	290.32	710	691.14	97%
RF Boards / Hoardings	LS				368	0	174	0	542	

Activities	Unit	2013-14		2014-15		2015-16		Total		
		PT	P A	PT	P A	P T	P A	PT	P A	P
Fire Protection works	LS				3,360.09	0	2860.46	0	6,220.55	
Construction of Retaining Wall	LS									
Sub Total		**103**	**100**	**404.4**	**4483.37**	**600.82**	**3610.63**	**1108.22**	**8194**	**739%**
Conservation and Regeneration of Forests										
Assisted Natural Regeneration (ANR) (area in ha.)										
Advance Pitting / Trenching (including Raising of Nursery)		2,050	2,050	5,430.00	5,590.80	2500	2366	9,980.00	10,006.8	100%
Raising of Plantations.	ha	5,785	5,785	2,050.00	2,050.00	5430	5525.8	13,265.00	13,360.8	101%
Maintenance of One year old plantations raised under CAMPA during 2012-13, 2013-14	ha	2985.99	2985.99	5,785.00	5,835.00	2050	2050	10,820.99	10,871.0	100%
Maintenance of Two year old plantations raised under CAMPA during 2011-12, 2012-13	ha	6140	6140	2,985.99	2,985.99	5785	5785	14,910.99	14,911.0	100%
Maintenance of three year old plantations raised under CAMPA during 2010-11, 2011-12	ha	3,350	3,350	6,140.00	5,965.00	2985.987	2985.987	12,475.99	12,301.0	99%
Maintenance of four year old plantations raised under CAMPA during 2010-11	ha			3,330.00	3,230.00	6140	6090	9,470.00	9,320.0	98%
Maintenance of five year old plantations raised under CAMPA during 2010-11	ha					3330	3280	3,330.00	3,280.0	98%
Promotion of Sandal Regeneration on estate management concept (in Ha).										
Maintenance of One year Old Plantations raised under CAMPA during 2012-13, 2013-14	ha	75	69	10	10			85.00	79.0	93%
Maintenance of Two year old plantations raised under CAMPA during 2011-12, 2012-13	ha	218	218	75	69	10	10	303.00	297.0	98%

Activities	Unit	2013-14		2014-15		2015-16		Total		
		PT	P A	PT	P A	P T	P A	PT	P A	P
Maintenance of three year old plantations raised under CAMPA during 2010-11, 2011-12	ha	615	595	218	203	69	69	902.00	867.0	96%
Maintenance of four year old plantations raised under CAMPA during 2011-13	ha			615	595	203	203	818.00	798.0	98%
Maintenance of five year old plantations raised under CAMPA during 2010-11	ha					595	595	595.00	595.0	100%
Raising & Maintenance of Sandal Plantation (Ramanagara)	ha	10	10					10.00	10.0	100%
Raising of Afforestation of Forest Areas in the catchments of the Forest Areas Diverted (on Watershed basis) (Spillover)										
Maintenance of One year old Plantations raised under CAMPA during 2012-13, 2013-14	ha	50	50	150	150			200.00	200.0	100%
Raising of Plantations	ha	150	150					150.00	150.0	100%
Maintenance of Two year old plantations raised under CAMPA during 2012-13	ha			50	50	150	150	200.00	200.0	100%
Maintenance of Three year old plantations raised under CAMPA during 2012-13	ha					50	50	50.00	50.0	100%
Research Activities										
Production of Quality Planting Materials and collection of quality seeds and any other research activities by Research wing including Creation of Research Plots, Teak beds etc., (Spill Over works)		47		47	49.05	28	29.0316	122.00	78.1	64%
Production of Quality Planting Materials and collection of quality seeds and any other research activities by Research wing including Creation of Research Plots, Teak beds etc., (fresh works)					53,199.60	0	0.478	0.00	53,200.1	

Activities	Unit	2013-14		2014-15		2015-16		Total		
		PT	P A	PT	P A	P T	P A	PT	P A	P
Integrated plan for conservation and development of Bio-diversity, forests and ecological in the forest areas of Coastal Zone -I (HASIRU KAVACHA)										
Raising of plantations	ha	243	243					243.00	243.0	100%
Maintenance of One year Old plantations raised under CAMPA during 2013-14	ha			243	243			243.00	243.0	100%
Maintenance of One year old Plantations raised in degraded area	ha	796.52	796.52					796.52	796.5	100%
Maintenance of two year old plantations raised in degraded area	ha	688.5	688.5	796.52	796.52	243	243	1,728.02	1,728.0	100%
Maintenance of three year old plantations raised in degraded area	ha	121.5	121.5	643.5	643.5	796.52	796.52	1,561.52	1,561.5	100%
Maintenance of four year old plantations raised in degraded area	ha			121.5	121.5	643.5	643.5	765.00	765.0	100%
Maintenance of five year old plantations raised in degraded area during 2010-11	ha					121.5	121.5	121.50	121.5	100%
Development of Herbal Gardens/ MPCA/ MPDAs						0	0			
Sub Total		**23,326**	**23,253**	**28,691**	**81,787**	**31,131**	**30,994**	**83,147**	**136,033**	**164%**
Wildlife Protection & Management										
Maintenance of road network in Protected Area		378	378	350	510.25	335	324.3	1063	1212.55	114%
Elephant-Human conflict mitigation measures (Areas outside &inside Protected Areas)										
EPT	kms	35	33	80	76.19		0	115	109.19	95%
Planting on EPT (Spill Over works)	kms	0		30	17	0	62.51	30	79.51	265%

Activities	Unit	2013-14		2014-15		2015-16		Total		
		PT	P A	PT	P A	P T	P A	PT	P A	P
Solar Fencing	kms	28	23	75	75	82	60.29	185	158.29	86%
Solar Power Generation/ Wind Power Generation.							0	0	0	
Wild life Habitat improvement &Management for individual PA :										
Desilting of tanks	Nos.	59	59	50	76	51	68	160	203	127%
Construction of Check Dams	Nos.			25	21	29	26	54	47	87%
Elephant depredation camps/ Anti poaching camps	LS	20	20	50	57	49	86	119	163	137%
Research and Training Activities and conducting workshops, environmental education programmes etc.	LS				10	0	2	0	12	
Assistance to ZAK [Sri Chamarajendra Zoological Garden]	LS					0	0	0	0	
Assistance to ZAK [Bannerghatta Biological Park]								0	0	
Maintenance of Nature Camps	LS				18			0	18	
Sub Total		**520**	**513**	**660**	**860.44**	**546**	**629.1**	**1726**	**2002.54**	**116%**
Infrastructure Development								0	0	
Strengthening & Augmenting Communication Network (ICT Cell)								0	0	
Upgrading Arms & Ammunition	LS					0	0	0	0	
VEHICLES								0	0	
Four Wheelers (For RFO's)	Nos.	30	30	30	30	30	30	90	90	100%
Two Wheelers (For Dy. RFO's)	LS			150	150	128	0	278	150	54%
Strengthening of Training Institutes - i. Construction of Buildings	LS				10	0	4	0	14	

Activities	Unit	2013-14		2014-15		2015-16		Total		
		PT	P A	PT	P A	P T	P A	PT	P A	P
Refresher Course at Training Institutes for capacity building				21	16	0	13	21	29	138%
Sub Total		**30**	**30**	**201**	**206**	**158**	**47**	**389**	**283**	**73%**
Other activities:										
(Including fees of Internal Auditors)	LS					0	0	0	0	
Involvement of Youth & Student in conservation of forests and wildlife	LS				29	0	71	0	100	
Purchase of Vehicles for Senior Officers of CAMPA						4	4	4	4	100%
Purchase of Vehicles for Senior Officers involved in CAMPA Activities in the Department.						10	10	10	10	100%
Purchase of vehicle for the use of MoEF& CC, Regional Office, Bengaluru for monitoring purpose.						1	1	1	1	100%
Supply of Energy Saving devices in fringe villages	LS				1,880.00	0	1040	0	2920	
Skill upgradation programme	LS				3	0	0	0	3	
Publicity and Awareness Programmes in the Department.					21	0	0	0	21	
Eco tourism Activity						0	421	0	421	
All India Sports Meet						0	0	0	0	
Rescheduled works						0	0	0	0	
Sub Total		**0**	**0**	**0**	**1933**	**15**	**1547**	**15**	**3480**	

Source: Secondary data from KFD

Table 5: Financial Targets and Achievements 2013-14, 2014-15 to 2015-16

Note: FT – Financial target, FA – Financial achievement

Activities	Unit	2013-14		2014-15		2015-16		TOTAL		Progress
		F T	FA	F T	FA	F T	F A	FT	FA	
Project Specific Activities										
Compensatory Afforestation:										
On Forest Area										
Advance Pitting / Trenching (including Raising of Nursery)	ha	3.37	2.56	18.7	17.25	62.11	60.74	84.18	80.55	96%
Raising of plantations	ha	30.21	25.56	2.86	1.82	17.1	13.69	50.17	41.07	82%
Maintenance of One year old Plantations raised under CAMPA during 2012-13, 2014-15	ha	104.55	96.79	15.21	15.18	1.04	0.49	120.8	112.46	93%
Maintenance of two year old plantations raised under CAMPA during 2011-12, 2012-13	ha	63.69	62.92	76.46	75.06	10.79	10.41	150.94	148.39	98%
Maintenance of three year old plantations raised under CAMPA during 2010-11, 2011-12	ha	37.95	36.82	52.77	51.62	66.94	63.43	157.66	151.87	96%
Maintenance of four year old plantations raised under CAMPA during 2010-11	ha			41.59	35.57	60.58	54.32	102.17	89.89	88%
Maintenance of five year old plantations raised under CAMPA during 2010-11						45.12	32.38	45.12	32.38	72%
Monsoon work in Mangalore Division (Advance work + Raising of Plantation)	ha	6.4	6.3					6.4	6.3	98%
On Non-Forest Area				-	-					
Advance Pitting / Trenching (including Raising of Nursery)	ha	277.46	238.47	221.06	166.14	312.015015	141.8703	810.54	546.48	67%

Activities	Unit	2013-14		2014-15		2015-16		TOTAL		Progress
		F T	FA	F T	FA	F T	F A	FT	FA	
Raising of plantations		78.56	73.3	280.59	301.57	208.12874	24.545	567.28	399.42	70%
Maintenance of One year old Plantations raised under CAMPA during 2012-13, 2014-15	ha	77.98	65.99	36.44	33.53	98.398689	71.50816	212.82	171.03	80%
Maintenance of Two year old plantations raised under CAMPA during 2011-12, 2012-13	ha	89.86	73.6	43.75	41.25	26.26163	21.64275	159.87	136.49	85%
Maintenance of three year old plantations raised under CAMPA during 2010-11, 2011-12	ha	26.27	21.19	79.24	68.82	41.633175	34.80959	147.14	124.82	85%
Maintenance of four year old plantations raised under CAMPA during 2010-11	ha			29.96	25.68	86.147525	72.27268	116.11	97.95	84%
Maintenance of five year old plantations raised under CAMPA during 2010-11	ha					32.21284	23.84041	32.21	23.84	74%
Sub Total		**796.3**	**703.5**	**898.63**	**833.49**	**1068.5**	**625.9**	**2763.4**	**2162.9**	**78%**
Site Specific Activities:										
Safety Zone Plantation										
Advance work for raising Safety Zone Plantation.	ha.			0.51	0.51	8.25	3.76	8.76	4.27	49%
Maintenance of one year old plantations raised under AMPA during 2010-11	ha	44.11	44.11					44.11	44.11	100%
Maintenance of two year old plantations raised under CAMPA during 2012-13	ha	1.24	0.47	33.61	33.61	0.46	0	35.31	34.08	97%
Maintenance of three year old plantations raised under CAMPA during 2011-12	ha			1.12	0.36	28.57	24.062	29.69	24.42	82%

Activities	Unit	2013-14		2014-15		2015-16		TOTAL		Progress
		F T	FA	F T	FA	F T	F A	FT	FA	
Maintenance of four year old plantations raised under CAMPA during 2011-12	ha					1.20825	0.521	1.21	0.52	43%
Reclamation of query area in STR Project										
Maintenance of two year old plantations raised under CAMPA during 2011-12	ha	8	8					8.00	8.00	100%
Maintenance of three year old plantations raised under CAMPA during 2010-11, 2011-12	ha	1.6	1.6	8.26	8.26			9.86	9.86	100%
Maintenance of four year old plantations raised under CAMPA during 2010-11	ha			1.65	1.65	8.94	8.94	10.59	10.59	100%
Maintenance of five year old plantations raised under CAMPA during 2010-11	ha					1.79	1.79	1.79	1.79	100%
Canal Plantation										
One year old plantations raised under CAMPA during 2012-13	ha	9.25	9.22			1.79	1.79	11.04	11.01	100%
Two year old plantations raised under CAMPA during 2012-13	ha			10.26	9.25			10.26	9.25	90%
Three year old plantations raised under CAMPA during 2012-13						8.58	7.59	8.58	7.59	88%
Fuel wood Plantation										
One year old canal side monsoon fuelwood plantation raised under CAMPA during 2012-13	ha	4.84	4.7			1.79	1.79	6.63	6.49	98%
One year old canal side monsoon fuelwood plantation raised under CAMPA during 2012-13	ha	3.14	3.07					3.14	3.07	98%

Activities	Unit	2013-14		2014-15		2015-16		TOTAL		Progress
		F T	FA	F T	FA	F T	F A	FT	FA	
Two year old canal side monsoon Fuel wood plantation raised under CAMPA during 2012-13	ha			4.21	3.97			4.21	3.97	94%
Third year old canal side monsoon Fuel wood plantation raised under CAMPA during 2012-13						2.059	1.9	2.06	1.85	90%
Road Side Plantation										
Two year old canal side monsoon Fuelwood plantation raised under CAMPA during 2012-13	kms			2.82	2.81			2.82	2.81	100%
Third year old canal side monsoon Fuelwood plantation raised under CAMPA during 2012-13						2.46	2.4	2.46	2.41	98%
CATP										
Advance Pitting / Trenching (including Raising of Nursery)				2.02	2.02	0	0	2.02	2.02	100%
Raising of Plantations under Catchment Area Treatment Plan (CATP)		10.31	9.94	24.3	24.3	0	0	34.61	34.24	99%
Maintenance of One year old Plantations raised under CAMPA during 2012-13, 2013-14	ha	11.06	11.06	4.73	3.49	10.48983	7.11	26.28	21.66	82%
Maintenance of two year old plantations raised under CAMPA during 2011-12, 2012-13	ha	7.82	7.8	5.7	5.69	3.405	2.817	16.93	16.31	96%
Maintenance of three year old plantations raised under CAMPA during 2011-12	ha			5.83	5.78	7.16	7.16	12.99	12.94	100%
Maintenance of three year old plantations raised under CAMPA during 2011-13	ha			0.58	0.44	5.628	5.56	6.21	6.00	97%

Activities	Unit	2013-14		2014-15		2015-16		TOTAL		Progress
		F T	FA	F T	FA	F T	F A	FT	FA	
Maintenance of four year old plantations raised under CAMPA during 2011-12	ha					0.61	0.58	0.61	0.58	94%
Catchment Area Treatment Plan (CATP) (Fresh)	ha	17	17					17.00	17.00	100%
Maintenance of two year old Medicinal Plantations	ha	0.54	0.54					0.54	0.54	100%
Afforestation in Degraded forest area 1 1/2 times of safety zone area										
Advance Pitting / Trenching (including Raising of Nursery)		19.27	17.64					19.27	17.64	92%
Raising of Plantations.	ha	42.25	31.21	15.48	15.44	0	0	57.73	46.65	81%
Maintenance of one year old plantations raised under CAMPA during 2012-13, 2013-14 (Block Plantation)	ha	10.92	7.48	14.96	14.91	6.89	6.823	32.77	29.21	89%
Maintenance of Two year old plantations raised under CAMPA during 2011-12, 2012-13	ha	8.5	7.34	8.1	6.31	13.24	12.496	29.84	26.15	88%
Maintenance of Three year old plantations raised under CAMPA during 2011-12	ha			7.38	6.34	7.07	12.5	14.45	18.84	130%
Maintenance of four year old plantations raised under CAMPA during 2011-12						8.26	12.5	8.26	12.50	151%
Others if any (Specify ACA, PCA, Dwarf Trees etc.)										
Advance work for Raising Dwarf / Medicinal Plantations.				125.62	65.18	42.26193	25.39	167.88	90.57	54%
Raising of Dwarf / Medicinal Plantations	ha	105.87	101.92	43.46	42.52	60.5712995	46.539	209.90	190.98	91%

Activities	Unit	2013-14		2014-15		2015-16		TOTAL		Progress
		F T	FA	F T	FA	F T	F A	FT	FA	
One year old plantations raised under CAMPA during 2012-13 (Block plantation)	ha	23.15	22.09	6.34	5.72	18.759	17.89	48.25	45.70	95%
Maintenance of One year old plantations raised under CAMPA during 2012-13 (Dwarf / Medicinal Plants)	ha	2.76	2.76					2.76	2.76	100%
Maintenance of Two year old Dwarf/ Medicinal plantations raised under CAMPA during 2011-12, 2012-13 (Block Plantation-)	ha	60.02	49.17	7.53	4.4	4.57178	4.03826	72.12	57.60826	80%
Maintenance of Two year old plantations raised under CAMPA during 2012-13 (Dwarf / Medicinal Plantation)	ha			2.11	1.47	14.99125	6.92	17.10	8.39	49%
Maintenance of Three year old plantations raised under CAMPA during 2010-11, 2012-13 (Dwarf / Medicinal Plantation)	ha	5.84	5.84					5.84	5.84	100%
Maintenance of four year old plantations raised under CAMPA during 2010-11	ha			3.89	4.54	1.79	1.637	5.68	6.177	109%
Maintenance of five year old plantations raised under CAMPA during 2010-11 (Dwarf / Medicinal)						7.16	4.421	7.16	4.42	62%
Penal Compensatory Afforestation (PCA)/ Addl. CA (ACA)										
Raising of Plantations (PCA)	ha			20.09	20.08			20.09	20.08	100%
Maintenance of One year old plantations raised under CAMPA during 2013-14 (PCA)	ha			48.31	48.29	8.4	8.399	56.71	56.69	100%

Activities	Unit	2013-14		2014-15		2015-16		TOTAL		Progress
		F T	FA	F T	FA	F T	F A	FT	FA	
Maintenance of Two year old plantations raised under CAMPA during 2013-14 (PCA)						34.93	33.65	34.93	33.65	96%
Maintenance of three year old plantations raised under CAMPA during 2011-12	ha			25.76	25.75			25.76	25.75	100%
Maintenance of three year old plantations raised under CAMPA during 2011-13	ha			23.69	23.66			23.69	23.66	100%
Maintenance of Four year old plantations raised under CAMPA during 2011-12 (PCA)						28.9	24.27	28.89	24.27	84%
Maintenance of four year old plantations raised under CAMPA during 2011-12 (ACA)						26.7	24.25	26.74	24.25	91%
Strip Plantation										
Advance work for Raising Strip Plantation.	ha			16.57	16.57	0.67671	0.65	17.25	17.22	100%
Raising of Strip Plantations.	ha	22.5	22.5	19.58	19.58	15.149975	13.41	57.23	55.49	97%
Dwarf trees	ha	49.95	49.95					49.95	49.95	100%
PCA	ha	23.81	16.67					23.81	16.67	70%
Raising of Swarf/Medicinal plantations (including Nursery Development)	ha	16.99	16.98					16.99	16.98	100%
Maintenance of One year old plantations raised under CAMPA during 2014-15	ha					8.45	7.54	8.45	7.54	89%
Fencing of Safety Zone	kms			2.48		80.16	43.30	82.64	43.30	52%
SMC works						59.6	64.5	59.60	64.50	108%

Activities	Unit	2013-14		2014-15		2015-16		TOTAL		Progress
		F T	FA	F T	FA	F T	F A	FT	FA	
Others if any (Specify) LR on MW from Wind Power Projects, supplying energy saving devices, to the concerned villages, etc.,		50	47.49	50	49.93	13.8	13.75	113.80	111.17	98%
Sub Total		**560.74**	**516.55**	**546.95**	**472.83**	**556**	**463**	**1663**	**1452**	**87%**
Activities for utilization of NPV amount										
Consolidation and Protection of Forests										
Survey and Demarcation	LS	40	35.6	35.6	88.62	100	71.7197	175.60	195.94	112%
Planting on CPT (spil over work)	kms.			2.92	1.48	9.32542	5.11817	12.25	6.60	54%
Forest boundary consolidation through CPT	Kms	146.26	141.22	491.36	436.64	523.7125	485.88745	1161.33	1063.75	92%
RF Boards / Hoardings	LS	42.4	36.17	54	36.52	49	28.10906	145.40	100.80	69%
Fire Protection works	LS			80	59.24	99.5	79.94239	179.50	139.18	78%
Construction of Retaining Wall	LS			18	18			18.00	18.00	100%
Sub Total		**228.66**	**212.99**	**681.88**	**640.5**	**781.5**	**670.8**	**1692.1**	**1524.3**	**90%**
Conservation and Regeneration of Forests										
Assisted Natural Regeneration (ANR) (area in ha.)										
Advance Pitting / Trenching (including Raising of Nursery)	ha	599.63	584	1,536.72	1,424.95	703.61	636.90216	2839.96	2645.85	93%
Raising of Plantations.	ha	590.07	581.16	225.85	205.73	565.035	524.46733	1380.96	1311.36	95%
Maintenance of One year old plantations raised under CAMPA during 2012-13, 2013-14	ha	121.51	116.31	407.16	385.27	109.0165	104.88658	637.69	606.47	95%
Maintenance of Two year old plantations raised under CAMPA during 2011-12, 2012-13	ha	219.3	208.68	154.52	142.52	322.2245	295.24273	696.04	646.44	93%

Activities	Unit	2013-14		2014-15		2015-16		TOTAL		Progress
		F T	FA	F T	FA	F T	F A	FT	FA	
Maintenance of three year old plantations raised under CAMPA during 2010-11, 2011-12	ha	118.55	111.81	310.42	280.7	169.61	151.00	598.58	543.51	91%
Maintenance of four year old plantations raised under CAMPA during 2010-11	ha			163.93	127.45	335.46	266.33	499.39	393.78	79%
Maintenance of five year old plantations raised under CAMPA during 2010-11	ha					182.70	136.27	182.70	136.27	75%
Promotion of Sandal Regeneration on estate management concept (in Ha).										
Maintenance of One year Old Plantations raised under CAMPA during 2012-13, 2013-14	ha	5.61	5.16	2.39	1.57			8.00	6.73	84%
Maintenance of Two year old plantations raised under CAMPA during 2011-12, 2012-13	ha	15.26	12.26	5.27	2.38	0.755	0.73	21.29	15.37	72%
Maintenance of three year old plantations raised under CAMPA during 2010-11, 2011-12	ha	38.75	31.46	15.3	10.29	5.04	3.38	59.09	45.13	76%
Maintenance of four year old plantations raised under CAMPA during 2011-13	ha			39.26	33.47	14.84	9.77	54.10	43.24	80%
Maintenance of five year old plantations raised under CAMPA during 2010-11	ha					42.96	32.77	42.96	32.77	76%
Raising & Maintenance of Sandal Plantation (Ramanagara)	ha	3.12	5.16					3.12	5.16	165%
Raising of Afforestation of Forest Areas in the catchments of the Forest Areas Diverted (on Watershed basis) (Spillover)										

Activities	Unit	2013-14		2014-15		2015-16		TOTAL		Progress
		F T	FA	F T	FA	F T	F A	FT	FA	
Maintenance of One year old Plantations raised under CAMPA during 2012-13, 2013-14	ha	6.81	6.81	10.54	10.54			17.35	17.35	100%
Raising of Plantations	ha	23.4	21.78					23.40	21.78	93%
Maintenance of Two year old plantations raised under CAMPA during 2012-13	ha			3.51	3.35	10.65	8.94	14.16	12.29	87%
Maintenance of Three year old plantations raised under CAMPA during 2012-13	ha					3.55	3.04	3.55	3.04	86%
Research Activities										
Production of Quality Planting Materials and collection of quality seeds and any other research activities by Research wing including Creation of Research Plots, Teak beds etc., (Spill Over works)		6.86	6.86	12.48	10.43	22.926	21.67	42.27	38.96	92%
Production of Quality Planting Materials and collection of quality seeds and any other research activities by Research wing including Creation of Research Plots, Teak beds etc., (FRESH works)		50	50	155	132.12	130	79.306	335.00	261.43	78%
Integrated plan for conservation and development of Bio-diversity, forests and ecological in the forest areas of Coastal Zone -I (HASIRU KAVACHA)										
Raising of plantations	ha	44.86	44.65					44.86	44.65	100%
Maintenance of One year Old plantations raised under CAMPA during 2013-14	ha			16.52	16.51			16.52	16.51	100%

Activities	Unit	2013-14		2014-15		2015-16		TOTAL		Progress
		F T	FA	F T	FA	F T	F A	FT	FA	
Maintenance of One year old Plantations raised in degraded area	ha	74.6	74.6					74.60	74.60	100%
Maintenance of two year old plantations raised in degraded area	ha			53.6	53.3	12.805	11.80	66.41	65.10	98%
Maintenance of three year old plantations raised in degraded area	ha	8.33	8.32	35.9	37.69	41.9046	35.09	86.13	81.10	94%
Maintenance of four year old plantations raised in degraded area	ha			6.58	7.68	33.818	28.45	40.40	36.13	89%
Maintenance of five year old plantations raised in degraded area during 2010-11						6.69515	5.82	6.70	5.82	87%
Development of Herbal Gardens/ MPCA/ MPDAs				20	20	9	5.10	29.00	25.10	87%
Sub Total		**1926.66**	**1869.02**	**3174.95**	**2905.95**	**2722.60**	**2360.97**	**7824.21**	**7135.94**	**91%**
Wildlife Protection & Management										
Maintenance of road network in Protected Area		74.28	74.17	122.17	123.19	118.0875	115.1386	314.54	312.50	99%
Elephant-Human conflict mitigation measures (Areas outside &inside Protected Areas)										
EPT	kms	104.04	80.71	268.13	236.3	500	25.26	872.17	342.27	39%
Planting on EPT (Spill Over works)	kms			0.9	0.36	2.36189	1.416	3.26	1.78	54%
Solar Fencing		69.19	60.86	194.43	185.98	214.84	124.01106	478.46	370.85	78%
Solar Power Generation/ Wind Power Generation.						10	3.607	10.00	3.61	36%
Wild life Habitat improvement &Management for individual PA :	Nos.									
Desilting of tanks	Nos.	94.4	94.27	79.28	80.09	81.6	69.59397	255.28	243.95	96%
Construction of Check Dams.	Nos.			37.31	29.8	43.5	35.01744	80.81	64.82	80%
Elephant depredation camps/ Anti	LS	44	43.98	226.5	186.57	235.935	206.29816	506.44	436.85	86%

Activities	Unit	2013-14		2014-15		2015-16		TOTAL		Progress
		F T	FA	F T	FA	F T	F A	FT	FA	
poaching camps										
Research and Training Activities and conducting workshops, envrionmental education programmes etc.	LS			2.19	1.12	2	2	4.19	3.12	74%
Assistance to ZAK [Sri Chamarajendra Zoological Garden]	LS	50	50	100	81.96	100	0	250.00	131.96	53%
Assistance to ZAK [Bannerghatta Biological Park]				150	150			150.00	150.00	100%
Maintenance of Nature Camps	LS			50	41.54			50.00	41.54	83%
Sub Total		**435.91**	**403.99**	**1230.91**	**1116.91**	**1308.32**	**582.34**	**2975.14**	**2103.24**	**71%**
Infrastructure Development										
Strengthening & Augmenting Communication Network (ICT Cell)										
Upgrading Arms & Ammunition:	LS	20		25		25	0	70.00	0.00	0%
VEHICLES	Nos.									
Four Wheelers (For RFO's)	Nos.	168	164.19	180	169.56	187.5	183.898	535.50	517.65	97%
Two Wheelers (For Dy. RFO's)	LS			82.5	79.97	76.8	0	159.30	79.97	50%
Strengthening of Training Institutes -i. Construction of Buildings	LS	151.56	157.72	300.15	300	343.4	119.725	795.11	577.45	73%
Refresher Course at Training Institutes for capacity building				25	15.58	54	25.53	79.00	41.11	52%
Sub Total		**339.56**	**321.91**	**612.65**	**565.11**	**686.7**	**329.153**	**1638.91**	**1216.173**	**74%**
Other activities:										
RMOE, TE, Etc,	LS	50.43	36.13	49.19	23.74	95.53	73.65	195.15	133.52	68%
Involvement of Youth & Student in conservation of forests and wildlife	LS	26.5	19.11	26.5	16.74	34.5	18.011	87.50	53.86	62%
Purchase of Vehicles for Senior Officers of CAMPA						45	45.389	45.00	45.39	101%

Activities	Unit	2013-14		2014-15		2015-16		TOTAL		Progress
		F T	FA	F T	FA	F T	F A	FT	FA	
Purchase of Vehicles for Senior Officers involved in CAMPA Activities in the Department.						100	99.94545	100.00	99.95	100%
Purchase of vehicle for the use of MoEF& CC, Regional Office, Bengaluru for monitoring purpose.						10	9.9945	10.00	9.99	100%
Supply of Energy Saving devices in fringe villages	LS	23.1	21.12	106.88	71.98	119	76.46112	248.98	169.56	68%
Skill upgradation Programme	LS			40	0.95	18	1.21072	58.00	2.16	4%
Publicity and Awareness Programmes in the Department.				65	17.29	40.584	21.304	105.58	38.59	37%
Eco tourism Activity						50	48.1	50.00	48.10	96%
All India Sports Meet						50	50	50.00	50.00	100%
Rescheduled works		66.44	56.65					66.44	56.65	85%
Sub Total		**166.47**	**133.01**	**287.57**	**130.7**	**562.614**	**444.06579**	**1016.654**	**707.77579**	**70%**
GRAND TOTAL	**LS**	**4454.3**	**4160.97**	**7433.54**	**6665.49**	**7685.808936**	**5475.83864**	**19573.64894**	**16302.29864**	**83%**
Monitoring & Evaluation	**LS**			**55**	**20.48**	**51**	**29.73**	**106**	**50.21**	**47%**
Rescheduled works				**147.13**	**94.33**	**366.774**	**268.47047**	**513.9**	**362.8**	**71%**
NET TOTAL		**4454.3**	**4160.97**	**7635.67**	**6780.3**	**8103.583**	**5774.04**	**20193.55**	**16715.31**	**83%**

Source: Secondary data from KFD

1.5 Scope of the Evaluation

The Energy and Resources Institute (TERI) was entrusted by Karnataka Evaluation Authority (KEA) to carry out the task of Evaluation of Compensatory Afforestation Fund Management and Planning (CAMPA) 2013-14 to 2015-16, 13th Finance Commission 2013-14 to 2014-15, National Afforestation Programme (NAP) 2013-14 to 2016-17 and National Bamboo Mission (NBM) 2013-14 to 2016-17. This report focuses on CAMPA, while separate reports were submitted for the other three schemes.

1.5.1 Purpose of the Evaluation

To assess the achievement of the objectives of the scheme and propose suggestions based on the observations to enhance effectiveness in delivery of the scheme.

1.5.2 Objectives of the Evaluation

To evaluate the works under the scheme that were carried out by Territorial, Wildlife, Research, Working Plan and Training wings of the Karnataka Forest Department.

- To assess whether the desired impact on natural and social environment is achieved and or undesirable impact is avoided under CAMPA.
- To assess the efficiency and effectiveness of the scheme and the ability of the works executed to meet the intended objectives of the scheme.
- To assess the performance of the works under different categories and across the divisions.
- To examine the requirement of works executed under the scheme, whether these works to be continued or closed.
- To assess whether the existing arrangements of accounting and reporting are adequate and transparent.
- To analyse whether the grants under the scheme were utilized for the intended objectives/ purposes.
- To examine the quality of works and the final success rates are satisfactory etc.
- To examine the impact of beneficiary schemes on the households.

1.5.3 Evaluation Questions

The detailed evaluation questions given as per the ToR maybe referred in the annexure. The main components that were studied were as follows:

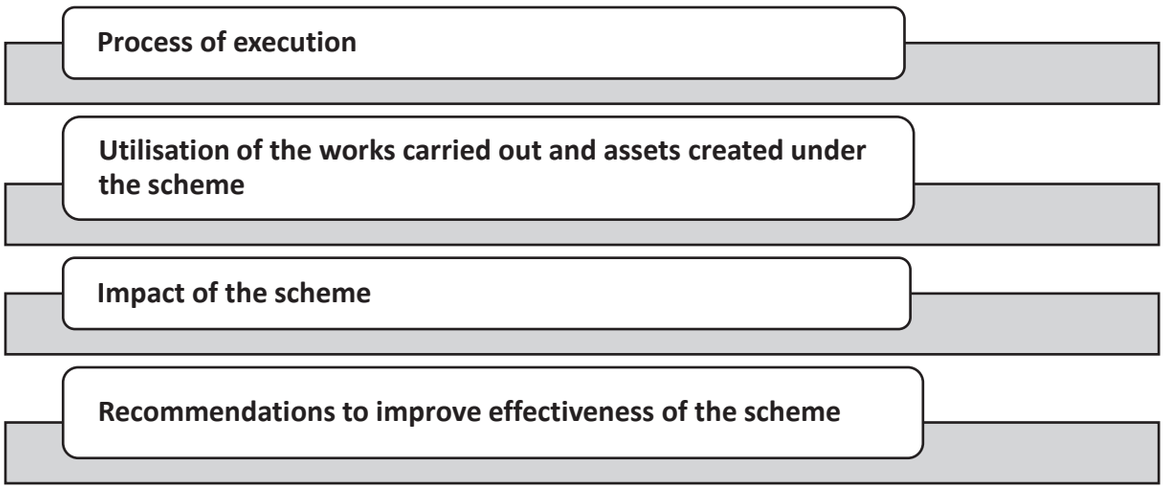


Figure 1: Major Components of Evaluation

1.6 Review of Literature

Secondary data such as scheme guidelines, target and achievements for the reference years of the study and previous evaluation reports were sourced from KFD. In addition, review of existing literature that studied similar aspects was researched online. The major study findings are tabulated to gain an understanding of the work already done in this direction.

Table 6: Brief summary of review of literature

Sl. No.	Study	Highlights
1.	Given. Lisa. M. 2008. The SAGE Encyclopaedia of Qualitative Research Methods. (Vol. 1-0). Thousand Oaks, CA. SAGE Publications.	In-depth interviews were conducted with officers and other stakeholders wherever necessary. The in-depth interviews (IDI) encourages and prompts participants to talk in depth about the topic under investigation without the researcher's use of predetermined, focused, short-answer questions as suggested by Given. L.(2008).

Sl. No.	Study	Highlights
2.	Kruger Richard. 2017. Observation in Evaluation, retrieved from https://www.betterevaluation.org/en/ resources/guide/how_to_use_observation	Kruger .R. (2017) opines that observation has a unique niche among evaluation methods and careful observation is distinctive in three important ways: the person doing the observation is trained, prepared, and systematic.
3.	Anonymous. July 2009. The Guidelines on State Compensatory Afforestation Fund Management and Planning Authority (State CAMPA), Ministry of Environment and Forests, Government of India	The guidelines outline the objectives, establishment of State CAMPA, Utilisation of money, fund disbursement, structure for implementation, accounting procedure and monitoring and evaluation.
4.	Anonymous. Compensatory Afforestation in India. 2013. Report of the Comptroller and Auditor General of India, Report 21 of 2013	Highlights serious shortcomings in regulatory issues related to diversion of forest land, the abject failure to promote compensatory afforestation, the unauthorised diversion of forest land in the case of mining and the attendant violation of the environmental regime.
5.	Anonymous. Species and Planting Technique Models. 2012. General Guidelines 2012. Karnataka Forest Department. Government of Karnataka.	The State is divided into four silvi (agro) climatic zones for the purpose of this guideline/ report. The taluks/ districts in each zone are as per the agro-climatic zone recognize by the State Agriculture Department. The zones are grouped as follows: • Dry zone – North eastern dry zone, northern dry zone, central dry zone, eastern dry zone, southern dry zone. • Transitional zone – southern transition zone, northern transition zone, north eastern transition zone • Malnad and Western Ghat zone – Corresponding to Hilly zone of Karnataka Land Use Board classification • Coastal zone – Coastal zone
6.	Priya Aishwarya and Khanna Ganesh. Critical Comments on Compensatory Afforestation Fund Bill. 2015. Journal on Contemporary Issues of Law. Vol. 2 Issue 8. Pp 1-10	In the Compensatory Afforestation Fund (CAF) Bill there is no provision to safeguard the rights of forest dwelling communities. There are loopholes in the provisions of the bill itself. There are ample amount of complications in the implementation of the Bill.

Sl. No.	Study	Highlights
7.	National Evaluation Manual for Compensatory Afforestation Fund Management and Planning Authority (CAMPA) Projects. February 2016. Indian Institute of Forest Management, Bhopal	Details the multi-disciplinary aspects such as statistical sampling, geo-informatics and PRA tools

Source: Secondary data

2 EVALUATION METHODOLOGY

2.1 Approach

The study was a summative evaluation wherein the scheme was evaluated post implementation to understand the overall effectiveness of the program/ scheme in terms of the objectives set out. The purpose was to assess the overall impact of the scheme, while also studying the effectiveness of the process/ delivery mechanism followed and to make suitable recommendations thereof to enhance the effectiveness and impact. Multi-dimensional approach including scientific, interactive/ consultative, objective-oriented, analytical, practical and participatory approach using appropriate methods were followed to gather qualitative and quantitative data. Primary and secondary data were collected and analysed to understand if the works executed are contributing to the objective of the scheme, if so to what extent.

For a project of this nature, the study was carried out using qualitative and quantitative methods. The approach process and methods that were used are as below:

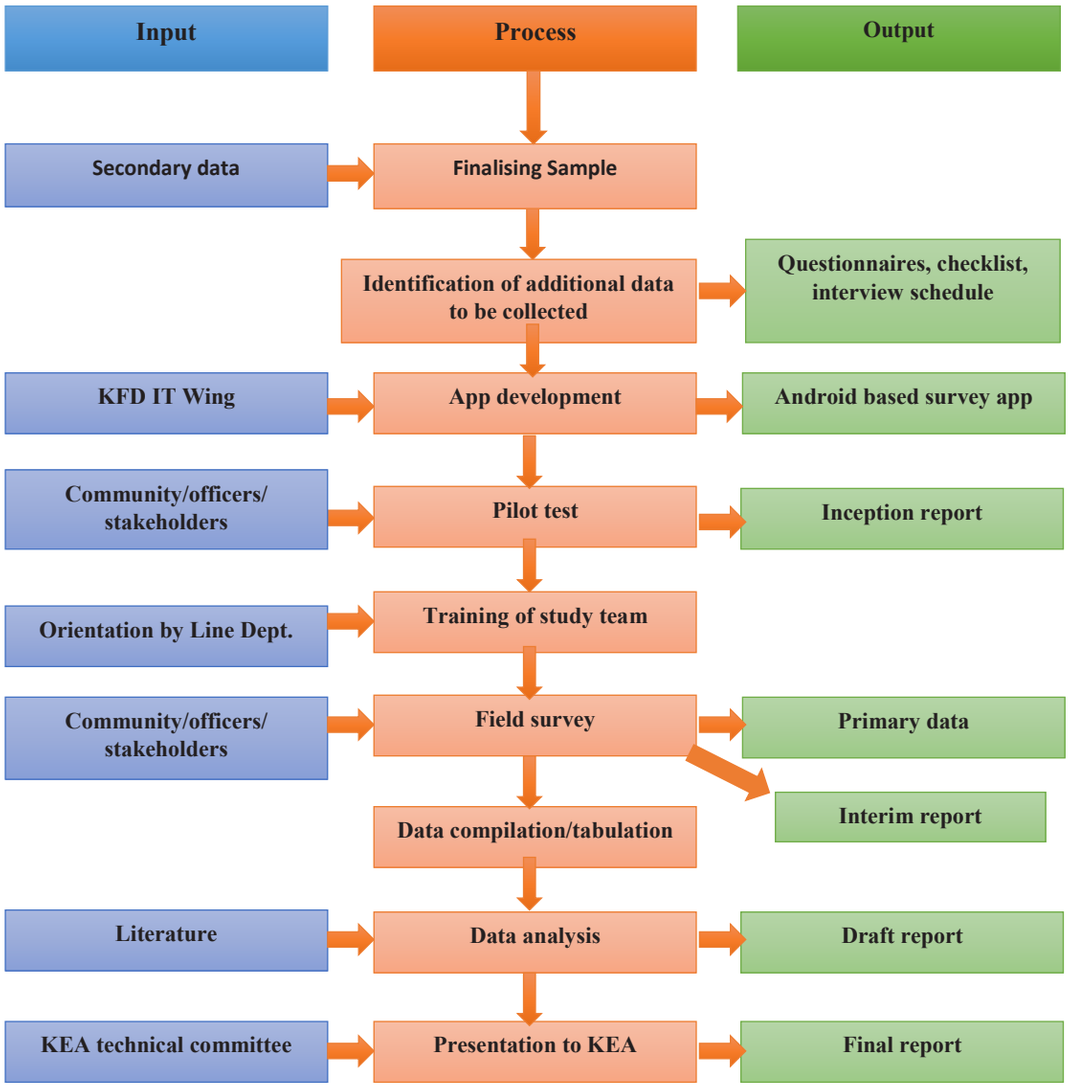


Figure 2: Approach for the evaluation study

2.2 Theory of Change

The following theory of change was developed based on the components of the forestry works assigned for evaluation. The outputs are measurable, while outcomes may be perceivable in the medium - long term after work implementation. The impacts are indicative and can be perceived only in the long term, which is not under the ambit of this study since the works have been executed 3-5 years ago.

Table 7: Theory of Change

Resources/ Inputs	Activities	Outputs	Outcomes	Impact
Policies Schemes Objectives Guidelines Budget Manpower Knowledge Infrastructure Requisite materials	Raising of nursery and plantations	• No. of nurseries and seedlings raised • No. of Plantations raised • Area covered by plantation	• Species-wise survival rate • Improved forest tree cover • Increased area under plantation • Reduced dependency on forest for fuel wood and maintenance	• Improved environment in the areas planted • Increased biodiversity • Reduced emission of greenhouse gases • Reduced erosion and pollution • Enhanced livelihood of bamboo artisans
	Soil moisture conservation works	• No. of SMC works undertaken	• Better moisture and soil retention in plantations • Enhanced survival of plantations • Enhanced water availability in summer months for wildlife • Better wildlife conservation and management	• Increased soil and moisture conservation in the watershed & forests • Enhanced flora and fauna and biodiversity conservation

Resources/ Inputs	Activities	Outputs	Outcomes	Impact
	Specialised works of Wildlife Habitat improvement works	• No. of Anti-poaching camps established, including manpower • No. of measures put in place to reduce man-animal conflict • No. of equipment (available for anti-poaching and wild life protection) procured for wildlife protection works • No. of fire protection camps	• Reduction in the number of poaching cases • Reduction in the number of animal attacks cases • Reduction in cases of forest fires • Better wildlife conservation and management • Better cooperation and support of communities in forest fringe areas	• Enhanced flora, fauna and biodiversity conservation • Enhanced participation of communities in wildlife protection and management
	Specialised works of Working Plan	• No. of survey and demarcation works undertaken • No. of boundary works undertaken	• No. of working and management plans prepared and being implemented • Area of forest boundary demarcated • Reduction in encroachment cases • Better protection of Forest land	• Preservation of diverse flora relevant to different forest locations
	Specialised works of Research and Utilisation	• No. of activities taken up under the research wing • No. of research/ preservation plots maintained	• The issues of the operational wings of the department are being addressed and requirement is met adequately • Learnings from research plots being adopted to improve quality and survival of plantations • Improved quality and survival of plantations	• Research activity is contributing to the broad objectives of forest policy

Resources/ Inputs	Activities	Outputs	Outcomes	Impact
	Specialised works of Training wing	• No. of training programmes conducted for department staff • No. of infrastructure created/ enhanced for training purpose	• The capabilities of the trained staff to discharge duties improved • Department has adequate infrastructure for training • Department staff are equipped to handle all tasks and challenges in the protecting and conserving forests	• Forests are managed in a scientific manner
	Construction and maintenance of Buildings, Roads and other infrastructure	• No. of buildings, roads and infrastructure developed • No. of works undertaken/ equipment procured to improve digitization and communication network	• Percentage of assets/ infrastructure is being utilised for the said purpose • Latest technology/ software and equipment being used	• Department efforts towards forest conservation and protection is strengthened and augmented • Department is modernised by using latest It technologies
	Providing individual/ community benefits	• No. of awareness programmes conducted • No. of people benefitting from LPG connections and continued usage	• Extent of participation of communities in awareness programmes • Percentage of household adopted LPG, thus changing the fuel used for cooking • Reduced dependency on forest for fuel wood • Employment opportunities generated for skilled and unskilled persons	• Enhanced awareness among communities about forest conservation and protection • Enhanced participation of communities in forest protection and management • Economic upliftment of households depending on bamboo related enterprises • Productive use of time saved by forest fringe community women

Source: Secondary data and TERI Inception report

2.3 Methodology

2.3.1 Study area

Thirteen forest circles and all forest divisions in Karnataka State comprised the study area. A mixed method approach was followed for this study as follows:

- Laying and Measurements of sample plots in plantations
- Field Observations of Other Works
- Interview – with officers/ field officers/ individual beneficiaries
- Focus group discussion with beneficiaries of community assets

There was considerable diversity in the works to be evaluated, which necessitated multiple methods to be used. Most importantly, visiting the work sites, physical verification and taking measurements of the plantations, observing other works such as civil structures, soil and water conservation works, roads, working plan, research, boundary consolidation etc. were carried out.

The boundary of the plantation was perambulated using the KFD android app and random plots generated in the app were considered as the centre of the sample plot to be laid. A minimum of one sample plot was laid for every 5 ha of plantation and a maximum of 10 sample plots were laid for plantations above 50 ha. The size of each sample plot was 1000 square meters (0.1 ha), having a measurement of 31.42 meters x 31.42 meters, laid at random intervals (as indicated in the KFD app) in the block plantation selected for evaluation. In case of plantations like Roadside, Greening of urban areas, Institutional plantations etc., the whole plantation was considered as one sample and 100% evaluation was done in each case.

Observation method was used to study the quality of the works (including community benefit works) executed based on appropriate parameters. Kruger, R. (2017)[11] opines that observation has a unique niche among evaluation methods and careful observation is distinctive in three important ways: the person doing the observation is trained, prepared, and systematic.

[11] Kruger Richard. 2017, Observation in Evaluation, retrieved from https://www.betterevaluation.org/en/resources/guide/how_to_use_observation

In-depth interviews were conducted with officers and other stakeholders wherever necessary. The in-depth interviews (IDI) encourage and prompt participants to talk in depth about the topic under investigation without the researcher's use of predetermined, focused, short-answer questions as suggested by Given. L. (2008).[12]

2.3.2 Sampling Design

Forest Department has Territorial, Social Forestry and Wild life Divisions. Apart from this, there are specialized wings like Working Plan & Research which are divided as functional units. The Training wing has a state academy with six institutes spread across the state.

At first stage, the Division/unit wise work list as provided by respective APCCF for the scheme was compiled for the whole state in the forest department. Then from this, state level work list the scheme, sorting of various types of works into nine categories was done. This was the second stage of clustering being done at the Department level. From this, the sample work the list for evaluation was generated for the scheme by random sampling of 10% of works from each category (type) of work in the scheme covering all the circles in the State. Thus, the method followed is basically a multi stage sampling in which the first stage of cluster formation is at division/unit level and second stage is at type of work level and 10% works were identified randomly at KEA. The sample to cover all the Circles and all the categories of works implemented in a circle. Selection of samples was based on proportional representation to its area/ no. of works and representing all years of work. Works of individual/ community benefits were randomly selected across representative divisions.

[12]Given. Lisa. M. , The SAGE Encyclopaedia of Qualitative Research Methods. (Vol. 1-0).Thousand Oaks, CA. SAGE Publications. 2008

2.3.3 Sample size

Sixty-one plantations were selected for sampling out of 574 plantations raised/ maintained during the period of evaluation. The circle-wise population and samples for the study were as follows:

Table 8: Circle-wise and Division-wise Plantations Sampled

Circle	Division	No. of plantation works	No. of plantations sampled
Ballari		**83**	**9**
	Ballari T	54	6
	Chitradurga T	14	2
	Davanagere T	9	0
	Koppal T	6	1
Bangalore		**46**	**5**
	Chikkaballapura T	14	2
	Kolar T	30	3
	Ramanagar T	2	0
Belagavi		**41**	**4**
	Bagalkot T	14	0
	Belagavi T	27	4
Chamarajnagar		**2**	**0**
	M M Hills	2	0
Chikkamagaluru		**46**	**5**
	Chikkamagaluru T	22	3
	Koppa T	24	2
Dharwad		**42**	**6**
	Dharwad T	21	4
	Gadag T	10	1
	Haveri T	11	1
Hassan		**22**	**2**
	Hassan T	9	1
	Tumkur T	13	1
Kalaburgi		**47**	**4**
	Bidar T	10	0
	Kalaburgi T	33	3
	Raichur T	4	1
Kodagu		**11**	**1**
	Madikeri T	10	1
	Vijrajpet	1	0
Mangaluru		**49**	**5**
	Karkala WL	10	1
	Kundapur T	16	2

Circle	Division	No. of plantation works	No. of plantations sampled
	Mangaluru T	23	2
Mysuru		**18**	**2**
	Hunsur T	5	0
	Mandya T	4	1
	Mysuru T	9	1
Resarch		**1**	**0**
	Madikeri Research	1	0
Shivamogga		**64**	**7**
	Bhadravathi T	44	4
	Sagar T	12	2
	Shivamogga T	8	1
Uttara Kannada		**102**	**11**
	DandeliWl	2	0
	Haliyal T	18	2
	Honnavar T	19	2
	Karwar T	20	2
	Sirsi T	30	3
	Yellapur T	13	2
Grand Total		**574**	**61**

Source: Terms of Reference

Other Works Sampling

Of the 1834 other works carried out during the period of evaluation, a total of 180 works were sampled across 14 circles. The works were classified broadly into boundary consolidation, buildings, desilting of tanks, formation of roads, soil and moisture conservation works and wildlife protection works.

Table 9: Circle-wise Details of Other Works sampled

Circle	Boundary consolidation	Buildings	Desilting of tanks	Formation of roads	Soil & moisture conservation	Wildlife/ Protection	Total
APCCF (HRD)		1					1
Ballari	10						10
Belagavi	5						5
Bengaluru	14	1	2	1		2	20
Chamarajanagara	1		4	4	1	4	14
Chikkamagaluru	7				2	3	12
Dharawada	2						2
FDPT, Mysuru			4	2	2		8
Hassana	1						1
Kalaburgi	2						2
Kodagu	2		1	1		2	6
Mangaluru	14		8	5			27
Shivamogga	13		1		1		15
Uttara Kannada	26	9	2	3	12	5	57
Total	**97**	**11**	**22**	**16**	**18**	**16**	**180**

Source: Primary data

Table 10: Details of Officers Interviewed

Designation	Territorial	Wildlife	Aranya Bhavan	Total
PCCF			5	**5**
APCCF			10	**10**
CCF	6	1		**7**
CCF & Director		2		**2**
CF	1			**1**
DCF	17	3		**20**
ACF	19	7		**26**
RFO	51	25	1	**77**
DRFO	51	15		**66**
Forest Guard	1			**1**
Total	**146**	**53**	**16**	**215**

Source: Primary data

2.3.4 KEA and KFD consultation

Discussions were held with the officers of various levels to understand the ToR, scope of work, secondary data sources and data collection process on the KFD app. Fine tuning of the app and modifications consumed considerable time initially.

2.3.5 Tools for Evaluation

Primary data was collected on the android based evaluation application developed by the ICT wing of Karnataka Forest Department. The main purpose of the app was to use it for plantation perambulation, ensure random selection of sample plot location and quick entry of data. The GPS location and photo of each sample was also captured in this application. Series of discussions and field trials were held in association with KFD to fine tune the app to the best possible extent. It was agreed that the data security including data collected/ photo/ plantation map and backup was the responsibility of the KFD. As per the discussion with KFD it was proposed to consider the surviving plants for estimating the survival percentage and ocular perception of field investigator to determine the health of the plants. Similarly, in other works, in addition to observation by field investigators, the utility of the works was assessed in discussion with the forest watchers, guards and other staff as appropriate.

An interview schedule was prepared to gather information from key persons at various levels including policy makers, supervisors and field executives. An android app called *'Collect'* app was developed in-house by TERI to elicit information from individual beneficiaries. In addition, a focus group discussion schedule was prepared to interact with community beneficiaries. The methodology and tools used are presented below:

Table 11: Methodology and tools

Work	Method of data collection	Tool
Plantation	Laying and measurement of sample plots	KFD Evaluation app (web and android)
Other Works	Observations	KFD Evaluation app (web and android)
Individual beneficiaries	Interview	Collect Android App (Interview schedule)
Community benefits	Focus Group Discussion	FGD checklist
Implementation and Administration	Interview with officers/ field officers	Questionnaire

Source: TERI Inception Report

In addition to the above, a detailed questionnaire was prepared to obtain division level information on the scheme. Tools were submitted to KEA with the inception report and due approval was obtained.

2.3.6 Hypothesis

The hypothesis that there is variation in survival percentage of plantations across the different forest circles was formulated.

2.3.7 Techniques for Evaluation

Gross plantation area was considered as the total land area falling within the boundary of plantations. It included areas like river, marshy patch, rocky outcrops, ponds etc. Net plantation area was considered as the actual area within the plantation boundary excluding the area which was not planted with a given species. It excluded the non-planted area like river, marshy patch, rocky outcrops, ponds etc. The sample plantations were selected irrespective of the area. The gross area and net area and all other secondary data were entered into the web app from the respective plantation journal, sample plots were laid and data collected in the presence of the local officers/ staff.

Survival was considered as the actual number/ count of seedlings surviving in the sample plots, irrespective of the health of the existing seedlings. This number was represented as 'total seedlings survived '. The number of empty pits in the sample plots was entered in the android application, based on which 'calculated failure' was generated automatically by the android application. The number of total seedlings planted was derived as follows:

Total seedlings planted = Total seedlings survived + Total calculated failures
Survival percentage(%)= Total seedlings survived / Total seedlings planted * 100

The health/ general performance of the seedlings of a given species in the plantation was assessed based on ocular estimation. The best performing seedlings within the plantation was compared with the poorest ones within the same plantation and was graded as good, satisfactory and poor.

2.3.8 Evaluation Team

Five field teams, each consisting of one key professional and one field assistant was formed to collect plantation data and a team of four TERI professionals with diverse expertise carried out evaluation of other works component. The study team consisted of trained TERI professionals and also retired officers of the KFD, all of whom have been involved in

evaluation of works of the forest department earlier using the android app. The team members were oriented on the methodology and the process to be followed for data collection to ensure uniformity in data collection.

It was ensured that all the team members followed the same protocol i.e. all team members adopted the same approach in collecting field information, laying sample plots, and interviewing in similar manner. This procedure helped minimise observer bias and avoid inconsistency in reporting.

2.3.9 Pilot study

One of the major tasks in this assignment was finalisation of the web app and android app developed by ICT section of KFD. Several rounds of tests, discussions and deliberations were carried out prior to finalising the app.

The first pilot test was conducted initially in Chikkaballapur range on 13th May 2019 along with the representatives of KEA (ICT Manager) and KFD (Range Forest Officers of ICT and Evaluation sections) to gain an understanding of the application and its feasibility. Raising of plantation in encroachment evicted area in Kyathanahalli block 1 and another work on vehicle parking shed in Chikkaballapur division office were selected for this study. The secondary data was first input into the web app in the Chikkaballapur range office and then the works were evaluated on the field. Several challenges were faced during this test, wherein the android app failed to work without the access to internet and some modifications were required in the web app, android app, questions to be added to the app and some modifications in the app from programming perspective which was communicated to KEA and KFD on 14th May 2019. Based on this field trial, a revised version of the app was tested for second time in Cubbon Park and TERI premises on 18th June 2019. Issues found during this iteration were shared with KEA and KFD.

On 20th June 2019, the revised app was tested for the third time in the Institute of Wood Science and Technology along with the Range Forest Officers (ICT and Evaluation sections). The app with all validations (version 1.2.5.6.1) was given to TERI on 20th July 2019 vide email from KEA. This version was tested for fourth time in Cubbon Park and TERI premises on 22nd July 2019. Issues faced were once again shared with KEA and KFD for modification. This version was pilot tested for the fifth time on 30th July 2019 at Bangalore Division, Doddaballapur sub division, Devenahalli range. The app was tested in the presence of Deputy

Conservator of Forests, Assistant Conservator of Forests, Range Forest Officer, Deputy Range Forest Officer and team. One plantation and two boundary consolidation works were tested from the samples selected.

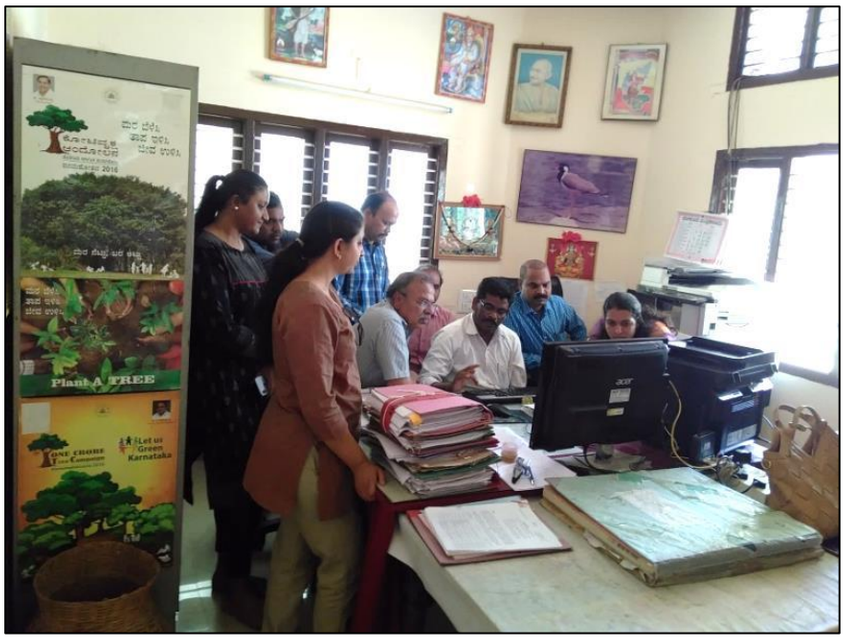


Photo 1: Secondary data entry at Chickballapur Range Office

Photo 2: Pilot test at Cubbon park

Photo 3: Devanahalli range, Bangalore Rural division

Photo 4: Devanahalli range, Bangalore Rural division

2.3.10 Observations of the Pilot Study

a) Plantation

The Akkupet plantation established under 13th Finance Commission raised in 2013-14 was selected for the study. This plantation followed the ANR model in 3.24 ha of land where 850 seedlings of Honge, Hippe, Mathi and Nerale were planted in pits (0.60x 0.60x0.60) with an espacement of 5m x 5m. Some records were available, while plantation journal was incomplete. Planting density was 262/ha. Maintenance was done for two years thereafter. There was no protection measure around the plantation.

One sample plot was laid to understand the details of plantation. In the sample plot, it was observed that only 7 (14.28%) out of 49 plants planted had survived, which were all Honge species. This low survival was attributed to poor soil quality and drought as explained by the local officers. There were no SMC works in this plantation and there was no VFC.

b) Other Works

Two boundary consolidation works, i.e. cattle proof trenches (CPT) were selected for the study. One work was undertaken in 2013-14 under CAMPA and another one in 2014-15 under 13th Finance. Records were available for one work, while it was not available for the other. Incidentally both works were undertaken in B.S. Gidakaval which is a Reserve Forest (predominantly eucalyptus trees) with adjoining private farm lands. CPT was done in the same forest land in 2001-02, 2006-07, 2010-11 and 2013-14. In both cases selected for study, the CPT was intact with shrub and vegetation growth in some places. It was observed that in few locations the CPT had been intentionally breached and could be easily accessed by cattle. It was understood that there was an ancient temple inside this forest, which villagers often visit. Apart from this usage, the forest boundary was maintained.

The KFD app was a useful tool that saves data entry time, besides reducing human bias. However, over the course of using the app for the field study, it was observed that some issues were still persisting (data loss, uploading issues etc.). In addition, the output tables need to be modified to suit the report requirements and in a way which can be easily tabulated, especially species-wise data. These issues were brought to the notice of KEA and KFD.

2.3.11 Interim Report

An interim report was submitted to the Karnataka Evaluation Authority on 3rd January 2020 vide email and hard copy on 14th January 2020 in addition to the agreed deliverables. The report was presented to KEA on 14th January 2020. The report presented a preview into the way in which data was analysed based on the objective of the scheme (the report was expected to answer the evaluation questions raised in the ToR, and was later modified to assess the achievements of the objectives of the schemes as suggested by KEA).

This modification necessitated gathering additional data adding to additional resources and time. At this stage, data collection was in progress, while data collection on certain aspects such as interview with officers was yet to commence, and much of the secondary data was awaited from Karnataka Forest Department. The app based primary data was yet to be provided to TERI in a usable form (especially species-wise data) and certain issues with the app still persisted. Hence, the content in this report was cursory and more in terms of being an initial template for the draft report.

2.3.12 Limitations

- Time lag between works executed and evaluation due to which some works are not amenable for evaluation
- Availability of required data and information in a timely manner
- Data maintenance and data parameters maintained were not amenable for evaluation
- Option to record non-availability of information/ work in the app
- Ambitious evaluation tasks overlays the time frame
- Resolution of some issues with the app and uploading data remained ongoing
- Delay in receiving secondary data from forest department
- There was limited response to questionnaires from KFD officers
- Shift in the focus of evaluation from answering the questions to meeting the objectives of the scheme necessitated major overhauling of data collection and hence could be carried out to a limited extent due to paucity of time
- The expectation from the study exceeds the time frame and resources allocated for the study.

3 RESULTS AND DISCUSSION

The CAMPA has focused its thrust on promoting afforestation and regeneration activities as a way of compensating for forest land diverted to non-forest uses. The CAMPA Act and guidelines provided a framework for implementation. Apart from setting physical and financial targets for some of the activities, the KFD had not prepared a log frame for the period of evaluation.

This chapter discusses the results of the primary data collected with respect to the activities set forth in the scheme covering the following broad components/ issues as follows:

i. Compensatory afforestation
ii. Site specific activities
iii. Activities for utilisation of NPV

In the evaluation of CAMPA, as per the ToR, plantations and other works have been sampled, besides, interacting with beneficiaries of individual benefits.

3.1 Project Specific Activities

3.1.1 Compensatory Afforestation and Site Specific Activities

This activity was undertaken to address the objectives of compensatory and regeneration activities through Assisted Natural Regeneration, Rehabilitation of Degraded Forests and Block plantation.

Among the 61 plantations sampled, the gross area of plantation is 1070 ha (average of 17.54 ha/ plantation) and net area is plantation of 1006 ha (average of 16.49 ha/ plantation). The CAMPA guidelines do not mention the criteria or benchmarks of the success of a plantation raised. However, in a previous internal evaluation report of the forestry works by the Karnataka Forest Department, weighted average survival rates of all departmental plantations sampled were used as the indicator for grading the performance[13]

[13] Anonymous. April 2014. Internal Evaluation Report of 2007-08 Works. Karnataka Forest Department.

3.1.2 Planning process

Plantations were raised mostly in forest areas in the plantations sampled, with the highest net planted area in Ballari (16%), followed by Dharawada and Shivamogga (14% each), 12% in Uttara Kannada circleand10% in Bengaluru circle.

The scheme does not have a log frame, but works were implemented based on the scheme guidelines. Interview with officers at the implementation, supervisory and policy level revealed that even though the planning meetings were held in February/ March of the previous financial year, the targets were conveyed to the field officers during June/ July month.

Funds were released in second or third quarter. Majority, i.e. 92% stated that funds were adequate, but allocation for nursery operations and raising of seedlings could be enhanced. In general, the funds were utilized completely. The officers stated that advance works were taken up from November onwards, nursery operations commenced between September and October, planting was done from June or July depending on the onset of monsoon. Maintenance of plantations was done for 3-5 years depending on the model of plantation.

Among the plantations sampled, Annual Plan of Operations (APOs) with approved dates were available at the time of visit in 15 (25%) samples. Of these, 40% were approved before October, 33% were approved between Oct – Dec and 27% were approved after January. It may be inferred that 60% APOs were sanctioned after planting season, .i.e. after September.

Intervention at policy level may be done to sanction APOs well in advance so that due diligence can be taken by field officers for raising quality nurseries and plantations within appropriate season.

Table 12: Year-wise timeline of APO approvals

Year of planting	APO approvals timeline (No. of plantations)							Total
	Before Oct	Oct	Nov	Dec	Jan	Feb	Mar	
2012-13					1			1
2013-14	2							2
2014-15	3	1		2			1	7
2015-16	1			2	2			5
Total	**6**	**1**	**0**	**4**	**3**	**0**	**1**	**15**
Per cent	**40**	**7**	**0**	**26**	**20**	**0**	**7**	**100**

Source: Primary data from field

Table 13: Circle-wise timeline of APO approvals

Circle	APO approvals timeline (No. of plantations)							Total
	Before Oct	Oct	Nov	Dec	Jan	Feb	Mar	
Ballari				1				1
Belagavi	1							1
Bengaluru		1		1				2
Dharwada	3							3
Hassan				1				1
Kalaburgi	1				1			2
Mangaluru					1		1	2
Shivamogga	1			1				2
Uttara Kannada					1			1
Total	**6**	**1**	**0**	**4**	**3**	**0**	**1**	**15**
Per cent	**40**	**7**	**0**	**26**	**20**	**0**	**7**	**100**

Source: Primary data from field

Table14: Work stage-wise timeline of estimate approvals

Year of planting	Sanction Date not available	Sanction Date available	Estimate approvals timeline (no. of plantations)							Total
	(no. of plantations)	(no. of plantations)	Before Oct	Oct	Nov	Dec	Jan	Feb	Mar	
Earth Work	44	17	2	1	2	2	2	3	5	17
			12%	6%	12%	12%	12%	18%	29%	
Raising Seedling	47	14	2	1	2	1	2	2	4	14
			14%	7%	14%	7%	14%	14%	29%	
Planting	45	16	8	1	1	3	3			16
			50%	6%	6%	19%	19%	0%	0%	
Total	**136**	**47**	**12**	**3**	**5**	**6**	**7**	**5**	**9**	**47**
Per cent	**74**	**26**	**25**	**6**	**11**	**13**	**15**	**11**	**19**	**100**

Source: Primary data from field

Estimates were available at the time of visit in 60 (98%) samples, and not available in one case. Of these, 42 (70%) plantations had more than one estimate. Out of the total 183 estimates available, 47 (26%) had sanction dates, while 136 (74%) did not have dates. Overall, it was observed that 45% of the estimates were sanctioned between January – March. Among the samples that had estimates with dates, it was noticed that 12% estimates for earth work and 14% estimates for raising seedlings were approved before October, while 59% estimates for earth work and 57% estimates for raising seedlings were approved after January. In case of planting works, 50% of the estimates available with date were approved before October, while 19% were approved after January. Overall it may be observed that 75% of the estimates were sanctioned after September. This indicates that the sanctioning process has delays which affect the timely planting and related work, which may reflect on the success of the plantation. However it must be noted that forestry activities are seasonal and are affected when the fund flow follows financial year. Many a times, when the work has to be carried out financial allocations or necessary action plan approvals may not have happened. A system of imprest allocation of finances to carry out committed seasonal works may be considered to improve the operational efficiency of KFD.

3.1.3 Cost Norms and Expenditure

The total and average amount spent on raising of plantations including boundary works, SMC, maintenance, earthwork, seedling and planting is given below:

Table 15: Summary of Expenditure among Sample Plantations

Details	Expenditure as per records provided (Rs.)	Percent of expenditure for each activity out of total planting cost (Rs.)	Average expenditure per ha (Rs.)
Planting Cost (Rs.)	13155242	22	13077
Raising seedlings (Rs.)	4226538	7	4201
Earthwork (Rs.)	13627555	23	13546
Plantation Boundary work (Rs.)	5702362	10	5668
Soil moisture conservation works (Rs.)	3981000	7	3957
Maintenance (Rs.)	17464747	30	17361
Total	**58157444**	**100**	**57811**

Source: Secondary data from KFD

The average expenditure per hectare was Rs. 57,811 as revealed by the records made available at the time of field visit. However, expenditure per hectare ranged from Rs. 29,025 to Rs. 2,00,750.

Table 16: Circle-wise expenditure for Plantation Works (Rs.)

Circle	No. of plantation sampled	Net Plantation Area (Ha)	Earth Work	Raising Seedling	Planting	SMC Work	Boundary protection	Maintenance	Total	Average expenditure per ha
Ballari	9	170	2724029	1021325	3660519	1290293	966316	3685974	**13348456**	78520.33
			20%	8%	27%	10%	7%	28%	**100%**	
Belagavi	4	65	1469787	290978	1860911	NA	167899	1539756	**5329331**	81989.71
			28%	5%	35%	0%	3%	29%	**100%**	
Bengaluru	5	87	1308189	672873	1421909	128000	311130	1554667	**5396768**	62031.82
			24%	12%	26%	2%	6%	29%	**100%**	
Chikkamagaluru	5	100	530084	262972	555417	374451	649311	1307136	**3679371**	36793.71
			14%	7%	15%	10%	18%	36%	**100%**	
Dharawada	6	115	1465872	653821	1443620	228537	169203	2115532	**6076585**	52839.87
			24%	11%	24%	4%	3%	35%	**100%**	
Hassana	2	34	1079490	191844	304300	NA	172850	479902	**2228386**	65540.76
			48%	9%	14%	0%	8%	22%	**100%**	
Kalaburgi	4	75	565240	242246	445575	386680	1203659	1021000	**3864400**	51525.33
			15%	6%	12%	10%	31%	26%	**100%**	
Kodagu	1	15	147000	54000	137000	423000	NA	257000	**1018000**	67866.67
			14%	5%	13%	42%	0%	25%	**100%**	
Mangaluru	5	70	945260	168705	490537	319979	437967	1075000	**3437448**	49106.40
			27%	5%	14%	9%	13%	31%	**100%**	
Mysuru	2	31	198731	136000	360300	NA	93750	267590	**1056371**	34076.48
			19%	13%	34%	0%	9%	25%	**100%**	
Shivamogga	7	115	1650490	171850	1198829	515731	703100	2309046	**6549046**	56948.23
			25%	3%	18%	8%	11%	35%	**100%**	
Uttara Kannada	11	130	1543383	359924	1276325	314329	827177	1852144	**6173282**	47486.78
			25%	6%	21%	5%	13%	30%	**100%**	
Total	**61**	**1006**	**13627555**	**4226538**	**13155242**	**3981000**	**5702362**	**17464747**	**58157444**	**57810.58**
Per cent			**23**	**7**	**23**	**7**	**10**	**30**	**100%**	

Source: Secondary data from KFD

Note: NA – Data not available. In some cases, documents were not available at the time of visit, hence average may not be comprehensive

Analysis of the activities in raising plantations in the study period indicated that Hassam circle invested 48% of the total cost on earthwork whereas Kodagu, Chikkamagaluru and Kalaburgi circle invested the least (14%, 14% and 15% respectively). Mysore circle spent 13% of the total cost for raising the seedlings, whereas, Shivamogga circle indicated only 3%. Similarly, planting cost varied from 35% in Belagavi to 12% in Kalaburgi circle. Likewise, boundary protection was at the cost of 31% in Kalaburgi, whereas it was 3% in Belagavi and Dharawada. Cost of maintenance was highest in Chikkamagaluru circle, i.e. 36% and lowest in Hassan, i.e.22%. Data on expenditure on soil moisture conservation works was not made available in Belagavi, Hassan and Mysuru. In Bengaluru circle, just 2% was spent on soil moisture conservations works, while 42% was spent in Kodagu circle. On the whole, 7% of the total cost was expended on soil moisture conservation works, indicating the low priority for this work.

Table 17: Cost Norms for Planting Technique Models for Various Agro-Climatic zones[14]

Planting Technique Model	Details							
	Advance works (Rs. Per ha)	Planting Cost (Rs. Per ha)	Maintenance (Rs. Per ha)					
			1	2	3	4	5	Total
ER IA (all zones)	13000	-	1400	1400	1400	-	-	**17200**
ANR IB (Transitional/ Malnad/ Coastal)	24300	10150	4670	3600	3600	3600		**49920**
ANR IB (Dry)	24550	9410	4170	3270	3270	3270	-	**47940**
AR II A (Dry)	30420	17370	6780	2930				**57500**
AR IIB & IIC (Dry & Transition)	31020	17975	6820	2930	-	-	-	**58745**
AR IIC, IID, IIE, IIG (Transitional/ Malnad/ Coastal)	28580	13940	7000	2950	-	-	-	**52470**
AR IID (moderate to high fertile area in Transitional zone)	27865	19080	9000	5400	-	-	-	**61345**
Others IIG, IIH, IIG, IIF (Teak in Malnad, lateritic soil & foreshore)	36250	14820	7420	4740	-	-	-	**63230**
NTFP Model-III (all zones) 100 plants	23300	14100	-	3570	3260	3260	3260	**50750**
NTFP Model-III (all zones) 275 plants	41050	17750	-	4700	3850	3850	3850	**75050**
Sandal estate IVA (Regeneration)	-	8937710	452710	452710	452710	452710	-	**10748550**
Sandal estate (Raising plantation)	34500	34549	16510	4810	4810	4810	4810	**104799**
Sandal estate (Raising Monsoon plantation)	-	47400	-	-	-	-	-	**47400**
Institution and School	12050	15450	-	1400	500	500	500	**30400**
Greening of urban areas VI (raising plantation in advanced worked areas)	-	35850	24100	700	700	700	700	**62750**
Greening of urban areas VI (raising of monsoon plantation)	-	42300	24100	700	700	700	700	**69200**
Roadside and Canal Bank – VII/VIII	23850	39900	28450	24150	23525	23525	23525	**186925**

[14]Anonymous. 2012. Species and Planting Technique Models. General Guidelines 2012. Karnataka Forest Department. Government of Karnataka.

Source: Secondary data from KFD

Table 18: Average expenditure per ha as per sample plantations (Rs. Per hectare)

Plantation Model	No. of Plantation	Net Plantation area (ha)	Advance Work (earth work + raising seedlings + SMC+ boundary)	Planting	Maintenance	Total
ANR Model-I(B)	35	597	29549	11722	15060	56331
AR Model-II(A)	9	117	33281	28385	28116	89782
AR Model-II(C)	1	1	31477	27425	ND	58902
AR Model-II(D)	1	20	31040	23838	40366	95244
ER Model-I(A)	12	243	18161	6366	13424	37951
NTFP Model-III	3	29	33278	27725	39346	100349
Total	**61**	**1007**				

Source: Secondary data from KFD

Note: ND - No details

Based on the available information collected from secondary sources such as plantation journals, the average expenditure incurred per hectare for various models is given in the above table.

3.1.4 Soil Moisture Conservation in plantations

Among the plantations sampled, 31 (51%) plantations had SMC structure despite the fact that most models have a budgetary allocation for SMC work ranging from 14-25% of the advance work cost allocated per hectare. Among the structures observed, three structures were damaged and not serving the intended purpose, while the others were found to be useful. The construction quality of 14 (50%) structures were satisfactory, 13 (46%) structures were good, while one was not satisfactory.

Table19: Details of SMC works in Sample Plantations (n=61)

Type of Structure	No. of Structure	Average cost per structure (Rs.)
Gully checks/plugs	1	55000
Nala bunds	5	131245
Percolation ponds	7	142498
Rain water harvesting trenches	17	133664

Source: Primary data from field

Photo 5: Percolation pit, Batragadde plantation, Aldur range, Chikkamagalur division and circle

Appropriate site, good quality, very effective

Photo 6: Percolation trench, Gudagur plantation, Ranebennur range, Haveri division

Appropriate site, stabilised bunds with vegetation, effective work

Photo 7: Gully checks, Gudekote range, Ballari division, Ballari circle
Good quality work

3.1.5 Monitoring

This section discusses the status of plantation journals and monitoring of the plantations by various levels of officers such as Assistant Conservator of Forests (ACF), Deputy Conservator of Forests (DCF), Chief Conservator of Forests (CCF) and Assistant Principal Chief Conservator of Forests (APCCF).

Plantation journals were available in all samples and field note book was available in all samples, except one plantation in Malur range in Kolar T division, Kolar circle at the time of visit. Among these, 8 (12%) had partial details, 54 (90 %) samples had complete details, while two had no details.

Among the plantations sampled, 28 (46%) plantations were inspected by a senior officer as recorded in the respective plantation journal. Sometimes one plantation is visited by more

than one senior officer at a time. The details are furnished below. This indicates that there is a need to document the visits with recommendations of senior level officers for effective implementation in the plantation journals.

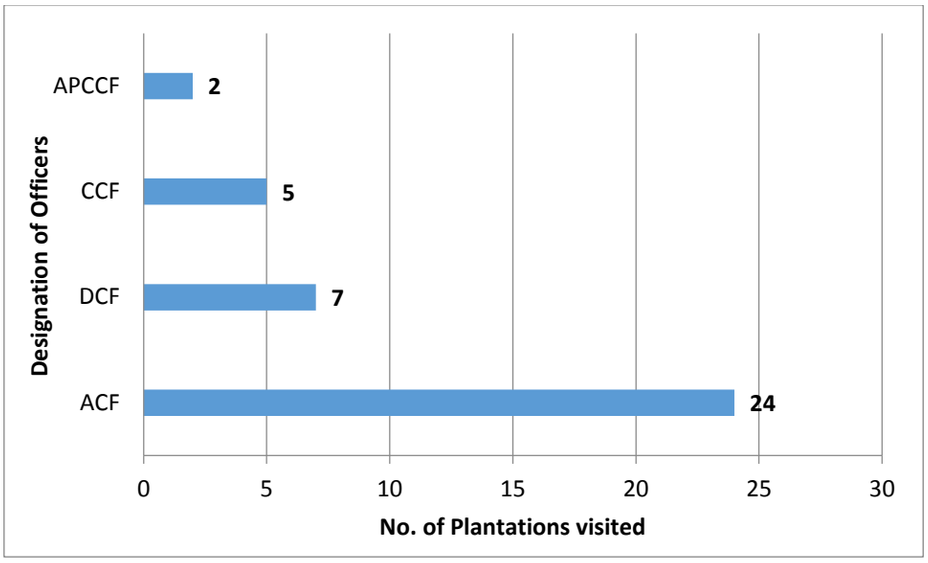


Chart 1: Inspection of Plantation by Senior Officers (n=61)

3.1.6 Involvement of Community

Among the 61 plantations visited, 13 (58%) had Joint Forest Management Committee (JFMCs), of which only 3 (38%) plantations were raised in JFM area. These included, Landaknalli Village Forest Committee, Sirsi range, Sirsi Division, Uttara Kannada circle, Mattigar/Janmane Village Forest Committee, Janmane range, Sirsi Division, Uttara Kannada circle and Rajarajeshwari VFC Sandalli Mattalli, Katgal range, Honnavara Division, Uttara Kannada circle.

Among these, two JFMCs i.e. Landaknalli Village Forest Committee and Mattigar/Janmane Village Forest Committee were actually involved in plantation activity and micro plan preparation. These two JFMCs were involved in advance work, planting and maintenance stages. These JFMCs had approved the planting activities, provided labour and supervised planting work. This shows that there is more scope for involvement of JFMCs and to raise plantations in the JFPM areas wherever feasible.

3.1.7 Planting Models and Species Planted

Table 20: Circle-wise and Model-wise plantations sampled

Circle	ANR Model-I(B)	AR Model-II(A)	AR Model-II (C)	AR Model-II(D)	ER Model-I(A)	NTFP Model-III	Total
Ballari	3	6					9
Belagavi	2	1				1	4
Bengaluru	5						5
Chikkamagaluru	1				4		5
Dharawada	3	1			1	1	6
Hassana	2						2
Kalaburgi	4						4
Kodagu	1						1
Mangaluru	4				1		5
Mysuru	2						2
Shivamogga	2			1	4		7
Uttara Kannada	6	1	1		2	1	11
Total	**35**	**9**	**1**	**1**	**12**	**3**	**61**
Percent	**57**	**15**	**2**	**2**	**20**	**5**	**100**

Source: Primary data from field

It may be observed from the above table that ANR Model I (B) was the model used in majority (57%) of the plantation sampled, which was as per the guidelines of CAMPA. ER Model – I (A) and AR Model II (A) were adopted in 20% and 15% plantations respectively. AR Model II (C), AR Model II (D) and NTFP Models were followed in few plantations.

Table 21: Planted species in the scheme

Listed in order of highest occurrence in sample plots

Sl. No.	Species	Species Count	Percent
1.	Others	209	14
2.	Honge (*Pongamia pinnata*)	120	8
3.	Nerale (*Sizyzium sp*.)	101	7
4.	Tapsi (*Holoptelia integrifolia*	63	4
5.	Nelli (*Emblica officianalis*)	57	4
6.	Honne (*Pterocarpus marsupium*)	52	4
7.	Mathi (*Terminalia alata*)	52	4
8.	Ficus (*Ficus religiosa*)	45	3
9.	Seemaruba (*Simarouba glauca*)	45	3
10.	Maavu (*Mangifera indica*)	41	3
11.	Mahagony (*Swietenia mahagoni*)	41	3
12.	Nandi (*Legarstroemia lanceolata*)	41	3

Sl. No.	Species	Species Count	Percent
13.	Hippe (*Bassia latifolia*)	38	3
14.	Bevu (*Azadirachta indica*)	37	3
15.	Bamboo 1 (*Bambusa arundinasia*)	36	2
16.	Kamara (*Hardwickia binata*)	35	2
17.	Kindal (*Terminalia paniculata*)	31	2
18.	Teak (*Tectona grandis*)	29	2
19.	Dhoopa (*Vateria indica*)	27	2
20.	Beete (*Dalbargia latifolia*)	24	2
21.	Hole mathi (*Termin aliaarjuna*)	22	2
22.	Shivane (*Gmelina arboria*)	21	1
23.	Tare (*Terminalia belleric*)	21	1
24.	Halasu (*Artocarpus integrefolia*)	19	1
25.	Tamarind (*Tamarindus indica*)	19	1
26.	Banyan (*Ficus benghalensis*)	18	1
27.	Glyrecedia (*Glyrecedia macculata*)	18	1
28.	Simethangadi (*Cassia siamia*)	17	1
29.	Seetaphala (*Annona squamosa*)	14	1
30.	Raktachandana (*Pterocarpus santalinus*)	13	1
31.	Bharanigi (*Vitex ultissima*)	11	1
32.	Vaate (*Artocarpus lacucha*)	11	1
33.	Acacia (*Acacia auriculiformis*)	10	1
34.	Agavu (*Agave americana*)	10	1
35.	Bage (*Albezzia lebbek*)	10	1
36.	Murugal (*Buchanania latifofia*)	10	1
37.	Saldhoopa (*Vateria indica*)	10	1
38.	Antuvala (*Sapindus emerginatus*)	8	1
39.	Canes (*Calamus spp.*)	7	0
40.	Atti (*Ficus recemosa*)	6	0
41.	Cashew (*Anacardium occidentale*)	6	0
42.	Dalchinni (*Cinnomomum zeylenicum*)	6	0
43.	Ramapatre (*Myristica sp.*)	6	0
44.	Uppage (*Garcinia gummigatta*)	6	0
45.	Gulmavu (*Machilus macranta*)	5	0
46.	Hebbalasu (*Artocarpus hirsuta*)	5	0
47.	Dhaman (*Grevia tilifolia*)	3	0
48.	Hale (*Writia tinctoria*)	2	0
49.	Kavalu (*Carea arborea*)	2	0
50.	Sandal (*Santalum album*)	2	0
51.	Bilvapatre (*Aegle marmolos*)	1	0
	Total	**1443**	**100**

Source: Primary data from field

Note: Species count – number of plots in which the species has occurred in the plantations sampled

Table 22:Circle-wise distribution of Planted Species

(Species count – number of plots in which the species has occurred in the plantations sampled)

Species	Ballari	Belagavi	Bengaluru	Chikkamagaluru	Dharawada	Hassana	Kalaburgi	Kodagu	Mangaluru	Mysusru	Shivamogga	Uttara Kannada	Species count	Per cent
Dhoopa (Vateria indica)		4		5					16		2		**27**	**2**
Hippe (Bassia latifolia)	5			15	10					5		3	**38**	**3**
Honge (Pongamia pinnata)	30	3	19	5	19		15	3	5	7	13	1	**120**	**8**
Honne (Pterocarpus marsupium)		4	5	7	10	5			6	2	3	10	**52**	**4**
Maavu (Mangifera indica)		9							15		5	12	**41**	**3**
Mathi (Terminalia alata)		5	3	5	5				7		10	17	**52**	**4**
Nandi (Legarstroemia lanceolata)		9			10			3	5		5	9	**41**	**3**
Nelli (Emblica officianalis)	10	4	5	3	7			3	2		5	18	**57**	**4**
Nerale(Sizyzium sps.)	10	4	17	15	15				10	2	7	21	**101**	**7**
Tapsi (Holoptelia integrifolia)	22				20	4	15			2			**63**	**4**
Others (covers about 40 species)	193	68	52	34	92	20	30	9	83	26	69	175	**851**	**59**
Total	**270**	**110**	**101**	**89**	**188**	**29**	**60**	**18**	**149**	**44**	**119**	**266**	**1443**	**100**

Source: Primary data from field

Note: 'Others' includes miscellaneous species separately listed in the android and listed in the previous table which have been combined for analysis. The remaining species listed above have been chosen based on the highest frequency of occurrence amongst the circles sampled, so as to gain an understanding of the most commonly planted species in each circle.

Among the plantations sampled, across the circles it may be inferred that apart from a combination of about forty species combined as 'others, about 90 species of plants were noticed during the study, of which 51 species are listed in the above table in the frequency of occurrence, of which Honge appears 120 times, followed by Nerale 101 times, Tapsi 63 times, Nelli 57 times and Honne and Mathi 52 times each. All the species are predominantly native species and provide Non-timber forest produce (NTFPs).

3.1.8 Protection and Maintenance

This section discusses the availability, types and status of protection measures, damages to plantation and its causes, number of years plantation were maintained as against the provision of various models and number of plantations where casualty replacement was done.

Table 23: Details of Boundary Protection Measures

Type of Protection	No. of Protection structures	Status of Protection measures (No. of plantations)			
		Breached/ filled with vegetation (CPT)	Good	Breached	Rusted
Barbed wire fence with stone pillars	3		2	1	
Barbed wire fence with wooden posts	15		3	9	3
Brush wood	1	1			
CPT	26	19	7		
EPT	1	1			
Stone wall	1		1		
Total	**47**	**21**	**13**	**10**	**3**
Per cent		**45**	**28**	**21**	**6**

Source: Primary data from field

The above table helps us understand the types of protection works that were carried out and their present condition. Just 51% of the plantations sampled had boundary protection measures. Among these, 28% were in good condition, 45% were filled with vegetation at the time of visit, while 21% were breached and 12% were rusted. This shows that protection measures become ineffective within 3-6 years after establishment/ installation in the absence of maintenance.

Table 24: Circle-wise type of boundary protection measures

Circle	Barbed wire fence with stone pillars	Barbed wire fence with wooden posts	Brush wood	CPT	EPT	Stone wall	Grand Total
Ballari	1			6		1	8
Belagavi		2					2
Bengaluru				1	1		2
Chikkamagaluru		3		1			4
Dharawada	2	1					3
Hassana				1			1
Kalaburgi				4			4
Kodagu							0
Mangaluru				4			4
Mysuru				1			1
Shivamogga		2		3			5
Uttara Kannada		7	1	5			13
Total	**3**	**15**	**1**	**26**	**1**	**1**	**47**
Per cent	**6**	**32**	**2**	**56**	**2**	**2**	**100**

Source: Primary data from field

It may be seen from the above table that boundary protection measures were visible at all circles except in Kodagu circle. In Belagavi, Chikkamagaluru, Shivamogga and Uttara Kannada and Chikkamagalur circles, barbed wire fence with wooden posts were adopted, while the measures adopted in other circles were varied. Cattle proof trenches were the most common boundary protection adopted, followed by barbed wire fence with wooden posts.

Table 25: Model-wise maintenance of plantations

Plantation Model	Model wise provision	No. of years plantation maintained						
		No details	1	2	3	4	5	Total
ANR Model-I(B)	4	6	1	9	9	10		35
AR Model-II(A)	2	1		3	4	1		9
AR Model-II(C)	2	1						1
AR Model-II(D)	2						1	1
ER Model-I(A)	3	1		3	3	4	1	12
NTFP Model-III	4			1	1		1	3
Total		**9**	**1**	**16**	**17**	**15**	**3**	**61**
Per cent		**15**	**2**	**26**	**28**	**25**	**4**	**100**

Source: Primary data from field

Table 26: Circle-wise maintenance of plantations

Circle	No. of years plantations maintained						Total
	No details	1	2	3	4	5	
Ballari	1		5	2	1		9
Belagavi	1		1	1	1		4
Bengaluru	2		1		2		5
Chikkamagaluru			2	1	2		5
Dharawada			2	1	2	1	6
Hassana			1	1			2
Kalaburgi	1			2	1		4
Kodagu				1			1
Mangaluru	1			2	2		5
Mysuru			2				2
Shivamogga	1	1		1	2	2	7
Uttara Kannada	2		2	5	2		11
Total	**9**	**1**	**16**	**17**	**15**	**3**	**61**
Per cent	**15**	**2**	**26**	**28**	**25**	**4**	**100**

Source: Primary data from field

Among the plantations sampled, 28% were maintained for three years and 26% for two years and 25% for four years. In 15% samples there were no details/ related documents pertaining to maintenance. It may be noted that even though ANR I (B) model provides maintenance for four years, only 10 plantations out of 35 were maintained for four years. Eleven plantations were sampled under AR models, of which no details were available for two plantations, three plantations were maintained as per the provision for two years, while the remaining six were maintained for more than two years.

Twelve plantations were raised under ER Model of which one had no detail; three were maintained for three years as per provision and the remaining were not maintained as per provision. Of the three NTFP –III model plantations sampled, only one was maintained upto five years as per provisions, while the remaining were not. It must be noted that these observations are based on maintenance documents provided at the time of field visit.

Table 27:Circle-wise and Model-wise casualty replacement

Circle	ANR Model-I(B)	AR Model-II(A)	AR Model-II(C)	AR Model-II(D)	ER Model-I(A)	NTFP Model-III	Total
Ballari	3	5					8
Belagavi	2					1	3
Bengaluru	5						5
Chikkamagaluru	1				2		3
Dharawada	3	1				1	5
Hassana	2						2
Kalaburgi	4						4
Kodagu	1						1
Mangaluru	3						3
Mysuru	2						2
Shivamogga	1			1	4		6
Uttara Kannada	5	1	1		1	1	9
Total	**32**	**7**	**1**	**1**	**7**	**3**	**51**
Per cent	**63**	**14**	**2**	**2**	**14**	**5**	**100**

Source: Primary data from field

Among the plantations sampled, casualty replacement was done in 51 plantations (84%). Most plantations sampled had followed ANR Model I (B), Casualty replacement was done mostly in Uttara Kannada circle and Bellari circles.

3.1.9 Success/ Survival

Most evaluation reports brought out earlier by the KFD have explained success of plantations in terms of survival of the plants[15] and in some cases the health of plants such as girth have been considered to rate the performance of plantations[16].

[15] Anonymous. April 2014. Internal Evaluation Report of 2007-08 Works. Karnataka Forest Department.

[16] Anonymous. August 2015. National Bamboo Mission (NBM) Report, Evaluation of Forestry Works 2009-2013, Karnataka Forest Department

Table 28: Circle-wise status of plantations and survival percentage

Circle	No. of plantation sampled	SMC Available		Boundary protection available		Watch and ward		State of Health (% out of seedlings survived)			Overall survival (%)
		No. of plantation	%	No. of plantation	%	No. of plantation	%	Good	Satisfactory	Poor	
Ballari	9	8	89	7	78	8	89	13	52	35	50
Belagavi	4			2	50	3	75	44	19	37	78
Bengaluru	5	2	40	1	20	5	100	60	38	2	62
Chikkamagaluru	5	4	80	4	80	5	100		23	77	40
Dharawada	6	2	33	1	17	6	100	71	29		86
Hassana	2			1	50	2	100	100			92
Kalaburgi	4	2	50	4	100	4	100	49	49	3	68
Kodagu	1	1	100			1	100	14	43	43	31
Mangaluru	5	4	80	4	80	5	100	12	48	39	38
Mysuru	2			1	50	2	100	44	40	16	77
Shivamogga	7	4	57	4	57	6	86	37	54	10	42
Uttara Kannada	11	4	36	10	91	11	100	42	42	16	42
Total	**61**	**31**		**39**		**58**		**41**	**39**	**20**	
Per cent of total plantations			**51**		**64**		**95**				**61**

Source: Primary data from field

It may be inferred from the above table that among the plantations sampled, 51% had SMC structures, boundary protection was available in 64% samples, 95% plantations had watch and ward. The overall survival percentage across the circles was 61%. Interestingly, the plantation sampled in Hassan had 92% survival, followed by 86% in Dharawada circle. Least survival was seen in Kodagu (31%) and Mangaluru (38%), despite having SMC, boundary and watch and ward. Among the surviving seedlings in the sampled plots, 41% of them were in good health, 39% were satisfactory and 20% were poor. In Hassan circle all seedlings were in good health, followed by 60% in Bengaluru circle. In Chikkamagaluru 77% seedlings were in poor health at the time of field visit. The hypothesis that there is variation in survival percentage of plantations across the different forest circles was found to be true.

Table 29: Model-wise survival percentage

Plantation Model	No. of plantations sampled	Total seedlings Survived	No. of Empty pits	Total Planted	Survival %
ANR Model-I(B)	35	3456	1838	5294	65
AR Model-II(A)	9	947	1012	1959	48
AR Model-II(C)	1	40	120	160	25
AR Model-II(D)	1	300	351	651	46
ER Model-I(A)	12	613	296	909	67
NTFP Model-III	3	355	90	445	80
Total	**61**	**5711**	**3707**	**9418**	**61**

Source: Primary data from field

It may be observed from the above table that higher survival percentage (80%) was found in NTFP model plantations, followed by 67% in Eco-restoration model and 65% in ANR Model –I (B). Three plantations were sampled under NTFP model, one each in Belagavi, Dharwada and Uttara Kannada circles. The species planted were Cashew & Kamara in Belagavi circle, Honge in Dharwada circle and Cashew in Uttara Kannada circle. Trench and mound method was followed in two plantations, which was effective in soil moisture conservation and hence the better survival rate.

Least survival of 25% was observed in AR Model-II (C). Only one plantation was sampled under AR Model-II (C) which was in Uttara Kannada circle, wherein mixed species were planted including Acacia. The terrain was steep. Even though barbed wire fencing with wooden post was provided, it was breached by wild life, causing damage to the plantation thus resulting in low survival. Pit planting without SMC measures has added to this.

Table 30: Survival based on progressing age

No. of years maintained	No. of plantations	Survival percentage
5	6	46
4	14	56
3	22	69
2	14	69
1	1	33
No details	4	18
Total	**61**	**61**

Source: Primary data from field

* Data on maintenance not made available during field visit

The above table indicates that plantations with two and three years of maintenance had the highest survival rate at 69%, while plantations with no details of maintenance had the least survival rate at 18%, followed by plantations maintained for one year where the survival was 33 per cent.

One plantation that was maintained for one year with low survival percentage of 33%, was raised in 2013-14 in Bhadravathi T range, Bhadravathi Division, Shivamogga circle with Neem and Bamboo species in steep slope area by following pit planting. Area was prone for wildlife damage in the absence of boundary protection. SMC works were not carried out, hence the low percentage.

Table 31: Survival based on year of planting

Year of planting	No. of plantations	Survival percentage
2011-12	1	46
2012-13	2	84
2013-14	10	73
2014-15	14	49
2015-16	18	40
2016-17	12	83
2017-18	4	64
Total	**61**	**61**

Source: Primary data from field

The above table indicates wide variation in the percentages of survival, from 40% for the plantations of 2015-16 to 84% for the plantations of 2012-13. Similarly the subsequent years also indicate variations from 46% to 83%. It may be seen that the increased years of maintenance of the plantations did not result in proportionate increase in survival percentage of the plantation. The reason and causes for the same may be further studied in depth.

Table 32: Species-wise survival percentage

Species	Total Survived	Total planted	Survival %
Dhoopa (*Vateria indica*)	42	99	42
Hippe (*Bassia latifolia*)	60	99	61
Honge (*Pongamia pinnata*)	1153	2206	52
Honne (*Pterocarpus marsupium*)	111	148	75
Maavu (*Mangifera indica*)	46	90	51
Mathi (*Terminalia alata*)	99	129	77
Nandi (*Legarstroemia lanceolata*)	125	164	76
Nelli (*Emblica officianalis*)	85	143	59
Nerale(*Sizyzium sp*.)	227	362	63
Others	3385	5481	62
Tapsi (*Holoptelia integrifolia*)	378	497	76
Total	**5711**	**9418**	**61**

Source: Primary data from field

The overall average survival was 61%. It may be seen from the above table that average overall survival of Mathi*(Terminalia alata)* was the highest at 77%, followed by 76% survival of Nandi *(Legarstroemia lanceolata)* and Tapsi *(Holoptelia integrifolia)* and 75% survival of Honne *(Pterocarpus marsupium)*. The least survival was seen in Dhoopa *(Vateria indica)* at 42 per cent. Interestingly, Honge and Maavu, which are indigenous species had a lower survival at 52% and 51% respectively.

Table 33: Circle-wise and species-wise survival percentage

CG – Average Collar girth in cms, H – Average height in mtrs, S% - Survival percentage

Circle		Ballari	Belagavi	Bengaluru	Chikkamagaluru	Dharawada	Hassana	Kalaburgi	Kodagu	Mangaluru	Mysuru	Shivamogga	Uttara Kannada	Total
Dhoopa	CG		8.0		15.0					14.5		6.0		12.6
	H		4.5		2.0					2.9		2.0		2.8
	S%		85.7		50.0					39.0		33.3		**42.4**
Hippe	CG	5.0			2.5	2.5					3.8		14.0	4.3
	H	0.6			1.3	1.0					1.8		1.5	1.3
	S%	100.0			51.7	83.3					44.4		47.4	**60.6**
Honge	CG	6.5	1.0	9.5	5.6	6.2		4.5	4.7		3.8	10.3	5.0	6.3
	H	1.0	0.4	1.6	1.1	1.4		4.8	1.0		1.7	1.9	0.5	1.8
	S%	33.7	90.1	53.4	43.8	84.4		64.1	43.9		66.2	13.0	11.8	**52.3**
Honne	CG		12.0	10.0		4.9	7.0			6.0	3.5		3.0	5.7
	H		4.0	1.2		1.5	2.0			2.0	1.0		0.8	1.6
	S%		62.5	100.0		82.8	88.0			40.0	87.9		8.3	**75.0**
Maavu	CG		4.0							6.4			12.0	6.8
	H		2.5							1.4			2.0	1.6
	S%		87.0							39.2			37.5	**51.1**
Mathi	CG				2.7	8.6						9.2	8.3	8.0
	H				1.0	3.2						1.9	1.0	1.9
	S%			0.0	37.5	92.4						77.8	47.4	**76.7**
Nandi	CG		12.0			4.5			3.0				11.2	7.1
	H		2.5			1.6			1.0				1.3	1.5
	S%		81.3			89.8			16.7				64.6	**76.2**
Nelli	CG	3.5	12.0			4.7						8.0	6.3	6.2
	H	0.4	3.5			1.8						1.0	1.1	1.4

Circle		Ballari	Belagavi	Bengaluru	Chikkamagaluru	Dharawada	Hassana	Kalaburgi	Kodagu	Mangaluru	Mysuru	Shivamogga	Uttara Kannada	Total
	S%	100.0	71.4			86.0						90.9	23.7	**59.4**
Nerale	CG	5.5	2.0	14.6	2.1	4.1				8.0		7.9	6.4	5.9
	H	0.6	2.5	2.4	1.0	1.1				1.0		2.2	1.1	1.3
	S%	77.8	71.4	80.0	42.0	88.9				40.0		42.3	52.5	**62.7**
Tapsi	CG	6.6				6.3	2.0	5.0						5.8
	H	0.8				1.6	1.0	1.2						1.2
	S%	65.0				85.6	77.0	75.5						**76.1**
Others	CG	5.5	2.4	9.3	6.9	5.1	4.0	6.6	8.0	8.8	7.4	12.3	8.4	6.8
	H	0.7	1.2	2.0	1.5	1.8	1.6	1.1	4.7	2.0	2.5	3.7	1.2	1.6
	S%	54.3	74.1	88.2	25.3	86.4	94.5	68.8	19.1	37.8	84.2	43.8	41.2	**61.8**

Source: Primary data from field

The above table indicates that Mathi had the highest survival (77%) with an average height varying from 1.0 mtr in Chikkamagaluru and Uttara Kannada to 3.2mtrs in Dharawada circle with an average girth of 2.5 cms in Chikkamagaluru and 9.2cms in Shivamogga. Dhoopa with a survival of 42% varied in its height from 2mtr (Chikkamagaluru and Shivamogga) to 4.5mtrs (Belagavi) with an average girth of 8 cms (Belagavi) to 15cms (Chikkamagalur).It may be noticed that either/ and the girth and height of seedlings in Belagavi were found to be better in Dhoopa, Honne, Maavu, Nandi, Nelli and Nerale indicating better growth.

Table 34: Details of Rootstock

Circle	Total No. of plots laid	Rootstock available (No. of plots)	Total No. of stems with collar girth 2-10 cms	Average No. of stems per plot	Average Collar Girth	Average Height
Ballari	36	8	75	2.1	7	2
Belagavi	13	1	6	0.5	1	1
Bengaluru	19	3	12	0.6	4	2
Chikkamagaluru	20	3	40	2.0	3	1
Dharawada	24	2	33	1.4	1	1
Hassana	7	2	9	1.3	4	2
Kalaburgi	15	0	0	0.0	0	0
Kodagu	3	0	0	0.0	0	0
Mangaluru	14	5	183	13.1	3	1
Mysuru	7	0	0	0.0	0	0
Shivamogga	24	6	96	4.0	3	2
Uttara Kannada	28	9	128	4.6	4	11
Total	**210**	**39**	**582**			

Source: Primary data from field

Overall rootstock was available in 19% of the sample plots laid. The above table reveals the absence of rootstock in Kalaburgi, Kodagu and Mysuru circles, moderate in Mangaluru circle and better in Ballari and Uttara Kannada circles. The average number of stems per plot ranged from 0.5 in Belagavi to 13.1 in Mangaluru circle.

It may be inferred that the survival rate of planted species (refer earlier tables on survival percentage) and percentage of rootstock were inversely proportional in the case of Mysuru and Kalaburgi, while it was directly proportional in case of Kodagu. The average collar girth of rootstock was highest in Ballari circle and least in Dharawada and Belagavi. The average height of rootstock was highest in Uttara Kannada and much lesser in all other circles.

Table 35: Details of Natural trees

Plantation Model	Average survival %	Total No. of plots laid	Total No. of Stems with Collar Above 10cm	Average GBH	Average Height (mtrs)
ANR Model-I(B)	65	123	74	40	6
AR Model-II(A)	48	26	13	33	4
AR Model-II(C)	25	1	1	40	7
AR Model-II(D)	46	4	4	35	9
ER Model-I(A)	67	49	39	66	8
NTFP Model-III	80	7	3	5	2
Total/ Average	**61**	**210**	**134**	**46**	**6**

Source: Primary data from field

The average GBH in natural trees was highest in ER Model – I (A), while the average height of natural trees was highest in AR Model – II (D). It may be inferred from the above table that the presence of natural trees does not seem to have the same effect on survival of planted species across the various models of plantation. For instance, the AR Model –II (C), there was one tree in the single sample plot laid, however survival was 25% in this plantation. On the other hand, in ANR Model –I(B), there were 74 trees in 123 plots, i.e. an average of 1.6 trees per plot, but the survival was 65% in this model. In NTFP model plantation, the average number of trees per sample plot laid was 2.3, however the survival was 80% which was the highest. The main species planted in this plantation were Honge and Nelli.

Photo 8: Hulakoppa plantations, Dharwad range, Dharwad division and circle
Marking sample plot corner with wooden pegs

Photo 9: Belawadi Extension plantation, Chikkanayanakanahalli range, Tumkur division
Very good plantation with good maintenance

Photo 10: Bendigeri plantation, Manchikeri range, Yellapur division, Uttara Kannada circle
Plantation board with all details

Photo 11: Karajagi plantation, Nagergali range, Belagavi division, Belagavi circle
Appropriate site selection

Photo 12: Samudra plantation, Devdurga range, Raichur division, Kalaburgi circle
Measuring height of planted seedlings

Photo 13: Saragodu plantation, Aldur range, Chikkamagaluru division and circle
Measuring girth of natural trees

3.2 Activities for Utilisation of NPV Amount

3.2.1 Planning and Records

Records such as the Annual Plan of Operation (APO), Estimate, Field Note Books, Completion certificate were perused to understand the timeliness of approvals and completeness of the records

Table 36: Status of Availability of Approved Annual Plan of Action (APO)

Circle	Details of Records Available during Field visit (Per cent of records available)	
	Work approved in APO	APO date available
APCCF (HRD)	100	100
Ballari	100	70
Belagavi	100	100
Bengaluru	90	70
Chamarajanagara	86	64
Chikkamagaluru	100	67
Dharawada	100	100
FDPT, Mysuru	100	63
Hassana	100	100
Kalaburgi	100	100
Kodagu	100	100
Mangaluru	100	100
Shivamogga	100	53
Uttara Kannada	98	93
Total	**97**	**82**

Source: Primary data from field

With regards to the planning process, majority of the works sampled were approved in APOs, while in few cases, APOs were not made available at the time of field visit. Among the APOs available at the time of field visit, 82% of the documents had dates. The timeline of APO approvals is provided in the table below. In some cases in Chamarajanagar, Chikkamagaluru, FDPT Mysuru, Shivamogga the APOs were available without the covering letter, hence the dates of approval were not clear.

Table 37: Year-wise timeline of APO approvals

Year of planting	APO approvals timeline (no. of works)							Total
	Before Oct	Oct	Nov	Dec	Jan	Feb	Mar	
2013-14	8	10	1	2	1	3	11	36
2014-15	9	2	23	4	3	3	20	64
2015-16			2	22	11	7	8	50
Total	17	12	26	28	15	13	39	150
Percent	**11**	**8**	**17**	**19**	**10**	**9**	**26**	**100**

Source: Primary data from field

Among the works sampled, 11% works were approved prior to October which was the middle of the financial year. Nearly 44% works were approved between October to December, while 45% APOs were approved in the last quarter of the financial years. This indicates that approvals were delayed in several cases and works may have been executed prior to APO approvals also.

Table 38: Status of Availability of Field Note Books and Completion Certificates

Circle	Details of Records Available during Field visit (Per cent of records available)	
	Field Note Book with Check measurement date	Completion certificate with date
APCCF (HRD)	0	0
Ballari	60	40
Belagavi	20	0
Bengaluru	60	15
Chamarajanagara	64	7
Chikkamagaluru	83	42
Dharawada	50	0
FDPT, Mysuru	100	0
Hassana	0	0
Kalaburgi	100	0
Kodagu	83	0
Mangaluru	78	67
Shivamogga	27	0
Uttara Kannada	86	9
Total	**71**	**20**

Source: Primary data from field

Field note books (FNB) with check measurement date were made available in 71% of the works at the time of visit. FNB was available for all the works visited in FDPT, Mysuru circle and Kalaburgi circle. Similarly, FNB was available in very few works visited in Belagavi, Dharawada and Shivamogga circles.

Completion report was available in very few works sampled. In Mangaluru circle, the availability of completion certificate was much better (67%) as compared to most other circles where it was nil. Similarly completion certificate was available in Ballari (40%) and Chikkamagaluru (42%).

3.2.2 Consolidation and protection of forests

Various types of boundary works which were taken up for consolidation and protection of forests were sampled, which are detailed below.

Table 39: Types of Boundary consolidation and protection works sampled

Circle	Types of works sampled (no. of works)					Total
	Barbed wire fencing	Cattle Proof Trench	Chain link mesh	RF Boards	RF Stones	
Ballari	1	3		2	4	10
Belagavi		2		3		5
Bengaluru		6	1	7		14
Chamarajanagara				1		1
Chikkamagaluru		5		2		7
Dharawada		1		1		2
Hassana		1				1
Kalaburgi		2				2
Kodagu		1		1		2
Mangaluru		7		7		14
Shivamogga		3		10		13
Uttara Kannada		26				26
Total	**1**	**57**	**1**	**34**	**4**	**97**
Per cent	**1**	**59**	**1**	**35**	**4**	**100**

Source: Primary data from field

All the works sampled were fresh works. Majority (59%) of the works sampled included cattle proof trenches which were carried out in forest fringe areas. Reserve Forest boards which were installed to give an identity to the demarcated forest areas constituted 35% of the sample. Similarly Reserve Forest stones which distinguish forest boundaries comprised 4% of the sample. Among the samples visited, 27% of the samples were in Uttara Kannada circle, 14% in Bengaluru and Mangaluru circles and 13% in Shivamogga circle.

Of the 97 works sampled, 7 (7%) works, (i.e. RF Boards) did not exist on site at the time of visit. This constituted six works in Shivamogga circle and one work in Mangaluru circle. Among the 90 works that existed, 7 cattle proof trench works (8%) were not serving the intended purpose of boundary protection since they were breached. This included three works in Uttara Kannada circle, one each in Chikkamagaluru and Ballari circles.

The Karnataka Forest Department makes consistent efforts to protect the Survey and Demarcate the Forest Boundary in the State. Several measures like boundary demarcation stones with concrete boards which are durable and have all appropriate details are installed at critical points.

Photo 14: Reserve Forest Board, Bagalkot range, Bagalkot division
Board with durable material

Photo 15:Sunkadakallu Reserve Forest, Kudligi range, Ballari division & circle
Durable reinforced cement concrete structure for boundary marking

Photo 16: Cattle Proof Trench at Virnoli range, Dandeli division, Uttara Kannada circle
Filled with weeds and ineffective

Photo 17: Barbed wire fencing at Holalkere range, Chitradurga division, Ballari circle
Located within mining area, purpose not clear

3.2.3 Wildlife Protection and Management (Wildlife Works)

The wildlife protection and management works carried out mostly included EPTs and fencing to minimise human-animal conflict. The samples visited are as below.

Table 40: Wildlife protection and management measures sampled

Circle	Types and No. of works sampled		Total
	Elephant Proof Trench	Solar fence	
Bengaluru	1	1	2
Chamarajanagara	3	1	4
Chikkamagaluru	2	1	3
Kodagu	1	1	2
Uttara Kannada	5		5
Total	**12**	**4**	**16**
Per cent	**75**	**25**	**100**

Source: Primary data from field

The wildlife protection and management measures included elephant proof trenches and solar fencing works. All were fresh works and existed at the time of visit. All assets were found to be useful and serving the purpose, except one elephant proof trench which was carried out

inside the forest area and was not very useful in preventing wild animals from straying into nearby habitation in Srimangala WL range, Madikeri WL division, Kodagu circle.

As per the ToR several Anti-poaching camps were to be sampled. However, on verification it was found that these works included payment of salaries to watchers which were not amenable for evaluation.

The Railway Barricade is one of the boundary consolidation measures which also serves as a fairly effective elephant proof measure, especially in areas of human-animal conflict

Photo 18: Railway barricade, Bannerghatta range, Bengaluru urban Division, Bengaluru circle
Railway Barricade, a boundary consolidation measure also serves as elephant proof measure

Photo 19: Elephant proof trench, Chikkamagaluru range, Chikkamagalur division & circle
Breached and ineffective

3.2.4 Soil and moisture conservation (SMC) works

Among the 14 circles sampled for evaluating other works, SMC works were sampled in eight circles as per the sampling plan provided by KEA.

Table 41: Circle-wise Soil Moisture Conservation Works Sampled

Circle	Check dam	Desilting of tank	Gully checks	Percolation ponds	Waterholes	Others	Total
Bengaluru		2					2
Chamarajanagara	1	4					5
Chikkamagaluru	1			1			2
FDPT, Mysuru	2	4					6
Kodagu		1					1
Mangaluru		8					8
Shivamogga		1				1	2
Uttara Kannada	2	2	1	2	1	6	14
Total	**6**	**22**	**1**	**3**	**1**	**7**	**40**
Per cent	**15**	**54**	**3**	**8**	**3**	**17**	**100**

Source: Primary data from field

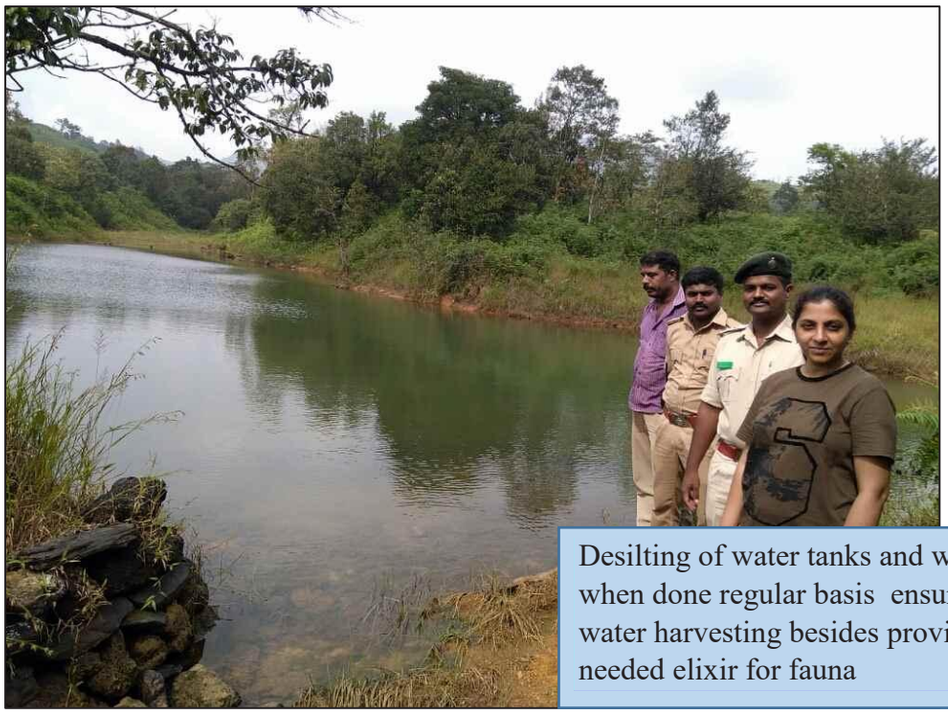
Among the SMC works sampled, desilting of existing tanks constituted more than half the samples, i.e. 55%, which were maintenance works. The remaining 45% constituted fresh works such as other SMC works (trenches/ staggered trenches/ excavation of farm ponds etc.), check dams, percolation ponds, gully checks, and waterholes. Nearly 35% of the works sampled were in Uttara Kannada circle, followed by Mangaluru (20%), FDPT Mysuru (15%) and Chamarajanagara (13%).

All the works sampled existed at the time of field visit, except one check dam in Kumbarawada WL range, Dandeli division, Uttara Kannada circle which was not traceable due to dense vegetation. Among the 39 works that existed, all were put to use, except two check dams, one at Halagur WL range, Cauvery WL division, Chamarajanagara circle which was completely filled with silt and another at Lakkavalli WL range, Bhadra WL division, Shivamogga circle which was cracked, resulting in seepage. Among the 37 works being put to use, all were serving the intended purpose.

Percolation trenches when carried out in the appropriate location and in a qualitative manner are effective and modest water conservation techniques

Photo 20: Percolation trench, Mandagadde range, Shivamogga division, Shivamogga circle
Appropriate location and effective

Photo 21: Gully checks, Gerusoppa range, Honnavar division, Uttara Kannada circle
Breached and ineffective



Desilting of water tanks and waterholes when done regular basis ensure optimum water harvesting besides providing the much needed elixir for fauna

Photo 22: Desilting of tanks, Kudremukha range, Karkala WL division, Mangaluru circle
Good quality work, clear water for wild animals

Photo 23:Check dam, Lakkavalli range, Bhadravathi division, Shivamogga circle
Filled with vegetation and partially breached

3.2.5 Infrastructure Development (Buildings/ Roads)

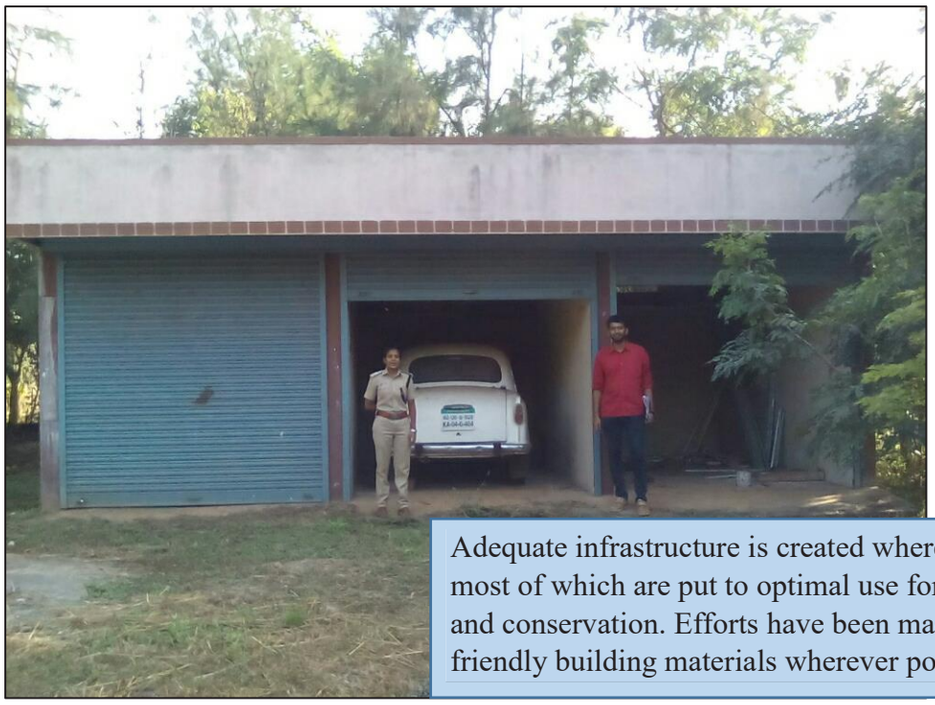
The infrastructure development included construction/ maintenance of Buildings and Roads for patrolling. The Buildings sampled included eleven fresh works distributed across three circles, i.e. nine works in Uttara Kannada circle, one work each in APCCF (HRD) and Bengaluru circle. These works mainly comprised of eco-tourism works, a toilet at anti-poaching camp, a vehicle shed at a training centre etc. It was observed that the eco-tourism works need regular maintenance to continue to be a useful asset. All the works sampled existed at the time of visit and were found to be serving the intended purpose. The samples for roads included the following:

Table 42: Details of Road Works sampled

Circle	Cement/Concrete Road	Forest Road	Total
Bengaluru		1	1
Chamarajanagara		4	4
FDPT, Mysuru		2	2
Kodagu		1	1
Mangaluru		5	5
Uttara Kannada	1	2	3
Total	**1**	**15**	**16**
Per cent	**6**	**94**	**100**

Source: Primary data from field

All, except one cement/ concrete road work sampled in Uttara Kannada circle were maintenance works. Of the 16 road works sampled, all existed at the time of visit. The roads were observed to be used regularly for patrolling, except one work in Mangaluru which was not accessible due to persistent heavy rains.



Adequate infrastructure is created wherever required, most of which are put to optimal use for forest protection and conservation. Efforts have been made to adopt eco-friendly building materials wherever possible

Photo 24: Vehicle shed at Training Centre, Gungargatti, Dharwad circle
Good quality construction and structure put to use

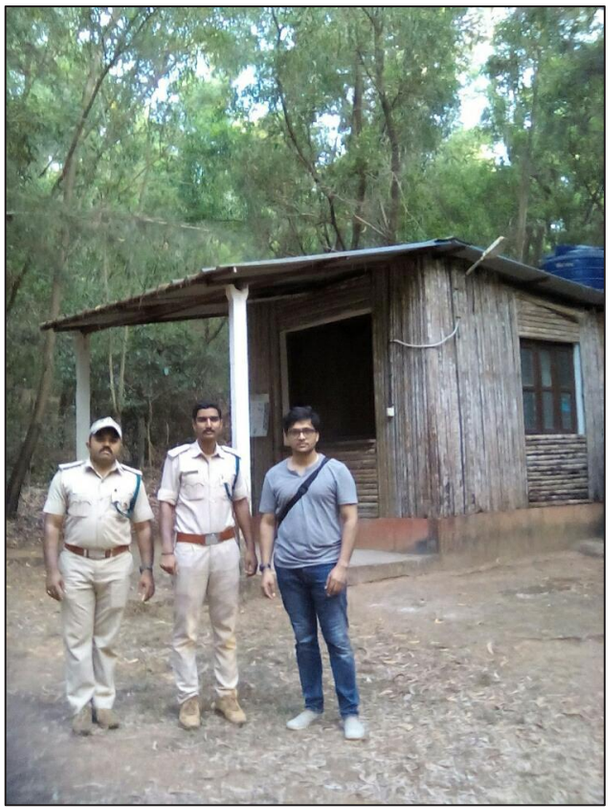


Photo 25: Eco-tourism work at Bhatkal range, Mangaluru division and circle
Eco-friendly local materials used

Maintenance of forest roads is a regular exercise in the department and is crucial for forest patrolling and protection. Despite the difficult and undulating terrains in several locations, best efforts are made to maintain the roads and other infrastructure, thus serving the purpose

Photo 26: Road formation, Antharasanthe range, Nagarahole division, FDPT Mysuru circle
Well maintained road

Photo 27: Cement concrete pathway, Idagungi range, Yellapur division, Uttara Kannada circle
Well laid out and used everyday

3.2.6 Community/ Individual Benefits

a) Community Benefits

In terms of community benefits, as per the data provided by the department there were five works:

i. Erection and commissioning of solar fence for 2 km at Kalagondanahalli village, Kodihalli Wildlife range, Bannerghatta Division, Bengaluru circle, executed in 2015-16
ii. Erection and commissioning of solar fence for 2 kms at Gonakala village YemmeKhan to Baktharahalli-1.20 km and Kamenahalli SF-0.80 km at Chikkamagalur range, Chikkamagalur Division and Chikkamagalur circle, executed in 2014-15
iii. Three cattle proof trenches for consolidation of forest boundary for a total of 10.85 km at Iddalla, Belur range, Hassan Division, Hassan circle, executed in 2015-16

Among the above, three works were sampled one in each circle. Focus group discussion was held with the community to understand the usefulness of the asset. The site locations selected for the three works sampled was appropriate. The solar fence in Bengaluru circle was not functional, while the one in Chikkamagaluru circle was partially functional. In both locations the community opined that when the fences were functional, the incidences of animals straying into habitation and crop lands had reduced. Both the fences required regular maintenance to be effective.

The cattle proof trenches at Hassan circle were located appropriately. They were partially effective in preventing cattle from straying into the forest. The trenches were filled with vegetation. Clearing the vegetation in the trenches will help improve the effectiveness of this asset.

b) Individual Benefits

As per the data provided by the department, over 800 beneficiaries have benefitted across six circles. Of these, 139 (17%) beneficiaries were selected randomly and interviewed. Circle-wise sample of beneficiaries covered under the study is as follows:

Table 43: Circle-wise Types of benefits extended

Circle wise	Types of benefits (No. of beneficiaries sampled)			Total	Per cent
	LPG stove	Solar Lantern	Bee box		
Bangalore	31		1	32	22
Charamarajanagar	14	1		15	10
Chikkamagalur	13			13	9
Kalaburgi		20		20	14
Hassan		31		31	22
Kodagu		30		30	21
Total	**58**	**82**	**1**	**141***	**100**
Per cent	**41**	**58**	**1**	**100**	

Source: Primary data from field

*Two beneficiaries had received two benefits

Among the respondents, 32% belonged to ST, 29% to SC, 20% to other backward community, 15% to general and 4% to minority communities. Among the beneficiaries interviewed, 45 (32%) were landless, while the others were marginal farmers with less than five acres of land holding.

The respondents were asked whether need assessment was conducted prior to distribution of benefits. Overall 66% mentioned that need assessment was carried out through meetings/ discussions in the villages, grama sabhas, house visits etc. while 21% stated it was not conducted and 14% were not aware if a need assessment was carried out. In Chikkamagalur and Hassan circles need assessment was carried out as mentioned by all respondents, on the contrary in Kalaburgi nearly 95% respondents mentioned that they were not consulted prior to distribution of benefit.

Usage and Advantages of the Benefits

a) LPG cylinder and cook stove

LPG was given in Bengaluru, Chamarajanagara and Chikkamagalur circles, benefitting 58 respondents, all of them claimed to use it every day for preparing meals.

Table 44: Advantages of using LPG

Circle	Advantages of using LPG (No. of responses)							
	Faster cooking	Less smoke	Easy to use	No Carbon deposited	Easily available	Cost effective	Reduces the dependence on fuel wood	Drudgery reduction for collection and processing of fuel wood
Bangalore	29	28	9		7		30	19
Charamarajanagar	12	14	14	13	13	10	12	10
Chikkmagalur	11	10	7	1	3	3	8	3
Total	**52**	**52**	**30**	**14**	**23**	**13**	**50**	**32**
Per cent	**93**	**93**	**54**	**25**	**41**	**23**	**89**	**57**

Source: Primary data from field

The respondents articulated various advantages of using LPG, most commonly faster cooking, less smoke compared to conventional cook stoves and reduced dependency on fuel wood. It was noted that just 41% mentioned easy availability indicating that there are some bottlenecks in easy access for refilling. The higher cost of LPG compared to other fuel choices was evident in the fact that just 23% stated was cost effective.

b) Solar Lantern

Solar lantern was distributed in all circles sampled, except in Chikkamagaluru circle, benefitting 82 respondents. Nearly half of the respondents (49%) claimed to use the lantern everyday, while 18% stated it was used only when required/ during power cuts. In Kodagu 73% used it everyday, while the others have not used it at all. In Kalaburgi 65% used it only when required, while the others used it every day.

It was found that nearly one-third, i.e. 33% mentioned that the lantern was never used, especially in Hassan circle where 61% mentioned that they never used it. This contradicts the claim that need assessment was carried out in this circle. This may indicate that people who actually are in need of the benefit may not have been selected.

Table 45: Advantages of Using Solar Lantern

Clean light	Advantages of using Solar Lantern (No. of responses)							
	Clean light	Portable	Kerosene saving	Reduces the eye irritation	Reduces the headache	Can be used in agriculture field	Enables us to work at night times (for income generation)	Children can study longer hours
Bangalore	1	1	1					
Charamarajanagar	1	1	1	1	1		1	
Kalaburgi	19	12	8	5		2	1	16
Hassan	12		2	1		1	7	6
Kodagu	23	23	23	21	19	12	5	8
Total	**56**	**37**	**35**	**28**	**20**	**15**	**14**	**30**
Per cent	**67**	**45**	**42**	**34**	**24**	**18**	**17**	**36**

Source: Primary data from field

The respondents articulated several advantages of using solar lantern especially clean light, portability and kerosene saving. A few respondents noticed reduced irritation in the eyes and reduced incidences of headache when compared to kerosene lamps. Among the respondents that have used the lantern, 70% stated that the quality of the lantern was good, while 30% mentioned it was average. It was found that a handful (9%) of the respondents had made their own arrangements locally for service and repair, while 32% had stopped using it few months prior to the study since their houses were electrified or the device had stopped working for various reasons.

a) Bee box

One respondent had received two bee boxes in Bannerghatta division, Bengaluru. The box had been placed in their backyard and they had collected honey 2-3 times a year. Each box yielded 1-1.6 kilos of honey, which was marketed locally. The respondent was not very satisfied with the benefit and was not trained in using the boxes.

4 FINDINGS

Based on the evaluation study, the following inferences may be drawn vis-à-vis the objectives of the CAMPA:

The main objective of the scheme was to promote afforestation and regeneration activities as a way of compensating for forest land diverted to non-forest uses. From 1981-82 to 2018-19, 29566.94 ha of forest land was diverted for non-forestry purposes involving 713 cases. A large extent (32%) of forest land was diverted for mining and quarry purposes, followed by 25% for hydel and wind power projects, while relatively least area was diverted for roads and railway purposes (1%) each.

As per the 20 point programme Progress reports of 2013-14, 2014-15, 2015-16, Ministry of Statistics and Programme Implementation, Government of India[17], the afforestation (in public and forest lands) target of area covered under plantation for Karnataka was 1,92,850 ha, while achievement was 2,04,823 ha (106%).

Forest Cover in Karnataka State is 38,575.48 sq km which is 20.11% of the State's geographical area. The forest cover in Karnataka was enhanced by 1025.48 sq. km vide India State of Forest Report, Forest Survey of India, 2019, Ministry of Environment, Forest and Climate Change, Government of India[18] as compared to the previous report in 2017. Tree cover in Karnataka is 6,257 sq. km which increased by 544 sq km as compared to the previous assessment report of 2017, which may be attributed to afforestation in non-forest areas. Various schemes for public like Krishi Aranya ProthsahaYojane (KAPY) and Raising of Seedlings for Public Distrbution (RSPD), Daivivana, TalukigonduHasiruGramaYojana, Jillegondu Kaadu Nirmana, Maguvigondu Mara ShaalegonduVana, VanaNirmala in gomal areas etc. have helped in increasing the tree cover in non-forest areas.

Under CAMPA compensatory afforestation, site specific activities and activities for utilisation of net present value were taken up to meet the scheme objectives, which were evaluated and brief findings are presented below:

[17] http://mospi.nic.in/sites/default/files/twenty_point_programme_2006/annual_report_of_tpp2006/QPR%20of%20TPP.pdf
[18] http://fsi.nic.in/forest-report-2019

The focus of the scheme was to promote afforestation and regeneration activities in forest areas as well as the revenue lands received by the forest department for compensatory afforestation by way of mutation in lieu of diverted forest land. This mutated land is treated as forest land in future for all legal purposes. The plantation and ancillary activities carried out in these areas are described below:

During the period of evaluation Rs. 20,194.00 lakhs was the financial target of which Rs. 16,715 lakhs has been expended, i.e. 83% achievement. In terms of physical plantation activities (raising, maintenance and advance works), 109,783.34 ha was the achievement against the target of 110,473.52 (99%). During the period of evaluation, advance works were taken up in 12865.70 ha (97% achievement), plantations were raised in 17113.69 ha (101% achievement) and maintenance works were carried out in 79803.95 ha (99% achievement).

1. Conservation, protection, regeneration, management of existing natural forests and Compensatory afforestation

During the study period, a total of 491.13 ha were diverted for 76 projects. An area of 9.2 ha was diverted for 13 projects in 2013-14, 245.55 ha for 29 projects in 2014-15 and 236.46 ha for 34 projects in 2015-16[19].

In terms of physical activities, under Compensatory Afforestation, during the period of evaluation, 12,019.89 ha of non-forest area was treated (advance works 2388.02 ha, raising plantations 2100.64 ha and maintenance 7531.23 ha) with an expenditure of Rs. 1500 lakhs (73% achievement).

Similarly, 6439.31 ha of forest area was treated (advance works 182.73 ha, raising plantations 136.67 ha and maintenance 6119.91 ha) with an expenditure of Rs.662.91 lakhs (92% achievement).

Besides these, 12 types of site specific activities such as safety zone plantation, reclamation of quarry area, canal plantation, fuel wood plantation, roadside plantation, fencing of safety zone, supply of energy saving devices to concerned villages etc were carried out in 7759.16 ha with a budgetary achievement of Rs. 918.97 lakhs (84% achievement) including 8.4 kms of roadside plantation and distribution of 669 units of energy saving devices.

[19] Year-wise forest area diverted in the State, From the office of APCCF, CAMPA, Karnataka Forest Department

Various works taken under conservation and regeneration of forests included assisted natural regeneration, promotion for sandal regeneration, catchment area treatment plan, coastal zone plantation, development of herbal garden, besides raising quality seedlings by research wing. As against the target of 59,821 ha of enrichment planting, 59,581 ha were achieved by expending Rs. 5266.91 lakhs under NPV as against the financial target of Rs. 5987.56 lakhs, i.e. 89% achievement.

Among the 574 plantation works carried out during the period of evaluation, 61 plantations were sampled, the gross area of plantation is 1070 ha (average of 17.54 ha/ plantation) and net area is plantation of 1006 ha (average of 16.49 ha/ plantation).

Interview with officers at the implementation, supervisory and policy level revealed that even though the planning meetings were held in February/ March of the previous financial year, the targets were conveyed to the field officers during June/ July month.

Funds were released in second or third quarter. Majority, i.e. 92% stated that funds were adequate, but allocation for nursery operations and raising of seedlings could be enhanced. In general, the funds were utilized completely.

Among the plantations sampled, Annual Plan of Operations (APOs) with approved dates were available in 25% samples at the time of visit. Of these, 60% APOs were sanctioned after planting season, i.e. after October.

Estimates were available at the time of visit in 98% samples. Overall it was observed that 75% of the estimates were sanctioned after September. This indicates that the sanctioning process has delays affecting the timely planting and related works, which may reflect on the success of plantations.

It appears that 7% of the total expenditure was invested on an average for SMC works, indicating low priority for these works, despite the fact that most models have a budgetary allocation for SMC work ranging from 14-25%. This was corroborated by the fact that only 51% of the plantations sampled had SMC works. Rainwater harvesting trenches were the most common structures (57%) observed during the study. Among the 17 structures observed three structures were damaged and not serving the intended purpose while the rest were found

to be useful. The construction quality in 50% of structures were satisfactory, 46% were good, while 4% were not satisfactory.

Plantation journals were available in all samples and field note book was available in all samples, except one plantation in Malur range in Kolar T division, Kolar circle at the time of visit.

With regard to monitoring mechanisms adopted, it was inferred that the senior officers were either not inspecting the plantations or/ are not recording the observations/ inspection note in the plantation journal as evidenced by the fact that only 46% of plantation journals had notes recorded by senior officers.

There is a government order which specifies the guidelines for promoting VFCs in Karnataka. Among the plantations sampled, even though 13 plantation areas had JFMCs, only 3 plantations were raised in JFM area, of which only two plantations were actually raised by involving JFMCs. This shows that there is more scope for involvement of JFMCs and to raise plantations in the JFPM areas wherever feasible. The local officers opined that the VFCs participate actively whenever usufructs from plantations are available for sharing.

It was observed that ANR Model I (B) was adopted in majority (57%) of the plantations sampled, followed by ER Model – III in 20% of plantations and AR Model II (A) was followed in 15% of plantations.

About 90 species of plants were noticed during the study, of which Honge was the most frequently occurring species followed by Nerale, Tapsi, Nelli, Honne, Mathi etc. all of which were native species and known for their NTFP value. It is noteworthy to mention here that the department is making an earnest attempt to encourage mixed plantations of native species which is a welcome change. Growing of mixed native species in the forests will enhance the biodiversity value of the forests and its intangible benefits to the environment.

Even though 51% of the plantations sampled had boundary protection measures, only 28% of the structures were in good condition, while the remaining were filled with vegetation/ breached/ rusted. This shows that majority of the protection measures were becoming ineffective within 3-6 years after establishment/ installation.

In earlier evaluation studies and as per the evaluation wing, performance of plantations based on survival percentage was assessed as follows: very good- 81% and above, Good - 61-80%, Average - 41-60%, Poor - 21-40% and Failure - below 20%.

Among the plantations sampled, the overall survival observed was 61%, ranging from 92% in Hassan circle to 31% in Kodagu circle. Out of the plantations sampled, 33% plantations were damaged by grazing, wildlife and fire which maybe the cause of low survival percentage in some cases. This may also be attributed to the fact that only 77% plantations had boundary protection of which 72% were ineffective. Among the seedlings surviving in the sample plots, 41% were found to be in good condition, 39% were satisfactory and 20% were poor.

NTFP Model-III showed the highest percentage of survival (80%) mainly due to trench and mound method of planting, which was effective in soil moisture conservation and hence the better survival rate. Only one plantation of AR Model II (C) was sampled which indicated survival of 25% perhaps due to steep terrain, pit planting, lack of SMC measures, breached boundary protection and damage due to wildlife.

Mathi *(Terminalia alata)* recorded the highest percentage of survival 77%, followed by Nandi *(Legarstroemia lanceolata)* and Tapsi *(Holoptelia integrifolia)* 76% each, Honne *(Pterocarpus marsupium)* 75%. The least survival was seen in Dhoopa*(Vateria indica)* at 42 per cent.

As expressed by the officers, common challenges in protecting plantations included grazing, lopping, adverse climatic conditions, fire, encroachment, anthropogenic pressures etc. In addition, scarcity of labour for plantation works, high labour wage rates, inadequate supply of high quality seedlings were challenges in promoting plantations.

2. Conservation, protection and management of wildlife and its habitat within and outside protected area including the consolidation of the protected areas

KFD initiated various activities such as consolidation and protection of forests, wildlife protection and management, infrastructure development and other activities by utilizing NPV amount to fulfill the above objective.

Consolidation and protection of forests included survey and demarcation, planting on cattle proof trenches, forest boundary consolidation, RF boards, fire protection works and construction of retaining walls. During the period of evaluation, these activities were carried out with an expenditure of Rs. 1,311.27 lakhs as against a target of Rs. 1,527.82 lakhs, i.e. 86% achievement.

Wildlife protection and management measures such as maintenance of road network (1212.55 km), elephant human conflict mitigation measures (109.19 km EPT, 79.51 km planting on EPT, 158.29 km solar fencing), wildlife habitat improvement and management measures (203 desilting of tanks, 47 check dams works and maintenance of 163 APCs/ elephant depredation camps), assistance to Zoo Authority of Karnataka and maintenance of Nature Camps were carried out with an expenditure of Rs. 323.50 lakhs as against the target of Rs. 450 lakhs, i.e. 72% achievement.

Among the 1834 works carried out during the period of evaluation, 180 works were sampled. Approved APOs were present in 82% of the other works sampled, however, the date of approval indicates that 45% of the works were sanctioned between January and March, indicating delay in sanctioning process. Scrutiny of field note books and completion certificates indicated that check measurement with date in the field note books were not available in 29% of works and 80% of works did not have completion certificates at the time of field visit.

As per the data provided by the Working plan wing, the total forest area in the State was 3212848.18 ha, of which 1927708.90 ha (60%) was surveyed and the balance to be surveyed is 1285139 ha (40%). Out of 39 divisions, 38 working plans were approved, one working plan of Koppal division was pending before GOI for approval.

Of the 97 boundary works sampled, majority of the works existed, while 7% works, (i.e. RF boards) did not exist on site at the time of visit. Among the works that existed, 92% were serving the intended purpose of boundary protection, while the remaining was breached.

Protected areas were managed in accordance with the approved management plans. Solar fencing, elephant proof trenches etc. were installed in appropriate locations to mitigate human animal conflict. However, much work needs to be done to reduce further conflicts. Among the 16 elephant proof trenches and solar fences evaluated, all of them were found to be useful and serving the intended purpose, except one EPT in Srimangala WL range, Madikeri WL division, Kodagu circle.

Wildlife protection and forest conservation measures such as anti-poaching camps (APCs) and fire protection camps were established. Interaction with staff of APCs, field staff and officers revealed that APCs were immensely effective in controlling poaching and smuggling which have led to perceived increase in wildlife numbers and protecting valuable tree species. Similarly, fire protection camps were helpful in controlling forest fires over the years.

It is understood that anti-poaching camps were located in vantage points, have adequate staff, but need modern communication devices, arms and ammunition and higher capacity battery back-up for effective functioning. The field staff articulated that uniform amenities were to be provided to APCs in tiger reserves and other protected areas. Mapping the requirement of new APCs will enhance the effectiveness of patrolling considering the vast area.

Among the 40 SMC works sampled, 55% were maintenance works like desilting of existing tanks. The remaining 45% constituted fresh works such as check dams, percolation ponds, gully checks, waterholes and other SMC works (trenches/ staggered trenches/ excavation of farm ponds etc.) contributing to habitat improvement. Two works evaluated were not put to use due to high level of siltation and damage. It was observed that maintenance of SMC works was usually carried out once in 4-5 years, hence sufficient water could not be stored in the structures for longer period.

3. Environmental services, research, training and capacity building

Efforts in training and capacity building have two fold objectives viz to create awareness amongst the public; and human resource development of the department staff. Training program, workshops, environmental education program etc. were carried out with an expenditure ofRs.3.12 lakhs as against a target of Rs. 4.19. lakhs i.e. 74% achievement. Youth and students were involved in conservation of forests and wildlife through awareness programs with an expenditure of Rs. 34.75 lakhs as against Rs. 61.00 lakhs (57% achievement). Larger publicity and awareness program in the department were conducted with an expenditure of Rs. 38.60 lakhs against a financial target of Rs. 105.58 lakhs (37% achievement) indicating inadequate planning of activities in this regard. Rs. 2.16 lakhs were expended for skill upgradation as against Rs. 58.00 lakhs (4% achievement), physical details of which were not made available.

As an effort towards strengthening the capacity of the department staff and facilitating all-round development, Training Institutes infrastructure enhancement was done at a cost of Rs. 419.73 lakhs as against a target of Rs. 643.55 lakhs (65% achievement). Refresher courses were conducted for staff of the department with an expenditure of Rs. 41. 11 lakhs as against a financial target of Rs. 79.00 lakhs (52%) indicating that there is much scope to address the training needs of the staff. Providing ample opportunity for staff to participate in sports activities, Rs. 50 lakhs was spent on participation of department staff in All India Sports Meet.

Seven public awareness, including one refresher training carried out for staff were sampled. The public awareness program included classroom training, street play, jathas etc. Children were involved in planting of medicinal plants and visited the forest nursery in one case, which was found to be effective in stimulating interest toward nature and environment amongst the participants. Feedback from participants was taken only in three cases. It may be inferred that even though adequate funds are available for enhancing the capacity of staff and creating awareness amongst public about forests and its importance in environment and ecology, there was underutilization of the funds.

Enhancing the mobility of the field staff and supervisory officers is crucial to monitoring the project. In this regard, a total of Rs. 597.62 lakhs was expended against a target of Rs. 694.80 (86% achievement). However, it was observed that only 50% of the amount allocated for purchase of two-wheelers for Deputy Range Forest Officers was spent.The funds allocated for the mobility of the field staff, purchase of arms and ammunition and communication devices were not utilised adequately for the purpose.

Eco-tourism activities were given due importance by carrying out works worth Rs. 48.10 lakhs against the provision of Rs. 50.00 lakhs (96% achievement). Among the 11 building works sampled, majority were eco-tourism works which were functional and serving the intended purpose at the time of visit. All the 16 road works sampled were regularly used for patrolling. It was learned that the green building code is not followed in the planning and design phase of buildings constructed.

To reduce the dependency of forest fringe communities on firewood, energy saving devices were distributed to benefit over 2920 people during the period of evaluation, an amount of Rs. 148.44 lakhs were expended out of Rs. 222 .5 lakhs (66%) for this purpose.

Proper need assessment was not done prior to distributing individual benefits. For the LPG stove and solar lanterns given, proper documentation was not available at the time of visit in most locations. The LPG stoves and cylinders distributed to individual beneficiaries were used regularly by all the recipients and they articulated various benefits of the same. In case of solar lanterns, only 49% of the beneficiaries were using it regularly. There were no systems in place for repair and maintenance of the lanterns which has led to disuse of the device in some cases.

Under community benefits, two solar fencing works, one each in Bengaluru and Chikkamagaluru circle and one cattle proof trench work In Hassan circle were evaluated. Focus group discussion revealed that these works were effective in the initial period for about 2-3 years, subsequently their effectiveness reduced due to lack of maintenance.

As mentioned earlier, findings of the Forest Survey of India Report, 2019 clearly mention the increase in forest cover, especially tree cover in non-forest areas in Karnataka. The present practice of preferring mixed local species in lieu of monoculture for afforestation is a welcome change which contributes to the biodiversity, ecological value of the forests, and its

intangible benefits to the environmentbesides yielding NTFP. The department has made efforts to create awareness amongst the public, youth and children about the importance of forests through various awareness activities. In addition, eco-tourism facilities such as nature camps, tree parks etc. have been established to provide aesthetic, educational and recreational amenities for the public. All these activities are aimed at enhancing the contribution of forests in providing environmental services and yielding of goods like timber and NTFP. The regulatory services such as flood moderation, climate regulation, carbon sequestration, nutrient cycling etc. have to be studied in detail to assess the contribution of various types of forests in the state.

5 RECOMMENDATIONS

This study aimed to evaluate four schemes within a limited time frame and resources. Hence it will be useful to have a separate detailed study for each scheme to arrive at a more comprehensive assessment. Based on this evaluation study, the following recommendations are offered for consideration:

Short term

1. The department may develop comprehensive definition, benchmarks and rating indices to determine the success and performance of plantations. Survival may be specified and linked to growth of the plants.
2. Cost norms of plantation models may be redesigned based on field realities.
3. The APOs and estimates may be approved during the first quarter of the financial year to enable proper planning of works at the field level. Mechanisms may be developed by ICT for APOs, estimates and other relevant documents, which could be sanctioned online/ offline and uploaded to central database.
4. Participatory need assessment may be carried out involving the beneficiaries/ community prior to distributing/ identifying the benefit. To reduce the dependency of forest fringe communities on firewood, distribution of alternative fuels like LPG could be continued, while facilitating access to sustained use.
5. Upgradation and modernisation of the mobility infrastructure, arms and ammunition and communication devices may be taken up with optimal fund utilisation.
6. Details of all campaigns and public awareness programmes may be documented adequately and the plan and progress may be displayed on the department website.
7. Department may evolve a system wherein the verification of works by DRFO, RFO and ACF and supervisory comments of DCF, CF and other senior officers whether in plantation journals or in their respective tour diaries are made available as a single document helping to properly assess the progress of activities in a plantation.

8. A workshop could be conducted by involving officers from all levels to brainstorm on the process automation possibilities in the forest department which the ICT wing may take up. It is recommended that the new software/ applications developed by ICT wing may be more user friendly and tested at remote corners of the forest/ range devoid of mobile/ internet connectivity with the device currently used by the field staff in the presence of the developers so that they get a clear idea of the field realities.

Medium term

1. Provision can be made to clear lantana and other invasive weeds from proposed plantation areas as part of advance works. In areas prone for encroachment and grazing, more intensive planting activity may be undertaken with permanent boundary demarcation structures. Additional watering may be provided for plantations in dry and arid zones, wherever feasible. Similarly, additional watch and ward can be provided for plantations in town areas and areas of human animal conflict. The casualty replacement may be done in all the years of maintenance based on the actual requirement. Maintenance may be provided for a minimum of 5 years across all models of plantations.
2. The concept of augmenting mixed native species in degraded natural forests may be encouraged in all future afforestation activities of the department.
3. Waterholes/ tanks/ percolation ponds and other SMC structures may be maintained every alternate year, based on the site conditions. The utility of the existing SMC structures in the forest areas may be studied in detail to assess their efficacy.
4. It is recommended to take up soil moisture conservation works based on watershed approach in collaboration with Watershed Development Department (WDD) and to extend Land Resource Inventory (LRI) works in the forest areas also.
5. It is recommended to involve forest dependent communities in forestry operations. Benefits to communities and individuals can be dovetailed and converged with other ongoing government schemes/ programmes such as MGNREGS, Watershed Development Programmes, Krishi Bhagya, Ujwala etc.

6. Infrastructure such as buildings, roads, camp sheds etc. may be periodically maintained at regular intervals for effective utilisation. Additional staff quarters could be constructed at Thattihalla Training Centre after assessing the actual need.
7. Training needs assessment may be done in a systematic manner and all staff to be trained on relevant issues (not just selected staff). Appropriate boarding and lodging may be provided to the in-service trainees as an incentive, free of cost.
8. The functioning of the research wing can further be strengthened with adequate funding, recruitment of qualified manpower and continuous collaboration with other wings of the forest department.
9. A qualified and experienced User interface and User experience Engineer could be helpful, in increasing the usability and efficiency of the functioning of IT wing.
10. The ICT wing could provide data support on identifying low canopy density areas, encroachments, locating all assets created, provide maps where forestry features have been over laid on Survey of India topo sheets etc.
11. Some of the suggestions for mitigating human animal conflict are as follows:
    - Upgradation/ maintenance of EPTs and CPTs on regular basis
    - Erecting railway barricades for all forest boundaries in a phased manner where the incidences of conflicts are high
    - Regular maintenance of solar fences
    - Ensuring water sources inside the forest
    - Providing capturing cages for all wildlife ranges
    - Ensuring adequate frontline staff
    - Encroachments should be evicted
    - A veterinary doctor to be posted in each wildlife circle
12. Apart from identifying and establishing new APCs, the existing ones are to be upgraded with adequate manpower, basic facilities, higher capacity battery backup, well equipped with modern arms, ammunition, communication devices and night vision binoculars.
13. Decentralised planning at circle level on five year mode would be useful in taking a customized approach which is more appropriate to the diverse needs of each division.

Long term

1. The pending forest boundary to be surveyed and demarcated is 1285139 ha, which has to be demarcated with proper permanent boundary structures at the earliest on war footing in order to prevent encroachment.
2. The research wing may be adequately equipped in a phased manner to supply high quality planting material for all plantations across the state.
3. The research wing can be entrusted to undertake research activities to address the problems faced in the field by the executives.
4. The possibility of establishing ICT units at circle level may be explored so that all field staff can be easily trained.
5. A system of imprest allocation of finances to carry out committed seasonal works may be considered to improve the operational efficiency of KFD.
6. Proper transfer policies can be developed to retain the trained specialist personnel in appropriate wings at least for three years tenure after completion of training.

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ANNEXURE

TERMS OF REFERENCE
FOR THE STUDY

EVALUATION OF FORESTRY WORKS UNDER COMPENSATORY AFFORESTATION FUND MANAGEMENT & PLANNING AUTHORITY (CAMPA), 2013-14 to 2015-16 13THfiNANCE COMMISSION (TFC) 2013-14 to 2014-15, NATIONAL AFFORESTATION PROGRAMME (NAP) 2013-14 to 2016-17 & NATIONAL BAMBOO MISSION (NBM) 2013-14 to 2016-17

1. TITLE OF THE STUDY:

The study is titled as Evaluation of Forestry Works under Compensatory Afforestation Fund Management & Planning Authority (CAMPA), 2013-14 to 2015-16 13th Finance Commission (TFC) 2013-14 to 2014-15, National Afforestation Programme (NAP) 2013-14 to 2016-17 & National Bamboo Mission (NBM) 2013-14 to 2016-17.

2. DEPARTMENT IMPLEMENTING THE SCHEME

Karnataka Forest Department, Government of Karnataka

3. BACKGROUND AND CONTEXT:

Compensatory Mforestation Fund Management & Planning Authority (CAMPA):

The *Forest (Conservation) Act of 1980* governs diversion or use of forest land for non-forest purposes such as industrial or developmental projects. Since forests are an important natural resource and provides us with a variety of ecological services, the Forest (Conservation) _!\ct of 1980 mandates that non-forest land, equal to the size of the forest being diverted be afforested. But, since afforested land cannot become a forest overnight, loss of goods and services like timber, bamboo, fuelwood, carbon sequestration, soil conservation, water recharge, and seed dispersal are still experienced. Moreover, the newly afforested land will take around 50 years to start delivering the comparable goods and services which the diverted land gave just before diversion. To compensate the losses suffered in the interim, the *Net Present Value (NPV)* of the diverted forest are computed for a period of 50 years, and recovered from the "user agency" that is diverting the forests.

As per the act, the CAMPA funds can be used for the following purposes:

- Artificial regeneration (plantation)

- Assisted natural regeneration
- Forest management
- Forest protection
- Infrastr ucture development
- Wildlife protection and management
- Supply of wood
- Other forest produces saving devices.

The main works taken up under State CAMPA are:-

Project Specific Activities:-

A. Compensatory Mforestation (CA), Additional CA (ACA) &Penal CA (PCA):

i) In Forest Land

ii) In Non-Forest Land

B. Site Specific Activities:

i) Safety Zone plantation

ii) Planting in degraded forest area (1 ½ times of safety zone)

iii) Fencing

iv) Catchment Area Treatment Plan (CATP)

v) Planting Dwarf Species

vi) Medicinal plantation

vii) Soil & Moisture Conservation works

viii) Providing LPG connection to local villagers etc.,

C. Activities for Utilization of NPV:

I. Consolidation and protection of Forests:

a. Survey and demarcation of Forests

b. Forest boundary consolidation through Cattle Proof Trench (CPT)

c. Fire protection

d. Creation of lung spaces by pr<rtection and consolidation of valuable forest areas in the city's urban areas and developing them as Tree Parks.

II. Consolidation and Regeneration of Forests:

a. Assisted Natural Regeneration (ANR)
b. Promotion of Sandal Regeneration on estate management concept.
c. Production of Quality Planting Materials, collection of quality seeds and other Research activities.
d. Integrated plan for Conservation and Development of biodiversity, forests and ecology in the forest areas of coastal zone (HasiruKavacha)

III. **Wildlife Protection and Management:**

a. D-line clearance
b. Development & maintenance of road network in protected areas.
c. Elephant Human conflict mitigation measures (Areas outside & inside protected areas)
    i. Elephant Proof Trench (EPT)
    n. Solar Fencing
    iii. Assistance to Bannerghatta Biological Park
d. Wildlife Habitat Improvement & Management for individual Protected Area's (PA's)
    1. Creation of new water holes
    ii. De-silting of tanks
    iii. Soil &Moisture Conservation (SMC) works
    iv. Providing Salt licks
    v. Elephant depredation camps/ Anti-poaching camps (APC's)

IV. Infrastructure Development:

a. Strengthening and augmenting digitization and Communication network;

i. Cell Phones

ii. Computers

iii. Laptop

iv. Xerox Machines

v. GPS

vi. Digital Cameras

vii. Personal Digital Assistance (PDA)

b. New Buildings (Staff Quarters)

c. Building maintenance

d. Strengthening of Forest Institutes for capacity building.

e. Purchase of vehicles (Two Wheelers for Forests and Four Wheelers for Officers)

V. Forest Produce Saving devices & other activities:

a. Supply of energy saving devices at subsidized cost to forest fringe villages.

b. Maintenance of WP Samples Plots

c. Repair, Maintenance, & Office Expenditure (RMOE), Travelling Expenses (TE) etc.

Other Schemes

There are other schemes implemented by the forest Department under which the works undertaken are also of similar nature as that of CAMPA. Hence, Karnataka Forest Department (KFD) intends to appraise itself of the outcome of implementation of works under the other schemes as mentioned in the title of this Terms of Reference (ToR) for the period beside each scheme as follows;

i. 13th Finance Commission (TFC)[Q013-14 and 2014-15]

ii. National Mforestation Program(NAP)[2013-14 to 2014-17]

iii. National Bamboo Mission (NBM)[2013-14 to 2014-17]

Many of the work taken up under all the above schemes are in the nature of plantations, other works like buildings, infrastructure development, soil and moisture conservation works and beneficiary-oriented works. In order to avoid the Consultants crisscrossing the whole state separately for each scheme, works under all the above schemes shall be evaluated simultaneously once the evaluation team visits a particular division. This will not only reduce the financial cost of the evaluation in respect of travel expenses, but will also cover all sampled works in a division in one visit. It also helps to make a comparative analysis across the Schemes.

Sampling of works shall be done scheme-wise. Thus, 4 State level evaluation reports i.e one for each scheme as mentioned above have to be submitted separately.

4. EVALUATION SCOPE, PURPOSE AND OBJECTIVES:

4.1 Forestry works carried out in Karnataka Forest Department under above mentioned schemes broadly fall under following categories:

1. Raising & Maintenance of plantations.
2. Seedling Distribution to Public
3. Soil moisture conservation works
4. Specialized works of Wildlife
5. Specialized works of Working Plan
4. Specialized works of Research & Utilization
7. Specialized works of Training wing
8. Construction and maintenance of buildings, Roads &other infrastructure
9. Providing individual/ community benefits

Generally, in any Scheme of KFD, the works may include either or all the works as listed above. Hence, the activities to be evaluated will invariably fall in one of the

above categories. The list of works and other project documents are provided by the APCCF (CAMPA) for the scheme (i), APCCF (Projects) for scheme (ii), APCCF (NAEP-BM) for schemes (iii) & (iv) through their implementing Forest Circles, Divisions and Units. The purpose of evaluation is to assess the implementation process and analyse the impact of them on environment and society.

The field data has to be analysed with respect to the scheme objectives and evaluation issues. The findings have to be reported along with recommendations for improvement as a separate chapter in the final evaluation report of each scheme. A separate evaluation report has to be submitted for each scheme.

4.2 EVALUATION OBJECTIVES:

- To evaluate the works under the above 4 schemes that were carried out by Territorial, Wildlife, Research, Working Plan and Training wings of the Karnataka Forests Department.
- To assess whether the desired impact on natural and social environment is achieved and or undesirable impact is avoided UNDER CAMPA and other schemes.
- To assess the efficiency and effectiveness of the schemes and the ability of the works executed to meet the jntended objectives of the Schemes.
- To assess the performance of the works under different categories and across the divisions.

  To Examine the requirement of Works executed under all above schemes, whether these works to be continued or closed.
- To assess whether the existing arrangements of accounting and reporting are adequate and transparent.
- To analyze whether the grants under the scheme were utilized for the intended objectives/ purposes.
- To examine the quality of works and the final success rates are satisfactory etc.
- To examine the impact of beneficiary schemes on the households.

5. EVALUATION QUESTIONS:

The Proposed evaluation has multiple objectives. Inter alia, this evaluation is expected to examine the following questions and file their succinct findings and conclusions. The Questions of Part (A) & (I) are common and should be answered for all 4 schemes as mentioned in the title of this ToR. The questions from the remaining sections (B) to (H) should be answered based of implementation of that particular component of work in a scheme.

(A) For Raising & Maintenance of Plantations: -Under all the Schemes to be analysed from scheme perspectives and separate analysis for each scheme.

i. What is the success rate of departmental plantations under respective scheme in terms of the following?

   a. Overall and Species-wise survival rates with progressing age across the regions.
   b. Species-wise performance in terms of girth, height and vigor.
   c. Compatibility of planted species with the local biodiversity.
   d. Consistency in performance across Forest Divisions and Circles in the state.
   e. Potential to contribute to the tree cover in the state in the long run?
   f. How does the overall survival percentage compare with those observed in the evaluation of previous years?

ii. What factors contribute to mortality of seedlings in plantations? How can they be addressed across the regions to reduce mortality?

iii. What measures/interventions have been made to improve the survival percentage of plantations over the years since evaluation of plantations has commenced? What has been their actual impact in improving survival percentage?

1. How can the quality and performance of departmental plantations be enhanced?

n. Whether plantation models differ across different schemes. Examine the sustainability of these models.

iii. What is the existing status of forest/ plantation protection and conservation works carried out under these schemes?

iv. What is their effectiveness in conserving the forests/ plantations and enhancing the productivity?

v. Whether the Plantation programme under CAMPA and other schemes has been able to cover the forest cover lost? If not, what is the gap?

vi. Assess whether the desired impact on natural and social environment is achieved and or undesirable impact is avoided.

vii. Assess the adequacy, regularity and utilisation of funds for plantation activity.

(B) For Soil & Moisture Conservation (SMC) Works:

i. What is the present condition of SMC works carried out in the plantations and other forest areas? Do they exist? Make observations for each scheme separately.

ii. In case of water harvesting structures, are they capable of holding water to the designed potential now? If not, why so?

iii. Is there any visible impact of SMC activity on the vegetation? Assess the impact across the regions.

(C) **For Specialized works of Wildlife**

ı. What is the impact of Anti-Poaching Camps (APC) on the forests and Wildlife of the area? Assess across the circles and divisions under each scheme.

ii. Are the APC's sufficiently equipped with staff and modern equipment's for protection activities?

iii. What are the other infrastructures required for strengthening APC's?

iv. What are the instances in numbers and intensity of occurrence of Forest Fires in the area? Have Fire Protection Camps (FPC) helped to prevent, contain and douse forest fires?

v. What is the status of effectiveness()£ the activities taken up for mitigating man-animal conflict?

(D) For Specialized works of Working Plan

1. What is the status of survey and demarcation of forest areas (RF's) in the state?

n. What is remaining area which needs to be demarcated? What is the amount required for a 100% survey & demarcation of RF'sin the state?

iii. What is the condition of Cairns, RCC boundary pillars and RF stones? What is the percentage of missing, not visible and damaged boundary demarcation cairns/ pillars/ stones?

(E) For Specialized works of Research:

1. Are the research activities like collection of seeds from plus trees, raising & maintenance of Romets; Rare, Endangered &Threatened (RET) seedlings &Quality Planting material (QPM) etc being done annually in the Research Units throughout the state? Which species are commonly done under each of the above component i.e. Seed collection, Romets, RET & QPM.

ii. To what extent the research activity has contributed to promote the broad objectives of forest policy. What are the suggestions to strengthen and improve the research activities in Karnataka Forest department?

(F) For Specialized works of Training?

1. What is the kind of infrastructure developed in the training wing of KFD under these schemes? How they have been maintained? To what extent the gaps are addressed?

ii. What kind of training is supported under these schemes in various training centers in the state?

(G) Other Infrastructure works of KFD

i. What is the present condition of forest infrastructure created during the evaluation period? What are the different types of works undertaken? Whether

they are as per requirements of local conditions and are completed within the scheduled plan period?

n. Are they being properly utilized? If yes, to what extent and if no, why?

iii. What is the status of maintenance of buildings, roads and other infrastructure?

iv. Is the ICT wing of department sufficiently modernized? What are the gaps which need to be filled in order to make KFD as one of the best digital department in the state?

(H) Providing individual/ community benefits

1. What kind of individual and Community benefits has been provided by KFD under the 4 schemes being evaluated?

n. What is the impact of the schemes on livelihood and living conditions of the beneficiaries?

ii. What is the nature of benefits and assets provided to the beneficiaries? Examine their suitability and functional status.

(I) General Issues:

i. Evaluate the quality of the Works/ Assets with reference to the sanctioned estimate, utility, functionality, usage, usefulness and appropriateness etc.

ii. Whether Third Party Monitoring is introduced under CAMPA? What are the monitoring arrangements for the scheme works?

iii. To what extent the works undertaken under each of these schemes serve the objectives of respective schemes? Which objectives have been fully addressed, which partly and which not at all?

iv. Evaluate specific achievements failures and gaps of each scheme.

v. Does the works carried out in the evaluation period under each scheme collectively contribute to the objectives of forest policy?

6. EVALUATION METHODOLOGY:

Sampling Design:

Forest Department in general has Territorial, Social Forestry and Wild life Divisions. Apart from this there are specialized wings like Working Plan & Research which are not divided as divisions but as units. The Training wing has a state Academy with several institutes spread across the state. A multi stage sampling method is adopted to draw the final sample.

- At first stage, the Division/unit wise work list as provided by respective APCCF for a particular scheme will be compiled for the whole state in the forest department.
- Then from this state level work list of a particular scheme, sorting of various types of works into 9 categories shall be done. This will be the second stage of clustering being done at the Department level.
- From this, the sample work the list for evaluation will be generated for each scheme by random sampling of 10% of works from each category (type) of work in that particular scheme covering all the circles in the State. This will be done by Karnataka Evaluation Authority.

Thus, the method followed is basically a multi stage sampling in which the first stage of cluster formation is at division/ unit level and second stage is at type of work level and 10 % Works are identified randomly at KEA.

Sample across the categories of works- CAMPA

CAMPA	Total	Sample (10%)
Plantations	578	58
Other works		
Boundary	730	73
Other works	92	9
Other civil works	28	3
Camp	101	11
Building	37	4
Training	93	9
Desilting	155	15
General	34	4
Road	161	16
SMC	98	10
RF Board	314	30
Total	2412	242

Source: Forest Department GoK

Sample across the categories of works under 13th Finance, NAP &NBM Schemes

Sl.no.	Particulars	13thFinance Total	Sample (10%)	NAP FDA Total	Sample (10%)	NBM Total	Sample (10%)
1.	Plantations	1088	110	579	58	248	25
	Other works						
2.	Boundary	651	65				
3.	Inventory	151	15				
4.	Other works (including General)	44	4				
5.	Other Civil Works	109	10				
6.	Camp	281	28				
7.	Building	170	17				
8.	Training	13	2				
9.	Desilting of tanks	25	3				
10.	Other researc h work	13	2				
11.	Road	24	2				
12.	SMC	56	5				
13.	RF Board	07	1				
	Total	2646	264	579	58	248	25

Source: Forest Depar tment GoK

- The sample to cover all the Circles and all the categories of works implemented in a circle.
- The RF Board works may be observed on the way while visiting the sample works.
- The sample of works will be randomised by KEA.

Collection of primary data:

- The Consultant is expected to visit all the work spots sampled and provided to them by Karnataka Evaluation Authority for CAMPA, TFC, NAP and NBM schemes. Works once selected for sampling shall not be changed. Location of each sample work should be geo-referenced using GPS (Global Positioning System).
- The Consultant is required to collect the field data on the Android Application developed by ICT wing of Karnataka Forest Department for 'Third Party Evaluation'. Training shall be provided to the successful consultant about the use of the app. The consultant is expected to use the mobile app and capture the evaluation

data through his own device (tabs/ " mart phone) on the spot along with geo-referenced and annotated photos ef the works and upload them to the forest Dept. and KEA website as soon as the internet connectivity is available. The Client may suggest common configuration to all the Consultants for compatibility purpose which the Consultants must reekon. The backend application software, evaluation formats, basic information about the selected samples etc., will be hosted on the web site. The Consultant will be given privileged access to the sampled data relevant to him on the website. Client will not supply the android equipment. Consultants must arrange for the same.

- **Form-1** of the app should be used if the work evaluated is a **Plantation.** The Consultant should collect all the details as required in the above format which may include the diverse species used in planting, survival percentage of the planted seedlings, their vigor, level of protection available, prospects of becoming a fully stocked plantation etc. All the fields in the above format should be filled and no field should be kept blank. The sampling intensity for plantations shall be 2% irrespective of the extent of plantation. This works out to have a sample plot for every 5 hectares of plantation, but in case where the extent of block plantation is less than 5 hectares, one sample plot shall be laid compulsorily. The size of each sample plot shall be 1000 square meters- (0.1 hectares), having a measurement of 31.42 meters X 31.42 meters, laid at random intervals with a random start, in the block plantation selected for evaluation. In case of plantations like Roadside, Greening of urban areas, Institutional plantations etc. and the whole plantation has to be considered as one sample and 100% evaluation has to be done for such plantations.
- The boundaries of plantation selected for evaluation shall be geo referenced and a plantation sketch prepared. Grids of 5 hectares or 0.1 hectares (1,000 square meters) shall be plotted on this sketch and the required number of sample plots shall be selected randomly. The sampling intensity shall not be less than 2%. The sampling intensity can be a little more than 2% to round off the decimals that are likely to

arise as the plantations are of various sizes. The evaluation shall include, among other, information on suitability of species planted, survival percentage, growth conditions, health of surviving plants, species wise girth at collar region, average height of the plants, quality of the work, with reference to the sanctioned estimate, carried out, etc. The sample plots laid for assessing the performance of the plantations shall be geo referenced with the help the GPS.

- Form-3 pertains to evaluation of 'Other works' like building & road construction, Soil and Moisture Conservation works, Boundary consolidation works, specialized works of Wildlife, Working Plan, Research & Training wings apart from purchase of equipment/ vehicles etc.

- Fonb-4 relates to works of extending individual or community benefits to the beneficiaries under various schemes. The Consultant should examine relevant expenditure related documents, visit the work spots, examine the overall usage and its impact on the beneficiary, interact with the beneficiaries and record their satisfaction level apart from uploading details in the app.

- Sample data shall be collected in quantitative form generally. Where appropriate, it may be qualitative or mixed. No field in the digital forms of the android app should be left vacant while uploading the data.

- As per requirement Focus Group Discussions and in depth Interviews of implementing and monitoring officers at various levels are to be conducted.

- Secondary data related to different schemes may be collected from the Forest department.

7. DELIVERABLES AND TIMELINES:

The whole study is to be completed within 6 months from date of getting confirmed evaluation assignment. The evaluating agency is expected to adhere to the following time lines and deliverables

Deliverables and time schedule

1. Work plan submission/Inception report	:One month after signing the agreement
2. Field Data Collection	: Two – three months
3. Draft report submission	: One month after Field Data Collection
4. Final report submission	:One month after Draft report submission
5. Total Duration	: 6 Months

8. QUALITIES EXPECTED FROM THE REPORT:

The evaluation report should generally confirm to the United Nations Evaluation Guidelines (UNEG) "Standards for Evaluation in the UN System" and "Ethical Standards of Evaluations".

a) The results should correspond to the ToR. In the results chapter, each question of the ToR should be answered. The overall results to be analysed in an integrated way to draw the conclusions.

b) The report should be complete and logically organized in a clear but simple language. Evaluation report should confirm to the standard report writing style and structure.

c) The report should present a comprehensive review of the Scheme/ programme in terms of the content, implementation process, adequacy, information and access to beneficiaries.

d) The Report should provide a scientific assessment of the impact of the works under the CAMPA and other schemes in Forest Department in Karnataka. It should assess the impact in terms of the increase in forest cover, Soil moisture, Infrastructure development research and training and find out as to what extent the scheme objectives are attained. The qualitative data should be used in an unbiased manner to support or for further analysis of and reflections from the quantitative data. The analysis should provide adequate space for assessing the variations across the regions and categories. Case studies to be presented to bring out the realities at the local level.

e) With regard to recommendations, the number of recommendations is not a measure of the quality of evaluation. The report should come out with specific recommendations

based on adequate field evidence for any modifications in the programme design, content, implementing procedures, and any other modifications to improve the access and impact of the Scheme/Programme. The recommendations should be short term to bring in mid course corrections and the long term to bring about modifications/ change in the policy.

Structure of the report:

The following are the points, only inclusive and not exhaustive, which need to be mandatorily followed in the preparation of evaluation report:

By the very look of the evaluation report it should be evident that the study is that of Forest Department, Government of Karnataka and Karnataka Evaluation Authority (KEA) which has been done by the Evaluation Consultant Organization. The report should be complete and logically organized in a clear but simple language. Besides conforming to the qualities covered in the Terms of Reference, report should be arranged in the following order:

1. Title and Opening Page
2. Index
3. List of acronyms and abbreviations
4. Executive Summary- A stand alone section that describes the program, purpose and scope of evaluation, research design and methodology, key findings, constraints and recommendations. It should be brief and precise not exceeding 4-7 pages.
5. Background- A section that briefly covers the history or genesis of the sector under which the programme/ scheme being evaluated covered. It should give recent fact sheets taken from reliable and published sources.
6. Objectives and performance of the program being evaluated- This section will include the stated objectives of the programs and the physical and financial achievements of the selected program in the period of evaluation. It should cover the description of the target group, aim of the program and method of selection of

beneficiaries.

7. Review of literature/ past evaluati n reports.
8. Evaluation Methodology - This should include research design, sample design and size, questionnaire design and pilot test, data collection and quality assurance plan.
9. Findings of the evaluation study.
10. Case Studies, Best Practices
11. Limitations/ constraints in the evaluation study.
12. Recommendations that flow from the evaluation.

Annexures-

1. Sanctioned Terms of Reference of the study.
2. urvey tools and questionnaires
3. List of persons interviewed.
4. Place, date and number of persons covered by Focus Group Discussion.
5. Additional documents

9. ADMINISTRATIVE ARRANGEMENTS:

The Forest Department and KEA will provide the necessary information pertaining to the study and also co-operate with the consultant organization in completing the assignment task within the stipulated time period. The forest department will provide all the details of the works undertaken in four schemes at various levels till the village level and the list of beneficiaries. The concerned district and taluk officials will be instructed by the Forest Department for providing the required information/ data at the taluk and GP levels.

It is expected to complete the present study in 6 months time line, excluding the time taken for approvals at KEA.

QUALIFICATION OF THE CONSUL'FANTS:

Consultant Organizations are expected to have at least minimum 5 years of experience in undertaking evaluation studies in Forest/Natural Resource management area. They should have the following key professional staff in their team:

S. No	Subject Experts Requirement	Experience
1.	**Principal Investigator:** Retired Forest official (not below the rank of Chief Conservator of Forests)/ First class MSc Life Sciences/ Forestry/. Ph. Dis preferable.	With at least 05 years of field experience in evaluation of Forestry works
2.	1st Core Team Member: B E (Civil) Engineer	With at least 3 years of field experience in related field
3	2nd Core team member First Class Post graduate in Sociology/ Social Work/ Rural Development.	With at least 3 years of field experience in related field
4.	3rdCore Team Member: Resource Analyst /Chartered Accountant/ Data Analyst with Post Graduate degree in Statistics/ Computer Science.	With at least 3 years of field experience

10. COST SCHEDULE OF BUDGET RELEASE :

Output based budget release will be as follows;

1. The first instalment of consultation fee amounting to 30% of the total fee shall be payable as advance to the consultant after the approval of the inception report, but only on execution of a bank guarantee of a scheduled nationalised bank, valid for a period of at least 12 months from the date of issuance of advance.

2. The second instalment of consultation fee amounting to 50% of the total fee shall be payable to the consultant after approval of the draft report.
3. The third and final instalment of consultation fee amounting to 20% of the total fee shall be payable to the consultant after the receipt of the hard and soft copies of the

final report in such format as prescribed in the agreement along with all original documents containing primary and secondary data, processed data outputs study report and soft copies of all literature used in the final report.

4. Taxes will be deducted from each payment as per rates in force. In addition the evaluating agency/ consultant is expected to pay service tax as their end.

11. SELECTION OF CONSULTANT AGENCY FOR EVALUATION:

The selection of evaluation agency shall be finalized as per provisions of KTPP Act and rules without compromising on the quality.

12. Contact person for further details:

- Nodal Officer, Forest Department, Government of Karnataka.
- Consultant (Evaluation) KEA

-Sd-
Chief Evaluation Officer
Karnataka Evaluation Authority

(Acl\,o. " '-"" -
ToR Prepared by
(Dr. Chaya Degaonkar)

Annexure-1

DETAILS OF SCHEMES TO BE EVALUATED

SCHEME-I: COMPENSATORY AFFORESTATION FUND MANAGEMENT & PLANNING AUTHORITY (CAMPA)

1. Introduction:

CAMPA has been constituted in pursuance of the Hon'ble Supreme Court's order dated 30-10-2002 in lA No.544, in Writ Petition(Civil) No. 202 of 1995 for the purpose of management of money collected towards Compensatory Afforestation (CA), Net Present Value (NPV) and any other money recoverable in pursuance of the Hon'ble Supreme Court's Order to this regard.

Ministry of Environment, Forest and Climate Change, (MOEFCC) Government of India has issued guidelines for operating the funds under State Compensatory Afforestation Fund Management and Planning Authority (CAMPA) for preservation of natural forests, management of wildlife, infrastructure development and other allied works.

The State CAMPA would administer the amount received from the Ad-hoc CAMPA and utilize the amount collected for undertaking Compensatory Afforestation, assisted natural regeneration, conservation and protection of forests, infrastructure development, wildlife c;_onservation and protection and other related activities and for matters connected therewith or incidental thereto.

2. The Major objectives of the State CAMPA Projects:

As per guidelines issued by the Ministry of Environment and Forests, Government of India, the State CAMPA shall seek to promote:

(a) Conservation, Protection, Regeneration and Management of existing natural forests;

(b) Conservation, Protection, and Management of wildlife and its habitat within and outside Protected Areas including the consolidation of the protected areas.

(c) Compensatory Afforestation

(d) Environmental services, which include:-

(i) Provision of goods such as wQod, non-timber forest products, fuel, fodder and water and provision •of services such as grazing, tourism, wildlife protection and life support;

(ii) Regulating Services such as climate regulation, disease control, flood moderation, detoxification, carbon sequestration and health of soils, air and water regimes;

(iii) Non-material benefits obtained from ecosystems, spiritual, recreational, aesthetic, inspirational, educational, symbolic and

(iv) Supporting such other services necessary for the production of ecosystem services, biodiversity, nutrient cycling and primary production.

(v) Research, training and capacity buildings. The project is implemented in all districts of the State. With the release of funds from Ad-hoc CAMPA, Government of India, the State CAMPA has embarked on a mission mode to take up Project Specific Activities i.e., Compensatory Afforestation & other Site-Specific Activities and Activities for utilization of NPV amount like Consolidation, Protection, Regeneration in natural Forests Wildlife Protection and Management activities, Infrastructure Development etc.

As envisaged by the Hon'ble Supreme Court of India and as per guidelines issued by the Ministry of Environment and Forests, Government of India, the main works taken up under State CAMPA are: -

3. Project Specific Activities:-

A. Compensatory Mforestation (CA), Additional CA (ACA) &Penal CA (PCA)

i) In Forest Land

ii) In Non-Forest Land

B. Site Specific Activities:

i) Safety Zone plantation

ii) Planting in degraded forest area (1½ times of safety zone)

iii) Fencing

iv) Catchment Area Treatment Plan (CATP)

v) Planting Dwarf Species

vi) Medicinal plantation

vii) Soil & Moisture Conservation works

viii) Providing LPG connection to local villagers etc.,

C. Activities for Utilization of NPV:-

I. Consolidation and protection of Forests:

a. Survey and demarcation of Forests

b. Forest boundary consolidation through Cattle Proof Trench (CPT)

c. Fire protection

d. Creation of lung spaces by protection and consolidation of valuable forest areas in the city's urban areas and developing them as Tree Parks.

II. Consolidation and Regeneration of Forests:

a. Assisted Natural Regeneration (ANR)

b. Promotion of Sandal Regeneration on estate management concept.

c. Production of Quality Planting Materials, collection of quality seeds and other Research activities.

d. Integrated plan for Conservation and Development of biodiversity, forests and ecology in the forest areas of coastal zone (HasiruKavacha)

III. Wildlife Protection and Management:

a. D-line clearance

b. Development & maintenance of road network in protected areas.

c. Elephant Human conflict mitigation measures (Areas outside & inside protected areas)

d. Elephant Proof Trench (EPT)

e. Solar Fencing

f. Assistance to Bannerghatta Biological Park

g. Wildlife Habitat Improvement & Management for individual Protected Area's (PA's)

i. Creation of new water holes

ii. De-silting of tanks

iii. Soil &Moisture Conservation (SMC) works

iv. Providing Salt licks

v. Elephant depredation camps/ Anti-poaching camps (APC's)

IV. Infrastructure Development:

a. Strengthening and augmenting digitization and Communication network;

i. Cell Phones

ii. Computers

iii. Laptop

h. Xerox Machines

i. GPS

j. Digital Cameras

k. Personal Digital Assistance (PDA)

b. New Buildings (Staff Quarters)

c. Building maintenance

d. Strengthening of Forest Institutes for capacity building.

e. Purchase of vehicles (Two Wheelers for Forests and Four Wheelers for Officers)

V. Forest Produce Saving devices & other activities:

a. Supply of energy saving devices at subsidized cost to forest fringe villages.

b. Maintenance of WP Samples Plots

c. Repair, Maintenance, & Office Expenditure (RMOE), Travelling Expenses (TE) etc.

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SCHEME- 2:13TH FINANCE COMMISSION (TFC)

1. Introduction:

Karnataka is pioneer in implementation of various Forestry Programs. The successful implementation of various programs with the assistance of State Government, Central Government and Externally Aided projects has added fillip to its efforts done so far in this field. Appreciating the implementation of these programs and preparation of working plan the Government of India under '13th Finance ' has come forward to support the Forest Department of Karnataka. The project is implemented in all districts of the State. With this assistance from the Government of India, the Forest Department has embarked on a mission mode to expand the Forest cover and strengthen the infrastructure of the department in all districts of the state.

2. The Major objectives of the 13th Finance projects:

The broad objectives of the grant-in-aid for forests are to provide the wherewithal for preservation, so as to halt and reverse past declines in the quantum and quality of area under forest: and to provide fiscal resources by which the state can enable alternative economic activities as a substitute for economic disability imposed by forest cover.

i. To increase the Forest Cover of the state
ii. To improve the infrastructure of the department especially for front line staff
iii. To improve the mobility of the Field Staff through induction of vehicles
iv. Use of modern technology like GIS through ICT (Information, Communication &Technology) etc)
v. Enhance protection mechanism for forest & wildlife

3. Project Specific Activities:

1. Advance works for Plantation

2. Raising of Plantation

3. Maintenance of Plantation

4. Development of Central Nursery

5. Development & maintenance of Sandal & Medicinal Plant Estate

4. Habitat Improvement

7. Support to ANR to Special such as Dindiga/ Caned regeneration

8. Raising/Maintenance of Seedlings of Polythene Bags (PBs)

9. Eco-Tourism Development

10. KaravaliHasiruKavachaYojane

11. Renewable Energy

12. Research & Utilization Activities

13. Training activities for forest staff

14. ICT, Mobility, Publicity & Other Infrastructure Developments in HQs

15. Building infrastructure development works (Civil Works)

14. Publicity, Awareness, Training, etc.,

17. Working Plan Activities

18. Fixing/Creating/Formations Cairns

19. Establishment & Maintenance of Protection Camps like Forest PC, Anti-Poaching C mps, Anti-Smuggling Camps, Anti-depredation camps etc

20. Boundary Consolidation including D-line clearance, CPT and Boundary Walls.

21. Vehicle Maintenance.

22. Purchase of Laptop, Desktops, related accessories and other ICT Requirements

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SCHEME-3 :NATIONAL AFFORESTATION PROGRAM-FOREST DEVELOPMENT AGENCY (NAP- FDA)

Objectives of the Scheme

i. **Goal:**

Increase and/ or improve Forest and Tree cover (FTC)

ii. **Purpose:**

Rehabilitation of degraded forests and other areas by institutionalizing decentralized/ participatory forest management and supplementing livelihoods improvement processes.

iii. The activities involved and the outputs of NAP-FDA scheme are as follows;

Outputs	Activities
(a) Improved natural forest stock	Assisted natural regeneration of degraded areas
Increased and improved FTC	(a)Artificial regeneration and Enrichment planting. (b) Promotion of Non-Timber forest Products (NTFPs)
(c)Participatory forest management initiated by supporting the immediate needs of fringe-community	Entry Point Activities
(d)Long -term participation of fringe-community in forest management	(a)Participatory-micro-planning, implementation and monitoring of projects (b) Flexible project design and cost Norms
(e)Increased Soil and Moisture Conservation (SMC)	Biological SMC supplemented by physical SMC treatment as per local site condition.
(f) Improved forest/ tree productivity	Promotion and use of improved technologies and high-quality planting material.
(g)Increased capacity of fringe community and frontline staff to develop and manage natural resources	Awareness generation, training and linkage with other institutions
(h)Enhanced opportunity for local forest-based micro enterprises	Value-addition and marketing of forest produce from project area
(i) Review and independent monitoring processes internalized	Bottom-up internal monitoring of projects and independents third party concurrent and final evaluations of each project
G)Tree cover in non-forest areas promoted	(a) Agro-forestry on bunds and farmlands (b)Coastal shelterbelt and tank foreshore plantations on public and private lands.

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SCHEME-4: NATIONAL B MBOO MISSION (NBM)

Mission Objectives:

- To promote the growth of the bamboo sector through an area based regionally differentiated strategy
- To increase the coverage of area under bamboo in potential areas, with suitable species to enhance yields.
- To promote marketing of bamboo and bamboo- based handicrafts.
- To establish convergence and synergy among stakeholders for the development of bamboo.
- To promote, develop and disseminate technologies through a seamless blend of traditional wisdom and modern scientific knowledge.
- To generate employment opportunities for skilled and unskilled persons, especially unemployed youths.

Strategy:

To achieve the above objectives, the mission would adopt the following strategies:

- Adopt a coordinated approach covering production and marketing to assure appropriate returns to growers/ producers.
- Promote Research and Development (R&D) of genetic superior clones of suitable species and technofogies for enhanced production.
- Enhance acreage (in forest and non-forest areas) and productivity of bamboo through species change and improved cultural practices.
- Promote partnership, convergence and synergy among R&D and marketing agencies in public as well as private sectors, at all levels.
- Promote where appropriate, cooperatives and self-help groups ensure support and adequate returns to farmers.
- Facilitate capacity-building and Human Resources Development.
- Set up National, State and sub State Level Structures, to ensure adequate returns for the produce of the farmers and eliminate middlemen, to the extent possible.

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Annexure 2

List of Plantations sampled

Sl. No.	Circle	Division	Sub-Division	Range	Plantation Name	Year of Planting	Net Plantation Area HA
1	Ballari	Chitradurga T	Chitradurga T	Holalkere T	Thodarnal Campa Plantation	2015-16	11.98
2	Ballari	Chitradurga T	Chitradurga T	Chitradurga T	Kennadlu	2016-17	25
3	Mangaluru	Kundapura T	Moodabidre T	Hebri T	ANR	2014-15	10
4	Shivamogga	Sagara T	Sagara T	Anandpura T,Choradi	Yadehalli Thavarehalli	2015-16	25
5	Ballari	Koppal T	Gangavathi T	Gangavathi T	Kanneramadu	2016-17	25
6	Belagavi	Belagavi T	Belagavi T	Gujnal T	Nandhi plantation	2016-17	15
7	Chikkamagaluru	Chikkamagaluru T	Moodigere T	Aldur T	saragodu sy No 179, Koove sy No 256	2016-17	25
8	Chikkamagaluru	Chikkamagaluru T	Chikkamagaluru T	Chikkamagaluru T	Kalasapura SF-Shettykere Block	2014-15	25
9	Chikkamagaluru	Koppa T	Balehonnur T	Sringeri T	Addagadde-kavalakodige block	2016-17	15
10	Mangaluru	Mangaluru T	Subramanya T	Panja T	ANR plantation of 2015(Misc.)	2015-16	10
11	Shivamogga	Sagara T	Sagara T	Kargal T	kudururu sy 280,502	2015-16	25
12	Belagavi	Belagavi T	Khanapur T	Khanapur T	Alloli kanasoli	2015-16	25

Annexure

Sl. No.	Circle	Division	Sub-Division	Range	Plantation Name	Year of Planting	Net Plantation Area HA
13	Shivamogga	Bhadravathi T	Channagiri T	Bhadravathi T	Kottadal campa platation	2011-12	19.6
14	Bengaluru	Kolar T	Kolar T	Srinivasapura T	Jinagalakunte	2016-17	25
15	Shivamogga	Bhadravathi T	Channagiri T	Channagiri T	Agave planting on CPT at ajjihalli sy no4	2015-16	2.5
16	Dharwada	Dharwada T	Kalaghatagi T	Kalaghatagi T	Campa siddanabavi	2013-14	25
17	Ballari	Ballari T	Kudligi T	Kudligi T	Advance works	2017-18	25
18	Bengaluru	Kolar T	Bangarpet T	Malur T	Palamadagu	2013-14	5.87
19	Ballari	Ballari T	Kudligi T	Gudekote T	Palamadagu	2017-18	25
20	Ballari	Ballari T	Ballari T	Ballari T	Kudutini Sy No. 1251	2014-15	13
21	Belagavi	Belagavi T	Khanapur T	Kanakumbi T	Amagao Rsy no 7/p 27	2014-15	5
22	Dharwada	Ranebennur Wl	Ranebennur Wl	Ranebennur Wl	Gudagur	2015-16	25
23	Kalaburgi	Raichur T	Raichur T	Devadurga T	Samudra	2014-15	25
24	Bengaluru	Chikaballapura T	Chikaballapura T	Chikkaballapura T	Chadumanahalli	2014-15	25
25	Ballari	Ballari T	Ballari T	Ballari T	Nadavi Sy no. 397, 521 & 522	2014-15	10.5
26	Mysuru	Mysuru T	H.D Kote T	Sargur T	Koolya	2015-16	25
27	Bengaluru	Chikaballapura T	Chintamani T	Bagepalli T	Honnampalli	2014-15	15
28	Mysuru	Mandya T	Mandya T	Maddur T	Tippurgudda planataion	2016-17	6

Sl. No.	Circle	Division	Sub-Division	Range	Plantation Name	Year of Planting	Net Plantation Area HA
29	Uttara Kannada	Karwar T	Karwar T	Karwar T	Arga F S no52A	2015-16	1
30	Kalaburgi	Kalaburgi T	Kalaburgi T	Kalaburgi T	Raising of plantation ANR Model	2015-16	15
31	Uttara Kannada	Sirsi T	Sirsi T	Sirsi T	Landaknalli Plantation	2014-15	15
32	Kalaburgi	Kalaburgi T	Kalaburgi T	Chincholi T	Kodli	2014-15	25
33	Uttara Kannada	Honnavara T	Kumta T	Katgal T	Sandalli-Mattalli	2013-14	15
34	Uttara Kannada	Haliyala T	Haliyala T	Bhagawati T	Campa ssa model	2015-16	3
35	Uttara Kannada	Honnavara T	Honnavara T	Gerusoppa T	Herangadi-204	2012-13	5
36	Uttara Kannada	Sirsi T	Sirsi T	Banavasi T	Shivalli	2014-15	10
37	Hassana	Hassana T	Channarayapattana T	Arasikere T	Belavathally	2015-16	8.5
38	Uttara Kannada	Karwar T	Ankola T	Mastikatta T	Hebbul Eco-Restortion Model-I	2015-16	20
39	Uttara Kannada	Yellapur T	Manchikeri T	Manchikeri T	Bendigeri sno. 17	2016-17	20
40	Uttara Kannada	Yellapur T	Yellapur T	Yellapur T	Chikkamavalli	2017-18	25
41	Hassana	Tumkur T	Tiptur T	Chikkanayakanahalli T	Belavadi NW extension	2016-17	25

Annexure

Sl. No.	Circle	Division	Sub-Division	Range	Plantation Name	Year of Planting	Net Plantation Area HA
42	Kodagu	Madikeri T	Somawarapete T	Kushalanagara T	Bendebetta Beat , Bollur	2013-14	15
43	Mangaluru	Karkala Wl	Siddhapura Wl	Siddhapura Wl,Hebri	Yellabere bit 3.baregundi	2013-14	10
44	Mangaluru	Kundapura T	Moodabidre T	Venoor T	ANR plantation	2014-15	15
45	Uttara Kannada	Sirsi T	Janmane T	Janmane T	Mathigar FS No. 266	2015-16	10
46	Mangaluru	Mangaluru T	Subramanya T	Subramanya T	Puttige-Udane	2016-17	25
47	Bengaluru	Kolar T	Bangarpet T	Bangarpet T	Balamande	2014-15	16.19
48	Chikkamagaluru	Chikkamagaluru T	Moodigere T	Aldur T	Kundur Sy.no.225 Battaragadde block-2	2015-16	25
49	Shivamogga	Bhadravathi T	Channagiri T	Bhadravathi T	Dodderi	2013-14	15
50	Shivamogga	Bhadravathi T	Channagiri T	Shanthisagara T	Revised Bsavapura sy no-10, 12-02-2020	2013-14	2.5
51	Shivamogga	Shivamogga T	Thirthahalli T	Mandagadde T	Mrugavadhe (Ballikudige Block)Sy no.63	2016-17	25
52	Ballari	Ballari T	Ballari T	Ballari T	Revised Thumati 106 C/2	2016-17	9.33
53	Chikkamagaluru	Koppa T	Balehonnur T	Kalasa T	Balige Kadive	2015-16	10

Sl. No.	Circle	Division	Sub-Division	Range	Plantation Name	Year of Planting	Net Plantation Area HA
54	Uttara Kannada	Haliyala T	Haliyala T	Haliyala T	Golehalli FS 76 and Malawadi FS 27	2015-16	6.13
55	Ballari	Ballari T	Ballari T	Ballari T	Revised Mincheri RF	2017-18	25
56	Belagavi	Belagavi T	Nagargali T	Nagargali T	Katajagi revice	2014-15	20
57	Dharwada	Gadag T	Gadag T	Shirahatti T	Revised chabbi 247,248	2013-14	25
58	Dharwada	Dharwada T	Dharwada T	Dharwada T	Revised hulkoppa	2013-14	25
59	Dharwada	Dharwada T	Dharwada T	Dharwada T	Revised mummigatti .60	2012-13	8.1
60	Dharwada	Dharwada T	Dharwada T	Dharwada T	Revised kedanatti	2013-14	6.72
61	Kalaburgi	Kalaburgi T	Kalaburgi T	Kalaburgi T	Kalmandargi	2015-17	11

Annexure 3

List of Other Works sampled

Sl. No.	Circle	Division	Sub-division	Range	Work_Name	Work_Location	Execution year
1	Bengaluru	Bengaluru Rural T	Doddaballapura T	Devanahalli T	Cattle Proof Trench	B.S.Gidakaval Gollahalli & Narayanapura Side	2013-14
2	Bengaluru	Bengaluru Rural T	Doddaballapura T	Devanahalli T	Others	RF Board In Akkupet , Savaknahalli, Koramangala	2014-15
3	Bengaluru	Bengaluru Rural T	Doddaballapura T	Doddaballapura T	Cattle Proof Trench	Excavation Of Cpt In Ujjani Sf In Doddaballapura Range	2013-14
4	Bengaluru	Kolar T	Kolar T	Malur T	Chain Link Mesh	Teri Office	2013-14
5	Bengaluru	Chikaballapura T	Chintamani T	Bagepalli T	Cattle Proof Trench	Cpt At Paragodu	2013-14
6	Bengaluru	Chikaballapura T	Chintamani T	Bagepalli T	Others	RF Board At Yallampalli State Forest	2013-14
7	Bengaluru	Chikaballapura T	Chikaballapura T	Chikkaballapura T	Cattle Proof Trench	K S Gida	2014-15
8	Bengaluru	Chikaballapura T	Chikaballapura T	Chikkaballapura T	Cattle Proof Trench	Kalavara Sy No 129	2015-16
9	Chamarajanagara	M.M Hills Wildlife,Kollegala	M.M Hills Wl	M.M Hills Wl	Desilting Of Tank	Kokkobore	2014-15

Sl. No.	Circle	Division	Sub-division	Range	Work_Name	Work_Location	Execution year
10	Chamarajanagara	M.M Hills Wildlife,Kollegala	M.M Hills Wl	M.M Hills Wl	Forest Road	Ponachi Cross To Erkeyam	2014-15
11	Chamarajanagara	Cauvery Wl	Hanur Wl	Cowdally Wl	Others	Uranayakanakare To Andainayakanadoddi	2014-15
12	Chamarajanagara	Cauvery Wl	Hanur Wl	Cowdally Wl	Desilting Of Tank	Karidikere Channur Beat	2013-14
13	Chamarajanagara	Cauvery Wl	Hanur Wl	Hanur Wl	Others	Chilla Apc To Tellanuru D Line	2014-15
14	Chamarajanagara	Cauvery Wl	Hanur Wl	Hanur Wl	Forest Road	Rachhapana Thota D Line To Huccharakatte Dimbu	2013-14
15	Chamarajanagara	Cauvery Wl	Hanur Wl	Hanur Wl	Others	Bellibasapanna Halla To Ganigamangala Danada Dari	2014-15
16	Chamarajanagara	Cauvery Wl	Kanakapura Wl	Halagur Wl	Others	Basavanahalli Road To Gundapura	2013-14
17	Chamarajanagara	Cauvery Wl	Kanakapura Wl	Halagur Wl	Desilting Of Tank	Kalachandana Kere	2014-15
18	Chamarajanagara	Cauvery Wl	Kanakapura Wl	Halagur Wl	Others	Bheemeshwari	2014-15
19	Chamarajanagara	Cauvery Wl	Kanakapura Wl	Halagur Wl	Check Dam	Handihalla Near Harihara Check Post	2015-16
20	Chamarajanagara	Cauvery Wl	Kanakapura Wl	Halagur Wl	Forest Road	Muttatti To Konanagundi	2015-16
21	Chamarajanagara	M.M Hills Wildlife,Kollegala	M.M Hills Wl	M.M Hills Wl	Forest Road	Marur To Ponnachiboli	2015-16
22	Chamarajanagara	M.M Hills Wildlife,Kollegala	Hanur Wl	Hanur Buffer	Desilting Of Tank	Bavihalla Of Lokkanahalli Cpt 104	2013-14
23	Fdpt, Mysuru	Bandipur Tr	Bandipur Tr	Bandipur	Check Dam	Construction Of Check Dam Near Chandrakala Circle	2015-16

Annexure

Sl. No.	Circle	Division	Sub-division	Range	Work_Name	Work_Location	Execution year
24	Fdpt, Mysuru	Bandipur Tr	Gundlupete	Omkara	Forest Road	Mahadeswara Temple, Huthada Circle	2014-15
25	Fdpt, Mysuru	Bandipur Tr	Hediyala	Moliyur	Desilting Of Tank	Shigevadi Kalachi (Kadagada Mara)	2013-14
26	Fdpt, Mysuru	Bandipur Tr	Gundlupete	Omkara	Desilting Of Tank	Muttigemarada Katte	2014-15
27	Fdpt, Mysuru	Bandipur Tr	Hediyala	Moliyur	Desilting Of Tank	Widening And Strengthening Of Existing Waterhole At Sebugere	2015-16
28	Fdpt, Mysuru	Bandipur Tr	Gundlupete	Omkara	Check Dam	Paladahalla Bridge	2014-15
29	Fdpt, Mysuru	Hunsur Wl(Nagarhole Tr/Ragiv Gandhi Np)	Metikuppe Wl	Metikupe Wl	Forest Road	Dammanakatte To Udboor Road And Russel Line	2015-16
30	Fdpt, Mysuru	Hunsur Wl(Nagarhole Tr/Ragiv Gandhi Np)	Metikuppe Wl	Metikupe Wl	Desilting Of Tank	Yarekatte (Kallahalla Kere)	2014-15
31	Bengaluru	Kolar T	Kolar T	Malur T	Cattle Proof Trench	Ksf 3rd And 4th	2014-15
32	Bengaluru	Bengaluru Urban T	Bengaluru North T	Yelahanka T	Others	Fixing Of RF Boards In Marasandra	2015-16
33	Bengaluru	Bengaluru Urban T	Bengaluru South T	K.R Puram T	Others	Fixing Of RF Board At Mandur Jyothipura RF	2015-16
34	Bengaluru	Bengaluru Urban T	Bengaluru South T	Anekal T	Others	Bhutanahalli, Bidarakadanahalli, Kumbaranahalli	2014-15
35	Bengaluru	Bannerghatta National Park	Bannerghatta National Park	Anekal Wl	Others	Thattekere Apc	2015-16
36	Bengaluru	Bannerghatta National Park	Bannerghatta National Park	Anekal Wl	Others	RF Boards In Anekal Wl Range	2013-14

Sl. No.	Circle	Division	Sub-division	Range	Work_Name	Work_Location	Execution year
37	Bengaluru	Bannerghatta National Park	Bannerghatta National Park	Anekal Wl	Desilting Of Tank	Desilting And Streghtening Tank Bund At Jambakere	2013-14
38	Bengaluru	Bannerghatta National Park	Bannerghatta National Park	Anekal Wl	Others	Kanivegate Madapura Road To Mullukere Right & Left Side	2015-16
39	Bengaluru	Bannerghatta National Park	Bannerghatta National Park	Bannerghatta Wl	Desilting Of Tank	Desilting Of Tank At Ramaswamy Kere	2013-14
40	Bengaluru	Bannerghatta National Park	Bannerghatta National Park	Bannerghatta Wl	Others	Elephant Proof Barriers At Hakkipikki Colony Spike Gate Doddabande To Tharemara	2015-16
41	Bengaluru	Bannerghatta National Park	Bannerghatta National Park	Bannerghatta Wl	Forest Road	Maintenance Of Road From Kalyani To Balanakunte	2015-16
42	Bengaluru	Bannerghatta National Park	Bannerghatta National Park	Bannerghatta Wl	Others	Ragihalli	2015-16
43	Mangaluru	Mangaluru T	Mangaluru T	Bantwala T	Cattle Proof Trench	Kavalamudur, Block-1	2014-15
44	Mangaluru	Mangaluru T	Mangaluru T	Bantwala T	Others	Badagakajekar Block, Maninalkur Block 1 & 2, Uli Block 2	2015-16
45	Mangaluru	Mangaluru T	Puttur T	Puttur T	Cattle Proof Trench	Forest Boundary Consolidation On Through Cpt @ Kaniyarumale RF, Bairikatte Locality	2014-15
46	Mangaluru	Mangaluru T	Puttur T	Puttur T	Others	RF Board/ Hoardings @ Kalanjimale RF, Anegundi RF, Kanakamajalu RF, Parappa RF, Jalsur East & West RF	2014-15
47	Mangaluru	Mangaluru T	Puttur T	Puttur T	Cattle Proof Trench	Forest Boundry Consolidation On Through Cpt @ Erembathotti-Anavu Gudde Of Punacha Block	2015-16
48	Mangaluru	Kundapura T	Kundapura T	Kundapur T	Others	RF Boards At Harmanpare Extension Block, Kedur Block	2015-16

Annexure

Sl. No.	Circle	Division	Sub-division	Range	Work_Name	Work_Location	Execution year
49	Mangaluru	Kundapura T	Kundapura T	Byndoor T	Others	RF Boards At Savanthgudde RF Extension Block	2013-14
50	Mangaluru	Kundapura T	Kundapura T	Byndoor T	Others	RF Boards/ Hoarding At Kalthodu Block	2014-15
51	Mangaluru	Kundapura T	Kundapura T	Byndoor T	Cattle Proof Trench	Cpt At Byndoor Extension Block, Othinana	2015-16
52	Mangaluru	Karkala Wl	Kudremukh Wl	Karkala Wl	Forest Road	Maintenance Of Road In Protected Area From Mullur To Berkala	2014-15
53	Mangaluru	Karkala Wl	Kudremukh Wl	Karkala Wl	Desilting Of Tank	Desilting Of Water Tank At Mittalanda	2015-16
54	Mangaluru	Karkala Wl	Kudremukh Wl	Karkala Wl	Desilting Of Tank	Desilting Of Water Tanks At Raodakalkodi	2014-15
55	Mangaluru	Karkala Wl	Kudremukh Wl	Karkala Wl	Others	RF Boards/ Hoardings At Mutlupady	2013-14
56	Mangaluru	Karkala Wl	Kudremukh Wl	Karkala Wl	Cattle Proof Trench	Formation Of Cpt At Pelataje	2015-16
57	Mangaluru	Karkala Wl	Kudremukh Wl	Kerekatte Wl	Desilting Of Tank	Desilting Of Water Tanks At Valakunja, Muduba Village	2014-15
58	Mangaluru	Karkala Wl	Kudremukh Wl	Kerekatte Wl	Forest Road	Maintenance Of Existing Patrolling Path From Soojigudda-Manikyabailu & Kere Village	2013-14
59	Mangaluru	Karkala Wl	Kudremukh Wl	Kerekatte Wl	Forest Road	Maintenance Of Existing Patrolling Path From Machangudda, Kere Village	2015-16
60	Mangaluru	Karkala Wl	Kudremukh Wl	Kerekatte Wl	Others	RF Board At Hanumangundi And Kigga	2015-16
61	Mangaluru	Karkala Wl	Siddhapura Wl	Someshwara Wl	Cattle Proof Trench	Formation Of Cpt From Main Road To Chandukundu, Hebri Village	2014-15
62	Mangaluru	Karkala Wl	Siddhapura Wl	Someshwara Wl	Cattle Proof Trench	Formation Of Cpt From Thenkola To Doopadakatte, Belinje Village	2013-14

Sl. No.	Circle	Division	Sub-division	Range	Work_Name	Work_Location	Execution year
63	Mangaluru	Karkala Wl	Siddhapura Wl	Someshwara Wl	Desilting Of Tank	Desilting Of Water Tank At Nadugudde, Thenkola	2015-16
64	Mangaluru	Karkala Wl	Siddhapura Wl	Someshwara Wl	Desilting Of Tank	Desilting Of Water Tank At Ikkodlu	2015-16
65	Mangaluru	Karkala Wl	Siddhapura Wl	Someshwara Wl	Desilting Of Tank	Desilting Of Tank At Rushikone, Ballimane, Madamakki Village	2013-14
66	Mangaluru	Karkala Wl	Kudremukh Wl	Kudremukh Wl	Forest Road	Maintenance Of Patrolling Path At Sujigudda Near Kere To Govugudda	2014-15
67	Mangaluru	Karkala Wl	Kudremukh Wl	Kudremukh Wl	Forest Road	Maintenance Of Patrolling Path At Ganapathikatte	2013-14
68	Mangaluru	Karkala Wl	Kudremukh Wl	Kudremukh Wl	Desilting Of Tank	Desilting Of Water Tank At Bhagavathi	2015-16
69	Belagavi	Vijayapura T	Vijayapura T	Vijayapura T	Others	Mamdapur	2013-14
70	Belagavi	Bagalkote T	Bagalkote T	Bagalkote T	Others	Timmapur	2013-14
71	Belagavi	Bagalkote T	Bagalkote T	Badami T	Others	Nagaral Sb	2014-15
72	Belagavi	Bagalkote T	Bagalkote T	Badami T	Others	Nagaral Sb	2013-14
73	Belagavi	Belagavi T	Belagavi T	Kakati T	Cattle Proof Trench	Aldal,Bidrewadi,Nagnoor	2013-14
74	Mangaluru	Karkala Wl	Kudremukh Wl	Kudremukh Wl	Desilting Of Tank	Desilting Of Tank At Mining Area	2013-14
75	Kodagu	Virajpete T	Thithimathi T	Ponnampet T	Cattle Proof Trench	Forest Boundary Consolidation Through Cpt @ Halligattu, Thithimati	2015-16
76	Kodagu	Madikeri Wl	Madikeri Wl	Sreemangala Wl	Others	Fixing Of RF Boards @Kurchi/ Beenuga Village	2013-14
77	Kodagu	Madikeri Wl	Madikeri Wl	Sreemangala Wl	Others	Excavation Of Ept Of 0.18kms @ Pongarumadu- Kokka	2014-15

Annexure

Sl. No.	Circle	Division	Sub-division	Range	Work_Name	Work_Location	Execution year
78	Kodagu	Madikeri Wl	Madikeri Wl	Talakaveri Wl,Bhagamandala	Desilting Of Tank	Desilting Of Water Hole @ Mulemotte Tank	2015-16
79	Uttara Kannada	Honnavara T	Honnavara T	Gerusoppa T	Others	School Nursery, Ghps Nagare Ii, Gersoppa Honnavara	2015-16
80	Kodagu	Madikeri T	Somawarapete T	Kushalanagara T		Solar Fencing @ Anekadu Section, Around Mavinalla Nursury Side	2015-16
81	Kodagu	Madikeri Wl	Madikeri Wl	Brahmagiri Wl Range, Makutta	Forest Road	Maintenance Of Existing Forest Roads @ Makutta To Sollekolli Sollekolli To Androus Hole Kokka To Pattimale	2014-15
82	Hassana	Hassana T	Hassana T	Hassana T	Cattle Proof Trench	Idalla Forest	2015-16
83	Chikkamagaluru	Bhadra Wl	Lakkavalli Wl	Lakkavalli Wl	Others	University Compound To Malligenahalli	2013-14
84	Chikkamagaluru	Bhadra Wl	Lakkavalli Wl	Lakkavalli Wl	Check Dam	Chowdikatte Halla Changed To Tammadihalla	2014-15
85	Shivamogga	Bhadravathi T	Tarikere T	Tarikere T	Cattle Proof Trench	Kuntinamadu	2015-16
86	Shivamogga	Shivamogga T	Ayanur T	Rippanpet T	Others	Kenchanala RF	2013-14
87	Shivamogga	Shivamogga T	Ayanur T	Rippanpet T	Others	Yogimalalli Mf	2013-14
88	Shivamogga	Shivamogga T	Thirthahalli T	Mandagadde T	Others	Manikoppa B-Ii	2013-14
89	Shivamogga	Shivamogga T	Thirthahalli T	Mandagadde T	Others	Shedgar Section Mrugavadhe	2014-15
90	Shivamogga	Shivamogga T	Thirthahalli T	Mandagadde T	Others	Shedgar B-1 Sy No.80	2013-14

Sl. No.	Circle	Division	Sub-division	Range	Work_Name	Work_Location	Execution year
91	Shivamogga	Shivamogga T	Thirthahalli T	Mandagadde T	Others	Manikoppa B-1, Sy No.19	2013-14
92	Shivamogga	Bhadravathi T	Tarikere T	Lakkavalli T	Cattle Proof Trench	Gopala (Siddeshwara)	2015-16
93	Shivamogga	Bhadravathi T	Tarikere T	Lakkavalli T	Others	Gurpura & Karkuchi Sf	2014-15
94	Shivamogga	Shivamogga T	Ayanur T	Rippanpet T	Others	Masaruru Sf	2013-14
95	Shivamogga	Shivamogga Wl	Shivamogga Wl	Shivamogga Wl	Desilting Of Tank	Hunsemarakere	2015-16
96	Shivamogga	Sagara T	Hosanagara T	Hosanagara T	Others	RF Boards @ Huligadde, Hosanagara	2013-14
97	Shivamogga	Sagara T	Sagara T	Anandpura T,Choradi	Others	RF Boards @ Konehosur, Chordi	2014-15
98	Shivamogga	Sagara T	Sagara T	Anandpura T,Choradi	Cattle Proof Trench	Cpt Works @ Adur	2014-15
99	Shivamogga	Shivamogga T	Thirthahalli T	Mandagadde T	Others	Mrugavadhe Sy No.24	2013-14
100	Chikkamagaluru	Koppa T	Balehonnur T	Sringeri T	Cattle Proof Trench	Digging Of Cpt At Melbilre	2015-16
101	Chikkamagaluru	Koppa T	Balehonnur T	Kalasa T	Others	Providing And Fixing Of RF Boards At Karimane Kalgodu Reserve Block	2014-15
102	Chikkamagaluru	Koppa T	Balehonnur T	Kalasa T	Others	Providing RF Boards At Devarabetta RF	2014-15
103	Chikkamagaluru	Chikkamagaluru T	Chikkamagaluru T	Chikkamagaluru T	Cattle Proof Trench	Excavation Of Cpt @ Kamanahalli RF	2015-16
104	Chikkamagaluru	Chikkamagaluru T	Chikkamagaluru T	Chikkamagaluru T	Percolation Ponds	Construction Of Sunken Pond At Kamanahalli Survey No.1	2013-14

Annexure

Sl. No.	Circle	Division	Sub-division	Range	Work_Name	Work_Location	Execution year
105	Chikkamagaluru	Chikkamagaluru T	Chikkamagaluru T	Chikkamagaluru T	Elephant Proof Trench	Excavation Of Ept @ Kamanahalli Sf	2013-14
106	Chikkamagaluru	Chikkamagaluru T	Chikkamagaluru T	Chikkamagaluru T	Elephant Proof Trench	Excavation Of Ept At Hulikallappa Temple To Neergundi, Kamanahalli	2014-15
107	Chikkamagaluru	Chikkamagaluru T	Moodigere T	Aldur T	Cattle Proof Trench	Cpt At Chithuvalli Village Survey Number 198	2015-16
108	Chikkamagaluru	Chikkamagaluru T	Moodigere T	Aldur T	Cattle Proof Trench	Cpt At Chithuvalli Survey Number 49 And 50	2015-16
109	Chikkamagaluru	Chikkamagaluru T	Moodigere T	Aldur T	Cattle Proof Trench	Cpt At Kesavinahaklu Around C.A. Suresh Gowda Coffe Plantation To Saragod D Line	2013-14
110	Uttara Kannada	Sirsi T	Sirsi T	Banavasi T	Cattle Proof Trench	Vadageri F. Sy. 15	2014-15
111	Uttara Kannada	Sirsi T	Janmane T	Hulekal T	Others	Bakkal Botanical Garden	2014-15
112	Uttara Kannada	Sirsi T	Janmane T	Janmane T	Cattle Proof Trench	Devimane F.Sy. 21, 4	2014-15
113	Uttara Kannada	Sirsi T	Janmane T	Janmane T	Percolation Ponds	Hebre F. Sy. No. 41	2015-16
114	Uttara Kannada	Honnavara T	Honnavara T	Honnavara T	Cattle Proof Trench	Cpt At Hodkeshiroor 161-I	2015-16
115	Uttara Kannada	Honnavara T	Honnavara T	Honnavara T	Others	Construction Of Steps At Apsarakonda Beach	2015-16
116	Uttara Kannada	Honnavara T	Honnavara T	Honnavara T	Others	Staggered Trench At Salkod-385	2014-15
117	Uttara Kannada	Honnavara T	Honnavara T	Honnavara T	Others	Hirebail-4	2014-15
118	Uttara Kannada	Honnavara T	Honnavara T	Honnavara T	Others	Staggered Trench At Heribail --7	2014-15

Sl. No.	Circle	Division	Sub-division	Range	Work_Name	Work_Location	Execution year
119	Uttara Kannada	Honnavara T	Honnavara T	Gerusoppa T	Gully Checks	Saralagi 70 And 72	2015-16
120	Uttara Kannada	Honnavara T	Honnavara T	Gerusoppa T	Cattle Proof Trench	Nagarabasthikeri-340	2013-14
121	Uttara Kannada	Karwar T	Karwar T	Karwar T	Cattle Proof Trench	Cpt Work @ Shirve Fsy 69 & Mallapur 68 & 6	2013-14
122	Uttara Kannada	Yellapur T	Manchikeri T	Manchikeri T	Cattle Proof Trench	Bilki	2014-15
123	Uttara Kannada	Karwar T	Ankola T	Mastikatta T	Others	Smc Works @ Dongri Fs No. 81	2014-15
124	Uttara Kannada	Karwar T	Karwar T	Gopshitta T	Cattle Proof Trench	Cpt Works @ Kanasgeri Fs 905 & 164 A, Kolage Fs 289 & 69	2015-16
125	Uttara Kannada	Karwar T	Karwar T	Gopshitta T	Others	Smc Work @ Bhaira Fs No 171	2015-16
126	Uttara Kannada	Karwar T	Karwar T	Gopshitta T	Cattle Proof Trench	Cpt Work @ Chittakula - Kolge Fsy 905	2013-14
127	Uttara Kannada	Honnavara T	Kumta T	Hiregutti T	Cattle Proof Trench	Devigaddi (Fs No 14a)	2014-15
128	Uttara Kannada	Honnavara T	Kumta T	Hiregutti T	Cattle Proof Trench	Kyakanishivpur (Fs 96) Moralli 51	2014-15
129	Uttara Kannada	Honnavara T	Kumta T	Hiregutti T	Cattle Proof Trench	Sagadgeri 43 Kamage 97 (Fs 97)	2015-16
130	Uttara Kannada	Yellapur T	Manchikeri T	Idugundi T	Others	Kumbarkuli	2013-14
131	Uttara Kannada	Yellapur T	Manchikeri T	Idugundi T	Cattle Proof Trench	Telangar	2014-15
132	Uttara Kannada	Yellapur T	Manchikeri T	Idugundi T	Cement/Concrete Road	Chinnapur	2013-14
133	Uttara Kannada	Yellapur T	Manchikeri T	Idugundi T	Cattle Proof Trench	Vajralli 34-21	2014-15

Annexure

Sl. No.	Circle	Division	Sub-division	Range	Work_Name	Work_Location	Execution year
134	Uttara Kannada	Yellapur T	Yellapur T	Yellapur T	Cattle Proof Trench	Chippinagadde	2015-16
135	Uttara Kannada	Yellapur T	Yellapur T	Yellapur T	Cattle Proof Trench	Hubbanalli	2014-15
136	Uttara Kannada	Honnavara T	Kumta T	Kumta T	Cattle Proof Trench	Morse 36	2014-15
137	Uttara Kannada	Honnavara T	Kumta T	Kumta T	Cattle Proof Trench	Chimmolli 10	2014-15
138	Uttara Kannada	Honnavara T	Bhatkala T	Bhatkala T	Others	Ecoshop Construction At Hadin Eco Beach	2015-16
139	Uttara Kannada	Honnavara T	Bhatkala T	Bhatkala T	Others	Barbed Wire Fencing Around The Beach At Hadin Eco Beach	2015-16
140	Uttara Kannada	Honnavara T	Bhatkala T	Bhatkala T	Others	Formation/Construction Of Entrance Gate At Hadin Eco Beach	2015-16
141	Uttara Kannada	Honnavara T	Bhatkala T	Bhatkala T	Others	Staggered Trench At Henjale -17, Hasrolli	2014-15
142	Uttara Kannada	Haliyala T	Dandeli T	Dandeli T	Cattle Proof Trench	Kerwad Comptt V6	2014-15
143	Uttara Kannada	Haliyala T	Dandeli T	Dandeli T	Cattle Proof Trench	Cpt At Usoda Campp No.Vi-30	2013-14
144	Uttara Kannada	Haliyala T	Haliyala T	Haliyala T	Cattle Proof Trench	Cpt At Dongrikopra F Sy. 37 A	2015-16
145	Uttara Kannada	Haliyala T	Haliyala T	Haliyala T	Cattle Proof Trench	Cpt At Neralga F Sy No.33	2015-16
146	Uttara Kannada	Haliyala T	Haliyala T	Sambrani T	Cattle Proof Trench	Gardolli F Sy No 13	2014-15
147	Uttara Kannada	Haliyala T	Haliyala T	Sambrani T	Cattle Proof Trench	Gardolli Fs No13 & Kalginatti F S No 13	2014-15
148	Uttara Kannada	Dandeli Wl	Dandeli Wl	Pansoli Wl	Forest Road	Shiroli Beat To Kalamkhanda	2015-16

Sl. No.	Circle	Division	Sub-division	Range	Work_Name	Work_Location	Execution year
149	Uttara Kannada	Haliyala T	Haliyala T	Sambrani T	Elephant Proof Trench	Karlakatta F Sy 26	2014-15
150	Uttara Kannada	Dandeli Wl	Dandeli Wl	Pansoli Wl	Elephant Proof Trench	Kumbeli F.Sy. 6&7	2015-16
151	Uttara Kannada	Dandeli Wl	Dandeli Wl	Kulgi Wl	Waterholes	Kulgi Beat Ii-16	2013-14
152	Uttara Kannada	Dandeli Wl	Dandeli Wl	Kulgi Wl	Check Dam	Kulgi Beat Ii-10	2014-15
153	Uttara Kannada	Haliyala T	Dandeli T	Virnoli T	Elephant Proof Trench	Veerampalli F Sy No 21 Compt Iii -29	2014-15
154	Uttara Kannada	Haliyala T	Dandeli T	Virnoli T	Cattle Proof Trench	Virnoli F Sy No 83	2014-15
155	Uttara Kannada	Dandeli Wl	Anshi Wl	Castle Rock Wl	Cattle Proof Trench	Palda F. Sy. No. Malki Sy.No.15, 16,17	2014-15
156	Uttara Kannada	Dandeli Wl	Anshi Wl	Castle Rock Wl	Others	Construction Of Toilet To Dormitory No. 2	2014-15
157	Uttara Kannada	Dandeli Wl	Anshi Wl	Kumbarawada Wl	Elephant Proof Trench	Kalasai Village Fsy 117, 109 Msy 113,114,115,116	2014-15
158	Uttara Kannada	Dandeli Wl	Anshi Wl	Kumbarawada Wl	Check Dam	Keloli	2015-16
159	Uttara Kannada	Dandeli Wl	Anshi Wl	Kumbarawada Wl	Forest Road	Kuravalli Cross To Kuravalli	2014-15
160	Uttara Kannada	Dandeli Wl	Anshi Wl	Kumbarawada Wl	Elephant Proof Trench	Kalasai Village Fsy 86 Msy 84,83	2015-16
161	Uttara Kannada	Dandeli Wl	Anshi Wl	Anshi Wl	Desilting Of Tank	Bison Tank	2014-15
162	Uttara Kannada	Dandeli Wl	Anshi Wl	Anshi Wl	Desilting Of Tank	Kajuwada Kere	2015-16
163	Dharwada	Dharwada T	Dharwada T	Dharwada T	Cattle Proof Trench	Cpt @ Banadur Fsy 5,22,21,20 C.No 31,20	2013-14

Annexure

Sl. No.	Circle	Division	Sub-division	Range	Work_Name	Work_Location	Execution year
164	Dharwada	Dharwada T	Dharwada T	Dharwada T	Others	RF Boards @ Dharwad, (Kalkere, Lalgatti And 4 More Locations)	2013-14
165	Apccf(Hrd)	Dcf Training Gungaragatti	Acf Ta Gungaragatti	Acf Training Gungaragatti 1	Others	Construction Of Vehicle Sheds @ Gungargatti	2015-16
166	Uttara Kannada	Dandeli Wl	Dandeli Wl	Kulgi Wl	Others	Kitchen At Kulgi Nature Camp	2014-15
167	Uttara Kannada	Dandeli Wl	Dandeli Wl	Kulgi Wl	Others	Kulgi Nature Camp	2014-15
168	Uttara Kannada	Dandeli Wl	Dandeli Wl	Kulgi Wl	Cattle Proof Trench	Near Kegdal Check Post	2013-14
169	Kalaburgi	Kalaburgi T	Kalaburgi T	Kalaburgi T	Cattle Proof Trench	Cpt Work @Dongargaon Block 1& 2 Sy No 157	2014-15
170	Kalaburgi	Bidar T	Basavakalyana T	Humnabad T	Cattle Proof Trench	Excavation Of Cpt @ Bemalkheda B-1 (0.5 Km)	2015-16
171	Ballari	Chitradurga T	Chitradurga T	Holalkere T	Cattle Proof Trench	Nirthadi RF Medikeripura To Kagalagere Road Side	2014-15
172	Ballari	Chitradurga T	Chitradurga T	Holalkere T	Barbed Wire Fencing	Sesa Goa Bheemasamudra	2015-16
173	Ballari	Chitradurga T	Chitradurga T	Chitradurga T	Cattle Proof Trench	Jogimatti RF Kennedlu Chikkasiddavanahalli	2014-15
174	Ballari	Koppal T	Gangavathi T	Kushtagi T	Others	RF Boards @ Kustagi	2013-14
175	Ballari	Koppal T	Gangavathi T	Kushtagi T	Others	RF Boards @ Hanchinal Pf, Shakapura Pf	2014-15
176	Ballari	Koppal T	Gangavathi T	Kushtagi T	Cattle Proof Trench	Cpt Work @ Mensagere, Kushtagi	2015-16
177	Ballari	Ballari Wp	Na	Na	Others	Sunkadakallu North Ext RF	2014-15

Sl. No.	Circle	Division	Sub-division	Range	Work_Name	Work_Location	Execution year
178	Ballari	Ballari Wp	Na	Na	Others	Sunkandallu Of Kudligi West	2014-15
179	Ballari	Ballari Wp	Na	Na	Others	Sunkadakallu South West Exten RF Kudligi	2014-15
180	Ballari	Ballari Wp	Na	Na	Others	Sunkadakallu East Of Kudligi	2014-15

Annexure 4

List of SMC Works sampled

Sl. No.	CIRCLE	DIVISION	SUBDIVISION	RANGE	PLANTATION
1.	BALLARI	CHITRADURGA T	CHITRADURGA T	HOLALKERE T	Thodarnal Campa Plantation
2.	MANGALURU	KUNDAPURA T	MOODABIDRE T	HEBRI T	ANR
3.	SHIVAMOGGA	SAGARA T	SAGARA T	ANANDPURA T,CHORADI	Yadehalli Thavarehalli
4.	BALLARI	KOPPAL T	GANGAVATHI T	GANGAVATHI T	Kanneramadu
5.	CHIKKAMAGALURU	CHIKKAMAGALURU T	CHIKKAMAGALURU T	CHIKKAMAGALURU T	Kalasapura SF-Shettykere Block
6.	CHIKKAMAGALURU	KOPPA T	BALEHONNUR T	SRINGERI T	Addagadde-kavalakodige block
7.	MANGALURU	MANGALURU T	SUBRAMANYA T	PANJA T	ANR plantation of 2015(Misc.)
8.	SHIVAMOGGA	SAGARA T	SAGARA T	KARGAL T	kudururu sy 280,502
9.	SHIVAMOGGA	BHADRAVATHI T	CHANNAGIRI T	BHADRAVATHI T	kottadal campa platation
10.	BENGALURU	KOLAR T	KOLAR T	SRINIVASAPURA T	Jinagalakunte
11.	DHARWADA	DHARWADA T	KALAGHATAGI T	KALAGHATAGI T	campa siddanabavi
12.	BALLARI	BALLARI T	KUDLIGI T	KUDLIGI T	Advance works
13.	BENGALURU	KOLAR T	BANGARPET T	MALUR T	Palamadagu
14.	BALLARI	BALLARI T	KUDLIGI T	GUDEKOTE T	
15.	BALLARI	BALLARI T	BALLARI T	BALLARI T	Kudutini Sy No. 1251
16.	DHARWADA	RANEBENNUR WL	RANEBENNUR WL	RANEBENNUR WL	gudagur
17.	BALLARI	BALLARI T	BALLARI T	BALLARI T	Nadavi Sy no. 397, 521 & 522
18.	KALABURGI	KALABURGI T	KALABURGI T	KALABURGI T	Raising of plantation ANR Model
19.	KALABURGI	KALABURGI T	KALABURGI T	CHINCHOLI T	kodli
20.	UTTARA KANNADA	HALIYALA T	HALIYALA T	BHAGAWATI T	campa ssa model
21.	UTTARA KANNADA	KARWAR T	ANKOLA T	MASTIKATTA T	Hebbul Eco-Restortion Model-I
22.	UTTARA KANNADA	YELLAPUR T	MANCHIKERI T	MANCHIKERI T	bendigeri sno. 17
23.	UTTARA KANNADA	YELLAPUR T	YELLAPUR T	YELLAPUR T	chikkamavalli

Sl. No.	CIRCLE	DIVISION	SUBDIVISION	RANGE	PLANTATION
24.	KODAGU	MADIKERI T	SOMAWARAPETE T	KUSHALANAGARA T	Bendebetta Beat , Bollur
25.	MANGALURU	KARKALA WL	SIDDHAPURA WL	SIDDHAPURA WL,HEBRI	yellabere bit 3.baregundi
26.	MANGALURU	MANGALURU T	SUBRAMANYA T	SUBRAMANYA T	Puttige-Udane
27.	CHIKKAMAGALURU	CHIKKAMAGALURU T	MOODIGERE T	ALDUR T	Kundur Sy.no.225 Battaragadde block-2
28.	SHIVAMOGGA	BHADRAVATHI T	CHANNAGIRI T	BHADRAVATHI T	Dodderi
29.	BALLARI	BALLARI T	BALLARI T	BALLARI T	Revised Thumati 106 C/2
30.	CHIKKAMAGALURU	KOPPA T	BALEHONNUR T	KALASA T	BALIGE KADIVE
31.	BALLARI	BALLARI T	BALLARI T	BALLARI T	Revised Mincheri RF

Annexure 5

List of Species Planted

Sl. No.	Species
1.	Acacia (*Acacia auriculiformis*)
2.	Agave (*Agave americana*
3.	Antuvala (*Sapindus emerginatus*)
4.	Atti (*Ficu srecemosa*)
5.	Bage *Albezzia lebbek*)
6.	Bamboo 1 (*Bambusa arundinasia*)
7.	Banyan (*Ficus benghalensis*)
8.	Beete (*Dalbargia latifolia*)
9.	Bevu (*Azadiracht aindica*)
10.	Bharanigi (*Vitex ultissima*)
11.	Bilvapatre (*Aegle marmolos*)
12.	Canes (*Calamus spp.*)
13.	Cashew (*Anacardium occidentale*)
14.	Dalchinni (*Cinnomomum zeylenicum*)
15.	Dhaman (*Grevia tilifolia*)
16.	Dhoopa *Vateria indica*)
17.	Ficus (*Ficus religiosa*
18.	Glyrecedia (*Glyrecedia macculata*)
19.	Gulmavu (*Machilus macranta*)
20.	Halasu (*Artocarpus integrefolia*)
21.	Hale (*Writia tinctoria*)
22.	Hebbalas (*Artocarpus hirsuta*)
23.	Hippe (*Bassia latifolia*)
24.	Hole mathi (*Terminalia arjuna*)
25.	Honge (*Pongamia pinnata*
26.	Honne (*Pterocarpus marsupium*)
27.	Kamara (*Hardwickia binata*)
28.	Kavalu (*Carea arborea*)
29.	Kindal (*Terminalia paniculata*)
30.	Maavu (*Mangifera indica*
31.	Mahagony (*Swietenia mahagoni*)
32.	Mathi (*Terminalia alata*)
33.	Murugal (*Buchanania latifofia*)
34.	Nandi (*Legarstroemia lanceolata*)
35.	Nelli (*Emblica officianalis*)
36.	Nerale(*Sizyzium sp.*)
37.	Raktachandana (*Pterocarpus santalinus*)
38.	Ramapatre (*Myristica sp.*)

Sl. No.	Species
39.	Saldhoopa (*Vateria indica*)
40.	Sandal (*Santalum album*)
41.	Seemaruba (*Simarouba glauca*)
42.	Seetaphala (*Annona squamosa*)
43.	Shivane (*Gmelina arboria*
44.	Simethangadi (*Cassia siamia*)
45.	Tamarind (*Tamarindus indica*)
46.	Tapsi (*Holoptelia integrifolia*)
47.	Tare (*Terminalia bellerica*)
48.	Teak (*Tectona grandis*)
49.	Uppage (*Garciniagummigatta*)
50.	Vaate (*Artocarpus lacucha*)

Annexure 6

EVALUATION TEAM

Core Team

- Dr. B. Shivaraju, IFS, APCCF (Rtd.), Principal Investigator
- Dr. Lasya Gopal, Co- Principal Investigator
- Dr. Nagraj Patil, Civil Engineering Expert
- Dr. Krishnamurthy, Statistician
- Mr. Ashwathaiah, DCF (Rtd.), Team Member
- Mr. Nagesh I. V DCF (Rtd.), Team Member
- Mr. H.H. Ninga Setty, Team Member
- Mr. Yabbati Nagaraju, Team Member
- Dr. Sridar Babu M. N, Team Member
- Mr. Hara Kumar Verma, Team Member
- Mr. Arjun Shetty, Team Member
- Dr. Veerabaswant Reddy, Team Member
- Mr. Kiriti Sahoo, Team Member
- Mr. ManjunathJadhav, Team Member
- Mr. Mahendra Math, Team Member

IT and Secretarial Support

- Mr. T. Saravana, IT Manager
- Ms. Shobha M.P., Executive Secretary
- Ms. Jyothi. S., Secretary
- Ms. Manjula, Secretary
- Ms. Christina Preethi, Secretary