HIMACHAL PRADESH FOREST DEPARTMENT

RECASTING OF CATCHMENT AREA TREATMENT PLAN FOR SATLUJ BASIN OF HIMACHAL PRADESH

TIDONG PROJECT

NAIK ENVIRONMENT RESEARCH INSTITUTE LTD.

(NERIL)

TIDONG PROJECT

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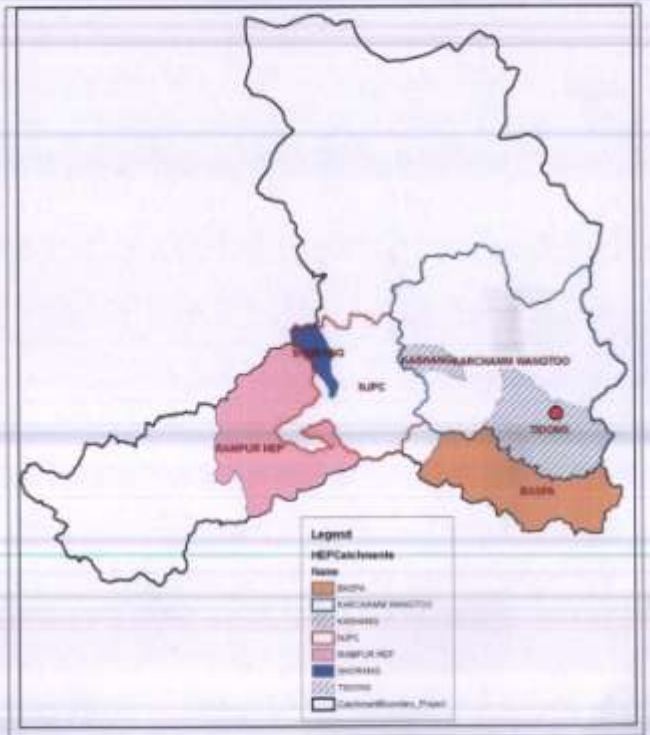
CHAPTER I

INTRODUCTION

CHAPTER 1: BACKGROUND FOR TODONG HYDRO ELECTRIC PROJECT

The Catchment Area Treatment (CAT) Plan of Tidong Hydro Electric Project was prepared by Nuziveedu Seeds Ltd, New Delhi in the year 2007. The Plan was prepared for a period of 10 years excluding zero year for raising nurseries starting from 2008-09 to 2018-19 with total financial outlay of Rs. 5.89 crores. The actual implementation of the CAT Plan was started in the year 2010-11. As per stipulation imposed by the GoI MoEF, the user agency deposited the funds as prescribed in the approved CAT Plan. The user agency started depositing the funds in the Ad-hoc CAMPA (Compensatory Afforestation Fund Management and Planning Authority). Later on, after the constitution of state CAMPA, the funds are now being released since 2009 onwards gradually to the state CAMPA, enabling the implementation of CAT Plans.

This time gap in the preparation of CAT Plan and their actual implementation has rendered the original CAT Plan document out dated and impractical to execute. Moreover, many changes have also taken place during the last few years because of the altered ground realities, review of technical / administrative decisions and new advances/ techniques in the field of soil and water conservation, which has necessitated the recasting of this CAT Plan.



Satluj Catchment boundary and HEP Boundary

About Comprehensive Catchment Area Treatment Plan:

NERIL was awarded the work of Preparation of Comprehensive Catchment Area Treatment (CCAT) Plan for the entire Satluj basin on 25th March, 2009 and actual work commenced on 1st April, 2009.

The Satluj Basin has a total catchment area of 20,000 sq. km. NERIL's study area stretches from Bilaspur district up to the Spiti valley, i.e. the Satluj basin above Kol Dam and its tributary-Spiti. The spatial unit of this study was Micro-watershed. The study area comprised of 179 micro-watersheds from Kol Dam to Wangtoo and 31 sub catchments from Wangtoo to Spiti which were not demarcated further into their micro-watershed. Hence, the sub catchments have been considered as a unit of study for such regions. NERIL team of field investigators have visited all the MWSs and SCs. (both inhabited and un-inhabited) to collect primary and secondary data w.r.t the demography, topography, plantation, status of current treatment measures, pressures on the MWS from various sources etc. Similarly, socio-economic data was collected through PRA's and RRA's by NERIL's team of field investigators and experts. GPS co-ordinates and photographs of all the locations visited were taken. Further, this CCAT Plan was completed and submitted to the H.P Forest Department in May, 2011.

On the basis of guidelines followed while preparing the CCAT Plan for Satluj basin, the H.P. Forest department has allotted the work of recasting of Annual Action Plans of the ongoing CAT Plans, including Tidong Hydro Electric Project to NERIL. The task of recasting is based on ground realities and incorporates the recent advances in silt management and consonance with the stipulations on the project of Catchment Area Treatment Plan. The main objective for recasting of Action Plan is prioritizing the most cost effective vegetative measures and Bio-engineering methodology rather than the conventional approach of using civil structures. In addition, target oriented plantation to encourage moisture retention, reduce soil erodibility and improve soil and water conservation measures is also proposed.

INTRODUCTION

The Catchment Area of Tidong Hydro Electric Project is located on the Tidong Khad which is a tributary of river Satluj in district Kinnaur. It forms the part of Karchham Wangtoo CAT Plan and falls under Moorang Range of Kinnaur Forest division. The division wise total CAT Plan outlay and achievements up to 31/3/2011 including approved APO for the year 2011-12 is given as under:

Sr. No	Name of division	CAT Plan outlay	Achieved up to 31/3/2011 including APO for 2011-12	Balance
1.	Kinnaur	72484026	11388000	61096026
	Total	**72484026**	**11388000**	**61096026**

The Balance amount of Tidong Hydro Electric Project CAT Plan has been recasted on the basis of sub catchment. The Tidong HEP CAT plan comprises of two Forest Divisions and spreads over fourteen sub catchments.

A. The division wise sub catchments are given as under:

a) **In Kinnaur Division (14 Sub-catchment)**

Sub Catchment No. 22 (part)

B. The following Forest Ranges are covered under Tidong HEP CAT-Plan:

a) **Kinnaur Division**

Moorang range

C. Division wise Panchayats falling under Tidong HEP CAT plan are:

a) **Kinnaur Forest Division**

Thangi, Kunucharang (2 Panchayats)

SCOPE OF WORK AND METHODOLOGY

As per guideline issued from the H.P. Forest department, the scope of work and task involving the recasting of balance (unspent) amount of the Tidong Hydro Electric Project CAT Plan is as under:

1) Preparation of GIS baseline data available from the comprehensive CAT Plan of Satluj River basin after proper delineation of sub catchment falling in Tidong Hydro Electric Project CAT Plan.

2) To enhance the base layer data of comprehensive CAT Plan by creation of new layers like:

- Nurseries
- Forest roads
- Forest buildings, Rest houses
- Treatment already done/existing
- Future treatments proposed

All the above details will be sub catchment specific.

3) Field reconnaissance

a) NERIL has carried out systematic field reconnaissance of each sub catchment for existing works by recording their GPS coordinates along with photographs. Also suggested scope for further improvement through Bio-engineering techniques which has been prescribed on site specific recommendations under future management / treatment Plan accordingly.

b) Prescription of the new works after extensive field visits / survey of the Sub catchments. Further addition and deletion of the unexecuted works of the existing Tidong Hydro Electric Project CAT Plan.

c) After that, the works proposed have been prioritized and suitably spread spatially subcatchment wise over the next 10 years.

d) More emphasis has been given to the cost effective Bio-engineering methodology and less to civil/stone structures.

e) Further no civil works has been proposed beyond 30°-35° slope.

4) Emphasis on Nursery management

Almost all the nurseries that fall in the Tidong Hydro Electric Project CAT Plan have been visited during intensive field survey and site specific prescriptions for their improvement have been prescribed. Further suitable species to be raised in the nurseries has also been prescribed for Afforestation, including suitable bio engineering species for the areas falling in each micro watershed in each nursery. Improvement of infrastructure in each nursery like Water storage, Vermi compost etc. wherever required has also been suggested under future planning.

METHODOLOGY ADOPTED FOR RE-CASTING

To achieve the scope of work assigned to the consultant, following methodology has been adopted for recasting the Tidong Hydro Electric Project CAT Plan.

- Sub Catchment wise planning which is further described under three heads:
  - Introduction of sub catchment.
  - Past management.
  - Future management/planning.
- Reconnaissance/ Intensive Field Survey of each sub-catchment along with concerned implementing field staffs of the H.P. Forest Department.
- Panoramic view of the subcatchment.
- Identification of boundaries of the sub catchment.
- Location in the Toposheet (MAP).
- Works executed under concerned CAT Plan with GPS coordinates along with photographs of the works.
- Works to be executed under different components along with GPS coordinates and photographs.

A brief account of each subcatchment described under three heads is given as under:

a) Introduction of subcatchment:

The introductory part of the subcatchment contains the administrative/demo graphic, land use pattern, biodiversity and Socio-economic details along with GPS co-ordinates and panoramic view of the subcatchment.

b) Past management

The past management has been described under main components like soil conservation measures, Afforestation, Infrastructure development etc. of the old CAT Plan along with GPS coordinates, photographs and overlay on GIS baseline data.

c) Future management

The future management has been described under these nine main components as per guidelines issued by the Government of Himachal Pradesh as per **Annexure A**

Sr. No	Item	Percentages
1.	Afforestation, Maintenance, Pastures & Nurseries*	20
2.	Soil and water conservation measures*	25
3.	PES including study and its implementation	10
4.	Research, Capacity build-up, publicity	5
5.	Institutional charges/Departmental charges	7
6.	Monitoring & Evaluation	3
7.	Wildlife related interventions	5
8.	Infrastructural build-up	15
9.	Contingencies	10
	Total	**100**

**In CAT plans involving Protected Areas, these funds (Sr .no. 1 & 2) be re-allocated for Wild life activities, keeping in view specific requirements of the area.*

This recasting plan aims at achieving the scope of work based on ground realities and detail site specific prescription along with their GPS co-ordinates and photographs. In addition, division wise financial forecasting is done subcatchment wise.

The technical description about the CAT Plan main components is as follows:

1. AFFORESTATION MEASURES:

The Afforestation measures have been categorized in these 4 sub-components:

a) Normal Afforestation:

Under this component three strand barbed wire fencing with creosoted wooden fence posts and two layers of live-hedge plants to reinforce fencing has been prescribed with planting of 1100 plants per Ha out of which at least 20% would be trees of medicinal value and 10% of wild fruits species to maintain diversity.

b) Enrichment planting:

Under this component the area falling in degraded forest and improvement of the forest stocking has been proposed which aims at planting 800 tall plants per notional Ha.

c) Energy plantation:

The areas falling around habitations in small patches are proposed to be taken under this component. Five strand barbed wire fencing- 3 strand and 2 cross wire; with creosoted wooden fence posts and two layers of live hedge to reinforce fencing have been prescribed with planting of 5000 tall plants of fuel and fodder value per ha (spacing 2m x 1m).

d) Measures to handle Invasive species:

Under this component, the area infested with invasive weeds like lantana is proposed to be undertaken. The invasive weeds are to be eradicated and planted with 800 No of plants per Ha. (i.e. 300 Nos. tall plants and 500 Nos. bamboo) including sowing of native grass seeds. Extensive use of local grass to be broadcast over the area being treated is recommended. A one and half to two meter wide strip of lantana is to be retained along the periphery of the area being treated to obviate the need to do any fencing. Gaps, if any, in this protective strip be filled with stacks of cut lantana / live hedges. Involvement of User Groups for maintenance of such areas should be encouraged.

NOTE: In view of the recommendations/ suggestions to improve the execution of CAMPA works given wide APCCF (CAT and ES) H.P. no. - FT CAMPA/2010/CAT Plan/General Dated: 2/8/2011 (Refer Annexure B) & further as per office letter from chair person, executive committee HP state CAMPA-Cum-PCCF HP dated 21/01/2012 (Refer Annexure C).

1. Five years maintenance as per old practice prevalent in the forest department has been prescribed under Afforestation scheme.
2. The cost norms for each component of Afforestation measures listed above has been prepared on the basis of prevalent schedule of works and labour rates for Rampur circle. Refer **Annexure D.**
3. Provision for fencing under enrichment component has also been made on the lines of departmental schemes for enrichment component being implemented by the forest department.
4. The norms/ Schedule of Rates approved by the Competent Authority has been applied in the Recast CAT Plan.
5. Future escalation in the wages and unforeseen eventualities will be met with from the Contingencies component.
6. The proposed activities in the CAT Plan can be changed with prior approval of the Competent Authority as and when required.
7.

2. SOIL AND WATER CONSERVATION MEASURES:

The soil and moisture conservation measures works has been prescribed and described under the following categories:

a) Moisture retentively operations: staggered contour trenching (priority activity), bio-engineering species planting.

b) Contoured live hedges.

c) Vegetative structures- fascines, brush-wood check dams, bamboo crib etc. wherever applicable.

d) Civil structures- masonry crate wire check dams, masonry dams, (primarily dry stone), check/protection walls.

e) Drainage line treatment and landslide control, with site specific estimates, using interventions mentioned in a-d above.

The cost norms of soil and water conservation endeavors have also been prepared on the basis of prevalent schedule of work and labour rates for Rampur circle**, Annexure-D.**

3. PAYMENTS FOR ENVIRONMENTAL SERVICES:

a) Soil conservation works in private land

The site specific financial outlay for the private areas for treatment has been prescribed. The amount kept for treatment will be released to the individual after completion/ treatment carried out by the owners of the land.

b) The provision kept for JFMC'S for assisting the forest staff in each subcatchment under Forest protection measures will be released only after the entire satisfaction of forest staff, in case the JFMCs actively associate and prevent the forest offence successfully.

c) With regard to distribution of GI pipe for hoisting the flags per the list provided by the Panchayat. It will be done through concerned Panchayat in the presence of forest staff by keeping proper record. In case improper utilization of the materials, the concerned Panchayat will be responsible. It will be one time provision.

7. WILDLIFE MEASURES:-

The provision kept under wildlife activities will be spent on improvement and management of Wildlife outside the protected areas by the concerned wild life warden i.e. Divisional Forest Officer. The necessary provision for the same has been made.

Management of Wild Life outside the Protected Area in Tidong Hydro Electric Project:

The catchment area of Tidong is rich in flora and fauna. Our love for wildlife has got religious sanctity behind it. Our sacred scriptures speak so eloquently about the protection and preservation of animal and bird kingdom. The almighty has created every being with a purpose and function to maintain the ecological balance. The variety of wildlife is found in forest of the catchment area as a result of great variation in altitude, topography, climate and vegetation. The Wild Life in the tract is under great threat due to deforestation, poaching and other

biotic pressures. As a result of this, many species are highly endangered and are in the verge of extinction. Similarly, the excessive cattle population is also a great threat which is often beyond carrying capacity which results into insufficient grazing lands. This has also resulted into the deterioration of ecology and environment of the plan area. Moreover the local inhabitants are also exercising their traditional rights since time immortal. It has also resulted into extinction of some of the wildlife species. Natural calamities like drought, storms, heavy snow fall and repeated forest fires etc are also the root cause for extinction of the species.

Since the exact numbers of various animals found in the tract are not known, the fundamental need is to carry out a detailed survey and population census of species in the area.

Man- Wildlife Conflict

Man-Wild Life conflict is a result of gradual degradation of natural resources and the most sufferers are poor, marginalized communities living in an around the Forests of the Catchment area. The problems of animal damage whether it is crop depredation, live stock depredation and human causalities are not as alarming as it is prevalent in other parts of the States or elsewhere in the country. The problem of livestock predation and killing by Leopard and Black Bear is gradually escalating and to some extent appropriate compensation is needed and also environmental awareness programmes for migratory glaziers thus need to be developed. Concerted efforts, education, awareness, research monitoring, policy, law and governance; habitat restoration and development of essentially needed infrastructure to tackle complex issues pertaining to the man animal conflict are required to be implemented on a priority basis.

Improvement and development of wild life: -

The improvement and development of wild life in the tract including various activities have been suggested in the plan.

Special objectives of wildlife management

The following tasks are suggested:

- To maintain plant and animal biodiversity in nature by establishing the viable, healthy and productive population of wildlife for conserving genetic resources. Therefore it is suggested to carryout wildlife census every alternate year in the key area of the catchment so as to assess the density of the species and they can further be improved and developed from the management point of view.

- Protection of forest and wildlife through Publicity and awareness

  A provision for formation of street theatre of local community may be effective for protection of wildlife and forest. Bands of 10-12 village youth may perform a play about wildlife and forest conservation with local nature based songs and natty from village to village. It is therefore essential to make the people, school children aware about the importance for success of wildlife management. Therefore to protect the wildlife in the catchment area wide publicity through Nukar Natak, posters, notice boards, documentaries etc will be arranged and carried out so that the people will be educated to respect the environment.

- Anti-poaching measures

  The forest area is required to be guarded against poaching throughout the year. In order to curb the nefarious activities of the poachers, Anti-poaching measures like joint patrolling is to be organized by engaging ex-servicemen/ local unemployed youth. Necessary provision to engage locals to keep close eye on the poaching of wildlife in the catchment area has been made accordingly.

- Unique wildlife Habitat

  The catchment area seems to have lot of unique wildlife habitats such as gorges and hidden valleys which are houses to many such species like amphibians, reptiles, etc. There is need to identify such unique habitats to protect them from activities like blasting and degradation. This is also true for the nesting site of vultures and galiform etc (cliffs and ledges). The mapping of such critical and unique area is required to be done and necessary provision for the same has been kept.

- Compensation against wild life damages.

  To avoid man-animal conflict, it is proposed to give reasonable amount as per GoHP notification for the damages caused to their crop and attack on humans

- Sign and slogan boards

  Sign and slogan boards will be displayed in strategic locations which will be written in Hindi language in the form of an appeal to the locals telling about the wildlife conservation and provision of wildlife protection act, 1972, Indian forest act, 1927 and Forest conservation act, 1980. Similarly, all the activities be carried out in the catchment area under the CAT Plan will also be displayed at the respective sites.

- Reward/Incentives to informers

Lumpsum provision has been kept for reward and incentives to informers who actively associate with the forest department in protecting the forest area against poaching and illicit felling.

- Vaccination of domestic cattle

  The local people have their grazing rights in and around the undemarcated /demarcated protected areas. It is therefore necessary to immunize their domestic cattle against the contagious disease like foot and mouth etc. It will also prevent the disease from spreading from domestic cattle to wildlife and vice versa

- Field equipment and medicine for management of wild life— Purchase of capture cage, traps, immobilizing gun, darts, drug, Compass, Handy Cam, Altimeter, binoculars, sleeping bags tents water bottles, pedometer etc.

The recast output of Annual Action Plan of Tidong Hydro Electric Project CAT Plan has been thoroughly discussed with the concerned Officers and field staff of Kinnaur Forest Division on 14th October,2011

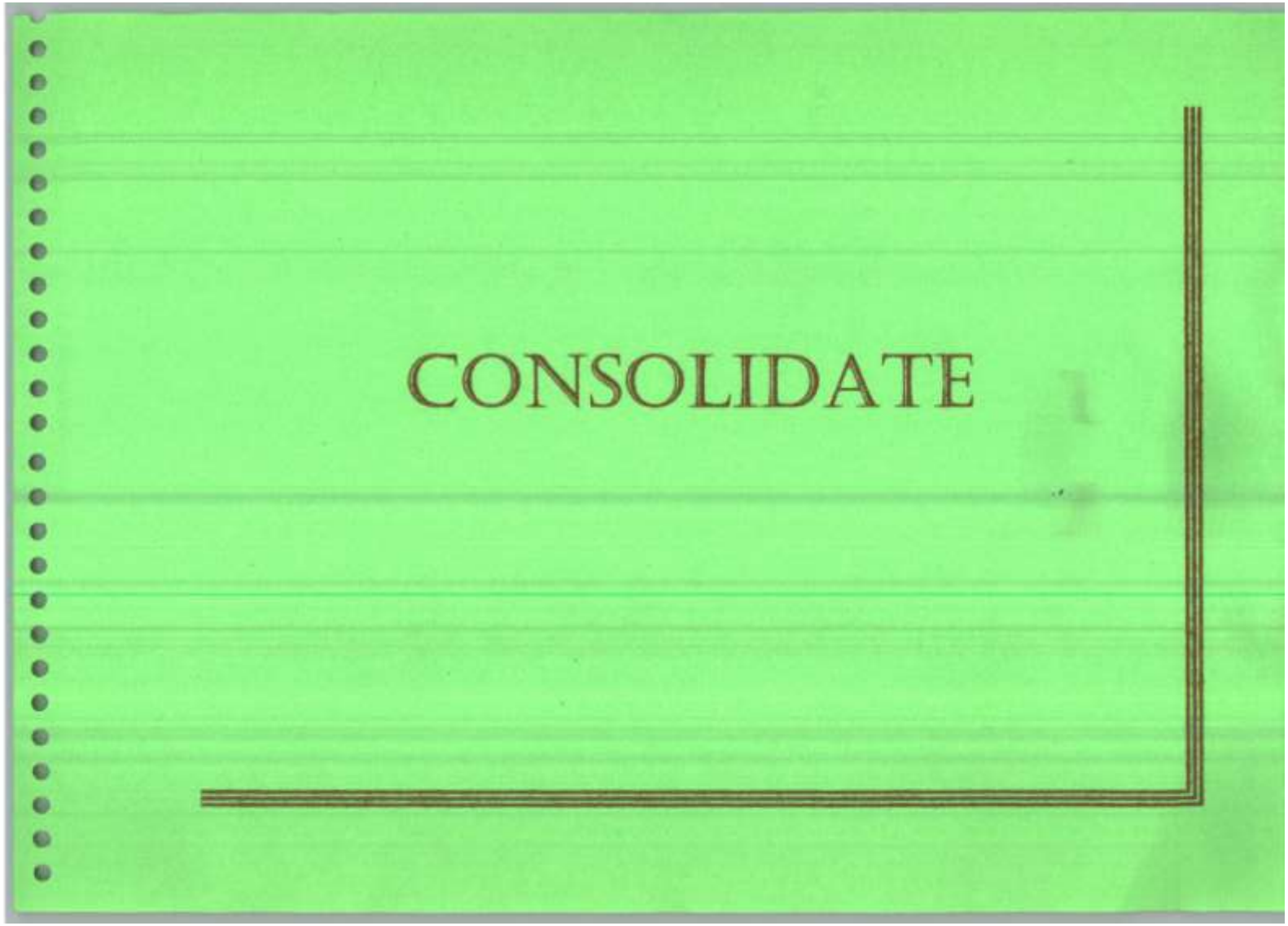
8. INFRASTRUCTURE BUILD UP AND FOREST PROTECTION:-

- The provision for infrastructure build up has been made on site specific basis after taking their GPS co-ordinates along with their photographs. With regards to distribution of non conventional energy and fuel saving devices in catchment area on cost sharing basis, 50% provision has been made for the identified families, the list of which has been made available by the concerned forest staff.

- The provision for distribution of LPG and Pressure cooker will be one time only and the mechanism for their distribution will be through concerned Panchayat in presence of forest staff by keeping proper record.
- The necessary provision for hiring one vehicle for six months during fire season has been made for effective patrolling during fire season in the catchment.

CHAPTER II

OVER VIEW


CONSOLIDATE

CONSOLIDATE TIDONG HEP

Sr. No	Name of division	CAT Plan outlay	Achieved up to 31/3/2011 including APO for 2011-12	Balance
1.	Kinnaur	72484026	11388000	61096026
	Total	**72484026**	**11388000**	**61096026**

SUMMARY

Annual phasing summary of TIDONG CAT Plan Kinnaur Division (All amount in Lacks)													
Name of Component	Balance Amount to be recasted	1st Year	2nd Year	3rd Year	4th Year	5th Year	6th Year	7th Year	8th Year	9th Year	10th Year	Total	Balance
Afforestation Measures	91.64	0.00	5.32	3.56	1.43	0.47	0.37	0.34	0.13	0.13	0.00	11.74	79.90
Soil & Water Conservation Endeavors	152.74	0.00	36.80	45.75	28.50	8.00	0.00	0.00	0.00	0.00	0.00	119.05	33.69
Payment for Environmental Services	61.10	0.00	0.00	0.00	0.00	11.00	10.10	10.00	10.00	10.00	10.00	61.10	0.00
Research, Training & Capacity build up, Publicity & Awareness, Documentation	30.55	0.00	0.00	0.00	0.00	9.00	8.50	7.50	5.55	0.00	0.00	30.55	0.00
Infrastructure built up & Forest Protection	91.64	0.00	0.40	5.75	7.00	5.00	4.00	3.80	2.30	2.00	0.00	30.25	61.39
Wild Life Measures	30.55	0.00	2.45	6.80	5.00	5.20	2.85	3.35	2.10	2.25	0.55	30.55	0.00
Monitoring & Evaluation	18.33	0.00	0.00	3.00	5.00	5.00	3.00	2.33	0.00	0.00	0.00	18.33	0.00
Institutional / Departmental Charges	42.77	0.00	8.00	6.75	10.70	10.77	3.05	2.50	1.00	0.00	0.00	42.77	0.00
Micro Planning	30.55	0.00	0.00	5.00	7.50	6.50	6.00	5.55	0.00	0.00	0.00	30.55	0.00
Contingencies	61.10	0.00	8.00	9.60	8.50	8.00	6.00	6.00	4.50	4.00	6.50	61.10	0.00
Total	610.96	0.00	60.97	86.21	73.63	68.94	43.87	41.37	25.58	18.38	17.05	436.00	174.96

YEAR WISE ABSTRACT

Abstract action plan of Tidong HEP for Second year (2012-13)

Name Of Component		Name Of Division	Physical Targets (Ha/Nos)							Total Financial (In Lacks)
				Maintenance						
			New	I Year	II Year	III Year	IV Year	V Year	Total	
Afforestation Measures	(a) Normal Afforestation (In Ha)	Kinnaur	0	0	0	0	5	0	5	0.21
	(b) Enrichment (In Ha)		4	0	0	0	0	0	4	1.61
	(c) Nurseries (locations in Nos)								2	1.50
Soil & Water Conservation Endeavors	(a) Moisture Retentively Operations (locations in Nos)	Kinnaur							0	0.00
	(b) Live Hedge Fencing (locations in Nos)								0	0.00
	(c) Vegetative structures (locations in Nos)								1	0.30
	(d) Civil Structures (locations in Nos)								9	31.50
	(e) Drainage line treatment & Land slide control. (locations in Nos)								0	0.00
	(f) Stream Bank stabilizations (locations in Nos)								1	5.00
Payment for Environmental Services		Kinnaur								0.00
Research, Training & Capacity build up, Publicity & Awareness, Documentation		Kinnaur								0.00
Infrastructure built up & Forest Protection	(a) Building for stay of staff, FRHS Hut. (locations in Nos)	Kinnaur							0	0.00
	(b) Forest Roads/ Paths (locations in Nos)								0	0.00
	(c) Augmentation of Water Supply. (locations in Nos)								0	0.00
	(d) Vehicle & Operational support to HPFD									0.40
	(e) Office Equipment (computers,Laptops ,GPS, LCD Projector etc.)									0.00
	(f) Silt Monitoring & Purchase of Meteorological Equipment									0.00
	(g) Construction & Repair of Boundary Pillars.									0.00
	(h) Fire Protection Measures									0.00
	(i) Distribution of Non-conventional energy & Fuel Saving devices									0.00
Wild Life Measures		Kinnaur								2.45
Monitoring & Evaluation		Kinnaur								0.00
Institutional / Departmental Charges		Kinnaur								8.00
Micro Planning		Kinnaur								0.00
Contingencies		Kinnaur								8.00
Grand Total										60.97

Abstract action plan of Tidong HEP for Third year (2013-14)

Name Of Component		Name Of Division	Physical Targets (Ha/Nos)							Total Financial (in Lacks)
			New	Maintenance					Total	
				I Year	II Year	III Year	IV Year	V Year		
Afforestation Measures	(a) Normal Afforestation (in Ha)	Kinnaur	0	0	0	0	0	5	5	0.21
	(b) Enrichment (in Ha)		0	4	0	0	0	0	4	0.35
	(c) Avenues Excations in Nos)								1	5.00
Soil & Water Conservation Endeavors	(a) Moisture Retentivity Operations (locations in Nos)	Kinnaur							0	0.00
	(b) Live Hedge Fencing (locations in Nos)								0	0.00
	(c) Vegetative structures (locations in Nos)								1	2.00
	(d) Civil Structures (locations in Nos)								9	39.75
	(e) Drainage line treatment & Land slide control. (locations in Nos)								0	0.00
	(f) Stream Bank stabilizations (locations in Nos)								1	4.00
Payment for Environmental Services		Kinnaur								0.00
Research, Training & Capacity build up, Publicity & Awareness, Documentation		Kinnaur								0.00
Infrastructure built up & Forest Protection	(a) Building for stay of staff, Fitni Hut (locations in Nos)	Kinnaur							0	0.00
	(b) Forest Roads/ Paths (locations in Nos)								0	0.00
	(c) Augmentation of Water Supply (locations in Nos)								0	0.00
	(d) Service & Operational Support to HPFD									3.00
	(e) Office Equipment (computers,Laptops ,GPS, LCD Projector etc.)									1.00
	(f) SR Monitoring & Purchase of Meteorological Equipment									0.00
	(g) Construction & Repair of Boundary Pillars.									0.25
	(h) Fire Protection Measures									1.50
	(i) Distribution of Non-conventional energy & Fuel Saving devices									0.00
Wild Life Measures		Kinnaur								6.80
Monitoring & Evaluation		Kinnaur								3.00
Institutional / Departmental Charges		Kinnaur								6.75
Micro Planning		Kinnaur								5.00
Contingencies		Kinnaur								9.60
Grand Total										88.21

Abstract action plan of Tidong HEP for Fourth year (2014-15)

Name Of Component		Name Of Division	Physical Targets (Ha/Nos)							Total Financial (In Lacks)
				Maintenance						
			New	I Year	II Year	III Year	IV Year	V Year	Total	
Afforestation Measures	(a) Normal Afforestation (in Ha)	Kinnaur	0	0	0	0	0	0	0	0.00
	(b) Enrichment (in Ha)		3	0	4	0	0	0	7	1.43
	(c) A/Nurseries (locations in Nos)								0	0.00
Soil & Water Conservation Endeavors	(a) Moisture Retentively Operations (locations in Nos)	Kinnaur							0	0.00
	(b) Live Hedge Fencing (locations in Nos)								0	0.00
	(c) Vegetative structures (locations in Nos)								1	2.00
	(d) Civil Structures (locations in Nos)								6	25.50
	(e) Drainage line treatment & Land slide control. (locations in Nos)								0	0.00
	(f) Stream Bank stabilizations (locations in Nos)								1	1.00
Payment for Environmental Services		Kinnaur								0.00
Research, Training & Capacity build up, Publicity & Awareness, Documentation		Kinnaur								0.00
Infrastructure built up & Forest Protection	(a) Building for stay of staff, FRH/I Hut (locations in Nos)	Kinnaur							0	0.00
	(b) Forest Roads/ I Paths (locations in Nos)								0	0.00
	(c) Augmentation of Water Supply. (locations in Nos)								0	0.00
	(d) Vehicle & Operational Support to HPFD									4.00
	(e) Office Equipment (computers,Laptops ,GPS, LCD Projector etc.)									3.50
	(f) Silt Monitoring & Purchase of Meteorological Equipment									0.00
	(g) Construction & Repair of Boundary Pillars									0.00
	(h) Fire Protection Measures									1.50
	(i) Distribution of Non-conventional energy & Fuel Saving devices									0.00
Wild Life Measures		Kinnaur								5.00
Monitoring & Evaluation		Kinnaur								5.00
Institutional / Departmental Charges		Kinnaur								10.70
Micro Planning		Kinnaur								7.50
Contingencies		Kinnaur								8.50
Grand Total										79.63

Abstract action plan of Tidong HEP for Fifth year (2015-16)

			Physical Targets (Ha/Nos)							Total Financial (In Lacks)
				Maintenance						
Name Of Component		Name Of Division	New	I Year	II Year	III Year	IV Year	V Year	Total	
Afforestation Measures	(a) Normal Afforestation (in Ha)	Kinnaur	0	0	0	0	0	0	0	0.00
	(b) Enrichment (in Ha)		0	3	0	4	0	0	7	0.47
	(c)Nurseries (locations in Nos)								0	0.00
Soil & Water Conservation Endeavors	(a) Moisture Retentively Operations (locations in Nos)	Kinnaur							0	0.00
	(b) Live Hedge Fencing (locations in Nos)								0	0.00
	(c) Vegetative structures (locations in Nos)								0	0.00
	(d) Civil Structures (locations in Nos)								1	0.00
	(e) Drainage line treatment & Land slide control. (locations in Nos)								0	0.00
	(f) Stream Bank stabilizations (locations in Nos)								0	0.00
Payment for Environmental Services		Kinnaur								11.00
Research, Training & Capacity build up, Publicity & Awareness, Documentation		Kinnaur								9.00
Infrastructure built up & Forest Protection	(a) Building for stay of staff, FRH/I Hut (locations in Nos)	Kinnaur							0	0.00
	(b) Forest Roads/ I Paths (locations in Nos)								0	0.00
	(c) Augmentation of Water Supply. (locations in Nos)								0	0.00
	(d) Vehicle & Operational Support to HPFD									3.50
	(e) Office Equipment (computers,Laptops ,GPS, LCD Projector etc.)									0.00
	(f) Silt Monitoring & Purchase of Meteorological Equipment									0.00
	(g) Construction & Repair of Boundary Pillars.									0.00
	(h) Fire Protection Measures									1.50
	(i) Distribution of Non-conventional energy & Fuel Saving devices									0.00
Wild Life Measures		Kinnaur								5.20
Monitoring & Evaluation		Kinnaur								5.00
Institutional / Departmental Charges		Kinnaur								10.77
Micro Planning		Kinnaur								6.50
Contingencies		Kinnaur								8.00
Grand Total										68.94

Abstract action plan of Tidong HEP for Sixth year (2016-17)

Name Of Component		Name Of Division	Physical Targets (Ha/Nos)							Total Financial (In Lacks)
			New	Maintenance						
				I Year	II Year	III Year	IV Year	V Year	Total	
Afforestation Measures	(a) Normal Afforestation (In Ha)	Kinnaur	0	0	0	0	0	0	0	0.00
	(b) Enrichment (In Ha)		0	0	3	0	4	0	7	0.37
	(c)Nurseries (locations in Nos)								0	0.00
Soil & Water Conservation Endeavors	(a) Moisture Retentively Operations (locations in Nos)	Kinnaur							0	0.00
	(b) Live Hedge Fencing (locations in Nos)								0	0.00
	(c) Vegetative structures (locations in Nos)								0	0.00
	(d) Civil Structures (locations in Nos)								0	0.00
	(e) Drainage line treatment & Land slide control. (locations in Nos)								0	0.00
	(f) Stream Bank stabilizations (locations in Nos)								0	0.00
Payment for Environmental Services		Kinnaur								30.10
Research, Training & Capacity build up, Publicity & Awareness, Documentation		Kinnaur								8.50
Infrastructure built up & Forest Protection	(a) Building for stay of staff, Fifth/I Hut (locations in Nos)	Kinnaur							0	0.00
	(b) Forest Roads/ I Paths (locations in Nos)								0	0.00
	(c) Augmentation of Water Supply. (locations in Nos)								0	0.00
	(d) Vehicle & Operational Support to HPFD									2.50
	(e) Office Equipment (computers,Laptops ,GPS, LCD Projector etc.)									0.00
	(f) SDI Monitoring & Purchase of Meteorological Equipment									0.00
	(g) Construction & Repair of Boundary Pillars.									0.00
	(h) Fire Protection Measures									1.50
	(i) Distribution of Non-conventional energy & Fuel Saving devices									0.00
Wild Life Measures		Kinnaur								2.85
Monitoring & Evaluation		Kinnaur								3.00
Institutional / Departmental Charges		Kinnaur								5.05
Micro Planning		Kinnaur								6.00
Contingencies		Kinnaur								6.00
Grand Total										43.87

Abstract action plan of Tidong HEP for Seventh year (2017-18)

Name Of Component		Name Of Division	Physical Targets (Ha/Nos)							Total Financial (In Lacks)
			New	Maintenance I Year	II Year	III Year	IV Year	V Year	Total	
Afforestation Measures	(a) Normal Afforestation (In Ha)	Kinnaur	0	0	0	0	0	0	0	0.00
	(b) Enrichment (In Ha)		0	0	0	1	0	4	7	0.34
	(1A)Nurseries (locations In Nos)								0	0.00
Soil & Water Conservation Endeavors	(a) Moisture Retentively Operations (locations In Nos)	Kinnaur							0	0.00
	(b) Live Hedge Fencing (locations In Nos)								0	0.00
	(c) Vegetative structures (locations In Nos)								0	0.00
	(d) Civil Structures (locations In Nos)								0	0.00
	(e) Drainage line treatment & Land slide control. (locations In Nos)								0	0.00
	(f) Stream Bank stabilizations (locations In Nos)								0	0.00
Payment for Environmental Services		Kinnaur								10.00
Research, Training & Capacity build up, Publicity & Awareness, Documentation		Kinnaur								7.50
Infrastructure built up & Forest Protection	(a) Building for stay of staff, / Rest/ Hut. (locations In Nos)	Kinnaur							0	0.00
	(b) Forest Roads/ Paths (locations In Nos)								0	0.00
	(c) Augmentation of Water Supply. (locations In Nos)								0	0.00
	(d) Vehicle & Operational Support to HPFD									2.88
	(e) Office Equipment (computers,Laptops ,GPS, LCD Projector etc.)									0.00
	(f) Silt Monitoring & Purchase of Meteorological Equipment									0.00
	(g) Construction & Repair of Boundary Pillars.									0.00
	(h) Fire Protection Measures									1.50
	(i) Distribution of Non-conventional energy & Fuel Saving devices									0.00
Wild Life Measures		Kinnaur								3.35
Monitoring & Evaluation		Kinnaur								2.33
Institutional / Departmental Charges		Kinnaur								2.50
Micro Planning		Kinnaur								5.55
Contingencies		Kinnaur								6.00
Grand Total										41.37

Abstract action plan of Tidong HEP for Eighth year (2018-19)

			Physical Targets (Ha/Nos)							Total Financial (In Lacks)
				Maintenance						
Name Of Component		Name Of Division	New	I Year	II Year	III Year	IV Year	V Year	Total	
Afforestation Measures	(a) Normal Afforestation (In Ha)	Kinnaur	0	0	0	0	0	0	0	0.00
	(b) Enrichment (In Ha)		0	0	0	0	3	0	3	0.15
	(c) Afforestries (locations in Nos)								0	0.00
Soil & Water Conservation Endeavors	(a) Moisture Retentively Operations (locations in Nos)	Kinnaur							0	0.00
	(b) Live Hedge Fencing (locations in Nos)								0	0.00
	(c) Vegetative structures (locations in Nos)								0	0.00
	(d) Civil Structures (locations in Nos)								0	0.00
	(e) Drainage line treatment & Land slide control (locations in Nos)								0	0.00
	(f) Stream Bank stabilizations (locations in Nos)								0	0.00
Payment for Environmental Services		Kinnaur								10.00
Research, Training & Capacity build up, Publicity & Awareness, Documentation		Kinnaur								5.55
Infradtructure built up & Forest Protection	(a) Building for stay of staff, FRH/I Hut (locations in Nos)	Kinnaur							0	0.00
	(b) Forest Roads/ Paths (locations in Nos)								0	0.00
	(c) Augmentation of Water Supply (locations in Nos)								0	0.00
	(d) Vehicle & Operational Support to HPFD									2.30
	(e) Office Equipment (computers,Laptops ,GPS, LCD Projector etc.)									0.00
	(f) Silt Monitoring & Purchase of Meteorological Equipment									0.00
	(g) Construction & Repair of Boundary Pillars.									0.00
	(h) Fire Protection Measures									0.00
	(i) Distribution of Non-conventional energy & Fuel Saving devices									0.00
Wild Life Measures		Kinnaur								2.10
Monitoring & Evaluation		Kinnaur								0.00
Institutional / Departmental Charges		Kinnaur								1.00
Micro Planning		Kinnaur								0.00
Contingencies		Kinnaur								4.50
Grand Total										25.58

Abstract action plan of Tidong HEP for Ninth year (2019-20)

Name Of Component		Name Of Division	Physical Targets (Ha/Nos)							Total Financial (In Lacks)
				Maintenance						
			New	I Year	II Year	III Year	IV Year	V Year	Total	
Afforestation Measures	(a) Normal Afforestation (In Ha)	Kinnaur	0	0	0	0	0	0	0	0.00
	(b) Enrichment (In Ha)		0	0	0	0	0	3	3	0.13
	(c) Nurseries (Locations In Nos)								0	0.00
Soil & Water Conservation Endeavors	(a) Moisture Retentively Operations (locations In Nos)	Kinnaur							0	0.00
	(b) Live Hedge Fencing (locations In Nos)								0	0.00
	(c) Vegetative structures (locations In Nos)								0	0.00
	(d) Civil Structures (locations In Nos)								0	0.00
	(e) Drainage line treatment & Land slide control. (locations In Nos)								0	0.00
	(f) Stream Bank stabilizations (locations in Nos)								0	0.00
Payment for Environmental Services		Kinnaur								10.00
Research, Training & Capacity build up, Publicity & Awareness, Documentation		Kinnaur								0.00
Infrastructure built up & Forest Protection	(a) Building for stay of staff, FRH,I Hut. (locations In Nos)	Kinnaur							0	0.00
	(b) Forest Roads/ I Paths (locations In Nos)								0	0.00
	(c) Augmentation of Water Supply. (locations In Nos)								0	0.00
	(d) Vehicle & Operational Support to HPFD									2.00
	(e) Office Equipment (computers,Laptops ,GPS, LCD Projector etc.)									0.00
	(f) SFI Monitoring & Purchase of Meteorological Equipment									0.00
	(g) Construction & Repair of Boundary Pillars.									0.00
	(h) Fire Protection Measures									0.00
	(i) Distribution of Non-conventional energy & Fuel Saving devices									0.00
Wild Life Measures		Kinnaur								2.35
Monitoring & Evaluation		Kinnaur								0.00
Institutional / Departmental Charges		Kinnaur								0.00
Micro Planning		Kinnaur								0.00
Contingencies		Kinnaur								4.00
Grand Total										18.38

Abstract action plan of Tidong HEP for Tenth year (2020-21)

Name Of Component		Name Of Division	Physical Targets (Ha/Nos)							Total Financial (in Lacks)
				Maintenance						
			New	I Year	II Year	III Year	IV Year	V Year	Total	
Afforestation Measures	(a) Normal Afforestation (in Ha)	Kinnaur	0	0	0	0	0	0	0	0.00
	(b) Enrichment (in Ha)		0	0	0	0	0	0	0	0.00
	(c)Nurseries (locations in Nos)								0	0.00
Soil & Water Conservation Endeavors	(a) Moisture Retentively Operations (locations in Nos)	Kinnaur							0	0.00
	(b) Live Hedge Fencing (locations in Nos)								0	0.00
	(c) Vegetative structures (locations in Nos)								0	0.00
	(d) Civil Structures (locations in Nos)								0	0.00
	(e) Drainage line treatment & Land slide control. (locations in Nos)								0	0.00
	(f) Stream Bank stabilizations (locations in Nos)								0	0.00
Payment for Environmental Services		Kinnaur								10.00
Research, Training & Capacity build up, Publicity & Awareness, Documentation		Kinnaur								0.00
Infrastructure built up & Forest Protection	(a) Building for stay of staff, FRHT Hut. (locations in Nos)	Kinnaur							0	0.00
	(b) Forest Roads/ I Paths (locations in Nos)								0	0.00
	(c) Augmentation of Water Supply. (locations in Nos)								0	0.00
	(d) Vehicle & Operational Support to HPFD									0.00
	(e) Office Equipment (computers,Laptops ,GPS, LCD Projector etc.)									0.00
	(f) Silt Monitoring & Purchase of Meteorological Equipment									0.00
	(g) Construction & Repair of Boundary Pillars.									0.00
	(h) Fire Protection Measures									0.00
	(i) Distribution of Non-conventional energy & Fuel Saving devices									0.00
Wild Life Measures		Kinnaur								0.55
Monitoring & Evaluation		Kinnaur								0.00
Institutional / Departmental Charges		Kinnaur								0.00
Micro Planning		Kinnaur								0.00
Contingencies		Kinnaur								6.50
Grand Total										**17.05**

CHAPTER III

ANNUAL PHASING DETAILS

APO for TIGONG HEP (Kinnaur Division) (All amount in Lacks)

Afforestation Measures

Name of Sub Component	Name of Area	Name of Range	Name of Beat	Micro water shed	1st Year	2nd Year	3rd Year	4th Year	5th Year	6th Year	7th Year	8th Year	9th Year	10th Year	Total
(a) Normal Afforestation	Pibber thangi (5 Ha. 2008-09)	Moorang	Moorang	Sc-21		0.21	0.21								**0.42**
(b) Enrichment	C-196 I(4 Ha.New)	Moorang	Moorang	Sc-21		1.61	0.35	0.26	0.22	0.18	0.18				**2.79**
(b) Enrichment	C-196 II(3 Ha.New)	Moorang	Moorang	Sc-21				1.17	0.25	0.19	0.16	0.13	0.13		**2.04**
(c) Energy Plantation		Na	Na	Na											**0.00**
(d) Measure to handle invasive species.		Na	Na	Na											**0.00**
(1A)Nurseries	Khokpa (2485m)	Moorang	Moorang	Sc-22		1.50	3.00								**4.50**
(1A)Nurseries	Skibba (0.5 Ha. Ht 2227m)	Moorang	Ribba	Sc-22		2.00									**2.00**
(1B)Pasture Reclamation.	Na	Na	Na	Na											**0.00**

Soil & Water Conservation Endeavors

Name of Sub Component	Name of Area	Name of Range	Name of Beat	Micro water shed	1st Year	2nd Year	3rd Year	4th Year	5th Year	6th Year	7th Year	8th Year	9th Year	10th Year	Total
(a) Moisture Retentively Operations	Na	Na	Na	Na											0.00
(b) Live Hedge Fencing	Na	Na	Na	Na											0.00
(c) Vegetative structures	Gauri Slip/ Nala	Moorang	Moorang	Sc-22			2	2							4.00
(c) Vegetative structures	Thangi Slip	Moorang	Moorang	Sc-22		0.3									0.30
(d) Civil Structures	Rowang Nala	Moorang	Moorang	Sc-22		4.00	6	3							13.00
(d) Civil Structures	Shakchang khad/ nala	Moorang	Moorang	Sc-22		4.50	6	3.5							14.00
(d) Civil Structures	Lamber Khad	Moorang	Moorang	Sc-22		4.00	6	5	2						17.00
(d) Civil Structures	Shakutang nala	Moorang	Moorang	Sc-22		3.00	5	2							10.00
(d) Civil Structures	Khandika nala	Moorang	Moorang	Sc-22		3.00	1.75								4.75
(d) Civil Structures	Parvati nala	Moorang	Moorang	Sc-22		3.00	5	6	1						15.00
(d) Civil Structures	Tullig khad	Moorang	Moorang	Sc-22		3.00	2.5								5.50
(d) Civil Structures	Shankwi Khad	Moorang	Moorang	Sc-22		4.00	5.5	6	5						20.50
(d) Civil Structures	Tirung nala (Rispa Beat)	Moorang	Moorang	Sc-22		3.00	2								5.00
(e) Drainage line treatment & Land slide control.	Na	Na	Na	Na											0.00
(f) Stream Bank stabilizations	Stream bank stabilization of Tidong khad near Lamber	Moorang	Moorang	Sc-22		5.00	4	1							10.00

Payment for Environmental Services

Name of Area	Name of Range	Name of Beat	Micro water shed	1st Year	2nd Year	3rd Year	4th Year	5th Year	6th Year	7th Year	8th Year	9th Year	10th Year	Total
Sc			Sc-22					11	10.1	10	10	10	10	**61.10**

Research, Training & Capacity build up, Publicity

1st Year	2nd Year	3rd Year	4th Year	5th Year	6th Year	7th Year	8th Year	9th Year	10th Year	Total
				9	8.5	7.5	5.55			30.55

Infrastructure built up & Forest Protection

Name of Sub Component	Name of Area	Name of Range	Name of Beat	Micro water shed	1st Year	2nd Year	3rd Year	4th Year	5th Year	6th Year	7th Year	8th Year	9th Year	10th Year	Total
(a) Building for stay of staff, FRH/I Hut.	Na	Na	Na	Na											0.00
(b) Forest Roads/ I Paths	Na	Na	Na	Na											0.00
(c) Augmentation of Water Supply.	Na	Na	Na	Na											0.00
(d) Vehicle & Operational Support to HPFD	Na	Na	Na	Na		0.40	3.00	4.00	3.50	2.50	2.30	2.30	2.00		20.00
(e) Office Equipment (computers,Laptops ,GPS, LCD Projector etc.)	(computer=1,Laptop=1 ,GPS=3, LCD Projector=1 Internet Dongal etc.)	Na	Na	Na			1.00	1.5							2.50
(f) Silt Monitoring & Purchase of Meteorological Equipment	Na	Na	Na	Na											0.00
(g) Construction & Repair of Boundary Pillars.	C194, C 195 b, C 196 & C 197	Na	Na	Na			0.25								0.25
(h) Fire Protection Measures	Fire Protection Measures (Hiring of Vehicle during fire season)	Na	Na	Na			1.5	1.5	1.5	1.5	1.5				7.50
(i) Distribution of Non-conventional energy & Fuel Saving devices	Na	Na	Na	Na											0.00

Wild Life Measures

1st Year	2nd Year	3rd Year	4th Year	5th Year	6th Year	7th Year	8th Year	9th Year	10th Year	Total
	2.45	6.8	5	5.2	2.85	3.35	2.1	2.25	0.55	**30.55**

Monitoring & Evaluation

1st Year	2nd Year	3rd Year	4th Year	5th Year	6th Year	7th Year	8th Year	9th Year	10th Year	Total
		3.00	5.00	5.00	3.00	2.33				**18.33**

Institutional Departmental Charges

Name of Sub Component	1st Year	2nd Year	3rd Year	4th Year	5th Year	6th Year	7th Year	8th Year	9th Year	10th Year	Total
a i) Establishment Cost (Refund of Salary of CAT Plan Division to Govt.)		4.00	3.00	6.50	6.50						**20.00**
a ii) Establishment Cost (contractual Emoluments)		1.00	1.20	1.25	1.50	1.00	1.00	1.00			**7.95**
b) Office Expenses		2.00	0.55	0.55	0.55	0.55					**4.20**
c) Motor Vehicle & POL		1.00	1.50	2.00	1.87	1.50	1.50				**9.37**
d)Amenities to Staff and Labour			0.50	0.40	0.35						**1.25**

Micro Planning

1st Year	2nd Year	3rd Year	4th Year	5th Year	6th Year	7th Year	8th Year	9th Year	10th Year	Total
		5	7.5	6.5	6	5.55				**30.55**

Contingencies

1st Year	2nd Year	3rd Year	4th Year	5th Year	6th Year	7th Year	8th Year	9th Year	10th Year	Total
0.00	8.00	9.60	8.50	8.00	6.00	6.00	4.50	4.00	6.50	61.10

*** The amount kept at the disposal of DFO CAT Plan and expended accordingly.**

****Unforeseen eventualities in future or to be spent under Comprehensive CAT Plan for Sutluj Basin Falling in Kinnaur Forest Division.**

***** Out of Rs 2 Lacks, Rs 1.5 Lacks is meant for DFO kinnaur under this component for the second year i.e. 2012-13.**

Annual Action Plan Of Wild Life Component(Outside Protected Area) Under TIDONG droelectric Project(Amount in Lakhs)													
Name Of Component	Name Of Division	Total Amount to be Recasted	1st Year	2nd Year	3rd Year	4th Year	5th Year	6th Year	7th Year	8th Year	9th Year	10th Year	Total
Total Amount to be Recast	Kinnaur	30.55											
Wild Life Census Outside Protected Area	Kinnaur	5			1.25		1.25		1.25		1.25		5
Protection Of Forest & Wild Life Through Publicity and Awareness	Kinnaur	3.5		0.45	0.75	0.5	0.5	0.5	0.3	0.3	0.2		3.5
Anti Poaching Measures	Kinnaur	3.5		0.5	0.5	0.5	0.5	0.5	0.5	0.5			3.5
Unique Wildlife Habitat	Kinnaur	3.25			1.25	1	1						3.25
Compensation against wild life damages	Kinnaur	5		0.6	0.55	0.55	0.55	0.55	0.55	0.55	0.55	0.55	5
Sign and Slogan Boards	Kinnaur	2.3			0.6	0.6	0.6	0.5					2.3
Reward Incentives to Informers	Kinnaur	2.5		0.4	0.4	0.35	0.3	0.3	0.25	0.25	0.25		2.5
Vaccination of Domestic Cattle	Kinnaur	3.5		0.5	0.5	0.5	0.5	0.5	0.5	0.5			3.5
Field equipment and Medicine for Management of Wildlife	Kinnaur	2			1	1							2
TOTAL		30.55	0	2.45	6.8	5	5.2	2.85	3.35	2.1	2.25	0.55	30.55

CHAPTER IV

DETAILED DATA OF MICRO WATERSHEDS

SUB CATCHMENT

22

MANAGEMENT PLAN OF – Sc22 Sub Catchment (UNDER TIDONG HEP)

INTRODUCTION

LOCATION (BOUNDARIES)					GENERAL DESCRIPTION OF MWS				
AREA OF MWS	LATITUDE	LONGITUDE	ALTITUDE	SLOPE	SOIL	FOREST			PANCHAYAT
						RANGE	BLOCK	BEAT	
86500 ha.	31°20'38"	78°64'60"	2225 to 6465	40° to 85°	Loam & Clay Loam	Moorang	Ribba	Moorang	Moorang, Thangi & Kunu Charang

LAND USE						DEMOGRAPHY		
RF	DPF	UPF	PRIVATE LAND (Agri+Horti)	WASTE LAND	TOTAL	HOUSE HOLD	HUMAN POPULATION	LIVE STOCK POPULATION
(In HA)	(In HA)	(In HA)	(In HA)	(In HA)	(In HA)	(In Nos.)	(In Nos.)	(In Nos.)
	492.77				492.77	651	3010	3504

FLORA

TREES	KAIL, DEODAR, WALNUT, KUNISH, CHILGOZA, JUNIPEROUS, BETULA, POPLUS ETC.
HERBS & SHRUBS	ROSA ,RUBUS, COTONEASTER, DESDOMODIUM, VIOLA, POLYGONUM, FRAGERIA, PLECTRANTHUS, SALVIA, INDIGO FERA, BERBARIS, DAPHNE, LONICERA, VIBURNUM, JUNIPERUS COMMUNIS, CARAGENA, SPIRAEA, FRAXINUS ZANTHOXYLOIDES, ARTIMESIA, LONICERA, DEUTIZIA, THYMUS ETC.
GRASSES	ARUNDO-DONAX, AGROPHRON LONGEARISTATUM, AGROSTIS ALBA ETC.
MEDICINAL HERBS	RATANJOT, GUCHHI, KALA ZIRA, DIASCORIA ETC.

FAUNA

ANIMALS	BLACK BEAR, LEOPARD, BHARAL & OTHERS SMALL MAMMALS
BIRDS/PHEASANTS	CHAKUR & OTHER BIRDS ETC.

Tidong HEP (Kinnaur Division)

Sub-Catchment 22

Naik Environment Research Institute Ltd

PAST HISTORY OF MANAGEMENT

Soil & Moisture conservation

Name of Area	GPS Coordinates	Observation	Remarks
Rowang Nala	31 34'09", 78 27'45"	The nala originates from kimcha & is perennial. The length of the nala is about 6 to 7 KM. The nala is steep above & moderate below. The nala meets with Tidong khad below Thangi road/ Rowang dogri. The nala has been treated during 2007-08 under karcham wangtoo cat plan in laban which is tributary of Rowang nala by constructing a wall (28 Na's) in crate & 36 without crate but the same has been washed away during August 2011. the maximum part of the nala is rocky & stable. But some part of the nala requires treatment.	The nala requiring treatment is described under future management.
Gauri Slip/ Nala	31 33'01", 78 28'50"	It is situated above Thangi to Lamber link road & on the left side of the road. The slip is almost steep & has been treated during in the past but details not yet provided. The slip below road need treatment.	The Slip requiring treatment is described under future management.
Shenkagul Slip	31 33'02", 78 28'59"	the slip is situated above Thangi- Lamber motor able road. The slope of the slip is steep & has been treated during 2007-08 under karcham wangtoo cat plan but details not yet provided.	No further treatment is required.
Lamber Khad	31 31'05", 78 30'05"	It is situated on the left side of Lamber village & meets with Tidong khad just above the dam site. The slope is moderate to steep. The nala/ khad has been treated during 2010-11 under Tidong Hep cat plan by constructing 4nos of check dams in crate but the same has been washed away. the khad/ nala requires treatment.	The Nala/ Khad requiring treatment is described under future management.
Stream bank stabilization of Tidong khad near Lamber	31 31'05", 78 30'05"	It is situated just below Lamber village & on the left bank of Tidong khad. It has been treated during 2010-11 but details not yet provided. The left bank of tidong khad requires repair of old structures & construction of new structures.	The Nala/ Khad requiring treatment is described under future management.
Khandika nala	31 29'52", 78 31'48"	The nala is situated on the left side of Charang approach path. It is a seasonal nala. The slope of the nala is steep. The nala is being treated during this year(i.e.) 2011-12 but details not yet provided. Necessary technical inputs has been provided to the staffs on the spot scenes some structures constructed were technically wrong. About 150m of the nala below the approach path requires treatment.	The Nala/ Khad requiring treatment is described under future management.
Thangi Slip	31 33'44", 78 28'02"	It is situated on the right side of Thangi village & above Thangi Lamber link road. The slope is steep. The slip has been treated during 2010-11 by constructing 75rm's of check walls.	Biological interventions required are described under future managements.

Road Side Erosion Control

Name of Area	GPS Coordinates	Observation	Remarks

Afforestation

Name of Area	GPS Coordinates	Observation	Remarks

Rural Infrastructure Development

Name of Area	GPS Coordinates	Observation	Remarks

Forest Infrastructure Development

Name of Area	GPS Coordinates	Observation	Remarks

FUTURE PLANNING

1 Afforestation Measures

Name of Sub Component	Name of Area	GPS Coordinates	Observation	Treatment Prescribed	Unit	Physical (Appx)	Rate	Approximate Financial Outlay (In lacks.)
(a) Normal Afforestation	Ribber thangi (5 Ha. 2008-09)	31 33'03", 78 28'02"	The area has been closed under rehabilitation of degraded forest during 2008-09 & treated under Kancham Wangtoo cat plan. The area is fenced with stone wall fencing. Slope is moderate to steep. The area is situated on the left bank of Tidong khad & above Ribber village. The detail of plantation along with GPS co ordinates has been provided by DFO Kinnaur/ RO Moorang.	Fence require repair. The area be protected from all types of biotic interferences. And the area be maintained as per availability of funds.	Ha.(maint. 4th year)	5	4200	0.21
					Ha.(maint. 5th year)		4200	0.21
(b) Enrichment	C-198 (7 Ha.New)	31 33'48", 78 28'00"	The proposed area is situated near Thangi village & above Rowang. It is open to very open forest of Deodar & Nesia. The area about 4+3 Ha. is proposed to be taken under enrichment component so as to restock the area. The irrigation to the plantation is proposed to be provided from Rowang khad. The proposed area along with GPS co ordinates has been provided by DFO Kinnaur/ RO Moorang.	1)B/wire fencing. 2)Planting of Chilgoza/Deodar from Sabba & Khokpa Nursery	Ha.	3	75460	2.2638
						4	64020	2.5608
(c) Energy Plantation								
(d) Measure to handle invasive species.								
Nurseries	Khokpa (2485m)	31 35'12", 78 28'55"	The proposed nursery is situated just above Moorang road & near to Nangiamatic dogri. The nursery is being established in UPF Khokpa under Tidong Hep cat plan which is a pure Chilgoza forest. The aspect of the nursery is north west. The provision of Rs 5 Lakhs are available in the approved APO for this year.	(i) Irrigation from Rowang khad through A pipe about 4 Km. (ii) Construction of storage tanks. (iii) establishment of nursery about 0.75 hc. (iv) Construction of nursery store/ shed. (v) Raising of bio species like Lonicera, Populus, Salixes, Fraxinus etc. & tree species like Deodar & Chilgoza etc. (vi)	No	1	Lumpsum	4.50

Name of Sub Component	Name of Area	GPS Coordinates	Observation	Treatment Prescribed	Unit	Physical (Appx)	Rate	Approximate Financial Outlay (in lacks.)
Nurseries	Skibba (0.5 Ha. Ht 2227m)	31.34'49", 78.22'56"	The nursery is situated about 150m down to NH 22from Recong Peo to Pooh & above river Satluj. The nursery is established during 2010-11 under Tidong HEP. The aspect is South west. Irrigation is through Alkathene pipe from Kanala nale & direct to nursery. No Vermicompost pits are available The nursery contains following stocks: Chilgoza = 4500nos, Chulli = 3800nos, Behmi = 3800nos, Walnut = 3000nos, Khanor = 5000nos, Robinea = 5000nos.	(i) Scope for Extension & improvement of nursery. (ii) Raising of Biospecies like Cotoneaster, Rotua, Lonicera, Desmodium, Spiraea, Daphne, Firal etc. (iii) Vermicompost pits	No	1	Lumpsum	2.00
Pasture Reclamation.								
Total Afforestation and Nurseries								**11.74**
2 Soil & Water Conservation Endeavors								
(a) Moisture Retentively Operations								
(b) Live Hedge Fencing								
(c) Vegetative structures	Gauri Slip/ Nala	31.33'01", 78.28'30"	It is situated above Thangi to Lamber link road & on the left side of the road. The slip is almost steep & has been treated during in the past but details not yet provided. The slip below road need treatment.	vegetative interventions required are (i) Broadcasting of seed of Artemesia, Arundodonax & local grass. (ii) Construction of vegetative Fascine/ Palisade.	Ha.	4.8	84400	4.00
	Thangi Slip	31.33'44", 78.28'02"	It is situated on the right side of Thangi village & above Thangi Lamber link road. The slope is steep. The slip has been treated during 2010-11 by constructing 73no's of check walls.	vegetative interventions required are (i) Broadcasting of seed of Artemesia,Spiraea, Arundodonax & local grass.	Ha.	0.35	84400	0.30

Name of Sub Component	Name of Area	GPS Coordinates	Observation	Treatment Prescribed	Unit	Physical (Appx)	Rate	Approximate Financial Outlay (In lacks.)
(d) Civil Structures	Rowang Nala	31 34'09", 78 27'45"	The nala originates from kimcha & is perennial. The length of the nala is about 6 to 7 KM. The nala is steep above & moderate below. The nala meets with Tidong khad below Thangi road/ Rowang dogri. The nala has been treated during 2007-08 under kancham wangtoo cat plan in laban which is tributary of Rowang nala by constructing p wall (28 No's) in crate & 36 without crate but the same has been washed away during August 2011. the maximum part of the nala is rocky & stable. But some part of the nala requires treatment.	(I) Construction of check dams/ p walls in crate. (II) Planting of bio species like popular, spiraea, salix etc.	Ha.	3.5	84400	13.00
					Cum	612	1633	
	Shakchang khad/ nala	31 31'23", 78 29'52"	The nala originates from the triangulation glacier point & the length is about 4 to 5 KM. It is a perennial nala. The slope of the nala is precipitous above & moderate to steep below. The top portion of the nala is rocky & stable. The nala meets with Tidong khad just below the dam site of Tidong Hep. About 300m to 325m of the nala require training/ treatment below lamber link road.	(I) Construction of T walls/ p walls in crate. (II) Planting of bio species like popular, spiraea, salix etc.	Ha.	3.5	84400	14.00
					Cum	674	1633	
	Lamber Khad	31 31'05", 78 30'05"	It is situated on the left side of Lamber village & meets with Tidong khad just above the dam site. The slope is moderate to steep. The nala/ khad has been treated during 2010-11 under Tidong Hep cat plan by constructing 4nos of check dams in crate but the same has been washed away. the khad/ nala requires treatment.	(I) Construction of check dams/ p walls in crate. (II) Planting of bio species like popular, spiraea, salix, seabuckthorn etc.	Ha.	4.75	84400	17.00
					Cum	706	1633	
	Shakutang nala	31 29'57", 78 31'33"	The nala originates from the triangulation glacier point & the length is about 3.5 to 4 KM. It is a perennial nala. The nala is steep & precipitous above & moderate to steep below. The nala meets with Tidong khad just below bridge on Thangi-Lamber-Kunu link road. About 500m length of the nala requires treatment.	(I) Construction of T wall / p walls in crate. (II) Planting of bio species like popular, spiraea, salix, kanish etc.	Ha.	3	84400	10.00
					Cum	459	1633	

Name of Sub Component	Name of Area	GPS Coordinates	Observation	Treatment Prescribed	Unit	Physical (Appx)	Rate	Approximate Financial Outlay (In lacks.)
(d) Civil Structures	Khandka nala	31 29'52", 78 31'48"	The nala is situated on the left side of Charang approach path. It is a seasonal nala. The slope of the nala is steep. The nala is being treated during this year(i.e.) 2011-12 but details not yet provided. Necessary technical inputs has been provided to the staffs on the spot somes some structures constructed were technically wrong. About 150m of the nala below the approach path requirse treatment.	(I) Construction of check dams / check walls in crate. (II) Broadcasting of bio species Seed & local grass seed. (III) Planting of bio species like Artemesia, Lonicera etc.	Ha.	1.75	84400	4.75
					Cum	199	1633	
	Parvati nala	31 30'12", 78 31'08"	It is situated on the left bank of Tidong khad & opposite to Parvati dhank. The nala is perennial. The slope of the nala is precipitous above & moderate to gentle below. The nala meets with Tidong Khad just below parvati dhank. The length of the nala is about 3 to 3.5 Km.	(I) Construction of check dams / check walls in crate. (II) Broadcasting of bio species Seed, Kail seed & local grass seed. (III) Planting of bio species like Cotoneaster, Spiraea, poplus, Kunish, Salix, Lonicera etc.	Ha.	3.5	84400	15.00
					Cum	735	1633	
	Tulig khad	31 31'25", 78 29'36"	It is situated just below the intake point of Tidong Hep & on the left side of Tidong Khad. The slope of the khad is steep to precipitous above & moderate to gentle below. It is a perennial nala/ khad & meets with Tidong just below the dam site.	(I) Construction of check dams / check walls & p walls in crate. (II) Broadcasting of bio species Seed & local grass seed. (III) Planting of bio species like Spiraea, poplus, Kunish, Salix, Seabuckthorn etc.	Ha.	2.35	84400	5.50
					Cum	213	1633	

Name of Sub Component	Name of Area	GPS Coordinates	Observation	Treatment Prescribed	Unit	Physical (Appx.)	Rate	Approximate Financial Outlay (in lacks.)
(d) Civil Structures	Shahkal Khad	31 32'02", 78 28'59"	The nala originates from the triangulation glacier point & the length is about 4 to 5 KM. It is a perennial nala. The nala is steep & precipitous above & moderate to steep below. The nala meets with Tidong khad below & opposite to C-194. About 1500m to 2000m length of the nala requires treatment.	(I) Construction of check dams & p walls in crate. (II) Broadcasting of bio species Seed & local grass seed. (III) Planting of bio species like Spiraea, poplar, Kunish, Salix, Seabuckthorn, Fraxinus xanthoxyloides etc.	Ha.	4.75	84400	20.50
					Cum	1010	1633	
	Tirung nala (Rispe Seet)	31 34'34", 78 27'02"	It is situated in C-193 DPF which is a mixed forest of Deodar & Chilgoza. The slope is Steep. It is a seasonal & glarier prone nala. The nala is narrow & there is grassy blank above.	(I) Construction of Staggered Mondu c walls. (II) Construction of check dams & p walls in crate. (III) Broadcasting of bio species Seed & local grass seed. (IV) Planting of bio species like Spiraea, Rose, Rubus etc.	Ha.	2.35	84400	5.00
					Cum	183	1633	
(e) Drainage line treatment & Land slide control.								
(f) Stream Bank stabilizations	Stream bank stabilization of Tidong khad near Lamber		It is situated just below Lamber village & on the left bank of Tidong khad. It has been treated during 2010-11 but details not yet provided. The left bank of tidong khad requires repair of old structures & construction of new structures.	(I) Repair of old structures. (II)Construction of p walls in crate. (III) Broadcasting of Bio Seed. (IV) Planting of bio species like popular, spiraea, salix, seabuckthorn etc.	Ha.	3.5	84400	10.00
					Cum	429	1633	
Total Soil & Water Conservation Endeavors								**119.09**

Name of Sub Component	Name of Area	GPS Coordinates	Observation	Treatment Prescribed	Unit	Physical (Appx)	Rate	Approximate Financial Outlay (in lacks.)
3 Payment for Environmental Services								
			i) It is proposed that the JFMC's of theSub Catchments will be involved in all type of forest protection activities in the areas. ii) The villagers located in the Sub Catchments are mostly agriculturalist / holticulturalist and Budhist and fell 1 no of Deo pole annually for hoisting flags in their houses. The people will be given / provided one GI pipe each to 651 nos. people situated in the Sub Catchments, so that people don't fell the poles from the forest from this purpose. iii) The villagers located in the Sub Catchments are mostly agriculturalist / holticulturalist and are mostly dependant upon it. The slope of the land holding is mostly steep to very steep which leads to severe soil erosion due to wrong cropping pattern. Similarly the people in the Sub catchment are rearing sheep, goat & other domestic cattles & are having extensive rights for grazing in the forest which also requires immunition in order to prevent the contagines disease to & from wild life living in & around the Subcatchment. In addition to this other animal improvement interveniona are also required so that the environment is no affected.	i) Lump sum provision has been kept for this purpose which will be given to the JFMC's, which actively involve themselve in forest protection in the Sub Catchment. ii) The people located in the Sub Catchment shall be provided 1 no of GI pipe for the purpose. iii) Lump sum provision has been kept for Agricultural / Horticultural & Animal Husbandry support in the Sub Catchment.	No.	JFMC's and 1 No GI pipe	Lumpsum	61.10
Total Payment for Environmental Services								61.10
5 Infrastructure built up & Forest Protection								
(a) Building for stay of staff, FRH/I Hut.								
(b) Forest Roads/ I Paths								

Name of Sub Component	Name of Area	GPS Coordinates	Observation	Treatment Prescribed	Unit	Physical (Appx)	Rate	Approximate Financial Outlay (in lacks.)
(c) Augmentation of Water Supply.								
(d) Vehicle & Operational Support to HPFD								
(e) Office Equipment								
(f) Silt Monitoring & Purchase of Meteorological Equipment								
(g) Construction & Repair of Boundary Pillars.	C194, C 195 b, C 196 & C 197		The boundary pillers in C194=22 Nos. (8 large and 14 no. small), C195 =4nos.(4 large) , C196 =8nos.(8 large), C197=4 Nos. (4 large) require maintenance and updation.	Maintenance of 38 boundary pillers in C 194, 195 b, 196 & 197.	No.	38		0.25
(h) Fire Protection Measures								
(i) Distribution of Non-conventional energy & Fuel								
Total Infrastructure built up								0.25
Grand Total								192.14

Nurseries

Khokpa

Soil & Water Conservation Endeavors

Gauri Slip/ Nala

Thangi Slip

Rowang Nala

Shakchang khad/ nala

Lamber Khad

Shakutang nala

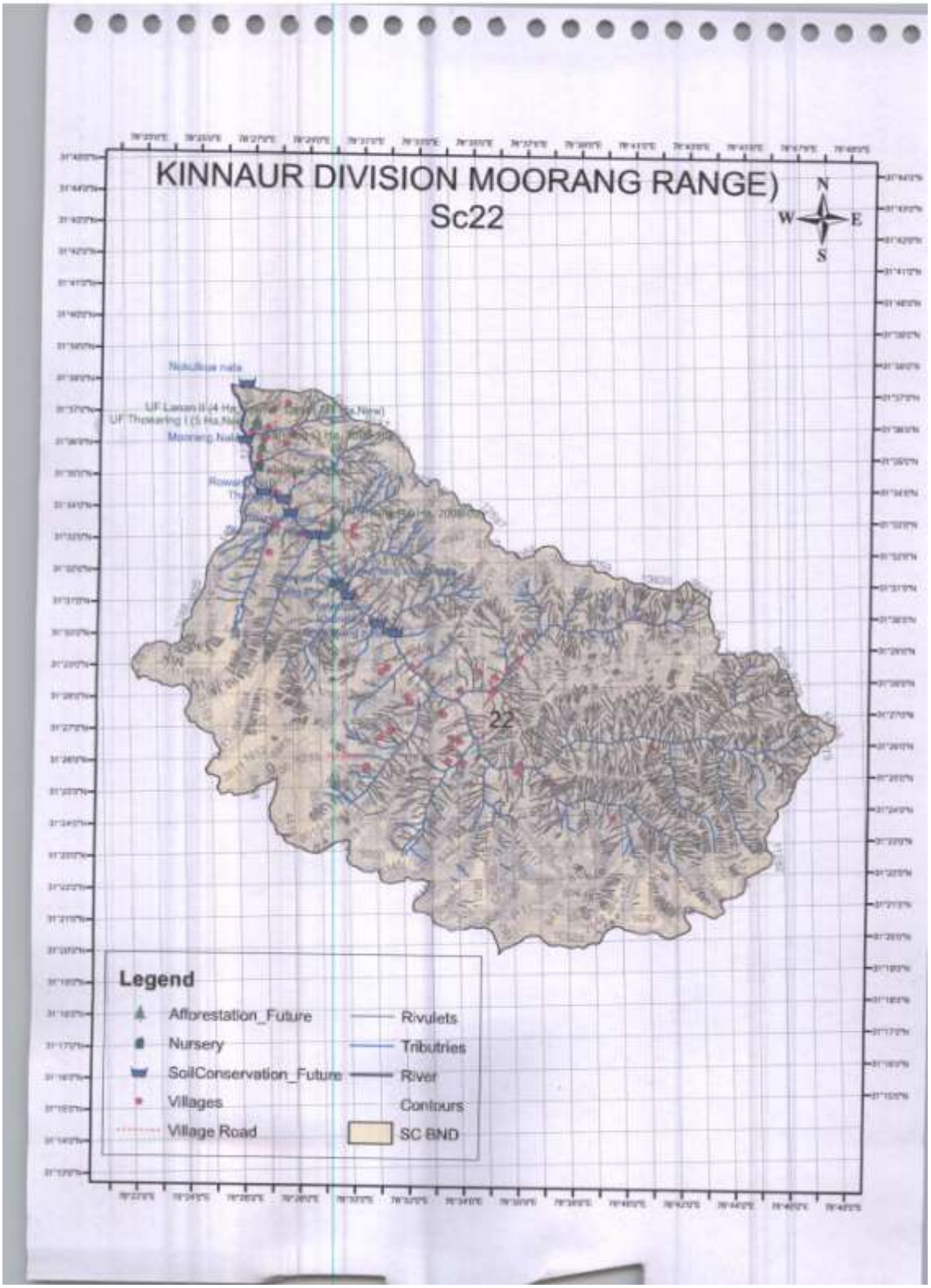
Khandika nala

Parvati nala

Tullig khad

Shankwi Khad

Tirung nala (Rispa Beat)


KINNAUR DIVISION MOORANG RANGE)
Sc22
N
W
E
S
22
Legend
Afforestation_Future
Nursery
SoilConservation_Future
Villages
Village Road
Rivulets
Tributries
River
Contours
SC BND

ANNEXURE

ANNEXURE-E ANNEXURE – A

GUIDELINES FROM H.P. FOREST DEPARTMENT FOR WRITING CAT PLANS .

1. ***AFFORESTATION MEASURES*** -
   A. Normal afforestation (3 strand barbed wire fencing with creosoted wooden fence posts & two layers of live-hedge plants to reinforce fencing, 1100 plants per ha of which at least 20% would be trees of medicinal value and 10% of fruit species, maintenance for 3 years)
   B. Enrichment planting (in degraded forest areas to improve stocking, 600 plants per notional ha. and protection of thorny bushes/twigs for individual plants, no maintenance)
   C. Energy plantations (around habitations in small patches, 5 strand barbed wire fencing with creosoted wooden fence posts & two layers of live-hedge to reinforce fencing, 5000 plants per ha of fuel and fodder value, no maintenance)
   D. Measures to handle invasive species—(e.g. lantana eradication and planting with tall plants (1100 Nos. Per ha./ bamboo (500 Nos./ ha); maintenance once in 3rd year)

2. ***SOIL AND WATER CONSERVATION ENDEAVORS:-***
   A. Moisture retentivity operations---contour trenching, bio-engineering species planting
   B. Live hedge fencing
   C. Vegetative structures—fascines, brush-wood check dams, bamboo crib etc. wherever applicable
   D. Civil structures—masonary crate-wire check dams, masonry dams (dry stone & cement concrete), check/ protection walls
   E. Drainage line treatment & Landslide control, with site specific estimates, using interventions mentioned at A-D above.
   F. Stream bank stabilization—protection walls, spurs etc. with live hedge support

   ❖ ***50% of all funds under soil & water conservation measures prescribed would be spent on bio-engineering and 50% of the funds earmarked for bio-engineering techniques, would in turn be spent on raising quality plants of the suitable bio-engineering species in nurseries.***

3. ***NURSERIES:-***

   Normal plants @ Rs. 3.50 per plant, bio-engineering plants @ Rs. 2/50- per plant, medicinal plants @ Rs... /- per plant. Provide for relevant increases for Chilgoza, Fir/Spruce plants.

4. ***PASTURE RECLAMATION:-***
   Rotational closures with fencing (live hedge fencing), sodding with local grasses, measures to reclaim the moisture regime etc.

5. ***PAYMENTS FOR ENVIRONMENTAL SERVICES:-***

   Provision be made for conducting catchment specific study to identify routes and activities to be undertaken under PES in the early years and then keep provision for implementation of these identified activities (after approval by the HPFD) in the later years of the Annual phasing of activities under the CAT Plan.

6. ***RESEARCH(including experimental plots; seed banks), TRAINING AND CAPACITY BUILD-UP, PUBLICITY AND AWARENESS, DOCUMENTATION:-***
   a) Understanding perceptions of benefits accruing from the catchment area (water quality, biodiversity, or otherwise) from different stakeholders (service providers, hydroelectric facilities, and downstream consumers) and how this differs among socioeconomic groups; b) Highlighting economic efficiency through a mix of qualitative and quantitative methods to assess demand; costs of status quo catchment area management; initial opportunity cost of land-use change and potential for asset-building alternatives on foregone land, and intervening costs

(associated with institutions, transaction monitoring, technical support necessary etc.); c) Empirically analyse the impacts of applying different fairness criteria and their impacts on transaction efficiency, why they may be justified considering the context, and how they may change over time.

7. *INFRASTRUCTURE BUILD-UP & FOREST PROTECTION:-*

a) Buildings for stay of staff, FRHs/Inspection huts,
b) Forest roads/inspection paths,
c) Augmentation of water supply,
d) Vehicle and operational support to HPFD (replacement vehicles and their maintenance/repair)
e) Office equipment--- purchase and repair (computers with accessories(printers, photocopiers etc—hardware and software)) and furniture, digitalised cameras, GPS.
f) Silt monitoring and purchase of basic meteorological equipment, procurement of related data
g) Construction and repair of boundary pillars
h) Fire protection measures
i) Distribution of Non-conventional Energy and Fuel Saving Devices in catchment area on a cost-sharing basis, such as, LPG, Tandoors, Pressure cookers and Solar devices.

8. *WILDLIFE MEASURES:-*

In CAT Plans involving Protected Areas, the financial outlay of the CAT Plan for Wildlife activities, be apportioned to the percentage extent of Protected Area in the catchment and the activity plan be got vetted from the Chief Wildlife Warden/ Pr.CCF (WL), H.P, before incorporation in the CAT Plan. However, in catchments having no Protected Area, recommendations for wildlife management and reduction of human-animal conflicts in the area, may be included in due consultation with the Chief Wildlife Warden/ Pr.CCF (WL), H.P would be sought.

9. *MONITORING AND EVALUATION:-*

Provision for 3rd party monitoring of the CAT Plan works, silt monitoring, Impact studies. All works under the CAT Plan be Geo-referenced for ease/ authenticity of location & future monitoring. M & E studies including impact evaluation studies should be scheduled for the later years of the CAT Plan implementation calendar.

❖ *The basis for calculating financial outlays for all of the above activities, the prevailing HPFD schedule of rates for the works and the daily wage rate of the year of writing of the CAT Plan.*

The percentage allocation of total CAT Plan outlay is broadly stipulated as under:

	Item	%
1.	**Afforestation, Maintenance, Pastures & Nurseries***	**20%**
2.	**Soil and water conservation measures***	**25%**
3.	**PES including study and its implementation**	**10%**
4.	**Research, Capacity build-up, publicity**	**5%**
5.	**Institutional charges/Departmental charges**	**7%**
6.	**Monitoring & Evaluation**	**3%**
7.	**Wildlife related interventions**	**5%**
8.	**Infrastructural build-up**	**15%**
9.	**Contingencies**	**10%**
	Total	**100%**

**In CAT plans involving Protected Areas, these funds (S.no. 1 & 2) be re-allocated for Wild life activities, keeping in view specific requirements of the area.*

Annexure-B

No. FL CAMPA/2010/CAT Plans/General
H.P. Forest Department

Dated Shimla-1 the 12 AUG 2011

From: Addl. Pr.CCF(CAT&ES),H.P. Tarland Shimla-1. To:1. Pr.CCF(Wild Life) H.P. Tarland, Shimla-1
2.All CFs(T) in H.P.

Subject: Recommendations/suggestions to improve the execution of CAMPA works.

Memo

Kindly refer to office order No.FFE-B-F(2)-72/2004-PII(CAMPA) dated 9.5.2011 issued by Addl. Chief Secretary(Forests) to the Govt. of H.P. vide which nine teams headed by CCFs were constituted for spot inspections and verification of field works carried out during 2010-11 under CAMPA. The recommendations/suggestions that have emerged from the monitoring reports of the CCFs are enclosed herewith for your guidance and implementation in the ongoing CAMPA works.

Addl. Pr.CCF(CAT&ES),H.P. Tarland, Shimla-1

Endst. No.) Dated/
Copy to ALO DFOs for information
& w/s.

CF Rampur.

Annexure B_1

RECOMMENDATIONS/ SUGGESTIONS TO IMPROVE CAMPA WORKS EXECUTION

(BASED ON MONITORING REPORT OF CCF'S SUBMITTED AFTER INSPECTION OF WORKS IN DIFFERENT CIRCLES, DURING MAY, 2011)

Nine teams, comprising two members each, led by CCFs, were constituted vide ACS(Forests) to the Govt. of HP, office order No FFE-B-F(2)-72/2004-Pt.(CAMPA) dated 9.5.2011 for spot inspection and verification of field works carried out during 2010-11 under CAMPA. Following suggestions/ recommendations have emerged from the reports, submitted by the officers after the field inspections of different circles.

A) SUGGESTIONS received FOR PLANTATIONS:-

1) Natural Regeneration with live hedge closure instead of increased concentration on artificial regeneration is a better strategy for future afforestation programs, especially in areas having harsh conditions, degraded soil and refractory terrain.
2) Tree planting in high altitude grassy blanks should be disallowed as it is not ecologically advisable.
3) The subject of protection against grazing needs to be debated at length within the Department. Some out of the box new ideas like rotational grazing, user groups, propagating native grasses are required to achieve success in the pasture improvement program. Payments for environmental services experimentation could also be tried.
4) The present norm to provide 3 year maintenance for plantations needs to be examined, especially for high altitude areas where slow growth in trees is seen. The 5 year maintenance as of old could continue here.
5) The CAT plans should be site specific and must be prepared after exhaustive land survey. Target mode of afforestation in terms of hectare and civil structures in numbers must stop. Bio-engineering methodology, moisture retentivity work and protection of planted areas especially from grazing are a priority.
6) A detailed Plantation Policy should be prepared in the HP Forest Department to prevent the degradation of old plantation in the absence of adequate maintenance period & funds. The present plantation policy needs to be dramatically changed. Moisture retentivity through bio-engineering (natives) species planting, contour trenching and other soil and water conservation measures be tried in the first two years---protection should be the focus in the first 2 years through live hedge fencing. Plantations should only be done only in the third year with tall plants (around 700 numbers per hectare, with 2-3 year old nursery plants). DFOs/CFs need to be made personally responsible for all the species to be raised in their permanent nurseries---No stock of Fir/Spruce available for planting is not a healthy sign!
7) The aim under plantation strategy should be to establish/nourish afforestation areas we take up (even if it takes as much as 30 years to maintain and establish) and not be guided by mere annual plantation targets. No plantation should be opened up until it has established itself completely particularly with regard to biotic pressure. There should be a mechanism in the HPFD to write off failed areas---many areas fail for no fault of the field staff.
8) The budget for plantations under compensatory afforestation may be diverted to other circles/divisions where the areas (land bank) are available for plantations, in consultation with MoEF, especially since there is a dearth of available areas in some Divisions/Circles. No

Annexure B-2

may be allowed by the Conservator stating specific reasons in writing; otherwise, prioritizing permanent nurseries is in order.

0) GENERAL SUGGESTIONS:-

1) Any meaningful benefit from a CAT Plan treatment gets diluted with other projects coming up uphill very close. CAT plan works are rendered useless, because of muck disposal involved in road/project construction activity.

2) It would be appropriate to use CAT Plan funds for those activities of the Forest Department (such as boundary demarcation and consolidation, survey of bio-diversity, wild life conservation, protection infrastructure etc) for which normal state and central funds are generally inadequate/not available. The recasting of CAT plans should address incorporating activities (that were not addressed earlier) that were not being done earlier.

3) An independent officer of the rank of ACF for CAT Plan works is mandatory in each division for proper execution and monitoring of the soil and water conservation works. The officer posted may also be provided an independent vehicle with technical field staff---surveyors/draftsman etc. for proper technical estimation/scrutiny/vigil over the works. The territorial staff is already overly burdened. A CCF be made accountable to a circle and made responsible for monitoring of CAMPA works, WP write-up and other important assignments. There are many ACFs now available (22 direct officers)---these are an invaluable resource for CAT plan write-up, WP write-up etc. At present this pool is used only to conduct enquiries and other non-important work which the DFO is reluctant to do.

4) The quality of works shall improve considerably if younger staff (with less than 40 years of age) is posted in tough/rough terrain---Kinnaur Forest Division & other remote areas. Some Ranges in Kinnaur Forest Division e.g. Malling, Pooh & Bhawanagar Ranges should be reorganized/merged with other Ranges keeping in view the quantum of work & forestry activities and the surplus staff from this merger should be posted in CAT Plan areas of the Kinnaur division for their proper utilization. We could only try and impress as a transfer policy!

5) Many of the misgivings/misinformation about the CAT plan works shall be dispelled through regular monitoring of the works by the officers in the direction office. By placing a CCF incharge of a circle for monitoring and providing right impetus for WP, lot of progress in field work would emerge. The Direction Office should delegate authority of CFs to concerned CCF.

6) The sanctions for procurement of P-bags, rate contract items like interlink chain, barbed wire etc need to be conveyed in advance so that the targets are achieve on time. With delegation available to the DFOs as of now, delays would reduce.

Annexure-C

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Office of HP State Compensatory Afforestation Fund Management and Planning Authority (H.P.State CAMPA), Forest Headquarters, Talland, Shimla- 171 001.

No. Ft. CAMPA/79/2011/Norms/ Dated Shimla-1, the

From: Chairperson, Executive Committee, HP State CAMPA -cum- Pr. CCF HP.

To: Pr. CCF W.L. H.P.
All CF, H.P. (T & WL)

Subject: Maintenance of Plantation under CAT Plans and Compensatory Afforestation.

Memo:

A meeting was held under the Chairpersonship of ACS (Forests) to GoHP on 4th January, 2012 and it was decided that since many of the areas which are taken up for plantation under CAT Plans and Compensatory Afforestation are refractory/ difficult; maintenance of plantation in such areas for three years is not sufficient and therefore, maintenance of plantation in such areas should be done for 5 years. Quality plants will continue to be raised in nurseries to ensure better survival.

It is, therefore, requested to take further action accordingly.

Chairperson, Executive Committee,
HP State CAMPA -cum-
Pr. CCF HP.

Endst-No. 7554-58 dt. 23-1-2012
Copy is forwarded to all DFO's for information & further necessary action.
Copy to Accountant Circle office Rampur for information & further n/a.

CF Rampur

Per M3 Notional Cost norms for Civil Works				
Sr.No.	Partuculars of works	Volume M3	Non-Tribal Amount	Tribal Amount
1	Check Wall in Creat Wire 2 Mt	3.52	3600	4500
2	Check Wall in Creat Wire 3 Mt	5.28	5800	7500
3	Check Wall in Creat Wire 5 Mt	8.8	9200	11500
4	Check Wall in Creat Wire 7 Mt	12.32	13350	16700
5	Protection Wall in Creat Wire10 Mt	31.24	32900	41125
	Sub Total	**61.16**	**64850**	**81325**
	Cost per M3		**1060**	**1325**
5	Check Dam 2 Mtrs Creat Wire Mts Length	9.3	7850	9800
6	Check Dam 2 .5 Mts Creat Wire Length	11.17	18900	23600
	Sub Total	**20.47**	**26750**	**33400**
	Cost per M3		**1307**	**1633**
8	**Diversion Drain Per 100 Mtrs**		**27100**	**33800**

Per ha Notional Cost norms for Bio-Engineering Species			
Sr.No.	Partuculars of works	Non-Tribal Amount	Tribal Amount
1	Broadcasting of Bio Seed I/C Collection cost Etc	3100	3900
2	Planting of Bio Species	63100	79000
3	Brush Layering	78400	98000
4	Polarding/ Wattling	75000	93750
5	Palisade	107100	133800
6	Fascines	78250	97800
	Grand Total	**404950**	**506250**
	Average Cost	**67492**	**84375**
	Or say	**67500**	**84400**

Per Hac. Cost Model for Enrichment Planting Deodar and Fir (Pooh Subdivision)						
S. No	Particulars	Qty	Unit	Rate	unit	Tribal
1	Survey and demarcation of plantation and area I/C marking of seditions, path preparation of map.	1	Hac	75.05	Hac	93.81
2	Cutting and preparation of wooden posts 1.8 mtr and 8 to 10 CM dia I/C debarking and fashioning the top 15 cm in conical shape	60	Nos	949.90	Per %	712.43
3	Carriage of fence posts upto 2 mtr long and 8 to 10 cm dia over distance 0.5 KM	60	Nos	499.95	per % per KM	187.48
4	Charing and coaltaring of the ends of the posts 45cm bottom and 15 cm conical taring	60	Nos	204.90	per % per no.	153.68
5	Preparation and digging of holes 20-30 cm dia & 45 cm deep	60	Nos	665.10	per %	498.83
6	Fixing of wooden posts I/C strutting	60	Nos	510.45	per %	382.84
7	Carriage of barbed wire bundles up hill over an overage distance of 1 km	0.9	qtls	125.10	per qtl per Km.	140.74
8	Streching and fixing of barbed wire with U-stapple in each strand	540	Rmt	3.45	per Rmt	2328.75
9	Interlacing ofthorny bushes with barbed wire obtained from planting side	160	Rmt	3.00	per Rmt	600.00
10	Preparation of inspection path 60 cm wide	150	Rmt	7.50	per Rmt	1406.25
11	Layout of pits/patches	1	Hac	124.9	Hac	156.13
12	Digging of pits (45x45x45) cm	800	No	699.9	Per %	6999.00
13	Filling of pits (45x45x45) cm	800	No	200.5	Per %	2005.00
14	Carriage of Plants in P/bags from Nursery site over an average distance of 1 Km.	800	No	133.25	Per %/Km	1332.50
15	Planting of entire Plants I/C ramming raised in P/bages	800	No	160.05	Per %	1600.50
16	Mulching of Plants	800	No	43.85	Per %	438.50
				Sub Total		19036.42
17	Add Increase 9.09%					1602.58
18	Watering of Plants for 5 months	800	No		Lumpsum	2250.00
19	Nursery Cost of P/bags raised Plants	800	Tribal	6.95	Per plant	5560.00
20	Cost of Alkathene Pipe (on average 150 Rmt)				Lumpsum	3900.00
21	cost of B wire and other material					4300.00
				G.Total		36649.00
				Or Say		36640.00
Maintenance:-						
	I year Maintenance (30% Mortality)					7880.00
	II year Maintenance (20% Mortality)					6000.00
	III year Maintenance (15% Mortality)					5100.00
	I Vyear Maintenance (10% Mortality)					4200.00
	V year Maintenance (10% Mortality)					4200.00
				Sub Total maintenance		27380
					G Total	64020.00

Per Hac. Cost Model for Enrichment Planting Chilgoza (Pooh Subdivision)						
S. No	Particulars	Qty	Unit	Rate	unit	Tribal
1	Survey and demarcation of plantation and area I/C marking of seditions, path preparation of map.	1	Hac	75.05	Hac	93.81
2	Cutting and preparation of wooden posts 1.8 mtr and 8 to 10 CM dia I/C debarking and fashioning the top 15 cm in conical shape	60	Nos	949.90	Per %	712.43
3	Carriage of fence posts upto 2 mtr long and 8 to 10 cm dia over distance 0.5 KM	60	Nos	499.95	per % per KM	187.48
4	Charing and coaltaring of the ends of the posts 45cm bottom and 15 cm conical taring	60	Nos	204.90	per % per no.	153.68
5	Preparation and digging of holes 20-30 cm dia & 45 cm deep	60	Nos	665.10	per %	498.83
6	Fixing of wooden posts I/C strutting	60	Nos	510.45	per %	382.84
7	Carriage of barbed wire bundles up hill over an overage distance of 1 km	0.9	qtls	125.10	per qtl per Km.	140.74
8	Streching and fixing of barbed wire with U-stapple in each strand	540	Rmt	3.45	per Rmt	2328.75
9	Interlacing ofthorny bushes with barbed wire obtained from planting side	160	Rmt	3.00	per Rmt	600.00
10	Preparation of inspection path 60 cm wide	150	Rmt	7.50	per Rmt	1406.25
11	Layout of pits/patches	1	Hac	124.9	Hac	156.13
12	Digging of pits (60x60x60) cm	800	No	1279.9	Per %	12799.00
13	Filling of pits (60x60x60)cm	800	No	259.85	Per %	2598.50
14	Carriage of Plants in P/bags from Nursery site over an average distance of 1 Km.	800	No	133.25	Per %/Km	1332.50
15	Planting of entire Plants I/C ramming raised in P/bages	800	No	160.05	Per %	1600.50
16	Mulching of Plants	800	No	43.85	Per %	438.50
				Sub Total		**25429.92**
17	Add Increase 9.09%					2183.75
18	Watering of Plants for 5 months	800	No		Lumpsum	2250.00
19	Nursery Cost of P/bags raised Plants	800	Tribal	6.95	Per plant	5560.00
20	Cost of Alkathene Pipe (on average 150 Rmt)				Lumpsum	3900.00
21	cost of B wire and other material					4300.00
				G.Total		**43623.67**
				Or Say		**43620.00**
		Maintenance:-				
	I year Maintenance (30% Mortality)					9450.00
	II year Maintenance (20% Mortality)					7050.00
	III year Maintenance (15% Mortality)					5890.00
	I Vyear Maintenance (10% Mortality)					4725.00
	V year Maintenance (10% Mortality)					4725.00
				Sub Total maintenance		**31840**
				G Total		**75460.00**