

**SCHEME FOR COMPENSATORY AFFORESTATION
OVER AN AREA OF 321.00 HA NON FOREST LAND
IDENTIFIED IN VILLAGE LUNGAJHAR UNDER
BANSPAL TAHASIL OF BJP RANGE IN KEONJHAR
FOREST DIVISION.**

**FOR DIVERSION OF 310.110 HA
OF FOREST LAND FOR THE PURPOSE OF
KANPUR (CANAL SYSTEM) IRRIGATION
PROJECT
IN
KEONJHAR FOREST DIVISION**

**Prepared by
DIVISIONAL FOREST OFFICER
KEONJHAR FOREST DIVISION**

ELEMENTS OF THE SCHEME FOR COMPENSATORY AFFORESTATION

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CHAPTER- I

BRIEF NOTE ON THE PROPOSED FOREST DIVERSION PROPOSAL

Water Resources Department (Irrigation wing) Govt. of Odisha has constructed the Dam/Reservoir near village Basudevpur in Keonjhar Forest Division under Keonjhar District at Latitude 22°02'30"N & Longitude 85°30'47"E in the upstream side of the Baitarani bridge across the river Baitarani and for that Diversion Proposal has been obtained for MoEF & CC, GOI vide letter No. B-261/88-FC, dated 4.7.1989.

The present proposal is for Diversion of 310.110 Ha of Forest land out of 1669.986 Ha of total land required for Canal System of Kanupur Irrigation Project under Keonjhar Forest Division in Keonjhar District. This Project is one of the most beneficial Major Irrigation project in the State of Odisha. The Right Main Canal starts from the right side of the dam near Basudevpur village and cover 244 Nos of villages in Barbil, Champua, Jhumpura, Keonjhar Sadar and Patna Tahasils of Keonjhar District. The length of the main canal is 78.21 Kms and there are minor, sub minor, canals, distributaries in canal system to facilitate annual irrigation 29578 Ha CCA out of 39437 Ha of GCA with Khariff Irrigation (Rainy Season) 24555 Ha, Rabi Irrigation (November – March) 17154 Ha and 6000 Ha during summer (Summer Months) along with 260 Ft³/sec per year constant municipality and industry supplies as an ultimate aim of the project. This project will also create 2.25 MW of Hydra Power to meet the demand of the neighboring villages. The project area comes under Barbil, Champua, Jhumpura, Keonjhar Sadar & Patna Tahasil of Keonjhar District, which is a drought prone area, chronically affected with frequent bouts of draught. The agricultural yield in this area completely depends on the natural rain fall, which is inadequate, untimely and unevenly distributed. Consequently, the agricultural production, which is the only source of income of the locality, is much below the average level. As such financial status of the people in this area is very low. So the project is absolutely necessary to improve the agricultural output and economy of the region to mitigate the misery of a sizeable population, mostly belonging to schedule caste, schedule tribe and backward class.

Other objectives are to provide an equitable irrigation supply to the cultivators while simultaneously providing municipal and industrial water supply to the proposed steel plants and thereby develop confidence in these area amongst the users for availability of water and its management. The proposed industries are expected to draw water from the head works of the sub-project. The operations and maintenance of the canal network of the sub project from outlet levels upto Distributary levels is to be handed over to various Farmers Irrigation Associates/Co-operative societies so as to imbibe sense of ownership of the irrigation system and consequently increase the agricultural production.

There is only one Right Main Canal starting from the right side of the Dam axis near village Basudevpur under Keonjhar District. The Right Main Canal covers 244 villages with Distributaries, Minor Canals, Sub Minor Canals, and outlets for Irrigation. The Project is located about 53 Kms for Keonjhar District Head Quarter and about 288 KMs from State Capital Bhubaneswar. The referral Topo sheets are 73F/12, 73G/9 & 73G/13.

The command area of the project is undulated and the natural ground slope is defined with developed drainage natural draining water towards the main stream. The Gross command area of the project is 39437 Ha. The Cultivable command area is 29578 Ha with Khariff Irrigation 24555 Ha and Rabi Irrigation 17154 Ha and 6000 ha in summer irrigation along with 260ft³/sec per year constant municipality and industry supply. The command area lies between Latitude 21°49'15"N to 22°05'45"E and Longitude 85°31'45"E to 85°49'00"E. the command area covers 244 no of villages under Barbil, Champua, Jhumpura, Keonjhar Sadar & Patna Tahasils of Keonjhar District.

Since the project involves Forest land for non forest use the User Agency has submitted Diversion Proposal over an area of 310.110 Ha under section 2 of FCA 1980 vide proposal no. FP/OR/IRRIG/40827/2019. As per guideline of Government of India in MoEF & CC, the User Agency shall identify equivalent of non forest area for raising Compensatory Afforestation. Accordingly 321.00 Ha of non forest land has been identified in village Lungajhar under Banspal Tahasil of Keonjhar District and Keonjhar Forest Division.

The present scheme, therefore aims at preparation of site specific Compensatory Afforestation scheme over an area of 321.00 Ha non forest land in village Lungajhar under Banspal Tahasil, Keonjhar District in ANR model plantation (400 seedlings / Ha) with a maintenance of ten years.

CHAPTER- II

DETAILS OF LAND IDENTIFIED FOR COMPENSATORY AFFORESTATION

A. - LAND IDENTIFICATION AND JOINT VERIFICATION OF THE IDENTIFIED SITE.

The site for Compensatory Afforestation has been identified in village Lungajhar over an area of 321.00 Ha under Banspal Tahasil, BJP Range of Keonjhar Forest Division and has been jointly verified by the Tahasildar, Banspal, Range Officer, BJP Range, RI Suakati, Forester Suakati Section and User Agency. The above identified land has been allotted in favor of Kanpur Irrigation Project, by Collector & District Magistrate Keonjhar vide his letter no 303 / Rev, dated 24.02.2018 Govt. of Odisha.

B. INFORMATION ON NON-ENCROACHMENT AND NON-ENCUMBRANCE.

The Tahasildar Banspal, has given certificate as regards non-encroachment and non-encumbrance on the identified Non Forest Land for raising Compensatory Afforestation.

C. - INFORMATION ON LAND STATUS.

The land scheduled and land status identified and allotted for Compensatory Afforestation is furnished hereunder:-

Khata No	Plot No	Kissam	Area (in Ha)
66 (AJA)	224	Parbat	15.520
	225		16.000
	226		16.000
	227		16.000
	238 (P)		6.360
	241		16.000
	242		16.000
	243		16.000
	244		16.000
	245		16.000
	246		16.000
	247		17.120
	248		12.960
	370		15.200
	371		16.000
	372		16.000
	376		16.640
	377		12.000
	378		16.000
	379		15.600
	380 (P)		17.600
	Total	321.00	

D.-SUITABILITY OF THE IDENTIFIED SITE FOR COMPENSATORY AFFORESTATION-

The identified land is free from encroachment and encumbrance. This land is neither covered under Section-4 of Orissa Forest Act, 1972 nor included in DLC report.

The non-forest land identified in village Lungajhar is in two patches. The area is situated on hilly slopes. The crop density varies from 0.1 to 0.5.

The topography of the area is mainly hilly terrain and undulating. However, good depth of sandy-loam soil is still available which is conducive for plantation with suitable soil conservation measures. The average temperature varies from 13.5° C minimum in December to 45°C maximum in May. The annual rainfall varies from 1200 mm to 1500 mm. The maximum rainfall is received during the rainy season from July to September. The identified land is therefore taken up for Compensatory Afforestation in ANR with gap plantation model (400 nos /Ha) over an area of 321.00 Ha with site specific SMC measures.

CHAPTER-III

DELINEATION OF PROPOSED AREA ON SUITABLE MAP

A. VILLAGE SHEET SHOWING COMPENSATORY AFFORESTATION SITE

The Identified non forest land depicted in village Lungajhar sheet and submitted by the Tahasildar, Banspal is annexed herewith.

B. DGPS COORDINATES AND DGPS MAP OF THE COMPENSATORY AFFORESTATION SITE

The area has been demarcated through DGPS survey method and 85nos of 4' height RCC pillars has been posted around the identified area and the same has been depicted in village sheet map. The DGPS Survey map has also vetted by ORSAC, Revenue and Forest authorities. (Copy of the Maps Enclosed)

CHAPTER- IV

AGENCY RESPONSIBLE FOR COMPENSATORY AFFORESTATION

IV (1) AGENCY RESPONSIBLE FOR PLACEMENT OF FUNDS

The user agency shall provide funds for raising Compensatory Afforestation as per approved scheme.

IV (2) AGENCY RESPONSIBLE FOR EXECUTION OF COMPENSATORY AFFORESTATION

The Territorial Wing of the Forest Department i.e. Divisional Forest Officer, Keojhar Forest Division will be assigned with the task for execution of the Compensatory Afforestation.

CHAPTER- V

DETAILS OF WORK SCHEDULE PROPOSED FOR COMPENSATORY AFFORESTATION

A. PLANTING PLAN

Planting Plan reflects the species specific treatment of the identified site. Choice of species is based on the geo-morphology of the site, soil-texture, structure, fertility and depth, proneness of the site to water logging etc. Specific treatment of the site in terms of soil and moisture conservation intervention will be depicted in the treatment map. A treatment map will invariably be prepared for Species to be planted and treatments to be applied to the different patches shown in the treatment map and planting plan. This plan will be followed when actual planting is carried out.

Species to be planted:-

1. *Sizyziumcumini* (Jamu)
2. *Adina cardifolia* (Kuruma)
3. *Anogeissuslatifolia* (Dhaura)
4. *Accacia catechu* (Khair)
5. *Dalbergiasissoo* (Sissoo)
6. *Azadirrachtaindica* (Neem)
7. *Gmelinaarborea* (Gambar)
8. *Terminaliabelerica* (Bahada)
9. *Terminaliachebula* (Harida)
10. *Pongamiapinnata* (Karanja)
11. *Emblicaofficinalis* (Ainla)
12. *Tectona grandis* (Teak)

B. PRE-PLANTING OPERATION

B (I)-RAISING OF PLANTATION STOCK- NURSERY-

Nursery will be raised @440 seedlings per ha including seedlings for 10% causality replacement.

B (II)-SURVEY, DEMARCATION & PILLAR POSTING, DGPS READING WITH MAPPING

The planting area has been surveyed and demarcated with four feet height RCC pillars at inter visible distance (as per the direction of the Forest Range officer, BJP Range) with DGPS coordinates, forward and backward bearing, pillar No. and distance between pillars inscribed in it. A DGPS map in the scale of 1:4000 has been prepared along with DGPS co-ordinates, forward & backward bearing, pillar to pillar distance and pillar numbers reflected in the map. A sign board has been erected at a conspicuous location with name of the site, scheme, area etc. depicted at the identified site.

B (III)- SITE PREPARATION AND SILVICULTURAL OPERATION INCLUDING CLEARANCE OF WEED, CLIMBER CUTTING, HIGH STUMP CUTTING, SINGLING OF SHOOTS

The clearing of the site involving removal of invasive weeds, bushes, climbers, high stumps and singling of shoots will be taken up preferably by the end of February and latest by the end of March. Pits of the dimension 45 x 45 x 45 cm. will be dug @400 per ha in the available gaps. Pitting work will be completed during March of the year during which plantation will be taken up.

C. PLANTING OPERATION

Planting of seedlings will be taken up in the month of July. The polythene covering of the balls of earth will be carefully removed before planting. Care will be taken to see that the ball of earth is not broken while doing so. The seedling with the ball of earth will then be placed firmly in the pit and buried at such a depth that the root collar is well below the surface of the soil. The soil around the plant will be well compacted as a final step so that there is a proper bond between the ball and the surrounding soil. The earth close to the collar will be slightly elevated so that rain water does not accumulate very close to the plant.

D. POST PLANTING OPERATION **D (1)-CASUALTY REPLACEMENT**

The entire area will be gone over in the same order as plantation was carried out and casualties, if any, will be replaced as soon as the main plantation operation is over.

D (2)-WEEDING AND SOIL WORKING

Regular and efficient weeding will start immediately after sprouting of the stumps is complete or after the seedlings have started generating new buds.

D (3)-MANURING AND INSECTICIDE APPLICATION

On degraded sites urban compost or farmyard manure, wherever available, will be added 0.25 cft and fertile soil 0.25 cft per plant while refilling the pit. As regards chemical fertilizers, the fertilizers required and dosage @ 100 grams of patent mixtures like N.P.K. will be applied in two split doses one in August and the other in September and application of insecticide (Granular insecticide @ 5gms/plant will be added.

D (4)-SOIL MOISTURE CONSERVATION MEASURES

Staggered trench along the contour @ 300 per ha (2.5mx0.5mx0.5m), digging of percolation pits @ 600 per ha in lieu of staggered trenches, gully plugging and Drainage line treatment, half-moon trench on the uphill side of each planting pit (100 MD for staggered trench/ percolation pits and 30 MD for gully plugging, drainage line treatment and half-moon trench)

D (5)-PROTECTION AGAINST FIRE AND GRAZING

Fire line tracing will be ensured to protect the plantation from fire and watch & ward will be provided as per the approved norm to augment protection. It is proposed to protect CA plantation from grazing by domestic animals using Barbed wire fencing (7 Stands). The total length of such Barbed wire fencing (2 no. of patches) which comes to 12200 meters.

CHAPTER- VI

COST NORM FOR COMPENSATORY AFFORESTATION @ 400 PLANTS PER HECTARE (NORM AS APPLICABLE FOR BALD HILL PLANTATION)

Labour cost @ Rs. 308.00 per manday

Sl. No.	Item of work	Preferable period of execution	Mandays	Labour cost @ Rs 298.00 per day	Material cost per hectare in Rs	Total cost per hectare in Rs.
	Preparatory operation (0th Year)					
1	Survey and demarcation	June	2	616.00	0	616.00
2	Pitting (400 per ha) each pit 45cm ³	Nov-Dec	32	9856.00	0	9856.00
3	Soil and water conservation measures (a) Staggered trench along the contour @ 300 per ha (2.5mx0.5mx0.5m), digging of percolation pits @ 600 per ha in lieu of staggered trenches, gully plugging and Drainage line treatment, half moon trench on the uphill side of each planting pit (100 MD for staggered trench/ percolation pits and 30 MD for gully plugging, drainage line treatment and half moon trench)	Sept-Nov	130	40040.00	0	40040.00
	(b) Site clearance-8 MD. Alignment and staking of contour lines on ground, planting pits, contour trenches/ percolation pits and check dam sites etc.-2 MD	July-Aug	10	3080.00	0	3080.00
4	Raising of seedlings in poly bags (minimum 60 cm high) @ Rs. 13.10 per seedling (Rs 9.12 in 0 th year + Rs. 3.98) Part (440 saplings to be raised for one hectare	October-March	11	3388.00	734.80	4122.80
	Total 0th year		185	56980.00	734.80	57714.80
5	Monitoring & Supervision Charge 5% of the total cost					2885.74
	Grand Total=		185	56980.00	734.80	60600.54

Planting Operation (1 st Year)						
1	Cost of sapling (balance) from April-June/July @ Rs 3.98 per seedling for 440 seedlings	April-July	5.38	1657.04	148.40	1805.44
2	Freshening of pits, filling with fertile soil and farm yard manure (FYM), application of insecticide and planting of 60 cm tall saplings including carriage of plants	June-July	27.25	8393.00	0	8393.00
3	Cost of fertile soil 0.25 cft @ Rs 8 per cft/ FYM 0.25 cft @ Rs 15 per cft per pit		0	0	2300.00	2300.00
4	Carriage. Planting including casualty replacement, fertilizer application, 1 st weeding, 2 nd weeding, soil working.	July-August	9	2772.00	0	2772.00
6	Cost of fertilizer and insecticide (Granular insecticide @ 5gms/plant @Rs 80/- per kg, NPK 100 gms/plant in two doses @ Rs 24 per kg		0	0	1120.00	1120.00
7	Maintenance of Soil and Moisture Conservation measures (20% of cost)	October-December	26	8008.00	0	8008.00
8	Closure to grazing, fire and other biotic interference by engaging watch & ward	April-March	30	9240.00	0	9240.00
9	Fire tracing and control, display board construction, painting/writing, other miscellaneous cost	Jan-Feb	10	3080.00	360.00	3440.00
	Total (1st year)		107.63	33150.04	3928.40	37078.44
10	Monitoring & Supervision Charge 5% of the total cost					1853.92
	Grand Total		107.63	33150.04	3928.40	38932.36
Maintenance Operation (2 nd Year)						
1	Casualty replacement including seedling cost @ Rs 13.10 per seedling and its transportation	June-July	2.5	770.00	524.00	1294.00
2	Soil working, 1 st weeding, 2 nd weeding and fertilizer application	August-October	5.75	1771.00	0	1771.00
3	Cost of fertilizer @ 50 gms NPK per plant. Insecticide @ 5 gm per plant		0	0	496.00	496.00
4	Maintenance of Soil and Moisture Conservation measures (20% of cost)	August-October	26	8008.00	0	8008.00
5	Fire tracing and control, and other miscellaneous cost	Feb-March	10	3080.00	0	3080.00

6	Closure to grazing, fire and other biotic interference by engaging watch & ward	April-March	30	9248.00	0	9248.00
	Total 2nd Year		74.25	22869.00	1020.00	23889.00
7	Monitoring & Supervision Charge 5% of the total cost					1194.45
	Grand Total=		74.25	22869.00	1020.00	25083.45
Maintenance Operation (3rd Year)						
1	S.M.C measures (Renovation)-	April-March	26	8008.00	0	8008.00
2	Maintenance of plantation	Apr-Mar	14	4312.00	0	4312.00
3	Closure to grazing, fire and other biotic interference by engaging watch & ward	April-March	18	5544.00	0	5544.00
	Total 3rd Year		58	17864.00	0	17864.00
4	Monitoring & Supervision Charge 5% of the total cost					893.20
	Grand Total		58	17864.00	0	18757.20
Maintenance Operation (4th Year)						
1	S.M.C measures- 21MD, and maintenance of plantation – 14 MD	April-March	35	10780.00	0	10780.00
2	Closure to grazing, fire and other biotic interference by engaging watch & ward	April-March	18	5544.00	0	5544.00
	Total 4th Year		53	16324.00	0	16324.00
3	Monitoring & Supervision Charge 5% of the total cost					816.20
	Grand Total		53	16324.00		17140.20
Maintenance Operation (5th Year)						
1	S.M.C measures- 21MD, and maintenance of plantation – 14 MD	April-March	35	10780.00	0	10780.00
2	Closure to grazing, fire and other biotic interference by engaging watch & ward	April-March	18	5544.00	0	5544.00
	Total 5th Year		53	16324.00	0	16324.00
3	Monitoring & Supervision Charge 5% of the total cost					816.20
	Grand Total		53	16324.00		17140.20
Maintenance Operation (6th Year)						
1	S.M.C measures- 21MD, and maintenance of plantation – 14 MD	April-March	35	10780.00	0	10780.00
2	Closure to grazing, fire and other biotic interference by engaging watch & ward	April-March	18	5544.00	0	5544.00
	Total 6th Year		53	16324.00	0	16324.00

3	Monitoring & Supervision Charge 5% of the total cost					816.20
	Grand Total		53	16324.00		17140.20
Maintenance Operation (7th Year)						
1	S.M.C measures- 21MD, and maintenance of plantation – 14 MD	April-March	35	10780.00	0	10780.00
2	Closure to grazing, fire and other biotic interference by engaging watch & ward	April-March	18	5544.00	0	5544.00
	Total 7th Year		53	16324.00	0	16324.00
3	Monitoring & Supervision Charge 5% of the total cost					816.20
	Grand Total		53	16324.00		17140.20
Maintenance Operation (8th Year)						
1	S.M.C measures- 21MD, and maintenance of plantation – 14 MD	April-March	35	10780.00	0	10780.00
2	Closure to grazing, fire and other biotic interference by engaging watch & ward	April-March	18	5544.00	0	5544.00
	Total 8th Year		53	16324.00	0	16324.00
3	Monitoring & Supervision Charge 5% of the total cost					816.20
	Grand Total		53	16324.00		17140.20
Maintenance Operation (9th Year)						
1	S.M.C measures- 21MD, and maintenance of plantation – 14 MD	April-March	35	10780.00	0	10780.00
2	Closure to grazing, fire and other biotic interference by engaging watch & ward	April-March	18	5544.00	0	5544.00
	Total 9th Year		53	16324.00	0	16324.00
3	Monitoring & Supervision Charge 5% of the total cost					816.20
	Grand Total		53	16324.00		17140.20
Maintenance Operation (10th Year)						
1	S.M.C measures- 21MD, and maintenance of plantation – 14 MD	April-March	35	10780.00	0	10780.00
2	Closure to grazing, fire and other biotic interference by engaging watch & ward	April-March	18	5544.00	0	5544.00
	Total 10th Year		53	16324.00	0	16324.00
3	Monitoring & Supervision Charge 5% of the total cost					816.20
	Grand Total		53	16324.00		17140.20

ABSTRACT

Sl. No.	Year	No. Person Days	Labor cost in Rs.	Material cost in Rs.	Monitoring & Supervision charge 5% of the total cost in Rs.	Total Cost in Rs.
1	0 th Year	185	56980.00	734.80	2885.74	60600.54
2	1 st Year	107.63	33150.04	3928.40	1853.92	38932.36
3	2 nd Year	74.25	22869.00	1020.00	1194.45	25083.45
4	3 rd Year	58	17864.00	0	893.20	18757.20
5	4 th Year	53	16324.00	0	893.20	17140.20
6	5 th Year	53	16324.00	0	893.20	17140.20
7	6 th Year	53	16324.00	0	893.20	17140.20
8	7 th Year	53	16324.00	0	893.20	17140.20
9	8 th Year	53	16324.00	0	893.20	17140.20
10	9 th Year	53	16324.00	0	893.20	17140.20
11	10 th Year	53	16324.00	0	893.20	17140.20
Total		795.88	245131.04	5683.20	13079.71	2, 63, 354.95
Total Cost of Plantation (321 Ha.)						8,45,36,938.95

ADDITIONAL COST PROPOSED

1	Barbed wire fencing @Rs.684/- per meter over 12200 meter	8344800.00
	Total	8344800.00


TOTAL COST OF THE PROJECT

S. No	Description	Amount in Rs.
1	Bald Hill Plantation over 321.00 Ha @ Rs. 2,63,354.95/- Per Ha (400 Plants Per Ha)	84536938.95
2	Total additional cost	8344800.00
	Sub Total	92881738.95
3	15% of the total plantation cost towards Entry Point Activity/ Incenti to VSS etc.	13932260.84
	Total	106813999.79
4	Add 20% escalation	21362799.95
	Grand Total	128176799.75 OR 12,81,77,000.00

(Rupees twelve crore eighty-one lakh seventy-seven thousand) only

PROVISION OF FUNDS AND FUND UTILIZATION

Rs. 12,81,77,000.00 (Rupees twelve crore eighty-one lakh seventy-seven thousand) only shall be deposited by the user agency (Executive Engineer, Jhumpura Canal Division) on approval of the scheme to the Ad-hoc CAMPA Account and the funds will be utilized for raising of Compensatory Afforsstation by the Divisional Forest Officer, Keonjhar Forest Division on allotment by the Principal Chief Conservator of Forest, Odisha, Bhubaneswar.


Divisional Forest Officer,
Keonjhar Division

CHAPTER-VII

DETAILS OF PROPOSED MONITORING MECHANISM

Compensatory Afforestation will be taken up in the identified site by the Range Officer, BJP Range of Keonjhar Forest Division. The Range Forest Officer, BJP Forest Range will undertake field checks of the works undertaken at the identified site and will be cross checked by the Asst. Conservator of Forests, (Affn.) and Divisional Forest Officer, Keonjhar Forest Division. DGPS Coordinates along with other required informations of Compensatory Afforestation will be uploaded in the e-Greenwatch Portal of NIC, MOEF & CC, and Govt. of India for the purpose of online monitoring. Annual progress of plantation involving growth of planted seedling, survival percentage etc. will be monitored and recorded in the plantation journal by the field staffs of BJP Forest Range and reported to the Divisional Forest Officer, Keonjhar for necessary action. The same thing will be reported to the Regional Chief Conservator of Forests, Rourkela Circle and Addl. Chief Conservator of Forests (PP&A), O/o the Pr. Chief Conservator of Forests, Odisha, Bhubaneswar and necessary corrective measures will be followed if required so.


**Divisional Forest Officer,
Keonjhar Division**

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BRIEF NOTE ON THE PROPOSED FOREST DIVERSION PROPOSAL

Water Resources Department (Irrigation wing) Govt. of Odisha has constructed the Dam/Reservoir near village Basudevpur in Keonjhar Forest Division under Keonjhar District at Latitude 22°02'30"N & Longitude 85°30'47"E in the upstream side of the Baitarani bridge across the river Baitarani and for that Diversion Proposal has been obtained for MoEF & CC, GOI vide letter No. B-261/88-FC, dated 4.7.1989.

The present proposal is for Diversion of 310.110 Ha of Forest land out of 1669.986 Ha of total land required for Canal System of Kanupur Irrigation Project under Keonjhar Forest Division in Keonjhar District. This Project is one of the most beneficial Major Irrigation project in the State of Odisha. The Right Main Canal starts from the right side of the dam near Basudevpur village and cover 244 Nos of villages in Barbil, Champua, Jhumpura, Keonjhar Sadar and Patna Tahasils of Keonjhar District. The length of the main canal is 78.21 Kms and there are minor, sub minor, canals, distributaries in canal system to facilitate annual irrigation 29578 Ha CCA out of 39437 Ha of GCA with Khariff Irrigation (Rainy Season) 24555 Ha, Rabi Irrigation (November – March) 17154 Ha and 6000 Ha during summer (Summer Months) along with 260 Ft³/sec per year constant municipality and industry supplies as an ultimate aim of the project. This project will also create 2.25 MW of Hydra Power to meet the demand of the neighbouring villages. The project area comes under Barbil, Champua, Jhumpura, Keonjhar Sadar & Patna Tahasil of Keonjhar District, which is a drought prone area, chronically affected with frequent bouts of draught. The agricultural yield in this area completely depends on the natural rain fall, which is inadequate, untimely and unevenly distributed. Consequently, the agricultural production, which is the only source of income of the locality, is much below the average level. As such financial status of the people in this area is very low. So the project is absolutely necessary to improve the agricultural output and economy of the region to mitigate the misery of a sizeable population, mostly belonging to schedule caste, schedule tribe and backward class.

Other objectives are to provide an equitable irrigation supply to the cultivators while simultaneously providing municipal and industrial water supply to the proposed steel plants and thereby develop confidence in these area amongst the users for availability of water and its management. The proposed industries are expected to draw water from the head works of the sub-project. The operations and maintenance of the canal network of the sub project from outlet levels upto Distributary levels is to be handed over to various Farmers Irrigation Associates/Co-operative societies so as to imbibe sense of ownership of the irrigation system and consequently increase the agricultural production.

There is only one Right Main Canal starting from the right side of the Dam axis near village Basudevpur under Keonjhar District. The Right Main Canal covers 244 villages with Distributaries, Minor Canals, Sub Minor Canals, and outlets for Irrigation. The Project is located about 53 Kms for Keonjhar District Head Quarter and about 288 KMs from State Capital Bhubaneswar. The referral Topo sheets are 73F/12, 73G/9 & 73G/13.

The command area of the project is undulated and the natural ground slope is defined with developed drainage natural draining water towards the main stream. The Gross command area of the project is 39437 Ha. The Cultivable command area is 29578 Ha with Khariff Irrigation 24555 Ha and Rabi Irrigation 17154 Ha and 6000 ha in summer irrigation along with 260ft³/sec per year constant municipality and industry supply. The command area lies between Latitude 21°49'15"N to 22°05'45"E and Longitude 85°31'45"N to 85°49'00"E. the command area covers 244 no of villages under Barbil, Champua, Jhumpura, Keonjhar Sadar & Patna Tahasils of Keonjhar District.

Since the project involves Forest land for non forest use the User Agency has submitted Diversion Proposal over an area of 310.110 Ha under section 2 of FCA 1980 vide proposal no. FP/OR/IRRIG/40827/2019. As per guideline of Government of India in MoEF & CC, the User Agency shall identify equivalent of non forest area for raising Compensatory Afforestation. Accordingly 321.00 Ha of non forest land has been identified in village Lungajhar under Banspal Tahasil of Keonjhar District.

During verification of non forest CA land through DSS (Decision Support System) it is found that 169.00 Ha of non forest land coming under Medium Dense Forest (MDF) Category, that means only 152.00 Ha of non forest area is suitable for Compensatory Afforestation, where 1, 28, 400 number of seedlings can be accommodated. For raising balance 1, 81, 710 numbers of seedlings, the Divisional Forest Officer Keonjhar Forest Division has selected 421.704 Ha of Degraded Forest Land in 3 Reserved Forests (Ukhunda RF 224.675 Ha under Champua Range + Barabanka RF 110.749 Ha and Raghunathpur RF 86.280 Ha under Keonjhar Range) for raising balance seedlings.

The present scheme, therefore aims at preparation of site specific Compensatory Afforestation scheme over an area of 110.749 Ha in Barabanka RF in Keonjhar Range under Keonjhar Forest Division in ANR Model (600 seedlings / Ha) with a maintenance of ten years.

CHAPTER- II

DETAILS OF LAND IDENTIFIED FOR COMPENSATORY AFFORESTATION

A. - LAND IDENTIFICATION AND JOINT VERIFICATION OF THE IDENTIFIED SITE.

The site for Compensatory Afforestation has been identified in Barabanka RF under Keonjhar Range of Keonjhar Forest Division over an area of 110.749 Ha and has been jointly verified by the Range Officer, Keonjhar Range, and User Agency. The above identified land has been allotted in favor of Kanpur Irrigation Project, Govt. of Odisha.

B. INFORMATION ON NON-ENCROACHMENT AND NON-ENCUMBRANCE.

The Range Officer, Keonjhar has given certificate regarding non-encroachment and non-encumbrance on the identified Degraded Forest Land in Barabanka RF for raising Compensatory Afforestation.

C. - INFORMATION ON LAND STATUS.

The land scheduled and land status identified and allotted for Compensatory Afforestation is furnished hereunder:-

Name of the Range	Name of the Reserved Forest	Area(in Ha)
Keonjhar	Barabanka Reserved Forest	110.749

D.-SUITABILITY OF THE IDENTIFIED SITE FOR COMPENSATORY AFFORESTATION-

The identified land is free from encroachment and encumbrance.

The degraded forest land identified in Barabanka RF is in one patch. The area is mainly plain and some patches are undulating. The crop density is below 0.3

The topography of the area is mainly plain and undulating. However, good depth of sandy-loam soil is still available which is conducive for plantation with suitable soil conservation measures. The average temperature varies from 13.5° C minimum in December to 45°C maximum in May. The annual rainfall varies from 1200 mm to 1500 mm. The maximum rainfall is received during the rainy season from July to September. The identified land is therefore taken up for Compensatory Afforestation in ANR with gap plantation model over an area of 110.749 Ha with site specific SMC measures.

CHAPTER-III

DELINEATION OF PROPOSED AREA ON SUITABLE MAP

III (1) GPS COORDINATES AND GPS MAP OF THE COMPENSATORY AFFORESTATION SITE

The area has been demarcated through GPS survey showing Latitude and Longitude of each point and their chainage with bearing is also enclosed in the map prepared there on (Maps enclosed).

CHAPTER- IV

AGENCY RESPONSIBLE FOR COMPENSATORY AFFORESTATION

IV (1) AGENCY RESPONSIBLE FOR PLACEMENT OF FUNDS

The user agency shall provide funds for raising Compensatory Afforestation as per approved scheme.

IV (2) AGENCY RESPONSIBLE FOR EXECUTION OF COMPENSATORY AFFORESTATION

The Territorial Wing of the Forest Department i.e. Divisional Forest Officer, Keonjhar Division will be assigned with the task for execution of the Compensatory Afforestation.

CHAPTER- V

DETAILS OF WORK SCHEDULE PROPOSED FOR COMPENSATORY AFFORESTATION

A. PLANTING PLAN

Planting Plan reflects the species specific treatment of the identified site. Choice of species is based on the geo-morphology of the site, soil-texture, structure, fertility and depth, proneness of the site to water logging etc. Specific treatment of the site in terms of soil and moisture conservation intervention will be depicted in the treatment map. A treatment map will invariably be prepared for Species to be planted and treatments to be applied to the different patches shown in the treatment map and planting plan. This plan will be followed when actual planting is carried out.

Species to be planted:-

1. *Syzgiumcumini*(Jamu)
2. *Adina cardifolia*(Kuruma)
3. *Anogeissuslatifolia*(Dhaura)
4. *Accacia catechu* (Khair)
5. *Dalbergiasissoo*(Sissoo)
6. *Azadirrachtaindica*(Neem)
7. *Gmelinaarborea* (Gambar)
8. *Terminaliabelerica*(Bahada)
9. *Terminaliachebula*(Harida)
10. *Pongamiapinnata* (Karanja)
11. *Emblicaofficinalis* (Ainla)
12. *Tectona grandis* (Teak)

B.PRE-PLANTING OPERATION**B (I)-RAISING OF PLANTATION STOCK- NURSERY-**

Nursery will be raised @660 seedlings per ha including seedlings for 10% causality replacement.

B (II)-SURVEY, DEMARCATION & PILLAR POSTING, GPS READING WITH MAPPING

The planting area has been surveyed and demarcated with four feet height RCC pillars at inter visible distance (as per the direction of the Forest Range officer, Keonjhar Range) with GPS coordinates, forward and backward bearing, pillar No. and distance between pillars inscribed in it. A GPS map in the scale of 1:4000 has been prepared along with GPS co-ordinates, forward & backward bearing, pillar to pillar distance and pillar numbers reflected in the map. A sign board has been erected at a conspicuous location with name of the site, scheme, area etc. depicted on it.

B (III)-SITE PREPARATION AND SILVICULTURAL OPERATION INCLUDING CLEARANCE OF WEED, CLIMBER CUTTING, HIGH STUMP CUTTING, SINGLING OF SHOOTS

The clearing of the site involving removal of invasive weeds, bushes, climbers, high stumps and singling of shoots will be taken up preferably by the end of February and latest by the end of March. Pits of the dimension 30 x 30 x 30 cm. will be dug @600 per ha in the available gaps. Pitting work will be completed during March of the year during which plantation will be taken up.

C. PLANTING OPERATION

Planting of seedlings will be taken up in the month of July. The polythene covering of the balls of earth will be carefully removed before planting. Care will be taken to see that the ball of earth is not broken while doing so. The seedling with the ball of earth will then be placed firmly in the pit and buried at such a depth that the root collar is well below the surface of the soil. The soil around the plant will be well compacted as a final step so that there is a proper bond between the ball and the surrounding soil. The earth close to the collar will be slightly elevated so that rain water does not accumulate very close to the plant.

D. POST PLANTING OPERATION

D (1)-CASUALTY REPLACEMENT

The entire area will be gone over in the same order as plantation was carried out and casualties, if any, will be replaced as soon as the main plantation operation is over.

D (2)-WEEDING AND SOIL WORKING

Regular and efficient weeding will start immediately after sprouting of the stumps is complete or after the seedlings have started generating new buds.

D (3)-MANURING AND INSECTICIDE APPLICATION

On degraded sites urban compost or farmyard manure, wherever available, will be added to the soil @200 grams per plant while refilling the pits. As regards chemical fertilizers, the fertilizers required and dosage @ 50 grams of patent mixtures like N.P.K. & Urea @ 70 grams per plant will be applied in two split doses one in August and the other in September.

D (4)-SOIL MOISTURE CONSERVATION MEASURES

Special Soil Moisture Conservation Measures will be taken up through construction of LBCD structures of dimension 3m span to the tune of 110 nos. over the entire plantation site. Staggered trenches of dimension 2 x 0.5 x .5 mtr will be done to the tune of 60nos per hectare.

D (5)-PROTECTION AGAINST FIRE AND GRAZING

Fire line tracing will be ensured to protect the plantation from fire and watch & ward will be provided as per the approved norm to augment protection. It is proposed to protect CA plantation from grazing by domestic animals using Barbed wire fencing (7 Stands). The total length of such Barbed wire fencing (1 no. of patch) which comes to 4554 meters.

CHAPTER- VI

COST STRUCTURE OF PLANTATION, PROVISION OF FUNDS AND UTILIZATION

A. ESTIMATE OF COST FOR 1.00 HA UNDER ANR PLANTATION MODEL

COST NORM FOR AIDED NATURAL REGENERATION (ANR) @ 600 PLANTS PER HECTARE

WAGE RATE Rs. 308.00/ Manday

Sl. No.	Item of Work	Preferable Period of Execution	Labour in Mandays	Labour Cost Rs.	Material Cost Rs	Total Cost Rs
0TH YEAR						
1	Survey, Demarcation and Pillar Posting, GPS Reading with mapping.	Nov/Dec	2	616.00	0	616.00
2	Site Preparation	Nov/Dec	2	616.00	0	616.00
3	Silvicultural Operation including Clearance of weed, climber cutting, high stump cutting, singling of shoots etc.	Jan/Feb	5	1540.00	0	1540.00
4	Nursery cost (6 months old seedling)part @ Rs.13.10/-seedling (Rs.9.12 in 0th year + RS.3.98 in 1st year) for 660 seedling(600+60)	Jan-March	16.5	5082.00	1102.20	6184.20
5	Contingency and Unforeseen Expenditures		0	0	198.00	198.00
	SUB TOTAL		25.5	7854.00	1300.20	9154.20
6	Monitoring & Supervision charge 5% of the total cost					457.71
	GRAND TOTAL		25.5	7854.00	1300.20	9611.91
1ST YEAR						
1	Nursery cost (6 months old seedling) balance @ Rs.3.98 for 660 seedlings	Apr-June	8	2464.00	242.80	2706.80
2	Pitting 30 cm cube size	Feb/Mar	18	5544.00	0	5544.00
3	Carriage and planting including casualty replacement	Jul/Aug	15	4620.00	0	4620.00
4	Complete weeding, soil working, manuring	Aug/Sep	18	5544.00	0	5544.00
5	Cost of Vermi compost @ 200 gms/plant @ Rs.20/-per kg=Rs.2400.00 and Granular Insecticides 5gms/plant @Rs.80/-per kg.=240.00	Aug/Sep	0	0	2640.00	2640.00
6	Cost of Chemical fertiliser (a)Urea 70 gms/plant in two subsequent doses @ Rs.6/-per kg=Rs.252.00 (b)NPK 50 gms/plant @ Rs.24/-per kg =Rs.720.00 as basal dose	Jul/Aug	0	0	972.00	972.00
7	Fire line Tracing and inspection path	Feb/Mar	3	924.00	0	924.00
8	Silvicultural Operation involving clearance of weeds, cutting of climbers, singling of shoots etc.	Sep/Oct	15	4620.00	0	4620.00
9	Soil Conservation Measures (Staggered trenches of dimension 2 m x 0.5 m x 0.5 m @ 60 nos per ha) or its equivalent	Sep/Oct	20	6160.00	0	6160.00
10	Watch & ward	Aug-Mar	7	2156.00	0	2156.00
11	Contingency and Unforeseen Expenditures		0	0	353.00	353.00
	SUB TOTAL		104	32032.00	4207.80	36239.80
12	Monitoring & Supervision charge 5% of the					1811.99

	total cost					
	GRAND TOTAL		104	32032.00	4207.80	38051.79
2ND YEAR						
1	Casualty Replacement including cost of seedling, carriage and planting	Jul/Aug	3	924.00	786.00	1710.00
2	Complete weeding and cultural operations	Sep/Oct	6	1848.00	0	1848.00
3	Soil working and manuring	Sep/Oct	6	1848.00	0	1848.00
4	Cost of Fertiliser and insecticide (a) Vermi compost 200 gms/plant @ Rs.20/- per kg=Rs.2400.00 (b) Granular Insecticides 5 gms /plant for 60 plants 300 gms @ Rs.80/-per kg=Rs.24.00	Sep/Oct	0	0	2424.00	2424.00
5	Fire line Tracing and Inspection Path	Feb/Mar	1	308.00	0	308.00
6	Soil Conservation Measures (Renovation of staggered trenches etc)	Sep/Oct	8	2464.00	0	2464.00
7	Watch & Ward (Whole year)	Apr-Mar	7	2156.00	0	2156.00
8	Contingency and Unforeseen Expenditures		0	0	193.00	193.00
	SUB TOTAL		31	9548.00	3403.00	12951.00
9	Monitoring & Supervision charge 5% of the total cost					647.55
	GRAND TOTAL		31	9548.00	3403.00	13598.55
3RD YEAR						
1	Complete weeding and cultural operations	Aug/Sep	3	924.00	0	924.00
2	Soil working	Aug/Sep	3	924.00	0	924.00
3	Fire line Tracing and Inspection Path	Feb/Mar	1	308.00	0	308.00
4	Watch & ward (Whole year)	Apr-Mar	7	2156.00	0	2156.00
	SUB TOTAL		14	4312.00	0	4312.00
5	Monitoring & Supervision charge 5% of the total cost					215.60
	GRAND TOTAL		14	4312.00	0	4527.60
4TH YEAR						
1	Fire line Tracing and Inspection Path	Feb/Mar	1	308.00	0	308.00
2	Watch & Ward and cultural operations	Apr-Mar	2	616.00	0	616.00
	SUB TOTAL		3	924.00	0	924.00
3	Monitoring & Supervision charge 5% of the total cost					46.20
	GRAND TOTAL		3	924.00	0	970.20
5TH YEAR						
1	Fire line Tracing and Inspection Path	Feb/Mar	1	308.00	0	308.00
2	Watch & Ward and cultural operations	Apr-Mar	2	616.00	0	616.00
	SUB TOTAL		3	924.00	0	924.00
3	Monitoring & Supervision charge 5% of the total cost					46.20
	GRAND TOTAL		3	924.00	0	970.20
6TH YEAR						
1	Fire line Tracing and Inspection Path	Feb/Mar	1	308.00	0	308.00
2	Watch & Ward and cultural operations	Apr-Mar	2	616.00	0	616.00
	SUB TOTAL		3	924.00	0	924.00
3	Monitoring & Supervision charge 5% of the total cost					46.20
	GRAND TOTAL		3	924.00	0	970.20

7TH YEAR						
1	Fire line Tracing and Inspection Path	Feb/Mar	1	308.00	0	308.00
2	Watch & Ward and cultural operations	Apr-Mar	2	616.00	0	616.00
	SUB TOTAL		3	924.00	0	924.00
3	Monitoring & Supervision charge 5% of the total cost					46.20
	GRAND TOTAL		3	924.00	0	970.20
8TH YEAR						
1	Fire line Tracing and Inspection Path	Feb/Mar	1	308.00	0	308.00
2	Watch & Ward and cultural operations	Apr-Mar	2	616.00	0	616.00
	SUB TOTAL		3	924.00	0	924.00
3	Monitoring & Supervision charge 5% of the total cost					46.20
	GRAND TOTAL		3	924.00	0	970.20
9TH YEAR						
1	Fire line Tracing and Inspection Path	Feb/Mar	1	308.00	0	308.00
2	Watch & Ward and cultural operations	Apr-Mar	2	616.00	0	616.00
	SUB TOTAL		3	924.00	0	924.00
3	Monitoring & Supervision charge 5% of the total cost					46.20
	GRAND TOTAL		3	924.00	0	970.20
10TH YEAR						
1	Fire line Tracing and Inspection Path	Feb/Mar	1	308.00	0	308.00
2	Watch & Ward and cultural operations	Apr-Mar	2	616.00	0	616.00
	SUB TOTAL		3	924.00	0	924.00
3	Monitoring & Supervision charge 5% of the total cost					46.20
	GRAND TOTAL		3	924.00	0	970.20

ABSTRACT						
Sl. No.	Item of work	Person Days	Labour Cost @ Rs. 308.00/-per day	Material Cost (Rs.)	Monitoring & Supervision charge 5% of the total cost	Total Cost(Rs)
1	0th Year Maintenance	25.5	7854.00	1300.20	457.71	9611.91
2	1th Year Maintenance	104	32032.00	4207.80	1811.99	38051.79
3	2th Year Maintenance	31	9548.00	3403.00	647.55	13598.55
4	3th Year Maintenance	14	4312.00	0	215.60	4527.60
5	4th Year Maintenance	3	924.00	0	46.20	970.20
6	5th Year Maintenance	3	924.00	0	46.20	970.20
7	6th Year Maintenance	3	924.00	0	46.20	970.20
8	7th Year Maintenance	3	924.00	0	46.20	970.20
9	8th Year Maintenance	3	924.00	0	46.20	970.20
10	9th Year Maintenance	3	924.00	0	46.20	970.20
11	10th Year Maintenance	3	924.00	0	46.20	970.20
TOTAL		195.5	60214.00	8911.00	3456.25	72581.25

ADDITIONAL COST PROPOSED

1	SMC measures- LBCD structure @ Rs. 8725.39/- for 110 structures.	959792.90
2	Barbed wire fencing @Rs.684/- per meter over 4554 meter	3114936.00
	Total	4074728.90

TOTAL COST OF THE PROJECT

S. No	Description	Amount in Rs.
1	ANR Plantation over 110.749 Ha @ Rs. 72,581.25/- Per Ha (600 plants Per Ha)	8038300.81
2	Total additional cost	4074728.90
	Sub Total	12113029.71
3	15% of the total plantation cost towards Entry Point Activity/ Incentive to VSS etc.	1816954.45
	Total	13929984.16
4	Add 20% escalation	2785996.83
	Grand Total	16715980.99 OR 1,67,16,000.00

(Rupees one crore sixty-seven lakh sixteen thousand) only

PROVISION OF FUNDS AND FUND UTILIZATION

Rs. 1,67,16,000.00 (Rupees one crore sixty-seven lakh sixteen thousand) only shall be deposited by the user agency (Executive Engineer, Jhumpura Canal Division) on approval of the scheme to the Ad-hoc CAMPA Account and the funds will be utilized for raising of Compensatory Afforestation by the Divisional Forest Officer, Keonjhar Forest Division on allotment by the Principal Chief Conservator of Forest, Odisha, Bhubaneswar.


Divisional Forest Officer,
Keonjhar Division

CHAPTER-VII

DETAILS OF PROPOSED MONITORING MECHANISM

Compensatory Afforestation will be taken up in the identified site by the Range Officer, Keonjhar Forest Range of Keonjhar Division. The Range Forest Officer, Keonjhar Forest Range will undertake field checks of the works undertaken at the identified site and will be cross checked by the Asst. Conservator of Forests, (Affn.) and Divisional Forest Officer, Keonjhar Forest Division. GPS Coordinates along with other required informations of Compensatory Afforestation will be uploaded in the e-Greenwatch Portal of NIC, MOEF & CC, and Govt. of India for the purpose of online monitoring. Annual progress of plantation involving growth of planted seedling, survival percentage etc. will be monitored and recorded in the plantation journal by the field staffs of Keonjhar Forest Range and reported to the Divisional Forest Officer for necessary action. The same thing will be reported to the Regional Chief Conservator of Forests, Rourkela Circle and Addl. Chief Conservator of Forests (PP&A), O/o the Pr. Chief Conservator of Forests, Odisha, Bhubaneswar and necessary corrective measures will be followed if required so.



**Divisional Forest Officer,
Keonjhar Division**

**SCHEME FOR COMPENSATORY AFFORESTATION
OVER AN AREA OF 86.280 HA IN DEGRADED
FOREST LAND IDENTIFIED IN RAGHUNATHPUR
RESERVED FOREST OF KEONJHAR RANGE IN
KEONJHAR FOREST DIVISION.**

**FOR DIVERSION OF 310.110 HA
OF FOREST LAND FOR THE PURPOSE OF
KANPUR (CANAL SYSTEM) IRRIGATION
PROJECT**

IN

KEONJHAR FOREST DIVISION

Prepared by

DIVISIONAL FOREST OFFICER

KEONJHAR FOREST DIVISION

ELEMENTS OF THE SCHEME FOR COMPENSATORY AFFORESTATION

CHAPTER	PARTICULARS	PAGE NUMBER
I	BRIEF NOTE ON THE PROPOSED FOREST DIVERSION PROPOSAL	03-04
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CHAPTER- I

BRIEF NOTE ON THE PROPOSED FOREST DIVERSION PROPOSAL

Water Resources Department (Irrigation wing) Govt. of Odisha has constructed the Dam/Reservoir near village Basudevpur in Keonjhar Forest Division under Keonjhar District at Latitude 22°02'30"N & Longitude 85°30'47"E in the upstream side of the Baitarani bridge across the river Baitarani and for that Diversion Proposal has been obtained for MoEF & CC, GOI vide letter No. B-261/88-FC, dated 4.7.1989.

The present proposal is for Diversion of 310.110 Ha of Forest land out of 1669.986 Ha of total land required for Canal System of Kanupur Irrigation Project under Keonjhar Forest Division in Keonjhar District. This Project is one of the most beneficial Major Irrigation project in the State of Odisha. The Right Main Canal starts from the right side of the dam near Basudevpur village and cover 244 Nos of villages in Barbil, Champua, Jhumpura, Keonjhar Sadar and Patna Tahasils of Keonjhar District. The length of the main canal is 78.21 Kms and there are minor, sub minor, canals, distributaries in canal system to facilitate annual irrigation 29578 Ha CCA out of 39437 Ha of GCA with Khariff Irrigation (Rainy Season) 24555 Ha, Rabi Irrigation (November – March) 17154 Ha and 6000 Ha during summer (Summer Months) along with 260 Ft³/sec per year constant municipality and industry supplies as an ultimate aim of the project. This project will also create 2.25 MW of Hydra Power to meet the demand of the neighbouring villages. The project area comes under Barbil, Champua, Jhumpura, Keonjhar Sadar & Patna Tahasil of Keonjhar District, which is a drought prone area, chronically affected with frequent bouts of draught. The agricultural yield in this area completely depends on the natural rain fall, which is inadequate, untimely and unevenly distributed. Consequently, the agricultural production, which is the only source of income of the locality, is much below the average level. As such financial status of the people in this area is very low. So the project is absolutely necessary to improve the agricultural output and economy of the region to mitigate the misery of a sizeable population, mostly belonging to schedule caste, schedule tribe and backward class.

Other objectives are to provide an equitable irrigation supply to the cultivators while simultaneously providing municipal and industrial water supply to the proposed steel plants and thereby develop confidence in these area amongst the users for availability of water and its management. The proposed industries are expected to draw water from the head works of the sub-project. The operations and maintenance of the canal network of the sub project from outlet levels upto Distributary levels is to be handed over to various Farmers Irrigation Associates/Co-operative societies so as to imbibe sense of ownership of the irrigation system and consequently increase the agricultural production.

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The command area of the project is undulated and the natural ground slope is defined with developed drainage natural draining water towards the main stream. The Gross command area of the project is 39437 Ha. The Cultivable command area is 29578 Ha with Khariff Irrigation 24555 Ha and Rabi Irrigation 17154 Ha and 6000 ha in summer irrigation along with 260ft³/sec per year constant municipality and industry supply. The command area lies between Latitude 21°49'15"N to 22°05'45"E and Longitude 85°31'45"N to 85°49'00"E. the command area covers 244 no of villages under Barbil, Champua, Jhumpura, Keonjhar Sadar & Patna Tahasils of Keonjhar District.

Since the project involves Forest land for non forest use the User Agency has submitted Diversion Proposal over an area of 310.110 Ha under section 2 of FCA 1980 vide proposal no. FP/OR/IRRIG/40827/2019. As per guideline of Government of India in MoEF & CC, the User Agency shall identify equivalent of non forest area for raising Compensatory Afforestation. Accordingly 321.00 Ha of non forest land has been identified in village Lungajhar under Banspal Tahasil of Keonjhar District.

During verification of non forest CA land through DSS (Decision Support System) it is found that 169.00 Ha of non forest land coming under Medium Dense Forest (MDF) Category, that means only 152.00 Ha of non forest area is suitable for Compensatory Afforestation, where 1, 28, 400 number of seedlings can be accommodated. For raising balance 1, 81, 710 numbers of seedlings, the Divisional Forest Officer Keonjhar Forest Division has selected 421.704 Ha of Degraded Forest Land in 3 Reserved Forests (Ukhunda RF 224.675 Ha under Champua Range + Barabanka RF 110.749 Ha and Raghunathpur RF 86.280 Ha under Keonjhar Range) for raising balance seedlings.

The present scheme, therefore aims at preparation of site specific Compensatory Afforestation scheme over an area of 86.280 Ha in Raghunathpur RF in Keonjhar Range under Keonjhar Forest Division in ANR Model (600 seedlings / Ha) with a maintenance of ten years.

CHAPTER- II

DETAILS OF LAND IDENTIFIED FOR COMPENSATORY AFFORESTATION

A. - LAND IDENTIFICATION AND JOINT VERIFICATION OF THE IDENTIFIED SITE.

The site for Compensatory Afforestation has been identified in Raghunathpur RF under Keonjhar Range of Keonjhar Forest Division over an area of 86.280 Ha and has been jointly verified by the Range Officer, Keonjhar Range, and User Agency. The above identified land has been allotted in favor of Kanpur Irrigation Project, Govt. of Odisha.

B. INFORMATION ON NON-ENCROACHMENT AND NON-ENCUMBRANCE.

The Range Officer, Keonjhar has given certificate regarding non-encroachment and non-encumbrance on the identified Degraded Forest Land in Raghunathpur RF for raising Compensatory Afforestation.

C. - INFORMATION ON LAND STATUS.

The land scheduled and land status identified and allotted for Compensatory Afforestation is furnished hereunder:-

Name of the Range	Name of the Reserved Forest	Area (in Ha)
Keonjhar	Raghunathpur Reserved Forest	86.280

D.-SUITABILITY OF THE IDENTIFIED SITE FOR COMPENSATORY AFFORESTATION-

The identified land is free from encroachment and encumbrance.

The degraded forest land identified in Raghunathpur RF is in one patch. The area is mainly plain and some patches are undulating. The crop density is below 0.3

The topography of the area is mainly plain and undulating. However, good depth of sandy-loam soil is still available which is conducive for plantation with suitable soil conservation measures. The average temperature varies from 13.5° C minimum in December to 45°C maximum in May. The annual rainfall varies from 1200 mm to 1500 mm. The maximum rainfall is received during the rainy season from July to September. The identified land is therefore taken up for Compensatory Afforestation in ANR with gap plantation model over an area of 86.280 Ha with site specific SMC measures.

CHAPTER-III

DELINEATION OF PROPOSED AREA ON SUITABLE MAP

III (1) GPS COORDINATES AND GPS MAP OF THE COMPENSATORY AFFORESTATION SITE

The area has been demarcated through GPS survey showing Latitude and Longitude of each point and their chainage with bearing is also enclosed in the map prepared there on (Maps enclosed).

CHAPTER- IV

AGENCY RESPONSIBLE FOR COMPENSATORY AFFORESTATION

IV (1) AGENCY RESPONSIBLE FOR PLACEMENT OF FUNDS

The user agency shall provide funds for raising Compensatory Afforestation as per approved scheme.

IV (2) AGENCY RESPONSIBLE FOR EXECUTION OF COMPENSATORY AFFORESTATION

The Territorial Wing of the Forest Department i.e. Divisional Forest Officer, Keonjhar Division will be assigned with the task for execution of the Compensatory Afforestation.

CHAPTER- V

DETAILS OF WORK SCHEDULE PROPOSED FOR COMPENSATORY AFFORESTATION

A. PLANTING PLAN

Planting Plan reflects the species specific treatment of the identified site. Choice of species is based on the geo-morphology of the site, soil-texture, structure, fertility and depth, proneness of the site to water logging etc. Specific treatment of the site in terms of soil and moisture conservation intervention will be depicted in the treatment map. A treatment map will invariably be prepared for Species to be planted and treatments to be applied to the different patches shown in the treatment map and planting plan. This plan will be followed when actual planting is carried out.

Species to be planted:-

1. *Syziumcumini*(Jamu)
2. *Adina cardifolia*(Kuruma)
3. *Anogeissuslatifolia*(Dhaura)
4. *Accacia catechu* (Khair)
5. *Dalbergiasissoo*(Sissoo)
6. *Azadirrachtaindica*(Neem)
7. *Gmelinaarborea* (Gambar)
8. *Terminaliabelerica*(Bahada)
9. *Terminaliachebula*(Harida)
10. *Pongamiapinnata* (Karanja)
11. *Emblicaofficinalis* (Ainla)
12. *Tectona grandis* (Teak)

B. PRE-PLANTING OPERATION**B (I)-RAISING OF PLANTATION STOCK- NURSERY-**

Nursery will be raised @660 seedlings per ha including seedlings for 10% causality replacement.

B (II)-SURVEY, DEMARCATION & PILLAR POSTING, GPS READING WITH MAPPING

The planting area has been surveyed and demarcated with four feet height RCC pillars at inter visible distance (as per the direction of the Forest Range officer, Keonjhar Range) with GPS coordinates, forward and backward bearing, pillar No. and distance between pillars inscribed in it. A GPS map in the scale of 1:4000 has been prepared along with GPS co-ordinates, forward & backward bearing, pillar to pillar distance and pillar numbers reflected in the map. A sign board has been erected at a conspicuous location with name of the site, scheme, area etc. depicted on it.

B (III)-SITE PREPARATION AND SILVICULTURAL OPERATION INCLUDING CLEARANCE OF WEED, CLIMBER CUTTING, HIGH STUMP CUTTING, SINGLING OF SHOOTS

The clearing of the site involving removal of invasive weeds, bushes, climbers, high stumps and singling of shoots will be taken up preferably by the end of February and latest by the end of March. Pits of the dimension 30 x 30 x 30 cm. will be dug @600 per ha in the available gaps. Pitting work will be completed during March of the year during which plantation will be taken up.

C. PLANTING OPERATION

Planting of seedlings will be taken up in the month of July. The polythene covering of the balls of earth will be carefully removed before planting. Care will be taken to see that the ball of earth is not broken while doing so. The seedling with the ball of earth will then be placed firmly in the pit and buried at such a depth that the root collar is well below the surface of the soil. The soil around the plant will be well compacted as a final step so that there is a proper bond between the ball and the surrounding soil. The earth close to the collar will be slightly elevated so that rain water does not accumulate very close to the plant.

D. POST PLANTING OPERATION **D (1)-CASUALTY REPLACEMENT**

The entire area will be gone over in the same order as plantation was carried out and casualties, if any, will be replaced as soon as the main plantation operation is over.

D (2)-WEEDING AND SOIL WORKING

Regular and efficient weeding will start immediately after sprouting of the stumps is complete or after the seedlings have started generating new buds.

D (3)-MANURING AND INSECTICIDE APPLICATION

On degraded sites urban compost or farmyard manure, wherever available, will be added to the soil @200 grams per plant while refilling the pits. As regards chemical fertilizers, the fertilizers required and dosage @ 50 grams of patent mixtures like N.P.K. & Urea @ 70 grams per plant will be applied in two split doses one in August and the other in September.

D (4)-SOIL MOISTURE CONSERVATION MEASURES

Special Soil Moisture Conservation Measures will be taken up through construction of LBCD structures of dimension 3m span to the tune of 86 nos. over the entire plantation site. Staggered trenches of dimension 2 x 0.5 x 0.5 mtr will be done to the tune of 60 nos per hectare.

D (5)-PROTECTION AGAINST FIRE AND GRAZING

Fire line tracing will be ensured to protect the plantation from fire and watch & ward will be provided as per the approved norm to augment protection. It is proposed to protect CA plantation from grazing by domestic animals using Barbed wire fencing (7 Stands). The total length of such Barbed wire fencing (1 no. of patch) which comes to 5613 meters.

CHAPTER- VI

COST STRUCTURE OF PLANTATION, PROVISION OF FUNDS AND UTILIZATION

A. ESTIMATE OF COST FOR 1.00 HA UNDER ANR PLANTATION MODEL

COST NORM FOR AIDED NATURAL REGENERATION (ANR) @ 600 PLANTS PER HECTARE

WAGE RATE Rs. 308.00/ Manday

Sl. No.	Item of Work	Preferable Period of Execution	Labour in Mandays	Labour Cost Rs.	Material Cost Rs	Total Cost Rs
0TH YEAR						
1	Survey, Demarcation and Pillar Posting, GPS Reading with mapping.	Nov/Dec	2	616.00	0	616.00
2	Site Preparation	Nov/Dec	2	616.00	0	616.00
3	Silvicultural Operation including Clearance of weed, climber cutting, high stump cutting, singling of shoots etc.	Jan/Feb	5	1540.00	0	1540.00
4	Nursery cost (6 months old seedling)part @ Rs.13.10/-seedling (Rs.9.12 in 0th year + RS.3.98 in 1st year) for 660 seedling(600+60)	Jan-March	16.5	5082.00	1102.20	6184.20
5	Contingency and Unforeseen Expenditures		0	0	198.00	198.00
	SUB TOTAL		25.5	7854.00	1300.20	9154.20
6	Monitoring & Supervision charge 5% of the total cost					457.71
	GRAND TOTAL		25.5	7854.00	1300.20	9611.91
1ST YEAR						
1	Nursery cost (6 months old seedling) balance @ Rs.3.98 for 660 seedlings	Apr-June	8	2464.00	242.80	2706.80
2	Pitting 30 cm cube size	Feb/Mar	18	5544.00	0	5544.00
3	Carriage and planting including casualty replacement	Jul/Aug	15	4620.00	0	4620.00
4	Complete weeding, soil working, manuring	Aug/Sep	18	5544.00	0	5544.00
5	Cost of Vermi compost @ 200 gms/plant @ Rs.20/-per kg=Rs.2400.00 and Granular Insecticides 5gms/plant @Rs.80/-per kg.=240.00	Aug/Sep	0	0	2640.00	2640.00
6	Cost of Chemical fertiliser (a)Urea 70 gms/plant in two subsequent doses @ Rs.6/-per kg=Rs.252.00 (b)NPK 50 gms/plant @ Rs.24/-per kg =Rs.720.00 as basal dose	Jul/Aug	0	0	972.00	972.00
7	Fire line Tracing and inspection path	Feb/Mar	3	924.00	0	924.00
8	Silvicultural Operation involving clearance of weeds, cutting of climbers, singling of shoots etc.	Sep/Oct	15	4620.00	0	4620.00
9	Soil Conservation Measures (Staggered trenches of dimension 2 m x 0.5 m x 0.5 m @ 60 nos per ha) or its equivalent	Sep/Oct	20	6160.00	0	6160.00
10	Watch & ward	Aug-Mar	7	2156.00	0	2156.00
11	Contingency and Unforeseen Expenditures		0	0	353.00	353.00
	SUB TOTAL		104	32032.00	4207.80	36239.80
12	Monitoring & Supervision charge 5% of the total cost					1811.99

	GRAND TOTAL		104	32032.00	4207.80	38051.79
2ND YEAR						
1	Casualty Replacement including cost of seedling, carriage and planting	Jul/Aug	3	924.00	786.00	1710.00
2	Complete weeding and cultural operations	Sep/Oct	6	1848.00	0	1848.00
3	Soil working and manuring	Sep/Oct	6	1848.00	0	1848.00
4	Cost of Fertiliser and insecticide (a) Vermi compost 200 gms/plant @ Rs.20/- per kg=Rs.2400.00 (b) Granular Insecticides 5 gms /plant for 60 plants 300 gms @ Rs.80/-per kg=Rs.24.00	Sep/Oct	0	0	2424.00	2424.00
5	Fire line Tracing and Inspection Path	Feb/Mar	1	308.00	0	308.00
6	Soil Conservation Measures (Renovation of staggered trenches etc)	Sep/Oct	8	2464.00	0	2464.00
7	Watch & Ward (Whole year)	Apr-Mar	7	2156.00	0	2156.00
8	Contingency and Unforeseen Expenditures		0	0	193.00	193.00
	SUB TOTAL		31	9548.00	3403.00	12951.00
9	Monitoring & Supervision charge 5% of the total cost					647.55
	GRAND TOTAL		31	9548.00	3403.00	13598.55
3RD YEAR						
1	Complete weeding and cultural operations	Aug/Sep	3	924.00	0	924.00
2	Soil working	Aug/Sep	3	924.00	0	924.00
3	Fire line Tracing and Inspection Path	Feb/Mar	1	308.00	0	308.00
4	Watch & ward (Whole year)	Apr-Mar	7	2156.00	0	2156.00
	SUB TOTAL		14	4312.00	0	4312.00
5	Monitoring & Supervision charge 5% of the total cost					215.60
	GRAND TOTAL		14	4312.00	0	4527.60
4TH YEAR						
1	Fire line Tracing and Inspection Path	Feb/Mar	1	308.00	0	308.00
2	Watch & Ward and cultural operations	Apr-Mar	2	616.00	0	616.00
	SUB TOTAL		3	924.00	0	924.00
3	Monitoring & Supervision charge 5% of the total cost					46.20
	GRAND TOTAL		3	924.00	0	970.20
5TH YEAR						
1	Fire line Tracing and Inspection Path	Feb/Mar	1	308.00	0	308.00
2	Watch & Ward and cultural operations	Apr-Mar	2	616.00	0	616.00
	SUB TOTAL		3	924.00	0	924.00
3	Monitoring & Supervision charge 5% of the total cost					46.20
	GRAND TOTAL		3	924.00	0	970.20
6TH YEAR						
1	Fire line Tracing and Inspection Path	Feb/Mar	1	308.00	0	308.00
2	Watch & Ward and cultural operations	Apr-Mar	2	616.00	0	616.00
	SUB TOTAL		3	924.00	0	924.00
3	Monitoring & Supervision charge 5% of the total cost					46.20
	GRAND TOTAL		3	924.00	0	970.20

7TH YEAR						
1	Fire line Tracing and Inspection Path	Feb/Mar	1	308.00	0	308.00
2	Watch & Ward and cultural operations	Apr-Mar	2	616.00	0	616.00
	SUB TOTAL		3	924.00	0	924.00
3	Monitoring & Supervision charge 5% of the total cost					46.20
	GRAND TOTAL		3	924.00	0	970.20
8TH YEAR						
1	Fire line Tracing and Inspection Path	Feb/Mar	1	308.00	0	308.00
2	Watch & Ward and cultural operations	Apr-Mar	2	616.00	0	616.00
	SUB TOTAL		3	924.00	0	924.00
3	Monitoring & Supervision charge 5% of the total cost					46.20
	GRAND TOTAL		3	924.00	0	970.20
9TH YEAR						
1	Fire line Tracing and Inspection Path	Feb/Mar	1	308.00	0	308.00
2	Watch & Ward and cultural operations	Apr-Mar	2	616.00	0	616.00
	SUB TOTAL		3	924.00	0	924.00
3	Monitoring & Supervision charge 5% of the total cost					46.20
	GRAND TOTAL		3	924.00	0	970.20
10TH YEAR						
1	Fire line Tracing and Inspection Path	Feb/Mar	1	308.00	0	308.00
2	Watch & Ward and cultural operations	Apr-Mar	2	616.00	0	616.00
	SUB TOTAL		3	924.00	0	924.00
3	Monitoring & Supervision charge 5% of the total cost					46.20
	GRAND TOTAL		3	924.00	0	970.20

ABSTRACT						
Sl. No.	Item of work	Person Days	Labour Cost @ Rs. 308.00/-per day	Material Cost (Rs.)	Monitoring & Supervision charge 5% of the total cost	Total Cost(Rs)
1	0th Year Maintenance	25.5	7854.00	1300.20	457.71	9611.91
2	1th Year Maintenance	104	32032.00	4207.80	1811.99	38051.79
3	2th Year Maintenance	31	9548.00	3403.00	647.55	13598.55
4	3th Year Maintenance	14	4312.00	0	215.60	4527.60
5	4th Year Maintenance	3	924.00	0	46.20	970.20
6	5th Year Maintenance	3	924.00	0	46.20	970.20
7	6th Year Maintenance	3	924.00	0	46.20	970.20
8	7th Year Maintenance	3	924.00	0	46.20	970.20
9	8th Year Maintenance	3	924.00	0	46.20	970.20
10	9th Year Maintenance	3	924.00	0	46.20	970.20
11	10th Year Maintenance	3	924.00	0	46.20	970.20
	TOTAL	195.5	60214.00	8911.00	3456.25	72581.25

ADDITIONAL COST PROPOSED

1	SMC measures- LBCD structure @Rs. 8725.39/- for 86 structures.	750383.54
2	Barbed wire fencing @Rs.684/- per meter over 5613 meter	3839292.00
	Total	4589675.54

TOTAL COST OF THE PROJECT

S. No	Description	Amount in Rs.
1	ANR Plantation over 86.280 Ha @ Rs. 72, 581.25/- Per Ha (600 plants Per Ha)	6262310.25
2	Total additional cost	4589675.54
	Sub Total	10851985.79
3	15% of the total plantation cost towards Entry Point Activity/ Incentiv to VSS etc.	1627797.86
	Total	12479783.65
4	Add 20% escalation	2495956.73
	Grand Total	14975740.39 OR 1,49,76,000.00

(Rupees one crore forty-nine lakh seventy-six thousand only)

PROVISION OF FUNDS AND FUND UTILIZATION

Rs. 1,49,76,000.00 (Rupees one crore forty-nine lakh seventy-six thousand only) shall be deposited by the user agency (Executive Engineer, Jhumpura Canal Division) on approval of the scheme to the Ad-hoc CAMPA Account and the funds will be utilized for raising of Compensatory Afforestation by the Divisional Forest Officer, Keonjhar Forest Division on allotment by the Principal Chief Conservator of Forest, Odisha, Bhubaneswar.


Divisional Forest Officer,
Keonjhar Division

CHAPTER-VII

DETAILS OF PROPOSED MONITORING MECHANISM

Compensatory Afforestation will be taken up in the identified site by the Range Officer, Keonjhar Forest Range of Keonjhar Division. The Range Forest Officer, Keonjhar Forest Range will undertake field checks of the works undertaken at the identified site and will be cross checked by the Asst. Conservator of Forests, (Affn.) and Divisional Forest Officer, Keonjhar Forest Division. GPS Co-ordinates along with other required informations of Compensatory Afforestation will be uploaded in the e-Greenwatch Portal of NIC, MOEF & CC, and Govt. of India for the purpose of online monitoring. Annual progress of plantation involving growth of planted seedling, survival percentage etc. will be monitored and recorded in the plantation journal by the field staffs of Keonjhar Forest Range and reported to the Divisional Forest Officer for necessary action. The same thing will be reported to the Regional Chief Conservator of Forests, Rourkela Circle and Addl. Chief Conservator of Forests (PP&A), O/o the Pr. Chief Conservator of Forests, Odisha, Bhubaneswar and necessary corrective measures will be followed if required so.



**Divisional Forest Officer,
Keonjhar Division**

**SCHEME FOR COMPENSATORY AFFORESTATION
OVER AN AREA OF 224.675 HA IN DEGRADED
FOREST LAND IDENTIFIED IN UKHUNDA
RESERVED FOREST OF CHAMPUA RANGE IN
KEONJHAR FOREST DIVISION.**

**FOR DIVERSION OF 310.110 HA
OF FOREST LAND FOR THE PURPOSE OF
KANPUR (CANAL SYSTEM) IRRIGATION
PROJECT**

IN

KEONJHAR FOREST DIVISION

Prepared by

DIVISIONAL FOREST OFFICER

KEONJHAR FOREST DIVISION

ELEMENTS OF THE SCHEME FOR COMPENSATORY AFFORESTATION

CHAPTER	PARTICULARS	PAGE NUMBER
I	BRIEF NOTE ON THE PROPOSED FOREST DIVERSION PROPOSAL	03-04
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V	DETAILS OF WORK SCHEDULE PROPOSED FOR COMPENSATORY AFFORESTATION	06-08
VI	COST STRUCTURE OF PLANTATION, PROVISION OF FUNDS AND UTILIZATION	09-12
VII	DETAILS OF PROPOSED MONITORING MECHANISM	13

CHAPTER- I

BRIEF NOTE ON THE PROPOSED FOREST DIVERSION PROPOSAL

Water Resources Department (Irrigation wing) Govt. of Odisha has constructed the Dam/Reservoir near village Basudevpur in Keonjhar Forest Division under Keonjhar District at Latitude 22°02'30"N & Longitude 85°30'47"E in the upstream side of the Baitarani bridge across the river Baitarani and for that Diversion Proposal has been obtained for MoEF & CC, GOI vide letter No. B-261/88-FC, dated 4.7.1989.

The present proposal is for Diversion of 310.110 Ha of Forest land out of 1669.986 Ha of total land required for Canal System of Kanupur Irrigation Project under Keonjhar Forest Division in Keonjhar District. This Project is one of the most beneficial Major Irrigation project in the State of Odisha. The Right Main Canal starts from the right side of the dam near Basudevpur village and cover 244 Nos of villages in Barbil, Champua, Jhumpura, Keonjhar Sadar and Patna Tahasils of Keonjhar District. The length of the main canal is 78.21 Kms and there are minor, sub minor, canals, distributaries in canal system to facilitate annual irrigation 29578 Ha CCA out of 39437 Ha of GCA with Khariff Irrigation (Rainy Season) 24555 Ha, Rabi Irrigation (November – March) 17154 Ha and 6000 Ha during summer (Summer Months) along with 260 Ft³/sec per year constant municipality and industry supplies as an ultimate aim of the project. This project will also create 2.25 MW of Hydra Power to meet the demand of the neighbouring villages. The project area comes under Barbil, Champua, Jhumpura, Keonjhar Sadar & Patna Tahasil of Keonjhar District, which is a drought prone area, chronically affected with frequent bouts of draught. The agricultural yield in this area completely depends on the natural rain fall, which is inadequate, untimely and unevenly distributed. Consequently, the agricultural production, which is the only source of income of the locality, is much below the average level. As such financial status of the people in this area is very low. So the project is absolutely necessary to improve the agricultural output and economy of the region to mitigate the misery of a sizeable population, mostly belonging to schedule caste, schedule tribe and backward class.

Other objectives are to provide an equitable irrigation supply to the cultivators while simultaneously providing municipal and industrial water supply to the proposed steel plants and thereby develop confidence in these area amongst the users for availability of water and its management. The proposed industries are expected to draw water from the head works of the sub-project. The operations and maintenance of the canal network of the sub project from outlet levels upto Distributary levels is to be handed over to various Farmers Irrigation Associates/Co-operative societies so as to imbibe sense of ownership of the irrigation system and consequently increase the agricultural production.

There is only one Right Main Canal starting from the right side of the Dam axis near village Basudevpur under Keonjhar District. The Right Main Canal covers 244 villages with Distributaries, Minor Canals, Sub Minor Canals, and outlets for Irrigation. The Project is located about 53 Kms for Keonjhar District Head Quarter and about 288 KMs from State Capital Bhubaneswar. The referral Topo sheets are 73F/12, 73G/9 & 73G/13.

The command area of the project is undulated and the natural ground slope is defined with developed drainage naturals draining water towards the main stream. The Gross command area of

the project is 39437 Ha. The Cultivable command area is 29578 Ha with Khariff Irrigation 24555 Ha and Rabi Irrigation 17154 Ha and 6000 ha in summer irrigation along with 260ft³/sec per year constant municipality and industry supply. The command area lies between Latitude 21°49'15"N to 22°05'45"E and Longitude 85°31'45"E to 85°49'00"E. the command area covers 244 no of villages under Barbil, Champua, Jhumpura, Keonjhar Sadar & Patna Tahasils of Keonjhar District.

Since the project involves Forest land for non forest use the User Agency has submitted Diversion Proposal over an area of 310.110 Ha under section 2 of FCA 1980 vide proposal no. FP/OR/IRRIG/40827/2019. As per guideline of Government of India in MoEF & CC, the User Agency shall identify equivalent of non forest area for raising Compensatory Afforestation. Accordingly 321.00 Ha of non forest land has been identified in village Lungajhar under Banspal Tahasil of Keonjhar District.

During verification of non forest CA land through DSS (Decision Support System) it is found that 169.00 Ha of non forest land coming under Medium Dense Forest (MDF) Category, that means only 152.00 Ha of non forest area is suitable for Compensatory Afforestation, where 1, 28, 400 number of seedlings can be accommodated. For raising balance 1, 81, 710 numbers of seedlings, the Divisional Forest Officer Keonjhar Forest Division has selected 421.704 Ha of Degraded Forest Land in 3 Reserved Forests (Ukhunda RF 224.675 Ha under Champua Range + Barabanka RF 110.749 Ha and Raghunathpur RF 86.280 Ha under Keonjhar Range) for raising balance seedlings.

The present scheme, therefore aims at preparation of site specific Compensatory Afforestation scheme over an area of 224.675 Ha in Ukhunda RF in Champua Range under Keonjhar Forest Division in ANR Model (400 seedlings / Ha) with a maintenance of ten years.

CHAPTER- II

DETAILS OF LAND IDENTIFIED FOR COMPENSATORY AFFORESTATION

A. - LAND IDENTIFICATION AND JOINT VERIFICATION OF THE IDENTIFIED SITE.

The site for Compensatory Afforestation has been identified in Ukhunda RF under Champua Range of Keonjhar Forest Division over an area of 224.675 Ha and has been jointly verified by the Range Officer, Champua Range, and User Agency. The above identified land has been allotted in favor of Kanpur Irrigation Project, Govt. of Odisha.

B. INFORMATION ON NON-ENCROACHMENT AND NON-ENCUMBRANCE.

The Range Officer, Champua has given certificate regarding non-encroachment and non-encumbrance on the identified Degraded Forest Land in Ukhunda RF for raising Compensatory Afforestation.

C. - INFORMATION ON LAND STATUS.

The land scheduled and land status identified and allotted for Compensatory Afforestation is furnished hereunder:-

Name of the Range	Name of the Reserved Forest	Area(in Ha)
Champua	Ukhunda Reserved Forest	224.675

D.-SUITABILITY OF THE IDENTIFIED SITE FOR COMPENSATORY AFFORESTATION-

The identified land is free from encroachment and encumbrance.

The degraded forest land identified in Ukhunda RF is in two patches. The area is mainly plain and some patches are undulating. The crop density is below 0.4

The topography of the area is mainly plain and undulating. However, good depth of sandy-loam soil is still available which is conducive for plantation with suitable soil conservation measures. The average temperature varies from 13.5° C minimum in December to 45°C maximum in May. The annual rainfall varies from 1200 mm to 1500 mm. The maximum rainfall is received during the rainy season from July to September. The identified land is therefore taken up for Compensatory Afforestation in ANR with gap plantation model over an area of 224.675 Ha with site specific SMC measures.

CHAPTER-III

DELINEATION OF PROPOSED AREA ON SUITABLE MAP

III (1) GPS COORDINATES AND GPS MAP OF THE COMPENSATORY AFFORESTATION SITE

The area has been demarcated through GPS survey showing Latitude and Longitude of each point and their chainage with bearing is also enclosed in the map prepared there on (Maps enclosed).

CHAPTER- IV

AGENCY RESPONSIBLE FOR COMPENSATORY AFFORESTATION

IV (1) AGENCY RESPONSIBLE FOR PLACEMENT OF FUNDS

The user agency shall provide funds for raising Compensatory Afforestation as per approved scheme.

IV (2) AGENCY RESPONSIBLE FOR EXECUTION OF COMPENSATORY AFFORESTATION

The Territorial Wing of the Forest Department i.e. Divisional Forest Officer, Keojhar Division will be assigned with the task for execution of the Compensatory Afforestation.

CHAPTER- V

DETAILS OF WORK SCHEDULE PROPOSED FOR COMPENSATORY AFFORESTATION

A. PLANTING PLAN

Planting Plan reflects the species specific treatment of the identified site. Choice of species is based on the geo-morphology of the site, soil-texture, structure, fertility and depth, proneness of the site to water logging etc. Specific treatment of the site in terms of soil and moisture conservation intervention will be depicted in the treatment map. A treatment map will invariably be prepared for Species to be planted and treatments to be applied to the different patches shown in the treatment map and planting plan. This plan will be followed when actual planting is carried out.

Species to be planted:-

1. *Syzgiumcumini*(Jamu)
2. *Adina cardifolia*(Kuruma)
3. *Anogeissuslatifolia*(Dhaura)
4. *Accacia catechu* (Khair)
5. *Dalbergiasissoo*(Sissoo)
6. *Azadirrachtaindica*(Neem)
7. *Gmelinaarborea* (Gambar)
8. *Terminaliabelerica*(Bahada)
9. *Terminaliachebula*(Harida)
10. *Pongamiapinnata* (Karanja)
11. *Emblicaofficinalis* (Ainla)

B. PRE-PLANTING OPERATION**B (I)-RAISING OF PLANTATION STOCK- NURSERY-**

Nursery will be raised @440 seedlings per ha including seedlings for 10% causality replacement.

B (II)-SURVEY, DEMARCATION & PILLAR POSTING, GPS READING WITH MAPPING

The planting area has been surveyed and demarcated with four feet height RCC pillars at inter visible distance (as per the direction of the Forest Range officer, Champua Range) with GPS coordinates, forward and backward bearing, pillar No. and distance between pillars inscribed in it. A GPS map in the scale of 1:8000 has been prepared along with GPS co-ordinates, forward & backward bearing, pillar to pillar distance and pillar numbers reflected in the map. A sign board has been erected at a conspicuous location with name of the site, scheme, area etc. depicted on it.

B (III)-SITE PREPARATION AND SILVICULTURAL OPERATION INCLUDING CLEARANCE OF WEED, CLIMBER CUTTING, HIGH STUMP CUTTING, SINGLING OF SHOOTS

The clearing of the site involving removal of invasive weeds, bushes, climbers, high stumps and singling of shoots will be taken up preferably by the end of February and latest by the end of March. Pits of the dimension 30 x 30 x 30 cm. will be dug @400 per ha in the available gaps. Pitting work will be completed during March of the year during which plantation will be taken up.

C. PLANTING OPERATION

Planting of seedlings will be taken up in the month of July. The polythene covering of the balls of earth will be carefully removed before planting. Care will be taken to see that the ball of earth is not broken while doing so. The seedling with the ball of earth will then be placed firmly in the pit and buried at such a depth that the root collar is well below the surface of the soil. The soil around the plant will be well compacted as a final step so that there is a proper bond between the ball and the surrounding soil. The earth close to the collar will be slightly elevated so that rain water does not accumulate very close to the plant.

D. POST PLANTING OPERATION **D (1)-CASUALTY REPLACEMENT**

The entire area will be gone over in the same order as plantation was carried out and casualties, if any, will be replaced as soon as the main plantation operation is over.

D (2)-WEEDING AND SOIL WORKING

Regular and efficient weeding will start immediately after sprouting of the stumps is complete or after the seedlings have started generating new buds.

D (3)-MANURING AND INSECTICIDE APPLICATION

On degraded sites urban compost or farmyard manure, wherever available, will be added to the soil @200 grams per plant while refilling the pits. As regards chemical fertilizers, the fertilizers required and dosage @ 50 grams of patent mixtures like N.P.K. & Urea @ 70 grams per plant will be applied in two split doses one in August and the other in September.

D (4)-SOIL MOISTURE CONSERVATION MEASURES

Special Soil Moisture Conservation Measures will be taken up through construction of LBCD structures of dimension 3m span to the tune of 224 nos. over the entire plantation site. Staggered trenches of dimension 2 x 0.5 x .5 mtr will be done to the tune of 60 nos per hectare.

D (5)-PROTECTION AGAINST FIRE AND GRAZING

Fire line tracing will be ensured to protect the plantation from fire and watch & ward will be provided as per the approved norm to augment protection. It is proposed to protect CA plantation from grazing by domestic animals using Barbed wire fencing (7 Stands). The total length of such Barbed wire fencing (5 no. of blank patches) which comes to 13120 meters.

CHAPTER- VI

COST STRUCTURE OF PLANTATION, PROVISION OF FUNDS AND UTILIZATION

A. ESTIMATE OF COST FOR 1.00 HA UNDER ANR PLANTATION MODEL

COST NORM FOR AIDED NATURAL REGENERATION (ANR) @ 400 PLANTS PER HECTARE

WAGE RATE Rs. 308.00/manday

Sl. No.	Item of Work	Preferable Period of Execution	Labour in Mandays	Labour Cost in Rs.	Material Cost in Rs.	Total Cost in Rs.
0TH YEAR (ADVANCE WORK) PRE-PLANNING OPERATION						
1	Survey, Demarcation and Pillar Posting, GPS Reading with mapping.	Nov/Dec	2	616.00	0	616.00
2	Site Preparation	Nov/Dec	2	616.00	0	616.00
3	Silvicultural Operation including Clearance of weed, climber cutting, high stump cutting, singling of shoots etc.	Jan/Feb	5	1540.00	0	1540.00
4	Nursery cost (6 months old seedling)part @ Rs.13.09/-seedling (Rs.9.12 in 0th year + RS.3.97 in 1st year) for 440 seedlings (400+40)	Jan-March	11	3388.00	735.00	4123.00
5	Contingency and Unforeseen Expenditures		0	0	165.00	165.00
	SUB TOTAL		20	6160.00	900.00	7060.00
6	Monitoring & Supervision charge 5% of the total cost		0	0	0	353.00
	GRAND TOTAL		20	6160.00	900.00	7413.00
1ST YEAR OPERATION						
1	Nursery cost (6 months old seedling) balance @ Rs.3.97 for 440 seedlings	Apr-June	5	1540.00	255.00	1795.00
2	Pitting 30 cm cube size	Feb/Mar	12	3696.00	0	3696.00
3	Carriage and planting including casualty replacement	Jul/Aug	10	3080.00	0	3080.00
4	Complete weeding, soil working, manuring	Aug/Sep	12	3696.00	0	3696.00
5	Cost of Vermi compost @ 200 gms/plant @ Rs.20/-per kg.=Rs.1600.00 and Granular Insecticides 5 gms/plant @ Rs.80/per kg.=Rs.160.00	Aug/Sep	0	0	1760.00	1760.00
6	Cost of Chemical fertilizer (a)Urea 70 gms/plant in two subsequent doses @ Rs.6/-per kg=Rs.168.00 (b)NPK 50 gms/plant @ Rs.24/-per kg =Rs.480.00 as basal dose	Jul/Aug	0	0	648.00	648.00
7	Silvicultural Operation involving clearance of weeds, cutting of climbers, singling of shoots etc.	Sep/Oct	15	4620.00	0	4620.00
8	Soil Conservation Measures (Staggered trenches of dimension 2 m *0.5m *0.5m @60 nos per ha) or its equivalent.	Sep/Oct	20	6160.00	0	6160.00
9	Fire line Tracing and inspection Path	Feb/Mar	3	924.00	0	924.00
10	Watch & ward	Aug-Mar	7	2156.00	0	2156.00
11	Contingency and Unforeseen Expenditures		0	0	319.00	319.00
	SUB TOTAL		84	25872.00	2982.00	28854.00
12	Monitoring & Supervision charge 5% of the					1442.70

	total cost					
	GRAND TOTAL		84	25872.00	2982.00	30296.70

2ND YAER OPERATION						
1	Casualty Replacement including cost of seedling, carriage and planting	Jul/Aug	2	616.00	497.20	1113.20
2	Complete weeding and cultural operations	Sep/Oct	4	1232.00	0	1232.00
3	Soil working and manuring	Sep/Oct	4	1232.00	0	1232.00
4	Cost of Fertilizer and insecticide (a) Vermicompost 200 gms/plant @ Rs.20/- per kg=Rs.1600.00 (b) Granular Insecticides 5 gms /plant for 40 plants 200 gms @ Rs.80/-per kg=Rs.16.00	Sep/Oct	0	0	1616.00	1616.00
5	Fire line Tracing and Inspection path	Feb/Mar	1	308.00	0	308.00
6	Soil Conservation Measures (Renovation of staggered trenches etc)	Sep/Oct	8	2464.00	0	2464.00
7	Watch & Ward (Whole year)	Apr-Mar	7	2156.00	0	2156.00
8	Contingency and Unforeseen Expenditures		0	0	362.00	362.00
	SUB TOTAL		26	8008.00	2475.20	10483.20
9	Monitoring & Supervision charge 5% of the total cost					524.16
	GRAND TOTAL		26	8008.00	2475.20	11007.36
3RD YEAR OPERATION						
1	Complete weeding and cultural operations	Aug/Sep	2	616.00	0	616.00
2	Soil working	Aug/Sep	2	616.00	0	616.00
3	Fire line Tracing and Inspection Path	Feb/Mar	1	308.00	0	308.00
4	Watch & ward (Whole year)	Apr-Mar	7	2156.00	0	2156.00
	SUB TOTAL		12	3696.00	0	3696.00
6	Monitoring & Supervision charge 5% of the total cost					184.80
	GRAND TOTAL		12	3696.00	0	3880.80
4TH YEAR OPERATION						
1	Fire line Tracing and Inspection Path	Feb/Mar	1	308.00	0	308.00
2	Watch & Ward and cultural operations	Apr-Mar	2	616.00	0	616.00
	SUB TOTAL		3	924.00	0	924.00
3	Monitoring & Supervision charge 5% of the total cost					46.20
	GRAND TOTAL		3	924.00	0	970.20
5TH YEAR OPERATION						
1	Fire line Tracing and Inspection Path	Feb/Mar	1	308.00	0	308.00
2	Watch & Ward and cultural operations	Apr-Mar	2	616.00	0	616.00
	SUB TOTAL		3	924.00	0	924.00
3	Monitoring & Supervision charge 5% of the total cost					46.20
	GRAND TOTAL		3	924.00	0	970.20
6TH YEAR OPERATION						
1	Fire line Tracing and Inspection Path	Feb/Mar	1	308.00	0	308.00
2	Watch & Ward and cultural operations	Apr-Mar	2	616.00	0	616.00
	SUB TOTAL		3	924.00	0	924.00
3	Monitoring & Supervision charge 5% of the total cost					46.20
	GRAND TOTAL		3	924.00	0	970.20
7TH YEAR OPERATION						
1	Fire line Tracing and Inspection Path	Feb/Mar	1	308.00	0	308.00
2	Watch & Ward and cultural operations	Apr-Mar	2	616.00	0	616.00

	SUB TOTAL		3	924.00	0	924.00
3	Monitoring & Supervision charge 5% of the total cost					46.20
	GRAND TOTAL		3	924.00	0	970.20
8TH YEAR OPERATION						
1	Fire line Tracing and Inspection Path	Feb/Mar	1	308.00	0	308.00
2	Watch & Ward and cultural operations	Apr-Mar	2	616.00	0	616.00
	SUB TOTAL		3	924.00	0	924.00
3	Monitoring & Supervision charge 5% of the total cost					46.20
	GRAND TOTAL		3	924.00	0	970.20
9TH YEAR OPERATION						
1	Fire line Tracing and Inspection Path	Feb/Mar	1	308.00	0	308.00
2	Watch & Ward and cultural operations	Apr-Mar	2	616.00	0	616.00
	SUB TOTAL		3	924.00	0	924.00
3	Monitoring & Supervision charge 5% of the total cost					46.20
	GRAND TOTAL		3	924.00	0	970.20
10TH YEAR OPERATION						
1	Fire line Tracing and Inspection Path	Feb/Mar	1	308.00	0	308.00
2	Watch & Ward and cultural operations	Apr-Mar	2	616.00	0	616.00
	SUB TOTAL		3	924.00	0	924.00
3	Monitoring & Supervision charge 5% of the total cost					46.20
	GRAND TOTAL		3	924.00	0	970.20

ABSTRACT						
Sl. No.	Item of Work	No. of Person Day	Labour cost @ Rs 308.00/per day	Material Cost in (Rs)	Monitoring & Supervision charge 5% of the total cost	Total Cost in (Rs)
1	0th Year Operation	20	6160.00	900.00	353.00	7413.00
2	1st Year Operation	84	25872.00	2982.00	1442.70	30296.70
3	2nd Year Operation	26	8008.00	2475.20	524.16	11007.36
4	3rd Year Operation	12	3696.00	0	184.80	3880.80
5	4th Year Operation	3	924.00	0	46.20	970.20
6	5th Year Operation	3	924.00	0	46.20	970.20
7	6th Year Operation	3	924.00	0	46.20	970.20
8	7th Year Operation	3	924.00	0	46.20	970.20
9	8th Year Operation	3	924.00	0	46.20	970.20
10	9th Year Operation	3	924.00	0	46.20	970.20
11	10th Year Operation	3	924.00	0	46.20	970.20
	TOTAL	163	50204.00	6357.20	2828.06	59389.26

ADDITIONAL COST PROPOSED

1	SMC measures- LBCD structure @ Rs.8725.39/- for 224 structures.	1954487.36
2	Barbed wire fencing @Rs.684/- per meter over 13120 meter	8974080.00
	Total	10928567.36

TOTAL COST OF THE PROJECT

S. No	Description	Amount in Rs.
1	ANR Plantation over 224.675 Ha @ Rs. 59, 389.26/- Per Ha (400 plants Per Ha)	13343281.99
2	Total additional cost	10928567.36
	Sub Total	24271849.35
3	15% of the total plantation cost towards Entry Point Activity/ Incentive to VSS etc.	3640777.40
	Total	27912626.75
4	Add 20% escalation	5582525.35
	Grand Total	33495152.10 OR 3,34,95,200.00

(Rupees three crore thirty-four lakh ninety-five thousand two hundred only)

PROVISION OF FUNDS AND FUND UTILIZATION

Rs. 3,34,95,200.00 (Rupees three crore thirty-four lakh ninety-five thousand two hundred only) shall be deposited by the user agency (Executive Engineer, Jhumpura Canal Division) on approval of the scheme to the Ad-hoc CAMPA Account and the funds will be utilized for raising of Compensatory Afforestation by the Divisional Forest Officer, Keonjhar Forest Division on allotment by the Principal Chief Conservator of Forest, Odisha, Bhubaneswar.


Divisional Forest Officer,
Keonjhar Division

CHAPTER-VII

DETAILS OF PROPOSED MONITORING MECHABISM

Compensatory Afforestation will be taken up in the identified site by the Range Officer, Champua Forest Range of Keonjhar Division. The Range Forest Officer, Champua Forest Range will undertake field checks of the works undertaken at the identified site and will be cross checked by the Asst. Conservator of Forests, (Affn.) and Divisional Forest Officer, Keonjhar Forest Division. GPS Co-ordinates along with other required informations of Compensatory Afforestation will be uploaded in the e-Greenwatch Portal of NIC, MOEF & CC, and Govt. of India for the purpose of online monitoring. Annual progress of plantation involving growth of planted seedling, survival percentage etc. will be monitored and recorded in the plantation journal by the field staffs of Champua Forest Range and reported to the Divisional Forest Officer for necessary action. The same thing will be reported to the Regional Chief Conservator of Forests, Rourkela Circle and Addl. Chief Conservator of Forests (PP&A), O/o the Pr. Chief Conservator of Forests, Odisha, Bhubaneswar and necessary corrective measures will be followed if required so.



**Divisional Forest Officer,
Keonjhar Division**

