

# Chapter 1

## INTRODUCTION

### 1.1 About CAMPA

Forest land is generally diverted for non-forestry purpose under the relevant provisions of the Forest (Conservation) Act, 1980 for facilitating developmental activities like construction of power projects, irrigation projects, roads, railways, schools, hospitals, rural electrification, telecommunication, drinking water facilities and mining, etc.<sup>1</sup> Based on various parameters, the entity requiring diversion of forests has to deposit a proportionate amount with the State/U.T. In lieu of the funds collected by the States, Compensatory Afforestation Management and Planning Authority (CAMPA) was constituted by the Central government as ordered by the Hon. Supreme Court in 2002<sup>2</sup>. The cost of creating the compensatory forest is borne by the 'User Agency' proposing the forest diversion for its project. The user agency can be a public or private sector enterprise or a government body owning the project. Whenever land inside a Reserved Forest or a Protected Area (PA), such as a wildlife sanctuary or a national park, is to be diverted, certain levies are imposed by the government on the project proponent (the User Agency) towards compensatory afforestation (CA), additional compensatory afforestation (ACA), penal compensatory afforestation (PCA), net present value (NPV) of forestland, catchment area treatment (CAT) plan funds, etc.<sup>3</sup>

The CAMPA functions under the supervision of the Ministry of Environment, Forests & Climate Change (MoEF&CC). GoI and Its jurisdiction extends to the whole of India. Under CAMPA, large-scale activities have been taken up to accelerate preservation of natural forests, management of wildlife, capacity building, research & development, infrastructure development in the sector and other allied works.

The Ministry of Environment and Forests, Government of India, in their letter dated 2 July 2009 have issued the Guidelines on State Compensatory Afforestation Fund Management and Planning Authority (State CAMPA)<sup>4</sup>. Based on these guidelines, the Government of Andhra Pradesh, in their G.O.Ms.No.78, E.F.S.& T (For. I) Department dated 11 September 2009 issued orders establishing the Andhra Pradesh State Compensatory Afforestation Fund Management and planning authority (A.P. State CAMPA). The main purpose enunciated in the Notification is

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<sup>2</sup> <http://envfor.nic.in/major-initiatives/compensatory-afforestation-fund-management-and-planning-authority-campa> ,  
[http://envfor.nic.in/sites/default/files/CAMPA-order-dated-13.8\\_0.pdf](http://envfor.nic.in/sites/default/files/CAMPA-order-dated-13.8_0.pdf)

<sup>3</sup> CAMPA Fact Sheet: A Compromised Composition CAF Bill and PSC Report, CSE, 7p.

<sup>4</sup> [http://envfor.nic.in/sites/default/files/Guidelines\\_for\\_Investment\\_Policy\\_and\\_Procedure\\_0\\_0.pdf](http://envfor.nic.in/sites/default/files/Guidelines_for_Investment_Policy_and_Procedure_0_0.pdf)

enhancement of forest and tree cover and conservation and management of wildlife by utilizing funds received towards CA, NPV etc. in compliance to the conditions stipulated by the Central Government while according approval under Forest (Conservation) Act, 1980 (69 of 1980) for non-forest uses of the forest lands.<sup>5</sup>

With the Compensatory Afforestation Fund Bill 2016 (*hereafter referred to as 'the Bill'*), the Government of India now seeks to make this corpus available to state governments to initiate necessary compensatory afforestation programmes, independent of the Supreme Court. The Bill provides for an institutional mechanism to ensure 'expeditious utilization' of the amounts collected from the diversion of forestlands till present.

## 1.2 Necessity of CAMPA

The necessity of CAMPA is to compensate for the loss of tangible as well as intangible benefits from the forest lands which were diverted for non-forest use compensatory afforestation is required to be done over an equivalent area of non-forest land or double the amount of degraded forest land in relation to the actual area being diverted. If clearances for diversion of forest land are granted, certain levies are imposed on the project proponents by the Government to compensate for the loss of forestlands, and this money is to be utilized for afforestation activities elsewhere. This concept is 'Compensatory Afforestation', defined as 'afforestation done in lieu of the diversion of forest land for non-forest use under the Forest (Conservation) Act, 1980 (ref. 5). In order to determine the cost of compensatory afforestation, the appropriate authority will evaluate the area of the forest area/degraded identified for compensatory afforestation. From such money, a huge corpus of over 42,000 crores have accumulated into accounts of Ad hoc CAMPA, a temporary body set up in 2006 by the Supreme Court to manage such funds. The corpus is increasing at the rate of about 6,000 crores per year. The disbursement of funds under the corpus to state governments was previously supervised by the Supreme Court to ensure effective monitoring and regulation of these funds.<sup>6</sup>

CAMPA fund is to be used for assisted natural regeneration (ANR), natural forest management, forest protection, biodiversity conservation, infrastructure development, wildlife protection and management, the supply of wood and other forest produce saving devices and other allied activities.

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<sup>5</sup> Manual of Guidelines and Accounting Procedure on works relating to A.P. State Compensatory Afforestation Fund Management and Planning Authority (A.P. State Campa), 38p.

<sup>6</sup> Text of the Supreme Court Order, dated 10 July 2009, on National and State CAMPAs.

### 1.3 CAMPA in Telangana

Telangana state formed in June 2014 from the northwestern part of the State of Andhra Pradesh, has an area of 112,102 square kilometers and a population of 35,193,978.<sup>7</sup> The notified forest area of the State is 26903.70 square kilometers, which is 23.99% of the geographical area.<sup>8</sup> The Telangana State Forest Department (TSFD) is implementing CAMPA activities in the state of Telangana since 2009-2010.

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<sup>3</sup> Census of India (2011).

<sup>8</sup> Telangana State of Forest report (2014), TSFD, 144p.

## Chapter 2

### WORKS TAKEN UP UNDER DIFFERENT CAMPA COMPONENTS

This chapter describes the works taken up by TSFD during 2013-2014 under different CAMPA components. Compensatory Afforestation (CA) and Net Present Value (NPV) components for which activities have been undertaken by Telangana State Forest Department during 2013-2014 are shown in Fig 2.0.

**Fig 2.0: Works undertaken for different CA and NPV components during 2013-2014.**

<b>Compensatory Afforestation (CA)</b>	<b>Net Present Value (NPV)</b>
<ul style="list-style-type: none"> <li>➤ Compensatory Afforestation</li> <li>➤ Safety Zone</li> <li>➤ Extraction of Tree Growth in diverted areas</li> <li>➤ Catchment Area Treatment</li> </ul>	<ul style="list-style-type: none"> <li>➤ Natural Forest Management (NFM)</li> <li>➤ Forest Protection (FP)</li> <li>➤ Forest Fire Management (FFM)</li> <li>➤ Bio-diversity Conservation and Development (BDC)</li> <li>➤ Research and Development (R&amp;D)</li> <li>➤ Capacity Building (CB)</li> <li>➤ Information Communication and Technology (ICT)</li> <li>➤ Monitoring and Evaluation (M&amp;E)</li> <li>➤ Office Support (OS)</li> </ul>

**2.1 Compensatory Afforestation (CA):** The main mandate of Telangana State CAMPA is afforestation of the compensatory area given by the user agency in lieu of the forest areas diverted for non-forestry purposes. Under Compensatory afforestation, planting of trees is carried out on another piece of land equivalent in area to the original forestland diverted for non-forest purposes. It is mandated under the Forest (Conservation) Act, 1980 that compensatory afforestation is done over an equivalent area of non-forestland. Equivalent non-forestland identified for the purpose would subsequently be transferred to the ownership of the State Forest Department and declared as Protected Forests so that the plantation raised can be maintained permanently. Where non-forestlands are not available, compensatory afforestation may be carried out over degraded forest twice in the extent to the area diverted or to twice the difference between forestland being diverted and available non-forestland, as the case may be. The activities under CA head namely CA / Addl.CA / Penal CA / Safety Zone / Extraction of tree growth and Catchment Area Treatment are taken up by TSFD strictly as per the Government of India stipulations while granting the stage - I & II clearances of CA proposals. It also envisages proper demarcation of the CA areas by erecting boundary pillars.

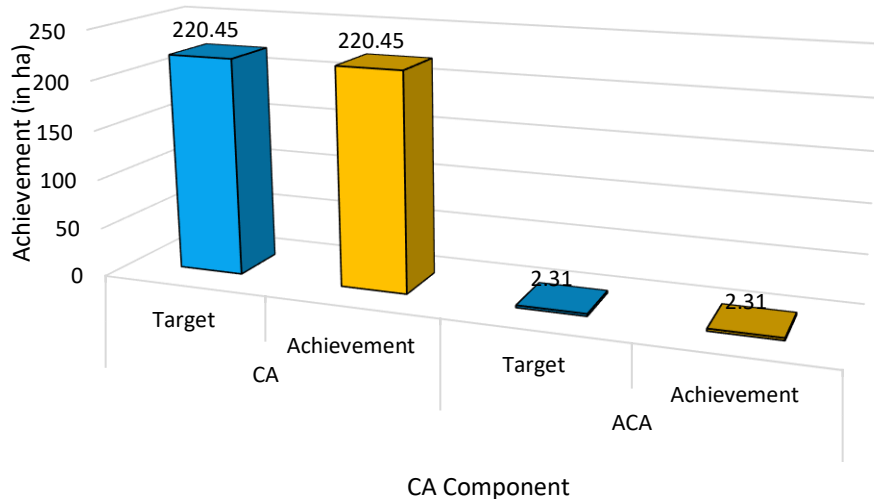
Under CA during 2013-2014, a total of 350 works were undertaken by TSFD with an expenditure of 456.03060 lakhs. Division wise total number of works and expenditure under CA is shown in Table 2.1a.

**Table 2.1a: Division wise expenditure (lakhs) incurred under CA by TSFD, CAMPA during the year 2013-2014.**

Name of the Circle	Name of the Division	Targets		Expenditure	
		Physical (No. of Works)	Financial (lakhs)	Physical (No. of Works)	Financial (lakhs)
Adilabad	Adilabad	10	17.02	10	13.90367
	Nirmal	5	12.15	5	4.46487
	Mancherial	13	55.235	13	14.89571
	Bellampally	53	16.5	53	51.25385
	<b>Circle total</b>	<b>81</b>	<b>100.905</b>	<b>81</b>	<b>84.5181</b>
Hyderabad	Hyderabad	3	0	3	0.977
	Mahabubnagar	15	0	15	37.653
	Nalgonda	41	0	41	39.775
	<b>Circle total</b>	<b>59</b>	<b>0</b>	<b>59</b>	<b>78.405</b>
Khammam	Khammam	29	0	29	102.44898
	Kothagudam	4	0	4	0.8344
	Paloncha	80	111.078	80	51.17915
	Bhadrachalam (N)	14	0	14	5.92146
	Bhadrachalam (S)	6	0	6	5.52444
	<b>Circle total</b>	<b>133</b>	<b>111.078</b>	<b>133</b>	<b>165.90843</b>
Nizamabad	Nizamabad	5	0	5	1.6642
	Kamareddy	3	0	3	4.194
	Medak	6	0	6	3.59295
	<b>Circle total</b>	<b>14</b>	<b>0</b>	<b>14</b>	<b>9.45115</b>
Warangal	Warangal (N)	39	0	39	93.63937
	Warangal (S)	9	0	9	2.79655
	Karimnagar (E)	14	0	14	21.122
	Karimnagar (W)	1	0	1	0.19
	<b>Circle total</b>	<b>63</b>	<b>0</b>	<b>63</b>	<b>117.74792</b>
FDPT Srisailam	N. Sagar (G)	0	0	0	0
	<b>Total</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>
WLM Hyderabad	D.F.O	0	0.97	0	0
	<b>Circle total</b>	<b>0</b>	<b>0.97</b>	<b>0</b>	<b>0</b>
<b>GRAND TOTAL</b>		<b>350</b>	<b>212.953</b>	<b>350</b>	<b>456.03060</b>

Plantation targets and achievements under CA during 2013-14 is mentioned in Fig. 2.1.a.

Fig 2.1.a: Plantation targets and achievements under CA during 2013-2014



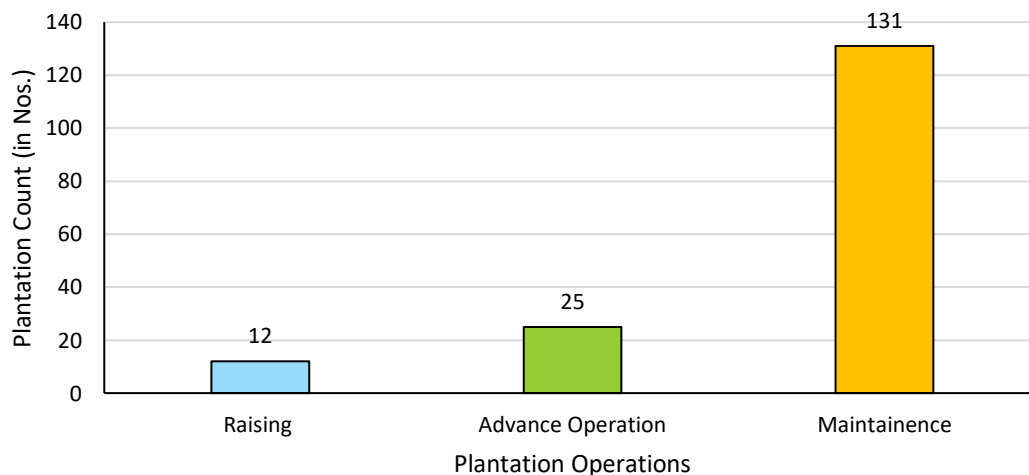
During 2013-2014, targets under CA plantations was 222.76 ha, and the same was achieved in Telangana. Division wise detail of plantation activities in ha. Is mentioned in Table 2.1b.

**Table 2.1b: Total plantation works in hectares undertaken under CA by TSFD, CAMPA during 2013-14.**

Name of the Circle	Name of the Division	Target		Achievement		Total	
		CA	ACA	CA	ACA	Target	Achievement
Adilabad	Nirmal	12.15	-	12.15	-	12.15	12.15
	Circle total	12.15	0	12.15	0	12.15	12.15
Hyderabad	Hyderabad	-	0.11	-	0.11	0.11	0.11
	Mahabubnagar	60	-	60	-	60	60
	Nalgonda	105	-	105	-	105	105
	Circle total	165	0.11	165	0.11	165.11	165.11
Khammam	Paloncha	38.8	-	38.8	-	38.8	38.8
	Circle total	38.8	0	38.8	0	38.8	38.8
Nizamabad	Medak	-	0.3	-	0.3	0.3	0.3
	Circle total	0	0.3	0	0.3	0.3	0.3
FDPT Srisailam	Nagarjunasagar	4.5	1.9	4.5	1.9	6.4	6.4
	Circle total	4.5	1.9	4.5	1.9	6.4	6.4
<b>GRAND TOTAL</b>		<b>220.45</b>	<b>2.31</b>	<b>220.45</b>	<b>2.31</b>	<b>222.76</b>	<b>222.76</b>

The main works under plantation activities included advance work including nursery works, raising of forest plantations and maintenance of previously raised plantations under CA and ACA sub-components. Total plantation works carried out under CA during 2013-2014 is shown in Fig 2.1b.

**Fig. 2.1b: Total plantation works carried out under CA during 2013-2014**



Under CA other activities, extraction of tree growth in diverted areas and development of soil and water conservation measures were undertaken during 2013-2014.

**2.2 Net Present Value (NPV):** The components of NPV include natural forest management, forest protection, forest fire management, biodiversity conservation and development, research and development, capacity building, information communication and technology, monitoring and

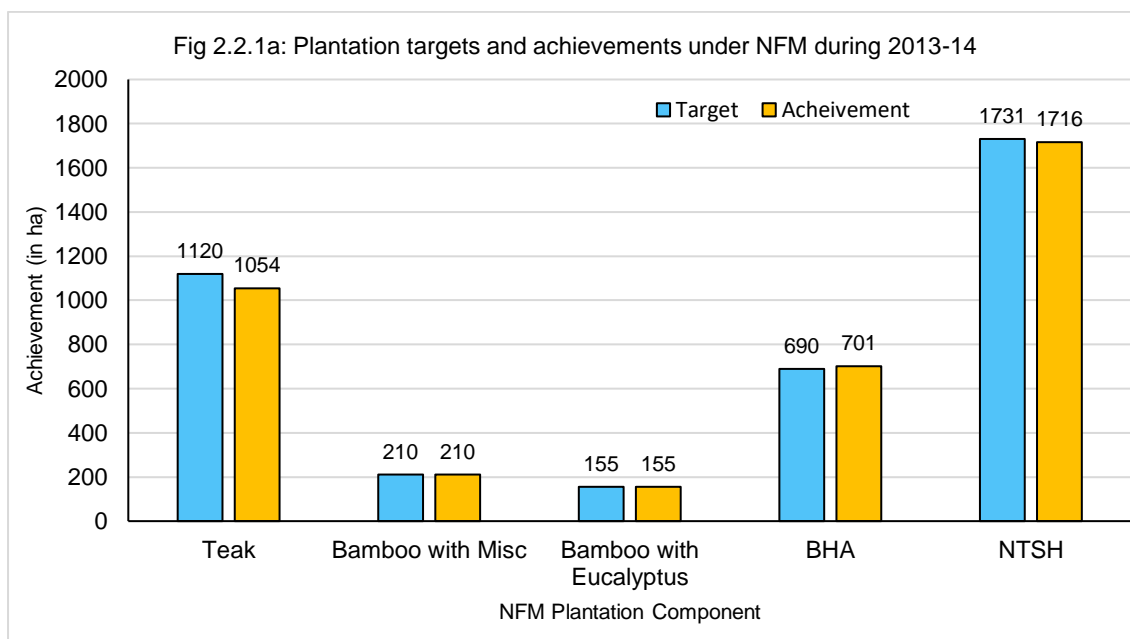
evaluation and office support. Each of the NPV components is described in the following sub-sections.

**2.2.1 Natural Forest Management (NFM):** The purpose of natural forest management treatments is to improve the overall stockings of the natural forests and at the same time to afforest degraded forest areas and improve the productivity of the forests on a sustained yield basis by using appropriate silvicultural and management practices. Under the natural forest treatments, activities were proposed to improve the stockings of natural bamboo in the forests, improve the stockings of teak in the teak bearing Telangana forests and cover the barren hills with indigenous tree species. Management and silvicultural prescriptions were in accordance with the overall prescriptions of the working plan for the given division. However, no raining of NFM plantations were carried out during the FY 2013-14, only advance operations and maintenance works were carried out. Division wise targets and achievements under NFM for the year 2013-2014 is shown in Table 2.2.1a.

**Table 2.2.1a: Division wise physical works (No. of Works) and expenditure (lakhs) abstract of NFM under TSFD, CAMPA for the year 2013-2014.**

Name of the Circle	Name of the Division	Targets		Achievement	
		Physical (No. of Works)	Financial (lakhs)	Physical (No. of Works)	Financial (lakhs)
Adilabad	Adilabad	87	130.948	87	93.079
	Nirmal	112	146.234	112	106.74608
	WL Jannaram	3	14.422	3	0
	Mancherial	78	188.547	78	170.8531
	Bellampally	77	177.258	77	139.083
	Kazagnagar	60	154.843	60	105.95337
	<b>Circle total</b>	<b>417</b>	<b>812.252</b>	<b>417</b>	<b>615.71455</b>
Hyderabad	Hyderabad	58	119.16	58	98.112
	Mahabubnagar	60	49.358	60	41.836
	Nalgonda	20	37.407	20	32.73471
	<b>Circle total</b>	<b>138</b>	<b>205.925</b>	<b>138</b>	<b>172.68271</b>
Khammam	Khammam	69	156.605	69	130.14622
	Kothagudam	48	80.909	48	51.504
	Paloncha	78	127.578	78	101.94589
	Bhadrachalam (N)	60	133.145	60	81.45087
	Bhadrachalam (S)	19	44.656	19	22.5921
	WL Paloncha	1	0	1	0.3866
	<b>Circle total</b>	<b>275</b>	<b>542.893</b>	<b>275</b>	<b>388.02568</b>
Nizamabad	Nizamabad	72	135.932	72	93.5812
	Kamareddy	84	134.589	84	75.7549
	Medak	214	320.249	214	351.5299
	<b>Circle total</b>	<b>370</b>	<b>590.77</b>	<b>370</b>	<b>520.866</b>
Warangal	Warangal (N)	59	309.5895	59	150.54289
	Warangal (S)	63	199.3755	63	137.76375
	Karimnagar (E)	91	181.2235	91	93.782
	Karimnagar (W)	78	183.833	78	101.084
	<b>Circle total</b>	<b>291</b>	<b>874.0215</b>	<b>291</b>	<b>483.17264</b>
FDPT Srisaillam	Achampet	23	9.283	23	14.552
	<b>Circle total</b>	<b>23</b>	<b>9.283</b>	<b>23</b>	<b>14.552</b>
<b>GRAND TOTAL</b>		<b>1514</b>	<b>3035.1445</b>	<b>1514</b>	<b>2195.014</b>

During 2013-2014, targets under NFM plantations was 3906 ha and 3836 ha plantation work as achieved in Telangana. The target and achievement of the NFM plantations in terms of hectare is mentioned in Fig. 2.2.1a.



Division wise target and achievement of the NFM plantations in terms of hectare is mentioned in Table. 2.2.1b.

**Table 2.2.1b: Total plantation works undertaken under NFM by TSFD, CAMPA during 2013-14 (all figures in ha).**

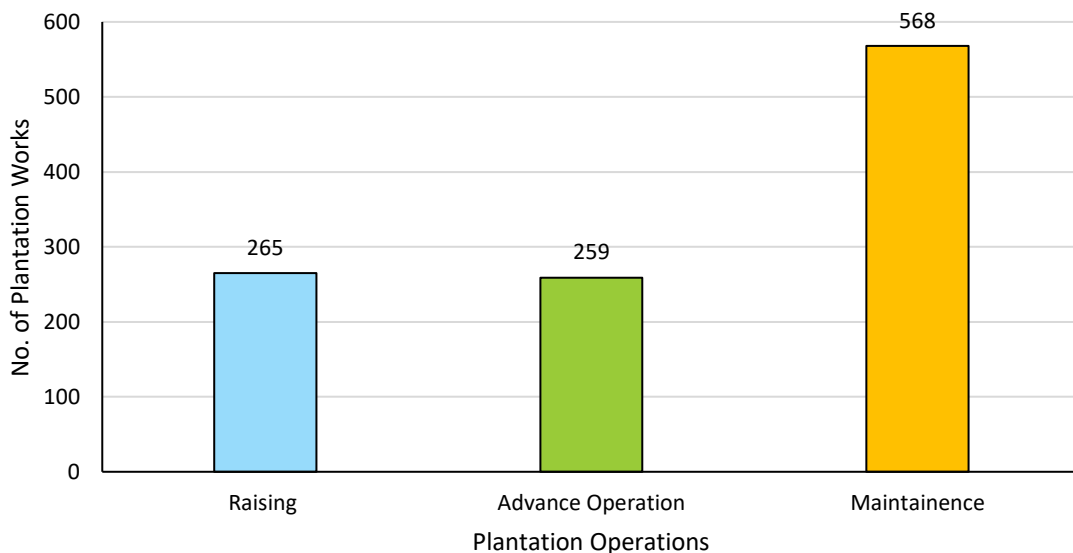
Name of the Circle	Name of the Division	Teak		Bamboo with Misc.		Bamboo with Eucalyptus		BHA		NTSH		Total	
		Target	Achiev.	Target	Achiev.	Target	Achiev.	Target	Achiev.	Target	Achiev.	Total Target	Total Achiev.
Adilabad	Adilabad	40	40	20	20	-	-	20	20	70	70	150	150
	Nirmal	40	37	40	40	-	-	20	20	70	67	170	164
	Mancherial	60	60	60	60	-	-	20	20	70	70	210	210
	Bellampally	60	60	60	60	-	-	20	20	70	70	210	210
	Kagaznagar	50	50	20	20	-	-	20	20	70	70	160	160
	<b>Circle Total</b>	<b>250</b>	<b>247</b>	<b>200</b>	<b>200</b>	<b>-</b>	<b>-</b>	<b>100</b>	<b>100</b>	<b>350</b>	<b>347</b>	<b>900</b>	<b>894</b>
Hyderabad	Hyderabad	-	-	-	-	-	-	40	40	31	31	71	71
	Mahabubnagar	-	-	-	-	-	-	50	50	20	20	70	70
	Nalgonda	-	-	-	-	-	-	50	50	-	-	50	50
	<b>Circle Total</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>140</b>	<b>140</b>	<b>51</b>	<b>51</b>	<b>191</b>	<b>191</b>
Khammam	Khammam	30	30	10	10	90	90	-	-	30	30	160	160
	Kothagudem	40	40	-	-	-	-	-	-	30	30	70	70
	Paloncha	55	55	-	-	30	30	-	-	30	30	115	115
	Bhadrachalam (N)	50	50	-	-	25	25	-	-	65	65	140	140
	Bhadrachalam (S)	5	5	-	-	10	10	-	-	-	-	15	15
	<b>Circle Total</b>	<b>180</b>	<b>180</b>	<b>10</b>	<b>10</b>	<b>155</b>	<b>155</b>	<b>0</b>	<b>0</b>	<b>155</b>	<b>155</b>	<b>500</b>	<b>500</b>
Nizamabad	Nizamabad	50	50	-	-	-	-	75	75	50	50	175	175
	Kamareddy	100	89	-	-	-	-	75	75	50	50	225	214
	Medak	125	117	-	-	-	-	200	211	275	275	600	603
	<b>Circle Total</b>	<b>275</b>	<b>256</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>350</b>	<b>361</b>	<b>375</b>	<b>375</b>	<b>1000</b>	<b>992</b>
Warangal	Warangal (N)	175	170	-	-	-	-	-	-	275	275	450	445
	Warangal (S)	40	33	-	-	-	-	-	-	375	363	415	396
	Karimnagar (E)	110	110	-	-	-	-	-	-	100	100	210	210



Name of the Circle	Name of the Division	Teak		Bamboo with Misc.		Bamboo with Eucalyptus		BHA		NTSH		Total	
		Target	Achiev.	Target	Achiev.	Target	Achiev.	Target	Achiev.	Target	Achiev.	Total Target	Total Achiev.
	Karimnagar (W)	90	58	-	-	-	-	-	-	50	50	140	108
	<b>Circle Total</b>	<b>415</b>	<b>371</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>800</b>	<b>788</b>	<b>1215</b>	<b>1159</b>
FDPT	Achampet	-	-	-	-	-	-	20	20	-	-	20	20
Srisailam	N.Sagar	-	-	-	-	-	-	80	80	-	-	80	80
	<b>Circle Total</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>100</b>	<b>100</b>	<b>-</b>	<b>-</b>	<b>100</b>	<b>100</b>
<b>GRAND TOTAL</b>		<b>1120</b>	<b>1054</b>	<b>210</b>	<b>210</b>	<b>155</b>	<b>155</b>	<b>690</b>	<b>701</b>	<b>1731</b>	<b>1716</b>	<b>3906</b>	<b>3836</b>

Total number of plantation works carried out under NFM during 2013-2014 is shown in Fig. 2.2.1b.

2.2.1b Total number of plantation works carried out under NFM during 2013-2014



**2.2.2 Forest Protection (FP):** Protection of forests is one of the vital responsibility of the forest department. The size of forest beats, sections and ranges have remained unchanged in the state and do not conform to national standards of forest beat, section and range sizes. To supplement the frontline field staffs in their protection efforts it was proposed to continue the existing and establish fresh base camps, strike forces, check posts and police parties. Various initiatives like maintenance and construction of forest boundaries pillars, providing arms to the frontline staff were proposed for improving the protection of the existing forests. An amount of 2383.219 lakh was spent for completing the proposed interventions, the amount also includes spillover works of the year 2013-2014. Activities carried out under FP during 2013-2014 includes:

- Base Camps (96 base camps) activities with highest in Adilabad circle (39 base camps) as on 28.03.2014.
- Forest Strike Forces (48 nos.) activities towards establishment and maintenance with highest in Adilabad (15 nos.) followed by Khammam (12 nos.) as on 28.03.2014.

- Strengthening and maintenance of 52 check posts as on 28.03.2014.
- 2 Police Party were constituted in Adilabad circle as on 28.03.2014
- Translation, scanning, and documentation of Reserve Forest Blocks notifications.
- Construction of protection wall in urban forest areas.
- Improvement of communication network and mobility for patrolling duty to frontline forest staff.
- Providing arms and ammunition to the frontline staffs.
- Legal assistance charges.

Division wise targets and achievements under FP for the year 2013-2014 is shown in Table 2.2.2.

**Table 2.2.2: Division wise physical works (numbers) and expenditure (lakhs) abstract of FP under TSFD, CAMPA for the year 2013-2014.**

Name of the Circle	Name of the Division	Targets		Expenditure	
		Physical (nos)	Financial (lakhs)	Physical (nos)	Financial (lakhs)
Adilabad	Adilabad	40	139.008	40	100.69986
	Nirmal	41	122.299	41	109.816
	WL Jannaram	49	120.955	49	74.11008
	Mancherial	25	94.157	25	75.578
	Bellampally	25	92.617	25	70.37
	Kazagnagar	23	84.533	23	54.36
	<b>Circle total</b>	<b>203</b>	<b>653.569</b>	<b>203</b>	<b>484.93394</b>
Hyderabad	Hyderabad	54	475.358	54	468.97998
	Mahabubnagar	46	135.63	46	120.55443
	Nalgonda	24	147.885	24	104.5375
	<b>Circle total</b>	<b>124</b>	<b>758.873</b>	<b>124</b>	<b>694.07191</b>
Khammam	Khammam	36	88.163	36	67.97633
	Kothagudem	44	94.538	44	73.551
	Paloncha	26	91.701	26	53.91756
	Bhadrachalam (N)	32	128.597	32	63.73777
	Bhadrachalam (S)	35	147.223	35	62.23142
	WL Paloncha	18	49.231	18	25.31188
	<b>Circle total</b>	<b>191</b>	<b>599.453</b>	<b>191</b>	<b>346.72596</b>
Nizamabad	Nizamabad	55	68.266	55	109.4968
	Kamareddy	79	61.194	79	112.2746
	Medak	68	135.948	68	171.4814
	WL Medak	4	4.006	4	3.319
	<b>Circle total</b>	<b>206</b>	<b>269.414</b>	<b>206</b>	<b>396.5718</b>
Warangal	Warangal (N)	47	152.9445	47	110.71749
	Warangal (S)	34	123.741	34	72.6708
	WL Warangal	24	31.671	24	28.598
	Karimnagar (E)	25	62.883	25	45.747
	Karimnagar (W)	26	68.6	26	62.003
	<b>Circle total</b>	<b>156</b>	<b>439.8395</b>	<b>156</b>	<b>319.73629</b>
FDPT	Achampet	68	170.092	68	120.019
Srisailem	<b>Circle total</b>	<b>68</b>	<b>170.092</b>	<b>68</b>	<b>120.019</b>
WLM Hyd	CNP	5	3.72	5	6.28
	D.F.O	5	11.1	5	10.867
	<b>Circle total</b>	<b>10</b>	<b>14.82</b>	<b>10</b>	<b>17.147</b>
Zoo Park	Zoo Park	1	7	1	4.013
	<b>Circle total</b>	<b>1</b>	<b>7</b>	<b>1</b>	<b>4.013</b>
<b>GRAND TOTAL</b>		<b>959</b>	<b>2913.0605</b>	<b>959</b>	<b>2383.219</b>

**2.2.3 Forest Fire Management (FFM):** The forest areas in Telangana are subjected to damage due to annual ground fires in the summer season. The protection of regeneration of forest areas from fire damage is essential for improving the stocking in the forests and for providing fodder for

the wild herbivores. An amount of 30.6068 lakh was spent on interventions under this component. Major activities under FFM during 2013-2014 include:

- Creation of 763 km of new fire lines in Telangana during 2013-14.
- Maintenance of 2290 km of existing fire lines.
- Engaging firewatchers for fire management.

Division wise targets and achievements under FFM for the year 2013-2014 is shown in Table 2.2.3.

**Table 2.2.3: Division wise physical works (numbers) and expenditure (lakhs) abstract of FFM under TSFD, CAMPA for the year 2013-2014.**

Name of the Circle	Name of the Division	Targets		Expenditure	
		Physical (No. of Works)	Financial (lakhs)	Physical (No. of Works)	Financial (lakhs)
Adilabad	Nirmal	2	0	2	1.5
	W L Jannaram	2	3.39	2	0
	<b>Circle total</b>	<b>4</b>	<b>3.39</b>	<b>4</b>	<b>1.5</b>
Hyderabad	Hyderabad	21	6.52	21	10.067
	Mahabubnagar	5	2.26	5	2.076
	Nalgonda	3	2.712	3	2.671
	<b>Circle total</b>	<b>29</b>	<b>11.492</b>	<b>29</b>	<b>14.814</b>
Nizamabad	Nizamabad	5	1.808	5	1.1718
	Kamareddy	6	1.808	6	0.811
	Medak	8	2.712	8	2.7
	WL Medak	1	1.808	1	1.664
	<b>Circle total</b>	<b>20</b>	<b>8.136</b>	<b>20</b>	<b>6.3468</b>
FDPT Srisaillam	Achampet	11	6.516	11	4.596
	<b>Circle total</b>	<b>11</b>	<b>6.516</b>	<b>11</b>	<b>4.596</b>
WLM Hyderabad	CNP	1	3.35	1	3.35
	<b>Circle total</b>	<b>1</b>	<b>3.35</b>	<b>1</b>	<b>3.35</b>
<b>GRAND TOTAL</b>		<b>65</b>	<b>32.884</b>	<b>65</b>	<b>30.6068</b>

**2.2.4 Biodiversity Conservation (BDC):** The Telangana state is endowed with rich flora and fauna with more than 3000 plant species, 400 bird species, 80 mammalian species and more than 50 reptilian species. Under this component during the year 2013 - 2014 an expenditure of 763.499 lakhs was made by TSFD. Initiatives for the conservation of biodiversity and development in the National Parks and Protected Areas undertaken by TSFD during 2013-2014 are listed below:

- Wildlife habitat improvement.
- Fringe area development.
- Augmentation of water sources.
- Man-animal conflict.
- Wildlife research & data collection / Revival of wireless network.
- Maintenance of deer parks & animal complex.
- *Ex situ* conservation of breeding programme in *ex-situ*.
- Wildlife environmental extension & education.
- Improvement of zoo parks / Consultancy for bringing the zoos of the state of international standards / Water resource management.

Division wise targets and achievements under BDC for the year 2013-2014 is shown in Table 2.2.4.

**Table 2.2.4: Division wise physical works (numbers) and expenditure (lakhs) abstract of BDC under TSFD, CAMPA for the year 2013-2014.**

Name of the Circle	Name of the Division	Targets		Expenditure	
		Physical (No. of Works)	Financial (lakhs)	Physical (No. of Works)	Financial (lakhs)
Adilabad	Adilabad	5	0	5	0
	Nirmal	46	17.721	46	17.211
	WL Jannaram	139	131.54	139	116.008
	<b>Circle total</b>	<b>190</b>	<b>149.261</b>	<b>190</b>	<b>133.219</b>
Hyderabad	Hyderabad	10	14.357	10	14.35
	Mahabubnagar	22	26.5	22	21.729
	<b>Circle total</b>	<b>32</b>	<b>40.857</b>	<b>32</b>	<b>36.079</b>
Khammam	Bhadrachalam (N)	3	0	3	0
	WL Paloncha	19	23.26	19	34.59
	<b>Circle total</b>	<b>22</b>	<b>23.26</b>	<b>22</b>	<b>34.59</b>
Nizamabad	Nizamabad	2	0	2	1.5
	Kamareddy	19	2.395	19	2.498
	Medak	10	3.847	10	1.303
	WL Medak	69	51.236	69	85.355
	<b>Circle total</b>	<b>100</b>	<b>57.478</b>	<b>100</b>	<b>90.656</b>
Warangal	Warangal (N)	1	0.819	1	0.18235
	Warangal (S)	0	0.2	0	0
	WL Warangal	93	110.621	93	101.064
	Karimnagar (W)	6	27.06	6	24.658
	<b>Circle total</b>	<b>100</b>	<b>138.7</b>	<b>100</b>	<b>125.90435</b>
FDPT Srisailem	Achampet	96	54.375	96	42.836
	<b>Circle total</b>	<b>96</b>	<b>54.375</b>	<b>96</b>	<b>42.836</b>
WLM Hyd	CNP	48	347.004	48	222.238
	WLM Hyderabad	21	39.584	21	51.179
	<b>Circle total</b>	<b>69</b>	<b>386.588</b>	<b>69</b>	<b>273.417</b>
Zoo Park	Zoo Park	5	45	5	26.797
	<b>Circle total</b>	<b>5</b>	<b>45</b>	<b>5</b>	<b>26.797</b>
<b>GRAND TOTAL</b>		<b>614</b>	<b>895.519</b>	<b>614</b>	<b>763.499</b>

**2.2.5 Research and Development (R&D):** The forest department has undertaken applied forestry research in a number of fields for improving the growing stock of forests species and development of genetically superior and high yielding variety of various species. A total amount of 163.14656 lakhs was spent under this component during 2013-2014. The major interventions include

- Strengthening of existing infrastructure,
- Tree breeding activities and documentation,
- Clonal forestry research,
- Vermicomposting maintenance
- Maintenance of arboretum,
- Seed technology,
- Domestication of indigenous fast-growing species,
- Tissue culture seedlings,
- Maintenance of mist chamber,
- Improvement of nursery technology, production of quality planting material, and
- Standardization of Natural Forest Management models.

Division wise targets and achievements under R&D for the year 2013-2014 is shown in Table 2.2.5.

**Table 2.2.5: Division wise physical works (numbers) and expenditure (lakhs) abstract of R&D under TSFD, CAMPA for the year 2013-2014.**

Name of the Circle	Name of the Division	Targets		Expenditure	
		Physical (No. of Works)	Financial (lakhs)	Physical (No. of Works)	Financial (lakhs)
R&D	SS Hyderabad	143	79.4	143	72.97656
	FG WGL	124	90.2	124	90.17
<b>GRAND TOTAL</b>		<b>267</b>	<b>169.6</b>	<b>267</b>	<b>163.14656</b>

**2.2.6 Capacity Building (CB):** The Forest Academy, Dullapally is the premier institute selected by the Government of India for imparting training to range officer trainees of the country. It also trains the in-service FBOs and FSOs to discharge their duties effectively. An amount of 213.598 lakhs is provided under the component for the following activities:

- Provision of hostel facilities with Auditorium for Range officer trainees,
- Construction of hotel building for FRO trainees,
- Provision of a Training Centre for Capacity Building of forest staff,
- Organizing refresher courses for the forest staff,
- Organizing workshops/trainings for frontline staff, other forest officers / various communities engaged in forest improvement and protection,
- Conducting of specialized training in Silviculture, Modern Nursery Management, Teak Nursery and Planting Techniques etc.,

Division wise targets and achievements under CB for the year 2013-2014 is shown in Table 2.2.6.

**Table 2.2.6: Division wise physical works (numbers) and expenditure (lakhs) abstract of CB under TSFD, CAMPA for the year 2013-2014.**

Name of the Circle	Name of the Division	Capacity Building			
		Targets		Expenditure	
		Physical (nos)	Financial (lakhs)	Physical (nos)	Financial (lakhs)
APFA Dullapally	Dullapally	108	870.437	108	213.598
<b>Grand total</b>		<b>108</b>	<b>870.437</b>	<b>108</b>	<b>213.598</b>

**2.2.7 Information Communication and Technology (IC&T):** TSFD is the pioneer in obtaining satellite data, analyzing and interpreting it and creating database for monitoring and improving the forest cover. The information obtained from the satellite imageries are analyzed and areas prone for fire damages have been categorized as high risk and moderate zones. This base information has been utilized for laying and maintaining the fire lines in the forests. CAMPA MIS is also being developed to capture and monitor the implementation of the activities under CAMPA. An amount of 463.02 lakhs has been spent in this component. Division wise targets and achievements is shown in Table 2.2.7. Major interventions under ICT component during 2013-14 includes:

- Broadband and internet connections.
- Maintenance of geomatics ARC GIS server
- Monitoring of vegetation cover change within and outside the forest.
- Development of Web enabled FMIS Package, Website Development for GIS-MIS Integration
- DEM generation, Stock Mapping, Density Mapping, Forest Fire Atlas Maps, WHS Maps etc.

- Survey of boundaries using modern technology,
- Wages to Data Entry Operators,
- Assessment of Tree Outside Forest.

**Table 2.2.7: Division wise ICT works (numbers) and expenditure (lakhs) during the year 2013-2014.**

Name of the Circle	Name of the Division	Targets		Expenditure	
		Physical (No. of Works)	Financial (lakhs)	Physical (No. of Works)	Financial (lakhs)
Adilabad	Adilabad	6	11.025	6	9.483
	Nirmal	9	11.175	9	8.029
	WL Jannaram	7	6.3	7	4.652
	Mancherial	4	9.525	4	7.365
	Bellampally	5	9.45	5	8.24497
	Kazagnagar	5	7.875	5	6.579
	<b>Circle total</b>	<b>36</b>	<b>55.35</b>	<b>36</b>	<b>44.35297</b>
Hyderabad	Hyderabad	14	18.525	14	18.419
	Mahabubnagar	29	9.875	29	10.22262
	Nalgonda	6	6.725	6	6.2632
	<b>Circle total</b>	<b>49</b>	<b>35.125</b>	<b>49</b>	<b>34.90482</b>
Khammam	Khammam	17	7.95	17	9.555
	Kothagudam	18	11.025	18	10.5201
	Paloncha	11	9.45	11	8.83014
	Bhadrachalam (N)	6	7.95	6	8.04209
	Bhadrachalam (S)	14	9.45	14	10.094
	WL Paloncha	6	3.15	6	3.04365
	<b>Circle total</b>	<b>72</b>	<b>48.975</b>	<b>72</b>	<b>50.08498</b>
	Nizamabad	Nizamabad	22	7.95	22
Kamareddy		20	7.875	20	8.52212
Medak		13	12.6	13	16.6947
WL Medak		3	1.575	3	1.37555
<b>Circle total</b>		<b>58</b>	<b>30</b>	<b>58</b>	<b>37.31594</b>
Warangal	Warangal (N)	17	12.675	17	14.18605
	Warangal (S)	4	9.45	4	7.19625
	WL Warangal	4	4.725	4	3.138
	Karimnagar (E)	12	11.1	12	8.31729
	Karimnagar (W)	13	9.45	13	8.39371
	<b>Circle total</b>	<b>50</b>	<b>47.4</b>	<b>50</b>	<b>41.2313</b>
FDPT Srisailam	Achampet	15	11.025	15	9.804
	<b>Circle total</b>	<b>15</b>	<b>11.025</b>	<b>15</b>	<b>9.804</b>
WLM Hyderabad	CNP	2	1.5	2	1.4455
	WLM Hyderabad	8	1.575	8	1.563
	<b>Circle total</b>	<b>10</b>	<b>3.075</b>	<b>10</b>	<b>3.0085</b>
R&D	SS Hyderabad	0	0.075	0	0
	FG Warangal	0	0.075	0	0
	<b>Circle total</b>	<b>0</b>	<b>0.15</b>	<b>0</b>	<b>0</b>
I&TC	I&TC	42	464.17	42	242.32236
	<b>Circle total</b>	<b>42</b>	<b>464.17</b>	<b>42</b>	<b>242.32236</b>
<b>GRAND TOTAL</b>		<b>332</b>	<b>695.27</b>	<b>332</b>	<b>463.02</b>

**2.2.8 Monitoring and Evaluation (M&E):** CAMPA is being implemented in the state since 2009 and there is a need to monitor the implementation of the programme in the field level besides the regular supervision by the Forest Range Officers/ DFOs /Circle heads and Senior Officers from the Head Office. Besides monitoring, the performance of the initiatives in achieving the objectives of CAMPA through Evaluation by the third party is proposed in 2013-14 for effective implementation of CAMPA scheme. The CAMPA guidelines also prescribe utilization of 2% of the Annual outlay for Monitoring and Evaluation component in the APO. An amount of 50.45 lakhs has

been spent. Division wise targets and achievements under M&E for the year 2013-2014 is shown in Table 2.2.8. Major monitoring and evaluation activities during 2013-2014 include:

- Forest resources management monitoring and evaluation,
- CA and audit fees for auditing works,

**Table 2.2.8: Division wise physical works (numbers) and expenditure (lakhs) under M&E component during the year 2013-2014.**

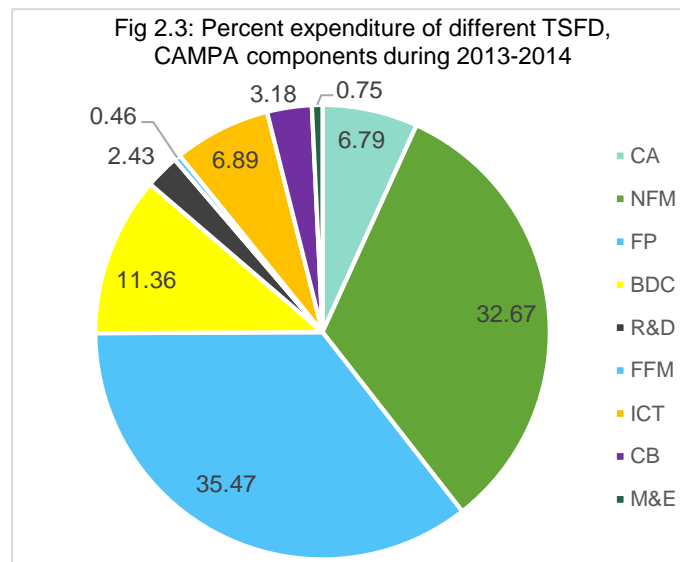
Name of the Circle	Name of the Division	Targets		Achievements	
		Physical (Nos.)	Financial (lakhs)	Physical (Nos.)	Financial (lakhs)
Adilabad	Adilabad	2	0	2	0.225
	Nirmal	15	0	15	0.5
	WL Jannaram	2	0	2	0.5
	Mancherial	1	0	1	0.5
	Bellampally	3	0	3	0.735
	Kazagnagar	2	0	2	0.225
	<b>Circle total</b>	<b>25</b>	<b>0</b>	<b>25</b>	<b>2.685</b>
Hyderabad	Hyderabad	1	0	1	2.81
	Mahabubnagar	5	0.8	5	0.753
	Nalgonda	1	0.169	1	0.669
	<b>Circle total</b>	<b>7</b>	<b>0.969</b>	<b>7</b>	<b>4.232</b>
Khammam	Khammam	4	0	4	1.95166
	Kothagudam	2	0	2	0.753
	Paloncha	2	0	2	0.76281
	Bhadrachalam (N)	2	0	2	0.75281
	Bhadrachalam (S)	2	0	2	0.67229
	WL Paloncha	5	0	5	0.6715
	<b>Circle total</b>	<b>17</b>	<b>0</b>	<b>17</b>	<b>5.56407</b>
Nizamabad	Nizamabad	8	0	8	1.884
	Kamareddy	1	0	1	0.725
	Medak	2	0	2	0.86
	WL Medak	1	0	1	0.169
	<b>Circle total</b>	<b>12</b>	<b>0</b>	<b>12</b>	<b>3.638</b>
Warangal	Warangal (N)	2	0	2	1.37195
	Warangal (S)	2	0	2	0.68266
	WL Warangal	3	0	3	0.58468
	Karimnagar (E)	3	0	3	0.625
	Karimnagar (W)	4	0	4	0.64841
	<b>Circle total</b>	<b>14</b>	<b>0</b>	<b>14</b>	<b>3.9127</b>
FDPT Srisailam	Achampet	6	0	6	0.79355
	<b>Circle total</b>	<b>6</b>	<b>0</b>	<b>6</b>	<b>0.79355</b>
WLM Hyd	CNP	2	0	2	0.79976
	D.F.O	1	0.97	1	0.97127
	<b>Circle total</b>	<b>3</b>	<b>0.97</b>	<b>3</b>	<b>1.77103</b>
AO IV	AO IV	3	0	3	27.85065
	<b>Circle total</b>	<b>3</b>	<b>0</b>	<b>3</b>	<b>27.85065</b>
<b>GRAND TOTAL</b>		<b>84</b>	<b>1.939</b>	<b>84</b>	<b>50.45</b>

### 2.3 Targets and Achievements of CAMPA components during 2013-2014:

The Government of India, Ministry of Environment and Forests communicated guidelines that prescribe the preparation of an annual plan of operations for utilizing funds received towards Compensatory Afforestation, Net Present Value etc., currently available with the Ad-hoc CAMPA. Accordingly, keeping in view the GOI guidelines, an Annual Plan of Operation (APO) for utilization of amounts realized under Compensatory Afforestation (CA) and Net Present Value (NPV) have been prepared by the TSFD for the year 2013-14 under A.P. State CAMPA, as Telangana state was a part of AP state in 2013-2014. Component wise detail target and achievements are shown in table 2.3. Percent expenditure of funds under different components are shown in Figure 2.3.

Annual Plan of Operation was prepared with the following broad objectives:

- (a) Compensatory Afforestation in lieu of diverted forest areas,
- (b) Conservation, protection, regeneration, and management of existing natural forests,
- (c) Biodiversity Conservation and management of Protected forest areas and wildlife habitats, and
- (d) Research, training and capacity building.



**Table 2.3: Summary of targets and achievements of TSFD, CAMPA components during 2013-2014.**

CAMPA Components	Targets		Expenditure	
	Physical (No. of Works)	Financial (lakhs)	Physical (No. of Works)	Financial (lakhs)
Compensatory Afforestation	350	212.953	350	456.03060
Natural Forest Management	1514	3044.0905	1514	2195.014
Forest Protection	959	2939.2185	959	2383.219
Biodiversity Conservation	614	913.673	614	763.499
Research and Development	267	169.6	267	163.14656
Forest Fire management	65	34.24	65	30.6068
Information and Communication Technology	332	699.995	332	463.02
Capacity Building	108	870.437	108	213.598
Monitoring and Evaluation	84	1.939	84	50.45
<b>Total</b>	<b>4293</b>	<b>8886.146</b>	<b>4293</b>	<b>6718.58396</b>

**2.4 Implementing mechanism:** The Telangana State Forest Department was the implementing agency. The works were executed through the departmental personnel. In activities like nursery raising, raising of plantations, maintenance of plantations, Soil and Moisture Conservation works, creation and maintenance of fire lines and other activities with wage component, the programme



was implemented following the guidelines of NREGA scheme by employing the rural unemployed people with job cards, maintenance of muster rolls and payment of wages into the bank account of job card holders.<sup>9</sup>

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<sup>9</sup>AP State CAMPA, APO for the year 2013-2014

## Chapter 3

### EVALUATION SCOPE AND OBJECTIVES

As Telangana State Forest Department (TSFD) is implementing CAMPA activities in the state of Telangana since 2009-2010, there is a felt need to technically evaluate these ongoing efforts, and based on the learnings, plan the way forward. Also, the State CAMPA guidelines stipulate that an evaluation methodology of the works implemented has to be evolved and implemented to ensure effective and proper utilization of the fund for which funds are also earmarked. In this regard, IORA Ecological Solutions Pvt. Ltd. is engaged as the 'Third party' to evaluate and monitor CAMPA works implemented in the State of Telangana yearly for the period 2009-10 to 2015-16. Evaluation of activities under all the CAMPA components was conducted. Two-stage random sampling strategy has been adopted.<sup>10</sup> Of all the activities, firstly 10% of works for each year were randomly sampled. For plantations activities, the basis for selecting 10% of the samples is adhering the National Evaluation Manual for CAMPA Projects when the survival percentage for different plantation sites is not available. Secondly, from the selected plantation sites, randomly a plot of 0.1 ha was laid for field enumeration adhering NWPC-2014<sup>11</sup> guidelines. For other activities, works carried out were randomly sampled and 10% of the activities were selected every year. Records maintained for the activities was checked and in the case where civil or other physical works were carried out, the inspection was conducted during the evaluation process to check from variation as reported in the records and that exists on the field. It was ensured that the random sample covers maximum forest divisions of the state.

#### 3.1 Evaluation scope

IORA Ecological Solutions Pvt. Ltd. has been assigned to conduct 3<sup>rd</sup> party evaluation of CAMPA works implemented in the State of Telangana.

#### 3.2 Objectives of the study

1. To physically monitor and document the status of plantations of the selected sample from the plantation carried out under the CAMPA Scheme in Telangana State Forest department for the year 2013-2014.
2. To evaluate the survival and health of plantations carried out under the CAMPA Scheme in Telangana State Forest department for the year 2013-2014 with photographic evidence.
3. To evaluate the other activities carried out by Telangana State Forest Department for the year 2013-2014 with photographic evidence.

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<sup>10</sup>National Evaluation Manual for CAMPA Projects (2016) CEAMT, IIFM Bhopal, 25 pages

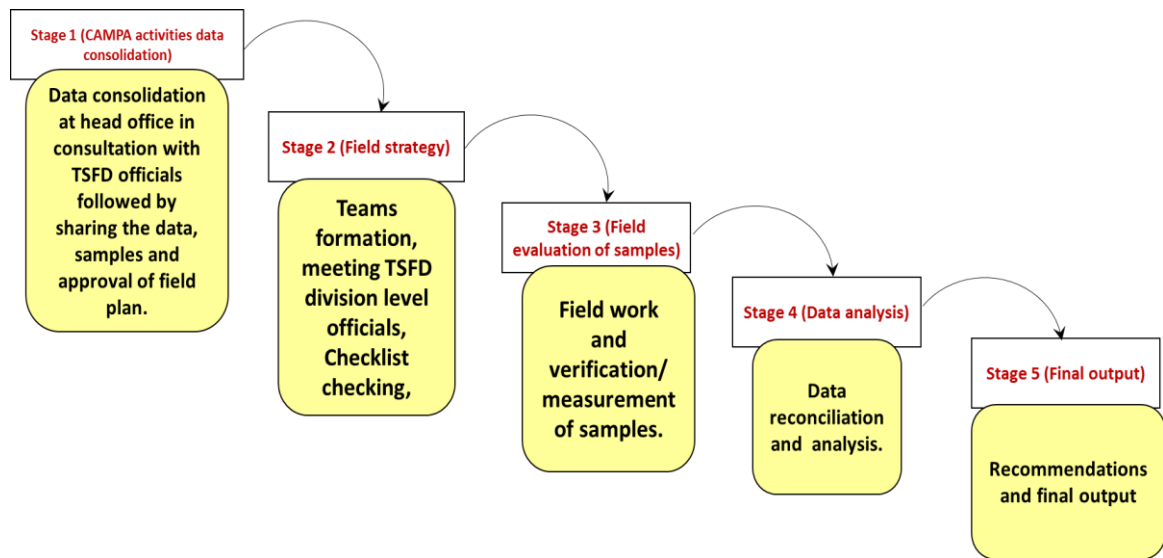
<sup>11</sup>National Working Plan Code – For Sustainable Management of Forests & Biodiversity in India (2014), MoEFCC, 91p.

# Chapter 4

## EVALUATION APPROACH AND METHODS

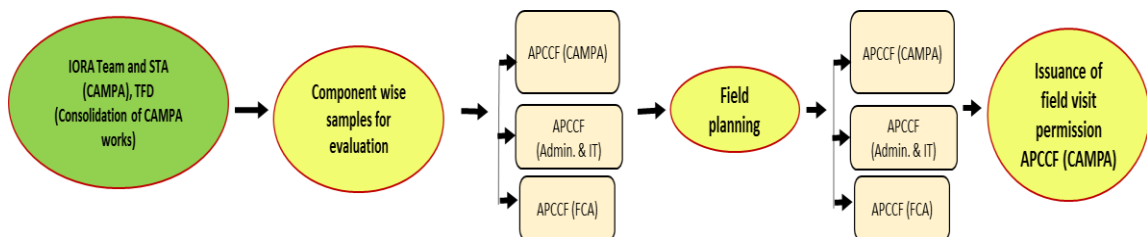
### 4.1 Evaluation Methodology

The process flow that was adopted during the third party CAMPA evaluation exercise is shown through a flowchart in Fig 4.1. The evaluation methodology was conducted in five stages. Each of these stages is elaborated in this chapter under five sub-sections.



**Fig 4.1: Process flow of third party CAMPA evaluation.**

**4.1.1 Stage 1 - CAMPA activities data consolidation:** The first stage i.e. CAMPA Activities Data Consolidation (see Fig 4.1.1) consisted of four major activities namely data collection, sampling, field planning and issuance of field visit permission from APCCF (CAMPA).



**Fig 4.1.1: Flow chart of Stage 1 - CAMPA activities data consolidation.**

TSFD officials were contacted at the TSFD, Head Office, Hyderabad to collect the total list of works under different CAMPA components undertaken by TSFD CAMPA for the year 2013-2014. The list of data sources reviewed for consolidation of CAMPA list of works for 2013-2014 is shown in List 4.1.1.

**List 4.1.1: List of data sources for third-party CAMPA evaluation.**

- (A) TSFD Data sources (files, excels) reviewed with support from STA CAMPA
- 1) TSFD circles, divisions together with AP order
  - 2) TSFD circles, divisions before bifurcation list
  - 3) TSFD circles, divisions after reconciliation list
  - 4) CAMPA Annual Plan report 2013-2014
  - 5) List of works 2013-2014 excel
- (B) Information on GIS with support from DCF (FCA) and RFO (Geomatics)
- 1) List of divisions
  - 2) List of ranges

**4.1.1.1 Component wise samples for evaluation:** The consolidated list of CAMPA works under different CAMPA components undertaken by TSFD, CAMPA for the year 2013-2014 was collected. A total of 4293 works (*Part B*) were undertaken in the state of Telangana under CAMPA during 2013-2014. The total list of CAMPA works was sorted into two categories i.e. Plantation Activities and Other Activities. The list of samples prepared was presented to the CAMPA Monitoring Committee (CMC) consisting of the APCCF (CAMPA), APCCF (Admin & IT) and APCCF (FCA) through an inception workshop. Suggestions received from the CMC during the inception workshop was incorporated and the final inception report submitted to TSFD for approval. Detail sampling design adopted is described under the following two sub-sections.

**4.1.1.1.1 Sampling of plantation activities:** For direct field evaluation of plantation, two-stage random sampling strategy was applied.

The list of plantation activities namely advance works, raising of forest plantations, maintenance of plantations and raising of planting stocks undertaken under CA and NPV was sorted for the year 2013-2014. The sorted list was then ably formatted using MS Excel software and the file was converted to a comma separated values (CSV) to plot them into the geo-spatial domain. The CSV values were plotted geo-spatially in ArcGIS Version 10.3 software and segregated into plantations undertaken under CA and NFM. Sampling design tool, an add-on of ArcGIS 10.3 software was run to generate random samples keeping sampling intensity of 10%.

Of all the total plantation taken up by TSFD, firstly 10% of plantations were randomly sampled. The basis for selecting 10% of the sample is adhering the National Evaluation Manual for CAMPA Projects when the survival percentage for different plantation sites is not available<sup>12</sup>.

Secondly, an iterative method was used to get the appropriate distribution of samples in the divisions. Telangana forest division boundary was taken as a sample frame to decide the extent of samples. From the selected plantation sites, a random point was generated to lay plot for direct

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<sup>12</sup>National Evaluation Manual for CAMPA Projects (2016) CEAMT, IIFM Bhopal, 25 pages

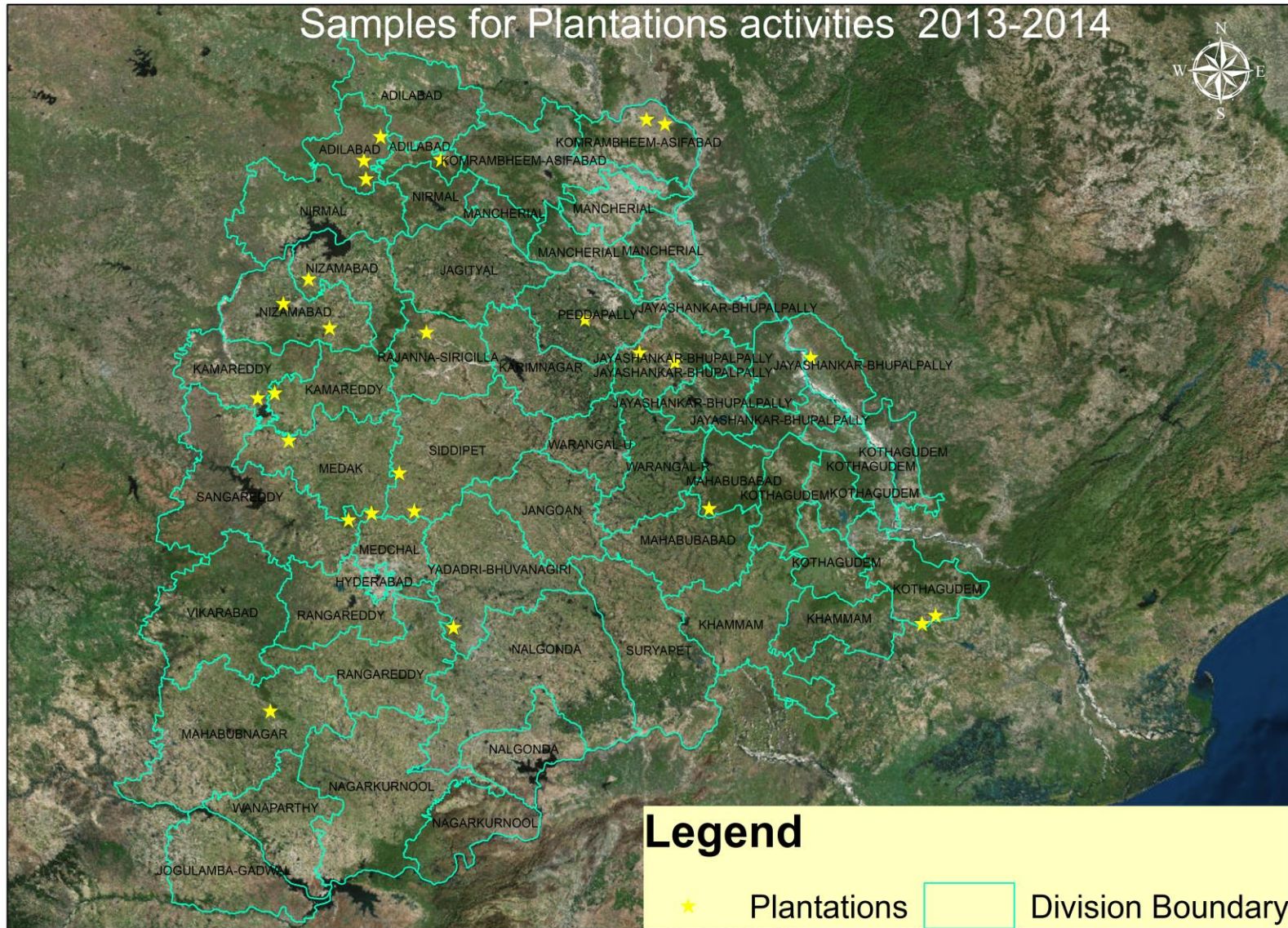
field enumeration adhering NWPC-2014 guidelines. The detail sample list (144 nos.) of plantation activities is given in Annexure IV. Division wise number of plantation samples for evaluation under CA and NPV is shown in table 4.1.1a and Map 4.1.1.

**Table 4.1.1a: Division wise number of plantation samples for different CAMPA components (2013-2014) for 3<sup>rd</sup> party evaluation.**

Division	Raising			Advance Operation			Maintenance			Nursery		Grand Total
	CA	NFM	R&D	CA	NFM	R&D	CA	NFM	R&D	CA	NFM	
Achampet	-	-	-	-	-	-	1	-	-	-	-	1
Adilabad	-	-	-	1	1	-	2	2	-	-	-	6
Amrabad	-	-	-	-	1	-	-	-	-	-	-	1
Armoor	-	-	-	-	-	-	2	-	-	-	-	2
Armoor	-	1	-	-	-	-	-	-	-	-	-	1
Banswada	-	2	-	-	-	-	1	2	-	-	-	5
Bhadrachalam	-	-	-	-	2	-	-	1	-	-	1	4
Bhupalpally	1	1	-	-	2	-	-	1	-	1	-	6
Echoda	1	2	-	-	1	-	-	2	-	-	1	7
FG Warangal (U)	-	-	-	-	-	-	-	-	1	-	-	1
FG Warangal(U)	-	-	3	-	-	2	-	-	2	-	-	7
Jagitial	-	-	-	-	-	-	2	3	-	-	-	5
Kagaznagar	-	2	-	-	-	-	1	1	-	-	-	4
Kamareddy	-	-	-	-	-	-	1	1	-	-	-	2
Khammam	-	-	-	-	-	-	-	2	-	-	-	2
Khanapur	-	-	-	1	1	-	-	1	-	-	-	3
Kothagudem	-	-	-	-	-	-	-	1	-	-	-	1
Mahaboobnagar	-	1	-	-	-	-	-	1	-	-	-	2
Mahbubabad	1	-	-	-	5	-	-	2	-	-	-	8
Medak	-	1	-	-	1	-	-	2	-	-	-	4
Nagrajunasagar WLM	-	-	-	-	-	-	1	-	-	-	-	1
Nalgonda	-	-	-	-	-	-	2	1	-	-	3	6
Nirmal	-	-	-	-	-	-	-	4	-	-	2	6
Nizamabad	-	2	-	-	1	-	-	2	-	-	-	5
Paloncha	-	1	-	-	-	-	-	1	-	-	-	2
Peddapally	-	1	-	-	2	-	2	4	-	-	-	9
Samshabad	-	-	-	-	-	-	-	-	-	-	1	1
Sangareddy	1	1	-	-	1	-	-	2	-	-	1	6
Sathupally	-	-	-	-	-	-	-	2	-	-	-	2
Siddipet	-	1	-	-	2	-	-	1	-	-	-	4
Sircilla	-	1	-	-	2	-	-	-	-	-	-	3
Sircilla	-	-	-	-	-	-	-	2	-	-	-	2
SS Hyderabad	-	-	1	-	-	-	-	-	4	-	-	5
Surayapet	-	-	-	1	-	-	-	-	-	-	-	1
Uttoor FDPT	-	1	-	-	-	-	-	-	-	-	-	1
Venkatapuram	-	1	-	1	1	-	-	1	-	-	-	4
Wanaparthy	-	-	-	1	-	-	-	2	-	-	-	3
Warangal Rural	-	-	-	1	1	-	-	-	-	-	-	2
Warangal(Rural)	-	-	-	-	-	-	-	-	-	-	1	1
Yadadri	1	1	-	-	-	-	-	2	-	-	-	4
Yallandu	-	-	-	-	2	-	-	1	-	-	1	4
<b>Grand Total</b>	<b>5</b>	<b>20</b>	<b>4</b>	<b>6</b>	<b>26</b>	<b>2</b>	<b>15</b>	<b>47</b>	<b>7</b>	<b>1</b>	<b>11</b>	<b>144</b>



**Map 4.1.1a: Map showing plantation activities samples evaluated for 3<sup>rd</sup> party evaluation during 2013-2014.**



**4.1.1.1.2 Sampling of other activities:** For sampling 'other' activities, the consolidated list of works of all the other activities undertaken by TSFD CAMPA during the year 2013-2014 was sorted. The sorted list was segregated into different CAMPA components. Sampling design tool, an add-on of ArcGIS 10.3 software was run to generate random samples keeping sampling intensity of 10%. An iterative method was used to get the appropriate distribution of samples in the divisions. The detail sample list (292 nos.) of other activities is given in Annexure V. Division wise number of samples of other activities under different CAMPA components namely, CA, NFM, FP, FFM, ICT, BDC, M&E and R&D is shown in table 4.1.1b and map 4.1.1.b.

**Table 4.1.1b: Division wise number of samples for 3<sup>rd</sup> party evaluation of other activities under different CAMPA components for the year 2013-2014.**

Division	CA	NFM	BDC	FP	FFM	ICT	CB	M&E	R&D	Grand Total
Achampet	-	2	1	4	-	1	-	-	-	8
Adilabad	1	1	-	3	-	-	-	-	-	5
Amrabad	-	-	8	6	-	3	-	-	-	17
Asifabad	-	-	-	3	-	-	-	-	-	3
Banswada	-	-	1	2	-	-	-	-	-	3
Bellampally	2	1	-	5	-	2	-	2	-	12
Bhadrachalam	-	3	-	1	-	1	-	1	-	6
Bhupalpally	-	-	-	2	-	1	-	-	-	3
Chilkur	-	-	2	1	-	-	-	-	-	3
Echoda	1	2	-	-	-	-	-	-	-	3
FG Warrangal	-	-	-	-	-	-	-	-	23	23
Hyderabad	1	1	-	-	1	-	-	-	-	3
Jagtial	-	-	-	5	-	2	-	-	-	7
Jannaram	-	-	9	1	-	1	-	1	-	12
Kagaznagar	-	-	-	-	-	-	-	1	-	1
Kamareddy	-	-	-	1	-	-	-	-	-	1
Karimnagar	1	-	-	2	-	-	-	-	-	3
KBR National park	-	-	4	3	-	1	-	-	-	8
Khammam	4	1	-	2	-	-	-	1	-	8
Khanapur	-	-	-	3	-	1	-	-	-	4
Mahabubnagar	1	-	6	2	1	-	-	-	-	10
Mahbubabad	1	-	-	5	-	1	-	-	-	7
Mancherial	-	-	-	6	-	1	-	1	-	8
Manuguru	1	-	-	-	-	1	-	-	-	2
Medak	-	2	3	5	1	2	-	1	-	14
Medchal	-	-	-	1	-	-	-	-	-	1
Nalgonda	2	-	-	4	1	1	-	-	-	8
Nirmal	-	1	7	4	-	-	-	-	-	12
Nizamabad	-	2	-	2	1	-	-	-	-	5
NZP, Hyderabad	-	-	2	-	-	-	-	-	-	2
Paloncha	1	1	1	2	-	3	-	-	-	8
Pedapally	-	-	-	2	-	1	-	-	-	3
Sangareddy	1	-	-	-	-	2	-	-	-	3
Sangareddy	-	-	-	1	-	-	-	-	-	1
Sathupally	2	-	-	3	-	1	-	-	-	6
Siddipet	-	-	-	-	-	2	-	-	-	2
Sircilla	-	-	-	1	-	1	-	-	-	2
SS Hyderabad	-	-	-	-	-	-	-	-	4	4
TSFA, Dullapally	-	-	-	-	-	-	11	-	-	11
Utnoor	-	-	-	1	-	-	-	-	-	1
Venkatapuram	-	-	-	3	-	-	-	-	-	3
Vikarabad	-	-	-	3	-	-	-	-	-	3
Wanaparthy	5	-	-	2	1	1	-	-	-	9
Warangal	2	-	-	1	-	-	-	-	-	3

Division	CA	NFM	BDC	FP	FFM	ICT	CB	M&E	R&D	Grand Total
WLM Eturunagram	-	-	1	-	-	-	-	-	-	1
WLM Kinnersani	-	-	3	1	-	1	-	-	-	5
WLM Medak	-	-	3	-	-	-	-	-	-	3
WLM Nagarjunasagar	-	-	8	1	-	3	-	-	-	12
WLM Paloncha	-	-	2	-	-	-	-	-	-	2
Yadadri Bhuvangiri	-	3	-	2	1	-	-	-	-	6
Yellandu	-	-	-	1	-	1	-	-	-	2
<b>Grand Total</b>	<b>26</b>	<b>20</b>	<b>61</b>	<b>97</b>	<b>7</b>	<b>35</b>	<b>11</b>	<b>8</b>	<b>27</b>	<b>292</b>

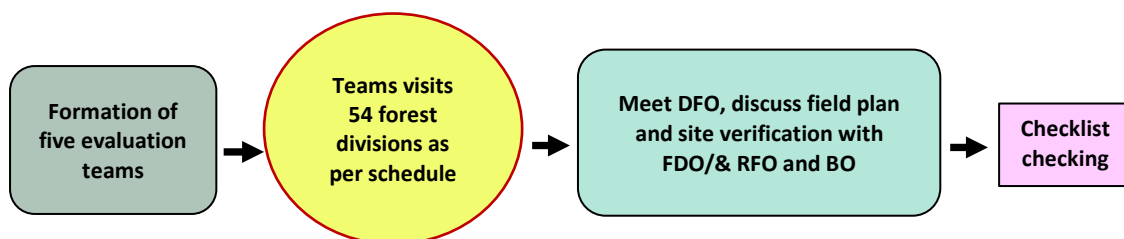




**4.1.1.3 Field plan:** Proposed field visit dates was prepared in consultation with DFO, Hyderabad and shared with CMC for comments. Suggestions received were incorporated and the draft field plan was submitted to APCCF (CAMPA) for its approval. The division-wise details of field visits are given in Annexure I.

**4.1.1.4 Issuance of field permission:** Proposed field visit dates, records and other information to be furnished were circulated from the O/o PCCF & HoFF, TSFD to all DFO/FDO of the territorial and wildlife forest divisions of Telangana state (*Annexure I*). Field staff of the forest divisions to be visited were requested to be present during evaluation along with Measurement Book, Plantation Journal, CAMPA works register, and other information to facilitate smooth completion of the evaluation. As per the Rc.No.3037/2017/CAMPA dated 30.05.2017 issued by PCCF, TSFD the DFOs/FDOs (*Annexure II*) shall ensure concern field staff should be present and show the plantation site or other works taken up for CAMPA. The plantation journal, measurement books, estimate, list of works in Division/Range should be made available to the evaluation team.

**4.1.2 Stage 2 - Field Strategy:** In the second stage (*see Fig 4.1.2 for the flow chart*) of third-party field evaluation field strategy was developed. This stage started with the formation of evaluation teams, team visits to fifty-four forest divisions team visits.



**Fig 4.1.2: Flow chart of Stage 2 - Field strategy.**

This stage started with the formation of five evaluation teams, each team comprising of Field lead, field associate, and back support analyst. Names and qualifications of the team members are shown in Annexure III.

As per the field visit schedule, each team met DFO and discussed field plan with DFO, FDO, RFO. The following checklist was checked: a) CAMPA Works Register, b) Confirmation of Samples, c) Plantation Sites, d) Measurement Books, e) Plantation Journals and f) Vouchers, were requested from the forest division/range visited for conducting site verification. Visit to the site was done with FDO/& RFO and BO.

**4.1.3 Stage 3 - Field evaluation of samples:** Field evaluation of samples was conducted by first checking CAMPA works register in the division to reconfirm plantation activities samples drawn under CA and NPV and after confirmation based on the geo coordinate the evaluation team visited the sites with the TSFD division level officials and data was collected adhering the forms (*Appendix I*).



#### 4.1.3.1 Meeting TSFD officials

- 1) Met DFO followed by a meeting with FDO, RFO and FBOs in each division/ranges visited.
- 2) Collected list of works carried out under TSFD, CAMPA.
- 3) Matched each sample with the CAMPA works register list.
- 4) After confirmation ensured a forest department officials presence in each of the samples locations.
- 5) Physical verification and geotagging. This is elaborated under sub-section 4.2.

**4.1.3.2 Build capacity:** During field evaluation efforts was laid also to build the capacity of the front line TSFD officials present during evaluation on how to lay sample plots and use, hands-on different forest inventory instruments like GPS, compass, densitometer, Hypsometer.

**4.1.4 Stage 4 - Data analysis:** This stage consisted of activities (see Fig 4.1.4) pertaining to data digitization, data reconciliation and data analysis data analysis.



Fig 4.1.4: Flow chart of Stage 4 – Data Analysis.

**4.1.4.1 Data digitization:** The primary activities conducted for digitizing the data are as follows:

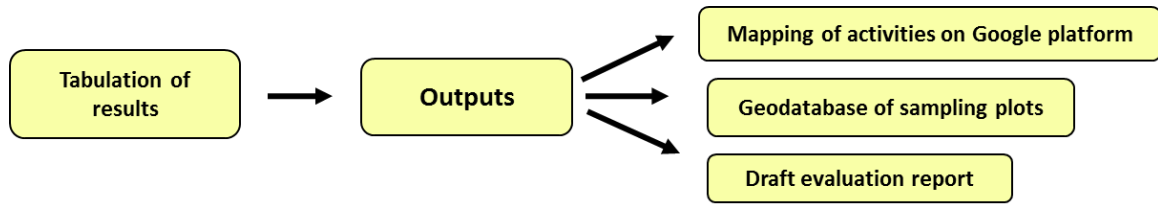
- a) Allocation of a place at Aranya Bhavan.
- b) Data of plantation activities and other activities were digitized through MS Excel.
- c) Data consolidated at the division level.

#### 4.1.4.2 Data reconciliation

- a) Reconciliation of the field data with the spending records.
- b) Verified works with audited reports and FA 9 for each CAMPA activities at Aranya Bhavan with support from STATE CAMPA. The verified CAMPA works list as per the audited reports was used.
- c) Collation of Field data collated.

**4.1.4.3 Data analysis:** Data analysis as per the methodologies approved in the inception workshop using MS Excel. For the purpose of reporting, the survival percent was weighted by net area planted in the same model. The percentage was reported separately for plantation type, plantation method, protection status of plantation and different species.

**4.1.5 Stage 5 - Final output:** The final stage of evaluation constituted tabulation of results and production of outputs (see fig 4.1.5).



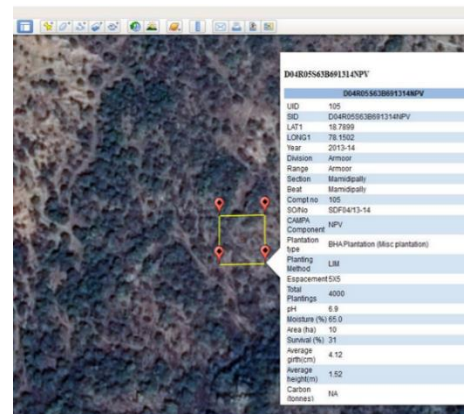
**Fig 4.1.5: Flow chart of Stage 5 – Final output.**

**4.1.5.1 Tabulation of results**

- a) Analyzed results were tabulated separately for divisions, species, plantation types, activities.
- b) Matched field data collected and data digitized.
- c) Field data digitization and consolidated at the division level for 2013-2014.

**4.1.5.2 Outputs**

a) Geodatabase created of all sampled plantation plots (file *CAMPA\_2013\_2014\_field\_plantation\_samples.kmz*)



b) All activities mapped using Arc GIS and exported to Google earth platform (file *CAMPA other activities samples\_2013-2014.kmz*)



c) Development of draft evaluation report.

## 4.2 Field evaluation and data collection

### (A) Plantation activities:

1) Based on the measurement books (MB), where all the works executed and amounts paid written by officer executing the work, check measured by R.O. and test checked by DFO/Sub DFO or any other higher authority are maintained, physical verification of MB, collection of GPS coordinates from registers and other records available in the concerned forest offices followed by field visit to the project area for its field verification. For evaluation plantation (raising) samples, sample plots were laid. Evaluation of other plantation activities namely, advance operations including nursery works of planting stocks; maintenance (1<sup>st</sup> year, 2<sup>nd</sup> year and 3<sup>rd</sup> year) was based on scrutinization of information available on measurement books/plantation journals/expenditure vouchers since these type of plantation activities had completed at least a year before the evaluation team visited the field.

2) For laying sample plot, Garmin GPS used to navigate to reach the randomly generated sample geocoordinate. A square plot of 0.1 ha<sup>13</sup> (Fig 4.1.3.2) was laid out by measuring 22.5 m horizontal distance i.e., half of the diagonal in all the four directions at 45<sup>o</sup> in north-east, at 135<sup>o</sup> in the south-east, at 225<sup>o</sup> in the south-west, and at 315<sup>o</sup> in north-west corners of the plot from true north. The dimensions of the plot, i.e. one side measured 31.62 m horizontal distance. Latitude and longitude of all the sample plots of plantations are shown in Annexure VI.

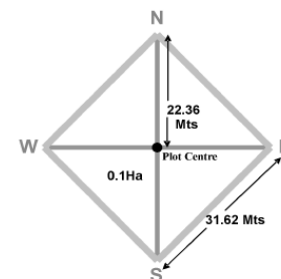


Fig 4.1.3.2: Sample plot layout.

3) After laying the sample plot, plots, the parameters evaluated is shown in table 4.1.3.2.a.  
**Table 4.1.3.2a: List of evaluation parameters for plantations.**

Evaluation Parameters	Field Recordings to be made
Survival percentage	Plants surviving in the sample plot counted and recorded.
Growth of trees	Diameter and height of each tree inside the plots were recorded.
Habitat Improvement	Presence of wildlife, good growth of grasses, soil erosion, water sources if any observed recorded. Plantation watchman, officials, VSS members, if present were interviewed to record their qualitative perception of CAMPA plantations on habitat improvement.
Canopy density	Canopy density recorded using a densiometer. Number of plants wounded, stressed, wilt, diseased recorded.
Soil salinity and moisture status	Soil salinity and soil moisture estimated using a portable soil pH and soil moisture meter.
Carbon content of plantations	The carbon content of the plantations estimated based on allometric equations as given by Forest Survey of India. <sup>14</sup>

<sup>13</sup>National Working Plan Code — For Sustainable Management of Forests & Biodiversity in India (2014), MoEFCC, 91p.

<sup>14</sup>FSI (2015) Carbon Stocks in India's Forest, 164p

- 4) For assessing mortality, every tree growing inside the plot were counted. Diameter for every tree growing inside the plot was measured 50 cm above the ground level for up to 3 years old plantation and 100 cm above ground level for up to 5 years plantations as mentioned in NEM CAMPA, 2016<sup>15</sup> using a tape.
- 5) For calculating the carbon content trees with girth above 30cm was taken to apply the allometric equations as developed by FSI<sup>10</sup> for calculating tree carbon. Accordingly, the carbon content per tree was calculated.
- 6) Data observed were recorded in Form B (Appendix I). Evaluated samples detail of plantation activities is shown in Annexure IV.

**(B) Other activities:**

- 7) For evaluation of other activities, from a total of the activities under each component, 10% of activity were randomly selected. Activities that were physically visible like RCC pillars, beat office, quarters, etc. field evaluation on work status was conducted and geotagged pictures taken. Evaluations of samples of other activities like fuel charges, POL charges, payments, etc. were based on the information made available through measurement books / CAMPA register / vouchers / FA 9, since the activities had been completed five years before the field evaluation visited the sites.
- 8) Field observations were recorded in different forms namely Form A to Form L (*Appendix 1*). Form number with the activities information recorded during the field evaluation exercise is shown in table 4.1.3.2b.

**Table 4.1.3.2b: List of Forms with the information of activities to be recorded during CAMPA field evaluation exercise.**

S. No.	Form No.	Activities
1.	Form A	Summary
2.	Form B	Plantation Activities (CA / NFM)
3.	Form C	Soil & Water Conservation activities (CA-CAT, FWM, BDC)
4.	Form D	Forest Protection Activities
5.	Form E	Forest Fire Management Activities
6.	Form F	Biodiversity Conservation & Ecotourism Activities
7.	Form G	Infrastructure Development & Maintenance
8.	Form H	Research & Development
9.	Form I	Information & Communication technology Activities
10.	Form J	Capacity Building and Office Support Activities
11.	Form K	Monitoring & Evaluation Activities
12.	Form M	Third party comments

The evaluated samples detail of other activities is shown in Annexure V.

<sup>15</sup>National Evaluation Manual for CAMPA Projects (2016) CEAMT, IIFM Bhopal, 25 pages

### 4.3 Evaluation scoring

#### (A) Quantitative aspects

Quantitative evaluation score for different plantation activities and other activities under different CAMPA components are elaborated below

##### i) Plantation activities:

a) For raising of plantations, scoring of each samples were carried out in a scale of 0 to 300. Scoring for evaluating the field plantation samples was based on mortality. Sample plantation plots with mortality less than 10% was scored 300 points, for mortality 11% to 20% = 240 points, 21% to 30%= 180 points, 31% to 40% = 120 points, 41% to 50% = 60 points and for mortality of plantations above 50% = 0 points was given.

b) For advance works of the plantations, scoring was done in a scale of 0 to 100 based on the percent variations. Scoring to evaluate the works was based on the deviations observed in between the records and in the field. For deviations less than 10% = 50 points, 11% to 20% = 40 points, 21% to 30%= 30 points, 31% to 40% = 20 points, 41% to 50% = 10 points and for deviations above 50% = 0 points was given.

c) For maintenance works of the plantations, scoring was done in a scale of 0 to 50 based on the percent variations. For deviations less than 10% = 100 points, 11% to 20% = 80 points, 21% to 30%= 60 points, 31% to 40% = 40 points, 41% to 50% = 20 points and for mortality above 50% = 0 points was assigned.

d) For nursery activities for raising of the plantations, scoring was done in a scale of 0 to 50 based on the percent variations. Scoring to evaluate the works was based on the deviations observed in between the records and in the field. For deviations less than 10% = 50 points, 11% to 20% = 40 points, 21% to 30%= 30 points, 31% to 40% = 20 points, 41% to 50% = 10 points and for deviations above 50% = 0 points was given.

e) Total score allotted to plantation activity for the year is the average score of the total plantation activities evaluated.

##### ii) Other activities:

a) For recording CA & NFM other activities, Soil and Water Conservation measures and BDC activities, scoring to evaluate the works was based on the deviations observed in between the records and in the field. For deviations less than 10% = 100 points, 11% to 20% = 80 points, 21% to 30%= 60 points, 31% to 40% = 40 points, 41% to 50% = 20 points and for deviations above 50% = 0 points was given.

b) For recording FP activities the scoring was done in a scale of 0 to 150. Scoring to evaluate works was based on the deviations observed in between the records and in the field. For deviations less than 10% = 150 points, 11% to 20% = 120 points, 21% to 30%= 90 points, 31% to 40% = 60 points, 41% to 50% = 30 points and for deviations above 50% = 0 points was given. `

c) Other activities under ICT the scoring was done in a scale of 0 to 50. Scoring to evaluate the works was based on the deviations observed in between the records and in the field. For deviations less than 10% = 50 points, 11% to 20% = 40 points, 21% to 30%= 30 points, 31% to 40% = 20 points, 41% to 50% = 10 points and for deviations above 50% = 0 points was given.

d) For the activities under R&D and CB the scoring was done in a scale of 0 to 20. Scoring to evaluated works was based on the deviations observed in between the records and in the field. For deviations less than 10% = 20 points, 11% to 20% = 16 points, 21% to 30%= 12 points, 31% to 40% = 8 points, 41% to 50% = 4 points and for deviations above 50% = 0 points was given.

e) For the activities under FFM and M&E, the scoring was done in a scale of 0 to 10. Scoring to evaluated works was based on the deviations observed in between the records and in the field. For deviations less than 10% = 10 points, 11% to 20% = 8 points, 21% to 30%= 6 points, 31% to 40% = 4 points, 41% to 50% = 2 points and for deviations above 50% = 0 points was given.

**(B) Qualitative aspects**

Qualitative evaluation scoring for different plantation and other activities carried out under TSFD CAMPA are elaborated below

a) Impact awareness generation campaign is based on any evidence during evaluation on conducting of regular CAMPA campaigns by the forest department.

b) Identification of approved site for plantation were based on checking availability of treatment plan on measurement books/ plantation journals.

c) Improvement in quality of wildlife habitat are based on the impact of different plantation raised under CAMPA on the wildlife.

d) CAMPA benefits was based on number of persons from BPL/SC/ST communities engaged for CAMPA activities.

e) Project awareness CAMPA is based on discussion with local people and forest officials about CAMPA.



f) Transparency maintenance and payment was based on availability of matching CAMPA works at the division and at the head office.

g) Maintenance of assets created was based on the state of the physical assets created and plantations raised.

**4.3.1 Evaluation scoring total:** The total score of a component is the total of the average score of the points scored under each sub-component. The total score of evaluation was recorded in the overall site assessment sheet as shown in table 4.3.1 for the year evaluated.

**Table 4.3.1: Overall site assessment sample sheet<sup>16</sup>.**

Quantitative Aspects (A)				Qualitative Aspects (B)			
S.No.	Main heading	Score	Total	S.No.	Main heading	Score	Total
I.	Plantation activities (CA and NPV)		500	I.	Impact of awareness generation campaign		5
II	Soil and Water Conservation Measures		100	II.	Identification of approved site for plantation		5
III.	Other activities (CA & NFM)		100	III.	Improvement in quality of wildlife habitat		5
IV	Forest Protection		150	IV.	CAMPA benefits (SC/ST/BPL households)		10
V	Forest Fire Management		10	V.	Project Awareness		5
VI	Biodiversity Conservation		100	VI.	Transparency, maintenance and payments		5
VII	Research & Development		20	VII.	Maintenance of assets created		10
VIII	Capacity Building		20				
IX	ICT		50				
X	M&E		10				
<b>Total (A)</b>			<b>1060</b>	<b>Total (B)</b>			<b>45</b>
<b>Grand Total (A+B)</b>				<b>1105</b>			

The total figure under each main heading of quantitative aspect in the above table is based on the number of sub-components under the components evaluated.

**Table 4.3.2. Percent of the total score obtained used to rank the performance<sup>17</sup>**

Percent score	Performance
90 - 100	Highly satisfactory
80 - 90	Satisfactory
60 - 80	Moderately Satisfactory
40 - 60	Unsatisfactory
Below 40	Highly unsatisfactory

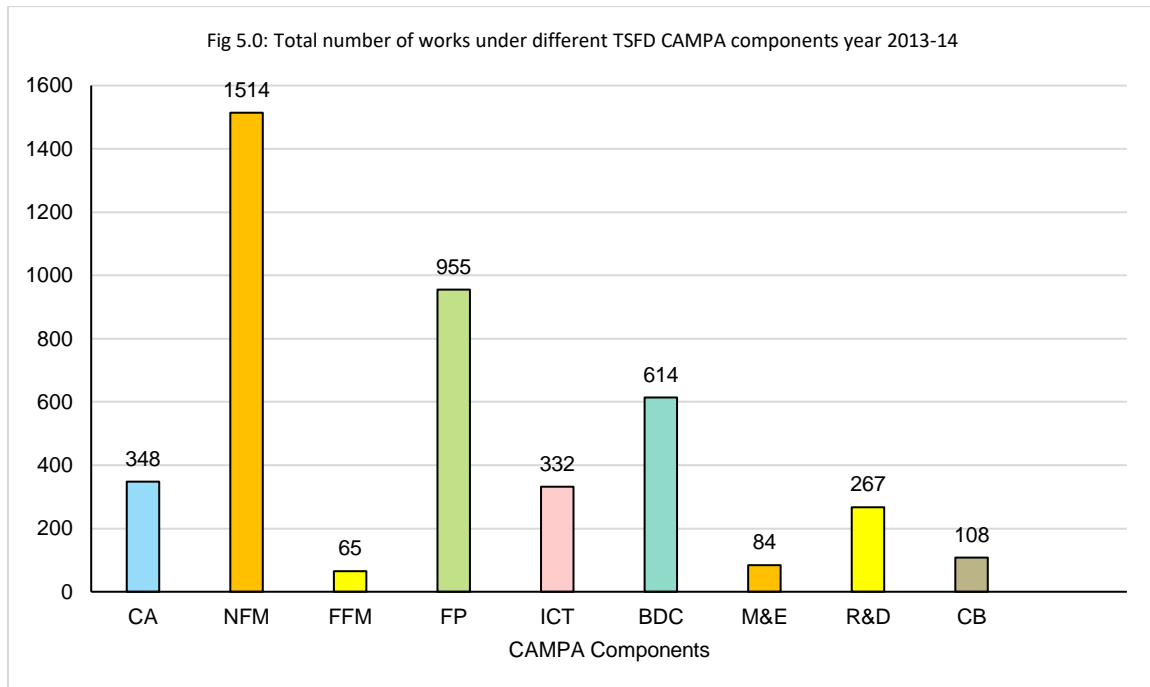
<sup>16</sup> The total score assigned to the components were done as per the percentage expenditure under the various sub-components of CAMPA and their importance.

<sup>17</sup>National Evaluation Manual for CAMPA Projects (2016) CEAMT, IIFM Bhopal, 25 pages

## Chapter 5

### DATA ANALYSIS

The total number of activities undertaken by TSFD under different CAMPA components during 2013-2014 is shown in Figure 5.0.



A total of 4293 works were undertaken in the state of Telangana during 2013-2014 under different CAMPA components. Highest number of works were undertaken under NFM followed by FP, BDC, CA, ICT, R&D, CB, M&E and FFM. Division wise details of total works are shown in table 5.0.

CA was undertaken by 20 divisions under 6 circles. The highest number of CA works was undertaken by Paloncha division. NFM activities were undertaken in 23 divisions under 8 circles, Medak undertook the highest number of NFM activities. FP works were carried out in 29 divisions of the state, among which Kamareddy had undertaken a maximum number of forest protection works. BDC works were undertaken by 18 divisions with Jannaram WL undertaking maximum number of BDC activities.

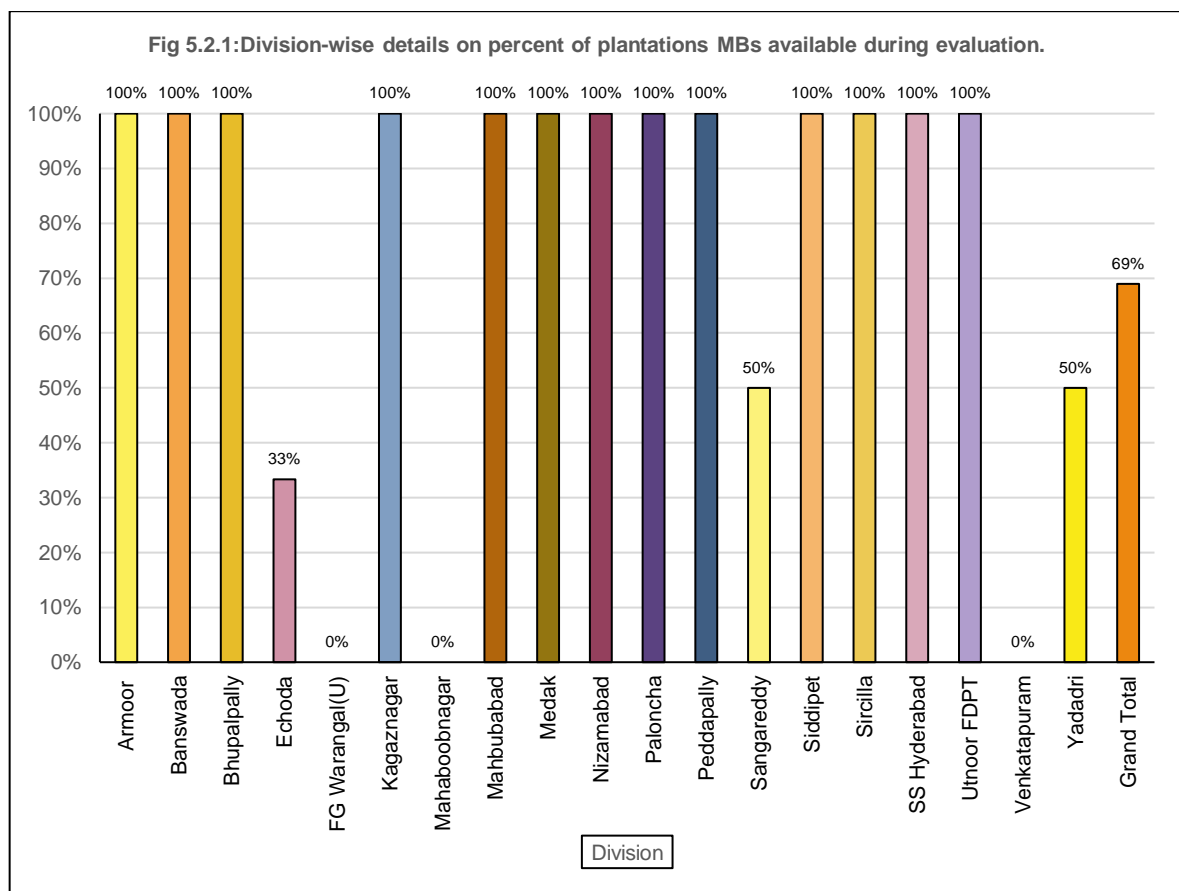
**Table 5.0: Division wise total number of works under different components of CAMPA for the year 2013-2014 (division list as per before bifurcation).**

Year	Division	CA	NFM	FFM	FP	ICT	BDC	M&E	R&D	CB	Total Works
Adilabad	Adilabad	10	87	-	40	-	5	2	-	-	144
	Nirmal	5	113	2	41	11	46	15	-	-	233
	Jannaram WL	-	-	-	49	8	139	2	-	-	198
	Mancherial	13	79	-	25	4	-	1	-	-	122
	Bellampally	53	78	2	25	6	-	3	-	-	167
	Kag haznagar	-	60	-	23	7	-	2	-	-	92
Hyderabad	Hyderabad	3	58	21	54	14	10	-	-	-	160
	Mahabubnagar	15	60	5	46	29	22	7	-	-	184
	Nalgonda	41	20	3	24	6	-	-	-	-	94
Khammam	Khammam	29	69	-	36	17	-	4	-	-	155
	Kothagudem	4	48	-	44	18	-	6	-	-	120
	Paloncha	80	78	-	26	11	-	-	-	-	195
	Bhadrachalam (North)	14	60	-	32	6	3	-	-	-	115
	Bhadrachalam (South)	6	19	-	35	14	-	2	-	-	76
	WLM Paloncha	-	1	-	18	6	19	5	-	-	49
Nizamabad	Nizamabad	5	72	5	55	22	2	8	-	-	169
	Kamareddy	3	84	6	79	20	22	1	-	-	215
	Medak	6	214	8	68	13	-	2	-	-	311
	WLM Medak	-	-	1	4	3	76	1	-	-	85
Warangal	Warangal (North)	39	59	-	47	17	1	2	-	-	165
	Warangal (South)	1	63	-	34	4	-	2	-	-	104
	Warangal WLM	-	-	-	24	4	93	3	-	-	124
	Karimnagar (East)	14	91	-	25	12	-	3	-	-	145
	Karimnagar (West)	1	78	-	26	13	6	5	-	-	129
FDPT	Achampet	-	9	6	47	10	70	3	-	-	145
	Nagarjunasagar	8	14	5	21	5	26	3	-	-	82
APFA Dullapally	APFA Dullapally	-	-	-	-	-	-	-	-	108	108
R & D Circle, Hyderabad	SS Hyderabad	-	-	-	-	-	-	-	143	-	143
	FG Warangal	-	-	-	-	-	-	-	124	-	124
WLM Hyderabad	CNP	-	-	1	5	2	48	2	-	-	58
	WLM Hyderabad	-	-	-	5	8	21	-	-	-	34
Director ZP Hyderabad	NZP Hyderabad	-	-	-	1	-	5	-	-	-	6
I&TC	I&TC	-	-	-	-	42	-	-	-	-	42
<b>Total</b>		<b>350</b>	<b>1514</b>	<b>65</b>	<b>959</b>	<b>332</b>	<b>614</b>	<b>84</b>	<b>267</b>	<b>108</b>	<b>4293</b>

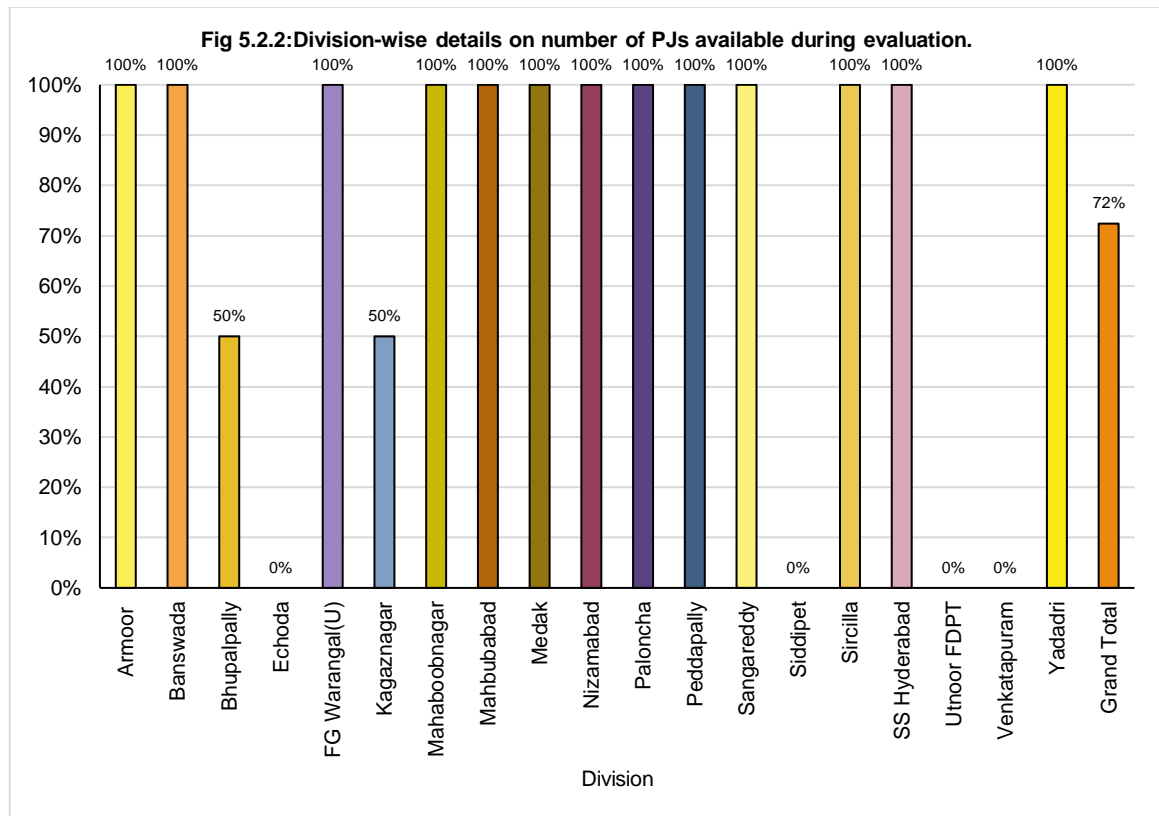
**5.1 Data Analysis of CAMPA Plantation activities:** Data collected for plantation activities and other activities during field evaluation of the sample CAMPA activities for the year 2013-2014 were digitized, collated and checked as per the audited records available at the O/o PCCF, TSFD, Aranya Bhavan. Thereafter, the data was analyzed to understand the status, performance of plantations, quantity and quality of other activities and any other critical issues on the CAMPA activities for the state of Telangana.

**5.2 Maintenance of Records:** Records were categorized as measurement books (estimates), plantation registers (treatment maps) and CAMPA schedule of works registers, vouchers, etc.

**5.2.1 Measurement Books (MB):** Section wise detail of works executed with estimates, amount disbursed, period of works, is mentioned in MB. It has been observed that out of 29 plantations, only for 20 plantations MBs were made available. Fig 5.2.1 shows the percent of MBs available during evaluation.



**5.2.2 Plantation journals (PJ):** Plantation journals contain all the information of the site, plantation map, sanctioned order, soil characteristics and records of activities, monitoring and evaluation and any other information, all updated on the plantation. It has been observed that out of a total of 29 sample plantations, only 21 plantations Plantation Journals were made available to the evaluation team. PJs of following plantations samples were not observed. Fig 5.2.2 shows the percent of PJs available during evaluation. Updated plantation journals section wise details on the area of plantation undertaken is mentioned.



**5.2.3 CAMPA works register (CWR):** CAMPA works register contains an index of work and summarized details of expenditure with the Schedule of Order. All the works entered in CWR are signed by the DFO. This information helps to authenticate whether works have been carried out. During field evaluation, it was observed that all the works were mentioned in the CWR.

**Findings:** Measurement Book (MB) could be examined for forty-one percent of the activities evaluated. Respective range level/ beat level officials during the evaluation time revealed that due to bifurcation of the Telangana state from erstwhile Andhra Pradesh and after further reconciliation of the divisions, documents have been kept at different places and therefore there were unable to produce during evaluation. Less attention was given to MBs which otherwise is a very important document. Only 69% of the plantations MB was examined during evaluation. Irrespective of the

situation MBs should always be kept with care in the range where plantation has been carried out. Further in all the available MBs for other activities, grid-wise details on volume of works undertaken is lacking. Lack of grid wise details makes it very difficult to quantify the works carried out. All the MBs that were made available during evaluation had the signature of RFOs indicating that RFOs have checked the works before making payments.

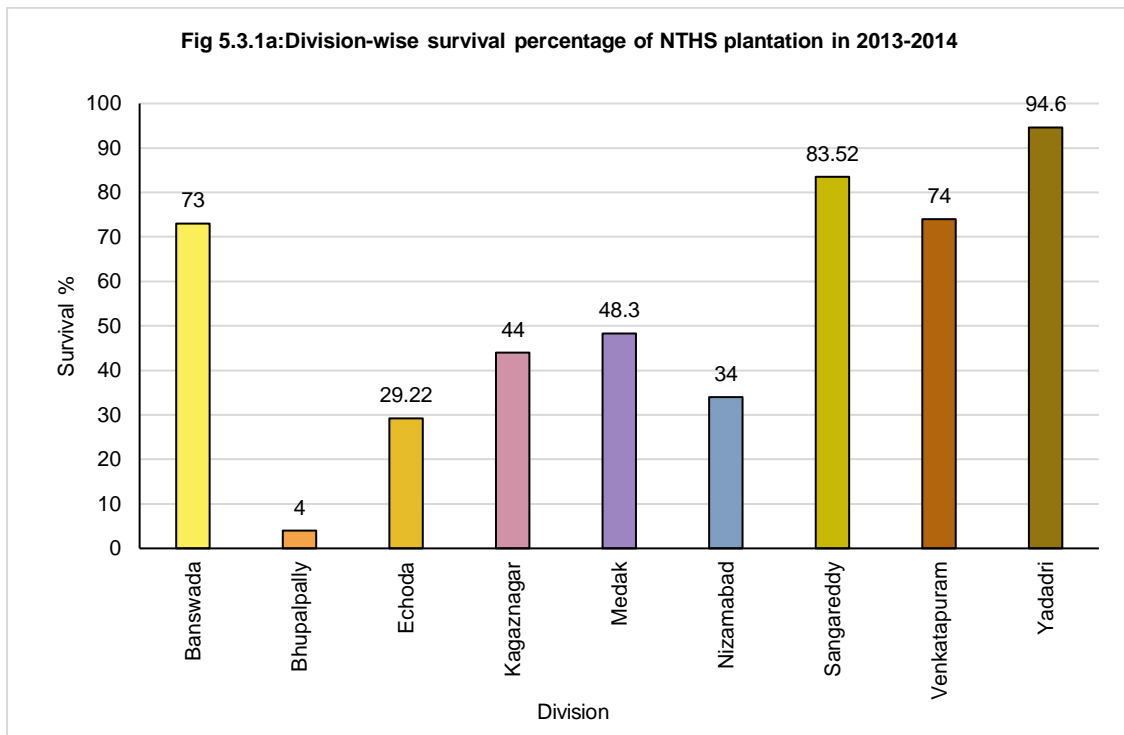
Plantation Journals (PJ) could be examined for only 72.4% of the plantations evaluated. The percentage of available PJs of plantations indicates that more attention is given on PJs which is one of the most important documents for any plantation activity. Irrespective of any situation PJs should always be kept with care in the range office where plantation has been carried out. Further in all the available MBs Grid wise details on volume of works undertaken is lacking. Lack of grid wise details makes it very difficult to evaluate. MBs that were available had the signature of RFOs indicating that RFOs have checked the works before making payments. Treatment plan and grid wise details of plantations are available in the examined PJs. All the examined PJs had the signature of RFOs indicating that proper methods have been adopted for conducting plantations.

CAMPA works register (CWR) a record-keeping document was found in all the sites of evaluation. Works register hardcopy and softcopy were maintained at the division office. It contains an index of works based on Schedule of Order (SO) with the name of works/activity, site, and the summary of expenditure. All the activities entered in CWR was found to be signed by the DFO. The CWR maintained in the divisions and the final list of works as audited and maintained at the H/o does not totally tally.

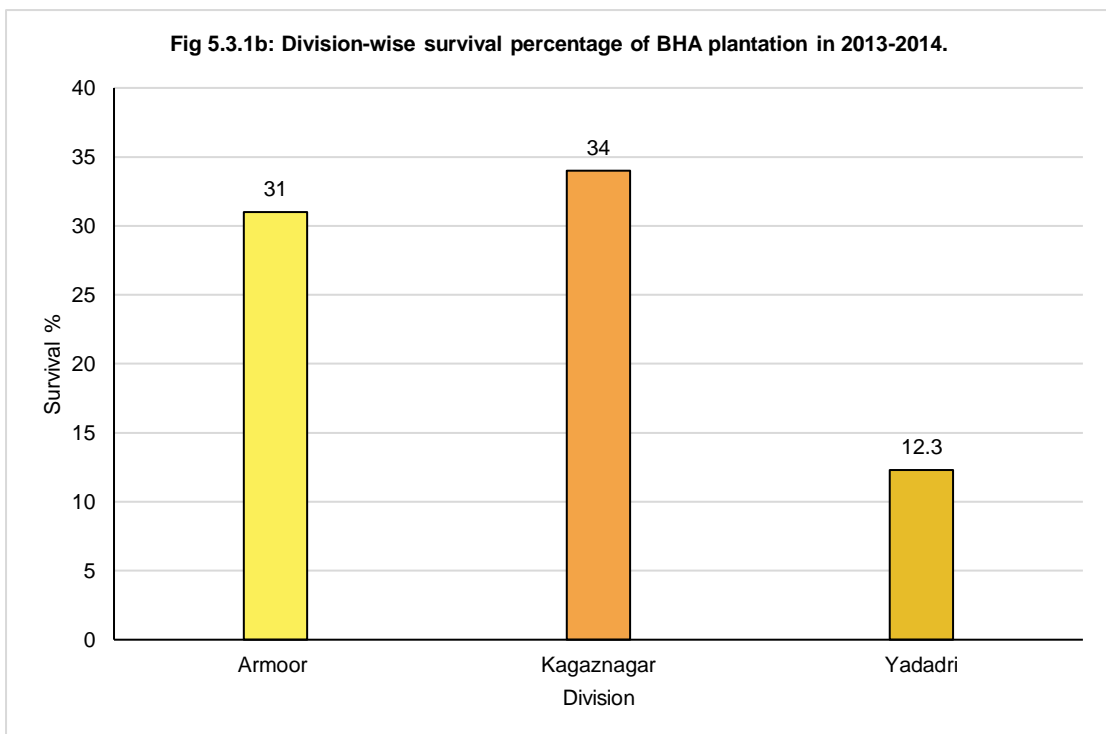
**5.3 Survival percentage:** Survival percentage of plantations is one of the vital parameter evaluated. It reflects the overall performance of plantations. Analysis of the survival percentage of the plantations was analyzed from different aspects namely methods of plantations, CAMPA components, species, divisions and existence of protections measures to get a clear understanding on the plantations.

**5.3.1 Division wise plantation survival percentages:** Division wise survival percentage of NTSH, Teak, Miscellaneous, R&D and BHA plantations is shown in fig 5.3.1 to Fig 5.3.7.

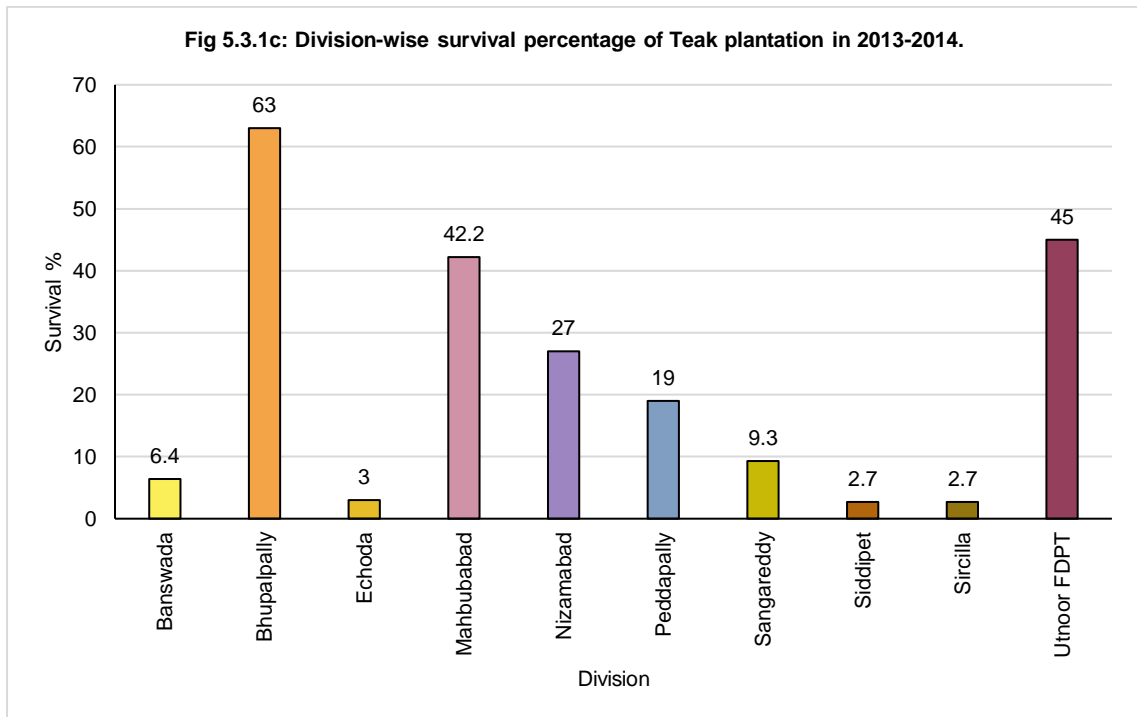
NTSH plantations were raised by 9 divisions were evaluated under CAMPA during 2013-2014. Average survival percentage of NTSH raised under TSFD CAMPA across the divisions ranged from 4% to 94.6%. Comparison of NTHS plantations survival across the divisions (see Fig 5.3.1a) revealed that Yadadri had the highest survival percentage of NTHS followed by Sangareddy, Venkatapuram, and Banswada. Bhupalpally, Echoda, Kagaznagar, Nizamabad and Medak divisions reported the lowest survival rates and was below 50 % in NTHS plantations raised under TSFA CAMPA during 2013-2014.



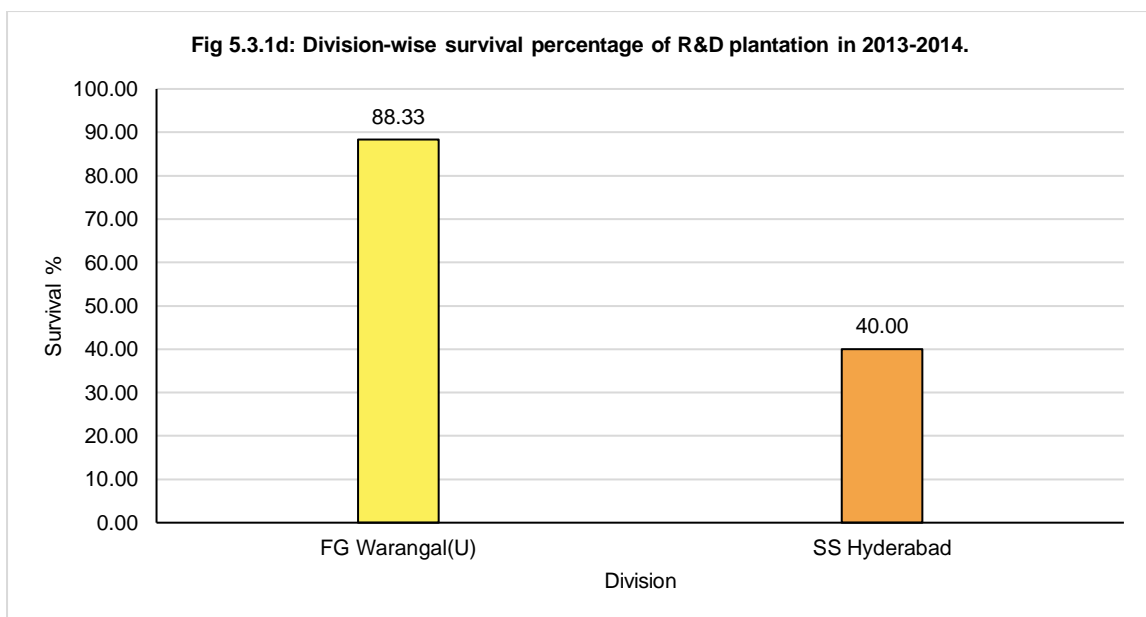
BHA plantations were raised by 3 divisions were evaluated under TSFD CAMPA during 2013-2014. Average survival percentage of the teak plantations under TSFD CAMPA across the divisions ranged from 12.3% to 34%. All of the BHA plantation evaluated had a very poor growth and the survival percentage was below 50%.



Teak plantations were raised by 10 divisions were evaluated under TSFD CAMPA during 2013-2014. Average survival percentage of the teak plantations under TSFD CAMPA across the divisions ranged from 2.7% to 63%. Comparison of Teak plantations survival across the divisions (see Fig 5.3.1c) revealed that Bhupalpally had the highest survival percentage of Teak. The rest of the Teak plantation had a very poor growth and the survival percentage was below 50%.

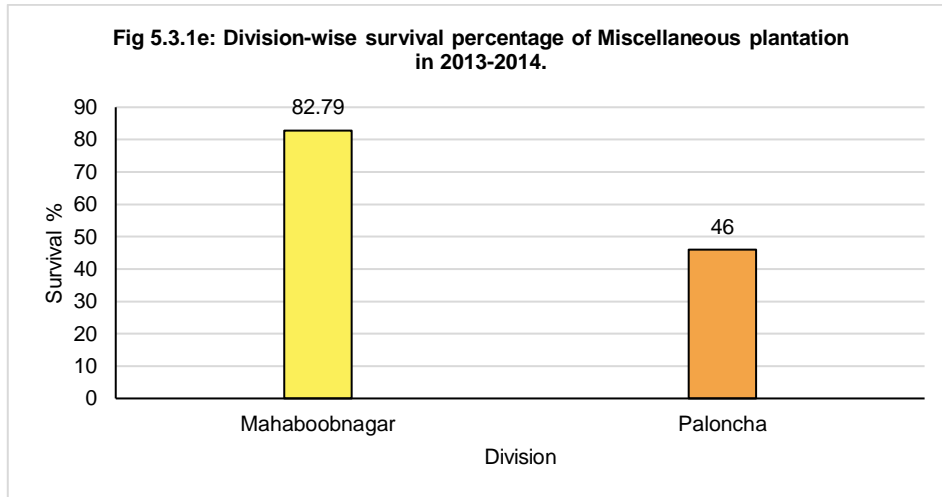


R&D plantations were raised by 2 divisions which were evaluated under TSFD CAMPA during 2013-2014. Average survival percentage of the R&D plantations under TSFD CAMPA was observed more in FG Warangal as compared to SS Hyderabad. (see Fig 5.3.1d).

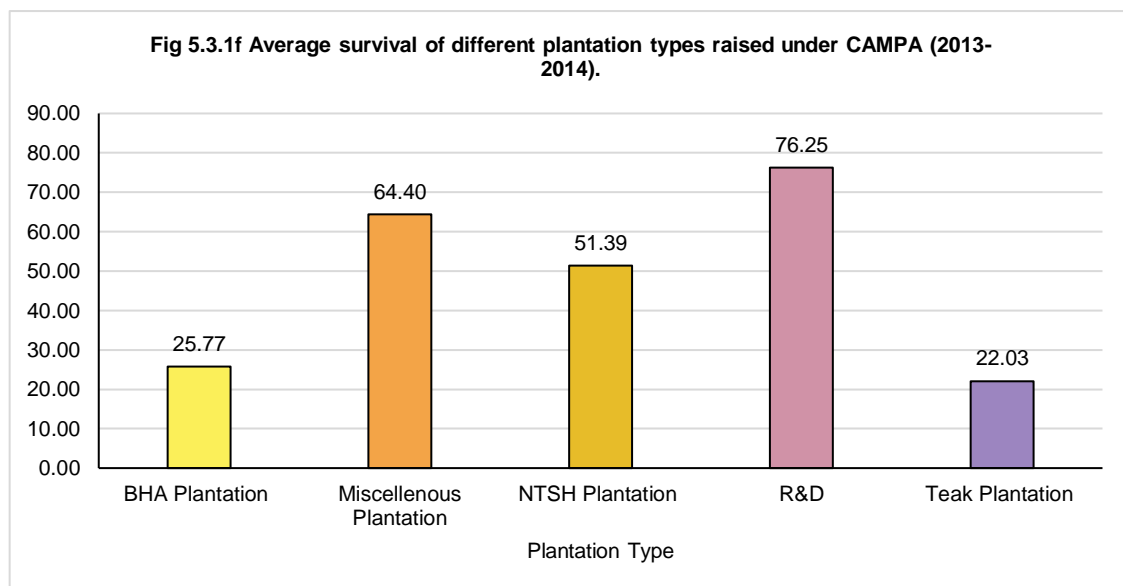




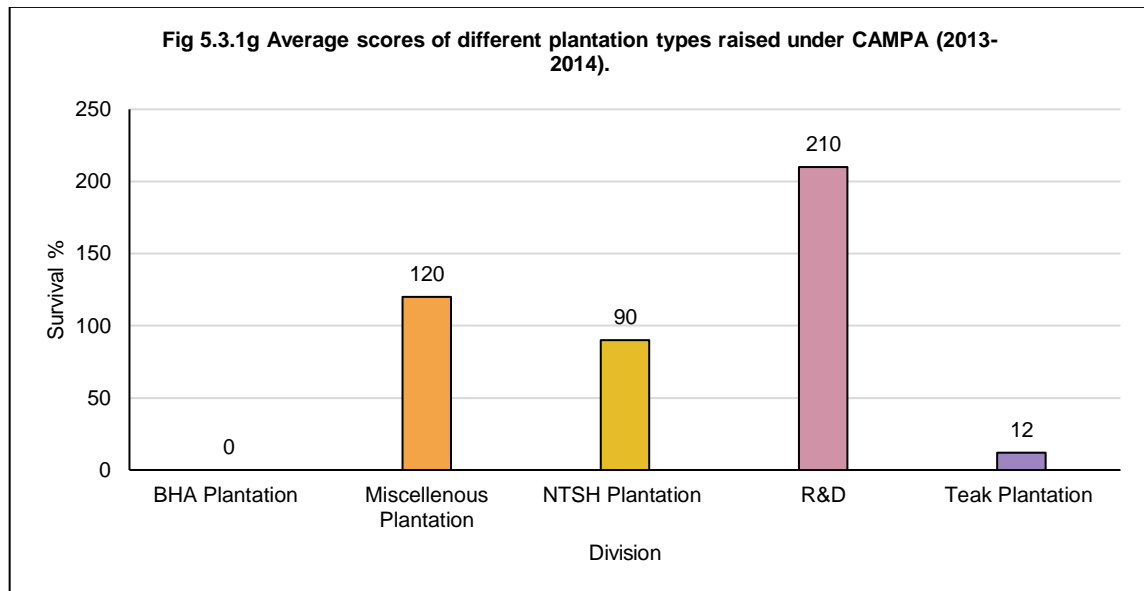
Miscellaneous plantations were raised by 2 divisions which were evaluated under TSFD CAMPA during 2013-2014. Average survival percentage of the Miscellaneous plantations under TSFD CAMPA was observed more in Mahabubnagar as compared to Paloncha. (see Fig 5.3.1e).



**Findings:** The plantations under TSFD CAMPA during 2013-2014 were raised under different plantations types namely NTSH plantation, Teak plantations BHA plantations, Miscellaneous plantations and Research and Development plots. The average survival percentage varied from 22.02 to 76.25 in different type of plantations. Among the plantation types, R&D plantations raised under TSFD CAMPA was recorded highest survival percentage. The average survival percentage of R&D plantations was 76.25 followed by miscellaneous species plantation and NTSH plantation. Teak and BHA plantations average survival percentage was the lowest and were 22.03 and 25.77 respectively. The average survival percentage of different plantation types is evaluated is mentioned in Fig.5.3.1f.



Scoring was done as mentioned earlier on a scale of 300 based on the mortality of the plants during field evaluation. Among the different plantation types, R&D plantations raised under TSFD CAMPA was recorded during the evaluation. The average score of R&D plantations was 216 followed by miscellaneous species plantation and NTSH plantation. Teak plantations scored only 12 points as most of the plantations survival percentage was below 50%. BHA plantation scored the lowest with 0 points as all the evaluated BHA plantations survival plantation was below 50%. The average score of different plantation types is evaluated is mentioned in Fig.5.3.1g.

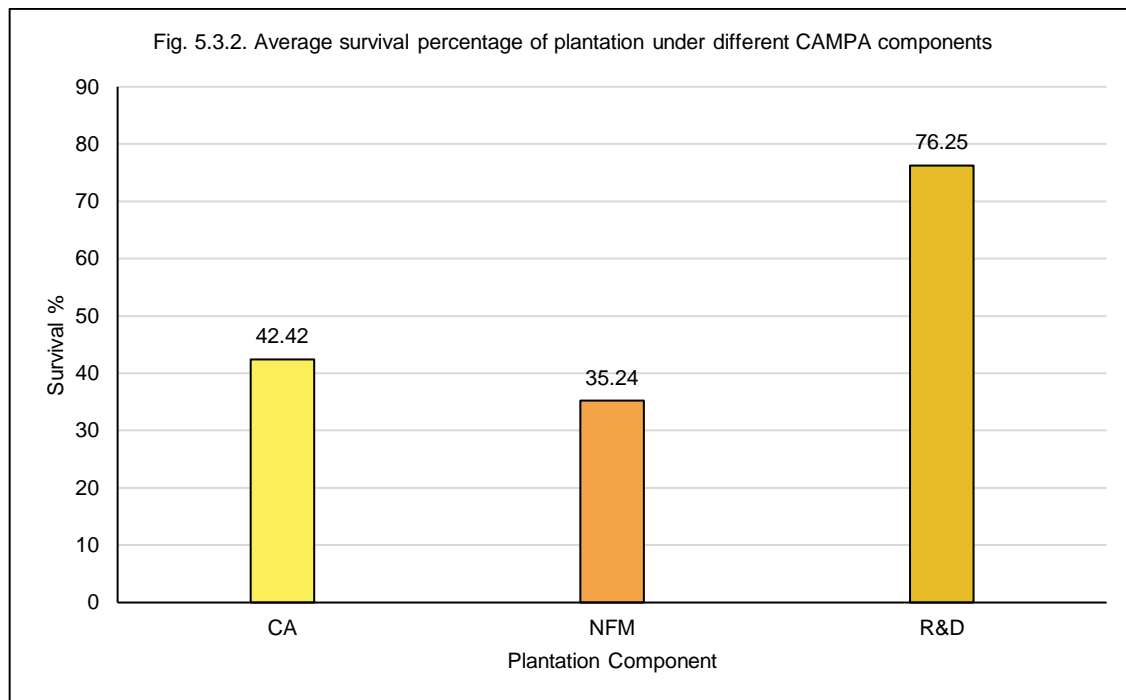


NTSH plantations performance was best recorded in Yadadri. The plantations had insignificant biotic disturbances. The plantations exhibited comparatively the best growth in comparison to the NTSH plantations raised in other divisions. The average survival rate of the evaluated NTSH plantation was 51.39% which is just above the 50% benchmark of scoring. Except Yadadri plantations the rest of them had very high grazing pressure. In Bhupalpally, Echoda, Kagaznagar and Nizamabad the survival percentage was below 50%. NTSH survival percentage was significantly low in areas exposed to repeated biotic interferences.

Information received during field visits revealed that heavy biotic pressure is one of the prime reason for 22.03% percent survival of Teak plantations in the evaluated divisions that raised Teak during 2013-2014 under TSFD CAMPA. Additionally, it was also learned through discussions with forest officials, watchman, and other available local people during the evaluation that lack of rains after plantation of teak seedlings significantly reduce teak germination. Suitable soil, soil with good depth and ability to retain water is necessary for the survival of teak plants.

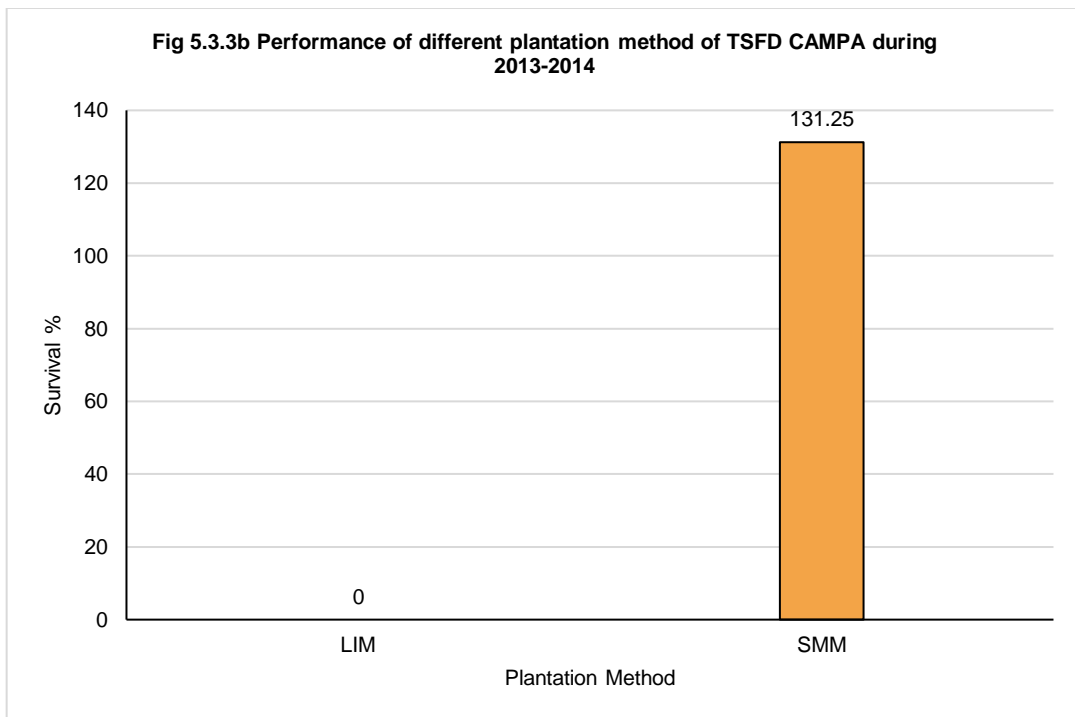
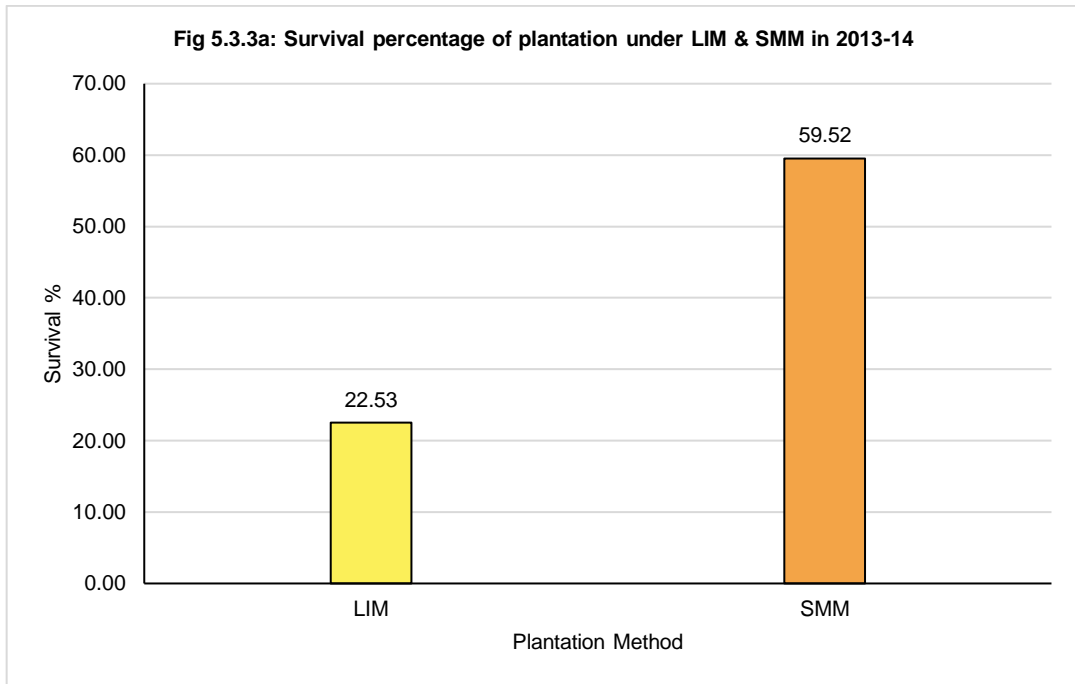
**5.3.2 Survival percentage of plantations under different CAMPA components:** Plantations activities was carried out under three CAMPA components namely CA, NFM and R&D in the state

of Telangana during 2013-2014. Comparison of survival percentages of plantations raised under the different CAMPA components is shown in Fig 5.3.2. It shows that plantations raised under R&D exhibited the highest survival percentage (76.25%) followed by plantations raised under CA (42.42%). Survival percent of plantations raised under NFM components was least 35.24%.



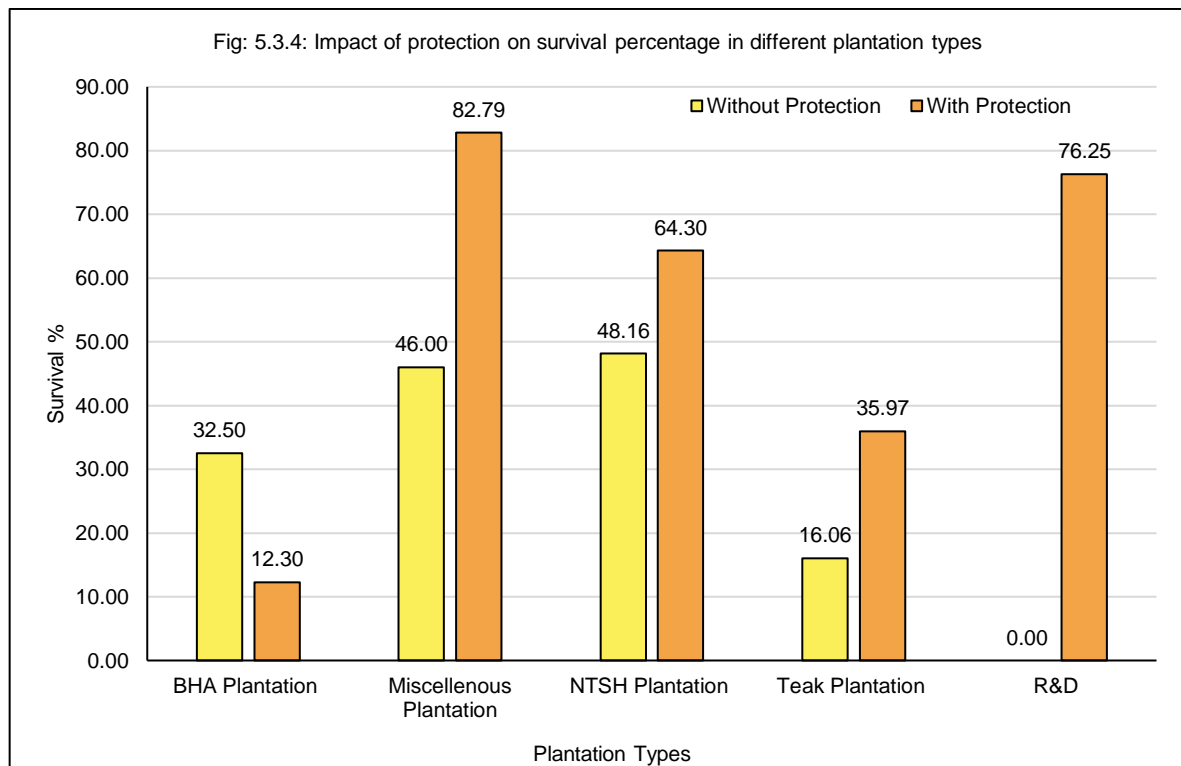
**Findings:** Analysis of field evaluation revealed that plantations raised under R&D performed better than those raised under CA and NFM. The analysis reveals that CA plantations and NFM plantations have survival percentage below 50% which should be a cause of concern. Performance of plantation raised under NFM was lowest when compared with those raised under CA and NFM. **Scores obtained by plantation raised under different CAMPA components namely CA, NFM, and R&D are 84, 49.41 and 210, respectively.**

**5.3.3 Survival percentage of plantations under different planting methods:** Two planting methods namely Labour Intensive Management (LIM) and Semi Mechanical Management (SMM) was adopted for raising plantations under TSFD, CAMPA during 2013-2014. Graphical representation of the results of plantations under the different planting methods is shown in Fig 5.3.3a. Survival of plantations was significantly higher (59.52%) under SMM method. Average survival percentage of plantations raised under LIM was found to be 22.53 percent.



**Findings:** Comparison of the two different planting method revealed that plantations raised under SMM performed better than those plantations raised under LIM. The score obtained by the LIM plantation was zero as the plantations raised by LIM method the survival percentage was less than 50%. On the other hand the SMM plantation scored 131.25 points.

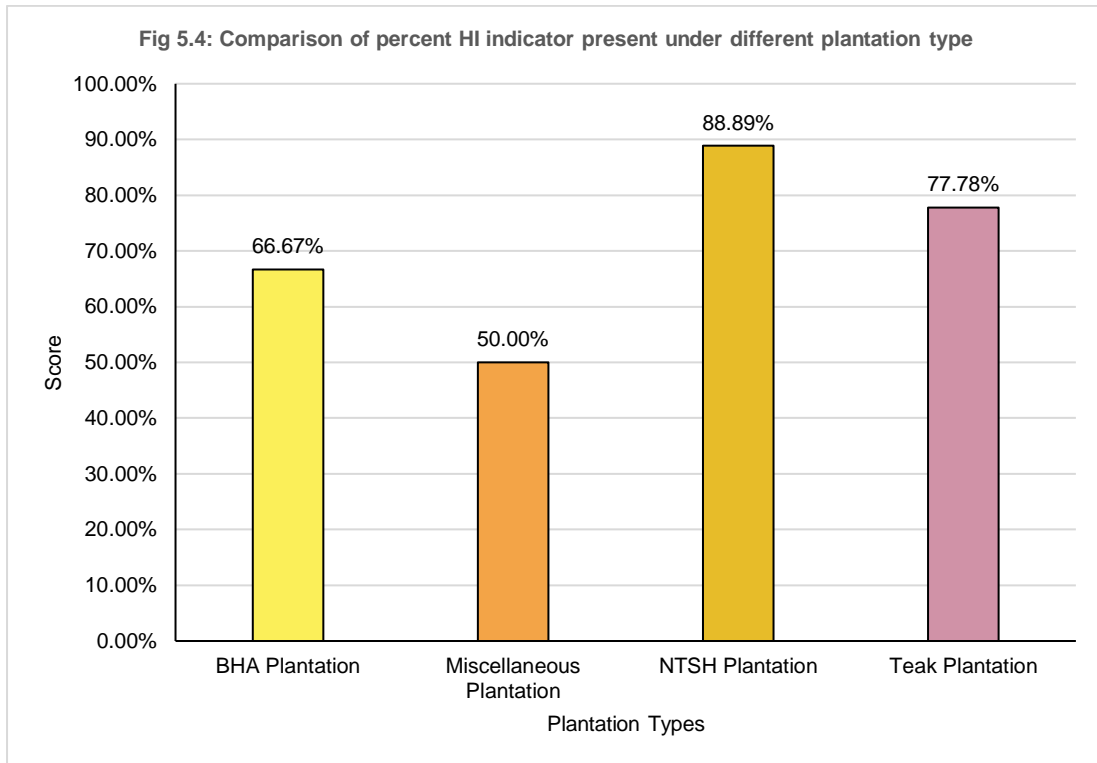
**5.3.4 Survival percentage of plantations with protection and without protection:** Comparison survival of different plantation types with protection and without protection. It is shown in Fig 5.3.4. It reveals that survival of miscellaneous plantations was more (82.79%) under protection and lower (46%) in areas without protection. Survival of plants raised under NTSH and Teak plantations were higher in areas with protection. Plantations under R&D were raised with protection inside the Research Center premises and the survival percent recorded was 76.25%. However during the visit it was observed that SS Hyderabad Research center was heavily affected by grazing pressure. The analysis further reveals that the protected BHA plantation was with less survival percentage of 12.3% as compared to 32.5% in plantations without protection.



**Findings:** Under protection, plantation survival was more only in miscellaneous, NTSH and Teak plantations. In BHA plantations types, survival was lower in areas with protection. This is perhaps due to the reason that the sites were earlier encroached and plantations were carried out after the eviction, etc. There are high biotic interferences including grazing pressure and illicit felling activities.

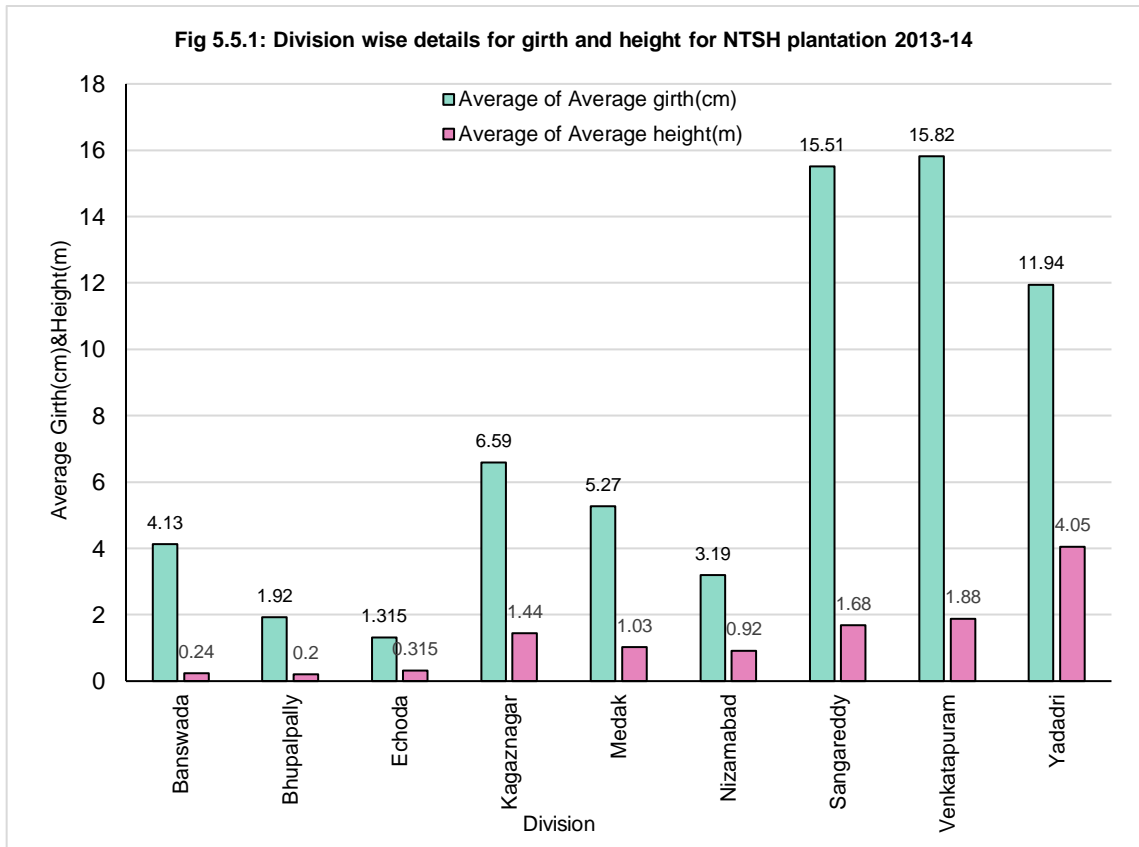
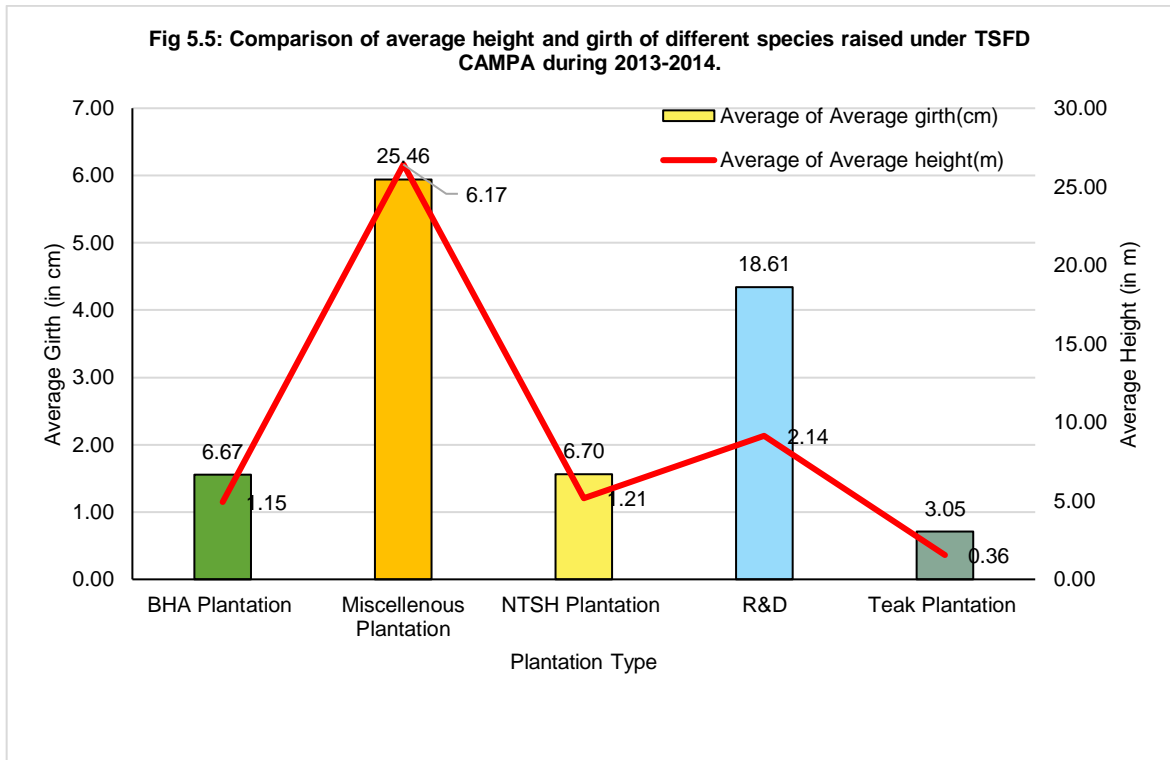
**5.4 Habitat improvement:** Comparison of plantations on habitat improvement under different plantation type is shown in Fig 5.4. Presence of wildlife any indications like the presence of scat/dung during evaluation in the plantations raised under TSFD CAMPA were recorded. Percent record of indicators was used to score habitat improvement.

Presence of wildlife was recorded in 88.89 percent of NTSH plantations raised under TSFD, CAMPA, followed by teak plantations. Presence of wildlife was recorded in 77.78% of the teak plantations. Further wildlife were also observed in BHA and miscellaneous species plantation sites.

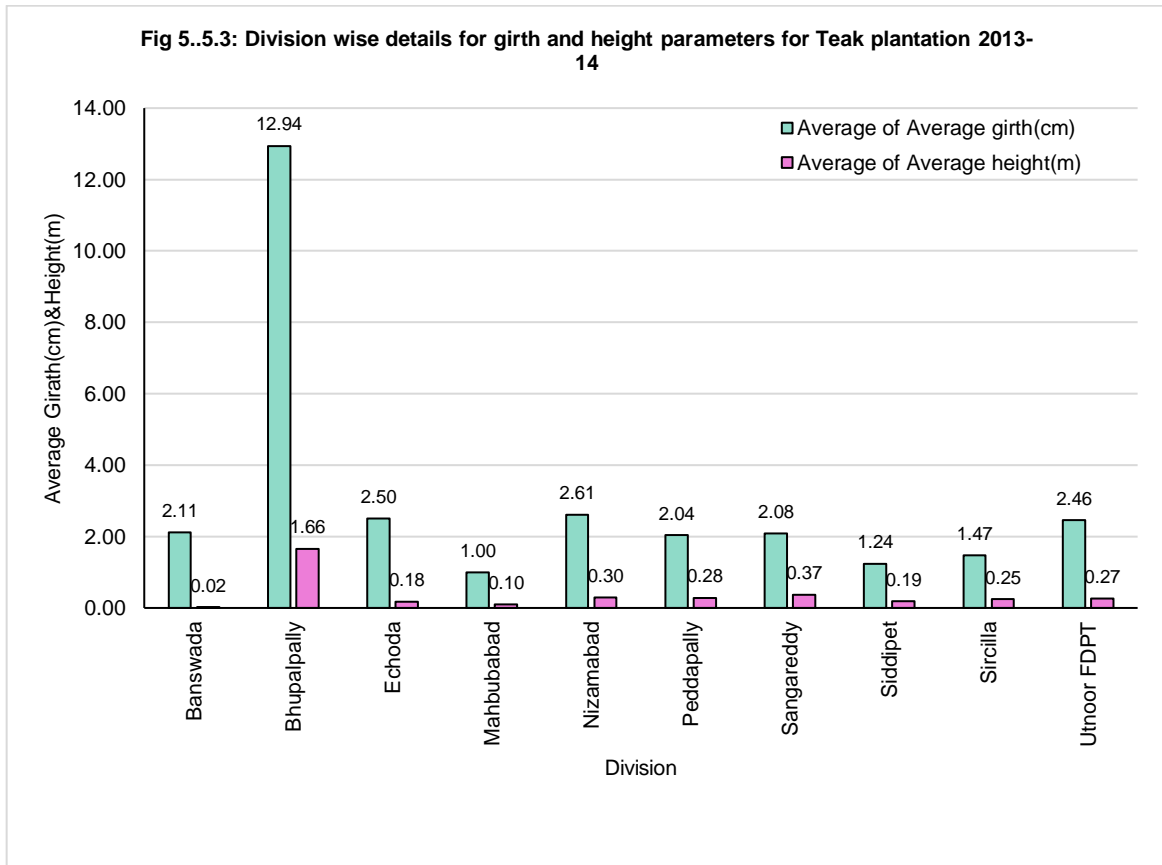
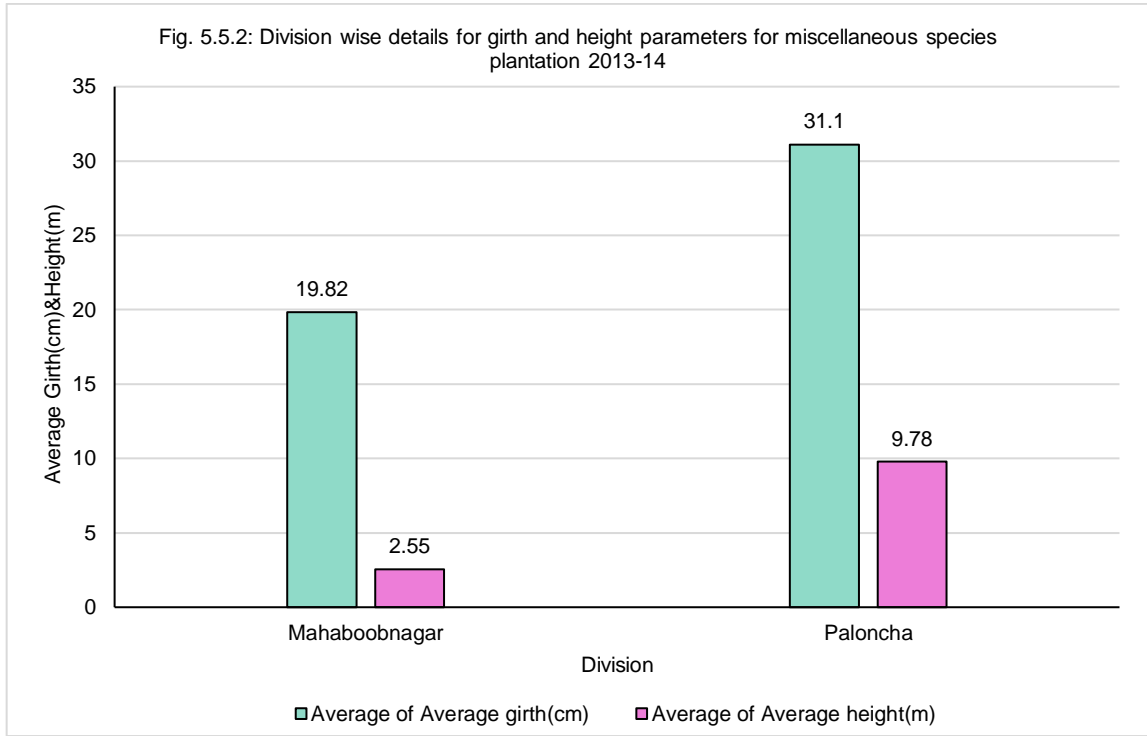


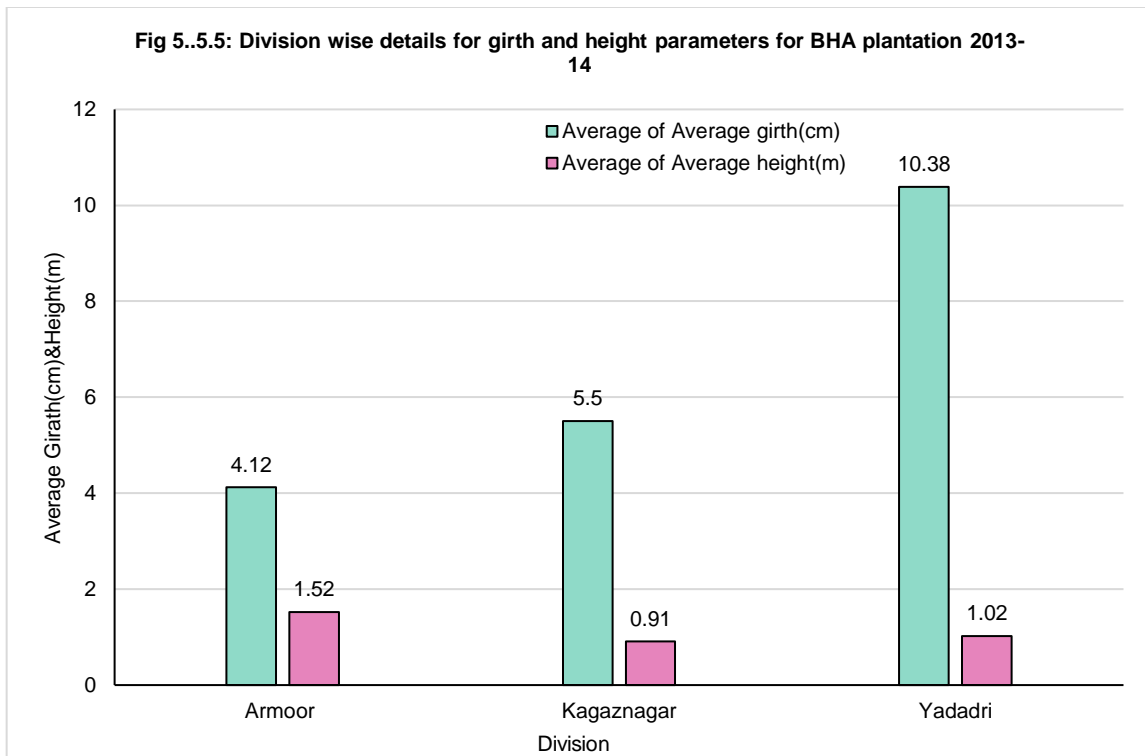
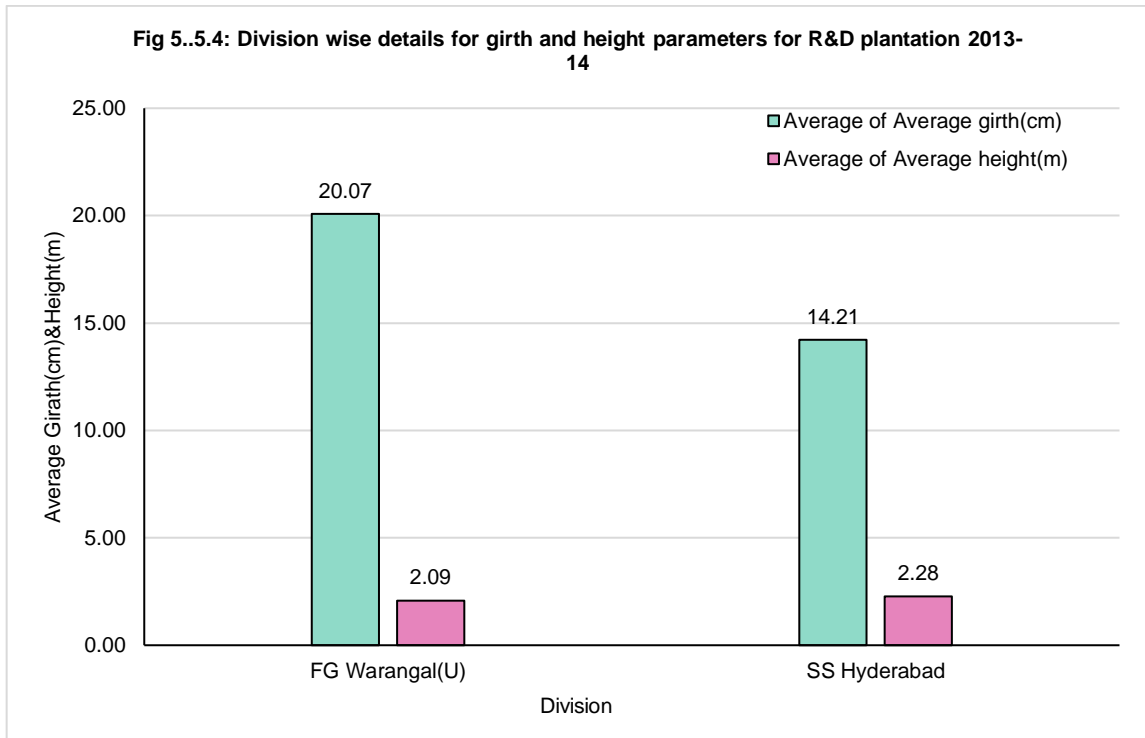
**Findings:** The maximum wildlife presence of wildlife was recorded in NTSH plantations raised under TSFD, CAMPA followed by teak plantations and BHA plantations during field evaluation. Due to extremely low survival in Teak plantation wildlife was not observed in three sample sites out of 9 sampled.

**5.5 Growth of trees:** Comparison of average height and average girth of different tree species raised under TSFD CAMPA during 2013-2014 is shown in Figure 5.5. The miscellaneous species and R&D plantations growth rate was better than the other plantations in the study area. Teak, NTSH and BHA plantations are not good performer under TSFD CAMPA plantation in almost all of the sites. Division wise details of growth of NTSH, miscellaneous species, Teak, R&D and BHA plantations is shown in figure 5.5.1, 5.5.2 5.5.3, 5.5.4 and 5.5.5 respectively.





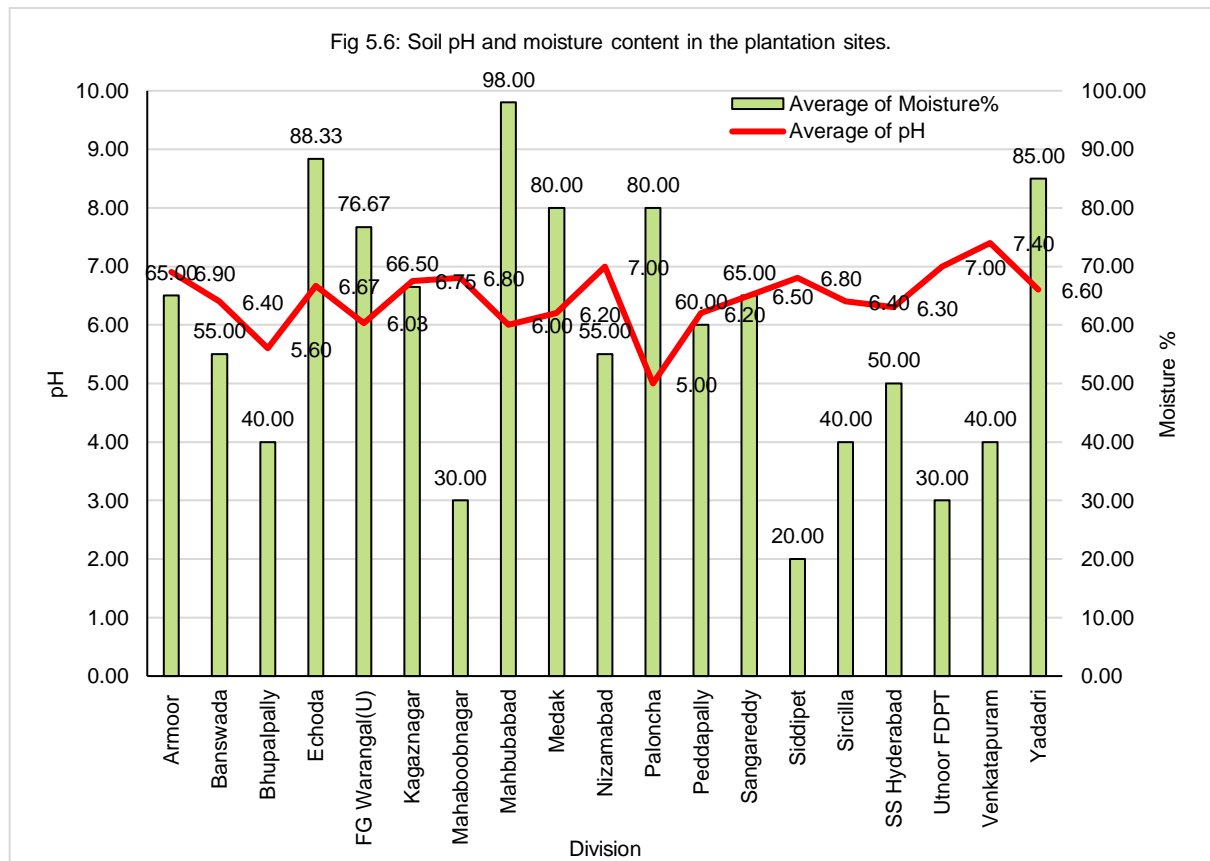




**Findings:** The performance of miscellaneous species and NTSH plantation was comparatively better than other plantation evaluated under CAMPA raised during 2013-14. The R&D plots

species like *Carya arborea*, *Ougeinia ojeinesis*, *Mitragyna parviflora* and *Soymida febrifuga* performance on the research plots were satisfactory. Teak is not a good performer under TSFD CAMPA plantation in all the sites. It reflects the fact that, teak being a microsite specific species requires proper site selection and silvicultural operations for establishment and growth. Choosing mother trees for seed collection and stumps preparation is a vital factor for producing quality planting stock of teak. Teak plantlets raised in nursery needs to be acclimatized properly till the sapling stage for field transplantation. Teak also requires sufficient moisture for retaining its faster growth in the initial years. Proper synchronization of the onset of monsoon and teak plantation is vital for best field performance of this species.

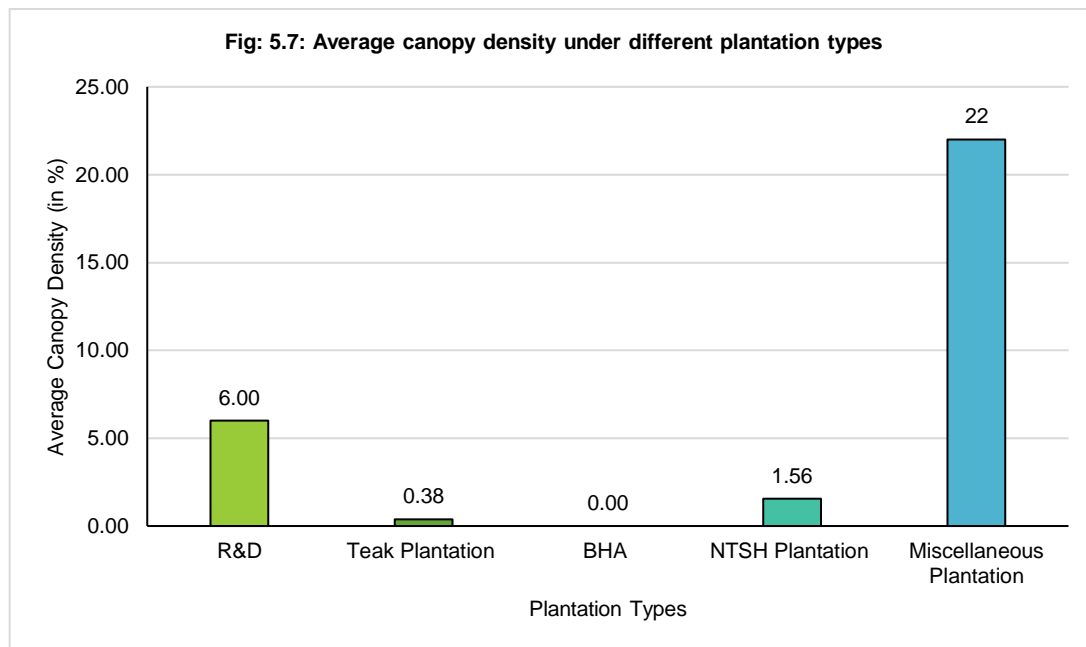
**5.6 Soil salinity and moisture status:** Soil pH and soil moisture content recorded during the evaluation is shown in Fig 5.6. Soil pH ranged from very acidic 5 at Ploncha to saline to 7.4 at Venkatapuram. Percent soil moisture content varied widely across the divisions. It varied from 20% to 98%.



**Findings:** Soil pH and soil moisture content are vital factors for plantations. Soil pH ranged from very acidic 5 to 7.4 across the plantation sites, indicating that soil pH amelioration practices are very necessary for better performance of plantations across the sites. Percent soil moisture content varied widely across the divisions. It varied from 20% to 98%. Higher soil moisture content was

perhaps due to the rains during evaluation period. Crumb of hard soil in many places indicated that average soil moisture content is relative on a lower side not suitable for plantations without artificial irrigation or innovative methods adopted else where in such areas across the world.

**5.7 Canopy density:** Average canopy density (shown in fig 5.7) under different was found to be highest in miscellaneous plantation followed by research plots. Average canopy density of NTSH plantations were found to be 1.56 and that of the plantations raised under research and development was of found to be 6. The lowest canopy density was found for the teak plots and BHA plots.

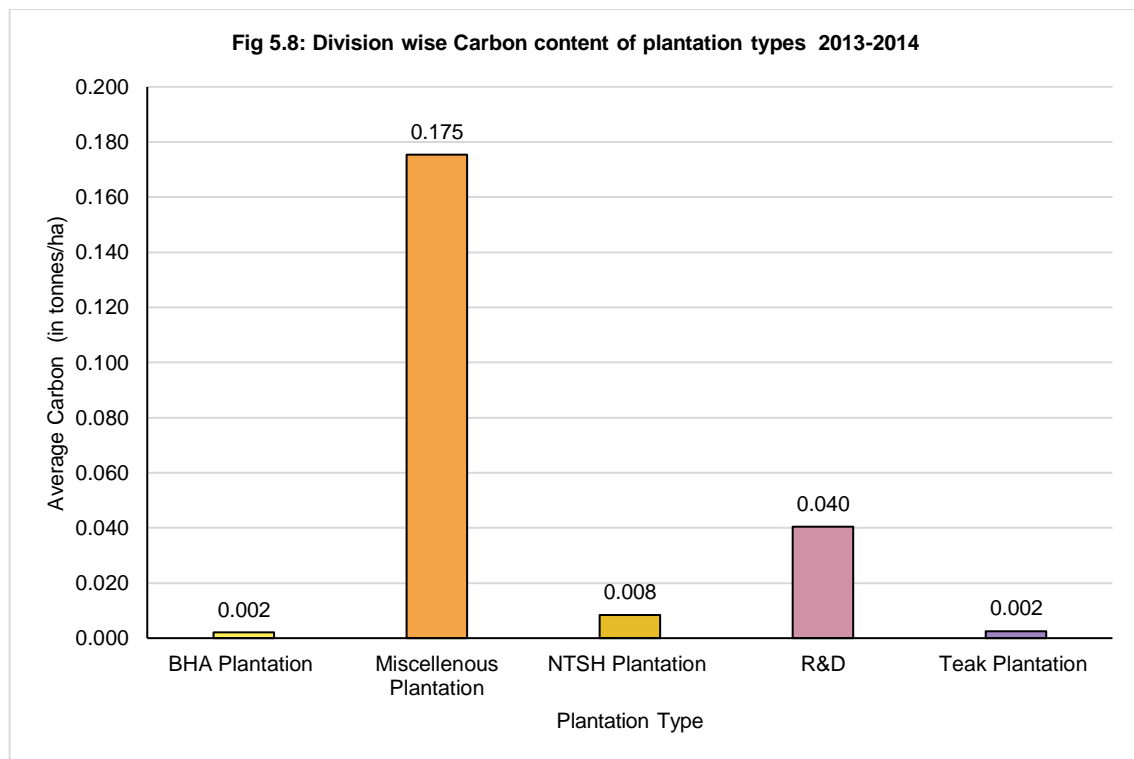


**Findings:** Average canopy density was found to be highest in Eucalyptus plantation due to its attainment of faster growth. Average canopy density of NTSH plantations were found to be very low 1.56% and that plantations raised under research and development was of found to be 6%. The Teak plantation grown with associates had attained some canopy density in one plot enumerated, however for rest of the enumerated plots no canopy density was observed. No canopy density was recorded for the BHA plantations. It indicates necessity of regular silvicultural practices for raising NTSH and Teak plantations in the state in blocks on scrub and open areas.

**5.8 Forest carbon:** Forest carbon (shown in fig 5.8) was estimated using the standard methodology adopting allometric equations (see Box) as given by FSI.<sup>18</sup> Allometric equations are applied only on those species that are above 10 cm in diameter. Average per hectare forest carbon varied from 0.002 tonnes per hectare to 0.175 tonnes per hectare. Miscellaneous plantations exhibited highest forest carbon i.e. 0.175 tonnes per hectare followed by R&D plantations which was 0.040 tonnes/ha. NTSH plantation which carbon sequestration rate was found to be 0.008 tonnes/ha. Whereas, BHA and Teak plantation exhibited the lowest carbon sequestered/ha (0.002 tonnes per hectare) which was the lowest among the different plantation types.

South Deccan		
S.No.	Species Name	Volume Equation
1	<i>Acacia auriculiformis</i>	$\sqrt{V} = -0.00142 + 2.61911 D - 0.54703 * D$
2	<i>Albizia amara</i>	$\sqrt{V} = -0.07109 + 2.99732 D - 0.26953 * D$
3	<i>Anogeissus latifolia</i>	$V = 0.289 * 2.653 D + 11.771 D^2$
4	<i>*Butea monosperma(Old) Butea frondosa</i>	$V = 0.088183 - 1.490948 D + 8.984266 D^2$
5	<i>Chloroxylon swietenia</i>	$V = -0.0532 D + 3.2378 D^2$
6	<i>Dalbergia paniculata</i>	$V = 0.18945 - 2.46215 D + 10.54462 D^2$
7	<i>Eucalyptus species</i>	$V = 0.02894 - 0.89284 D + 8.72416 D^2$
8	<i>Hardwickia binata</i>	$V = 0.063632 + 5.355486 D^2$
9	<i>Lagerstroemia parviflora</i>	$V = 0.066188 - 1.334512 D + 9.403257 D^2$
10	<i>Lannea coromandelica/lannea grandis/odina wodier</i>	$V = 0.091153 - 1.66153 D + 10.24624 D^2$
11	<i>*Syzygium cumini/jambolanum (Old) Eugenia jambolana</i>	$V = 0.088183 - 1.490948 D + 8.984266 D^2$
12	<i>Tectona grandis</i>	$V = -0.2414 + 2.8458 D - 5.5816 D^2 + 14.816 D^3$
13	<i>Terminalia crenulata/tomentosa</i>	$V = 0.051812 - 1.076790 D + 7.991280 D^2$
14	<i>Terminalia paniculata</i>	$V = 0.13100 - 1.87132 D + 9.47861 D^2$
15	<i>Wrightia tinctoria</i>	$\sqrt{V} = 0.050294 + 3.115497 D - 0.687813 \sqrt{D}$

\* For these species, Rest of species's Volume Equation is used.



**Findings:** Average per hectare forest carbon varied from 0.002 tonnes per hectare to 0.175 tonnes per hectare in different plantation types raided during 2013-14 by TSFD. The miscellaneous

<sup>18</sup> FSI (2011) Carbon Stocks of India's Forest.

species plantation due to its comparative fast growing rate sequestered maximum carbon and the average carbon tonnes was 0.175 tonnes/ha.

**5.9 Data analysis of CAMPA Other Activities:** Data collected for CAMPA other activities during field evaluation of the sample CAMPA activities for the year 2013-2014 were digitized, collated and checked as per the audited records available at the O/o PCCF, TSFD, Aranya Bhavan. Thereafter, the data was analyzed to understand the deviation with that of field and any other critical issues on the CAMPA activities for the state of Telangana.

**5.9.1 Soil and Water Conservation Measures:** Different soil and water conservation activities (SWC) were undertaken under TSFD CAMPA during 2013-2014. The random samples evaluated comprised of construction of check dam. The score of the evaluated samples is provided in table. 5.9.1. Details of sample evaluation details is provided in Annexure V. The total score of the evaluated samples based on the deviation on the records and on field conditions of the sampled SWC activity under TSFD, CAMPA during 2013-2014 is 100.

**Table 5.9.1: 3<sup>rd</sup> party CAMPA evaluation score of SWC samples for 2013-2014.**

S.No.	Division	Range	Lat	Long	Dimension/Area in MB	Condition	Score	Avg. Score
1	Wanaparthy	Wanaparthy	16.3771	78.0017	Earthwork excavation, filling of foundation with CC and PC, masonry work, 40 mm metal, labour charges, HBG stone work, dry packing of RR stone,	The condition of the check dam was good during evaluation	100	100
2	Wanaparthy	Wanaparthy	16.3816	78.2006	Earthwork excavation, filling of foundation with CC and PC, masonry work, 40 mm metal, labour charges, HBG stone work, dry packing of RR stone,	The condition of the checkdam was good during evaluation	100	

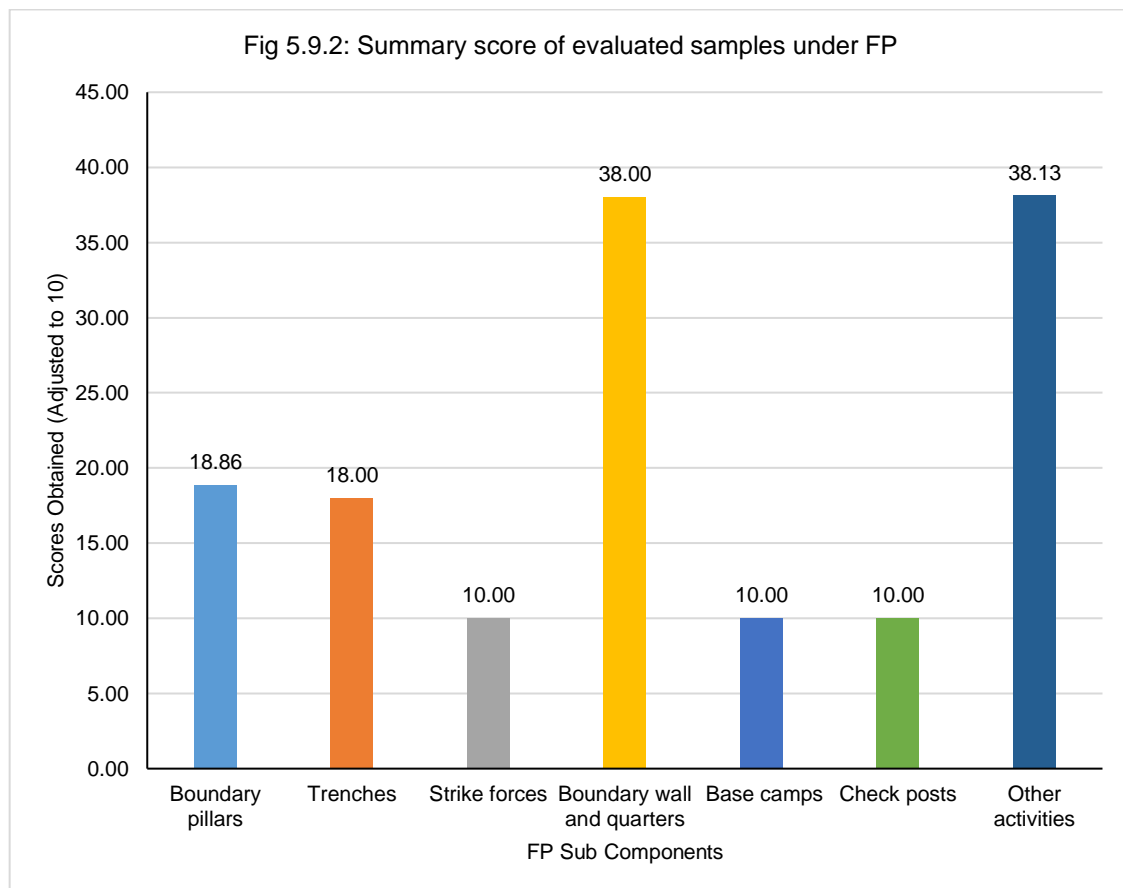
**Findings:** Soil and water conservation measures undertaken by TSFD CAMPA is able to retain water for about five to six months. The check dams were in good shape and condition at the time of evaluation. A small amount of water was found near the check dam indicating its retention potential. No major siltation problem was observed at the check dam sites during evaluation.

**5.9.1 Other activities under CA and NFM:** A total of different forest protection activities (FP) were undertaken by TSFD CAMPA during 2013-2014. Forty four samples were evaluated under CA and NFM other activities. Sample evaluation details is provided in Annexure V. Average score based on the percent variation obtained by each CA/NFM other activities is shown in Figure 5.9.2. **The total score obtained by CA and NFM other activities is 95 out of 100.** The performance of the implementation was good, however at several instances documents provided were not enough to evaluate the activities in a proper way. The other major observation was that the several components from FP, OS were wrongly booked under CA in several divisions.

**5.9.2 Forest Protection:** A total of 959 different forest protection activities (FP) were undertaken by TSFD CAMPA during 2013-2014. 96 samples were evaluated under various sub-components of FP (table 5.9.2). Sample evaluation details is provided in Annexure V. Average score based on the percent variation obtained by each FP sub-component is shown in Figure 5.9.2. **The total score obtained by forest protection is 144 out of 150.**

**Table 5.9.2: Number of samples evaluated under different sub-components of FP.**

No.	Forest Protection (FP) sub components	Number of samples
A	Boundary pillars	7
B	Trenches	2
C	Strike forces	4
D	Boundary wall and quarters	14
E	Base camps	10
F	Check posts	5
G	Other activities	54
<b>Total</b>		<b>96</b>



**Findings:** Of the seven FP sub-components evaluated, variation of dimension was observed in activity under one sub-component i.e. peripheral trenches and boundary pillar. In, Nizamabad boundary pillars were found to be damaged at places, during field evaluation the boundary pillars



were found to be damaged at several places. Strike force, Base Camp and Check post are being maintained at several places in and around the forest areas. In some of the quarters and compound walls cracks were observed.

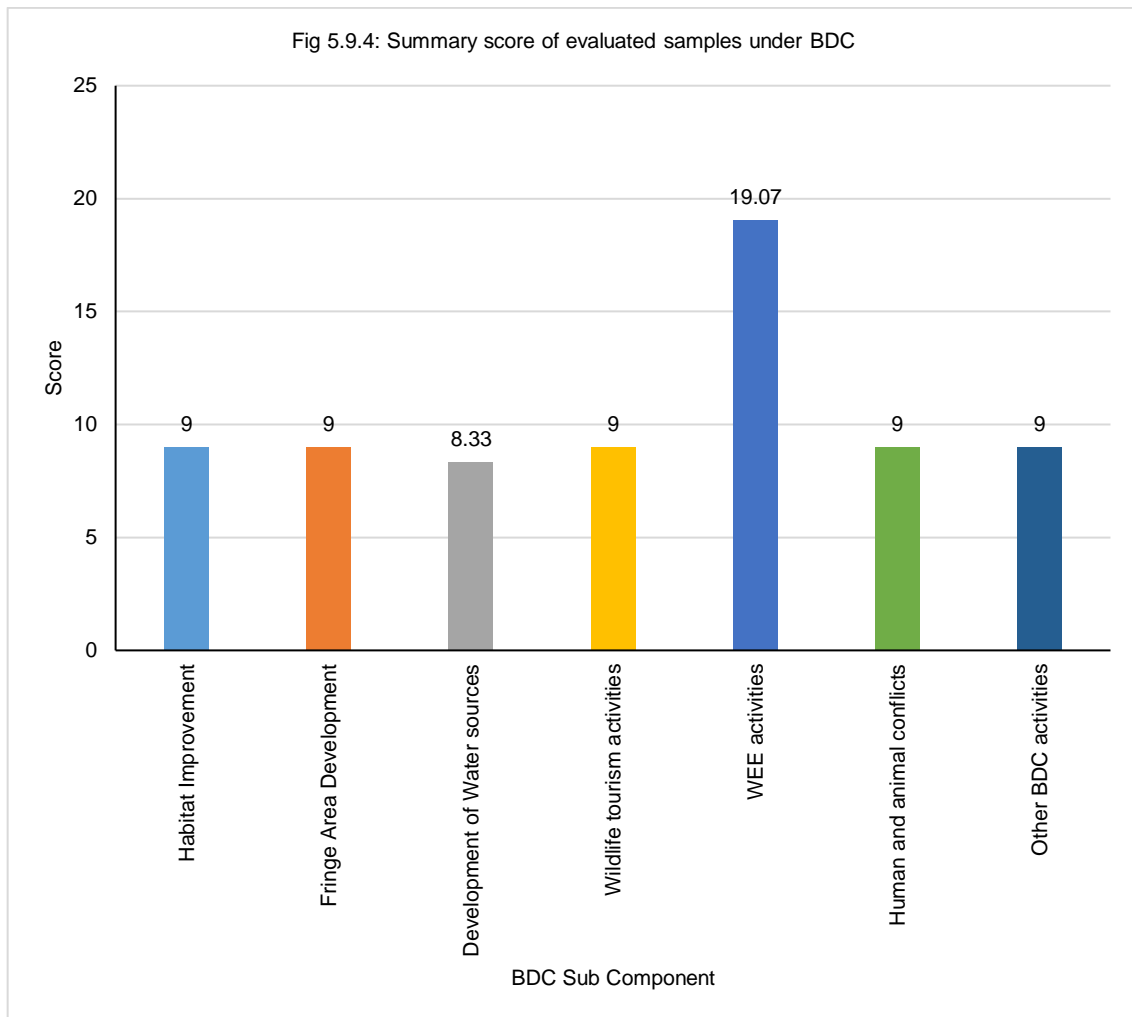
**5.9.3 Forest Fire Management (FFM):** A total of 65 forest fire management (FFM) works were undertaken by TSFD CAMPA during 2013-2014. Slightly more than 10% sample, i.e. 7 samples all falling under one sub-component namely fires watchers were evaluated. Scores obtained during field evaluation is provided in table. 5.9.3. Sample evaluation details is provided in Annexure V. Average score based on the percent variation obtained by each FFM sub-component is shown in Table 5.9.3. **The average score obtained by forest fire management is 9.7 out of 10.**

**Table 5.9.3 Evaluation summary of FFM samples.**

S.No.	Division	Range	Activity	Score
1	Mahabubnagar	Mahabubnagar	Wages to Fire Watcher at Mohammabad block	10
2	Nalgonda	Miryalaguda	Engaging Fire watcher for maintaining the existing Firelines	10
3	Yadadri Bhuvangiri	Choutupal	Engaging Firewatchers for maintaining existing Firelines in Lakkapur ii at Rachakonda during 2013-14	10
4	Medak	Narsapur	Estimate for protection of Firelines and Wages to Watchers during year 2013-14	10
5	Hyderabad	Hyderabad	Engaging Fire Watchers for RF Meddipally from April 2013- March 2014	8
6	Nizamabad	Banswada	Payment of Engaging of Fire Watchers in Banswada	10
7	Wanaparthy	Wanaparthy	Payment of Engaging of Fire Watchers at RF Jaggampally	10

**Findings:** Highest FFM works were undertaken in Hyderabad followed by Medak. The activities are being carried out by the divisions however records pertaining to FFM is not being properly managed.

**5.9.4 Biodiversity Conservation and Development (BDC):** A total of 614 different biodiversity conservation and development activities (FP) were undertaken by TSFD CAMPA during 2013-2014. Sixty one samples were evaluated under different sub-components of BDC (*table 5.9.4*). Sample evaluation details is provided in Annexure V. Average score based on the percent variation obtained by each BDC sub-component is shown in Figure 5.9.4. **The total score obtained by forest protection is 72.75 out of 80.**



**Table 5.9.4 Number of samples evaluated under different sub-components of BDC.**

No.	BDC sub components	Score
A	Habitat Improvement (HI)	9
B	Fringe Area Development (FAD)	9
C	Development of Water sources (DWR)	8.33
D	Wildlife tourism activities (WT)	9
E	WEE activities	19.07
F	Human and animal conflicts (MAC)	9
G	Other BDC activities	9
<b>Total</b>		<b>72.75</b>

**Findings:** There were 614 works under BDC component undertaken. Highest activities were undertaken in in Jannaram WLM, Warrangal WLM, WLM Medak and Achampet. HI, FAD, MAC, WT and Other BDC activities scores 9 out of 10. DWR scored 8.33 out of 9 points whereas Fringe Area Development activity scored 19.07 out of 20.

**5.9.5 Research & Development (R&D):** The total number of different works under CAMPA NPV component research and development undertaken by TSFD CAMPA during 2013-2014 is 267. 10% of the total works, 27 samples of R&D were evaluated. Details of evaluated samples is provided in Annexure V. Average score based on the percent variation obtained by each R&D

samples is shown in Table 5.9.5. **The average score obtained by Research and Development is 18.81 out of 20.**

**Table 5.9.5: Summary of R&D sample evaluation.**

S.No.	Division	Range	Activity	SO.No	Lat	Long	Comp	Characteristics	Score
1	SS Hyderabad	FRC-Mulugu	Estimate for raising and maintenance of 1 lakh no root trainers nursery at FRC Dullapally QPM 2013-14	13/2013-14/S2	17.54045	78.4611	R&D	Preparation of potting medium with organic compost charcoal granule partially burnt rice husk in 14:1:1 ratio, cost of conveyance of charcoal granules chemical fertilizers and insecticides. Filling of root trainer tubes with potting material	20
2	SS Hyderabad	FRC-Mulugu	Watch and Ward for protection of RC	10/Div/2013-14	-	-	R&D	Payment for Watch and Ward to the Staffs for Day and Night at FRC Mulgu	20
3	FG Warrangal	ARC, Achutapuram	Maintanance of Boudary (Planting and Cacalpinia bonduc plants around the boundary (Alipali)	4/Arc/2013-14	17.20405833	80.99809639	R&D	Boundary planting and maintenance (weeding and pruning etc.)	16
4	FG Warrangal	ARC, Achutapuram	Maintaince of Field Reseachr Center	5/Arc/2013-14	17.24974806	81.04735	R&D	White washing and maintenance of walls in Research Center	16
5	FG Warrangal	ARC, Achutapuram	Drip Irrigation system for irrigation	90/Div/2013-14	17.24974806	81.04735	R&D	Maintenance of Drip irrigation System for irrigation of trail plot Bamboo spececies 0.50 ha ARC Alipalli	20
6	FG Warrangal	ARC, Achutapuram	Estimate of maintainance of Inspection path at ARC	14_ARC_2013-14	17.20405833	80.99809639	R&D	Soil work and filling of pits in maintenance of Inspection Path in Alipalli for	20
7	FG Warrangal	ARC, Achutapuram	Est. for Maint. Of medicinal garden in RR Warangal-I at O/o Forest Geneticist, Wgl during 2013-14	2/Wgl-I/13-14	17.99137497	79.54044833	R&D	Watch and Ward for 6 month of medicinal garden	20
8	FG Warrangal	ARC, Achutapuram	Est. for Watch & ward of field research centre at WRC for day time O/o FG Wgl during 2013-14	3/Div/13-14	17.99068833	79.540315	R&D	Watch and Ward for 8 months in the day time	20
9	FG Warrangal	ARC, Achutapuram	Est. for improvement & maint. Of nursery infrastructure irrigation system and electriciy charges in WRC during 2013-14	8/Div/13-14	17.99106831	79.54019497	R&D	Electricity charges for the irrigation system in the mist chambers	20

S.No.	Division	Range	Activity	SO.No	Lat	Long	Comp	Characteristics	Score
10	FG Warrangal	FG Warangal-1	Estimate for Pay of Watcher for protection of Kesamudram Research Centre during the year 2013-14	27/Divn/13-14	18.13604333	79.86483667	R&D	Watchers pay for the protection of research station for seven months from May 2013 to February 2014	20
11	FG Warrangal	FG Warangal-1	Estimate for Measurement of Growth Parameters in Various Plots at Jakaram R.C. of R.R.WARANGAL-II during the year 2013-14	49/Wgl.II/13-14	18.13807497	79.864485	R&D	Measurement of growth data for different experimental plots namely Tectona grandis, Gemelia arborea, Agele marmelos, Oroxyllum indium	20
12	FG Warrangal	ARC, Achutapuram	Estimate for Maintenance of Lathe houses (4 nos) at ARC for the year 2013-14	06/ARC/13-14	17.24974807	81.0473	R&D	Lathe House for the maintenance and proper Germination of the Species	16
13	FG Warrangal	ARC, Achutapuram	Estimate for Maintenance of Vermi compost shed at ARC for the year 2013-14	07/ARC/13-14	17.24974806	81.04736	R&D	Vermi compost pits and shed maintenance for preparing compost for the Research Plot	16
14	FG Warrangal	ARC, Achutapuram	Estimate for Maintenance of Mist Chambers (2 nos) at ARC for the year 2013-14	08/ARC/13-14	17.24974806	81.04729	R&D	Mist Chambers maintenance and electrical fittings	16
15	FG Warrangal	ARC, Achutapuram	Estimate for Maintenance of 20 HP motor at ARC for the year 2013-14	09/ARC/13-14	17.24974805	81.04731	R&D	Service and repairs to the Electrical Motor	16
16	FG Warrangal	FG Warangal-1	Est. for Watch & ward of field research centre at WRC for day time O/o FG Wgl during 13-14	2/Div/13-14	-	-	R&D	Watch and Ward for 7 months in the day time	16
17	FG Warrangal	FG Warangal-1	Est. for Wages to (Services of) Lab assistant at STL lab of Forest Geneticist, Warangal during 2013-14	5/Div/12-13	-	-	R&D	Wages to Lab Assistant in FG Warangal	20
18	FG Warrangal	FG Warangal-1	Est. for Wages to Jeep driver for Govt.	6/Div/12-13	-	-	R&D	Wages to Driver vehicle No. AP 36 AG 9571 of Forest Geneticist, Warangal during 2013-14	20
19	FG Warrangal	FG Warangal-1	Est. for Wages to Bolero driver Govt.	07/Div/13-14	-	-	R&D	Wages to bolero driver Govt. vehicle No. AP 09 AX 4069 of Asst. Forest Geneticist, Warangal during 2013-14	20
20	FG Warrangal	FG Warangal-1	Est. for POL charges and maint. Of Govt. vehicles at O/o FG Wgl during 2013-14	4/Wgl-I/13-14	-	-	R&D	POL Charges and Maintanace charges for Service4 and Repairs	20
21	FG Warrangal	FG Warangal-1	Est.for cleaning at O/o Forest Geneticist,	9/Wgl-I/2013-14	-	-	R&D	Maintanace of FG Complex	20

S.No.	Division	Range	Activity	SO.No	Lat	Long	Comp	Characteristics	Score
			Complex etc., during 2013-14						
22	FG Warrangal	FG Warangal-1	Est. for publication of brochures for 1 day seminar on "Bharath Nava Nirman" O/o FG Wgl during 2013-14	15/Wgl-I/13-14	-	-	R&D	Brochures Publication for Seminar on "Bharath Nava Nirman"	20
23	FG Warrangal	FG Warangal-1	Est. for Cost and supply of materials for STL lab O/o Forest Geneticist, Warangla during 2013-14	19/Wgl-I/13-14	-	-	R&D	Cost of Supply of pH meter & chemicals	20
24	FG Warrangal	FG Warangal-2	Estimate for Pay of Watcher for protection of Jakaram Research Centre (day & night) during the year 2013-14	28/Divn/13-14	-	-	R&D	Payment for Watch and Ward (for Day and Night) at Jakkaram	20
25	FG Warrangal	FG Warangal-2	Est. for Maint. of Inspection paths inside the FRC. Jakaram during 2013-14	30/Wgl.II/13-14	18.13619444	79.86472222	R&D	Maintenance of Inspection Path at Jakkaram soil work and Pits Filling	16
26	SS Hyderabad	FRC-Mulugu	Estimate of Maintanace of arboretum at FRC Dullaplilly	16_2013-14	17.54045	78.46108889	R&D	Arboreatum maintenance and cleaning, weeding in some areas	20
27	SS Hyderabad	FRC-Mulugu	Towards Payment for dues of subscription of Indian Forester Journals vide RC no. 47254/08/S1 dt 11-06-2013	211/2013-14_S2	-	-	R&D	Indian Forester Subscription dues Payment Rs 242900/- and DD charges rs 500	20

**Findings:** FG Warangal having four centers across the state and SS Hyderabad undertook 267 R&D activities under TSFD CAMPA. However, during field evaluation plantations raised on R&D plots scored better than those raised under CA.

**5.9.6 Capacity Building:** CB activities were undertaken in Telangana State Forest Academy under CAMPA NPV component during the year 2013-2014. The total number of different works under CB component undertaken by TSFD CAMPA during 2013-2014 is 108. 10% of the total works, 11 samples of CB were evaluated. Details of evaluated samples is provided in Annexure V. Average score based on the percent variation evaluated on the basis of the available documents is shown in Fig 5.9.6. **The total score obtained by CB is 20 out of 20.**

**Table 5.9.6: Summary of CB sample evaluation**

S.N o.	Division	Activity	SO.No	Records in M.B./ CAMPA Register	Score
1	TSFA, Dullapally	Estimate for organizing refresher course on Silviculture Techniques and Treatment Practices" to DROs, FSOs, FBOs & ABOs from 22.04.2013 to 24.04.2013 at APFA, Dullapally	3/2013-14	Refresher Course was Organized on Silvicultural Trainings and Recorded	20
2	TSFA, Dullapally	Estimate for constructon of Hostel Building for FRO trainees at APFA, Dullapally	Pri. CCF S.O.No.25/2013-14	Spill over works of 2009-10 for adjustment from the balance fund 2009-10	20
3	TSFA, Dullapally	Estimate for organizing training programme on "Modern Nursery Management" to the Deptl. Staff from 09.07.2013 to 11.07.2013 at APFA, Dullapally	15/2013-14	Training Programs on "Modern Nursery Management" was Organized and Recorded	20
4	TSFA, Dullapally	Estimate for procurement of cutlery and Mess Utensils at APFA, Dullapally during 2013-14	57/2013-14	Materials Procured for Mess for FRO Hostel	20
5	TSFA, Dullapally	Estimate for Organizing training on "Silviculture techniques & Treatment Practicies" to the Departmental staff from 02.01.14 to 04.01.14 at APFA, Dullapally	59/2013-14	Training Programs on Silviculture techniques & Treatment Practices" was Organized and Recorded	20
6	TSFA, Dullapally	Estimate for Procurement of Cutlery items for at APFA, Dullapally	65/2013-14	Materials Procured for Mess for FRO Hostel	20
7	TSFA, Dullapally	Estimate for Organizing training on "Personality Development" at Nizamabad Circle from 29.01.2014 to 31.01.214	68/2013-14	Training Programs on "Personality Development" was Organized and Recorded	20
8	TSFA, Dullapally	Estimate for conducting sessions of Information Technology, First Aid & Hygiene subjects to FBO Trainees (16th Batch) at APFA, Dullapally	69/2013-14	Session was conducted on Information Technology, First Aid & Hygiene subjects to FBO Trainees (16th Batch) and Recorded	20
9	TSFA, Dullapally	Estimate for Organizing training on "Strategies for effective forest protection" to Departmental staff for (3) days from 07.01.14 to 09.01.14	75/2013-14	Training Programs on "Strategies for effective forest protection" was Organized and Recorded	20
10	TSFA, Dullapally	Estimate for Conduing Weapon Training to FBO (T) 16th Batch from 24.02.14 to 01.03.14 at APPA, Himayath sagar, Hyderabad	87/1/2013-14	Training Programs on Weapon Training for FBOs was Organized and Recorded	20
11	TSFA, Dullapally	Estimate for organizing training Programme on "Teak Nursery & Planting Techniques" at Nizamabad to the Sub-DFOs, ACFs, FBOs, & ABOs from 27.05.2013 to 29.05.2013	5_A_2013-14	Training Programs on "Teak Nursery & Planting Techniques" was Organized and Recorded	20

**Findings:** All the CB activities was undertaken in Telangana State Forest Academy, Dullapally. CB activities full points during evaluation. There are training programmes for forest officials on nursery raising techniques, silvicultural operations, weapons training, personality development and forest protection. Infrastructure development for housing trainees are also carried out under CAMPA in TSFA, Dullapally. A hostel was constructed for the Forest Range Officers for residential training purposes.

**5.9.7 Information Communication and Technology (ICT):** The total number of different works under ICT component undertaken by TSFD CAMPA during 2013-2014 is 332. 10% of the total

works, 33 samples of ICT were evaluated. Details of evaluated samples is provided in Annexure V. The ICT samples is shown in Table 5.9.7. The total score obtained by ICT is 48.28 out of 50.

**Table 5.9.7 Evaluation summary of ICT samples.**

S.No.	Division	Range	Activity	SO.No	Score
1	Bellampally	Ballampally	Internet Charges to Forest Range Office, Bellampally under CAMPA - NPV ( IT & C ) Scheme during the year 2013-14	31/2013-14	50
2	Bellampally	Ballampally	Wages to Data Entry Operators working in Bellampally Division under CAMPA - NPV ( IT & C ) Scheme during the year 2013-14	36/2013-14	50
3	Jannaram	Jannaram	Wages to Data Entry Operator in Jannaram range	37/2013-14/CAMPA	50
4	Khanapur	Khanapur	Wages to Data Entry Operator working in O/o FRO, Khanapur	4/2013-14	50
5	Mancherial	Mancherial	Wages to Data Entry Operators of Mancherial Division for the month 06/2013	17_2013-14	50
6	Siddipet	Siddipet	Assessment of trees outside Forest area in Siddipet Range	56/DFO/2013-14	50
7	Siddipet	Siddipet	4. Improvement to Communications/ Wireless network(Rs.500/each/Month	179/DFO/2013-14	50
8	Wanaparthy	Wanaparthy	Inventory of Tree Outside Forest in Wanaparthy	Awaited	40
9	Nalgonda	Miryalaguda	Communication charges to the staff of Miryalaguda Range	7/CAMPA/NPV/2013-14, dt. 29.04.2013	50
10	Sathupally	Tallada	Inventory of Tree outside the Forest points (TOF) in Tallada Range.	267 2013-14	50
11	Yellandu	Yallandu	Internet Charges for the period 04/13 to 03/14	RSO 01 2013-14	40
12	Paloncha	Paloncha	Internet charges	RSO 33 2013-14	40
13	Paloncha	Paloncha	Payment of Internet and Telephone charges to the BSNL of Paloncha Range	132 2013-14	40
14	Paloncha	Kukunoor	Inventory of trees carried out outside the notified for forest areas in Kukunoor Range	198 2013-14	40
15	Manguru	Ashwapuram	Wages to Data Entry Operator at Ashwapuram Range	5 2013-14	40
16	Bhadrachalam	Bhadrachalam	Estimate for carrying out inventory of Trees outside the notified forest Bhadrachalam Range.	RSO no. 18	50
17	Kiinnwerseni WLM	Yanambail	Communication charges to subordinates staff of Range Yanambail during 2013-14 (12 months) from 4/2013 to 3/2014 26 Nos @ Rs.500/- per month)	44 2013-14	50
18	Medak	Medak	Assessment of trees out side Forest area in Medak (W) section of Medak Range	40_CAMPA_2013-14	50
19	Medak	Narsapur	Improvement of infrastructure Communication- broad band connectivity upto range level. 625 per month	4_FRO_2013-14	50
20	Sangareddy	Zaheerabad	Maintenance of Internet connection charges in office of the Forest Range Office Zaheerabad	1_campa_2013-14	50
21	Sangareddy	Zaheerabad	Communication charges for Forest Range Staff (Executive) in Zaheerabad Range	235_campa_2013-14	50
22	Bhupalpally	Bhupalpalli(North)	Estimate for Internet charges of Bhupalpally (North) Range	01/FRO/Az/2013-14.	50
23	Sircilla	Sircilla	Tree out side the Forests (TOF) in Sircilla Range	81/2013-14	50



S.No.	Division	Range	Activity	SO.No	Score
24	Mahbubabad	Mahbubabad	Wages to DEO of Range Mahbubabad & Sub- DFO Mahabubabad 2 Nos & Internet Charges	26	50
25	Jagitial	Raikal	Remuneration charges to data entry operator at raikal	19/C/2013-14	50
26	Jagitial	Raikal	Estimate for internet charges to raikal for year 2013-14	6/2013-14	50
27	Peddapally	Manthani	Internet Usage Charge in Manthani Range	17/RSO/2013-14	50
28	Achampet	Achampet	Estimates for procurement of material for periodical data collection in Achampet Division Office	RSO No. 2/ CAMPA/2013-14Dt. 22.05.2013	50
29	Amrabad	Amrabad	Broad Band Charges of Forest Range Office, Achampet, for the year 2013-14	RSO 01/ABD/State CAMPA/2013-14/ Dt. 24.05.2013	50
30	Amrabad	Mannanur	Broad Band Charges of Forest Range Office, Mannanur, for the year 2013-14	RSO. No. 5/State CAMPA/ 2013-14/24.05.2013	50
31	Amrabad	Mannanur	Research and Data Collection for all India Tiger Census for the year 2014	RSO. No. 32/State CAMPA/ 2013-14/02.2013	50
32	Nagarjunasagar WLM	Devarkonda	Communication charges for field staff of Devarkonda	So. No. 05 CAMPA -NPV 13-14 dt. 29.4.13	50
33	Nagarjunasagar WLM	Nagarjunasagar	Engaging Contract personal as Computer Operator	DSO.No.13/2013-14	50
34	Nagarjunasagar WLM	Nagarjunasagar	Estimate for Improvement Infrastructure & Communication Broad band connectivity in WLM Range N.Sagar	RSO.No.50(a)/2013-14	50
35	KBR National park	KBR National park	Providing Data Entry Operator under Information Technology & Communication at K.B.R.National Park, Hyderabad during 2013-14	4/ CAMPA / 2013-14	50

**Findings:** There were a total of 332 activities undertaken in 2013-2014. The maximum number of ICT work was carried out in Hyderabad followed by Karimnagar. ICT activities were procurement of GPS (Garmin 72 H), desktop purchase, laptop purchase, repair works, communication charges to staff, evaluated based on the available records indicated highly satisfactory performance.

**5.9.8 Monitoring and Evaluation (M&E):** The total number of different works under M&E component undertaken by TSFD CAMPA during 2013-2014 is 84. 10% of the total works i.e. 84 sample namely. Expenses towards office support was maximum for Nirmal followed by Nizamabad. Details of the evaluated sample is provided in Annexure V. **Total score based on the percent variation of the M&E activity evaluated on the basis of the available documents is 9 out of 10.**

**Table 5.9.8 Evaluation summary of M&E samples.**

S.No.	Division	Range	Activity	SO.No	Score
1	Bellampally	Ballampally	Audit fees for CAMPA Scheme Cash Accounts for the year 2012-13 of Bellampally Division during the year 2013-14	390/2013-14	10

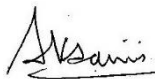

S.No.	Division	Range	Activity	SO.No	Score
2	Bellampally	Bellampally	Office support for monitoring of CAMPA Scheme in Bellampally Division during the year 2013-14	391/2013-14	10
3	Kagaznagar	Bejjur	Audit fees for audit of CAMPA accounts of Kagaznagar Division	RSO 11_2013-14	8
4	Jannaram	Jannaram	Payment of Audit fees for CAMPA Audit by CA for the year 2012-13	48_R_2013-14	10
5	Mancherial	Mancherial	Office Support for monitoring CAMPA scheme 2013-14 of Mancherial Division	310_2013-14	10
6	Khammam	Khammam	Audit fee for audit of campa for year 2013-14	236_2013-14	8
7	Medak	Medak	Payment of CAG Audit Fees	354_DFO_2013-14	8
8	Bhadrachalam	Bhadrachalam	Estimate for Chartered Accountant Audit Fee	31_2013-14	8

**Findings:** There were a total of 84 activities under M&E undertaken in 2013-2014. M&E activities evaluated based on the available records indicated highly satisfactory performance. Most of the expenditure was incurred by Nirmal followed by Nizamabad. The activities in M&E evaluated were audit fee payment, purchase of office support items.

**5.10 Over all evaluation score:** Scores obtained by different plantation activities and other activities under different CAMPA components is shown in Table 5.10. The total score obtained for the 2013-2014 CAMPA activities is **806.48** out of **1105** i.e. **72.98%** indicating “**moderately satisfactory performance**”.

**Table 5.10: Overall scoring of TSFD CAMPA undertaken during 2013-2014.**

Quantitative Aspects (A)				Qualitative Aspects (B)			
S.	Main heading	Score	Total	S.	Main heading	Score	Total
I.	Plantation activities (CA and NPV)	260.23	500	I.	Impact of awareness generation campaign	1.5	5
II.	Soil and Moisture Conservation Measures	100	100	II.	Identification of approved site for plantation	2.7	5
III.	Other activities (CA & NFM)	95	100	III.	Improvement in quality of wildlife habitat	3.5	5
IV	Forest Protection	144	150	IV.	CAMPA benefits (SC/ST/BPL households)	10	10
V	Forest Fire Management	9.71	10	V.	Project Awareness	2.2	5
VI	Biodiversity Conservation	72.75	80	VI.	Transparency, maintenance and payments	2.8	5
VII	Research & Development	18.81	20	VII.	Maintenance of assets created	7	10
VIII	Capacity Building	20	20		-	-	-
IX	ICT	48.28	50		-	-	-
IX	M&E	8	10		-	-	-
<b>Total (A)</b>		<b>776.78</b>	<b>1060</b>	<b>Total (B)</b>		<b>29.7</b>	<b>45.00</b>
<b>Grand Total (A+B)</b>						<b>806.48</b>	<b>1105</b>

Name of evaluators	Signatures	Name of evaluators	Signatures
Dr Satvant K Saini		Dr Saurindra Nr Goswami	

Akhilesh Singh	<i>Akhilesh Singh</i>	Amit Ashok Singhe	<i>Amit Ashok Singhe</i>
Ankit Rawat	<i>Ankit</i>	Aniket Choudhury	<i>Aniket</i>
Chetan TR	<i>TR Chetan</i>	Rohit Kumar	<i>Rohit</i>
Raj Kumar Arya	<i>Raj Kumar</i>	Neeraj Agrawal	<i>Neeraj</i>

## **5.11 Third party critical comments**

### **1. Project constraints/limitations**

What were the constraints /limitations faced by the project authority based on evaluator? Specify

- a) Lack of community participation in CAMPA activities.
- b) Lack of readily available quality planting materials of Teak and NTSH species.
- c) Lack of proven nursery practices for developing quality saplings within the state.
- d) Severe pressure on lands from encroachments.
- e) Lack of sufficient time for site preparation in the degraded lands before plantation.
- f) Lack of sufficient manpower to conduct regular maintenance of plantation and structures.
- g) Lack of holistic understand on CAMPA components, reporting amongst forest department staffs.
- h) Poorly organized record keeping.

### **2. Suggestions for improvement**

Areas of improving the project output? Specify

- a) Involvement of local stakeholders from site selection to maintenance activities.
- b) Identification of mother trees bearing areas for teak and NTSH species.
- c) Training on forest trees nursery practices for producing quality planting stocks.
- d) Planting of saplings to be synchronized with meteorological conditions (forecasting).
- e) Site - species relationships needs consideration for raising plantation.
- f) Adoption of innovative solutions (wadi, etc.) for soil and water on degraded areas.
- g) Emphasize on developing short rotation forest plantations as carbon sinks.
- h) Emphasize on wildlife habitat improvement including improvement of the hydrological regime.
- i) Updated CAMPA works on E-green watch and TGIMS.

### **3. Whether the project authorities have felt any need of improving upon any particular activity on methodology? Specify.**

Stakeholders' participation in all the project activities from planning to implementation needs to be initiated. Development of ecosystem based site quality indices including key considerations of community preference, biodiversity conservation, Soil and water conservation should be included

### **4. Whether the people of the project area feel any need to improve any particular aspects of the project? Specify.**

Presently few people from the project area were associated during implementation of activities as daily wage labour. Unless local people are totally aware of the benefits of CAMPA project and they actively participate, it is difficult to get reflections from them on the project.

### **5. Whether the project should be continued on the same lines or some modifications are necessary. Specify.**

The project should seriously make modifications by adopting ecosystem approach to ensure ecological security of the affected areas and the livelihoods of the communities affected by forest diversions. Plantation of local species with multiple benefits instead of planting exotic monoculture like eucalyptus is necessary to improve wildlife habitat and also distribute benefits for the affected people. Project activity should aim at rejuvenation of ecological goods and services like rebuilding soil fertility, pollination, seed dispersal, perennial stream flow, availability of fuelwood, fodder, fruits for the local people. Mechanism for ecological monitoring of CAMPA activities is to be developed. Use of latest field and information technology sources is highly recommended.

## Chapter 6

### RECOMMENDATIONS

#### Plantation activities

1. Development of Telangana State Site Quality Index (TSQX) based on climate variable, soil parameters, topography, land tenure, and degradation status for plantations.
2. Although from survival point of view, eucalyptus plantations obtained a better score yet avoidance of eucalyptus plantations as habitats by wildlife is a serious concern. It is recommended raising of local fast growing non timber forest products (NTFP) species for deriving multiple benefits for wildlife, human beings and rejuvenation of ecosystem services.
3. For raising teak plantation, planting stock of teak needs to be made from selected mother trees followed by proper root training of teak seedlings and acclimatization of the saplings before field transplantation with a ball of earth. Plantations to synchronize with the onset of monsoon. Sapling not less than 6ft in height should be field planted.
4. Keep updated plantation journals of all the CAMPA plantation activities in every ranges.
5. Eucalyptus not to replace natural teak growing areas.
6. Regular silvicultural practices for NTFP/NTSH and teak plantations to enhance the forest canopy.
7. Fast growing native NTFP/NTSH plantations should be raised for developing forest carbon sink.

#### Other activities

1. Plantation of native NTFP trees to join fragmented reserve forests for improving wildlife habitat and ensure ecosystem continuity.
2. Regular maintenance operations of soil and water conservation structures is necessary. Innovative low cost water harvesting structures like staggered trenches, *jaal kund* is better for treating catchments.
3. In areas frequented by wild herbivores, CPT be avoided to reduce the risk of wildlife accidents.
4. Maintenance of forest protection measures like chain link fencing in areas susceptible to severe grazing pressure is necessary.

5. Building trust among the forest fringe population on the benefits of stall-feeding for ecological benefits is a better way to reduce the grazing pressure.
6. Awareness programme for communities on the need for biodiversity conservation to enhance the perennial flow of ecosystem services is necessary.
7. All the activities undertaken under CAMPA is to be updated regularly in E-green watch for ease in conducting google earth based regular monitoring of activities.
8. Ecological monitoring of all the works on an annual basis is necessary.

#### **General activities**

1. Each division to update CAMPA list of works under each component as presently done for the year 2016-2017 in the FAMIS portal.
2. Training of officials on CAMPA components/sub-components for correct booking of works under the appropriate head/sub-head. A web based toolkit support system if available will assist forest officials to correctly book CAMPA works under the appropriate components.
3. Maintenance of record for all the activities is vital for proper monitoring of works. Irrespective of any situation measurement books / plantations journals should always be kept with care in the ranges where CAMPA works (*plantation and other activities*) have been carried out.
4. Adoption of recording CAMPA activities details grid wise. This is vital for ease in evaluating quantification of works.
5. Participatory selection of sites for CA plantations and CAMPA other activities in degraded lands with stakeholders for developing enhanced climate change resilient forests.