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Glimpses

SUCCESS STORIES OF CAMPA 2022-24

National Compensatory Afforestation Fund Management and Planning Authority
Ministry of Environment, Forest and Climate Change
Government of India

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Government of India

मंत्री
पर्यावरण, वन एवं जलवायु परिवर्तन
भारत सरकार

सत्यमेव जयते

भूपेन्द्र यादव
BHUPENDER YADAV

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MINISTER
ENVIRONMENT, FOREST AND CLIMATE CHANGE
GOVERNMENT OF INDIA

MESSAGE

National Compensatory Afforestation Fund Management and Planning Authority accords highest priority for compensating the loss of forest and ecosystem services leading to increase in forest cover, enrichment of biodiversity and holistic ecological restoration of degraded forests through innovative measures and approaches with people's participation.

The **Glimpses of Success Stories in CAMPA 2022-24** is an effort to highlight different examples of good works carried out in States and Union Territories. Gujarat's pioneering efforts in MISHTI scheme for Mangrove restoration, Maharashtra's voluntary village relocation for habitat improvement in protected areas, successful stabilization of mountain slopes along Srinagar-Jammu National Highway in Jammu & Kashmir, Meghalaya's afforestation initiatives on the Sohra Plateau and Model Forest Protection measures in Chhattisgarh are some of the best examples of eco-restoration Projects. These efforts not only enhance forest cover but also foster sustainable livelihoods and climate resilience of the local community.

I appreciate the efforts of all concerned field officers whose continuous efforts are driving ecological restoration and balance. It is the combined efforts of the field staff and the local community as well as Civil Society Organizations that will contribute towards fulfilling our obligations towards the conservation of forests, ecology and the environment.

(Bhupender Yadav)

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एक कदम स्वच्छता की ओर

सत्यमेव जयते

कीर्तवर्धन सिंह
KIRTI VARDHAN SINGH

राज्य मंत्री
पर्यावरण, वन एवं जलवायु परिवर्तन
विदेश मंत्रालय
भारत सरकार
MINISTER OF STATE
ENVIRONMENT, FOREST AND CLIMATE CHANGE
EXTERNAL AFFAIRS
GOVERNMENT OF INDIA

Message

The Ministry is committed for ensuring ecological security of the country and making continuous efforts with the participation of States for protection, conservation and development of our forest and wildlife.

National CAMPA along with States' CAMPA is focusing on improvement of quality and biodiversity of forests and Wildlife Habitat through Compensatory Afforestation, Assisted Natural Regeneration, forest landscape restoration, Soil Water Conservation activities, forest fire prevention and strengthening forest protection infrastructure. MISHTI Mission was launched in 2023 to safeguard India's vast coastline through conservation and development of mangrove forests in the coastal States.

CAMPA activities are strengthening our efforts towards sustainable development while addressing the challenges posed by climate change, loss of biodiversity and land degradation through innovative approaches and use of appropriate technologies. Some good works from the field are presented in "Glimpses of Success Story in CAMPA 2022-24", which will be useful for the readers and forest professionals.

I congratulate State Forest Departments and CAMPA Team for bringing out this publication.

(Kirti Vardhan Singh)

New Delhi
11 December, 2024

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लीना नन्दन
LEENA NANDAN

सत्यमेव जयते

सचिव
भारत सरकार
पर्यावरण, वन और जलवायु परिवर्तन मंत्रालय
SECRETARY
GOVERNMENT OF INDIA
MINISTRY OF ENVIRONMENT, FOREST
& CLIMATE CHANGE

MESSAGE

The Ministry of Environment, Forest and Climate Change has accorded high priority to the ecological restoration of degraded forests and conservation of biodiversity and wildlife. The efforts made in implementation of the Compensatory Afforestation Fund Act, 2016 in the States are yielding good results towards ensuring environmental sustainability and ecological security.

Various afforestation activities being carried out across the country have played a significant role in compensating the loss of forest land and ecosystem services. National CAMPA also supports major initiatives such as Mission MISHTI, Nagar Van Yojana and conservation of endangered wildlife species such as Great Indian Bustard, Dugong, Dolphins reintroduction of Cheetah. The adoption of Remote Sensing, IT and GIS technologies has notably enhanced monitoring for effective management of forest resources, apart from ensuring transparency.

The publication: "***Glimpses of success stories of CAMPA 2022-24***", gives a comprehensive overview of the multiple conservation efforts supported under CAMPA throughout the country.

(Leena Nandan)

Place: New Delhi
Date: December 9, 2024

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जितेंद्र कुमार
JITENDRA KUMAR

सत्यमेव जयते

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वन महानिदेशक एवं विशेष सचिव
भारत सरकार
पर्यावरण, वन एवं जलवायु परिवर्तन मंत्रालय
DIRECTOR GENERAL OF FORESTS & SPL. SECY.
GOVERNMENT OF INDIA
MINISTRY OF ENVIRONMENT FOREST AND
CLIMATE CHANGE

MESSAGE

The Compensatory Afforestation Fund Act, 2016 aims to compensate the loss of forest and ecosystem services when a forest area is diverted for non-forestry purpose as per the provisions of Van (Sanrakshan Evam Samvardhan) Adhiniyam, 1980.

National CAMPA is working with the concerned authorities in the States and Union Territories to increase the forest cover and also to improve the quality of the existing forests. Priority has been accorded to raising of high-quality seedlings for plantations on the identified sites.

Afforestation and forest conservation activities carried out under CAMPA, not only help in maintaining ecological balance, but also in creation of livelihood opportunities for the local people. The States and Union Territories have shown good progress in implementing CAMPA activities. Some of the good examples have been covered in this publication.

I appreciate the efforts of National CAMPA in bringing out this publication of success stories. Learning from the success stories will be useful for the frontline forest officers in planning and implementing various activities under CAMPA effectively.

09.12.2024

(Jitendra Kumar)

Place: New Delhi
Date: 9th December, 2024

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Preface

ABOUT THIS PUBLICATION...

The Compensatory Afforestation Fund Act, 2016 (CAF Act, 2016), aims to mitigate loss of forest and ecosystem services due to diversion of forest land for non-forestry purposes. The States take up compensatory afforestation, assisted natural regeneration, biodiversity management, soil and moisture conservation and ecological restoration activities for improvement in the quality and productivity of forests also helping in biodiversity conservation.

National CAMPA together with State CAMPA is continuously working for effective implementation of the various afforestation and conservation activities for ensuring ecological and environmental sustainability. CAMPA activities generate significant employment opportunities for the local communities alongwith increased production of useful non-timber forest products resulting in significant socio-economic outcomes across the country. Soil and water conservation works have led to stabilisation of slopes and increase in ground water recharge in adjoining areas leading to higher agricultural production. The stories from Chhattisgarh, Jammu & Kashmir, Tripura and Uttarakhand in this Publication highlight these aspects.

There are many outstanding success stories in the fields. Rajasthan has highlighted efforts for conservation and breeding of Great Indian Bustard, predator proof fencing in Jaisalmer and forest landscape restoration in Bharatpur. CAMPA has also helped in strengthening infrastructure for forest protection, control and prevention of forest fire, wildlife habitat improvement, rescue centre for wild animals, eradication of lantana and other invasive species for improvement of forest health etc. Conservation of Bugyals in Uttarakhand, Technological integration, like GIS-based forest monitoring in Tripura, mangrove restoration under the MISHTI Scheme in Gujarat, restoration of mined out area in Goa also bring out CAMPA's successful contribution in the field.

Glimpses: Success Stories of CAMPA 2022-24 showcase 49 success stories from 14 States, which will help in generating many innovative ideas and approaches in the field.

Subhash Chandra

(Subhash Chandra)
Chief Executive Officer

Contents

NATIONAL COMPENSATORY AFFORESTATION FUND MANAGEMENT AND PLANNING AUTHORITY

NATIONAL CAMPA

The Compensatory Afforestation Fund Act, 2016 (CAF Act, 2016) was enacted on 3rd August, 2016 and the Compensatory Afforestation Fund Rules were notified on 10th August, 2018. The CAF Act and Rules came into effect on 30th September, 2018 enabling the creation of the compensatory afforestation fund as a special fund under the Public Account of India. The monies deposited in the National fund are non-lapsable and interest-bearing and provide for State Compensatory Afforestation Fund under the Public account of the respective State/UT. The 90% of the monies realized from the user agencies are transferred to the respective State/UT CAMPA fund and the remaining 10% of the realised amount is deposited in the National CAMPA Fund. CAMPA Funds are utilized as per the provision of CAF Act, 2016 and Compensatory Afforestation Fund Rules, 2018 (CAF Rules, 2018) for carrying out Afforestation, protection and conservation related activities including control of forest fire, soil and moisture conservation activities, protection and improvement of forest and wildlife habitat, pertaining to conservation of forest, wildlife, biodiversity and enhancement of ecosystem services and relevant research programmes in the field of forest and wildlife sector. National Fund also supports large scale urban greening programme under Nagar Van/Vatika Yojana in various cities across the country. Its primary aim is to make the city green, habitable, climate resilient, improving quality of life and contribution to the National Clean Air Action Plan (NCAP) besides bringing trees in the city. The monitoring and evaluation of CAMPA activities throughout India ensures accountability and is one of the pivotal tasks by National Authority. It supports upgradation of technologies used for assessment of green cover through e-Green watch and Digital Web-Portal. The CAF Act provides for the constitution of National Authority at the national level and State/ Union Territory Authorities at State/ UT levels for administration and utilisation of the CAMPA funds. National Authority comprises of Governing Body, Executive Committee and Monitoring Group. The State/UT CAMPA authorities have Executive Committee, Steering Committee and Governing Body of the State/UT authorities. The CAF Act provides procedure for the preparation of Annual Plan of Operations by each State/ Union Territory CAMPA Authority for carrying out the activities mentioned under the Act vide Section 19 of the CAF Act, the Executive Committee of State CAMPA formulates the Annual Plan of Operations detailing physical and financial targets of afforestation, assisted activities to be implemented from the State CAMPA Fund, which, after the scrutiny and approval of the Steering Committee of the State Authority is forwarded to the National Authority for approval.

After the CAF Act, 2016 came into effect and till the 31st March, 2023, an amount of Rs. 55,292.40 crore has been transferred to 34 States/UTs.

During the financial year 2022-23, compensatory levies amounting to a sum of Rs. 6,385.98 crore has been deposited with the National Authority by User Agencies, in compliance with approvals granted under the Forest Conservation Act (FCA), 1980.

During the financial year 2022-23, two meetings of Governing Body (2nd and 3rd GB), six meetings of the Executive Committee (17th to 22nd EC Meetings) of National Authority, two meetings of Project Review Committee and one meeting of the Monitoring Group (6th MG Meeting) were held.

National Authority has approved APOs of States/ UTs Authorities during 2022-23 for an outlay of Rs. 8,493.68 crore in accordance with the CAF Act, 2016 and Rules, 2018. Against this approved amount, a sum of Rs. 6,974.31 crore was released by the States/UT Governments to their respective State/UT Forest Departments for carrying out approved CAMPA activities and an amount of Rs. 6,048.48 crore has been utilized in implementation of various approved CAMPA activities.

National Authority has given highest priority for the completion of committed Compensatory Afforestation (CA). From the year 1980 up to 31.03.2022, compensatory afforestation over an area of 10.508 lakh ha. (89.90 % of target) has been carried out by the State/UTs against the cumulative target of 11.689 lakh ha. The Executive Committee of National Authority, apart from its other functions, approves Annual Plan of Operations (APOs) of State/UT Authorities and recommends the schemes under National fund to the Governing body for approval.

National CAMPA envisions rebuilding and enriching forests and biodiversity through compensatory afforestation, reforestation and restoration for enhancing life-sustaining ecosystem services.

THE COMPENSATORY AFFORESTATION FUND ACT, 2016

Salient features

- Compensatory levies are realized from user agencies in lieu of diversion of forest land in accordance with the provisions of the Forest (Conservation) Act, 1980.
- Compensatory levies *viz.*, the costs of compensatory afforestation, catchment area treatment plan, implementation of Integrated Wildlife Management Plan for mitigation of impact on wildlife and Net Present value are realized, wherever applicable for compensating the loss of forest land and ecosystem services.
- These compensatory levies are apportioned in the National and State Fund in the ratio of 10:90. These funds are non-lapsable and interest-bearing. The National Fund is maintained in Public Account of India, whereas State/ UT Funds are maintained in Public Account of the respective State or Union Territory.
- A National Compensatory Afforestation Fund Management & Planning Authority (National CAMPA) for management and utilization of compensatory afforestation fund functions at National level. National CAMPA consists of a Governing Body, an Executive committee and a Monitoring Group.
- State and Union Territory CAMPA (Authorities) function at respective State and Union Territory levels for management and utilization of compensatory afforestation fund.
- Fund received for Compensatory afforestation, Catchment Area Treatment Plan, implementation of Integrated Wildlife Management Plan and for any other site-specific activity/ scheme are used as per approved plans/ schemes as per approval granted under the Forest (Conservation) Act, 1980.
- Net Present Value funds are used for enhancement of ecosystem services through the activities involving artificial regeneration (plantation), assisted natural regeneration, forest management, forest protection, forest and wildlife related infrastructure development, improvement of wildlife habitat, forest fire control and prevention etc.
- The Compensatory Afforestation Fund Act, 2016 and the Compensatory Afforestation Fund Rules, 2018 provide for the detailed procedure and mechanism for implementation of various activities and their monitoring and evaluation.

Government of Chhattisgarh
Forest & Climate Change Department

FOREST PROTECTION IN *Chhattisgarh*

COMPENSATORY AFFORESTATION FUND MANAGEMENT & PLANNING AUTHORITY, CHHATTISGARH CAMPA

Chhattisgarh is a rich state in terms of forests & wildlife. The Chhattisgarh Forest State CAMPA is responsible for protection of these valuable resources. The Chhattisgarh state comprises 6 territorial forest circles, 34 forest divisions, 4 wildlife circles, 7 wildlife divisions & 4126 territorial beats.

The department is equipped with 250 Forest strike force vehicles deployed across divisions. It improves mobility, response time of the action force. Rapid action force duties include forest patrolling, preventing illicit felling, encroachment, illegal mining, enquiring a forest offense etc.

Distribution of 2500 Mobile SIM Cards ensures good communication at administration level. The system's usefulness is evident during incidents of Forest Fire. Chhattisgarh CAMPA has equipped front line staff with 1442 fire blowers increasing their fire-fighting prowess. 420 km Chain link and 80 km Boundary Wall created at highly sensitive forest areas has been done to protect forest resources.

Hi-Tech Barriers that can be monitored in real-time have been established under Chhattisgarh CAMPA. 512 programs conducted in collaboration with schools to raise awareness among students with regarding wildlife, environment & conservation.

The Rejuvenation of streams is a flagship intervention of Chhattisgarh CAMPA. A process has been established for the identification of suitable rivulets & the treatment structures to be built. These works had generated 1.22 crore Man Days of work from 2019-20 to 2022-23. Drainage treatment of 6755 streams with catchment area of 25.03 lakh ha. 145 structures completed and an Impact Assessment of the SMC works in Chhattisgarh is underway.

FOREST PROTECTION IN CHHATTISGARH

(By: Shri Sreenivasa Vemula, IFS, CEO, Chhattisgarh (CAMPA)

Forest Protection

Chhattisgarh state is rich in Forest and wildlife resources and protection of these resources is one of the main mandates of Chhattisgarh Forest and Climate Change Department. For the purpose of Forest and wildlife Management, 6 Territorial Forest circles, 34 Territorial forest divisions, 4 Wildlife circles, 7 Wildlife divisions and 4126 territorial Beat has been constituted in the state. Strengthening of infrastructure, capacity building of the staff associated with forest protection, augmenting fire protection and involving local inhabitants in forest protection are given top most priority in the state.

Forest Strike Force Vehicles

Under Chhattisgarh CAMPA, Forest Range level Rapid Action Force has been constituted and 250 Forest Strike Force vehicles have been deployed in 34 Forest Divisions to improve the frontline stafff mobility for Protection of Forests and Wildlife i.e. Forest patrolling, prevention of illicit felling, encroachment, poaching of wildlife, control of illegal mining in forest areas, enquiry of Forest offence cases. These vehicles are used for forest fire detection and control during summer season. Also, these vehicles have greatly helped the forest staff in management of Human-Wildlife conflict, wildlife rescue operations, monitoring the CAMPA plantations and other forestry works.

Forest strike force vehicle-forest patrolling

Chhattisgarh CAMPA-Close User Group (CUG) Mobile SIM card

To ensure proper communication within the administrative units and strengthen the forest protection especially at frontline staff level, a total of 2500 Mobile SIM card has been provided under Chhattisgarh CAMPA to the forest staff-Beat Forest Officer, Circle Forest Officer, Forest Range Officer, Sub Divisional Officer and Divisional Forest Officer. Regular recharge of Mobile SIM card is being done to keep the SIM active. During the summer season, Forest Fire alert system is activated at Forest Head quarter level and fire alert messages are sent every year to the concern area forest officers and staff through these SIM cards for rapid response and taking appropriate action.

Forest Fire Protection

The summer season in Chhattisgarh starts on February 15th and end by June 15th. During the summer season, every beat forest officer is assisted by one forest fire watcher for the purpose of forest patrolling, control burning, fire detection and control of Forest fire. These forest fire watchers are engaged under the Chhattisgarh CAMPA. As manual forest fire suppression consumes more time, cost and energy and also less effective in fire control, all the territorial Forest divisions as well as Protected Areas staff were provided with Back pack Fire Blowers for rapid suppression of Forest fire. In the APO year 2021-22, 1442 Fire blowers were purchased and provided to the forest frontline staff. These fire blowers were effectively used for suppression of forest fire. As maximum Non Wood Forest Produce (NWFP) are being collected during the summer season, the forest areas are highly sensitive to the movement of local people, engagement of fire watcher has minimized the occurrence of fire in Chhattisgarh and also there is tremendous increase in collection of NWFP in Chhattisgarh which has benefitted the local tribal people.

Chain-link fencing and boundary wall construction in highly sensitive forest areas

Under Chhattisgarh CAMPA, Chain link fencing and

Forest Fire Control using back pack fire blower

boundary wall construction in highly sensitive and forest areas has been done to protect the forest resources. These precious forest areas are located in or near the forest mining, municipal / township areas which are highly sensitive and prone to encroachment, dumping of garbage, illicit construction and other illegal activities. After the construction of boundary wall and chain link fence erection, regeneration in these areas have greatly improved which helps combat pollution, improved the habitat for various wildlife and regulate the temperature.

Hi-Tech Forest Barrier

In order to control the illicit transport of forest produce and wildlife, forest check posts/ Barriers has been established in all the forest division. The state of Chhattisgarh has 247 Forest check posts within the state and 31 Forest check post located in the inter-state boundary. To improve the amenities for the staff posted in Forest barrier and to strengthen the forest protection, 92 Hi-tech Forest Barrier has been established under Chhattisgarh CAMPA. These Hi-tech forest barriers can be remotely monitored in real time at Forest Headquarters level, Circle level and Forest Divisional level through the App developed for this purpose.

Table 1: Details of the construction of protection boundary wall and Chain-link fencing

S.No.	CAMPA APO Year	Boundary wall construction (in meters)	Chain link fencing (in Running meters)
1.	2018-19	34836.00	103756.67
2.	2019-20	11121.60	156651.00
3.	2020-21	33798.50	159760.79

Forest Fire Control Using Backpack Fire Blower

Chain-link Fencing in Highly Sensitive Forest Areas

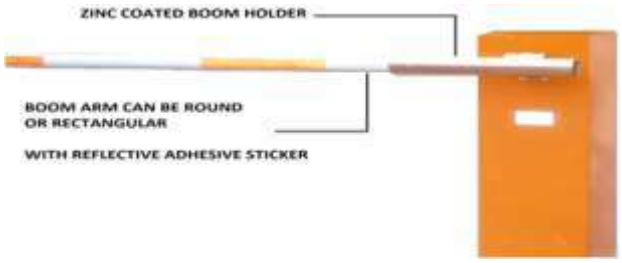
Boundary Wall Construction in Highly Sensitive Forest Areas

Table 1 : Details of Hi-tech Forest Barrier under Chhattisgarh CAMPA

S.No.	APO Year	No. of Hi-tech barrier	Amount (Rs. in lakh)
1	2018-19	26	416.00
2	2019-20	26	416.00
3	2020-21	40	670.00
	Total	**77**	**1502.00**

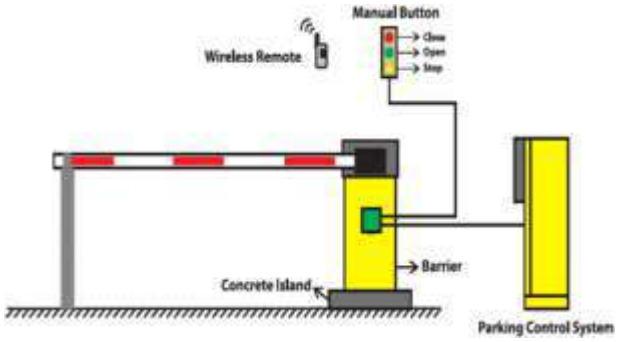
The features of Forest Hi-tech Barrier:

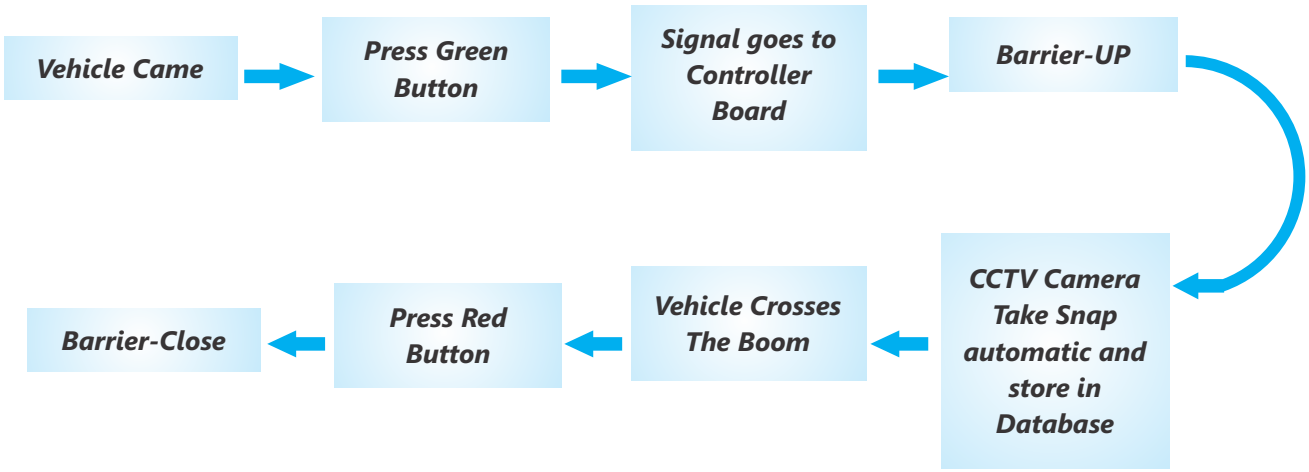
- Aluminium Boom With Radium Sticker
- An Ideal solution for heavy traffic
- Integration possible with all kinds of access control systems
- Manual override in case of power failure
- Water proof & handy

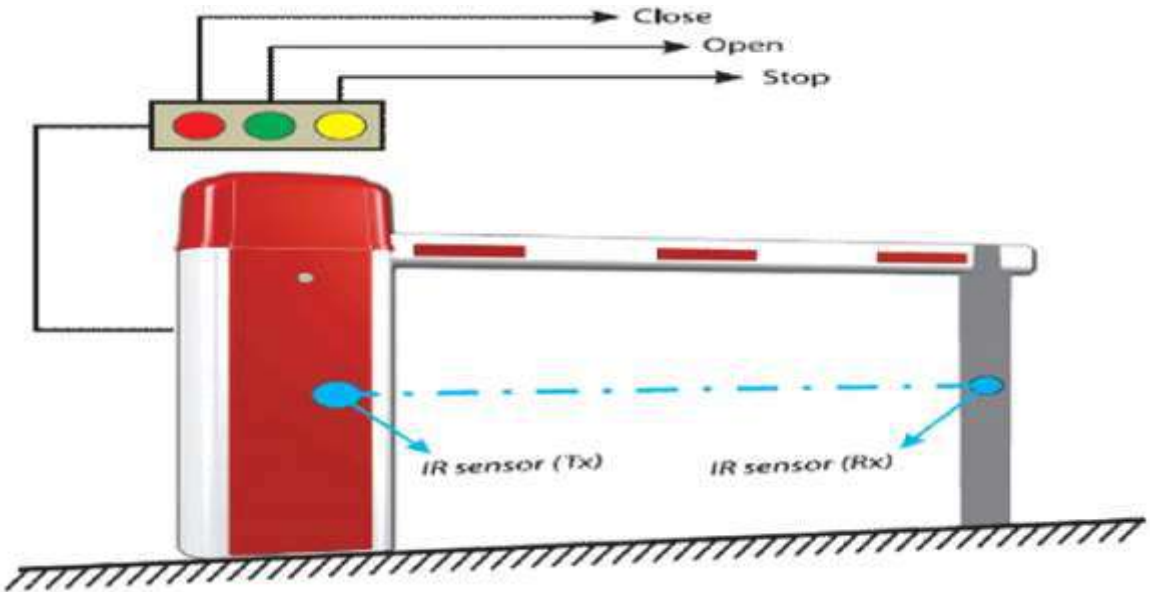


Modes of Operation:

1. Manually using Button
2. Using IR Sensor Auto closing
3. Fully automatic







Components of Hi-Tech Forest Barrier:

S.No.	Product Description	Quantity
1.	Intel-i5 Computer system	01
2.	Boom Barrier/Software/Digital Pen	01
3.	Solar Power Backup with battery	01
4.	RACK	01
5.	CAT 6UTP Armored Cable	305
6.	NVR	01
7.	IP Camera	04
8.	NVR	01
9.	HDD	01
10.	MONITOR	01
11.	Printer	01
12.	PoE Switch	01
13.	Barricade & other necessary accessories, Camera Pole, Sign Board	01 unit
14.	Camera Pole, Radium Sign Board	01
15.	Forest Guard Quarter Asper Designed & Norms Sanctioned by Add. PCCF	

Conclusion

The implementation of Forest Protection works using CAMPA funds has significantly improved the effectiveness of forest and wildlife protection in Chhattisgarh. The Forest strike Force / Patrolling vehicles deployed under Chhattisgarh CAMPA have kept the forest offences under control. Due to effective fire protection measures utilizing fire blowers and modern tools, there has been a tremendous improvement in forest regeneration enhancement in soil moisture and watershed quality, sustainable collection of Non-Wood Forest Products, habitat improvement for wildlife, reduction in Human wildlife conflict in Chhattisgarh. Construction of protection boundary wall and chain link fencing of highly sensitive areas has resulted in control of encroachment of precious forest lands in cities and other urban areas. Hi-Tech Forest barrier establishment has deterred the illegal transport of forest produce.

Hi-Tech Forest Barrier

Hi-Tech Forest Barrier –Division: Gariyaband

Hi-Tech Forest Barrier

Hi-Tech Forest Barrier
Division : West Bhanupratappur


ठहरिये


ठहरिये

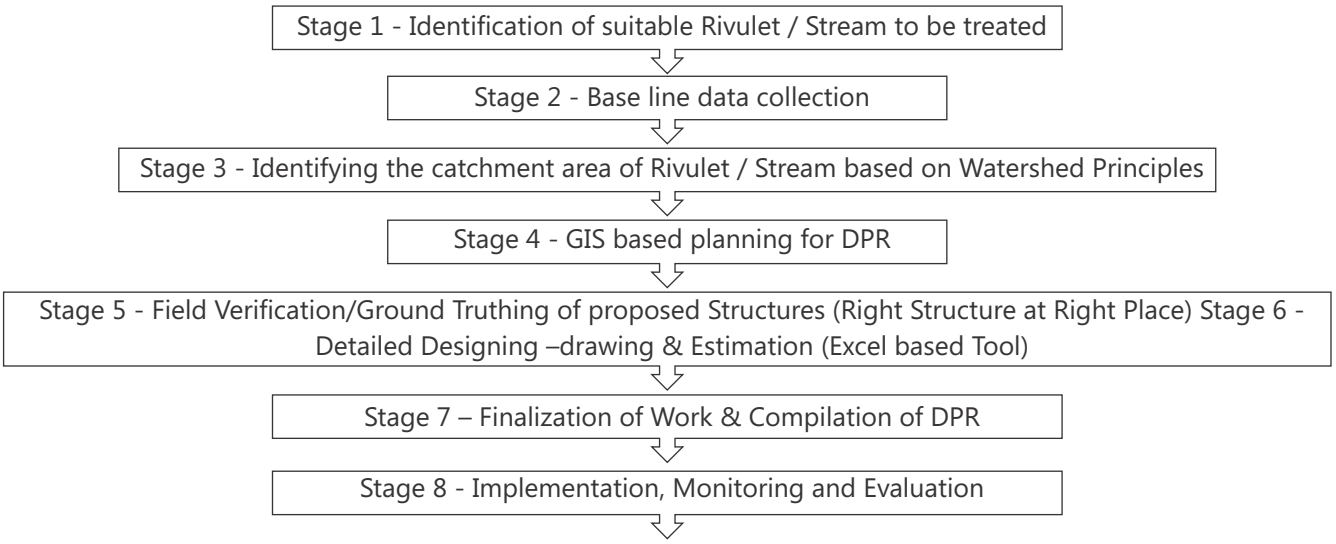
2) SOIL AND MOISTURE CONSERVATION WORKS FOR REJUVENATION OF STREAMS IN CHHATTISGARH (CHHATTISGARH CAMPA)

Distinct features

- Need based project implemented by Forest & Climate Change Department under Chhattisgarh CAMPA; Cost Effectiveness
- Technically Sound Detailed Project Report (DPR)- Forest Landscape level - Ridge to Valley Approach- inside Forest Areas
- Restoration of degraded Forest landscape-Forest Regeneration & Forest Productivity enhancement
- Rejuvenation of streams to normalcy & improve Soil Moisture, Ground water table
- Application of Remote Sensing & GIS tools, Bhuvan Portal data, Spatial & Thematic Maps
- Forest dwellers Participation, NGO, Natural Resource Management (NRM) engineers
- Improvement of Ecosystem Services.
- Climate Change Resilient Ecosystem

Overcoming the Challenges

- Vastness of the Forest Landscape in Chhattisgarh
- Lack of Trained Man Power
- Chhattisgarh- 33000 streams - Dendritic system of Drainage lines
- Nearly 8000 Rivulets / streams inside Forests
- Identification of Soil erosion vulnerable areas / Degraded landscape
- Prioritization & selection of drainage line of the watershed for treatment
- Ground Truth by NRM (Natural Resource Management) engineers for preparation of Site specific DPR
- Baseline survey for assessment of status of vegetation and Ground water table
- Monitoring & Evaluation of the works



Tools and process adopted for collection of Bio-physical information

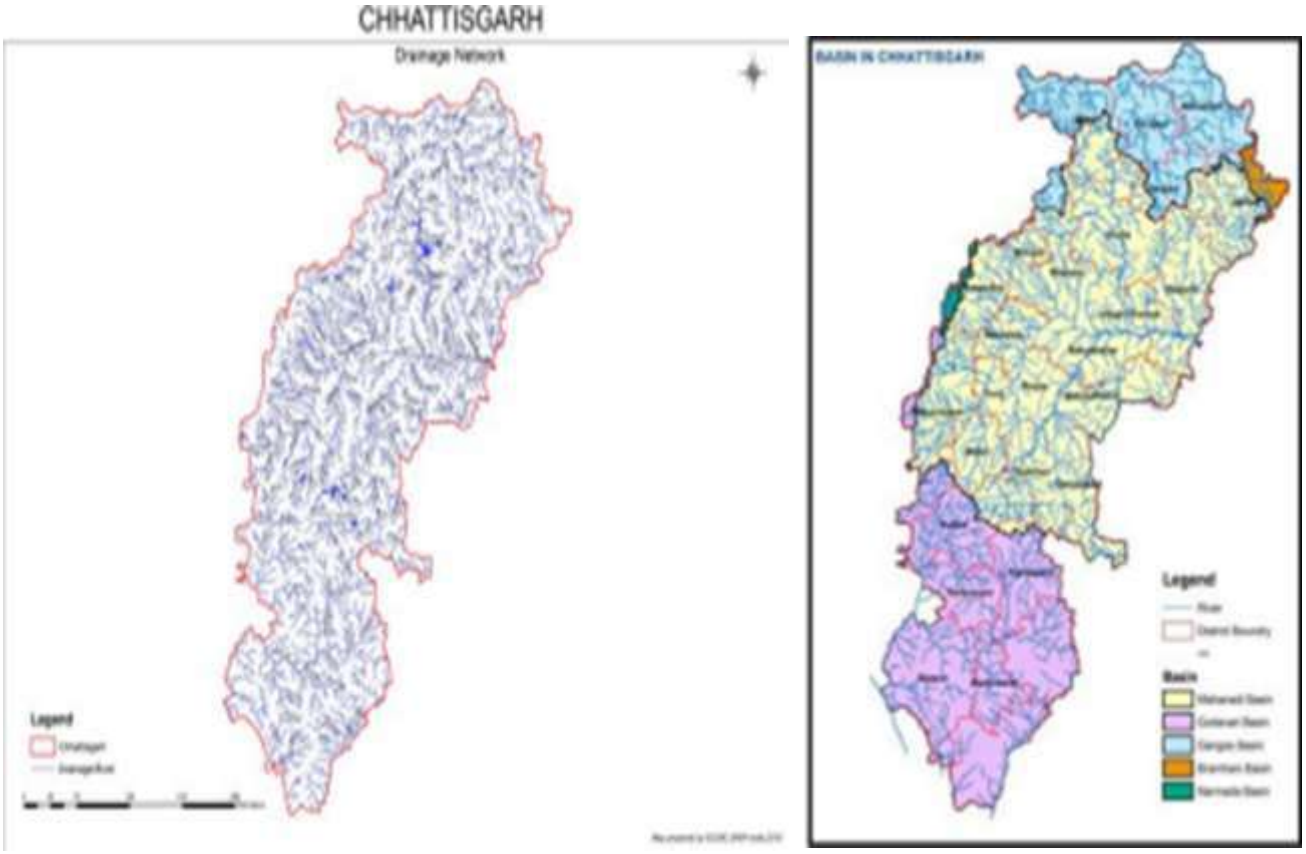
GIS based analysis – User friendly with

- Google Earth Pro
- Bhuvan portal
- Global Mapper
- CLART
- QGIS
- NoteCAM

Spatial Information collection

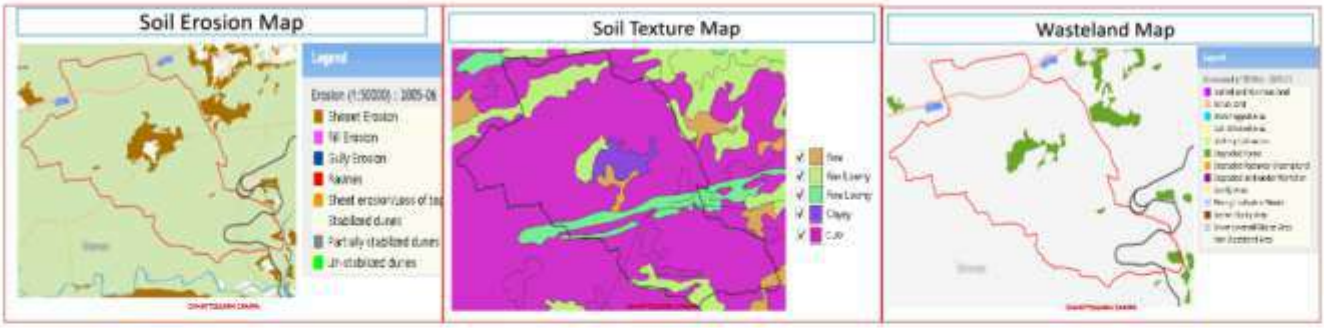
Following Thematic Maps were used for site selection of drainage line treatment from Bhuvan portal and other sources:

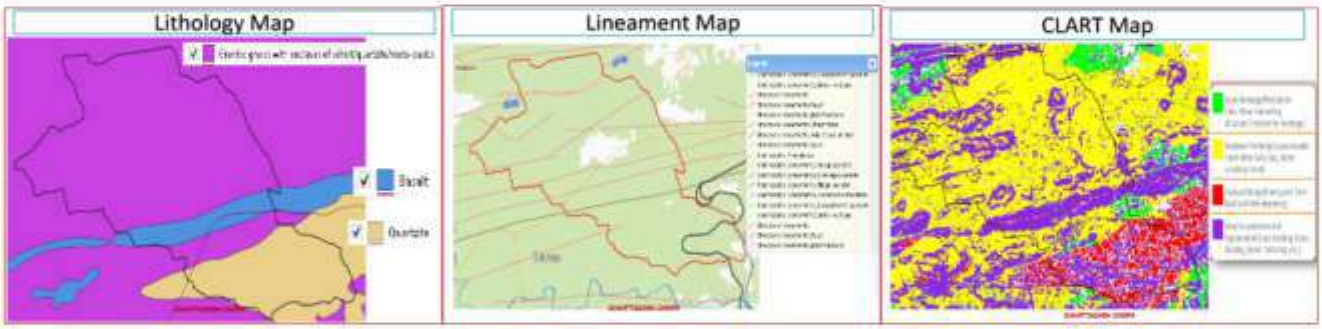
S.No.	Thematic map	Source
1.	Drainage Map	Bhuvan DEM Data process
2.	Contour Map	Globber Mapper Ver 18, *Operating system – 64 bit
3.	Wastelands Map	Bhuvan state portal
4.	Soil Erosion Map	Bhuvan state portal
5.	Land use land cover map	Bhuvan state portal
6.	Forest Cover Map	Forest Survey of India (FSI)
7.	Soil Texture map	Forest Management Information System of Chhattisgarh Forest Department (FMIS cell)
8.	Lithology map	FMIS cell
9.	Groundwater Prospects	Bhuvan state portal
10.	Structural Geology map (lineaments Map)	Bhuvan state portal
11.	CLART layer	FES - Q GIS app- 3.10.2
12.	Slope Map	FMIS cell
13.	Forest Compartment & Range map	FMIS cell
14.	Milli Watershed Map	FMIS cell
15.	Grid Point Map	FMIS cell



(Source:https://sandrp.in/2017/06/03/chhattisgarh-rivers-profile)


Drainage Map
Land Use Land Cover Map
Forest Cover Map
VDF
MDF
OF
SCRUB
WATER


Soil Erosion Map
Legend
Soil Texture Map
Wasteland Map


Lithology Map
Basalt
Quartzite
Lineament Map
CLART Map


Ground Water Prospect Map
Forest Range and Compartment Map
Contour Map- 5 m interval


Slope profile

Table 1: Possible intervention for Ridge area, Middle area & Valley area:

Ridge area- (sloping areas> 25%)	Ridge area- (25-10 % sloping areas)	Middle and Low area-(<10% sloping areas)
Seed Dispersal of Forestry Species.	Plantation- Block Plantation – As per local biodiversity and forestry plants (Silvi-Pasture)	Block Plantation – As per local biodiversity and forestry plants (Silvi-Pasture)
	Staggered Trenches – grazing land development	Contour Bunds .
	Continuous Contour Trenches (CCT)	Recharge Pit (min 3 m in depth of pit)
	30-40 Model	Farm Bunding / WAT
	Percolation tank	Farm Pond/ Percolation tank
		Bund Plantation

Table 2: Drainage line treatment structures:

1st Order Stream	2nd Order Stream	3rd Order Stream	4th Order and greater
Brushwood Check	Earthen Gully Plug	Gabion	Underground Dyke- Sub-Surface dyke
Earthen Gully Plug	Loose Boulder Check	Underground Dyke/ Sub-Surface dyke	Earthen dam
Loose Boulder Check	Mini Percolation Tank	Earthen dam	Check dam
	Gabion	Check dam	Stop Dam
		Stop Dam	Anicut
		Stream Bank Plantation 3 to 5 rows	Stream Bank Plantation 3 to 5 Rows

Achievement

- Large scale employment Generation for Forest Dwellers during COVID-19 period
- Work generation equivalent to 1.22 crore man days
- Drainage line treatment of 6755 streams with catchment area of 25.03 lakh hectares
- Control of Soil erosion & Conservation of fertile soil
- Improvement in watershed quality & small-scale irrigation facilities
- Increase in soil moisture content & improvement in Forest regeneration (Based on the analysis of Soil Moisture Index & Normalized Difference Vegetation Index-NDVI)
- Increase in water availability to wildlife - Reduction in Human-Wildlife conflict
- Implementation of the project -huge positive impact on Forests, Wildlife and Agriculture adjacent to forest areas

Table 3: Details of Soil and Moisture Conservation works-APO year wise:

S. No.	CAMPA APO Year	Proposed		No. of rivulet/ Stream	Catchment Area (in Lakh Ha.)	Achievement	
		No of Structures	Amount (In Crore Rs.)			No of Structure completed	Amount (In Crore Rs.)
1	2	3	4	5	6	7	8
1	2019-20	12.60	160.95	863	4.87	12.51	148.92
2	2020-21	48.38	426.74	2055	6.10	43.45	352.11
3	2021-22	73.20	407.26	1974	5.70	66.09	318.46
4	2022-23	29.11	300.52	1503	6.26	22.44	150.77
5	2023-24	17.31	180.04	360	2.10	In Progress	
	Total	**180.59**	**1475.51**	**6755.00**	**25.03**	**144.49**	**970.26**

Soil Moisture Conservation Works Impact Assessment:

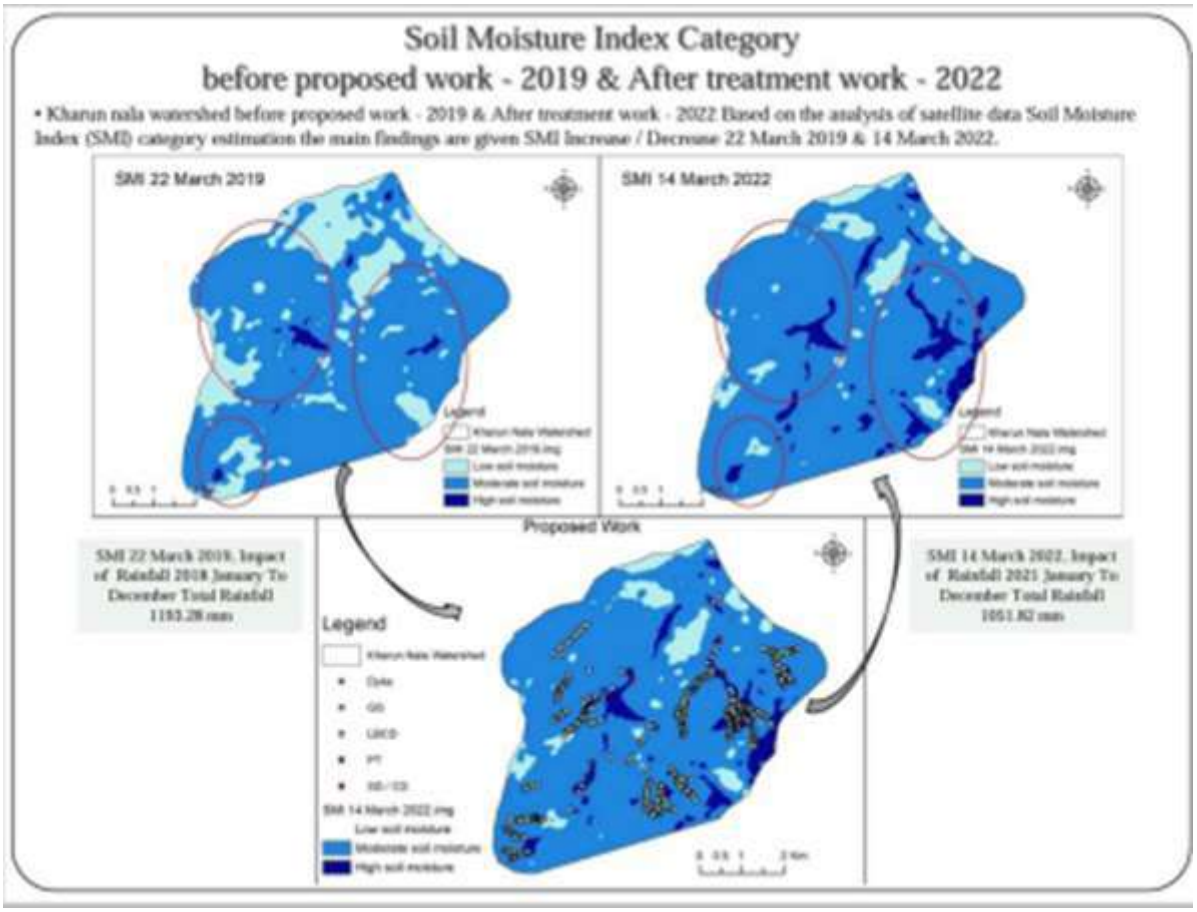
Chhattisgarh CAMPA has made a Memorandum of Understanding (MoU) with National Remote Sensing Centre (NRSC-ISRO), Hyderabad and Chhattisgarh Council for Science and Technology (CCOST) for assessing the impact of Soil Moisture Conservation Works in Chhattisgarh. Also, Baseline Survey has been conducted in the treatment sites to evaluate the impact of the works.

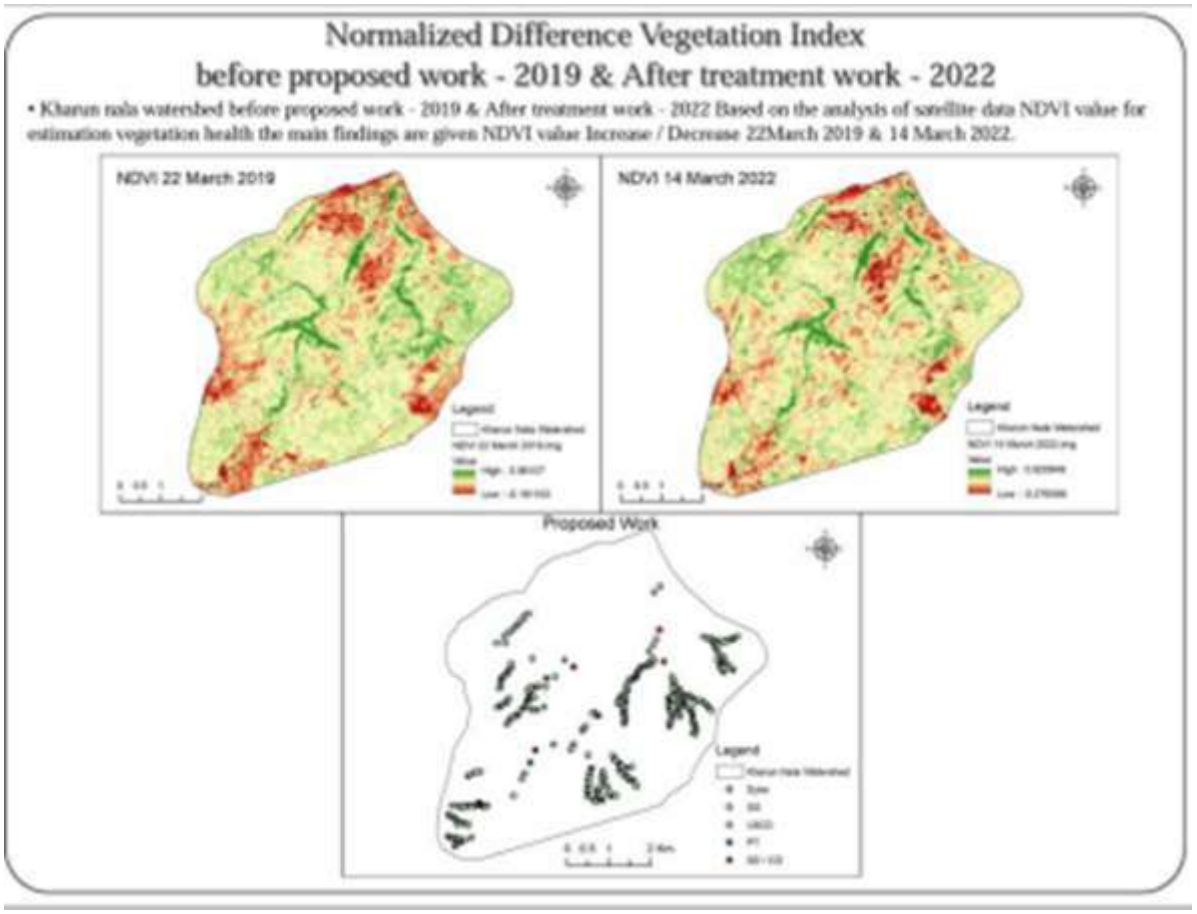
The impact of soil and moisture conservation works in being assessed in Chhattisgarh. In the Kharun Nala (stream) of Balod Forest Division, impact of Soil and moisture conservation works has been assessed using Remote sensing and GIS tools and the positive impact of the project is presented below.

Table: Details of Soil Moisture Conservation Structures in Kharun Nala-Balod Forest Division

Sr. No	Proposed Work Code	Proposed Work Name	Total
1	LBCD	Loose Boulder Check Dam	382
2	GS	Gabion Structures	16
3	PT	PercolationTank	3
4	CD	Earthen Dam	4
5	Dyke	Dyke	1
Total			406

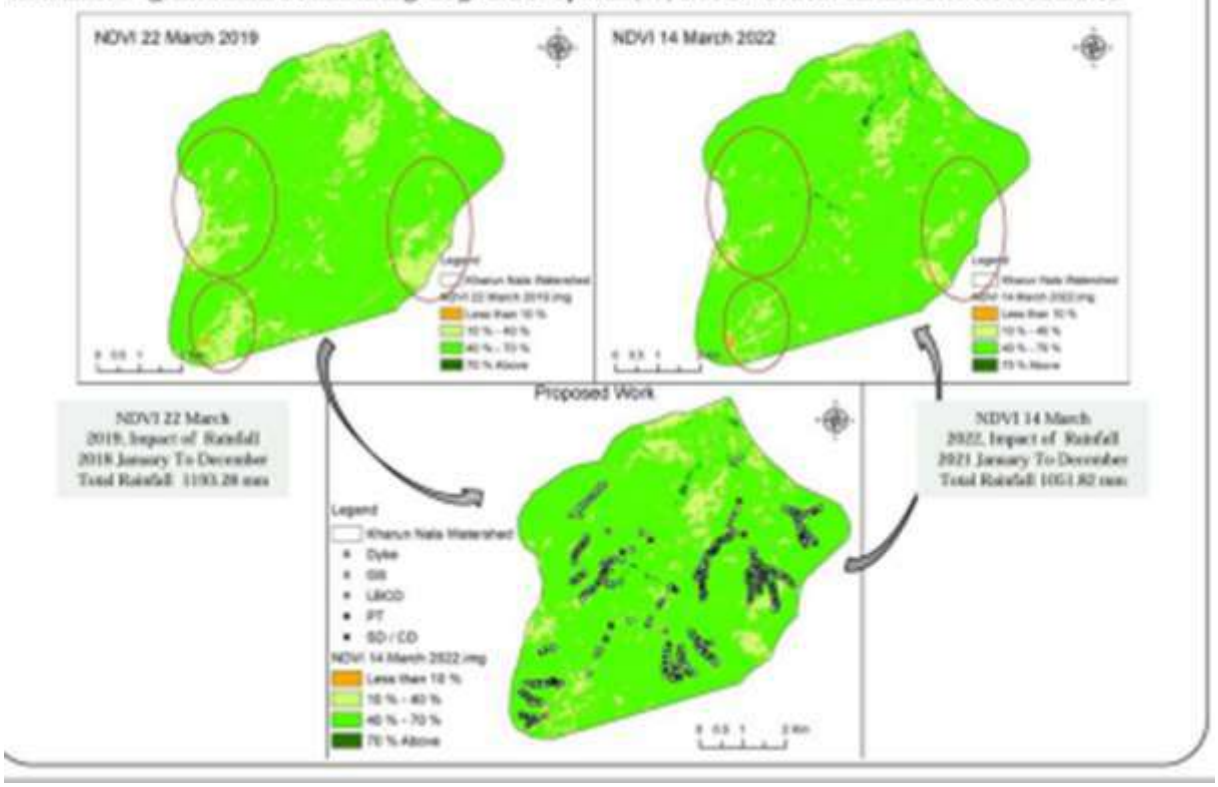
Table: Details of soil moisture conservation structures in kharun Nala-balod Forest Division


Soil Moisture Index Category
before proposed work - 2019 & After treatment work - 2022
• Kharun nala watershed before proposed work - 2019 & After treatment work - 2022 Based on the analysis of satellite data Soil Moisture Index (SMI) category estimation the main findings are given SMI Increase / Decrease 22 March 2019 & 14 March 2022.
SMI 22 March 2019
SMI 14 March 2022
Proposed Work
SMI 22 March 2019, Impact of Rainfall 2018 January To December Total Rainfall 1193.28 mm
SMI 14 March 2022, Impact of Rainfall 2021 January To December Total Rainfall 1051.82 mm
Legend


Normalized Difference Vegetation Index
before proposed work - 2019 & After treatment work - 2022
• Kharun nala watershed before proposed work - 2019 & After treatment work - 2022 Based on the analysis of satellite data NDVI value for estimation vegetation health the main findings are given NDVI value Increase / Decrease 22March 2019 & 14 March 2022.
NDVI 22 March 2019
NDVI 14 March 2022
Proposed Work
Legend

Normalized Difference Vegetation Index
before proposed work - 2019 & After treatment work - 2022

• Kharun nala watershed before proposed work - 2019 & After treatment work - 2022 Based on the analysis of satellite data NDVI value in % for estimation vegetation health the main findings are given NDVI percent (%) Increase / Decrease 22March 2019 & 14 March 2022.



Summary and Conclusion

• Based on the analysis of satellite data NDWI & SMI the main findings are given below:

• Change matrix in pre & post monsoon surface water body cover :-

Pre monsoon surface water body cover GIS area in Hectares			
Year	27 March 2019	26 March 2021	Increase / Decrease in surface water body cover 22 March 2019 & 26 March 2021
GIS area in hectares	5.58	6.23	+ 0.64

Post monsoon surface water body cover GIS area in Hectares			
Year	12 Nov 2019	26 Nov 2021	Increase / Decrease in surface water body cover 12 Nov 2019 & 26 Nov 2021
GIS area in hectares	8.48	10.66	+ 2.18

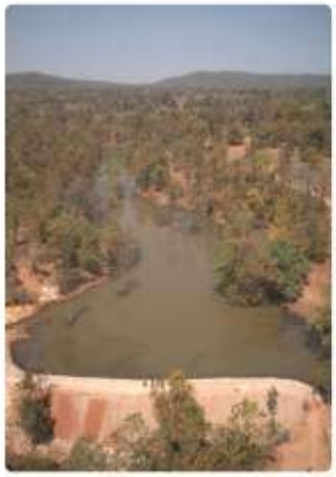
• Change matrix in pre monsoon soil moisture category GIS area in hectares :-

Soil Moisture Index (SMI) Category	SMI 22 March 2019	SMI 14 March 2022	Increase / Decrease in soil moisture
Low soil moisture	860.31	320.04	- 540.27
Moderate soil moisture	3069.99	3347.28	+ 277.29
High soil moisture	61.02	324	+ 262.98
Total GIS Area	3991.32	3991.32	

30-40 MODEL

CD KESHKAL

CHECK DAM



EARTHEN DAM AURA NAALA

EARTHERN DAM GARIABAND

EARTHERN DAM

ELEPHANT AT SMC SITE

EMPLOYMENT GENERATION

KONDAGAON

ENVIRONMENTAL EDUCATION AND AWARENESS INITIATIVE – VAN-MITRA 'JAGRITI' PROGRAMME 2022-23

Van Mitra- 'Jagriti' initiative of the CAMPA, Chhattisgarh is in tune and in alignment with the International and National arrangements and keeping abreast with the need of the hour towards community participation and education and awareness amongst the masses to bring about long-term environmental protection and ecological restoration.

In order to involve the school children, environmental education and awareness programs were conducted all over the state with the following objectives:

Objectives- Van Mitan- Jagriti' Initiative

- To encourage school children who are the future 'responsible citizen's of the nation through Forest, Wildlife and Environment Education and Awareness Programs conducted for schools located within 5 km radius of forests for protection and conservation of resources through Van Mitan- 'Jagriti' initiative.
- To shortlist self-actualized, motivated and willing students amongst the students participating in the aforementioned training program as 'Nature Volunteers'.
- To create awareness among the school children about the duties and responsibilities of the Forest Department and its functionaries and the challenges they face in the field of conservation of forests, wildlife and environment.

'Van Mitan -Jagriti' Program Mechanism

The Extent

In the year 2022-23, one-day Training Programs under the 'Van Mitan- Jagriti'- the Environment Education and Awareness Program were conducted in 360 Ranges in 44 Territorial, Wildlife and Research Divisions in Chhattisgarh State. Every such training program was conducted for 60 selected students from the shortlisted schools.

Program Sites

Education and Awareness Programs were mainly organized at carefully selected naturally serene and beautifully located landscapes conducive for achieving objectives of the program. It was ensured that the sites are within 20 to 25 km from the places or schools from where the children were supposed to travel to attend the training programs. In case such a site was not available in a particular range then allowance was given for selection of the best alternative natural site in the range. In all possible scenarios, it was ensured that the participant students do not have to indulge in a travel more than an hour to reach the program site from their respective schools.

Arrangements at the Program Site

- A proper layout plan consisting of parking space, program site, excursion route was prepared well in advance and distributed at the site to the organizing team.
- The excursion routes were planned in such a manner that they cut across sections of variety of forests so that various facets of the ecosystems can be appreciated, understood and demonstrated to the participants. It was ensured that wild animal tracks, signs and indirect evidences may also be demonstrated and elaborated upon to the participants.
- The Range Forest Officer, Sub Divisional Forest Officer and the Master Trainer of the Training Program, were supposed to get acquainted with the entire area well in advance. In some cases, site inspection of some locations was also done by the concerned Chief Conservator of Forests and the Divisional Forest Officers.
- Adequate arrangements for separate washroom facilities for female participants and proper 'Garbage Disposal Mechanism' in an ecofriendly manner was instituted and ensured at each Training Program Site.
- It was ensured that senior level competent officers inspect the Training Program/ Camp Site to ascertain the adequacy and appropriateness of various arrangements.

Training Program Schedule

The Training Programs were scheduled in the period 1st September to 31st December, 2022. The dates were decided through meetings which were conducted between the District Education Officers, Principals of various schools concerned and the Divisional Forest Officers of the Territorial Forest Divisions concerned.

- It was ensured that only one training program is conducted in one territorial forest division in a day. The concerned CCF's were entrusted with responsibility to ensure that in their constituency and on a particular route, not more than two training programs were organized. This was to ensure that they are able to inspect and ascertain the appropriateness of the training process in advance.
- The dates were organized in a manner so to avoid important holidays, festivals or marriage season mania.

Subject Mechanism of the Program

Since it was difficult to deliver such an elaborate topic in just one day the planning of the training programs were meticulously done. In order to expose the participants to various resources namely plants, trees, wild animals and the direct and indirect evidence of wild animals, reliance was been placed on tracks and signs identification. Before the participants were taken on the excursion, they were divided into four groups and allocated to the Master Trainer and local officer concerned to give them a pre-requisite exposure and understanding about the objectives of the program. All-out efforts were made to resolve and answer the queries raised by the participants and settle their curiosity related to their field observations. The main issues which were covered in the curriculum were forests, biodiversity, wildlife and environmental conservation and ethics of cleanliness. The participants were also exposed to various facets of forest and biodiversity conservation, bird watching and wildlife viewing, soil and water conservation and basic principles of Forest Management.

Program Delivery Content

The Program Participants were exposed to and briefed about the following:

- Program/ Camp Details- Objectives of the Program, its details and the topics to be dealt with.
- Nature Excursion- Forest, wildlife and ecological observations, details pertaining to forests, forest soils, various parts of the trees, Non-Wood Forest Produce, basic description of major wild animals found in the area. Providing details about insect life, reptilians and general wildlife ecology.
- Bird Watching- Elaborating upon the basic ethics and principles of bird watching, understanding the avifauna and their habitats.
- Elaborating relevant brief information about General Forest Management and the stratification in the forest service and their responsibilities.
- Promoting the Concept of 'Prakriti ki Pathshala' (Nature's School) covering aspects namely ecological techniques and balance, food chain and food web, importance of wild animals in sustaining all life on the planet.
- Knowledge enhancement on the Non-Wood Forest Produce, medicinal plants and biodiversity conservation.
- Soil and Water Conservation Concepts and Practices.
- Ethics of cleanliness and importance of maintaining good health.
- Principles and Practice of Joint Forest Management and its importance.
- Information about the mandate and activities conducted by the CAMPA.
- Briefing about nursery techniques and process of undertaking plantations on private lands and generating awareness about tree planting.
- Encourage learning pertaining to forest, wildlife and environmental conservation through games and practical day to day examples.

Transportation Arrangements

Transportation arrangements to and from the Program/ Camp Site to the schools was provided by the CAMPA. It was ensured that the transportation distance is not more than 25-30 kms to ensure that the participants get maximum time for learning.

Mandatory Precautions

1. The transportation vehicles were approved and bear operational license and documentations.
2. The vehicles displayed of Van Mitan- 'Jagriti' Program.
3. Two Forest Officials to accompany a vehicle. One to ensure safety measures pertaining to onboarding and alignment of the vehicles also ensuring the safe driving by the driver.
4. Adequate arrangements for parking of the vehicles at the Program/ Camp Site.
5. The Master Trainers were instructed to accompany the transportation vehicles carrying the participants so that the transportation time could be utilized to orient and acquaint the participants to various facets of the program and the traversing area.

Innovation

Innovation in the program curriculum was allowed to the extent that it carry forward and not dilute the

premise and essence of the program pertaining to forest, wildlife and environment education and awareness.

Photography and Videography

Photo and Video Documentation of the 'Van Mitan – Jagriti' Program has been meticulously done and maintained.

Publicity and Extension

- A District Level Coordination Committee comprising the District Collector, District Superintendent of Police, District Education Officers, District Publicity Officer and other relevant departments were constituted for each district.
- Invitations for the training programs were also extended to Hon. Judges in the jurisdiction and other District Level Officers to create synergy.
- Active participation of Local Politicians, Members of the Legislative Assembly and the Members of Parliament concerned and Hon. Dignitaries from the Zila Panchayat and Municipal Corporations were ensured by extending invitations.
- Members of the Electronic and Print Media were invited and requested to actively participate and cover the event.
- Wide publicity of the 'Van Mitra – Jagriti' Program was ensured through all possible media.
- Extensive outreach mechanisms were put into practice to ensure the success of the 'Van Mitan – Jagriti' Program.

Budget Allocation-

The budget allocation was done by the CAMPA Headquarters as per the Annexure-1

Monitoring and Evaluation

- Any program of this magnitude and kind needs proper monitoring and evaluation so that replication of such programs is possible through the learning process obtained from previous experience.
- The Divisional Forest Officers and the Range Forest Officers were supposed to ensure maximum and active participation from the school children of the participating schools.
- A protocol for monitoring information exchange and reporting was circulated in a timely manner and kept on file at both the Divisional Headquarters and the CAMPA Headquarters for documentation and publication.
- Incentives and Reward Plan was circulated to all the 44 Forest Divisions in the state.

Outcome

Nature Volunteers Force

Masters Trainers, the Divisional Forest Officers and his/her representatives were supposed to shortlist self-actualized, motivated and willing students amongst the students participating in the aforesaid training program as 'Nature Volunteers'. As a result, a 'Nature Volunteers Force ' was constituted in the Chhattisgarh State.

It was ensured that only those participants were shortlisted who demonstrated the potential for long-term and committed involvement towards future outcome of the program.

A database of the members of the 'Nature Volunteers Force' has been maintained at the Forest Division Level and a centralized state level database is maintained with the State/ Chhattisgarh Headquarters.

Follow-up Advance Training Programs will be imparted to the members of the 'Nature Volunteers Force' at Forest Division Level in various specialized themes and disciplines. The 'Nature Volunteers' have been issued identity cards from the respective Forest Divisions. These volunteers are supposed to be the future resource persons for the 'Van Mitan– Jagriti' Programs which will be organized in the following years.

Way Forward –

In the years to come State CAMPA intends to develop 'Monitoring and Evaluation Procedures' in accordance with the Evaluation Guidelines of IUCN's 'Commission on Education and Communication (1999)' to evaluate the outcome of the 'Van Mitan- Jagriti' Programs.

Environmental education is a must and so is the evaluation of environmental education.

There are at least four good reasons to devote due attention to evaluation:

- It clarifies what pupils and adult participants learn from nature and environmental education activities;
- It creates opportunities to account to funders about performance and effectiveness;
- It provides information to improve the quality of future educational activities and consumer satisfaction;
- It promotes professionalism in nature and environmental education.

The CAMPA is formulating the Monitoring and Evaluation Mechanism on these lines.

Program Conduction Details

Van Mitra - Jagriti' Program/ Camp Organisation Schedule- 2022-23										
Sr. No	**Forest Division**	**Target**	**No. of Program/ Camps**	**Participants Nos. - Students and Teachers**				**Differently Abled Students**		
				Teachers	**Boys**	**Girls**	**Total**	**Boys**	**Girls**	**Total**
1	Bilsapur	15	18	99	542	749	**1390**	3	0	**3**
2	Marwahi	8	8	43	237	243	**523**	0	0	**0**
3	Korba	18	12	69	280	416	**765**	0	0	**0**
4	Katghora	21	21	143	609	623	**1375**	0	0	**0**
5	Dharamjaigarh	12	12	77	384	335	**796**	1	0	**1**
6	Raigarh	14	14	79	490	482	**1051**	0	0	**0**
7	Janjhgir Champa	6	1	3	26	25	**54**	0	0	**0**
8	Mungeli	8	8	29	228	238	**495**	0	0	**0**
9	Research and Extension	12	0	0	0	0	**0**	0	0	**0**
Total Bilaspur Circle		**114**	**94**	**542**	**2796**	**3111**	**6449**	**4**	**0**	**4**
1	Bastar	27	26	112	714	860	**1686**	0	0	**0**
2	Research & Ext- Jagdalpur	12	12	48	285	435	**768**	0	0	**0**
3	Dantewada	8	8	35	270	229	**534**	0	0	**0**
4	Bijapur	14	14	71	370	474	**915**	0	0	**0**
5	Sukma	14	14	62	457	351	**870**	0	0	**0**
Total Jagdalpur Circle		**75**	**74**	**328**	**2096**	**2349**	**4773**	**0**	**0**	**0**
1	Balod	10	10	39	333	221	**593**	0	0	**0**
2	Rajnandgaon	25	16	61	615	507	**1183**	1	2	**3**
3	Khairagarh	14	12	70	589	729	**1388**	2	2	**4**
4	Kwardha	20	20	60	640	523	**1223**	0	0	**0**
5	Durg	20	11	52	251	408	**711**	1	0	**1**
Total Durg Circle		**89**	**69**	**282**	**2428**	**2388**	**5098**	**4**	**4**	**8**
1	Kanker	15	9	30	96	144	**270**	0	0	**0**
2	East Bhanupratappur	8	7	24	257	163	**444**	0	0	**0**
3	West Bhanupratappur	8	8	25	204	266	**495**	0	0	**0**
4	Keshkal	12	12	47	329	329	**705**	0	0	**0**
5	South Kondagaon	21	19	103	622	662	**1387**	1	0	**1**
6	Narayanpur	12	12	54	539	333	**926**	0	0	**0**
Total Kanker Circle		**76**	**67**	**283**	**2047**	**1897**	**4227**	**1**	**0**	**1**
1	Raipur	18	14	19	74	122	**215**	0	0	**0**
2	Gariaband	18	18	86	678	666	**1430**	1	1	**2**
3	Balodabazar	16	2	9	45	75	**129**	0	0	**0**
4	Dhamtari	17	17	92	511	511	**1114**	0	0	**0**
5	Mahasamund	20	18	84	589	466	**1139**	0	0	**0**
Total Raipur Circle		**89**	**69**	**290**	**1897**	**1840**	**4027**	**1**	**1**	**2**
1	Sarguja	18	12	74	381	346	**801**	0	0	**0**
2	Surajpur	12	12	59	422	336	**817**	0	0	**0**
3	Balrampur	18	18	106	707	958	**1771**	9	11	**20**
4	Korea	12	12	42	412	406	**860**	0	0	**0**
5	Manendragarh	12	6	24	257	300	**581**	0	0	**0**
6	Jashpur	27	7	27	246	311	**584**	8	6	**14**

Total Sarguja Wildlife Circle		**99**	**67**	**332**	**2425**	**2657**	**5414**	**17**	**17**	**34**
1	Guru Ghashidas N.P. Baikunthpur	10	10	31	261	302	**594**	0	0	**0**
2	Elephant Reserve Sarguja	12	7	36	209	243	**488**	0	0	**0**
Total Sarguja Wildlife Circle		**22**	**17**	**67**	**470**	**545**	**1082**	**0**	**0**	**0**
1	Kangerghati N.P. Jagdalpur	6	6	31	161	195	**387**	0	0	**0**
2	Indravati Tiger Reserve Bijapur	18	13	76	448	332	**856**	0	0	**0**
Total Jagdalpur Wildlife Circle		**24**	**19**	**107**	**609**	**527**	**1243**	**0**	**0**	**0**
1	Udanti Sitanadi T.R. , Gariaband	16	16	83	602	542	**1227**	0	0	**0**
2	Jungle Safari, Raipur	6	6	21	139	189	**349**	0	**0**	**0**
Total Raipur Wildlife Circle		**22**	**22**	**104**	**741**	**731**	**1576**	**0**	**0**	**0**
1	Achanakmar T.R., Mungeli	14	14	46	419	421	**886**	0	0	**0**
Bilaspur Wildlife Circle		**14**	**14**	**46**	**419**	**421**	**886**	**0**	**0**	**0**
Grand Total		**624**	**512**	**2381**	**15928**	**16466**	**34775**	**27**	**22**	**49**

Government of Goa

FOREST PROTECTION IN *Goa*

COMPENSATORY AFFORESTATION FUND MANAGEMENT & PLANNING AUTHORITY, GOA CAMPA

Addressing the problem of degraded lands through mining, CAMPA has accomplished an impressive feat in the state of Goa. With the help of state and CAMPA funds, Goa Forest department has successfully rejuvenated 55 hectares of land within the Netravali Wildlife Sanctuary, turning a formerly depleted mining site into a flourishing ecosystem. The area has witnessed a remarkable transformation, marked by the restoration of soil quality and moisture content, successful vegetation establishment, and the resurgence of wildlife populations. This restoration effort followed a standard operating procedure and was completed within a brief span of five years.

STANDARD OPERATING PROCEDURE (SOP) FOR RESTORATION OF MINED-UP AREAS

(By: Shri Umakant, IFS, CEO, Goa (CAMPA)

1. Purpose

The purpose of this Standard Operating Procedure (SOP) is to outline the step-by-step process for effective mining reclamation, ensuring the restoration and rehabilitation of mined areas to their natural or beneficial land use after mining activities have concluded.

2. Scope

This SOP applies to all mining reclamation tasks carried out by Wildlife Division South and provides guidelines for the reclamation of mined sites.

3. Definitions

- Mining Reclamation: The process of restoring disturbed land to a condition suitable for its intended use after mining activities have ceased.
- Reclamation Plan: A comprehensive plan detailing the strategies and methods for land restoration and rehabilitation after mining operations.
- Contouring: The process of reshaping the land to its original or desired topography.
- Erosion Control: Measures to prevent soil erosion and sedimentation during and after reclamation.
- Vegetative Cover: The establishment of native vegetation to stabilize soil, prevent erosion, and enhance ecosystem recovery.
- Gully Plugging: The procedure followed to stop the erosion of stabilized dumps by damming the gullies formed with the action of water flow.
- Contour Bunding: The procedure followed to control erosion and conserve soil by creating rows of rubble stones of height 0.25 to 0.4 meters aligned in contours so as the head of the lower line is tow of the upper line.

4. Reclamation Process

4.1 Pre-Reclamation Phase

4.1.1 Reclamation Planning

Develop a comprehensive reclamation plan for each mining site in accordance with site suitability. Include strategies for soil stabilization, erosion control, vegetation establishment, water management, and post-reclamation monitoring.

4.2 Reclamation Implementation

4.2.1 Land Grading and Contouring

- Begin reclamation by reshaping the land to resemble its original topography as closely as possible. Avoid creating steep slopes that can lead to erosion and instability.
- Engage soil conservation methods like gully plugging, and contour bunding with local grass plantation to slow down runoff.

4.2.2 Soil Preparation

- Amend soil with necessary nutrients and organic matter to promote plant growth and establish a stable soil structure.
- Addition of topsoil from nearby areas containing humus, dry leaf litter, and organic matter.
- Tailing ponds have high silica content and are waterlogged in the rainy season water draining and external soil addition is essential.

4.2.3 Erosion Control Measures

- Implement erosion control techniques such as terracing, mulching, contour bunding, gully plugging,and silt fences to prevent soil erosion and sediment runoff.

4.2.4 Plantation

- Select and plant native plant species that are appropriate for the local ecosystem and soil conditions.
- The plantation of pollinators and seed dispersers attracting (Bats, Bees, Birds, Butterflies, etc.) flora (Fruiting and flowering plants).
- Planting of primary colonizers (*Macranga Species, Trema Species*, etc.)
- Manure-yielding species like *Gliricidia* sp. and legumes may be planted.

- Plant a diverse mix of vegetation to enhance biodiversity and ecosystem resilience.
- Use tall seedling of height 4 feet and collar girth minimum of 1.5 inches.
- Add farmyard manure vermicomposting as fertilizers.
- Puff Ball and Mushroom media to be added to establish mycorrhiza in planted species thereby increasing nutrient-water absorption, and promoting nutrient availability to saplings.
- Special planting arrangements like the fishbone technique for water nutrient management and East-west alignment to reduce sun scorching may help in achieving success.
- Grass plantation with Guinea grass, alternate with tree species (for seeding) is successful in tailing ponds with high silica, iron, and waterlogged fine soil.
- External soil for substratum creation with bunding is essential in tailing ponds and rocky areas.

4.2.5 Water Management

- Establish water management structures such as gully plugging, levelled drainage channels, slope corrections, and water diversion systems to manage runoff and control erosion.
- In tailing ponds removal of water by making channels at a suitable depth to allow water drainage only in the top layer of the rooting zone.
- The area is deficient in the shade and prone to evaporation slow watering or drip irrigation may be preferred.
- Inverted water bottles with pin holes in the lid inserted near the root can give good results.

4.2.6 Protection

- Engage watch and ward to control grazing and prevent fire hazards in planted areas. Brushwood fence or suitable fence at entry points of cattle.
- Tying thorny twigs to stem on certain species debarked by porcupines and deer.

4.3 Monitoring and Maintenance

4.3.1 Post-Reclamation Monitoring

- Regularly monitor the reclamation site to assess the success of vegetation establishment and overall ecosystem recovery. Address any issues or deficiencies promptly to ensure effective reclamation.

4.3.2 Maintenance and Adaptive Management

- Conduct routine maintenance activities such as weed control, irrigation, and erosion control to support the establishment of vegetation.
- Use adaptive management principles to adjust reclamation strategies based on monitoring results.
- Replace the casualties in the plantation routinely by replacing the soil media with FYM, Mycorrhiza mix.
- Repair the bunds and water channels regularly if damaged by wildlife movement.

5. Documentation and Reporting

5.1 Reclamation Plan Documentation

- Maintain detailed records of the reclamation plan, including design documents, specifications, and plant and grass species selections.

5.2 Monitoring and Maintenance Reports

- Document monitoring results, maintenance activities, and any corrective actions taken. Generate regular reports to track progress and compliance with reclamation objectives.

6. Training and Education

- Provide training to all personnel involved in reclamation operations about the importance of reclamation, relevant procedures, and the significance of environmental stewardship.

7. Budget

- The Wildlife and Ecotourism South Division has undertaken Mining Dump Reclamation at the Netravali Wildlife Sanctuary area, a total of 33 Hectare area was treated, and the fund utilized for the reclamation is as under.

Sr. No.	Plantation Type	Total Area in Hectare	Per Hectare Cost in Lakhs	Total Cost in Lakhs
	Fruit-bearing and local tree species plantation	33.0	1.25	41.25
	Grass plot with Guinea grass and Vetiver Grass	10.0	1.00	10.00
			Total	**51.25**

Government of Gujrat
Forest & Climate Change Department

FOREST PROTECTION IN

Gujarat

COMPENSATORY AFFORESTATION FUND MANAGEMENT & PLANNING AUTHORITY, GUJRAT CAMPA

Gujarat ranks second in the country with a mangrove cover of approximately 1175 square kilometers. Over the years, through consistent efforts, Gujarat has seen a significant increase in mangrove cover, from 397 square kilometers in 1991 to 1175 square kilometers in 2021. The State has established the first Marine National Park and Marine Sanctuary in the Jamnagar Area. To safeguard and regenerate mangrove ecosystems while promoting sustainable livelihoods, the Mangrove Initiative for Shoreline Habitats & Tangible Incomes (MISHTI) scheme was launched by the Union Minister of Environment, Forest, and Climate Change. Gujarat State CAMPA has continued its work through public-private partnerships for mangrove planting and restoration, using scientific and satellite-based methods to identify over 33,000 square kilometers of suitable sites for mangrove plantation. In the year 2023-24, around 1000 hectares of mangrove plantation were undertaken under the MISHTI project in Kori Creek and Koteshwar Creek. Regular workshops are conducted to enhance the capacity of frontline staff in mangrove ecosystems and plantation techniques. Efforts are underway to engage local communities in adopting seaweed plantation initiatives. These initiatives align with broader environmental goals, including carbon sequestration and coastal resilience, offering long-term benefits for both ecosystems and livelihoods.

NATURE-BASED SOLUTIONS (NBS) AND MANGROVE INITIATIVE FOR SHORELINE HABITATS & TANGIBLE INCOMES (MISHTI) IN GUJARAT STATE

(By: Dr. Jaipal Singh, IFS, CEO, Gujrat (CAMPA)

NATURE-BASED SOLUTIONS (NBS)

Justify 2 pages ecosystems to address societal challenges while providing environmental, social, and economic benefits. These solutions utilize the power of nature to mitigate climate change, enhance resilience, and promote sustainable development. Therefore, Gujarat is considering NbS and these are increasingly recognised as important components of

climate targets. Nature- based solutions for climate change adaptation are cost-effective way to increase coastal resilience while generating multiple benefits (or co- benefits) for nature and society.

MISHTI (Mangrove Initiative for Shoreline Habitats & Tangible Incomes) scheme was announced in the Union Budget of 2023-24. Mangrove Initiative for

Shoreline Habitats & Tangible Incomes (MISHTI) envisage to comprehensively explore the possible area for development of Mangroves covering approximately 540 Sq. Kms. spreading across 11 States and 2 Union Territories during five years commencing FY 2023-24 onwards. The sharing of best practices on plantation techniques, conservation measures, management practices and resources mobilization through Public Private Partnership are objectives of the MISHTI scheme.

MISHTI was launched by Hon'ble Union Minister of Environment, Forest and Climate Change by simultaneous programmes throughout the coastal States for this purpose. Hon'ble Minister participated in a programme organized in Gujarat at Dwarka. MoUs with industries for participation in MISHTI were also signed. Multiple stakeholders participated in the programme.

The MISHTI scheme is an ambitious initiative that aims to address the threats to the mangrove

ecosystem while providing sustainable livelihood opportunities to local communities. The scheme's objectives are aligned with the global Sustainable Development Goals (SDGs) and the National Action Plan on Climate Change (NAPCC), rejecting the

government's commitment to sustainable development and climate change adaptation.

OBJECTIVES OF MISHTI SCHEME 2023

The objectives of the MISHTI scheme are multi-faceted, aiming to conserve the mangrove ecosystem, promote sustainable livelihoods for local communities, and enhance the resilience of the coastal ecosystem. The scheme's objectives are as follows:

1. Increase the mangrove cover along the coastline and on salt pan lands in India, with a particular focus on the Sundarbans delta and the Hoogly Estuary in West Bengal.
2. Promote community - based mangrove plantation and restoration activities, involving local communities and NGOs in the plantation and maintenance of mangrove forests.
3. Improve the ecological resilience of the coastal ecosystem by protecting against erosion, storm surges, and sea-level rise.
4. Enhance the bio-diversity of the mangrove ecosystem and conserve threat en endangered species.
5. Generate sustainable livelihood opportunities for local communities, such as eco-tourism, crab farming, and honey production.

MANGROVE CONSERVATION EFFORTS IN GUJARAT

Gujarat has a long coastline of more than 1600 km. Two major gulfs, Gulf of Kutch and Gulf of Khambhat are important ecosystems inhabiting mangrove forests. In the extent of mangroves, Gujarat is second in the country, after West Bengal with a mangrove cover of about 1175 sq. km. (IFSR-2019 by Forest Survey of India). Looking to the significance of mangrove, its associates and the marine flora and fauna of coastal ecosystem, Gujarat also notified the first Marine National Park and Marine Sanctuary in the Jamnagar area. Three types of Mangrove Forests are observed in Gujarat i.e. Deltaic, Gulf & Open Coast.

Gujarat State has continued its efforts to enhance the mangrove cover in the coastal region by taking up mangrove plantations over the years and other conservation initiatives, including strong community engagement and capacity building. As an outcome of it, mangrove cover has increases almost three times from 397 Sq Km in 1991 to 1175 Sq km in 2021.

District wise distribution of mangrove cover in Gujarat State is as under:

District	Moderately Dense Mangrove [km2]	Open Mangroves[km2]	Total [km2]
Kachchh	116.14	682.60	798.14
Jamnagar	28.06	203.20	231.26
Bhavnagar	5.84	15.23	21.07
Ahemdabad	0.71	25.67	26.38
Amereli	0	2.61	2.61
Anand	0	5.72	5.72
Bharuch	13.33	32.05	45.38
Bhavnagar	5.84	15.23	21.07
Navsari	0	11.15	11.15
Surat	3.87	15.45	19.32
Valsad	0	2.02	2.02
Vadodara	0	2.98	2.98
Junagadh	0	3.91	3.91
Rajkot	0.90	2.63	3.53

Major species of mangrove and its associates in Gujarat State are :

S. No.	Scientific Name	Family	Location in Gujrat
1	Avicennia marina (Forssk.) Vierh.	Avicenniaceae	South Gujarat and Gulf of Kutch
2	Avicennia officinalis L.		
3	Rhizophora mucronata Lam.	Rhizophoraceae	South Gujarat
4	Ceriops tagal (Pers.) C.B.Rob.		Gulf of Kutch
5	Ceriops decandra (Griff.) Ding Hou		
6	Bruguiera cylindrical (L.) Blume		South Gujarat
7	Bruguiera gymnorrhiza (L.) Lam.		
8	Rhizophora apiculata Blume		South Gujarat
9	Kandelia candle (L.) Druce		South Gujarat
10	Aegiceras corniculatum (L.) Blanco	Myrsinaceae	South Gujarat, Gulf of Kutch
11	Acanthus ilicifolius L.	Acanthaceae	South Gujarat
12	Sonneratia apetala L.f.	Sonneratiaceae	South Gujarat
13	Lumnitzera racemosa Willd.	Combretaceae	South Gujarat
14	Exocaria agallocha L.	Euphorbiaceae	South Gujarat

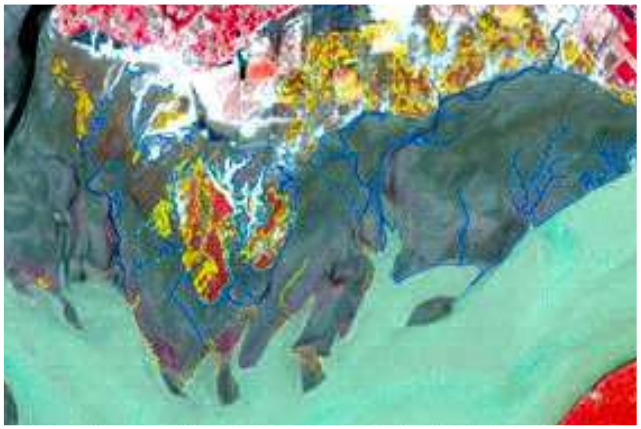
Tentative Potential Area Mapped by BISAG on Gujarat Coast – Except Kori Creek & Sir Creek (Sq km)

Coastal Length	Open Mud Flats	Gap Filling Areas	Other Potential areas	Total Potential areas
1600 km	183.39	110.50	40.0	333.89

Potential area estimated by NCSCM, Chennai except Kori & Sir creek (Sq km)

State	Coastal Length* (km)	Existing	Degraded & Gap Plantation	Mudflats	Open Mudflat	Replacement	Total Plantation Potential
Gujarat	1650 km	1175.0	205.02	143.39	40.00	10.00	258.41

Potential Mudflat area in Kutch- 13.32 sq km



Potential Mudflat area in Anand- 95.39 sq km

District wise estimated Potential Area for mangrove:

Sr. No	District	Total Mudflats in Hector	Potential Mudflats in ha [Except Kori & Sir Creek]
1	Kutch [Except Kori & Sir Creek]	13544	9456
	Kutch –Kori & Sir Creek	25380.7	Not evaluated
2	Morbi	2631	3021
3	Jamnagar	3149	3325
4	Dev Bhumi Dwarka	1525	265
5	Porbandar	265	325
6	Junagadh	138	138
7	Gir-Somanth	340.2	212
8	Amreli	759	759
9	Bhavnagar	10313.1	3233
10	Ahmedabad	6348.1	2125
11	Anand	15114.9	2213
12	Vadodara	455	455
13	Bharuch	14075	3866
14	Surat	5351.6	2945
15	Navsari	432	756
16	Valsad	411.2	456
	Total	**100232.8**	**33225 ha**

PLANTATION TECHNIQUES:

In Gujarat State, following plantation techniques are adopted

1. Seed sowing- Direct sowing of propagules is taken up in suitable areas with lesser tidal amplitude.
2. Mound Planting- Due to very high tidal amplitude in larger part, mounds of 1mX1mX0.30 m are formed on mudflats and seed sowing is done on these mounds. This is locally developed technique to prevent seeds/propagules from being washed out due to high tidal amplitude and success rate is quite satisfactory.
3. Nursery raised seedling- Nurseries are also established for raising seedlings which are then planted in suitable areas.
4. Formation of Channels- Channels are also formed to facilitate inflow of sea water in the otherwise drying mudflats and planting is done in these channels.

Raised Bed Mound Plantation

Poly Bag Plantation

Trenches

Seed Sowing

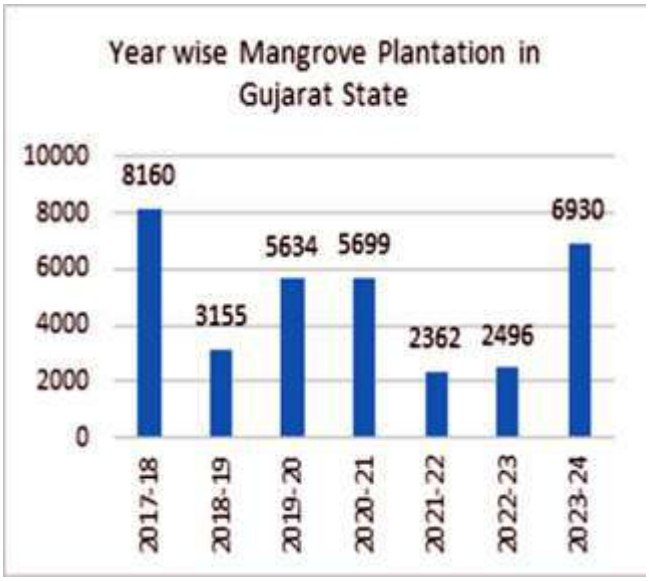
CONVERGENCE OF RESOURCES FOR MANGROVE PLANTATIONS

Gujarat Forest Department and Gujarat Ecology Commission are the implementing agencies and convergence of resources is focused. There is a strong industry participation for mangrove conservation in Gujarat State. Industries provide the financial support to Gujarat Ecology Commission for this purpose. In addition Gujarat State CAMPA has also undertaken mangrove plantation activities in recent years in the Annual Plan of Operations. Gist of mangrove plantations taken up by Gujarat State in the recent years is given in Table

District wise mangrove plantation after the launch of MISHTI is as follows

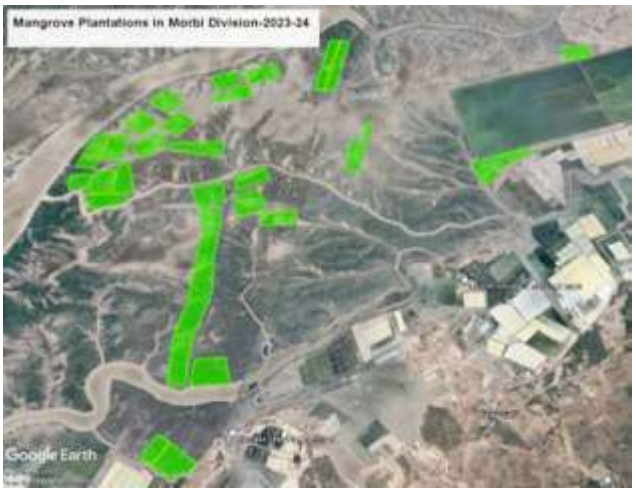
Year wise Mangrove Plantation in Gujarat State

Sr. No.	Year	Plantation by Forest Dept. (in Ha.)	Plantation by Gujarat Ecology Commission (in Ha.)	Total
1	2017 - 18	7850	310	8160
2	2018 - 19	2650	505	3155
3	2019 - 20	4990	644	5634
4	2020 - 21	5250	449	5699
5	2021 - 22	1490	872	2362
6	2022 - 23	1620	876	2496
7	2023 - 24	4740	2190	6930
	Total	**27890**	**5846**	**34436**



Details of Mangrove Plantation taken up during 2023-24

Sr.	Division	D & M	CAMPA	GEC	Total
1	Valsad	100	0	0	100
2	Ahmedabad	100	0	0	100
3	Anand	100	0	0	100
4	Kachchh	340	1300	210	1850
5	Surat	70	0	460	530
6	Bharuch	60	0	1520	1580
7	Bhavnagar	350	200	0	550
8	Morbi	75	1800	0	1875
9	Jamnagar	145	100	0	245
	Total	**1340**	**3400**	**2190**	**6930**



MANGROVE RESTORATION IN KORI CREEK- A STRATEGIC CREEK IN THE BORDER AREA.

Kori Creek is located on western side of prominent pilgrimage place Koteshwar in Lakhpat Taluka of Kutch district. There are many other small and large creeks situated in the area out of which Padala Creek, Pabewari Creek, Wainwari Creek, Kothawari Creek and Sir Creek are major creeks.

Total area of KORI to SIR creeks (including creeks) is 1400 Sq. KM. Out of that approx. 1000 Sq. KM (1 Lakh Ha.) is land mass. Kori Creek is adjoining to Koteshwar sea shore and Padala Creek, Pabewari Creek, Wainwari

Creek, Kothawari Creek and Sir Creek are major creeks west ward to Kori Creek. Beyond Sir Creek international boundary with Pakistan is situated. Considering Security Aspect, Approach and Transportation

Aspect along with detailed discussion and field visit with BSF personals, Padala Island was selected for working in year 2023-24.

During the year 2023-24, 1000 Ha mangrove plantation is taken up under MISHTI project in Kori Creek as well as in Koteshwar adjoining creek area. This plantation work is completed with seed/propagule sowing method, raised bed method as well as with polybag raised saplings.

The area under plantation has natural distribution of only one mangrove species namely *Avicennia marina*.

Forest Department initiated mangrove plantation work with introduction of two species of mangroves namely *Rhizophora mucronata* and *Ceriops tagal*. Plantation with propagules is taken up in area where there i s good water inundation condition and along creeks.

MANGROVE PLANTATION WITH RAISED BED METHOD

In area with loose mud and proper water inundation, mangrove plantation work is taken up with raised bed method. In this method, a bed of 1m * 1m * 0.3m dimension is prepared and seeds and propagules of mangroves are planted on these raised beds. In this method, 400 to 600 beds are being prepared on basis of site specific situation.

NURSERY PREPRATION ON PADALA ISLAND AND PLANTATION THROUGH NURSERY RAISED SAPLINGS

12.5 lakh mangrove saplings of *Avicennia marina* and *Ceriops tagal* spp. were raised in temporary mangrove nurseries during the year 2023-24. These seedlings were raised through polybags as well as root trainers. These nursery raised saplings are planted in Kori Creek area.

For watering to nursery plants, solar and diesel water pumps were used with establishment of temporary

pipelines. Labour teams were deployed to do every day watering at all nursery sites.

SEAWEED INTRODUCTION IN KORI CREEK

So far there is no any presence of seaweed recorded in

Kori creek area.

Forest Department has established 05 seaweed plot with *Kappaphycus* spp. in Kori Creek area at Padala Island which is the first attempt to introduce seaweed in this remote and challenging area. Seaweed has showed good growth in area. Efforts are being taken for mobilization of local community to take up sea weed plantation in Kori Creek area.

PLANTATION OF MANGROVE ASSOCIATE SPP.

Apart from mangrove plantation, Forest Department has taken up plantation of mangrove associate species on Padala Island. Under this work, 180000 saplings of

Suaeda spp (Morad) are planted along with mangroves.

CAPACITY BUILDING OF STAFF

For capacity building of frontline staff, Forest Department organized a mangrove workshop at

Narayan Sarovar in association with Central University of Gujarat. During the workshop, an exposure was given to forest frontline staff in field of mangrove ecosystem, mangrove plantation technique and other related topics.

ESTABLISHMENT OF MANGROVE LEARNING CENTER AT CORI CREEK AND MANGROVE TOURISM

A campus is developed on Padala Island of Kori Creek with establishment of Mangrove Interpretation Center to give exposure regarding mangrove eco system to visitors. This center is established wi t h pre- fabricated structures. Apart from mangroves, information of other local species are also included for visitors.

In coordination with the Forest Department and BSF, Tourism Corporation of Gujarat Limited has started a boat ride for tourists at Lakki Nala to take the tourists through the mangrove in the area, which would be scaled up.

CONCLUSION:

With a saturation based action plan for mangrove conservation and restoration, it is envisaged to harness the potential of carbon sequestration in sync with Net Zero Goals. This will also have long term sustainable benefits for coastal resilience and blue economy.

Government of
Jammu & Kashmir

FOREST PROTECTION IN

Jammu and Kashmir

COMPENSATORY AFFORESTATION FUND MANAGEMENT & PLANNING AUTHORITY, JAMMU AND KASHMIR CAMPA

The unstable mountain ranges along the Srinagar-Jammu National Highway pose a threat from landslides and erosion. To counter these issues, the Jammu & Kashmir (J&K) Forest Department initiated various initiatives supported by CAMPA funds. They successfully stabilized slopes using coir fiber logs, woven and non-woven geo-textile mats. Coir fibers promotes deep rooting and add nutrients, thereby providing a natural erosion control solution. Woven geo-textiles stabilize the soil with a tight makeup, while non-woven ones offer adequate drainage by allowing easy water flow through the fabric. These practices have yielded desired results, ensuring the stability of the Highway. State Annual Plan of Operations (APOs) are prepared with Panchayat consultation, focusing on species that can generate livelihoods. Plantation of species like Chikri, Parrotia, Qalnut, Hazelnut, and Mulberry in various forest divisions supports local artisans, weavers, and sericulture. Collection of Chir pine needles for handicrafts and briquettes not only adds to the locals' income but also helps preventing forest fires. CAMPA funding has played a significant role in these endeavors. The Kandi belt in Jammu faces water scarcity and land erosion due to its undulating terrain and erodible soils. Under a CAMPA project, measures have been undertaken since 2021-22 to mitigate these issues. RCC check dams, watershed treatments, and vegetative check dams aims to recharge groundwater, reduce runoff, and improve soil moisture. Upgrading existing ponds and planting stabilizing vegetation like Sisal and grasses further target water scarcity and land erosion, ensuring environmental sustainability in the region. CAMPA funds supported this project, contributing to its success.

STABILIZATION OF LANDSLIDE/LANDSLIP AREAS ON NATIONAL HIGHWAY (1A)

(By: Shri Asaf Mehmood Sagar, IFS, CEO, Jammu and Kashmir UT (CAMPA)

The Srinagar-Jammu National Highway passes through unstable mountain ranges, which makes the Highway prone to landslides and erosion. Realizing the gravity of the problem, the J&K Forest Department has undertaken measures/ initiatives to stabilize the slopes in the region with a substantial budgetary support under CAMPA. The initiative taken has yielded positive results. The use of materials such as coir fibre logs, woven and non-woven geo-textile mats to stabilize the slopes in this area, has been very successful. Coir fibres are made from the husk of coconut and provide a natural solution to erosion control. Coir fibres allow deep rooting and provide nutrients to support the growth and development of vegetation. The woven geo-textiles are made from different types of fibre. Their tight makeup stabilizes soil and is effective for erosion control. Non-woven geo-textiles are used for their smooth, felt-like surface that allows water to flow through the fabric while still filtering particles. Non-woven geo-textiles are used in areas that require subsurface filtration and stabilization and provide adequate drainage. These practices have proven to be quite successful and yielded desired results which are depicted through following photographs.

Co.47/Rbn. Karol (Ramban Forest Division)

Co. 14/Btt. Nashri Adjacent to Tunnel (Batote Forest Division)

Co. 14/Btt. Nashri Adjacent to Tunnel (Batote Forest Division)

Co. 23/Btt. Byepass Peerah (Batote Forest Division)

FODDER PRODUCTION AND DISTRIBUTION

Grazing is one of the major drivers of forest degradation. Due to high livestock population and their dependence on forests for fodder/grass, the forests of J&K are under tremendous pressure. In consonance with the objectives and laid down strategies of J&K State Forest Policy, 2011, the Agrostology Wing of J&K Forest Department and territorial forest divisions have been augmenting the fodder production. The high yielding, palatable fodder and leguminous plant species are grown in the degraded forest areas after fencing the area for protection. The harvested fodder from the fodder units is distributed to the local people through cut and carry system and provided free of cost. Budgetary support under CAMPA has been responsible for success of this project in supplementing the fodder production.

Agrostology Range Jammu-Samba

Agrostology Range Bandirpora

Agrostology Range Kupwara

Agrostology Range Rajouri

Agrostology Range Poonch

Agrostology Range Baramulla

LIVELIHOOD SUPPORTING ACTIVITIES

During preparation of Annual Plan of Operations, Panchayats are consulted in respect of all site-specific proposals. Plantation of those species which have potential to generate livelihood for local inhabitants has been given due consideration.

- Promotion of Chikri (*Buxus wallichiana*) plantation in Rajouri and Poonch Forest Divisions in order to support local traditional Chikri handicraft artisans.
- Willow wicker plantation in Sind Forest Division to support traditional Wicker work.
- Parrotia (Pohu) species plantation in Anantnag/ Kulgam Forest Divisions to support Kangri weavers.
- Walnut and Hazelnut plantation in Kamraj Forest Division to provide income from fruits to local inhabitants.
- Mulberry plantation in Kamraj and Nowshera Forest Divisions to support sericulture and fodder production.
- Promotion of Bamboo plantation in Kathua, Jammu, Samba, Billawar and Reasi Forest Divisions.

Pine needle handicrafts and Pine briquette making in Nowshera, Rajouri and Reasi Forest Divisions. Chir pine needles which become a cause of forest fire every year in Nowshera, Reasi, Rajouri and other forest divisions are collected and used for making handicrafts and briquettes which adds to the income of locals besides helping in cleaning the forest floor thereby preventing forest fires. Self Help Groups have been constituted in fire prone areas which are cooperating with the Department in controlling forest fires. The funding under CAMPA for preventing forest fires has played an appreciable role in this regard.

Pine needle Handicrafts

Chikri handicraft artisans

Kangri weaver using Parrotia (Pohu) branches

TREATMENT OF KANDI AREA OF JAMMU PROVINCE

The sub-montane tract lying in the outer Himalayas of Jammu Region- spread over Jammu, Samba and Kathua districts – is locally called Kandi belt. It lies between Ravi River in the east and Munawer Tawi in the west, bounded by Shivaliks in the north, and National Highway NH 1A separates it from the plains. The area has an undulating topography, steep and irregular slopes, erodible and low water retentive soils and badly dissected terrain by numerous gullies. Total estimated area of Kandi is 812 Sq. km. Due to higher elevation of Kandi area, the surface water and ground water flows towards the plains during rains. As a result of these factors, it is a water scarce region. The main sources of water for agriculture such as ponds, springs and dug wells are in various stages of drying and need maintenance.

A special project under CAMPA has been undertaken since 2021-22 to address these problems by way of improving ground water recharge, decreasing runoff, improving soil moisture regime of the area and increasing vegetative cover by:

a) Construction of RCC check dams across perennial streams for improving ground water recharge, water for longer period of time and decreasing the runoff of streams.

b) Treatment of the catchment on watershed basis through various interventions like DRSM, vegetative check dams, gully plugging, crates and gabion structures to decrease the runoff to arrest silt and increase the runoff time of the surface water for effective percolation.

c) Construction/up-gradation of existing ponds to increase availability of water for longer period of time.

d) Plantation of Sisal, grasses and good soil binders on loose soil and higher slopes for stabilization.

Construction of RCC Check Dam in Compt. 11/JDR of Surinsar Mansar WLS

Construction of RCC Check Dam at Simble Lehar Jammu

Construction of Pond at Bajoka Chak, Kathua

Construction of RCC Check Dam at Phangeri, Kathua

Earthen dam for gully control and water harvesting at Kathua

Construction of Pond at Bajoka Chak, Kathua

Government of Jharkhand

FOREST PROTECTION IN *Jharkhand*

COMPENSATORY AFFORESTATION FUND MANAGEMENT & PLANNING AUTHORITY, JHARKHAND CAMPA

The utilization of CAMPA funds in Jharkhand has significantly contributed towards addressing various challenges and improving the lives of local communities amidst the COVID-19 pandemic. With nearly 30% of its land covered with forests, Jharkhand faces vulnerabilities due to rainfed agriculture and climate-related factors, leading to significant migration for labour opportunities. The Garib Kalyan Rojgar Abhiyan (GKRA) and Atma Nirbhar Bharat initiatives, supported by CAMPA funds, focuses on rural employment generation, infrastructure development, and natural resource management. CAMPA funds were utilized for afforestation, plantation and its maintenance, check dam construction, and forest road repair, creating over 404,548 man-days of employment and enhancing green cover and water resources. Jharkhand's forest cover of 23,721.14 Km^2 is characterized by open forests and medium dense forests. The Silviculture Operation scheme with Assisted Natural Regeneration aims to enhance forest density, arrest forest degradation, increase biodiversity and conserve soil and moisture. Over 25,792 hectares of forest land has been treated under this scheme using CAMPA Funds, resulting in improved vegetation growth, increased biodiversity, improved water tables, and enhanced forest density. CAMPA has played a vital role in enhancing climate resilience and promoting carbon neutrality. In Jharkhand carbon sequestration from CAMPA plantations amounted to 907.29 tons over 72,193 hectares, with a CO_2 offset of 3320.713 tons CO_2e. Moreover, water management in forests through CAMPA Funds, particularly in the Koderma Forest Division, has been successful. Overall, CAMPA initiatives in Jharkhand demonstrate a strong commitment to environmental conservation, economic stabilization, and improving the livelihoods of local communities.

ROLE OF CAMPA IN GREENING OF FORESTS AND SMILES OF MIGRANT LABOURS UNDER GKRA : A SUCCESS STORY IN THE TIMES OF CORONA PANDEMIC IN JHARKHAND

(By: Shri Sanjiv Kumar, IFS, CEO, Jharkhand (CAMPA)

Abstract

Jharkhand is a land of forest with 29.71% of its geographical area under forest cover. But it is in a vulnerable state due to prevalence of rainfed agriculture and various climate-related factors. It forces many people to migrate in different States in search of wage labourers works. In early 2020, Corona pandemic broke out which resulted in unemployment of these labours in the States where they were employed. And they had to come back their home in Jharkhand empty handed. It could have created a condition of another crisis but schemes like Garib Kalyan Rojgar Abhiyan (GKRA) and Atma Nirbhar Bharat were lunched for their respite. CAMPA Fund played a crucial role. The present narration is all about how CAMPA Fund were utilized under GKRA in Jharkhand.

Introduction

During early March, 2020, World witnessed deadly arrival of virus generated pandemic COVID-19. This led to losses in financial markets worth trillions of US dollars leading to reductions in production, employment, incomes and consumer demand resulting into economic decline, closures of factories, construction works, etc. on an unprecedented scale. Consequently job cuts and a rapid increase in unemployment job losses among migrant workers from the state of Jharkhand who are particularly vulnerable, led to reverse migration to their home state (mainly to rural areas), reduced remittances, loss of livelihood, poverty and food insecurity. As a result, production, trade and employment have been scaled down in response to the low demand. Since the construction sector is a major employer (including for migrant workers), its decline contributed substantially to increased unemployment.

In response to the economic crisis Government initiated economic stimulus packages to bail out financial institutions and to stimulate production and consumption. The Government of India came up with Garib Kalyan Rojgar Abhiyan (GKRA) to tackle the impact of economic crisis on workers in India. Employment generation through public works was an important thrust of many of the stimulus packages. An increase in jobs was expected to enhance income, increase consumption and thus stimulate production and further employment, helping to break the downward spiral.

In ,three Districts- Hazaribagh, Giridih and Godda were earmarked for GKRA because of relatively large number of migrating labourers in these Districts. CAMPA Funds were used to implement this scheme in these Districts.

FORESTRY IN THE ECONOMIC STIMULUS PACKAGE

Forest Department always plays an important role for the upliftment of the people, some of which are:

(I) Providing employment to local people in rural and remote areas.

(ii) Fodder, fuel and small timber for agricultural implements, house construction as per the Government norms.

(iii) Providing 90% share of the produce as per the resolution of Government of Jharkhand from the earning of forests.

(iv) Promoting irrigation and fishery facilities by constructing water harvesting structures/ check dams in rural areas.

(v) Providing livelihood base on Non-Timber Forest Products (NTFPs)

Thus, forestry has a positive role in the economic stabilization efforts, particularly through job creation and rebuilding of the natural capital base. In Jharkhand, three Districts were selected under GKRA- Hazaribagh, Giridih and Godda. In these Districts, Forest Divisions carried out works related to afforestation, silvicultural operation, infrastructure development, Wildlife habitat improvement etc under CAMPA thus helping in job creation and economic stabilisation in the times of COVID-19 crisis. The Divisions which worked for it are – Godda Forest Division, Giridih East Forest Division, Giridih West Forest Division, Hazaribagh West Forest Division, Hazaribagh East Forest Division, Hazaribagh Wildlife Forest Division, and Hazaribagh Social Forestry Division.

Employment generation through CAMPA under GKRA

Compensatory Afforestation (CA):

Maintenance: Maintenance of CA plantations was carried out in 4498.299 Ha during 2020-21.

Plantation in CA: Plantation in 719.5 Ha was carried out in these three Districts during 2020-21 under GKRA using CAMPA Funds.

Advance Work (First year work): Advance Work on 1687.6 Ha was carried out under CA.

CA: Advance Work and Plantation under GKRA in Madhgopali, Hazaribagh

IWMP: Work under Integrated Wildlife Management Plan was carried in Giridih and Hazaribagh district.

Net Present Value:

Maintenance: Maintenance of plantations was carried out in 680 Ha during 2020-21.

Plantation: Plantation in Ha was carried out in these three Districts during 2020-21 under GKRA using CAMPA Funds.

Silviculture Operation: Advance Work of silviculture operation in 1760 Ha, completion in 1050 Ha and maintenance in 2439 Ha was carried out during this period in these Districts.

Check Dams: Fifty six earthen check dams with stone pitching were constructed.

Forest Guard Quarters: Five forest guard quarters were constructed.

Grassland Development: Works related to grassland development (Advance and 2nd year) in 45 Ha.

Grassland development in Hazaribagh

Forest Road Repairing: 254.7 Km of forest roads were repaired under GKRA in these three districts.

Soil Moisture Conservation: It was carried out in five hundred Ha.

Check dam in Hazaribagh

Forest Guard Quarter, Hazaribagh

IMPACT

An impact study done in these Districts to know the effect of action taken by Forest Divisions show that the number of people migrating to other States/areas has almost halved after the initiative of Forest Department as large number of people got employment at their doorsteps during this period (2020-21). Apart from this, the number of people working in the agriculture and associated activities has also increased. The decrease in migration also had a positive effect on the health of people as they have sufficient supply of good food with sustainable income. The natural assets created during forestry operations give rise to secondary and tertiary economic activities. Plantation of NTFP yielding species gives livelihood option for Lac and Tassar cultivation. Water harvesting structures created are helpful not only for wildlife and regeneration of forests but also has improved water table which has a direct impact on agriculture production and meeting water crisis.

All the Forest Divisions of these Districts acted properly for the help of people in need and did a very commendable job by providing employment to local migratory labours by creating 404548 man-days bringing smile on their face besides improving green cover and water regime.

Sl.No.	Name of Districts	Man-days Generated
1	Hazaribag	142270
2	Giridih	150581
3	Godda	111697
	Total	**404548**

CAMPA FUND AND IMPROVEMENT OF DEGRADED FORESTS THROUGH SILVICULTURE OPERATION IN JHARKHAND

Introduction

Jharkhand has an area of 79,714 sq. km. As per FSI Report of 2021 it has 23721.14 sq. Km of forest cover which is 29.71 % of geographical area of Jharkhand. But area of open forest and medium dense forests are 21120.09 sq. Km. which are full of root stock interspersed with gaps. In order to improve density of forests, scheme of Silviculture Operation with Assisted Natural Regeneration has been taken up. These are done mainly in the area of Rehabilitation working Circle. In the past five years, a total of 25792 Ha of such forest land has been treated under this scheme with CAMPA Funds.

General constitution of crop taken for Silvicultural Operation:

- Silviculture operation is mainly done in Rehabilitation working Circle with Saland miscellaneous forests which are stagnated in bushy stage (Salrooted wastes) or perpetual sapling stage due to extremely adverse biotic factors like unregulated felling, grazing and forest fire. They are virtually without any vegetation cover i.e. scrubs are also included in this scheme.
- Areas which are rehabilitated or planted by artificial planting in the past but degenerated back to bushy stage or blanks again due to inadequate protection.
- Areas under Coppice working Circle of the previous working plan which degenerated into bushy or sapling forest due to excessive unregulated fellings, extensive grazing, recurring incidence of fire and other biotic factors.

Objective of Scheme:-

(i) To arrest the further degradation of the forests and restoration of ecological status as a result of rising biotic pressure.

(ii) To increase biodiversity of the forests by encouraging the natural vegetation growth.

(iii) To optimize forest productivity, restore crop stand density by artificially planting trees in gaps and supporting the existing root stock through silvicultural operations to aid rehabilitation.

(iv) Soil and moisture conservation of the forest land to arrest soil erosion and loss of soil nutrients and make it available to the growing stock of the area and assist their rehabilitation and growth into healthy forests. The scheme proposes to make site specific soil/moisture conservation measures like construction of smaller check dams, silt detention dams, contour trenches, bunds and gully plugging gas per requirement of the area.

(v) For effective control over the ever rising biotic pressure on forest land and regulation of forest use by local people with the help of members of the Joint Forest Management Committee (JFMC) by optimizing the management/regulation principles with the sustained availability of timber, fuel wood, small timber and fodder to the local population.

(vi) Rehabilitation of blank areas technically called scrub with adequate soil depth by artificial plantation/ sowing of seeds of suitable species.

Activities undertaken:

Silvicultural operations are mainly carried out on priority basis. The soil conservation site specific schemes are also executed along with silvicultural operation. Major steps taken are-

i. The natural regeneration is protected.

ii. Soil and moisture conservation measures are compulsorily executed as an integral and inseparable component in these schemes.

iii. A 20 wide strip on the outer boundaries and along highways are preserved and protected unless the area is totally blank.

iv. The dead, dying, diseased and uprooted trees are marked as a measure of salvage felling. If any tree under the above category is a natural habitat or nesting/breading place for wildlife then those are preserved.

v. The fruit bearing species like Amla (*Phyllanthus emblica*), Mahua, Imli, Harra, Bahera, Jamun, Bel,

Tendu and Kachnar present in the area are preserved.

vi. Tree species associated with the religious faiths like Pipal, Bargad etc. are also spared.

vii. Views of the local communities are necessarily obtained before taking decision in the matters of execution and choice of species subject to suitability of site and other relevant factors.

TECHNIQUE:

The technique for rehabilitation will broadly consist of:

i. Fencing of the area.

ii. Coppicing and cutting back of defective stems and pollards.

iii. Cultural Operations: The cultural operation consists of cleaning and stool thinning. The useless species interfering with or likely to interfere with the growth of the main species are cut. The number of shoots per stool is reduced to two or three. The climbers are cut.

iv. Soil and Moisture Conurbation Works: Soil and moisture conservation works are taken up along with other operations and are completed before the onset of monsoon. These working include main operations namely contour trenching, nalab undings, check dams, silt detention dams and gully plugging as per site requirement.

Contour trenches are taken up all over the area. In the areas above 250 slopes, trenches are dug in accessible areas only. The section of the trenches are 45 cm and dug in staggered fashion to slowdown the water flow and allow safe escape to equestrian off and prevent damage to the structures. Soil from trenches is heaped on the lower side of the trenches. The contour interval between consecutive trenches is kept 1.5m. The laying out of contour lines are done with great precaution as faulty direction may lead to wastage of precious resources.

Slope in degree	Distance between consecutive trenches
Up to 15	8m
15 to 25	5m
Above 25	3m

Silt detention dam/nala bundings/ check dams/ gully plugging are in sloppy and along Nala/ rivulets to reduce run off and to arrest the silt. Nala bundings / gully plugging starts from the top of nala downwards. The entire catchments from ridge to valley are taken as a unit to reduce the cost and make it most effective.

E. Gap plantation in totally blank are as with suitable species.

B. Tending of rehabilitated natural crop and planted crops; and

C. Strict protection of the crop against unregulated felling, grazing and fires.

D. Singling of shoots in the next year.

RESULT: The area thus treated with this technique regains its vegetation growth. Shoots sprout from coppice / dressed stumps of species like Sal (*Shorea robusta*) attains height of 10-15 feet in two years. It comes up with associates like Asan and other herbs which increases biodiversity of the area. Similarly such operation raises water table of the area which improves regeneration of the forest area. Ultimately there is an increase in density of forest also.

Before operation Place-Morangi, Year 2017, Hazaribagh

After Operation , in June 2021

रांची, सोमवार 07.06.2021 | प्रभात खबर | 02

सिल्वी कल्चर से हरा-भरा बना मोरांगी जंगल

वर्ष 2017 में उजाड़ था मोरांगी जंगल

मोरांगी जंगल में हरियाली लौटी

प्रतिनिधि, हजारीबाग

हजारीबाग से 10 किलोमीटर में फैले मोरांगी जंगल दशकों के बाद फिर से हरा-भरा बना है. यह जंगल हजारीबाग-रामगढ़ एनएच 33 पर कुसि पर्यटन केंद्र के पूर्वी हिस्से में बसा हुआ है. वर्ष 2017-18 में यहां भू-भाग पर घास, बेर, पलाश सहित अन्य पेड़ों के ठूंठ व झाड़ियां नजर आती थीं. कई पेड़ों की जगह घुरमा की झाड़ी और घुरघुट जंगल में था. जंगलझाड़ एवार्ड में उजाड़ पड़े जंगल को फिर से हरा-भरा करने का सफल प्रयोग का विवरण ने मोरांगी जंगल में किया है. विस्तृत जानकारी में बताया गया है. सिल्वी कल्चर से जंगल बढ़ाया गया. फरवरी में 12 से 15 फीट ऊंचाई वाले पौधे मौजूद हैं. जंगली जलेबार और जामीर पौधों का आकार भी शुरू हो गया है.

सिल्वी कल्चर के कार्य : सिल्वी कल्चर ऑपरेशन में कटे पेड़ों के ठूंठ नये कोंपल पत्ते निकाली है. इसे बढ़ने का अवसर दिया जाता है. पौधों के विकास उनकी मोटाई का आकलन पीपलीन का किया जाता है. ऑपरेशन एरिया को 50 गुणा 5 मीटर के दायरे में चौकोर पौधों को पीपलीन की गयी. पेड़ों की ठूंठ को तेज धारदार हथियार से काटा गया. ठूंठ से नये पौधे निकलने लगे. इससे ही जंगल बढ़ने लगा.

जानवरों से बचा जंगल : ग्रामीणों के सहयोग से जंगल बचाने का कार्य हुआ. वर्ष 2017-18 में वैध खेतरा के लगा हुआ जंगल को हरा-भरा करने का काम शुरू हुआ. जंगल के चारों ओर ट्रेंच खुदाई की गयी. जंगल के आसपास गांवों में पहरेदारी लोगों को जागरूक करने का अभियान चलाया गया. मिट्टी की कटाई रोकने और मिट्टी में नमी बरकरार रखने के लिए भी काम शुरू हुआ. जंगल में मौजूद पानी के प्राकृतिक स्रोत को कई जगह मिट्टी से बांधकर छोटे-छोटे डैम बनाये गये. ग्रामीणों का जुड़ाव करने के लिए इन छोटे-छोटे डैमों में मछली पालन किया गया. जिससे ग्रामीण जानवरों को बचाने के लिए खाली जमीन में छोटे-छोटे गड्ढे बनाने में लगे रहे.

डीएफओ सह ओएसडीएम ने 2017-18 में किये गये सिल्वी कल्चर की वृद्धि दर्ज की

डीएफओ सह ओएसडीएम ने 2017-18 में किये गये सिल्वी कल्चर की वृद्धि दर्ज की

रांची. इसमें झारखंड में 58.41 घनमीटर की वृद्धि दर्ज हुई है. इसमें हजारीबाग डिविजन के अलावा वन प्रमंडल में 11.35 क्यूबिक मीटर/हेक्टेयर की वृद्धि दर्ज हुई है. हजारीबाग डिवीजन में जंगल में बढ़ाने में इसीएमए एवं कमीटी का सहयोग मिला सकते हैं. मनीष कुमार, आरएफओ

ROLE OF CAMPA IN ENHANCING CLIMATE RESILIENCE OF FORESTS AND ITS DEPENDENT COMMUNITIES IN JHARKHAND

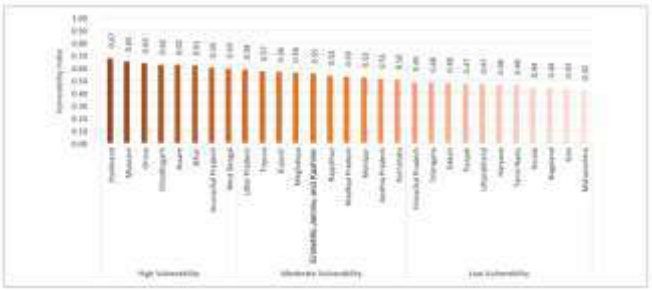
Introduction:

Jharkhand was carved out of the southern part of Bihar State on 15 November, 2000. Jharkhand shares its border with the States of Bihar to the north, and Chhattisgarh to the west, Orissa to the south, and West Bengal to the east. It has an area of 79,714 sq. km. The name "Jharkhand" means "The Land of Forests". Jharkhand accounts for 3.4% of the total forest cover of the country and ranks 10th among all States. The recorded forest area of the state is 23,605 sq. km. which is 29.61 % of the geographical area of the State. As per Champion and Seth (1968) Classification for Forests, the state has five forest types *viz.* (i) Moist Peninsular Low-Level Sal-3C/C2e (ii) Dry Peninsular Sal-5B/C1c, Northern Dry Mixed Deciduous Forest-5B/C2, Dry Deciduous Scrub-5/DS1, Dry Bamboo Brakes- 5/E9.

Jharkhand has 32 tribal groups. These are the Asur, Baiga, Banjara, Bathudi, Bedia, Binjhia, Birhor, Birjia, Chero, Chick-Baraik, Gond, Gorait, Ho, Karmali, Kharia, Kharwar, Khond, Kisan, Kora, Korwa, Lohra, Mahli, Mal-Paharia, Munda, Oraon, Parhaiya, Santal, Sauria-Paharia, Savar, Bhumij, Kol and Kanwar.

Forests make up 29.76% of the Jharkhand's land mass and provide essential resources to the daily livelihoods of forest dependent communities– close to 1/5th of total population. Forests are key to ecosystem services, including mitigation and adaptation to climate change, influencing weather patterns, capturing and storing carbon, providing food and fuelwood for many poor and vulnerable communities, conserving biodiversity and generating employment.

Despite its green cover, the State has the highest vulnerability to climate change, with a vulnerability index of 0.6742. Ten of the State's 24 districts, namely Sahibganj, Pakur, Chatra, Garhwa, Palamau, Giridih, Hazaribag, Bokaro, Khunti, and Godda, are classified as highly vulnerable . Department of Science and Technology has carried out a study for measuring vulnerabilities across States and Districts in which the highest vulnerability index was obtained for Jharkhand (0.67) and the lowest for Maharashtra (0.42). This vulnerability ranking is based on a set of indicators that were used in this assessment with a specific objective. These indicators predominantly focused on socio-economic drivers as well as those related to primary sector-



Source: Vulnerability report by DST-Govt of India

summary of the initiatives taken under various schemes of CAMPA for mitigation and adaptation by Department of Forests, Environment and Climate Change, Jharkhand:

The underlying objective of the CAMPA scheme is to compensate for forest land that is diverted for non-forest use. This mandate continuously adds to the pool of forest resources and has created a massive green cover in the State and resulted in social and economic outcomes.

These works envisage to enhance capacities and provide support services for facilitating adaptation; create carbon sink for mitigation, improvement of forest micro climate through Soil and Moisture Conservation (SMC) & Water Harvesting (WH); enhancement of gender sensitivity and climate resilient livelihood systems; and to bring about energy-use efficiency and alternative energy use. The works undertaken under CAMPA have brought visible contribution in the wake of the National commitment to make India carbon neutral by 2070.

1. Creation of Carbon Sink

1.1. Climate change mitigation: CAMPA plantations have created massive carbon sinks with the potential to offset GHG emissions and increase carbon sequestration capacity. As of 2021, carbon sequestration from a sample area of 72.193 ha of the CAMPA plantations (2016-17, 2017-18, 2018-19) was found to be 907.29 tons and the carbon capture (CO_2 offset) was 3320.713 tons CO_2e. Thus, plantations created under CAMPA have the

potential to limit the effect of climate change. Also, the large volume of carbon accumulated in the soil improves its quality.

1.2. Carbon markets: Forestry sector has gained prominence in carbon markets in recent years as policymakers, regulators and other key stakeholders realize its vast potential to reduce and offset carbon dioxide. Regulated markets and rapidly evolving voluntary markets allow for commoditisation of sequestered forest carbon for trade. Today, the forestry sector alone makes for almost half of the global carbon offset credits. In this context, the vast plantations under CAMPA (Jharkhand) have the potential to benefit from forest carbon offset mechanism. Out of the three different project types that qualify to produce carbon offsets, CAMPA scheme in Jharkhand can participate in the afforestation or reforestation category which is linked to projects restoring tree cover to previously non-forested land. The assessment of the scheme's performance in 3 years alone has recorded more than 127 species in the surveyed sites, spread across approximately 9515.2 ha. The carbon stock for 9515.2 ha of CAMPA plantations is broadly estimated to be 717,350.93 tCO_2/ha.

1.3. Ecosystem services: Forest is an important resource in Jharkhand and provides several ecosystem services that range from provisioning to indirect regulating and supporting services, and also cultural services in the forms of tourism and religion in Jharkhand. For instance, it is an important source of fruits, seeds and medicinal plants for the local population living in fringe areas. Similarly, they also provide key regulating services in terms of site-based air quality regulation, climate regulation, water regulation (water conservation, water quality and health maintenance), carbon sequestration, as well as regulation of natural hazards (storms, flooding, etc). In terms of cultural services, the local population has new avenues for eco-tourism, spiritual and religious tourism. The total valuation of ecosystem services from the surveyed CAMPA plantations is INR 18506.08 million per year of which INR 4503.87 is from Assisted Natural Regeneration (ANR) sites and 14002.21 from Artificial Regeneration (AR) sites.

1.4. Reduce biodiversity loss: CAMPA activities in Jharkhand focuses on preservation and protection of forest biodiversity and the assessment of CAMPA scheme has recorded more than 127 species. Controlling overgrazing and forest fires are key activities to protect biodiversity. Control of overgrazing helps improve soil quality by preventing surface erosion. Similarly, control over forest fires protects the natural habitat of local floral and faunal species.

Under CAMPA, a range of wildlife interventions are also undertaken to protect and preserve the rich biodiversity found in Jharkhand. Interventions like water holes and check dams prevent animals from migrating into new habitats due to water shortage. Culverts and causeways constructed under the scheme has reduced damage to flora from water logging and erosion. Lastly, structures like watch towers and elephant proof trenches help in protecting wildlife.

1.5 Productive use of reclaimed land: CAMPA works have reclaimed barren land into forest cover. Such land would have otherwise laid unproductive, contributing to soil erosion and negatively affecting air quality. Communities have observed a decline in wind erosion, which is a health hazard that causes difficulty in breathing and allergies. The greenery of the plantation sites, which were previously barren, have created intangible aesthetic value at the community level. These plantations are also a source of firewood for subsistence for the forest fringe communities.

1.6 Infrastructure development: Roads constructed during the plantation phase have yielded additional benefits for remote villages located near these plantation sites by improving connectivity to other areas. Similarly, soil and moisture conservation structures such as check dams constructed under CAMPA are able to control the flow of water and thus reduce surface runoff. Communities have observed higher water levels after soil moisture conservation structures were constructed under CAMPA that has improved water availability.

Photograph: Forest of Palani (Ramgarh) towards REDD+

2. **Capacity Building Initiatives for Adaptation:** Capacity building is the process by which individuals obtain, improve or retain the skills, knowledge, tools, equipment or other resources to do their work competently. It also refers to further developing the performance and thus leading to greater capacity. Villagers of 2500 villages have been given training in different aspects especially for preparation of micro plan. The micro plan covers all the aspect of village /forest development.

   - **Awareness generation:** Under awareness generation, villagers and members of JFMCs have been made aware about the changing weather patterns and climate in their area. Awareness of lesser use of chemicals, soil health, reasons for forest fires, improved cultivation practices, management of forests have been done.

Photographs: Capacity building and interaction with villagers

   - **Income generation:** They were trained on taking up different livelihood intervention under the project with adaptive capacity built for taking up these interventions. These include agriculture and animal husbandry based livelihood activities. Mostly the existing skill sets have been improved.
   - Employment generation: CAMPA engages local population in the creation and maintenance phases of planting and other operations such as nurseries construction works. Depending on the size of plantation, an average 20 to 40 man-days is generated during Advance Work and planting phases, and both men and women participate equally. GKRA- Hazaribagh, Giridih and Godda Districts were selected under GKRA during COVID -19 to give employment to migrated labourers in 2020-21 from CAMPA sPlantation was carried out on 9058.37 Ha and generated 404548 man-days in these three Districts. Similarly 5605872 man-days were created under Atma Nirbhar Bharat in all the 24 Districts from CAMPA Funds.
   - **Forest based livelihoods:** The major aim of CAMPA project is to carry out afforestation work. Plantation of species of NTFP has helped to generate livelihood. Regeneration of Sal after coppicing operation has helped in harvesting for making Sal leaf plates. Similarly, Palash and Kusum species, which are also available in the plantation sites, could be used to cultivate Lac.

Most of the trainings have been based on the low carbon life style ranging from agronomic practices like use of organic formulations in place of chemicals to use of improved cook stoves for reducing fuel wood consumption. All these will contribute to the INDC.

3. **Improving local micro climate through soil and moisture conservation and water harvesting structures:** This has been the most important initiative as this is the core for success of the project. Under this initiatives activities can be divided under three heads-

   - **Area treatments:** Area treatment helps landscapes in reducing soil erosion, improving ground water percolation, changing land use pattern, reversing land degradation and improving soil carbon. In last five years, area treatment with contour trenches is 48972.29 ha and drainage line treatment with 97943 gully plugs. Contour trenches can help in arresting of 29,18,749 tonnes of runoff water per year.
   - **Water storage and harvesting structures:** These are structures built for storage of runoff and use of the surface and sub-surface flow. 3500 check dams have been constructed.

Check dam in Jamshedpur

Cropland near check dam

Interventions under this component have played a great role in moving towards carbon neutrality by reducing emission and increasing sequestration. Activities like contour trenches, gully plugging and check dams have supported in reducing emissions by ensuring greater ground water recharge and gravity irrigation where as it has also helped in carbon sequestration through deposition of silts in the contours, and check dams. Drainage line treatments have led to improvement in the flow in the drainage line and reclamation of land degraded due to deposition of sand in the fields. Further activities like plantations have directly supported in sequestration of 2 tons of CO_2 equivalent per hectare.

The improvement in the soil moisture regime have led to improvement in the natural regeneration along with improving flow in the originating drainages and improvement in water levels of wells in the villages as observed by the villagers. Thus, the work has helped in low carbon lifestyle in the landscapes for moving towards low carbon lifestyle.

Capacity building measures with support system of weather station has helped in climate resilient and low carbon crops. Training on animal husbandry and integrated farming systems has led to greater productivity per unit area with lesser emission.

Intervention in SMC and WHS has led to increased area under irrigation and creation of more water storage structures, which helps in carbon sequestration.

Conclusion:

Hence CAMPA works undertaken under CAMPA have brought visible contribution in the wake of the National commitment to make India carbon neutral by 2070. The idea of LiFE and Panchamrit by the Honourable Prime Minister is also gaining attention under Compensatory Afforestation schemes.

WATER MANAGEMENT IN FOREST THROUGH CAMPA FUND IN JHARKHAND

KODERMA FOREST DIVISION

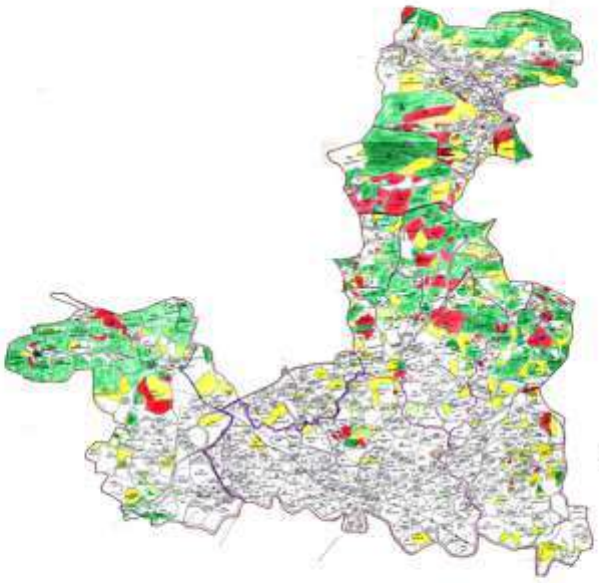
CREATION
5 October, 1956

LOCATION
24°12' to 22°38' N
and
85°05' to 85°47' E

BOUNDARY
North- Nawada (Bihar)
South- Hazaribagh
East- Giridih
West- Gaya (Bihar)

TOPOGRAPHY
Part of Chotanagpur
Comprising hills, hillocks, plains and rounds
Highest point – 677m
Average elevation – 397m

DEMOGRAPHY
(KODERMA DISTRICT)
Population – 716259
Area – 1655.61 Sq Km
Literacy – 66.84%
Urbanisation – 19.7%
TFR – 2.7%



ADMINISTRATIVE UNITS
Ranges – 4 Territorial and 1 Afforestation Range
Beat - 9 Beat
Sub Beat - 39 Sub Beat

FOREST COVER
RFA – 66704.70 Ha.
% of District – 40.33%

NORTHERN TROPICAL DRY DECIDUOUS FOREST
Dry Peninsular sal
Northern dry mixed deciduous forest
Dry deciduous scrub forest
Bosewellia forest

MAJOR FLORA
Sal, Mahuwa, Asan, Salai, Piar, Kend, Khair, Ber, Kachnar, Harsingar, Koraiya, Masondha

MAJOR FAUNA
Elephant, Bear, Sambhar, Chital, Porcupine, Nilgai, Pangolin, Vultures, Migratory birds

Water Management in Forests:

SMC under Plantation-Contour trenches, Gully Plugging, Loose boulder check dams, Silt detention dams

1. Water harvesting structure: Earthen check dams, Pucca check dams, Entry point activities
2. Traditional waterbody- Renovation of traditional water bodies.

Yearwise

Year	CA	NPV	WLMP	SMC	Total
2018-19	10	10	0	0	**20**
2019-20	25	8	0	0	**33**
2020-21	25	10	4	0	**39**
2021-22	22	10	12	4	**48**
2022-23	20	7	12	4	**43**
Total	**102**	**45**	**28**	**8**	**183**

Schemes/plans used

Conditional compliance
Koderma Thermal Power Plant - 90 check dams
Koderma Giridih Rail Line - 12 check dams

Wildlife management plan
28 check dams

NPV
45 check dams

SMC plan
8 check dams

Steps involved

Preliminary analysis

PF wise check dams history

Preliminary visit by field staff

Taking inputs from villagers, public representatives

Site selection

Site visit by officers

Training of field staffs in site selection

Involvement of JFMCs/locals

Selection criteria

- WL abundance
- Potential water retention
- Benefit to villagers

Execution

Regular inspection by officers

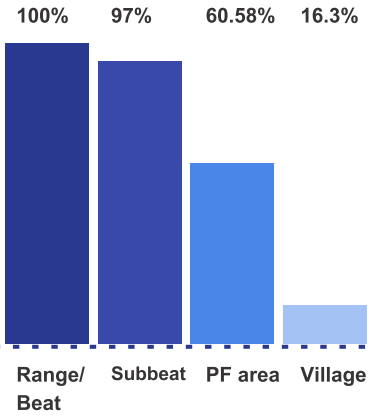
Coverage

All 4 ranges in proportion to their forest areas as much as possible

38 out of 39 sub-beats

117 villages out of total 717 villages

117 PFs having 60.58% (404 km2) of total PF area (667 km2)



Summer Season Photos

AAAAA

2021-22, Piprahi, Gajandi range

2021-22, Ghutitand, Gajandi range

2020-21, Birjamu, Domchanch range

2019-20, Dhursahi, Satgawan range

2020-21, Katiyo, Domchanch range

Summer Season Photos

2021-22, Laxmandih, Satgawan range

2019-20, Chak, Koderma range

2020-21, Kothiyar, Satgawan range

2019-20, Chak, Koderma range

2021-22, Laxmipur, Domchanch range

2021-22, Domchanch, Domchanch range

Summer Season Photos

2021-22, Singhpur, Domchanch range

2021-22, Kataiya, Satgawan range

2018-19, Dhodakola, Koderma range

2020-21, Nalwa, Koderma range

2018-19, Chaurichattan, Gajandi range

2019-20, Chilsodih, Koderma range

Summer Season Photos

2019-20, Devipur, Domchanch range

2019-20, Karakhut, Domchanch range

2019-20, Ratansota, Gajandi range

2019-20, Piprahi, Gajandi range

2019-20, Ratanpur, Satgawan range

2020-21, Jamu, Domchanch range

Rainy Season Photos

2019-20, Vanpok, Domchanch range

2019-20, Tetariyadih, Domchanch range

2019-20, Bandarchokwa, Domchanch range

2018-19, Bangakhalar, Domchanch range

2019-20, Behradih, Koderma range

2019-20, Janpur, Koderma range

Winter Season Photos

2018-19, Nalwa, Koderma range

2018-19, Ratansota, Gajandi range

2018-19, Devipur, Domchanch range

2021-22, Asnatari, Domchanch range

2021-22, Dhab, Domchanch range

2021-22, Madhuban, Domchanch range

2021-22, Tetariyadih, Domchanch range

Outcome

Forest and wildlife	Villages	Water retention
Provision of water to WL	Improved water table	Average size : width - 200 ft, length - 250 ft, depth - 6 ft
Moisture holding capacity	Soil quality	Per check dam water retention - 3 lakh cft or about 8500 cubic meter
Regeneration	Provision of water to farm and livestock	Total retention - 5.5 crore cft or 15 lakh cubicmeter
Forest density and productivity	Cultural - Chhath	

Way Forward

Integrated water management - water management plan

Watershed mapping using GIS for integrated.

Utilising potential of check dams constructed at boundary of villages - convergence

Government of Madhya Pradesh
Forest & Climate Change Department

FOREST PROTECTION IN

Madhya Pradesh

COMPENSATORY AFFORESTATION FUND MANAGEMENT & PLANNING AUTHORITY, MADHYA PRADESH CAMPA

Recognizing the deep connection between communities and the environment, the CAMPA-funded Compensatory Afforestation program in Madhya Pradesh has actively engaged villagers, fostering a sense of ownership and responsibility. Across Singrauli and Shivpuri Forest Divisions, various afforestation initiatives have revitalized 251.53 hectares of degraded forest, planting over 2.76 lakh saplings over a decade. This successful endeavour has restored native flora and fauna, offered economic opportunities through sustainable forest management, and improved groundwater levels, air quality, and soil health. The microclimate has changed, providing cooler temperatures and increased humidity, bringing relief during hot summers. Residents like Rajesh and Priya from Silfori village share anecdotes about the return of birds, butterflies, and improved water availability. Using the Compensatory Afforestation Fund Act 2016, Bandhavgarh implemented habitat improvements including solar power units, weed eradication, fire line creation, and soil moisture conservation. Solar power units not only address power issues but also enhance wildlife protection, staff safety, and habitat management. Future plans involve expanding solar power in sensitive conservation areas. To overcome the obstacles in remote forest areas due to distance and limited access, CAMPA Funds have been used for development of infrastructure for frontline staff, offering immediate response, enhanced security, community integration, and reduced commuting time. At Sanjay Tiger Reserve, the loss of a breeding tigress resulted in another tigress adopting orphaned cubs, showcasing the resilience of nature and the impact of conservation efforts on preserving these majestic creatures.

1) SUCCESS STORY OF COMPENSATORY AFFORESTATION PROGRAMME IN GORBI, FOREST DIVISION SINGRAULI, M.P.

(By: Shri Mahendra S. Dhakad, IFS, CEO, Madhya Pradesh (CAMPA)

In the village of Silfori, District Singrauli, Madhya Pradesh, a remarkable success story of Compensatory Afforestation plantation unfolded over the past decade. Initiated in 2014, the Compensatory Afforestation Programme under the project 765 kV single circuit Sasan Satna transmission line aimed to restore and enhance the local ecosystem, while also benefiting nearby villages. Through meticulous planning and community involvement, this endeavour has resulted in noteworthy positive impacts.

At the outset, the village faced issues like soil erosion, declining water quality, and loss of biodiversity due to deforestation and unsustainable land use practices. With the implementation of the afforestation project, over 62.50 acres of degraded forest land of PF 161,163, Beat-Silfori, Gram Van Samiti- Silfori, covering an area of 25 hectares land were transformed into a lush and diverse forest area. 62500 native tree species including Teak etc. were meticulously chosen to restore the region's original flora.

The impact on the ecosystem has been remarkable. The rejuvenated forest now acts as a natural habitat for a variety of wildlife, including several endangered species. The restoration of the local water table has led to improved groundwater levels due to constructions of percolation tanks and check dams under the Project and construction of Pond with the cost of 1500985/- INR under Asthamulak work, benefiting not only the villagers of Silfori but also nearby communities that rely on the same water sources.

Air quality in the region has also shown improvements, as the trees absorb carbon dioxide and release oxygen. This has led to a decrease in respiratory illnesses among villagers. The forest's dense canopy also helps regulate

temperature, providing a microclimate that is more suitable for both humans and wildlife.

Economically, the project has proven to be fruitful as well. With the sustainable management of the forest resources, villagers have found supplementary sources of income through activities like honey collection, non-timber forest produce, and eco-tourism. This has not only improved their livelihoods but also reinforced their commitment to protect the restored ecosystem.

Anecdotes from villagers further illustrate the success of the project. Rajesh, a farmer in Silfori, shares how the return of native flora has brought back the sound of bird song and the sight of vibrant butterflies to his land. Priya, a resident, describes how the increased availability of water has reduced her daily struggle to fetch water from distant sources.

As of 2023, the project continues to serve as a model for successful Compensatory Afforestation, demonstrating the potential of ecological restoration to foster positive change in both local communities and surrounding regions. The story of Silfori village showcases the powerful ripple effects that a well-executed environmental initiative can have, rejuvenating ecosystems, improving livelihoods, and fostering a sense of stewardship for future generations.

SUCCESS STORY OF COMPENSATORY AFFORESTATION PROGRAMME IN JIYAWAN, FOREST DIVISION SINGRAULI, M.P.

In the village of Jiyawan, Madhya Pradesh, the Compensatory Afforestation Programme (CAP) under 765 kV double circuit Vindhyanchal pooling station Jabalpur scheme has yielded remarkable success, demonstrating a positive impact on the environment and neighbouring communities. Since its inception from 2022 with an estimated cost of 22910000 INR, the programme has led to planting of over 40,000 native trees including Teak, Neem, Amla, Mahua etc. across the village's degraded forest land of RF 769, Beat-Dhondki, Gram Van Samiti- Chuhiya Tola, covering an area of 40 hectares. This has resulted in an impressive increase in forest cover.

The positive effects of this afforestation initiative are visible in several key aspects. Firstly, the enhanced forest cover has played a crucial role in biodiversity conservation. A notable increase in bird species diversity and increase in butterfly species diversity has been recorded, showcasing the improved ecosystem health. Moreover, the revived habitat has attracted various wildlife species back to the area, including the return of small mammals and reptiles.

Economically, the local communities have benefitted from the programme as well as constructions of PCC Road in the village Sarondha under Asthamulak work of the scheme with a cost of 936535 INR. The reforested area now serves as a valuable resource for non-timber forest products like honey, herbs, and medicinal plants. This has not only provided an additional income source for the villagers but has also encouraged sustainable practices, ensuring long-term viability of these resources.

Jiyawan's nearby villages have also experienced the positive ripple effects of the CAP's success. The rejuvenated forest ecosystem has improved air and water quality in the region, leading to healthier living conditions for residents. Additionally, the increased vegetation has acted as a natural buffer against soil erosion.

Statistical data further reinforces the programme's achievements. The village has seen a reduction of soil erosion, and groundwater recharge has improved due to various soil moisture works like constructions of percolation tanks and check dams benefiting both agriculture and local water supplies. This has had a direct impact on crop yields, with an average increase due to improved soil fertility and moisture retention.

Overall, the Compensatory Afforestation Programme in Jiyawan, Madhya Pradesh, stands as a remarkable success story. Through strategic reforestation efforts, the programme has not only contributed to environmental restoration but has also positively influenced neighboring communities by fostering sustainable livelihoods and improving the overall quality of life.

TRANSFORMATIVE SUCCESS STORY - COMPENSATORY AFFORESTATION PROGRAMME IN VILLAGE OF LANGHADOL-MADA, SINGRAULI, MP

In the arid landscapes of Singrauli, Madhya Pradesh, a remarkable success story of reforestation has unfolded in the village of Langhadol. Through concerted efforts by the Forest Department, the once-degraded land has been transformed into a thriving ecosystem, delivering substantial benefits to both the environment and the village community.

Background:-

Langhadol, a village struggling with deforestation and land degradation, embarked on a journey of reforestation in 2020 under 765 kV D/C Vindhyanchal-Varanasi transmission line, Powergrid Varanasi Transmission System Ltd. Compensatory afforestation programme with an estimated cost of 22437027 INR was initiated as the village faced challenges like soil erosion, water scarcity, and loss of biodiversity due to extensive deforestation. Recognizing the need for change, Gram Van Samiti Langhadol, collaborated with Forest Department to implement a holistic reforestation strategy in RF 570, Beat- Langhadol, covering a degraded forest land of 60 Ha., planting 60000 species of Teak, Neem, Amla, Bamboo, Arjun, Seesham etc.

Key Initiatives and Milestones:-

Watershed Management:- Reforestation played a vital role in enhancing water retention and regulating the local water table by construction of percolation tanks and check dams which led to increased water availability for irrigation and domestic use.

Carbon Sequestration:- The growing forest acted as a carbon sink, sequestering a significant amount of carbon dioxide from the atmosphere. This contributed to both local and global efforts to combat climate change.

Community Engagement:- Regular awareness campaigns, workshops, and training sessions were organized to involve the community in reforestation efforts. Villagers became actively engaged in planting and maintaining trees, fostering a sense of ownership and responsibility. Two PCC Roads with a cost of 987298 INR were constructed in the village Langhadol under Asthamulak work of the Project which has enhanced the connectivity of the village.

Impact on Ecosystem:-

(i) **Biodiversity Restoration:-** The reforested area witnessed a remarkable return of native flora and fauna. The renewed habitat attracted various species of birds, insects, and small mammals.

(ii) **Soil Conservation:-** Erosion control measures, including tree cover, helped stabilize soil and prevent further degradation. This had a positive impact on agricultural productivity.

(iii) **Microclimate Improvement:-** The reforested area experienced a microclimate change, with cooler temperatures and increased humidity, offering relief to villagers during scorching summers.

Community Benefits:-

(i) **Livelihood Diversification:-** The model provided additional income streams to the villagers through the sale of timber, fruits, and other forest products.

(ii) **Socioeconomic Upliftment:-** The improved ecosystem directly impacted the livelihoods of villagers, leading to an increase in household income and a reduction in poverty levels.

(iii) **Health and Well-being:-** Cleaner air, improved water resources, and access to forest products contributed to better health and overall well-being of the villagers.

Remarkable changes

(I) Over a decade, Langhadol successfully reforested 60 hectares of land.

(ii) Tree survival rate after five years exceeded 98%, indicating the robustness of the reforestation initiative.

(iii) Carbon sequestration by the newly established forest amounted tons annually.

(iv) Agricultural yield witnessed an increase due to improved soil health and water availability.

In conclusion, the reforestation success story in Langhadol, Singrauli, Madhya Pradesh, stands as a beacon of hope and inspiration. By fostering community participation, implementing sustainable practices, and acknowledging the intrinsic connection between people and the environment, the village has demonstrated the profound impact that reforestation can have on both ecosystems and local communities.

NPV SCHEME IN DIVISION NARSINGHPUR

Upon diversion of forest land for non forestry purpose; based on the ecological value and services provided by the forest, Net Present Value is calculated through which Compensatory Afforestation or reforestation is carried out.

Plantations funded by NPV serves multiple purposes :

ECOLOGICAL

- Improves forest condition : from degraded land to a sustainable forest ecosystem.
- Improves micro climate.
- Enriches the soil.
- Ensures soil and moisture conservation by digging ponds, bori bandhan, brushwood check dam, boulder check dam etc.
- Recharges ground water and water sources.
- In-situ and ex-situ conservation of species and improves their regeneration.

R- 49 Mixed plantation Rohiya 2022-23
Pond digging


R- 22 Mixed plantation Gortala 2022- 23
Boulder Check Dam


R- 22 Mixed plantation Gortala
2022-23 Bori bandhan

ECONOMICAL

- Offers employment opportunity to locals.
- Grass production and distribution - serves as cattle feed for adjoining villagers.
- Also provide minor forest produce for the community.

DEVELOPMENTAL

- Formation of Micro plan include PRA (Participatory Rural Appraisal) where in locals identify the problems, find the solution and in some case implement it too. It leads to an area specific infrastructural development.
- Conflict mitigation, strengthening the idea of joint forest management.
- Overall improvement in their standard of living.

Following are few examples from Narsinghpur Division representing the impact of NPV plantations as discussed in the aforementioned points:

Micro plan of Jhiraghati Plantation Identified the need of connecting road to Amthanu Construction of CC Road 300m x 3.5m Funded through other head (Tendu patta head)

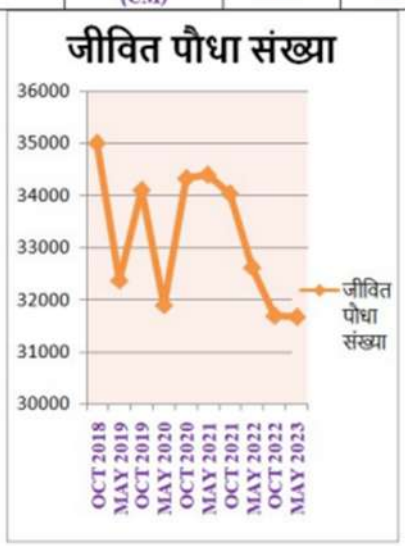
Before

After

वृक्षारोपण मूल्यांकन कार्य (प्री मानसून 2023)

कैम्पा मद वैकल्पिक वृक्षारोपण बरहटा, कक्ष क्रमांक पी 68, क्षेत्रफल 60.000 हे., रोपित पौधा संख्या – 35000

क्रमांक	विवरण	2018	2019		2020		2021		2022		2023
		OCT 2018	MAY 2019	OCT 2019	MAY 2020	OCT 2020	MAY 2021	OCT 2021	MAY 2022	OCT 2022	MAY 2023
1	जीवित पौधा संख्या	35000	32362	34104	31908	34338	34388	34049	32622	31700	31667
2	जीवितता प्रतिशत	100	92.46	97.44	91.17	98.11	98.11	97.28	93.21	90.57	90.48
3	औसत ऊंचाई (CM)	48.88	48.89	74.6	83.2	88	99	109	159	172	174
4	औसत गोलाई (CM)	3.33	3.33	4.8	5.3	6.3	6.4	6.9	8.81	9.96	10



Construction of RCC Check Dam at Phangeri, Kathua

Construction of RCC Check Dam at Phangeri, Kathua

Construction of RCC Check Dam at Phangeri, Kathua

Construction of RCC Check Dam at Phangeri, Kathua

CA Plantation Mau 2021-22, Area 13.20 ha for construction of Gotitoriya - Badagaon road under the scheme of Pradhan Mantri Gram Sadak Yojna

वृक्षारोपण मूल्यांकन परिणाम-द्वितीय वर्ष

वृक्षारोपण का नाम – वैकल्पिक वृक्षारोपण मऊ, खसरा नं. – 516/1 557, 540, 541, क्षेत्रफल –13.20 हे., मद– कैम्पा मद, रोपण वर्ष – 2022–23 रोपित पौधा– 13200

पास्ट मानसून माह अक्टूबर 2022 में गणना अनुसार जीवित पौधों की संख्या – 13101, प्रतिशत – 99.18

मूल्यांकन परिणाम प्री मानसून मई 2023

Sector	Area (ha.)	Planted (No.)	Survived (No.) Plants	Survival (%)	Max. Height(m)	Average Height(m)	Maximum girth (cm)	Average girth (cm)	GPS
Sector - I	6.00	6283	5962	94.89	3.30	1.4	11	4.8	22°47'3"N 78°49'40" E
Sector - II	3.00	3345	3106	92.86	3.15	1.05	4	3.4	22°47'13"N 78°49'44" E
Sector - III	4.2	3572	3346	93.67	2.50	0.85	9	3.5	22°47'15"N 78°49'48" E
TOTAL	**13.20**	**13200**	**12414**	**94.05**		**1.10**		**3.84**	

CA Plantation Mau 2021-22, area 13.20 Ha. for Construction of Gotitoriya-badagaon Road under ehe Scheme of Pradhan Mantri Gram Sadak Yojana

Inspection by DFO

Asthamulak Work under CA

Asthamulak Work under CA

Removal of Weeds

P- 356 Mixed Plantation Jhiraghati 2021-22 Area 50 ha

वृक्षारोपण मूल्यांकन प्री–मानसून मई 2023

(मूल्यांकन प्रथम वार, दूसरीवार, तीसरी वार, चतुर्थ वार, पंचम वार, षष्ठम वार, सप्तम वार, अष्ठम वार, नवम वार, दसवी वार)

वृक्षारोपण का नाम – मिश्रित वृक्षारोपण झिराघाटी वर्ष 2022

कक्ष क्रमांक – पी 356

रकबा – 50 हे0

मद – कार्य आयोजना कियान्वयन

रोपण वर्ष – 2022–23

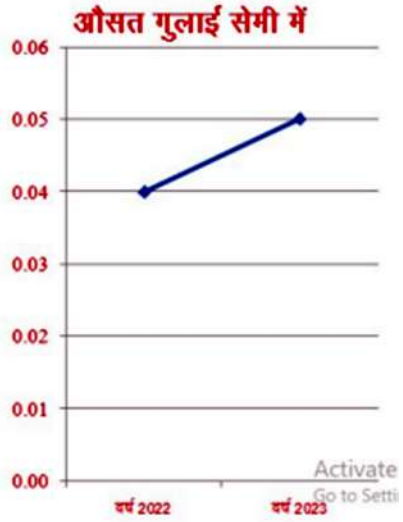
पोस्ट–मानसून अक्टूबर 2022 के परिणाम (प्रतिशत में) – 99.97

Sector	Area (ha.)	Planted (No.)	Survived (No.) Plants	Survival (%)	Max. Height (m)	Average Height(m)	Maximum girth (cm)	Average girth (cm)	GPS
Sector - I	8.750	5000	4480	89.60	1.80	1.60	0.10	0.08	23°10'56"N 79°03'20" E
Sector - II	8.500	5000	4464	89.28	1.60	1.40	0.08	0.06	23°11'13"N 79°02'20" E
Sector - III	8.250	5000	4670	93.40	1.70	1.50	0.06	0.04	23°11'12"N 79°02'20" E
Sector - IV	13.250	5000	4415	88.30	1.80	1.60	0.08	0.06	23°11'45"N 79°02'24" E
Sector - V	11.250	5000	4492	89.84	1.40	1.20	0.05	0.03	23°11'10"N 79°02'37" E
TOTAL	**50.000**	**25000**	**22521**	**90.08**	**1.66**	**1.46**	**0.07**	**0.05**	

P- 356 Mixed Plantation Jhiraghati 2021-22 Area 50 ha

वृक्षारोपण मूल्यांकन कार्य

क्रमांक	विवरण	वर्ष 2022	वर्ष 2023
		पोस्ट मानसून	प्री मानसून
1	जीवित पौधा संख्या	24992	22521
2	जीवितता प्रतिशत	99.97	90.08
3	औसत ऊँचाई मीटर में	0.77	1.46
4	औसत गुलाई सेमी में	0.04	0.05



Removal of Weeds

Inspection by DFO

CONSTRUCTION OF RESIDENTIAL AND OFFICE BUILDING FOR THE FRONT-LINE STAFF

Introduction

The Forest Department plays a pivotal role in conserving and managing our natural environment. To ensure its continued effectiveness, investing in infrastructure development is crucial. This report highlights key projects aimed at improving facilities for the Forest Department's personnel, enabling them to carry out their responsibilities more efficiently.

1. Residential Housing for Forest Guard/Forester:

In remote forest areas, distance and limited access pose challenges for Forest Guards, Foresters and Range Officers. Constructing residential houses and quarters will help overcome these hurdles, ensuring that personnel can be stationed closer to their work locations. This proximity is vital for 24/7 monitoring, rapid response during emergencies, and fostering a stronger connection between forest and the forests they protect.

Purpose:

Providing suitable housing will have a significant impact on employee morale and commitment. Forest officers stationed within or near the forests can respond more swiftly to incidents, resulting in improved forest protection. The continuous presence of staff aids in curbing illegal activities such as poaching and tree felling. Ultimately, this initiative supports the Department's goal of maintaining healthy and biodiverse ecosystems.

Having on-site residential quarters for forest guards and other frontline officers offers various advantages which align with the objectives of Forest Department.

- **Immediate Response to Emergencies:** Forest guards and frontline officers play a crucial role in responding to emergencies like wildfires, illegal logging, poaching, and other environmental threats. By living on-site, they can respond more swiftly to such situations, minimizing damage and ensuring a quicker containment of incidents.

- **Enhanced Security and Surveillance:** Living within the forest area allows officers to maintain constant vigilance over the ecosystem they are responsible for protecting. This presence serves as a deterrent to illegal activities and encroachments, contributing to better overall security and surveillance of the area.

- **Community Integration and Trust:** Having officers and their families reside within the forest area fosters a sense of community with nearby villages and indigenous populations. This integration helps build trust and collaboration between the officers and the local community. It facilitates the sharing of knowledge, cultural exchange, and the establishment of mutual goals for sustainable resource management.

- **Reduced Commuting Time:** Living within or near the area they patrol or manage reduces the time officers spend commuting to their workplaces. This translates to more productive hours dedicated to their responsibilities, resulting in increased effectiveness in safeguarding the ecosystem.

2. Range Offices:

Forest range offices in forest areas fulfill several important needs and purposes for effective natural resource management and conservation. Here are some key reasons for building forest range offices:

i. Administrative Hub: Forest range offices serve as administrative hubs for overseeing and managing a specific forest range or area. They provide a central location for forest officers and staff to coordinate and execute various management and conservation activities.

ii. Resource Management: Forest range offices are essential for planning and implementing resource management strategies. They help in monitoring forest health, wildlife populations, and ecosystem dynamics, allowing for informed decision-making to ensure the sustainable use of resources.

iii. Wildlife Protection: Range offices play a vital role in protecting wildlife by enabling officers to closely monitor and patrol the area. This presence deters poaching, illegal logging, and other harmful activities that threaten wildlife populations.

iv. Fire Management: Forest range offices are crucial in wildfire prevention, detection, and management. Officers stationed at these offices can respond swiftly to wildfire outbreaks, coordinate firefighting efforts, and implement fire management strategies to minimize damage.

v. Community Engagement: Range offices facilitate engagement with local communities living in or near the forest areas. They provide a platform for dialogue, collaboration, and education, helping to build partnerships with communities for sustainable resource management and conservation.

vi. Data Collection and Research: Forest range offices serve as bases for data collection, research, and monitoring activities. Officers stationed there can gather valuable information on biodiversity, vegetation, climate patterns, and more, which contributes to informed management decisions.

vii. Law Enforcement: Forest range offices play a critical role in enforcing environmental laws and regulations. They help ensure that activities within the forest range adhere to legal guidelines, preventing encroachments and illegal exploitation of resources.

viii. Emergency Response: In case of natural disasters or emergencies, such as floods or landslides, forest range offices serve as local command centers for emergency response and coordination efforts.

3. Other Infrastructures:

3.1 Patrolling Camp:

Facilitating swift communication and seamless coordination is paramount for effective forest management. Patrolling camp enables immediate coordination among officers, enhancing their ability to monitor poaching and logging in their areas and to address these situations and ensure streamlined collaboration within the team. In conclusion, patrolling camp offices are essential for protecting restricted forest areas because they offer constant observation, quick response times and improve communication.

3.2 Forest Barrier:

Forest barriers are established as a protective measure for the outer regions of expansive ecosystems, serving to regulate human activities and prevent misconduct. It is the first checkpoint where entry to protected ecosystems is regulated and thus these checkpoints play a huge role in keeping miscreants away from the protected areas while monitoring the movement of people and vehicles passing the checkpoints to detect and curb any cases of smuggling or poaching.

3.3 Depot Office (Timber Depot):

A Forest Depot serves as a repository for essential resources such as valuable timber, fuel wood, poles, tools, and vehicles required for various forest-related activities. This centralized storage ensures that resources are organized, accessible, and well-maintained, enabling efficient disposal. Teak wood is one of the nationalized forests produce hence the harvesting and sale of timber is regulated.

Glimpses of the infrastructural work done by CAMPA:

Forester Residence(Nandgaon) Pench Division-
Pench Tiger Reserve, 2022-23

Forest Guard Residence (Chilwaha) Obaidullaganj Division:
Range Chilwaha 2020-21

Forest Guard Residence (Kannod) Dewas Division,
Kannod Range 2020-21

Forester Residence (Sailana) Ratlam Division,
Range Sailana 2021-22

Forest Barrier (Mukundpur) Satna Division: Range,
Mukundpur 2020-21

Range Office (Baraudha) Satna Division 2021-22

Forest Barrier (Mohali) Nauradehi NP Sagar Division,
Range Mohali 2022-23

Range Office (Jhaapan) Nauradehi NP Sagar Division,
Range Jhapan 2023-24

Depot Office: Chhatarpur Division 2022-23

Patrolling Camp (Pipariya) Satpura Tiger Reserve,
Narmadapuram 2022-23

Forest Barrier (Sawant Van) Mandsaur Division 2022-23

Forest Barrier (Rawalikudi): Mandsaur Division 2022-23

Forest Barrier (Rawalikudi) Mandsaur Division 2022-23

Details of buildings constructed:

From FY 2018-19 to 2022-23 CAMPA has constructed the following infrastructure for Front-line Staff in Madhya Pradesh:

F.Y.	Forest Guard Residence	Forester Residence	Deputy Ranger Residence	Range Officer Residence	Range Office	Line Quarter	Other Buildings	Forest Barrier	Total Sanctioned
2018-19	---	---	---	---	---	---	---	---	---
2019-20	131	3	13	---	2	---	---	1	**150**
2020-21	123	10	13	3	2	---	1	41	**193**
2021-22	16	---	9	1	27	---	40	19	**112**
2022-23	98	---	36	11	9	14	11	1	**180**
Total	**368**	**13**	**71**	**15**	**40**	**14**	**52**	**62**	**635**

Abstract of buildings constructed during FY 2018-19 to 2022-23:

Sl. No.	Year	APO Target	Physical Achivement	Expenditure(in Cr.)
1	**2018-19**	**---**	**---**	**---**
2	**2019-20**	**192**	**150**	**15.01**
3	**2020-21**	**193**	**193**	**21.52**
4	**2021-22**	**112**	**112**	**12.1**
5	**2022-23**	**180**	**180**	**21.49**
	Total	**677**	**635**	**70.12**

WILDLIFE CONSERVATION SCHEME (SULIYARI COAL MINES)- SANJAY TIGER RESERVE, SIDHI

Success Story

Brief Introduction

In Madhya Pradesh, Suliyari Coal Mines Block area of 1298 hectares in Singrauli Coal Field (Main Basing) in Tehsil Saare under District Singrauli was allotted to M/s The Andhra Pradesh Minerals Development Corporation Limited for coal excavation through open wood method. Approval for transfer of 259 hectares of forest land included in the total area of 1298 hectares was given by the Ministry of Forest and Environment and Climate Change, Government of India on 15/12/2020. As per the conditions, the application amount 662020236 has been submitted by the organization to the CAMPA Fund of the Government of India.

In the wildlife conservation plan prepared for environmental approval, Rs 25 crore was given to Sanjay Tiger Reserve Sidhi for various works in 05 years for the conservation of Schedule 01 species along with endangered species and conservation of environmentally sensitive areas used as migratory corridors. The provision has been fixed.

Sanjay Tiger Reserve Sidhi is implementing the overall wildlife conservation plan from the year 2022-23. Before the start of the scheme, a study of sensitive endangered species was conducted in the area within 10 km radius from the commercial land, in which mainly the following species were found -

- Wolf (*Canis lupus*)
- Pangolin (*Manis Crassicaudata*)
- Sloth Bear (*Melursus Ursinus*)
- Leopard (*Panthera Pardus*)
- Chowsingha (*Tetracerus Quadricornis*)
- Townie Eagle (*Aquila Rapax*)
- White-backed Vulture (*Gyps Bengalensis*)
- Python (*Python Molurus*)
- Hyena (*Hyaenidae*)
- Black-headed Ibis (*threskiornis Melanocephalus*)

Mainly the following adverse effects of coal mining in commercial land were identified -

- The reason for the increase in biological pressure in the habitat of wild animals is the quantity and quality of the habitat.
- Abnormal deviations in the behavior of wild animals due to disruption of wildlife movement routes.
- Increase in pollution levels

Since the coal mine area is only 10 kilometers away from the buffer zone of Sanjay Tiger Reserve, measures to minimize the adverse environmental impacts due to the law were provisioned in the plan.

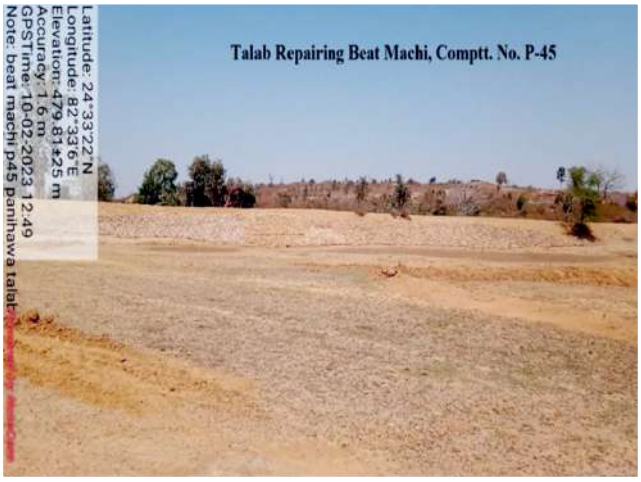
In the year 2022-23, a total of works worth Rs 3 crore 27 lakh were done under the scheme, which can be mainly divided into the following categories:

1. Housing Improvement

Under habitat improvement, mainly pasture development work was done and also water source development work was done to ensure availability of at least 01 water source in a 3*3 grid to ensure water supply for wild animals.

S.No.	Task Name	No. of Sites	Acreage	Expenditure Amount (in Lakhs)
1	Pasture Development	03	152 Ha	38.00
2	Sasar Construction	14	-	12.36
3	Pond deepening and repair work	06	-	24.04

Pasture Development Work Dingdoli Zone Bastua



Pond deepening and repair Manchi Beat area Bagdara

Sasar Construction Work Area Tamsar Buffer

Assessment of effects of work-

Due to habitat improvement work, wild animals got better habitat inside the Tiger Reserve, due to which the incidence of wild animal and human conflict has been reduced as follows:

Year	Casualty Case	Jandhaayal Case
2020	05	08
2021	07	10
2022	04	13
2023 (August)	01	05

The figures of group numbers and migration days of wild elephants and the loss of life as a result of human-elephant conflicts are shown in the following table. The figures till the year 2022-23 (August 2023) clearly indicate the successful outcome of habitat improvement.

Year	Elephant Number in group	Total stay days under tiger reserve	Casualties
2020	07	166	-
2021	07	77	03
2022	10	249	-
2023 (August)	11	192	-

The results of Management Effectiveness Index declared by National Tiger Authority in the year 2023 indicate better habitat management in Sanjay Tiger Reserve by 13% from the year 2018. In the year 2023, the community voluntary participation based ward survey under the Tiger Reserve found 17 ICUN species along with a total of 240 ward species, indicating successful results of better biodiversity conservation.

2. Facilities for Patrolling

2.1. Construction of patrolling camp to strengthen security system: Keeping in view the movement of wild animals, permanent patrolling camps were built at sensitive and strategically important places so that the patrolling party could reside there permanently and carry out continuous patrolling work.

S.No.	Task Name	No. of Sites	Expenditure Amount (In Lakhs)
1.	Construction of Patrolling Camp	05	45.64

Patrolling Camp Pondi, Zone Pondi

Patrolling Camp Badkardol, Zone Dubri

2.2. Basic material for patrolling camp and forest staff: Employees and laborers working in remote patrolling camps under the Tiger Reserve constantly face shortage of basic material, which has an adverse effect on work efficiency and work productivity. Under the scheme, the camp staff and employees were equipped with basic material as follows so that complete and better wildlife protection can be ensured, which is as follows-

S.No.	Material Name	Amount (in Numbers)	Expenditure Amount (In Lakhs)
01	Kitchen equipments	90 set	7.50
02	Bicycle	62	4.12
03	Water Tank	62	2.76
04	Fiber chair and Table	165	8.24
05	Iron Bed, Mattress, Bedsheet	132	7.50
06	Winter Jacket	350	14.00

07	Sleeping Bag	454	12.03
08	Mosquito Net	631	3.85
09	T-shirt and Cap	1080	3.67
10	Fire Blower	27	10.84

2.3 Forest road special repair and P.C.C. road construction work for patrolling: For uninterrupted implementation of forest tourism and patrolling in all seasons, special improvement of the routes was done as follows-

S.No.	Task Name	Length	Expenditure Amount (in Lakhs)
1.	Forest Road Special Repair	17 KM	29.34
2.	P.C.C. road Construction work	1740 M	84.20

PCC Construction Work Area at Mohan

2.4. Infrastructure development in inspection cottage/rest house: In order to monitor travel in remote areas and ensure right destination, the following work was done-

S.No.	Task Name	Amount	Expenditure Amount (In lakhs)
01.	Supply of Furniture/Kitchen Material in Inspection Cottage/Rest House	3	3.00

Bicycle Distribution Parikshetra Mohan Kor

Material Distribution Circle Mohan

Measuring effectiveness and results- Construction of patrolling camps, expansion of basic facilities in camps and development of transport infrastructure have achieved significant progress in forest and forest security in the year 2022-23, which is also reflected in the reduction in crime figures of the last 4 years as follows:

S.No	Year	Total Case	Hunt	Encroachment	Illegal Logging	Illegal Transportation	Illegal mining	Fire	Illegal entry	Illegal Grazing
1.	2020	166	13	4	145	1	0	3	0	0
2.	2021	193	9	1	152	3	3	24	1	0
3.	2022	91	4	0	65	0	2	20	0	0
4.	2023 (June)	30	1	0	6	1	0	22	0	0
Total		480	27	5	368	5	5	69	1	0

The year-wise comparison of the total patrolling work in the tiger reserve below shows the effectiveness of the vigilance work done:

S.No.	Year	Foot Patrol (KM)	Bicycle (KM)	Motorcycle (KM)	Total (KM)
1.	2021	124565	9596	8899	143060
2.	2022	241692	20623	26615	288930
3.	2023 (Till June)	149885	14649	12909	177443

3. Carbon footprint by following renewable energy options

As part of efforts to promote green energy and reduce pollution, the following work was done-

S.No.	Task Name	Amount	Expenditure Amount (In Lakhs)
1.	Solar rooftop on grid system in area director office building	01	10.00
2.	Installation of 01 KW solar light system in patrolling camps.	06	6.00

Effectiveness of Actions: The use of solar energy will not only save government money in the long term but will also help in reducing pollution and carbon footprint as the use of renewable energy is work-friendly.

For the year 2023-24 also, Rs. 327 lakhs were sanctioned for a total of 78 works in this project as per the provisions of the scheme, which are in progress, after the work, their overall impacts will be assessed in the coming year.

CAMPA Wing
COMPENSATORY AFFORESTATION PLANTATION-SHIVPURI FOREST DIVISION

Success Story

1.	Name of Forest Division	Shivpuri
2.	Name of Forest Area	Satanwada
3.	Beat Name	Thati
4.	Room Number	R475
5.	Acreage	21.24 Hectare
6.	Planting Year	2016-17
7.	Name of the Scheme	Conpensatory Afforestation
8.	Number of Plants Planted	33600
9.	Species of the Plants	Rosewood, Karanj, Bamboo

Forest Division Shivpuri Forest Range Satanwada Compensation Plantation (Construction of 4/6 line on Shivpuri Gwalior National State Road No. 3) Thathi R 475 area is 21.24 hectares. In the year 2016-17, tree plantation work was done in view of the increasing pressure of encroachment on forest land. 33600 thousand saplings were planted in the plantation area, on which the growth of rosewood plants was found to be very good. Presently, 85.92 percent of plants are alive in the plantation area. About 300-400 quintals of grass are being supplied free of cost to the local villagers from the said plantation. The plantation area has developed into a forest, which has become the natural habitat of many wild animals.

At present, there has been a positive sentiment between the villagers and the Forest Department, due to which the villagers cooperate as much as possible in extinguishing fires etc. from time to time. Thus, the said plantation is in the category of a successful plantation.

Success Story of Compensatory Tree Plantation Jugha Year 2015-16

1.	Name of Forest Area	Karera
2.	Name of Forest Division	Shivpuri
3.	Beat Name	Vangaav
4.	Name of village forest committee	Jugaha
5.	Name of the Scheme	Compensatory Afforestation
6.	Name of Plantation	Jugaha
7.	Room Number	R 457,458
8.	Total Area of Room	195.72, 202.46 Hectare
9.	Plantation Area	105 Hectare
10.	Year	2015-16
11.	Name of work circle	Plantation Work Circle
12.	Treatment Category Name	
13.	Brief description of work done in field preparation works	Pit Digging 30 30 30 -32000 & 45 45 45-108000 Total 140000
14.	Description of planted plants	Shisham 86230 Karanj 14805 Chirol 14805 Neem 17635 Cirrus 7830 Avala 2500 Baheda 2500
15.	Planting period July 2016	
16.	Present survival percentage of plants	95%
17.	Short Note	Compensation plantation was established in room number R 457, 458 of Beat Wangaon of Sub Range Karera in the year 2015-16, in which 140,000 thousand saplings of the above mentioned species were planted. Presently, the said plantation is a successful plantation.

FINALLY NATURE TRIUMPHS, STORY OF A MOTHER FROM WILD

Sanjay Tiger Reserve is a pristine protected forest situated in Sidhi District of Madhya Pradesh. Historically, it has been the birth place of majestic white tigers and home to significant tiger population. Lack of focused conservation policy during British Raj led to wiping out of tiger population in this region.

Post independence, enactment of Wildlife Protection Act in 1972 and implementation of Project Tiger finally gave the much needed hope of bringing back the glory of majestic tiger population in this region. With increasing conservation efforts, presently this tiger reserve is home to forty one (41) tigers including twenty two (22) adults and nineteen (19) cubs. But this number is still not close to what this region can sustainably support. Therefore, saving every tiger has been a top priority of tiger reserve management.

In this context, losing any one of them has immense detrimental effect to the conservation efforts in the Tiger Reserve. On the intervening night of 16th and 17th March this year, we received information that a tiger is lying injured near the railway track that passes through one of the core ranges of the tiger reserve. On reaching the spot, it was found that she is a mother tigress with four cubs of 8 to 9 months age. She was hit by a train from behind resulting in severe injury to her spine. We rescued her from the accident site and a team of veterinarian doctors was deployed for her care. We had hoped that she would recover from this injury but fate had different plans. Next evening, she succumbed due to severe internal bleeding leaving behind her four cubs who were perhaps still not aware of their mother's death.

The tigress along with her four cubs was a common sighting for tiger reserve officials as well as tourists. For a tiger reserve which is still not supporting its full potential of tigers, this news of death of a breeding tigress meant a huge loss. Next challenge before us was to ensure survival of her four cubs. They were still very young to hunt for food on their own. The loss of protective sheath of their mother meant their lives were at continuous risk in the wild. Imagining the similar situation for us, it was akin to orphaned children left to fend for themselves without care and protection of their mother. This situation meant possible loss of all four cubs if suitable management intervention were not taken in time.

This situation presented a unique dilemma for us. There were two possible options. First option was to tranquilize and capture the cubs and place them in an enclosure until they became adult. Second option was to keep them in wild in their present habitat and continuously monitor them. The four cubs had made a marshy lake their home since birth. It was a perfect home with 6-7 feet grass for cover and suitable water availability. Further, presence of 4 cubs together is a very difficult situation for tranquilization. These factors combined along with suggestions from senior officials, decision was taken to observe and monitor the cubs for a month. We felt that nature's own hand would sort out things and cubs would chart their own path in the wild. In case of any exigencies, first option was to be taken.

A team of frontline staff headed by a senior tiger reserve official was constituted to ensure well being and monitoring of the four cubs. They began their work from the very next day. Initially, for first six days everything was running as per the plan. The four cubs were sighted and reported daily. They were healthy and showing behavior as per our expectations.

Unfortunately on the morning of 24th March, one of cubs died fighting with another adult tiger. This posed a fresh challenge before us. We still couldn't resort to first option as tranquilization was still extremely difficult. Intense monitoring of remaining three orphaned cubs continued for next three weeks. They were healthy and stable. In last week of April 2022, the three orphaned cubs were not seen by monitoring team for two consecutive days. Our team minutely searched for them but even after three continuous days of searching, they

still remained elusive. Such information is often followed by unfortunate news. With diminished hopes, the team was returning to its base when they witnessed a miracle which none of us present there would ever forget in our lives. On the road connecting Forest Rest House to human habitations outside the park, we saw a group of seven tigers. At the outset, it seemed a group of one adult tigress and six cubs. The cubs had two groups, one group of three aged between 8-9 months and second group of three aged between 6-7 months. The first group matched with what we have been looking for a week. We confirmed it with our database and found that Tigress was another resident tigress of park with three cubs of her own and other three cubs were of her sister who died on 17th March in a train accident. This was a very rare incident when it comes to wildlife management. Tigers are generally territorial, therefore, being a foster mother for her sister's orphaned cubs meant additional burden for mother tigress. We also thought that this may be a one off incident. But as the monitoring continued, the seven tigers were always seen together. Continuous monitoring gave us unique insights to the motherhood amongst the most majestic species in wild. The orphaned cubs being deprived of motherly love and affection after their own mother's death were often seen warming up to their 'new' mother. They shared the same bonhomie with the three younger cubs that they shared amongst themselves. Mother tigress gave equal affection to her 'new' set of cubs. In fact, she seemed mindful of giving equal affection and care to her both sets of cubs. Her gentleness and embracing nature were seen frequently by monitoring team. As the orphaned cubs were relatively older than her own cubs, she first started taking the orphaned cubs on food searching and hunting sprees. She taught them every rule of skillful hunting to prepare them for the wild world.

It has been four months since they have been united. It's quite a beautiful sight to see 7 tigers together. Watching these majestic beauties together unites our soul with Mother Nature. We have been witness to change of behavior of a fierce tigress from an aggressive to warm tenderness of motherhood. Somehow, in this process of nature, we played our own little role with joy and satisfaction.

TRANSFORMATIVE SUCCESS STORIES
BANDHAVGARH FOREST DIVISION

Madhya Pradesh State Campa Authority

Solar Power Units

Introduction:

The Compensatory Afforestation Fund Act, 2016 came into effect on 30.09.2018 Bandhavgarh first received the fund in the year 2016 -17. In 2020-21 first time fund for Habitat improvement was received. With the help of these funds, many habitat improvement works have been done in Bandhavgarh such as Lantana eradication, weed eradication, soil moisture conservation work, solar power system etc. Some of them are explained below with photographs.

Solar power installation:

Considering the safest energy source for the environment solar power is always in the first priority.

With the help of CAMPA fund, Bandhavgarh TR has installed 43 solar power units so far with an expenditure of Rs. 47.62 Lakhs.

With rugged terrain & and inaccessible jungles, light plays an important role. Power unavailability affects patrolling and the protection of wildlife. Installation of solar systems in camps, wireless stations, etc. makes us able in many ways.

1. Continuous light in the patrolling camps
2. Availability of charging points for Mstripe Mobile phones, wireless handsets, and torches.
3. Increased the safety of forest staff.
4. Improved living standards of foot patrolling staff with 24/7 light availability.
5. Solar power pumps enable us to get groundwater for camps as well as to fill saucers in summer.

The CAMPA fund enables us to manage our energy demand with new strategy adopted. After arrival of Asian wild elephants in Bandhavgarh from 2018, many camps & solar plates were damaged by them. Working on the solution BTR team comes up with the raised Patrolling camps with solar power units. One of such first Camp was made in 2022 in Tala range with 1 kw solar unit.

Range: Tala, Beat: North Gohdi, Mahaman Camp, 2021-22
Raised patrolling camp with Solar power installation 2022-23

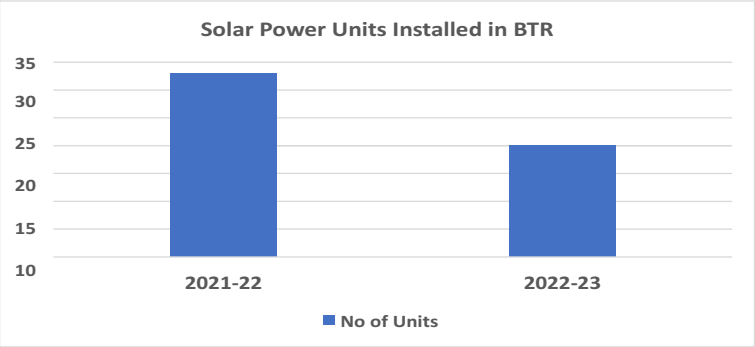
Range: Tala, Beat: Elephant camp Bathan, Year 2021-22
Raised Solar power plates a strategy adopted to save it from wild elephants

Many areas need to be supplied with water in summer months. Raised solar plates were installed in those areas. Bandhavgarh has two mega herbivores viz. Elephants & Gaur. Both requires continuous water supply in a large quantity.

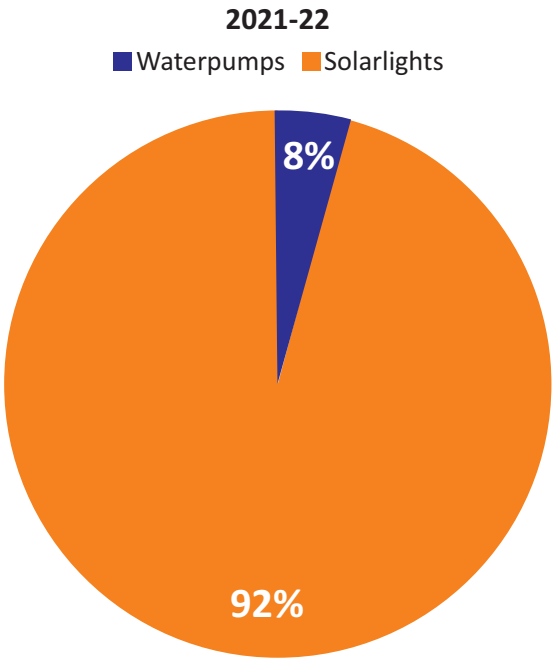
Providing water source- Range: Tala, Beat: Mahaman, Mahaman dam, 2021-22

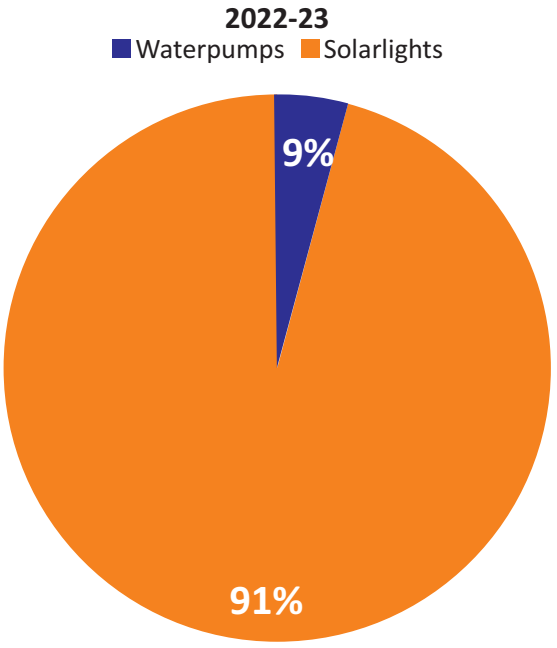
Range: Tala, Beat: Tala, Rama elephant Camp, 2021-22 Solar Light unit installation

Elephant camps are crucial part of management infrastructures. These areas are also inaccessible and could not be supplied with electricity. With the help of CAMPA funds, we installed 1 KW solar system in all the elephant camps. These installation helps our staff to well manage their daily activities. Keeping medicines, rations and other materials related to elephants.



Sr. No	Year	Quantity in kw	Expenditure
1	2022-23	20	20,00,000 Rs
2	2021-22	33	27,62,430 Rs





Range: Manpur buffer, Beat: Gadhrola, PF 312, Year: 2022-23

Range: Manpur buffer, Beat: Gurwahi, PF 612, Year: 2022-23

Lantana eradication gives a good space for native species to grow and proliferate. It shows the highest importance of this fund. The cause for which this fund was created can be seen in the image shown below.

Lantana eradicated area with new Bamboo growth Range: Khitauli, Beat: Gadhpuri, Year- 2022-23

Weed Eradication Work:

Sometimes over-utilised areas or degraded areas are overpopulated by weeds such as *Cassia tora, Sida acuta* etc. which hampers the growth of other vegetation that acts as a forage for herbivores, same as Lantana. Demarcation of the area was done for work and described in APOs.

Range: Magdhi, Beat: Khusarwah, RF 246, 247 Year: 2023-24

Herbivores utilizing Lantana/Weed eradiated areas

Weed eradication and restoring the degraded habitat with native palatable species of grasses.
Range: Tala, Beat: Sheshshaiya, RF 324, Year: 2023-24

Fire Line Creation:

Uncontrolled fire is the most hazardous event for biodiversity conservation. Each year, fire line work was done to minimise such events. Understanding sensitive points and breaking points of large fires was selected and control burning was done.

Rabge: Tala, Beat: Sheshaiya, RF 317, Year 2021-22

Range: Tala, Beat: North Gohdi, RF 307, Year: 2021-22

Camp Construction:

After the return of elephants in Bandhavgarh, Camps, Solar plates, and other human- made structures are under threat. Even the risk of life for patrolling staff. Considering this problem Bandhavgarh management adopted and started raised buildings. Elevated patrolling camps & and solar plates are now the new way.

Range: Tala, Beat: North Gohdi, Mahaman camp, Year 2021-22 (8 Lakh)

Range office construction: Range Pataur, 2022-23

Soil & Moisture Conservation:

Bandhavgarh is rich with plenty of water sources & good rainfall in monsoon. Although there are certain areas which need water during dry period. To avail water for wildlife as well as to maintain moisture in grassland, temporary check dams are created to store the water during pinch period with the help of this fund. It enables us to perform active wildlife management.

Desilting & temporary check dam construction- Range Pataur Year- 2022-23

Saucer construction: Range: Pataur, Beat: Pataur D, 2022-23

Way Forward:

Many alien and native woody and bushy plant species such as *Ageratun cony zoides, Lanatana Camara, Hpti suaveolens, Sida cordifiolia, Casia tora* etc. are invading forest grasslands. These species are capable of establishing, invading, and out-competing native palatable species. For prevention from invasive weed encroachment, bushy and woody growth, annual weed eradication, and woody and bushy growth uprooting works need to be done; these works support in suitable growth of grasses and native species such as *Bothrichloa intermedia, Ischaemum indicum, Themeda* spp. *Dichanthium annulatum, Heteropogon* spp. etc..

Involving local forest-dwelling communities in such works given them better livelihood option and also minimize their forest dependency.

Solar power system installation enables us in many ways which requires continuous upgradation and maintenance. Installation of these units has a large scope in Bandhavgarh which can provide a better life to patrolling staff and finally impact positively on protection. Many camps and wireless stations are now equipped with solar energy, it benefitting from a continuous supply of energy without disturbing communication equipment.

In the near future, BTR management has a vision to equip each patrolling camp, wireless stations, camps in sensitive areas & watch towers with solar power.

Such funds are key to the management of habitat and all other protection works.

NPV- कैम्पा मद अंतर्गत सफल बिगडे वनों के सुधार वृक्षारोपण उत्तर वनी वनमंडल, मध्य प्रदेश

क. वृक्षारोपण क्षेत्र का विवरण :–

1	परिक्षेत्र का नाम	छपारा
2	बीट का नाम	इमलिया
3	वन समिति का नाम	ग्राम वन समिति नांदियाकला
4	कक्ष क्रमांक	पी.एफ.–1133
5	रकबा	25 हे.
6	वृक्षारोपण क्षेत्र तैयारी वर्ष	2020–21
7	रोपण वर्ष	2021–22
8	रोपित पौधों की संख्या	25000
9	वृक्षारोपण की स्थिति	बहुत अच्छा
10	रोपित पौधों की प्रजाति	सागौन, बॉस, खमेर एवं अन्य
11	जीवित पौधों की संख्या (माह मई 2023 की स्थिति में)	23069
12	जीवितता का प्रतिशत	93.48 प्रतिशत
13	पौधों की औसत उँचाई	1.2 मीटर

ख. क्षेत्र सुरक्षा के फलस्वरूप वन समिति सदस्यों को घास वितरण :–

वृक्षारोपण क्षेत्र का घिराव चैनलिंक फेंसिंग के द्वारा किया गया है। जिससे उक्त वृक्षारोपण क्षेत्र की सुरक्षा सुनिश्चित होने के साथ–साथ वृक्षारोपण क्षेत्र में घास का उत्पादन भी हुआ है। जिससे स्थानीय लोगों को उनके पालतू मवेशियों के लिये चारा उपलब्ध हो सका है। उक्त वृक्षारोपण क्षेत्र से पशुओं के लिये चारा काटकर सिरबोझ से स्थानीय समिति सदस्यों द्वारा स्टॉल फीडिंग कराई जा रही है। जिससे वनों में चराई का भार कम हुआ है।

घास उत्पादन का विवरण

वर्ष	घास का कुल उत्पादन (क्विं में)	हितग्राही परिवार संख्या
2021	20.967	31
2022	28.982	29
2023	24.340	27
योग	**74.289**	**87**

घास उत्पादन क्षेत्र

वृक्षारोपण क्षेत्र में घास प्रचुरता के छायाचित्र

C. विगत वर्षों में वृक्षारोपण क्षेत्र की प्रगति :–
क्षेत्र तैयारी कार्य के छायाचित्र (वित्तीय वर्ष 2020–21)

लेन्टाना उन्मूलन कार्य

गड्ढा खुदाई कार्य

BwaWB ड्रेसिंग कार्य

पौधारोपण के बीच में औषधीय रोपण तैयारी

वृक्षारोपण (वित्तीय वर्ष 2021–22)

पौधारोपण कार्य

पौधारोपण

पौधारोपण कार्य के बीच में
औषधीय रोपण कार्य

निंदाई एवं थाला बनाई कार्य

3rd Year (वित्तीय वर्ष 2022–23)
वृक्षारोपण के तृतीय वर्ष में वृक्षारोपण की स्थिति दर्शाते छायाचित्र

निंदाई कार्य

निंदाई उपरान्त पौधों में वृद्धि

औषधीय पौधों की वृद्धि

जीवित्ता की स्थिति

(वित्तीय वर्ष 2023–24)
वृक्षारोपण के चतुर्थ वर्ष में वृक्षारोपण की स्थिति दर्शाते छायाचित्र

निंदाई कार्य

बांस पौधों में वृद्धि

पौधों के विकास की स्थिति

वृक्षारोपण से स्थानीय समुदाय को लाभ :– वृक्षारोपण हेतु चयनित क्षेत्र पूर्व में बिगडा वन क्षेत्र था। परंतु वृक्षारोपण होने के उपरान्त वर्तमान में उक्त क्षेत्र हरा भरा हो गया है। जिसके फलस्वरूप उक्त क्षेत्र में जैव विविधता में वृद्धि हुई है। क्षेत्र में पक्षियों की विभिन्न प्रजाति देखी गयी है। वृक्षारोपण क्षेत्र में चारा उत्पादन से उक्त क्षेत्र में चारे की समस्या दूर हुई है। जिससे ग्रामीणों में वनों के प्रति लगाव बढा है। वृक्षारोपण होने से क्षेत्र में भू जल संरक्षण में सुधार आया है। जिससे उक्त क्षेत्र से लगीं निजी भूमि का जल स्तर में वृद्धि हुई है। जिसका प्रत्यक्ष लाभ क्षेत्र की जनता को प्राप्त हो रहा है। जिसके कारण वनों के संरक्षण एवं संवर्धन में समितियों का सहयोग प्राप्त हो रहा है।

कैम्पा राज्य प्राधिकरण, मध्यप्रदेश भोपाल

कैम्पा अंतर्गत आस्थामूलक कार्य
(Entry Point Activities)

ग्राम विकास का माध्यम

वन (संरक्षण) अधिनियम, 1980 के तहत वन भूमि पर गैर वानिकी कार्य किये जाने हेतु भारत सरकार पर्यावरण एवं वन मंत्रालय द्वारा सशर्त स्वीकृति प्रदान की जाती है। इस शर्त में एक महत्वपूर्ण शर्त आवेदक संस्थान या उपयोगकर्त्ता संस्था से क्षतिपूर्ति वृक्षारोपण के साथ आस्थामूलक कार्यों हेतु राशि प्राप्त की होती है।

मध्यप्रदेश वन विभाग, मंत्रालय वल्लभ भवन के पत्र क्रमांक/एफ–03/11/2018 /10–2 दिनांक 14.05.2019 द्वारा दिये गये निर्देशानुसार राज्य शासन के प्रस्तावों को छोड़कर शेष प्रस्तावों से क्षतिपूर्ति वनीकरण योजना की कुल लागत की 5 प्रतिशत राशि आस्थामूलक कार्यों (Entry Point Activities) हेतु प्राप्त की जाती है। उक्त राशि से संबंधित ग्राम समिति के माध्यम से ग्राम सभा/ग्राम समिति द्वारा अनुमोदित ग्राम विकास के कार्यों को संपादित किया जाता है। इसके अंतर्गत विभिन्न वन मण्डलों में तालाब निर्माण, सौलर लाइट, शमसान घाट शेड, रपटा निर्माण, सी.सी. रोड, सामुदायिक भवन, चौपाल निर्माण आदि कार्य किये गये हैं। वन विभाग मध्य प्रदेश राज्य में प्रतिपूरक वनीकरण द्वारा वन आवरण को सक्रिय रूप से बढ़ा रहा है।

वन क्षेत्रों के पास रहने वाले समुदायों में व्यवहारिक परिवर्तन लाने के लिए विभाग द्वारा कई आस्थामूलक गतिविधियां शुरू की गई हैं। वन विभाग द्वारा वर्ष 2019 से 2022 तक राशि लगभग 242445581/– व्यय कर विभिन्न आस्थामूलक कार्य वन समितियों के सहयोग से कराये गये है, जिससे लगभग 37373 परिवार लाभान्वित हुए हैं।

आस्थामूलक गतिविधियों का उद्देश्य एवं महत्व :–

- वन विभाग एवं ग्रामीणों के बीच सकारात्मक बातचीत की शुरूआत एवं संयुक्त वन प्रबंधन परिकल्पना का सशक्तीकरण।
- वन विभाग एवं ग्रामीणों में परस्पर विश्वास में वृद्वि ।
- वन विभाग एवं ग्रामीणों के मध्य होने वाले विवादो में कमी।
- ग्रामीण विकास के साथ–साथ मूलभूत आवश्यकताओं की पूर्ति।
- रोजगार की संभावनाओं में वृद्वि के साथ अर्थिक एवं सामाजिक विकास।
- वन एवं वन्यप्राणियों के संरक्षण एवं संवर्धन में ग्रामीणों की भूमिका में वृद्वि।
- ग्रामीणी जीवन स्तर में उन्नति।

विगत तीन वर्षों (2021 से 2023 तक) में कैम्पा मद से आस्थामूलक कार्यों के अंतर्गत कुछ उल्लेखनीय कार्य निम्न हैं:–

(1) स्मार्ट क्लास की स्थापना– भोपाल वन मण्डल अंतर्गत परिक्षेत्र बैरसिया में DRDO को प्रदत्त वन भूमि के विरूद्ध बीट गुनगा में क्षतिपूर्ति वृक्षारोपण किया गया है। पूर्व में अन्य शासकीय विद्यालयों के समान ही इस विद्यालय में भी आधुनिक शिक्षा के उपकरण उपलब्ध नहीं थे। इस योजना की आस्थामूलक राशि से वन समिति

गुनगा एवं ग्रामीणों की विशेष मांग के आधार पर ग्राम गुनगा के निवासियों की शिक्षा हेतु स्मार्ट क्लास की मांग को ग्राम वन समिति द्वारा पारित करते हुए शासकीय उच्चतर माध्यमिक विद्यालय गुनगा में स्मार्ट क्लास की स्थापना वर्ष 2022 में की गई है। उक्त कार्य हेतु कंप्यूटर, प्रोजेक्टर, स्क्रीन, कीबोर्ड, माउस पर राशि रूपये 1.60 लाख

व्यय किया गया। जिसके उपरांत छात्रों में गणित एवं विज्ञान के विषयों के प्रति नवीन उत्साह जागृत हुआ है। वन मण्डल की इस पहल से ग्रामवासियों एवं छात्र–छात्राओं में विभाग के प्रति आस्था मजबूत हुई है तथा वन विभाग के द्वारा किये कार्यों में ग्रामवासियों द्वारा सहयोग प्रदान किया जा रहा है।

(2) पुस्तकालय निर्माण– वन मण्डल औबेदुल्लागंज के अंतर्गत सुदूर वन ग्राम सालेगढ़ में वन विभाग द्वारा एक अभिनव पहल की गई। पूर्व में छात्रों को किताबें खरीदने के लिये पास के ही शहर जाना पड़ता था। कई छात्र–छात्राओं के पास किताबें खरीदने के लिए पर्याप्त पैसे भी नहीं होने के कारण उनकी शिक्षा पर प्रतिकूल प्रभाव पड़ रहा था। इस समस्या का प्रस्ताव ग्रामीणों ने ग्राम वन विभाग के अंतर्गत ग्राम वन समिति के पास रखा, जिस हेतु वन विभाग की समिति ने ग्रामीणों की विशेष मांग पर छात्र–छात्राओं के लिये ग्राम में आस्थामूलक कार्य अंतर्गत वर्ष 2022 में राशि रूपये 6.00 लाख से पुस्तकालय का निर्माण किया गया। पुस्तकालय भवन तथा पुस्तकालय का लोकार्पण माननीय मुख्यमंत्री महोदय श्री शिवराज सिंह चौहान के द्वारा 11 नवम्बर 2022 को किया गया है। पुस्तकालय में विभिन्न विषयों की लगभग 300 पुस्तकों का संग्रह है एवं 147 बच्चे इसके सदस्य हैं। वन विभाग की इस पहल से ग्रामवासियों में वन विभाग के प्रति विश्वास जागृत हुआ है। इससे प्रदेश में वन विभाग की छवि सुदृढ़ हुई है।

(3) विद्यालय में बैठक व्यवस्था हेतु कुर्सी/टेबल प्रदाय –वन मण्डल धार अंतर्गत, परिक्षेत्र कुक्षी में डही माइक्रोलिफ्ट इरीगेशन प्रोजेक्ट के विरूद्ध क्षतिपूर्ति रोपण, के आस्थामूलक कार्य की राशि रूपये 0.98 लाख से आदिवासी अंचल के ग्राम वायल के शासकीय माध्यमिक विद्यालय, वायल में वर्ष 2022 में टेबल–कुर्सियां विद्यार्थियों के बैठने हेतु प्रदाय की गई। जिससे वहां के विद्यार्थियों में शिक्षा के प्रति नवीन उत्साह का संचार हुआ है।

(4) आर.सी.सी. रोड एंव सामुदायिक भवन निर्माण– वन मण्डल दक्षिण सागर में आस्थामूलक मद की राशि से मैनाई एंव महेन्द्रा वन समिति के अंतर्गत ग्राम मैनाई में आवागमन में सुविधा हेतु वर्ष 2020–21 में 160 र.मी. लंबाई में सीमेंट कांक्रीट रोड लागत राशि रूपये 7.92 लाख तथा ग्राम मैनाई में ही सामुदायिक भवन निर्माण राशि रूपये 7.67 लाख से किया गया है। उक्त निर्माण से ग्राम मैनाई, धौबाई एवं महेन्द्रा के सैकड़ों ग्रामीण लाभान्वित हुये हैं।

(5) **सौर ऊर्जा संचालित पम्पिंग सिस्टम की स्थापना** –वन मण्डल श्योपुर के वन परिक्षेत्र कराहल में 132 के.व्ही. शिवपुरी–कराहल विद्युत लाईन निर्माण कार्य से प्रभावित वन क्षेत्र के विरूद्ध किये गये क्षतिपूर्ति वृक्षारोपण में आस्थामूलक कार्य की राशि से ग्राम वन समिति रोड़ी के प्रस्ताव के आधार पर आदिवासी ग्राम पारोंद के प्राथमिक विद्यालय में राशि रूपये 3.87 लाख से सौर ऊर्जा से संचालित होने वाला 3 एच.पी. सोलर पम्पिंग सिस्टम वर्ष 2021–22 में स्थापित किया गया है। जिसमें विद्यालय के 61 विद्यार्थी एवं आंगनबाड़ी के 30 बच्चे तथा ग्रामीणों को शुद्ध पेयजल की आपूर्ति हो रही है साथ ही विद्यालय पर सोलर लाईट से रोशनी की व्यवस्था भी हुई है।

(6) तालाब एवं यज्ञशाला निर्माण : वन मण्डल रायसेन अंतर्गत बरखेड़ा से बुधनी तीसरी रेलवे लाईन निर्माण में प्रभावित वन भूमि अंतर्गत ग्राम ऐरन में रहवासियों ने जल की समस्या को वन विभाग के समक्ष रखा तथा वन समिति द्वारा तालाब के निर्माण हेतु प्रस्ताव पारित किया। जिसके विरूद्ध किये गये क्षतिपूर्ति रोपण के आस्थामूलक कार्य मद से वर्ष 2021–22 में ग्राम वन समिति ऐरन में राशि रूपये 6.60 लाख से तालाब निर्माण किया गया है। ग्रामवासियों के लिये पानी की व्यवस्था हेतु तालाब निर्माण होने से स्थानीय ग्रामवासियों को सिंचाई की सुविधा एवं मवेशियों को पीने के पानी की सुविधा उपलब्ध कराई गई है जिससे वहां के निवासियों के आय के स्रोत में बढ़ोतरी हुई है। यह तालाब ग्रामीणों के दैनिक निस्तार कार्यों के लिए भी उपयोगी है एवं वन ग्राम समिति मवई द्वारा राशि रूपये 7. 99 लाख से यज्ञशाला का निर्माण स्थानीय ग्रामीणों की मांग के आधार पर समितियों के माध्यम से कराया गया है जिसके फलस्वरूप यज्ञशाला के निर्माण से स्थानीय निवासियों द्वारा सांस्कृतिक एवं सामाजिक कार्यों का निर्वहन किया जाता है।

(7) नलकूप खनन एवं हैण्डपम्प निर्माण : वन मण्डल पश्चिम बैतूल अंतर्गम वन परिक्षेत्र चिचौली, वर्ष 2020–21 में नलकूप खनन एवं हैण्डपम्प लगवाई कार्य बैतूल हरदा मार्ग चौड़ीकरण अंतर्गत क्षतिपूर्ति वनीकरण कैम्पा, अंतर्गत आस्था मूलक राशि द्वारा किया गया। हैण्डपम्प निर्माण से ग्राम के लगभग 350 व्यक्ति लांभावित हुए है। इस कार्य पर कुल राशि रूपये 1.25 लाख उपयोग की गयी है।

(8) सिलाई मशीन एवं स्पोर्टस सामग्री वितरण : वनमण्डल नीमच अंतर्गत मध्यप्रदेश पॉवर ट्रान्समिशन कम्पनी लिमिटेड द्वारा 220 के .व्ही. नीमच–रतनगढ़ लाईन निर्माण में प्रभावित वनभूमि के बदले आस्थामूलक कार्य की राशि से ग्राम अमरपुरा की 20 महिलाओं को सिलाई मशीन एवं शासकीय विद्यालय अमरपुरा के 200 विद्यार्थियों को खेलकूद हेतु खेल सामग्री वर्ष 2020–21 में प्रदाय की गयी। इस कार्य से महिलाओं को स्वरोजगार प्राप्त हुआ है। इस कार्य पर कुल राशि रूपये 1.70 लाख उपयोग की गई है।

(9) रपटा निर्माण कार्य : वनमण्डल शाजापुर के अंतर्गत मोहन बडोदिया तहसील के ग्राम सागड़िया 30 हे. में ग्राम वासियों की सहमति से वर्ष 2020–21 में पौधारोपण कार्य किया गया था। कैम्पा योजना अंतर्गत आस्थामूलक कार्य में सी.सी. रोड निर्माण कार्य किया गया जिसमें कुल राशि रूपये 7.61 लाख व्यय हुये। सी.सी. रोड निर्माण से लगभग 170 परिवार लाभान्वित हुये है। ग्राम सागड़िया

गोपीपुर - रपट निर्माण कार्य पूर्ण का छायाचित्र

अंतर्गत महादेव पहाड़ी पर एक प्राचीन शिव मंदिर है। आस पास के

ग्रामीणों को पहाड़ी क्षेत्र होने को कारण मंदिर तक पहुचने में काफी समस्या हो रही थी आस पास के लगभग 5–7 गांव वासियों की मंदिर के प्रति आस्था होने के कारण सर्व सहमति से मंदिर के पहुच मार्ग में सी.सी.रोड निर्माण हेतु प्रस्ताव पारित किया गया। ग्रामवासियों की सुविधा को देखते हुए जनवरी 2023 में प्रस्ताव उपरांत सी.सी. रोड का निर्माण कार्य प्रारम्भ किया गया। सी.सी. रोड की लम्बाई लगभग 160 मीटर व चौडाई 3 मीटर है। सड़क निर्माण उपरांत ग्रामवासियों को मंदिर मे आने जाने हेतु काफी सुविधा प्राप्त हुई है।

(10) मांगलिक भवन निर्माण : वनमण्डल शाजापुर अंतर्गत शाजापुर तहसील के ग्राम सेतखेड़ी 27.99 हे. में वन विभाग शाजापुर द्वारा वैकल्पिक वृक्षारोपण अंतर्गत क्षेत्र तैयारी का कार्य किया गया। ग्राम सेतखेड़ी में कैम्पा योजना अंतर्गत उक्त वृक्षारोपण क्षेत्र सें संबंधित आस्थामूलक के कार्य मे ग्रामवासियों की सहमति से मांगलिक भवन जिसकी लागत 11.37 लाख, है। मांगलिक भवन निर्माण से लगभग 105 परिवार लाभान्वित हुये है। जिससे ग्रामिणों को सामूहिक आयोजन करने में काफी सुविधा प्राप्त होगी।

ग्राम सेतखेड़ी में कैम्पा योजना अंतर्गत उक्त वृक्षारोपण क्षेत्र से संबंधित आस्थामूलक के कार्य में ग्रामवासियों की सहमति से मांगलिक भवन का निर्माण किए जाने का ठहराव प्रस्ताव पारित किया गया था क्योंकि ग्राम पंचायत तथा अन्य शासकीय योजनाओं से मांगलिक भवन निर्माण का कार्य नहीं किया जा रहा था तथा ग्राम में पूर्व में भी कोई मांगलिक भवन नहीं था। जिससे ग्रामीणजनों को ग्राम के सामूहिक आयोजन आदि करने में काफी परेशानी होती थी। इस हेतु आस्थामूलक कार्य अंतर्गत समस्त ग्रामवासियों की सहमति से मांगलिक भवन निर्माण कार्य प्रसतावित किया गया। वन विभाग द्वारा ग्रामवासियों की सुविधा को देखते हुए उक्त क्षेत्र मे ग्रामवासियों हेतु 30ग40 का मांगलिक भवन का निर्माण किया गया। जिसमे 1 बड़ा हाल, 2 रूम व 1 किचन बनाया गया है। ग्रामीणों को सामुहिक आयोजन करने में काफी मदद मिलेगी।

सेतखेड़ी- मांगलिक भवन निर्माण कार्य पूर्ण का छायाचित्र

(11) समुदायिक शेड निर्माण : अगर मालवा जिले अंतर्गत सुसनेर तहसील के ग्राम कलारिया रकबा 17.61 हे. में ग्रामवासियों की सहमति से वर्ष 2023–24 में पौधा रोपण का कार्य किया गया। ग्राम कलारिया में कैम्पा योजना अंतर्गत उक्त वृक्षारोपण क्षेत्र सें संबंधित आस्थामूलक के कार्य मे ग्रामवासियों की सहमति से 20x30 का सामुदायिक शेड निर्माण किया गया जिसकी लागत 6.13 लाख, है। सामुदायिक शेड निर्माण से लगभग 110 परिवार लाभान्वित हुये है, जिससे ग्रामिणों को सामूहिक आयोजन करने में काफी सुविधा प्राप्त होगी।

परिणाम :–

- ग्राम वन समितियों के सहयोग से किये गये कार्यो से वन प्रबंधन मे सहभागिता में वृद्वि हुई है।
- वन विभाग द्वारा ग्रामीणों के हित में कियें गये कार्यो से दोनो के बीच सामन्जस्य एवं आपसी सहयोग में वृद्वि हुई है।
- ग्रामीणो में जागरूकता बढ़ने से वन्यप्राणी एवं ग्रामीणों के बीच बढ़ रहे विवादों में कमी आई है तथा तालमेंल में वृद्वि हुई है।
- ग्रामीणों को विभिन्न स्तर पर दुधारू गाय, फलदार पेड पौधे भी प्रदाय किये गये जिससे रोजगार मूलक गतिविधियों में वृद्वि से उनके आर्थिक एवं सामाजिक स्तर में वृद्वि हुई है।
- इन आस्था मूलक कार्यो से ग्रामीणों का वन सुरक्षा के प्रति सकारात्मक द्वष्टिकोण उत्पन्न हुआ है जिससे वे वनों मे अवैध चराई, अवैध कटाई एवं अवैध शिकार को रोकने में विभाग का परस्पर सहयोग कर रहे है।
- आस्थामूलक कार्य के पश्चात ग्रामीणों ने वन विभाग के प्रति अपनी सोच को बदला है। निश्चित रूप से आस्थामूलक कार्य ग्रामीणों एवं वन विभाग में सहयोग की कड़ी का कार्य कर रहे है।

मध्यप्रदेश राज्य कैम्पा प्राधिकरण

पन्ना टाईगर रिजर्व,पन्ना के अन्तर्गत पैट्रोलिंग कैम्पो में सोलर सिस्टम स्थापना

पन्ना टाईगर रिजर्व,पन्ना अन्तर्गत पैट्रोलिंग कैम्पों मद में राशि सोलर सिस्टम हेतु प्राप्त हुई थी, जिसका उपयोग कर, पन्ना टाईगर रिजर्व, के वनक्षेत्र में स्थित पेट्रोलिंग कैम्प, निगरानी टावर, वायरलेस स्टेशन, बैरियर नाका, परिक्षेत्र सहायक (वनक्षेत्र के अन्दर) के मुख्यालय आवास, एवं आस्थाई कैम्प में समस्त परिक्षेत्र के 53 स्थानो में प्रकाश व्यवस्था को सुदृण करने की दृष्टि से पन्ना टाईगर रिजर्व में सोलर सिस्टम एवं सौलर लैम्प उपलब्ध कराये गये है।

वर्ष	राशि (लाख में)
वर्ष 2021–22	53.00
2022–23	20.00

पन्ना टाइगर रिजर्व के पेट्रोलिंग कैम्पों में सौर ऊर्जा पैक स्थापित किये गये है। जिससे वन अमले को बिजली की कमी के चलते अंधकार में और बिना बिजली के जीने वाले पन्ना टाइगर रिजर्व अन्तर्गत कार्यरत फील्ड स्टाफ के जीवन को सुविधाजनक बनाया जा सके।

समस्या

पन्ना टाईगर रिजर्व, एक संरक्षित क्षेत्र होने के कारण यहाँ के वन एवं वन्यप्राणियों की 24 घन्टे सुरक्षा की निगरानी वनक्षेत्र के कर्मचारियों/श्रमिको पर होती है किन्तु वनक्षेत्र अर्न्तगत विभिन्न पेट्रोलिंग कैम्प, निगरानी टावर, वायरलेस स्टेशन, बैरियर नाका, परिक्षेत्र सहायक (वनक्षेत्र के अन्दर) के मुख्यालय आवास, एवं आस्थाई कैम्प आदि को विगत 03–04 वर्ष पूर्व विद्युत/प्रकाश हेतु कोई उचित व्यवस्था न होने से वायरलेस हैण्ड सेट, गश्ती मोबाइल, को चार्ज करने व कैम्पो में रात्रि प्रकाश न होने से वन्यप्राणी के द्वारा दुघर्टना जैसी समस्या का डर रहता था वायरलेस हैण्ड सेट, गश्ती मोबाइल को चार्ज करने हेतु वनक्षेत्र के समीप लगे ग्रामो एवं परिक्षेत्र

मुख्यालय आना पड़ता था जिससे गश्ती जैसे महत्वपूर्ण कार्य प्रभावित होता था, और वर्षा के मौसम में कई बार वनक्षेत्र के कर्मचारी से सूचनाओं का अदान–प्रदान न होने से त्वारित कार्यवाही में समस्याएँ होती थी। साथ ही गर्मी के मौसम में कैम्प एवं घास–मैदान के आस–पास पानी की समस्या होती थी।

समाधान

प्रबंधन द्वारा कैम्पा मद से उपलब्ध कराये गये बजट के द्वारा सोलर ऑफग्रिड पावर प्लान्ट सिस्टम 1 किलो वॉट (53 नग) सोलर ऑफग्रिड होम लाइटिंग सिस्टम 200 वॉट (20 नग), सोलर स्ट्रीट लाइट 150 वॉट (15 नग), सोलर माइको पम्प 0.5 एच.पी. सोलर लालटेन (150 नग) स्थापित की गई है, ताकि जंगल के सुदूर भागों में जहां पर बिजली की अनुपलब्धता है वहा पर भी प्रकाश एवं चार्जिंग की सुविधा उपलब्ध कराई जा सके। उक्त प्रयासों से वन कर्मचारियों की दैनिक जलापूर्ति की समस्या को हल करने में सहायता मिली है। इस प्रयास से टाइगर रिजव अन्तर्गत कर्मचारियों एवं चौकीदारों की जीवन की गुणवत्ता में काफी सुधार हुआ है।

टाईगर रिजर्व अन्तर्गत सोलर सिस्टम/सोलर पम्प स्थापित करने से उक्त समस्यों का सामाधन हुआ साथ ही सोलर लैम्प भी रात्रि कालीन कार्य के लिये उपयोगी है, यह उपकरण प्रदूषण रहित, शांत (Soundless), रखरखाव सरल होने से वनक्षेत्र के सामाधन में उपयोगी सिद्ध हुआ है।

परिणाम

कैम्पा मद से सौर ऊर्जा प्रणाली के स्थापना से पन्ना टाईगर रिजर्व के प्रबंधन को सुरक्षित, सुविधाजनक और प्रभावी बनाया है, सोलर सिस्टम वनक्षेत्र में स्थापित होने से कर्मचारियों के पास प्रकाश/विद्युत की व्यवस्था वर्तमान में बढ़ी है, जिससे वायरलेस हैण्ड सेट, गश्ती मोबाइल, कॅम्पो में ही चार्ज किये जा रहे हैं, अब समीप लगे

ग्रामों एवं परिक्षेत्र मुख्यालय नही जाना पड़ता है, व समय की बचत होती है, बचे हुये समय का उपयोग वन एवं वन्यप्राणियों की सुरक्षा में किया जा रहा है, कैम्पो में पर्याप्त प्रकाश होने से रात्रि में कैम्प के आस–पास वन्यप्राणी के द्वारा दुघर्टना जैसी समस्या का डर कर्मचारिया/ श्रमिकों में कम हुआ है। वनक्षेत्र में सोलर पम्प के स्थापित होने से कैम्प/घास मैदान के आस–पास पानी की उपलब्धता बढ़ी है, उक्त प्रयासों से सकारात्मक परिणाम देखने को मिला है।

यह साबित करता है कि सौर ऊर्जा का प्रयोग करने से हम वातावरण की सुरक्षा और संरक्षण में योगदान कर रहे है।

"कैम्पा राज्य प्राधिकरण,"
मध्यप्रदेश
भोपाल

क्षतिपूर्ति वृक्षारोपण ठाटी, शिवपुरी

ग्राम विकास का माध्यम

1. वन मण्ड़ल का नाम – शिवपुरी
2. वन परिक्षेत्रा का नाम – सतनवाड़ा
3. बीट का नाम – ठाठी
4. कक्ष क्र. – आर 475
5. रकबा – 21.24 हैक्टर
6. रोपण वर्ष – 2016–17
7. योजना का नाम – क्षतिपूर्ति वृक्षारोपण
8. रोपित पौधों की संख्या – 33600
9. रोपित पौधों की प्रजातियां – शीशम, करंज, बांस।

सफलता की कहानी

वनमण्डल शिवपुरी वन परिक्षेत्रा सतनबाड़ा

क्षतिपूर्ति वृक्षारोपण (शिवपुरी–ग्वालियर राष्ट्रीय राज्य मार्ग क्रमांक–3 को 4/6 लाईन निर्माण)ठाठी आर 475 रकवा 21.24 है. वर्ष 2016–17 में वन भूमि पर बढते हुये अतिक्रमण के दबाव को देखते हुये वृक्षारोपण का कार्य किया गया। रोपण क्षेत्रा में 33600 हजार पौधे रोपित किये गये थे, जिनमें शीशम के पौधों की बढत बहुत अच्छी पाई गई। वर्तमान में रोपण क्षेत्रा में 85.92 प्रतिशत पौधे जीवित है। उक्त वृक्षारोपण से स्थानीय ग्रामीणों को लगभग 300–400 क्विंटल घास निशुल्क प्रदाय की जा रही है। वर्तमान में रोपण क्षेत्रा जंगल का स्वरूप ले चुका है, जिसमें कई वन्यप्राणियों के प्राकृतिक आवास बन चुके है। वर्तमान में ग्रामीणों एवं वन विभाग के बीच सकारात्मक भावनाओं का संचार हुआ है, जिससे ग्रामीणों द्वारा समय–समय पर अग्नि बुझाने इत्यादि कार्यो में यथासंभव सहयोग प्राप्त होता है। इस प्रकार उक्त वृक्षारोपण एक सफल वृक्षारोपण की श्रेणी में है।

वृक्षारोपण की सफलता की कहानी क्षतिपूर्ति वृक्षारोपण जुगहा वर्श 2015–16

1. वन परिक्षेत्र का नाम – करैरा
2. वनमण्ड़ल का नाम – शिवपुरी
3. बीट का नाम – वनगवॉ
4. ग्राम वन समिति का नाम – जुगहा
5. योजना का नाम – क्षतिपूर्ति वृक्षारोपण
6. वृक्षारोपण का नाम – जुगहा
7. कक्ष क्रमांक – आर. 457, 458
8. कक्ष का कुल रकवा – 195.72 एवं 202.46 हैक्टेयर
9. वृक्षारोपण का रकबा – 105 हैक्टेयर
10. वर्ष – 2015–16
11. कार्यवृत्त का नाम – वृक्षारोपण कार्यवृत्त
12. उपचार क्षेणी का नाम –
13. क्षेत्र तैयारी कार्यों में किये गये कार्यों का संक्षिप्त विवरण :–

गडडा खुदाई 30×30×30 – 32000 एवं 45×45×45- 108000 कुल – 140000

14. रोपित पौधो का विवरण –

प्रजाति रोपित	पौधा संख्या
शीशम	86230
करंज	14805
चिरोल	8500
नीम	17635
सिरस	7830
ऑवला	2500
बहेडा	2500

15. रोपण अवधि – जुलाई 2016
16. वर्तमान में पौधों की जीविता प्रतिशत– 95.30 प्रतिशत
17. संक्षिप्त टीप – क्षतिपूर्ति वृक्षारोपण जुगहा सवरेंज करैरा की बीट वनगॅवा के कक्ष क्रमांक आर-457,458 में वर्ष 2015–16 में स्थापित किया गया था, जिसमें 140000 हजार पौधें उपरोक्तानुसार प्रजाति के रोपित किये गये थे। वर्तमान में उक्त वृक्षारोपण सफल वृक्षारोपण है।
18. वृक्षारोपण के छायाचित्र संलग्न है

सफलता की कहानी

वनमण्ड़ल – शिवपुरी वन परिक्षेत्र –करैरा

वनक्षेत्र को अतिक्रमण मुक्त कर सफल वृक्षारोपण निर्माण वन परिक्षेत्र करैरा के कक्ष क्रमांक आर. 457, 458 बीट वनगवॉ में ग्रामीणों द्वारा वन भूमि पर अतिक्रमण किया गया था, भविष्य में वन भूमि पर अतिक्रमित क्षेत्र में वृद्वि की सम्भावना थी। वन भूमि को अतिक्रमण मुक्त कर, वन क्षेत्र को पुनः वन अच्छादित करने के लिए क्षतिपूर्ति वृक्षारोपण (शिवपुरी जिले में 765 के.व्ही बीना–ग्वालियर–3 सिंगल सर्किट पारेषण लाईन) जुगहा कक्ष क्रमांक आर 457, 458 रकइा 105 हैक्टैयर क्षेत्र के लिए प्रोजेक्ट तैयार किया गया वर्ष 2015–16 में

स्वीकृत परियोजना के अनुसार के लिए प्रोजेक्ट तैयार किया गया वर्ष 2015–16 में स्वीकृत परियोजना के अनुसार 30×30×30 एवं 45×45×45 सेन्टीमीटर आकार के गडडे खुदवाये गये, एवं 6470 र. मी. पशु अवरोधक दीवाल से घेरकर क्षेत्र को सुरक्षित किया गया। रोपण वर्ष में शीशम 86230, करंज 14805, चिरोल 8500, नीम 17635, सिरस 7830, ऑवला 2500, बहेडा 2500 एवं कुल 140000 पौधे रोपित किये गये।

वृक्षारोपण क्षेत्र के रोपित किये गये वृक्षारोपण क्षेत्र के उत्कृष्ट संरक्षण एवं नियमित रख–रखाव के फलस्वरूप उत्साह वर्धक परिणाम प्राप्त हुए समय पर बीडिंग उचित मात्रा में खाद उपलब्ध कराने से एवं सही समय पर सिंचाई कार्य कराने से पौधों की उत्कृष्ट वढ़त प्राप्त हुई, मई 2022 की गणना में 95.30 प्रतिशत पौधे जीवित पाए गये वर्तमान में रोपित पौधों औसत ऊंचाई 300 से.मी. गोलाई 25 से.मी. है तथा ग्रामीणों को लगभग 400 क्विंटल पशुओं हेतु चारा वितरित किया गया। वृक्षारोपण में नीलगाय, चीतल एवं अन्य वन्यप्राणियों की उपस्थिति देखी जा रही है। उपरोक्त तथ्यों के आधार पर उक्त वृक्षारोपण एक सफल वृक्षारोपण की श्रेणी में है।

वृक्षारोपण की सफलता की कहानी

क्षतिपूर्ति वृक्षारोपण सिरसोद वर्ष 2013–14

1. वन परिक्षेत्र का नाम – करैरा
2. वनमण्ड़ल का नाम – शिवपुरी
3. खसना नं. – 5150
4. ग्राम वन समिति का नाम – सिरसोद की टपरिया
5. योजना का नाम – छर्च जलाशय से प्रभावित वनभूमि के बदले क्षतीपूर्ती
6. वृक्षारोपण का नाम – क्षतिपूर्ति वृक्षारोपण सिरसोद
7. खसरा क्रमांक – 5150
8. कुल रकबा – 42.06 हैक्टेयर
9. वृक्षारोपण का रकबा – 42.06 हैक्टेयर
10. वर्ष – 2013–14
11. कार्यवृत्त का नाम –
12. उपचार क्षेणी का नाम –
13. क्षेत्र तैयारी कार्यों में किये गये कार्यों का संक्षिप्त विवरण :–

गडडा खुदाई 30×30×30 एवं 45×45×45 Total - 67296

14. रोपित पौधो का विवरण –

प्रजाति रोपित	पौधा संख्या
सागवान	25350
ऑवला	4800
करंज	14900
नीम	4300
शीशम	9950
खमेर	6050
लक्ष्मीतरू	946
चिरोल	1000

15. रोपण अवधि – जुलाई 2014
16. वर्तमान में पौधों की जीविता प्रतिशत– 87.21 प्रतिशत
17. संक्षिप्त टीप – क्षतिपूर्ति वृक्षारोपण सिरसौद सवरेंज सिरसोद की बीट घसारई के अन्तर्गत खसरा क्रमांक 5150 में वर्ष 2013–14 में स्थापित किया गया था, जिसमें 67296 हजार पौधें उपरोक्तानुसार प्रजाति के रोपित किये गये थे वर्तमान में उक्त वृक्षारोपण सफल वृक्षारोपण है।
18. वृक्षारोपण के छायाचित्र संलग्न है।

सफलता की कहानी

वनमण्ड़ल – शिवपुरी वन परिक्षेत्र –करैरा

राजस्व से प्राप्त भुमि पर सफल वृक्षारोपण निर्माण वन परिक्षेत्र करैरा के खसरा क्रमांक 5150 बीट घसारई के अन्तर्गत सिरसोद में छर्च जलाशय से प्रभावित वनभूमि के बदले क्षतीपूर्ती राजस्व से प्राप्त भूमि पर वृक्षारोपण किये जाने की चुनौती वन विभाग के सम्मूख प्रस्तुत थी। प्राप्त राजस्व क्षेत्र को वन अच्छादित करने के लिए कैम्पा मद के अन्तर्गत क्षतिपूर्ति वृक्षारोपण रकबा 42.06 हैक्टैयर क्षेत्र के लिए प्रोजेक्ट तैयार किया गया। वर्ष 2013–14 में स्वीकृत परियोजना के अनुसार के लिए प्रोजेक्ट तैयार किया गया। वर्ष 2013–14 में स्वीकृत परियोजना के अनुसार 30×30×30 एवं 45×45×45 सेन्टीमीटर आकार के गडडे खुदवाये गये, एवं 3150 रनिंग मीटर चैनसिंलग फैन्सिग से घेरकर क्षेत्र को सुरक्षित किया गया। रोपण वर्ष में सागवान 25350, ऑवला 4800, करंज 14900, नीम 4300, शीशम 9950, खमेर 6050 ,लक्ष्मीतरू 946, चिरोल 1000 एवं कुल 67296 पौधे रोपित किये गये। वृक्षारोपण क्षेत्र के रोपित किये गये वृक्षारोपण क्षेत्र के उत्कृष्ट संरक्षण एवं नियमित रख–रखाव के फलस्वरूप उत्साह वर्धक परिणाम प्राप्त हुए समय पर बीडिंग उचित मात्रा में खाद उपलब्ध कराने से एवं सही समय पर सिंचाई कार्य कराने से पौधों की उत्कृष्ट बढ़त प्राप्त हुई, वर्तमान गणना में 87.21 प्रतिशत पौधे जीवित पाए गये वर्तमान में रोपित पौधों औसत ऊंचाई 250 सेमी. गोलाई 25 से.मी. है तथा ग्रामीणों को लगभग 350 क्विंटल पशुओं हेतु चारा वितरित किया गया। वृक्षारोपण में नीलगाय, चीतल एवं अन्य वन्यप्राणियों की उपस्थिति देखी जा रही है। उपरोक्त तथ्यों के आधार पर उक्त वृक्षारोपण एक सफल वृक्षारोपण की श्रेणी में है।

वृक्षारोपण की सफलता की कहानी

क्षतिपूर्ति वृक्षारोपण सिरसोद वर्श 2010–11

1. वन परिक्षेत्र का नाम – करैरा
2. वनमण्ड़ल का नाम – शिवपुरी
3. खसना नं. – 4780
4. ग्राम वन समिति का नाम – सिरसोद की टपरिया
5. योजना का नाम – 132 के.व्ही.मडीखेडा करैरा विद्युत पारेसण लाईन
6. वृक्षारोपण का नाम – क्षतिपूर्ति वृक्षारोपण सिरसोद
7. खसरा क्रमांक – 4780
8. कुल रकबा – 13 हैक्टेयर
9. वृक्षारोपण का रकबा – 13 हैक्टेयर

10. वर्ष – 2010–11

11. कार्यवृत्त का नाम – ––

12. उपचार क्षेणी का नाम – ––

13. क्षेत्र तैयारी कार्यों में किये गये कार्यों का संक्षिप्त विवरण :–

गडडा खुदाई 45×45×45 Total - 21671

14. रोपित पौधो का विवरण –

प्रजाति रोपित पौधा संख्या

सागवान	7406
बॉस	7000
जंगल जलेवी	2000
शीशम	500
अमलतास	500
सिरस	1500
ऑवला	2765

15. रोपण अवधि – जुलाई 2011

16. वर्तमान में पौधों की जीविता प्रतिशत– 91.83 प्रतिशत

17. संक्षिप्त टीप – क्षतिपूर्ति वृक्षारोपण सिरसौद सवरेंज सिरसोद की बीट घसारई के अन्तर्गत खसरा कमांक 4780 में वर्ष 2010–11 में स्थापित किया गया था, जिसमें 21671 हजार पौधें उपरोक्तानुसार प्रजाति के रोपित किये गये थे। वर्तमान में उक्त वृक्षारोपण सफल वृक्षारोपण है।

वृक्षारोपण के छायाचित्र संलग्न है।

सफलता की कहानी

वनमण्ड़ल – शिवपुरी वन परिक्षेत्र –करैरा

राजस्व से प्राप्त भुमि पर सफल वृक्षारोपण निर्माण

वन परिक्षेत्र करैरा के खसरा कमांक 4780 बीट घसारई के अन्तर्गत सिरसोद में 132 के-व्हीमडी खेडा करैरा विद्युत पारेषण लाईन के बदले राजस्व से प्राप्त भूमि पर वृक्षारोपण किये जाने की चुनौती वन विभाग के सम्मूख प्रस्तुत थी। प्राप्त राजस्व क्षेत्र को वन अच्छादित करने के लिए क्षतिपूर्ति वृक्षारोपण रकबा 13 हैक्टैयर क्षेत्र के लिए प्रोजेक्ट तैयार किया गया। वर्ष 2010–11 में स्वीकृत परियोजना के अनुसार के लिए प्रोजेक्ट तैयार किया गया। वर्ष 2010–11 में स्वीकृत परियोजना के अनुसार 45×45×45 सेन्टीमीटर आकार के गड्डे खुदवाये गये, एवं 1350 वर्गमीटर चैनसिंलग फैन्सिग से घेरकर क्षेत्र को सुरक्षित किया गया। रोपण वर्ष में सागवान 7406, बॉस 7000, जंगल जलेवी 2000, शीशम 500, ऑवला 2765, सिरस 1500, अमलतास 500 एवं कुल 21671 पौधे रोपित किये गये। वृक्षारोपण क्षेत्र के रोपित किये गये वृक्षारोपण क्षेत्र के उत्कृष्ट संरक्षण एवं नियमित रख–रखाव के फलस्वरूप उत्साह वर्धक परिणाम प्राप्त हुए समय पर बीडिंग उचित मात्रा में खाद उपलब्ध कराने से एवं सही समय पर सिंचाई कार्य कराने से पौधों की उत्कृष्ट बढ़त प्राप्त हुई, वर्तमान गणना में 91.83 प्रतिशत पौधे जीवित पाए गये वर्तमान में रोपित पौधों औसत ऊंचाई 320 से.मी. गोलाई 30 से.मी. है तथा ग्रामीणों को लगभग 450 क्विंटल पशुओं हेतु चारा वितरित किया गया। वृक्षारोपण में नीलगाय, चीतल एवं अन्य वन्यप्राणियों की उपस्थिति देखी जा रही है। उपरोक्त तथ्यों के आधार पर उक्त वृक्षारोपण एक सफल वृक्षारोपण की श्रेणी में है।

क्षतिपूर्ति वृक्षारोपण मनगुली वर्ष	2009–10
वनमण्डल का नाम :–	शिवपुरी
परिक्षेत्रा का नाम :–	पिछोर
वीट :–	बुधना
स्थल का नाम :–	मनगुली
कक्ष क्रमांक :–	आर 384

मद :– राष्ट्रीय औषधि बोर्ड से प्राप्त सहायता के अंर्तगत जड़ी बूटियों एवं अन्य लघु वनोपज के पौधों का रोपण

वर्किंग प्लान वर्ष :–	2007–08 से 2017–18
वर्किंग प्लान अधिकारी का नाम :–	श्री पुष्कर सिंह
वृक्षारोपण का वर्ष :–	2009–10
प्लान्टेशन मॉडल :–	औषधि वृक्षारोपण
रकबा :–	40 हैक्टेयर
चैनलिंक फैंसिंग :–	4000 वर्ग मीटर

गड्डा संख्या एवं अन्तराल :– गड्डा संख्या 44000 अन्तराल 3ग3 मीटर

प्रजातिबार पौधों की संख्या :– प्रजाति संख्या

आंवला	13550
कुल्लू	13600
बहेडा	12050
पाड़र	1700
कोंहा	1500
बेल	1300
हरण	300
ज्वजंस	44000

पौधों की जीवितता का प्रतिशतः– 75 प्रतिशत

वर्तमान स्थिति औषधि वृक्षारोपण

सफलता की कहानी

वनमण्ड़ल – शिवपुरी वन परिक्षेत्र –पिछोर

राष्ट्रीय औषधि बोर्ड से प्राप्त सहायता के अंर्तगत जड़ी बूटियों एवं अन्य लघु वनोपज के पौधों का रोपण किये जाने के उद्देश्य से बीट बुधना के कक्ष क्रमांक आर. 384 में औषधि प्रजाति के पौधों का रोपण किये जाने हेतु औषधि वृक्षारोपण रकबा 40 हैक्टैयर क्षेत्र के लिए प्रोजेक्ट तैयार किया गया। वर्ष 2009–10 में स्वीकृत परियोजना के अनुसार 45×45×45 सेन्टीमीटर आकार के 44000 गडडे खुदवाये गये, एवं 4000 वर्गमीटर चैनलिंक फैंसिंग से घेरकर क्षेत्र को सुरक्षित किया गया। रोपण वर्ष में 44000 पौधे रोपित किये गये। वृक्षारोपण क्षेत्र के उत्कृष्ट संरक्षण एवं नियमित रख–रखाव के फलस्वरूप उत्साह वर्धक परिणाम प्राप्त हुए। समय पर बीडिंग कार्य, उचित

मात्रा में खाद उपलब्धता एवं समय– समय पर सिंचाई कार्य के फलस्वरूप पौधों की उत्कृष्ट बढ़त प्राप्त हुई। मई 2022 की गणना में 75 प्रतिशत पौधे जीवित पाए गये वर्तमान में रोपित पौधों की औसत ऊंचाई 15 मीटर गोलाई 45 से.मी. है। इस प्रकार उक्त वृक्षारोपण एक सफल वृक्षारोपण की श्रेणी में है।

क्षतिपूर्ति वृक्षारोपण हीरापुर वर्ष 2010–11

1. वन परिक्षेत्र का नाम :– पिछोर
2. वनमण्डल का नाम :– शिवपुरी
3. बीट का नाम :– बुधना
4. ग्रा.व.स. का नाम :– हीरापुर
5. योजना का नाम :– क्षतिपूर्ति वृक्षारोपण हीरापुर
6. वृक्षारोपण का नाम :– हीरापुर
7. कक्ष क्रमांक :– 385,386
8. कक्ष का कुल रकबा :– 287.07 एवं 211.82 हैक्टेयर
9. वृक्षारोपण का रकबा :– 150 हैक्टेयर
10. वर्ष :– 2010–11
11. कार्य वृत्त का नाम :– वृक्षारोपण प्रबंधन वृत्त
12. उपचार श्रेणी का नाम :– पनिहारा
13. क्षेत्रा तैयारी कार्यो में किए गए कार्यो का संक्षिप्त विवरण
    - अ. 2×2 मीटर के अंतराल पर (0.45x0.45x0.45 CM) गड्डा खुदाई 110000
    - ब. 3×3 मीटर के अंतराल पर (0.45x0.45x0.45 CM) गड्डा खुदाई 115000
    - स. चैनलिंग फैंसिंग 13500 वर्ग मीटर
14. क्षेत्रा तैयारी पर किया गया व्यय :– 6004851.00
15. रोपित पौधों का विवरण :–

प्रजाति संख्या

सागौन	102616
चिरौल	40000
शीशम	25000
जंगल जलेवी	16660
सिरस	13100
कैंथ	11100
इमली	4550
बांस	4400
कंजी	5924
नीम	1650
योग	225000

16. रोपण अवधि 23.06.2011 से 15.07.2011
17. वर्तमान में जीवित पौधों का प्रतिशत 84 प्रतिशत

सफलता की कहानी

वनमण्ड़ल – शिवपुरी वन परिक्षेत्रा –पिछोर

वनक्षेत्र को अतिक्रमण मुक्त कर सफल वृक्षारोपण निर्माण वन परिक्षेत्र पिछोर के कक्ष कमांक आर. 385 एवं 386 बीट बुधना में ग्रामीणों द्वारा वन भूमि पर अतिक्रमण किया गया था, भविष्य में वन भूमि पर अतिक्रमित क्षेत्र में वृद्वि की सम्भावना थी। वन भूमि को अतिक्रमण मुक्त कर, वृक्षारोपण किये जाने की चुनौती वन विभाग के सम्मुख प्रस्तुत थी। वन क्षेत्र को पुनः वन अच्छादित करने के लिए वैकल्पिक वृक्षारोपण रकबा 50 हैक्टैयर क्षेत्र के लिए प्रोजेक्ट तैयार किया गया वर्ष 2010–11 में स्वीकृत परियोजना के अनुसार 45×45×45 सेन्टीमीटर आकार के 225000 गड्डे खुदवाये गये, एवं 13500 वर्गमीटर चैनलिंग फैंसिंग से घेरकर क्षेत्र को सुरक्षित किया गया। रोपण वर्ष में 225000 पौधे रोपित किये गये।

वृक्षारोपण क्षेत्र के उत्कृष्ट संरक्षण एवं नियमित रख–रखाव के फलस्वरूप उत्साह वर्धक परिणाम प्राप्त हुए समय पर बीडिंग, उचित मात्रा में खाद उपलब्ध कराने एवं सही समय पर सिंचाई कार्य कराने से पौधों की उत्कृष्ट बढ़त प्राप्त हुई, मई 2022 की गणना में 84.00 प्रतिशत पौधे जीवित पाए गये। वर्तमान में रोपित पौधों की औसत ऊंचाई 10 मीटर गोलाई 40 से.मी. है। इस प्रकार वृक्षारोपण एक सफल वृक्षारोपण की श्रेणी में है।

मध्य प्रदेश शासन, वन विभाग

सफलता की कहानी
मंधान नदी जलग्रहण उपचार परियोजना
(कैम्पा मद वित्त पोषित)

पश्चिम वनमंडल छिंदवाड़ा

परियोजना का संक्षिप्त विवरण

मंधान बांध पेंचवैली के मंधान नदी जो कि पेंच कि उपनदी है, पर बनाया गया है जिसकी पानी रोकने की क्षमता 5.3 MCM है। उक्त परियोजना के मास्टरप्लान में जलग्रहण क्षेत्र के समग्र उपचार का प्रावधान किया गया है। मंधान नदी का जलग्रहण क्षेत्र तीव्र पहाड़ी, उथली मृदा वाला क्षेत्र है जो भू–क्षरण के लिए अत्यंत प्रवृत्त है, वन क्षेत्र का प्रतिशत कम है एवं जो वनक्षेत्र है वह विरल एवं जैविक दबाव के कारण बिगड़ा वनक्षेत्र है। इस प्रकार से जलग्रहण क्षेत्र में मृदा क्षरण के कारण एवं बांध में मृदा अवसादन के कारण बांध की उपयुक्त आयु कम हो जाती है। साथ ही जलग्रहण कम होने कारण पानी सतह से बहकर पानी की वार्षिक उपलब्धता भी प्रभावित होती है। जलग्रहण उपचार परियोजना का मुख्य उद्देश्य जलग्रहण क्षेत्र में मृदाक्षरण को रोकना एवं पानी का भूमि में रिसाव बढ़ाना है।

उक्त परियोजना में कुल 29.97 हे. भूमि प्रभावित हुई है जिसमें से 17.725 हे वन भूमि है। मंधान नदी का जलग्रहण क्षेत्र10878 हे में एवं 24 गावों में विस्तारित है जिसमें से 6 गाँव पूर्णतः जलग्रहण क्षेत्र में आते है तथा शेष 18 गाँव अंशतः जलग्रहण क्षेत्र में आते है। समस्त गावों में कृषि मुख्यतः प्राथमिक व्यवसाय है, प्रति किसान भूमि धारण कम है तथा मिट्टी उथली एवं मुरमी किस्म है। परियोजना में आस्थामूलक कार्य भी शामिल किए गए है, जिसका उद्देश्य ग्रामीणों का परियोजना में सहभागिता बढ़ाना तथा परियोजना को सफल बनाने में मदद करना है।

परियोजना का नाम	मंधान नदी जलग्रहण क्षेत्र उपचार परियोजना (कैम्पा मद वित्त पोषित)
मंधान नदी का कुल आवाह क्षेत्र	10878 हे . (पश्चिम छिंदवाड़ा वनमंडल हेतु)
आवाह क्षेत्र में ग्रामों की संख्या	24 (6 ग्राम पूर्ण तथा 18 ग्राम आंशिक रूप से)
आवाह क्षेत्र में वाटर शेड संख्या	19 (3 मिली और 16 माइक्रो वाटरशेड)
परियोजना की कुल अवधि	2021–22 से 2028–29
कुल जनसंख्या	जलग्रहण क्षेत्र में आने वाले सभी ग्राम में मुख्यतः आदिवासी समुदाय की बाहुल्यता है ,जिसमे अनुसूचित जनजाति 71.2%, अनुसूचित जाति 8.4%, तथा अन्य 20.4% है ।
क्षेत्र की औसत वर्षा	110 से. मी.
परिक्षेत्र में स्वीकृत उपचार क्षेत्र	10878 हे. (कुल उपचार हेतु 10878 हे.)

उपचारपद्धति

1. जैविक उपचार

वृक्षारोपण – जलग्रहण क्षेत्र में सम्मिलित वनक्षेत्र अधिकतर बिगड़ा वनक्षेत्र है तथा जैविक दबाव के कारण क्षेत्र में पुर्नउत्पादन अत्यंत कम है। इस प्रकार के बिगड़े एवं विरल वन के पुर्नउत्थान हेतु क्षेत्र में मिश्रित वृक्षारोपण प्रस्तावित किया गया था। वृक्षारोपण क्षेत्र में मृदा उथली है तथा वनाच्छादन के अभाव में मृदा का सतत् क्षरण हो रहा था। मृदा में ह्युमस की मात्रा भी अत्याधिक कम थी। जलग्रहण क्षेत्र के अंतर्गत आने वाले बिगड़े वनो के सुधार हेतु 35 हेक्टेयर वन भूमि पर तथा 12 हेक्टेयर राजस्व भूमि पर मिश्रित वृक्षारोपण किया गया है। जिसमें मुख्यतः मिश्रित प्रजाति का रोपण किया है। जहां उथली एवं पथरीली मृदा है उन स्थानों पर Glericidia का रोपण कर मृदा में ह्यूमस मिट्टी के कार्बनिक पदार्थों का बढ़ाने का कार्य किया जा रहा है।

वृक्षारोपण क्षेत्र में मृदा तथा जलसंरक्षण के यांत्रिक कार्य जैसे बोल्डर चौक डेम, गेवियन स्ट्रक्चर भी बनाये गये। वर्तमान में उक्त वृक्षारोपणों में 94 प्रतिशत पौधे जीवित है। क्षेत्र में घास भी अच्छी तरह से उग आई है तथा घास की मात्रा में लगातार बढ़ोत्तरी हो रही है। इस प्रकार से तथा घास के माध्यम से मृदा का कटाव काफी मात्रा में नियंत्रण में आया है। साथ ही जल संर्वधन भी हो रहा है। उक्त वृक्षारोपण क्षेत्र से ग्रामीणों के द्वारा घास की कटाई पर अपने मवेशियों हेतु ले जाई जा रही है।

क्र.	कक्ष क्रमांक	रकबा	रोपित पौधो की संख्या	जीवित पौधो की संख्या मई 2023 की स्थिति में
1	677/पी 468बी	5.000 हे	5000	94 प्रतिशत
2	677/पी 468बी	10.000 हे	10000	94 प्रतिशत

वर्तमान स्थिति में उक्त वृक्षारोपण में जीवितता का प्रतिशत 94 प्रतिशत है तथा मृदा में ह्यूमुस की मात्रा बढ़ी है। वृक्षारोपण में बढ़ती हुई घास की मात्रा ह्यूमुस बढ़ने के संकेत देती है, साथ ही मृदा के कटाव में काफी नियंत्रण हुआ है।

क्र.	वर्ष	पौधों की गुलाई	पौधों की ऊंचाई	घास मात्रा
1	द्वितीय वर्ष	8 सेमी	75 सेमी	8 ट्रॉली
2	तृतीय वर्ष	11 सेमी	86 सेमी	12 ट्रॉली

वृक्षारोपण 677/पी 468बी

2. चारागाह विकास

जलग्रहण क्षेत्र के अंतर्गत कक्ष क्रमांक पी 213 में 15 हेक्टेयर वन भूमि पर चरागाह एवं जलाऊ रोपण किया है। वृक्षारोपण क्षेत्र जलाऊ प्रजाति के रोपण के साथ साथ बेड बनाकर घास प्रजाति जैसे दीनानाथ, कांदी, सुकरा इत्यादि का रोपण किया गया है। उक्त रोपण न केवल मिट्टी एवं जल का संधारण करेगी अपितु क्षेत्र में किसानों को चारे हेतु अच्छी घास उपलब्ध हो पायेगी। साथ ही उक्त घास रोपण से प्राप्त बीज नैसर्गिक रुप से अन्य क्षेत्र में भी फैल जावे एवं क्षेत्र में घास के आवरण में वृद्वि हो जो मृदा एवं जल संरक्षण का कार्य करेगी। वर्तमान में वृक्षारोपण में दीनानाथ, काँदी एत्यादि घाँस प्रचुर मात्रा में आयी है जो भू एवं मृदा संरक्षण कार्य के साथ स्थानीय कृषकों को दुग्ध विकास मददगार साबित हो रही है।

ऊर्जावन एवं चारागाह वृक्षारोपण कक्ष क्रमांक पी 213

फलदार पौधे वितरण हेतु रोपणी प्रबंधन

परियोजना में किसानों को फलदार पौधे वितरण हेतु नर्सरी स्थापना का प्रावधान भी रखा गया है। उक्त नर्सरी का मुख्यः उद्देश्य किसानों की मेड़ो पर फलदार पौधा रोपण से मिट्टी के कटाव को रोकना तथा किसानों को अतिरिक्त आय उपलब्ध कराना है।

इस कार्य हेतु परिक्षेत्र परासिया अंतर्गत पी 677 में 2 हे. क्षेत्र में नर्सरी का फलदार रोपण का निर्माण किया गया है। जिसमें वर्ष 2019–20 में क्षेत्र तैयारी कार्य (क्षेत्र सफाई, फेंसिंग कार्य, हट निर्माण और बेड निमार्ण कार्य) कर विभिन्न प्रजाति के बीज बुआई हेतु पालीथीन बैग भरवाई कार्य कर बीज बुआई कार्य किया गया है। वर्ष 2021 से मंधान क्षेत्र अंतर्गत आने वाले ग्रामों में प्राप्त पौधों को वितरण किया गया। जिसमें ग्रामीणों की विभिन्न प्रजाति के फलदार पौधों को निशुल्क प्रदाय किया गया। यह कार्य वर्ष 2022 व 2023 में किया गया है। जिनका विवरण वर्षवार, परिक्षेत्रवार, ग्रामवार एवं प्रजातिवार दिया गया है।

स्थापना वर्ष से वर्तमान दिनांक तक कुल 5.50 लाख पौधे तैयार किये जा चुके हैं।

कक्ष क्रमांक पी 677 रकवा 2 हे. फलदार रोपणी

जलग्रहण क्षेत्र के अंतर्गत ग्राम मुत्तौर में किसानों को फलदार पौधा वितरण

ग्राम काजरा में किसानों के मेड़ पर लगे फलदार पौधे

ग्राम गुद्दम में किसानों के मेड़ पर लगे फलदार पौधे

ग्राम गुद्दम में किसानों के मेड़ पर लगे फलदार पौधे

हरित बागड़ निर्माण

हरित बागड़ मुख्यतः केतकी, रतनजोत इत्यादि प्रजाति का किसानों की मेड़ों पर तथा ढलान क्षेत्रों में रोपण किये जाकर मिट्टी के कटाव को रोकना जल संधारण करना तथा किसानों की फसलों को आवारा मवेशियों से बचाने के उद्देश्य से निर्माण किये गये हैं।

हरित बागड़ के उद्देश्य एवं लाभ

1. कृषकों के खेत की सीमा निर्धारित करना।
2. खेत के किनारों पर मृदा कटाव को रोकना
3. रिक्त पड़ी भूमि पर ग्रीन बेल्ट तैयार करना।
4. फसलों को आँधी, हवा से सेल्टर के रुप में बचाव करना।

ग्राम लहगडुआ, साजकुही एवं जमुनिया में किसानों के मेड़ पर हरित बागड़ निर्माण

2. अभियांत्रिकी उपचार –

जैविक उपचार के साथ–साथ में मृदा एवं जल संरक्षण हेतु अभियांत्रिकी कार्य जैसे लूज बोल्डर चेक डेम, गेवियन चेकडेम, कन्टिनुयस कन्टूर बंड, कन्टूर ट्रेचिग इत्यादि महत्वपूर्ण भूमिका निभाते हैं। छोटे नालों में तथा जहां नये सिरे से नाली का निर्माण हो रहा है उस क्षेत्र में लूज बोल्डर चेकडेम नाली निर्माण के कार्य को रोकता है साथ ही मृदा एवं जल को रोकता है। पानी के प्रवाह की गति को कम करता है तथा पानी का जमीन में रिसाव बढ़ाने में मददगार साबित होता है।

बोल्डर चेकडैम

परिक्षेत्र परासिया के नाला क्रमांक 32 में कराये गये बोल्डर चेकडेम निर्माण कार्य

परिक्षेत्र परासिया के नाला क्रमांक 32 में कराये गये बोल्डर चेकडैम निर्माण कार्य

कोंटिनेओस कन्टूर बंड/मेड़ बंधान

कृषकों के खेतों में मृदा का शीट इरोजन को रोकने के लिए कंटिन्यूअस कूँटुरबंड का निर्माण किया गया है। मृदा एवं जल संरक्षण के साथ उक्त बंड मेड़ बंधान का कार्य भी कर रहे हैं। कोंटिनेओस कन्टूर बंड के माध्यम से बनाए गए मेड़ों से मृदा का क्षरण कम हुआ है तथा खेती के लिए बंजर जमीन में मृदा संचयन होकर सुपिक जमीन उपलब्ध हो रही है।

परिक्षेत्र परासिया के ग्राम काजरा के अंतर्गत किसानों की मेड़ों पर बनाये गये कन्टिनुअस कन्टूर बंड

परिक्षेत्र जामई के ग्राम गुद्दम के अंतर्गत किसानों की मेड़ों पर बनाये गये कन्टिनुअस कन्टूर बंड

गैबीयन चेकडैम

तीव्र ढलान एवं जहां पानी का बहाव तीव्र है उन स्थानों पर गेबीयन स्ट्रक्चर बनाए गए जो अत्यंत कारगर साबित हो रहे है। गेवियन स्ट्रक्चर मुख्यतः मध्यम से बड़े नालों में किया जाता है। गेवियन स्ट्रक्चर बोल्डर चेकडैम का ही बड़ा रुप है जिसमें स्ट्रक्चर की स्थिरता हेतु चौनलिंक का उपयोग कर लूज बोल्डर को बांध कर रखा जाता है। गेवियन स्ट्रक्चर बड़ी मात्रा में मृदा एवं जल का संचयन करता है तथा पानी के गति को कम कर जमीन में रिसने में मदद करता है।

1. गेबियन क्रमांक TM/NK&2/GCD&5

2. गेबियन क्रमांक TM/NK&2/GCD&1

कन्टूर ट्रेंचेस

अच्छी मृदा वाले मध्यम ढलान के क्षेत्र में कन्टिनुयस कन्टूर ट्रेंच का निर्माण किया जाता है। कन्टिनुयस कन्टूर ट्रेंच मुख्यतः जल संधारण का कार्य करती है तथा जलग्रहण क्षेत्र के निचले क्षेत्र में ग्राउंड वाटर को बढ़ाने में मददगार साबित होती है।

परिक्षेत्र परासिया के ग्राम काजरा के अंतर्गत कन्टिनुअस कन्टूर ट्रेच निर्माण

आस्थामूलक –वर्मी कम्पोस्ट बैग्ज मंधान जलग्रहण क्षेत्र में 22 ग्राम आते है। उक्त गावों में जैविक खेती को बढ़ावा देने हेतु केचुआ खाद निर्माण करना, गौमूत्र एकत्रित कर उससे ग्रोथ हरमोन तथा कीटनाशक बनाना इत्यादि कार्यों के लिए सामग्री वितरित की गयी है। केचुआ खाद बनाने के लिए HDPE टेट्रावर्मी बेड और उनके साथ केचुए प्रदाय किए गए है। कृषकों के द्वारा उक्त बेड में केंचुआ खाद निर्माण किया जा रहा है। एक आवर्तन में प्रतिबेड 2 क्विंटल केंचुआ खाद बनाया जा रहा है जो लगभग 45 दिनों में बनकर तैयार हो जाता है। ग्राम काजरा के कृषकों के द्वारा अभी तक 3 आवर्तन में 200 क्विंटल केंचुआ खाद तैयार कर अपने फसलो को लिए उपयोग की है। केंचुआ खाद के उपयोग से ना केवल रासायनिक खाद का उपयोग कम हुआ है बल्कि कृषकों की लागत भी कम हुई है। केंचुआ खाद के उपयोग से कृषि उत्पाद में भी बढ़ोतरी हुई है।

कृषकों के द्वारा केचुआ खाद तैयार कर मक्का, धान आदि फसलों में उपयोग किया है। उक्त फसलों के उत्पादन में केचुआ खाद के उपयोग से आ रहे सकारात्मक बदलाव का अनुश्रवण भी किया जा रहा है।

केंचुआ खाद बनाने के लाभ

1. फसलों से निकले हुये अनुपयोगी भाग का उपयोग कर केंचुआ खाद बनाया जाता है।
2. जिन किसानों के पास में पालतू पशु नही होने से गोबर खाद की कमी होती है उनके लिये अति उपयोगी है।
3. केवल 45 दिनों में वर्मी कम्पोस्ट तैयार कर उपयोग किया जा सकता है।
4. रासायनिक खाद के मुकाबले वर्मी कम्पोस्ट सस्ता एवं सुलभ होता है जिससे कृषक की लागत में कमी आती है।
5. भूमि की उर्वरक शक्ति एवं जलधारण क्षमता में वृद्वि होती है।
6. जैविक फसल उत्पादन में भी सहयोग होता है, जिससे रासायनिक दवाईयों का छिड़काव कम हो जाता है।
7. यह एक सुलभ एवं सामान्य तकनीक है जिसे कोई भी साधारण किसान अपनाकर केचुआ खाद प्राप्त कर अपने फसल उत्पादन में वृद्वि करता है।

वर्मी काम्पोस्ट

परिक्षेत्र परासिया के ग्राम काजरा एवं जामई के मानकादेही

ग्राम काजरा एवं मानकादेही में वर्मी कम्पोस्ट

जैविक खेती

साहीवाल गाय वितरण

मंधान केचमेंट क्षेत्र में ग्रामीणों को समग्र विकास हेतु अलग–अलग कार्य किये जा रहे है। जिसमें ग्रामीणों को साहीवाल नस्ल की 25 दुधारु गायों का वितरण भी किया गया है। जिससे ग्रामीण क्षेत्र में लोगों को घरेलू उपयोग हेतु दूध के साथ साथ अतिरिक्त दूध विक्रय से अतिरिक्त आय में वृद्वि हो रही है। इसके अतिरिक्त समय समय पर विभाग के द्वारा वितरित गायों के स्वास्थ्य एवं उनके रखरखाव से संबंधित गतिविधियों की जानकारी के लिये पशु चिकित्सक एवं विषय विशेषज्ञों को भ्रमण कराकर ग्रामीणों को जानकारी दी जा रही है।

मंधान क्षेत्र को विभिन्न ग्रामों में वितरित गायों का ग्रामवार विवरण

क्रमांक	ग्राम का नाम	वितरित साहीवाल गायों की संख्या
1	काजरा	5
2	कुंडाली	8
3	गुद्दम	6
4	झीलपिपरिया	3
5	खमरा	3
	योग	25

साहीवाल गाय वितरण के उद्देश्य एवं लाभ

1. ग्रामीणों को दुधारु नस्ल की गाय पालन के लिये प्रेरित करना।
2. ग्रामीणों में कृषि के अतिरिक्त पशु पालन से आय के अन्य स्त्रोतों को विकसित करना।
3. पशु पालन से गोबर खाद उत्पादन कर जैविक कृषि को बढ़ावा देना तथा कम से कम रासायनिक उर्वरकों का उपयोग करना।
4. दूध तथा दूध से बने उत्पादों को बनाने एवं विक्रय करने संबंधित आधार तैयार करना।
5. दूध का घरेलू उपयोग कर आहार एवं स्वास्थ्य में बढ़ोत्तरी करना।

विभाग द्वारा कृशकों को साहीवाल गाय का वितरण

अजोला चारा तैयार करने का प्रशिक्षण एवं सामग्री वितरण

मंधान क्षेत्र में कृषको की भू धारण क्षमता कम है। सामान्यतः कृषकों की कम भूमि होने के कारण वे जीवन यापन के लिये फसलें उगा कर अपना गुजारा करते हैं। ऐसी स्थिति में मवेशियों को पूरे वर्ष भर हरा चारा उपलब्ध नही हो पाता है तथा पशुओं के स्वास्थ्य एवं उत्पादन पर भी प्रभाव पड़ता है।

मंधान क्षेत्र में वन विभाग के द्वारा कार्य करते हुये यह पाया गया कि पशुओं को वर्ष भर हरे चारे की उपलब्धता के लिये नवीनतम स्त्रोंतो का उपयोग कर ग्रामीणों को लाभ दिया जा रहा है। इसी कार्य के तहत हरे चारे के स्त्रोत के रुप मे अजोला का उपयोग कर पशुओं को वर्षभर पौष्टिक, सुलभ हरा चारा उपलब्ध कराया जा रहा है। इसके लिये विभाग के द्वारा केचमेन्ट क्षेत्र में पड़ने वाले ग्रामों में ग्रामीणों को अजोला उत्पादन तकनीकी का प्रशिक्षण दिया जाकर चारा उत्पादन यूनिट का वितरण भी किया गया है। वर्तमान में ग्रामीण इसका उपयोग कर हरा चारा उत्पादन करके अपने मवेशियों को पौष्टिक आहार देकर उनके स्वास्थ्य एवं उत्पादकता में वृद्वि कर रहे हैं।

क्रमांक	ग्राम का नाम	कुल किसानों की संख्या	वितरित किये गये अजोला यूनिट
1	कुंडाली	20	20
2	खमरा	10	10
3	गुद्दम	10	10
4	काजरा	10	10
	योग	50	50

अजोला वितरण के उद्देश्य एवं लाभ

1. छोटे किसान जो अपने खेत में वर्षभर हरा चारा उत्पादन नही कर सकते उनको अत्याधिक लाभ प्राप्त होगा।
2. अजोला में प्रोटीन 25 से 35 प्रतिशत होता है साथ ही मिनरल कैल्सियम, फास्फोरस, आयरन व विटामिन भरपूर मात्रा में होते हैं।
3. अजोला उत्पादन में कोई विशेष खर्च नही आता है।
4. कम से कम स्थान में वर्ष भर हरा चारा उत्पादन किया जा सकता है।
5. सुलभ एवं सरल तकनीक होने से साधारण किसान भी अपने घर में इसका उत्पादन कर सकता है।
6. दुधारु पशुओं के लिये सम्पूर्ण पौष्टिक आहार के रुप में कार्य करता है।
7. दुधारु पशुओं के लिये साथ साथ बैल, मुर्गी, बकरी, सुअर इत्यादि को भी आसानी से खिलाया जा सकता है।
8. पशु पालन में आहार पर लगने वाली लागत भी कम लगती है।

छिंदवाड़ा भास्कर

NIDHISHRI ACADEMY

जंगल को बचाने के साथ मिल रहा रोजगार, आत्मनिर्भर बन रहे ग्रामीण

गौशाला फर्श निर्माण

गौमूत्र से जीवामृत तैय्यार करना कृषकों के द्वारा माँग के अनुसार गौशालाओं को कॉंक्रीट से फ्लोरिंग कर गौमूत्र एकत्रित कर टॉनिक एवं कीटनाशक तैयार किया जा रहा है। इस प्रकार जलग्रहण क्षेत्र में जैविक खेती से ना केवल उत्पादन में बढ़ोतरी होगी बल्कि बाँध के पानी में जाने वाले रासायनिक अवशेष में भी कमी आएगी जिससे पानी की शुद्धता बनी रहेगी तथा जैव विविधता का संरक्षण भी होगा।

इस कार्य हेतु वन विभाग के द्वारा कैचमेंट क्षेत्र के ग्रामों में ग्रामवासियों के घर पर पक्के फर्श का निर्माण कराया गया है जिससे गौमूत्र एकत्रित कर इसका उपयोग कीटनाशक बनाने में किया जा रहा है। इस हेतु संबंधित कृषकों को प्रशिक्षित भी किया गया है। इसका उपयोग कृषकों द्वारा अपने खेतों में कर फसलों की कीटों से सुरक्षा की जा रही है।

क्रमांक	ग्राम का नाम	कुल किसानों की संख्या	निर्माण किये गये फर्श
1	कुंडाली	10	10
2	खमरा	10	10
3	गुद्दम	10	10
4	मानकादेही	10	10
5	काजरा	16	16
	योग	56	56

फर्श निर्माण के लाभ एवं उद्देश्य

1. पक्की फर्श बनने से पशुओं को रखने में सुविधा होती है।
2. पशुओं के बीमारी से बचाव एवं स्वास्थ्य में सुधार।
3. गौमूत्र को आसानी से संग्रहित किया जा सकता है।
4. गौशाला से निकले मलमूत्र का निवटान होने से यह वर्षा जल से नही मिल पाता जिससे कैचमेंट के जल में प्रदूषण नही होता ।
5. प्राप्त मूत्र से कीटनाशक बनाना आसान होता है साथ ही गोबर खाद तैयार करने में भी सुगमता आती है।

मुर्गीपालन हेतु वितरण एवं प्रशिक्षण

मंधान केचमेंट क्षेत्र में ग्रामीणों को समग्र विकास हेतु अलग.अलग कार्य किये जा रहे है। जिसमें ग्रामीणों को अतिरिक्त आय उपलब्ध कराने के लिये मुर्गीपालन कार्य के लिये प्रोत्साहित किया जा रहा है। इसके लिये ग्रामीणों को मुर्गी पालन में प्रशिक्षित कर उन्हें चूजों का वितरण किया गया है। इसके अतिरिक्त चूजों के रखरखाव हेतु केज (पिंजरा) भी उपलब्ध कराया गया है। इस कार्य से ग्रामीणों के द्वारा अपने आय में वृद्वि कर जीवन सुधार का कार्य भी किया जा रहा है।

मुर्गीपालन के उद्देश्य एवं लाभ

1. ग्रामीणों को मुर्गी पालन के लिये प्रेरित करना।
2. ग्रामीणों में कृषि के अतिरिक्त मुर्गी पालन से आय के अन्य स्त्रोतों को विकसित करना
3. मुर्गी पालन से जैविक खाद उत्पादन कर जैविक कृषि को बढ़ावा देना तथा कम से कम रासायनिक उर्वरकों का उपयोग करना।
4. मुर्गी पालन से ग्रामीणों में प्रोटीन युक्त आहार उपलब्ध कराना।

क्रमांक	ग्राम का नाम	हितग्राही संख्या	वितरित मुगियों की संख्या
1	काजरा	5	50

कुंओं की मुँडेर निर्माण

मंधान क्षेत्र के ग्रामों में पाया गया है कि ग्रामीण द्वारा अपने खेतों के अंदर भी सिंचाई के लिये कुंओं का निर्माण किया गया है। यह पाया गया है कि कुंओं के आसपास मुंडेर नही बनाया गया है जिससे कभी मनुष्य, पालतू पशु अथवा वन्य प्राणियों के कुंए में गिर जाने का खतरा बना रहता है। साथ ही वर्षा के दिनों में वर्षा का गंदा पानी कुंए में जाने से यह उपयोग लायक नही रहता है और इसका उपयोग कर ग्रामीणों में अलग अलग तरह की बीमारियां फैलने की संभावना बनी रहती है। विभाग द्वारा इस कार्य को भी किये जाने की कार्यवाही की जा रही है।

क्रमांक	ग्राम का नाम	हितग्राही संख्या	कुंए में निर्मित मुंडेर संख्या
1	काजरा	1	1
2	खमरा	10	10
	योग	11	11

कुंआ में मुंडेर निर्माण

परिणाम

- परिणामों के अनुश्रवण हेतु समस्त गेबीयन स्ट्रक्चर, बोल्डर चेक डैम के ऊपरी सतह पर सीमेंट का पोल गाड़कर इन संरचनाओं के द्वारा रोकी गई सिल्ट का बारिश के मौसम में हर महीने के बाद अनुश्रवण किया जा रहा है।
- जल सँवर्धन कार्यों के परिणामों के अनुश्रवण हेतु जलग्रहण क्षेत्र में मौजूद कुंओं के पानी का हर महीने जलस्तर नाप कर उसके जलस्तर में आ रहे बदलाव का अनुश्रवण किया जा रहा है।
- वृक्षारोपण क्षेत्र का मूल्यांकन भी वर्ष में दो बार किया जा रहा है।

क्र.	कार्य का नाम	नाला क्र.	संरचना क्र	अक्षांश	देशांश	सिल्टेशन सेमी		
						20.7.21	20.8.21	20.9.21
1	गेबियन स्ट्रेक्चर निर्माण	1	1 = 12.60mt	22° 15' 35.94"	78° 41' 2.28"	7	14	26
2		1	2 = 12.5mt	22° 15' 37.032"	78° 41' 31.608"	5	8	15
3		2	1 =12 mt	22° 15' 36.822"	78° 41' 31.344"	5	7	9
4		3	1 = 12mt	22° 15' 36.696"	78° 41' 30.108"			
5		3	2 = 12.30mt	22° 15' 36.942"	78° 41' 29.418"	4	7	10
6		4	1 = 10 mt	22° 15' 36.672"	78° 41' 29.118"	6	10	17
7		6	1 = 10.20mt	22° 15' 37.662"	78° 41' 25.77"	0	4	7
8		6	2 = 9 mt	22° 15' 37.116"	78° 41' 25.8"	0	3	7

मंधान केचमेंट क्षेत्र अन्तर्गत कुंओं में जलस्तर वृद्धि के आंकड़े विगत तीन वर्षो में

क्र.	ग्राम का नाम	कुंआ मालिक का नाम	v{kk'k (Latitude)	n;'kk'k (Longitude)	कुँए का जलस्तर मी. में Aug 2021	Aug 2022	Aug 2023
1	2	3	4	5	4	5	6
2	काजरा	सार्वजनिक कुआ	22^0 16' 33.982"	78^0 410' 38.646"	1.9	2.2	2.8
3	काजरा	मिंदया मेहदाजी	22^0 16' 23.47"	78^0 40' 35.19	2.7	1.9	2.4
4	काजरा	लक्ष्मी छोटेलाल बेलवंशी	22^0 16' 23.994"	78^0 40' 27.888"	3.6	4.5	4.3
5	काजरा	मुन्नालाल जनकलाल मरकाम	22^0 16' 26.94"	78^0 40' 19.464	2.9	3.4	3.2
6	काजरा	रहिया फोगेशा मरकाम	22^0 16' 33.76"	78^0 40' 37.15	2.4	2.3	2.6
7	काजरा	धुन्धेशा मन्नूजी धुर्वे	22^0 16' 27.316"	78^0 40' 14.988	1.1	2.5	2.7
9	काजरा	रमेश शंकू आम्रवंशी	22^0 16' 23.640"	78^0 41' 0.678	1.8	2.4	2.7
10	काजरा	रामदास सुकलाल इवनाती	22^0 16' 24.29"	78^0 40' 36.29	2.6	2.8	3.4
11	काजरा	शांता मंगलशा उईके	22^0 16' 27.36	78^0 40' 23.844	2.5	1.7	2.1
12	काजरा	पुसू लच्छू ककोड़िया	22^0 16' 27.81"	78^0 41' 17.22"	3.9	3.7	4.4
13	काजरा	अग्धन पतालशाह धुर्वे	22^0 16' 27.119"	78^0 42' 28.29"	1.6	1.8	1.9
14	काजरा	श्री लालमंशा ईमरता धुर्वे	22^0 16' 28.062"	78^0 41' 26.16"	2.6	3.4	3.2
15	काजरा	श्री मंगलेश मनेश धुर्वे	22^0 16' 24.34"	78^0 41' 15.35 "	1.4	1.6	1.6
16	काजरा	श्री रम्मनशाह झिनो परतेती	22^0 16' 28.23"	78^0 40' 31.88""	0.7	1.1	1.4
17	काजरा	श्री पुनू गोहल बंलवंशी	22^0 16' 28.18"	78^0 40' 30.51"	1.8	1.3	1.9
18	काजरा	श्री लोटनशाह मुन्नशा मरकाम	22^0 16' 31.15"	78^0 40' 15.03 "	1.4	2.2	2.8
19	काजरा	सार्वजनिक कुआ	22^0 16' 30.42"	78^0 40' 15.036"	1.6	1.4	1.8
20	काजरा	श्री दिपक घुड़न आम्रवंशी	22^0 16' 30.44"	78^0 41' 8.24 "	3.7	6.4	6.8
21	काजरा	सार्वजनिक कुआ	22^0 16' 33.40"	78^0 42' 45.29"	0.4	0.8	0.9

मंधान केचमेंट क्षेत्र अन्तर्गत प्रदाय केंचुआं खाद (जैविक खाद) द्वारा हितग्राहियो की फसल

क्र. सं.	ग्राम का नाम	नाम	कृषि क्षेत्र (एकड़ मे)	फसल का नाम	पूर्व में प्राप्त फसल मात्रा 2021 में (क्वि.)	जैविक खाद डालने के बाद फसल मात्रा 2023 में (क्वि.)
1	काजरा	श्री कंचनशा धुर्वे	1	गेहूँ	8	10
				मक्का	12	-
2	काजरा	श्री धुंधेशा धुर्वे	1	गेहूँ	14	16
				मक्का	11	-
3	काजरा	श्री प्रेमभान धुर्वे	1	गेहूँ	8	10
				मक्का	13	-
4	काजरा	श्री आशाराम धुर्व	1.5	गेहूँ	8	11
				मक्का	14	-
5	काजरा	श्री कंचनशा धुर्वे	1	गेहूँ		
				मक्का		
6	काजरा	श्री रम्मनशा परतेती	1	गेहूँ	15	16
				मक्का	14	-
7	काजरा	श्री झीना इवनाती	1	गेहूँ	10	12
				मक्का	20	-
8	काजरा	श्री रायदास इवनाती	1	गेहूँ	10	13
				मक्का	13	-
9	काजरा	श्री मंतलाल	3	गेहूँ	28	32
				मक्का	36	-
10	काजरा	श्री बिरसलाल मरकाम	1.5	गेहूँ	0	-
				मक्का	7	-
11	काजरा	श्री संतर इवनाती	2	गेहूँ	9	13
				मक्का	17	-
12	काजरा	श्री सुकरलाल भलावी	1.5	गेहूँ	07	9
				मक्का	12	-
13	काजरा	श्री रामभाऊ धुर्वे	2.5	गेहूँ	9	14
				मक्का	13	-
14	काजरा	श्री जगदीश मरकाम	1	गेहूँ	10	12
				मक्का	9	-
15	काजरा	श्री मतभानशा धुर्वे	1	गेहूँ	12	13
				मक्का	9	-

16	काजरा	श्री राहेशा मरकाम	2	गेहूँ	11	13
				मक्का	13	
17	काजरा	श्री अफतशा धुर्वे	0.5	गेहूँ		
				मक्का		
18	काजरा	श्री मंचुशा धुर्वे	1.5	गेहूँ	5	
				मक्का	10	
19	काजरा	श्री आफूशा धुर्वे	0.5	गेहूँ	1.5	
				मक्का	2	
20	काजरा	श्री बालमशा धुर्वे	2	गेहूँ	42	43
				मक्का	40	-
21	काजरा	श्री दिमाकचंद नागवंशी	2	गेहूँ	11	13
				मक्का	10	-
22	काजरा	श्री सुरेश नागवंशी	2	गेहूँ	15	17
				मक्का	23	-
23	काजरा	श्री सुमरचंद आम्रवंशी	1	गेहूँ	10	11
				मक्का	12	-
24	काजरा	श्री छोटेलाल बेलवंशी	1	गेहूँ	13	14.5
				मक्का	18	-
25	काजरा	श्री असरलाल सरयाम	1	गेहूँ	8	10
				मक्का	12	-
26	काजरा	श्री विनोद नागवंशी	2	गेहूँ	23	26
				मक्का	24	-
27	काजरा	श्री कमलेश नागवंशी	1	गेहूँ	0	-
				मक्का	7	-
28	काजरा	श्री भकमानशा मरकाम	0.5	गेहूँ	0	
				मक्का	4	
29	काजरा	श्री प्रेमभानसा रहमानसा	1.5	गेहूँ	9	11
				मक्का	4	-
		योग	**39.5**			

क्र.	कक्ष क्रमांक	रकवा	रोपित पौधों की संख्या	जीवित पौधों की संख्या मई 2023 की स्थिति में
1	677/पी 468बी	5.000 हे	5000	94 प्रतिशत
2	677/पी 468बी	10.000 हे	10000	94 प्रतिशत

क्र.	वर्ष	गुलाई (सेमी)	लंबाई (सेमी)	घास मात्रा
1	द्वितीय वर्ष	8 सेमी	75सेमी	8 ट्रॉली
2	तृतीय वर्ष	11सेमी	86सेमी	12 ट्रॉली

Government of Maharashtra
Forest & Climate Change Department

FOREST PROTECTION IN

Maharashtra

COMPENSATORY AFFORESTATION FUND MANAGEMENT & PLANNING AUTHORITY, MAHARASHTRA CAMPA

In the State of Maharashtra, there are a range of key initiatives that have significantly contributed to environmental conservation and sustainable forest management. One major initiative involves plantation under Compensatory Afforestation spanning over 100957.98 hectares since 1980. These plantations, sustained with CAMPA funds, are documented on the e-Green Watch portal, reflecting ongoing conservation endeavors in the state. Additionally, CAMPA funds have facilitated the voluntary relocation of villages from protected areas, reducing biotic pressure, mitigating conflicts between humans and wildlife and safeguarding vital wildlife habitats.

Another pivotal aspect of CAMPA's impact is seen in the development of infrastructure for frontline staff. Through grants amounting to Rs. 581.62 crores, essential residential and official buildings such as quarters and offices have been constructed. These infrastructure investments have bolstered protection and conservation efforts in forest areas, enhancing operational capabilities. Moreover, CAMPA has supported capacity building and training programs for forest officers, aligning with objectives such as assessing carbon stock in forests.

Another initiative for grassland development for restoring landscapes in Maharashtra has not only benefited forest fringe villages by providing fodder for cattle but also contributed to broader ecosystem restoration and sustainable livelihoods. Collectively, these initiatives highlight CAMPA's holistic approach to ecological conservation, sustainable forest management, and promoting harmonious coexistence between humans and wildlife in Maharashtra, showcasing tangible positive impacts in the region.

GOOD PRACTICES OF VARIOUS CAMPA ACTIVITIES

(By: Ms. Shomita Biswas, CEO, Maharashtra State CAMPA)

The Good Practices on various themes of CAMPA works are being carried out in the State of Maharashtra some of these activities are as follows:

1. Plantation under Compensatory Afforestation
2. Voluntary Relocation of villages from Protected Areas.
3. Development of Infrastructure for Frontline Staff
4. Capacity Building/Training programs
5. Landscape Restoration through Grassland Development

1. Plantation under Compensatory Afforestation

- As per the Forest (Conservation) Act 1980 in Maharashtra State, total of 68390.592 Ha. forest area has been diverted for non-forest purpose since 1980 to till March 2021.
- Since 1980 rains to 2021 rains planting over an area of 100957.981 ha. has been undertaken under Compensatory Afforestation.
- These plantations are maintained for 10 year period under CAMPA Funds.
- The data of plantations from last 5 year is uploaded on e-Green Watch portal with the polygons and photographs. The latest updated status of uploading data on e-Green Watch Portal is as under:

Plantation Year	No. of Afforestation Site as per APO	Uploading Status						Avg. Survival %
		Polygon	Before Plantation Photos	After Plantation Photos	% of Polygon	% Before Plantation Photos	% of After Plantation Photos	
2017- Rain	130	128	100	113	98.46	76.92	86.92	67.87%
2018- Rain	138	138	104	107	100.00	75.36	77.54	72.72%
2019- Rain	643	643	643	640	100.00	100.00	99.53	81.30%
2020- Rain	47	47	47	47	100.00	100.00	100.00	89.47%
2021- Rain	351	351	327	304	100.00	93.16	86.61	95.77%
2022-Rains	181	181	177	178	100.00	97.79	98.34	94.81%

Time Series photographs of Plantations - 2021 Rains

Compartment No. 385, Pusad Range, Pusad Division, Yavatmal Circle

Time Series photographs of Plantations - 2020 Rains

Compartment No. 82, Gondia Range, Gondia Division, Nagpur Circle

Time Series photographs of Plantations - 2019 Rains

Compartment No. 340, Chandur Railway Range, Amravati Division, Amravati Circle

Time Series photographs of Plantations - 2018 Rains

Compartment No. 527 to 529, Ghatbori Range, Buldhana Division, Amravati Circle

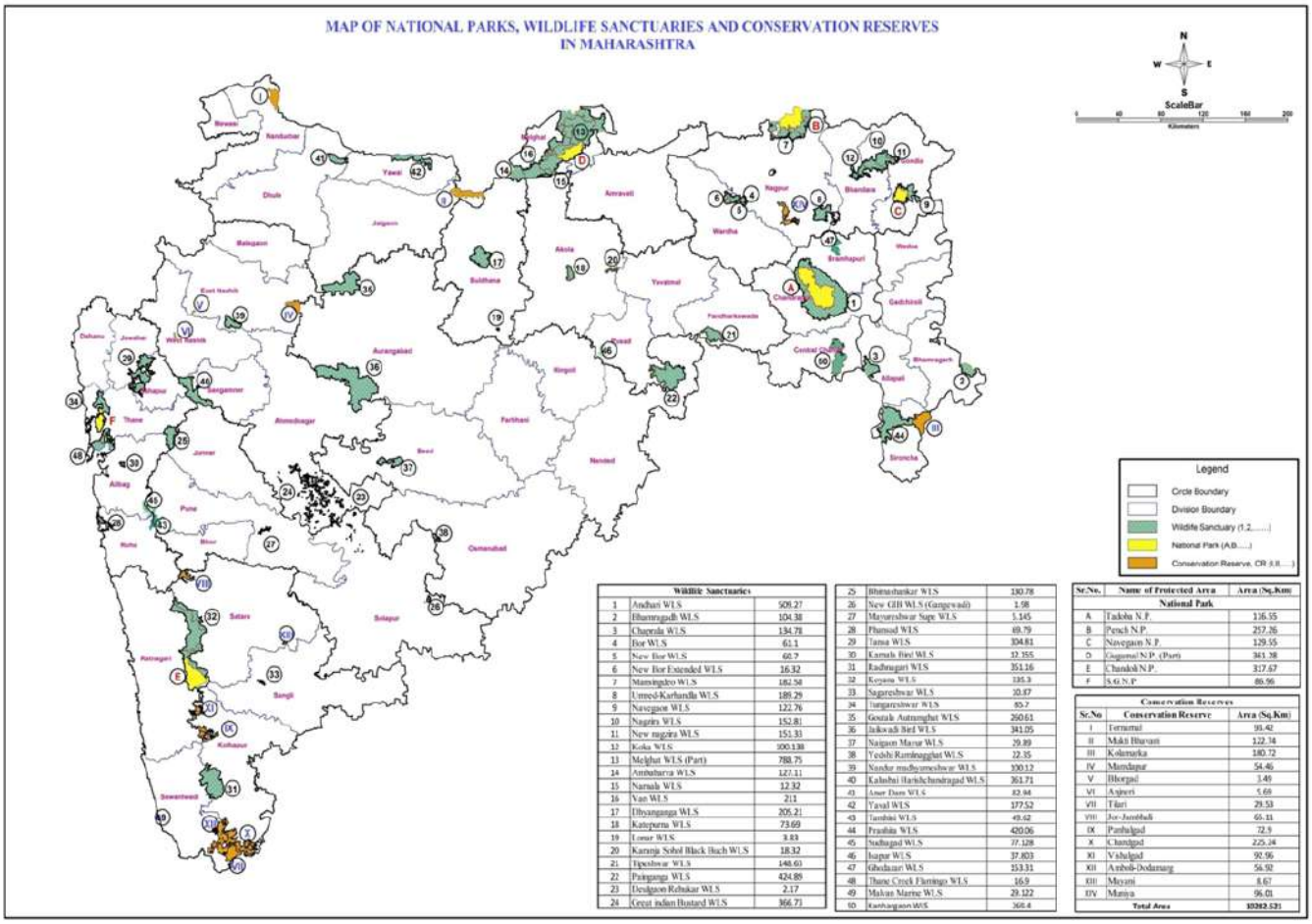
Time Series photographs of Plantations - 2019 Rains

Compartment No. 958, Kurkheda Range, Wadsa Division, Gadchiroli Circle

VOLUNTARY RELOCATION OF VILLAGES FROM PROTECTED AREAS

The Compensatory Afforestation Fund Rules, 2018 provides as per section 5(2)(h) voluntary relocation of villages from protected areas.

In the State of Maharashtra, there are 6 National Parks, 50 Wildlife Sanctuaries and 17 Conservation Reserves. Since the villages which are relocated from the core areas of PA (protected area) the biotic pressure is reduced because of the reduction in Inhabitants interference with the coexistence of the wildlife. Hence, the relocated area shall be available for wild animals to propagate for coexistence and as a consequence there is reduction in biotic pressure and man-animal conflict. Ultimately, it secures the wildlife habitat. As a result, it saves the human life, cattle life as well as ensures the peaceful coexistence with wildlife.



Wildlife Sanctuaries		
1	Andhari WLS	509.27
2	Bhamragadh WLS	104.38
3	Chaprala WLS	134.78
4	Bor WLS	61.1
5	New Bor WLS	60.7
6	New Bor Extended WLS	16.32
7	Mansingdeo WLS	182.58
8	Umred-Karhandla WLS	189.29
9	Navegaon WLS	122.76
10	Nagzira WLS	152.81
11	New nagzira WLS	151.33
12	Koka WLS	100.138
13	Melghat WLS (Part)	788.75
14	Ambabarva WLS	127.11
15	Narnala WLS	12.32
16	Yan WLS	211
17	Ubyanganga WLS	205.21
18	Katepurna WLS	73.69
19	Lonar WLS	3.83
20	Karanja Sohol Black Buch WLS	18.32
21	Tipeshwar WLS	148.63
22	Painganga WLS	424.89
23	Deulgaon Rehakar WLS	2.17
24	Great indian Bustard WLS	366.73

25	Bhimashankar WLS	130.78
26	New GIB WLS (Gangewadi)	1.98
27	Mayureshwar Supe WLS	5.145
28	Phansad WLS	69.79
29	Tansa WLS	304.81
30	Karnala Bird WLS	12.355
31	Radhanagari WLS	351.16
32	Koyana WLS	135.3
33	Sagareshwar WLS	10.87
34	Tungareshwar WLS	80.7
35	Gautala Autramghat WLS	260.61
36	Jaikwadi Bird WLS	341.05
37	Naigaon Mayur WLS	29.89
38	Yedshi Ramlingghat WLS	22.35
39	Nandur madhyameshwar WLS	100.12
40	Kalsubai Harishchandragad WLS	361.71
41	Amer Dam WLS	82.94
42	Yaval WLS	177.52
43	Tamhini WLS	49.62
44	Pradhia WLS	420.06
45	Sudhagad WLS	77.128
46	Isapur WLS	37.803
47	Ghodazari WLS	153.31
48	Thane Creek Flamingo WLS	16.9
49	Malvan Marine WLS	29.122
50	Kanhargaon WLS	368.4

Sr.No.	Name of Protected Area	Area (Sq.Km)
National Park		
A	Tadoba N.P.	116.55
B	Pench N.P.	257.26
C	Navegaon N.P.	129.55
D	Gugamal N.P. (Part)	361.28
E	Chandoli N.P.	317.67
F	S.G.N.P.	86.96

Sr.No	Conservation Reserve	Area (Sq.Km)
Conservation Reserves		
I	Ternamal	91.42
II	Mukti Bhuvan	122.34
III	Kolamarka	180.72
IV	Mamdapur	54.46
V	Bhorgad	3.49
VI	Anjneri	5.69
VII	Tilari	29.53
VIII	Jor-Jambhali	66.31
IX	Panhalgad	72.9
X	Chandgad	225.24
XI	Vishalgad	92.96
XII	Amboli-Dodamarg	56.92
XIII	Mayani	8.67
XIV	Maniya	96.01
	Total Area	10282.531

The current status of village relocation from Protected Areas is as under:

Sr. No.	Particulars	No. of villages
1	Villages to be relocated from tiger reserves	83
2	Villages to be relocated from PAs	34
3	**Total no. of villages to be relocated (1 +2)**	**117**
4	Villages relocated from Tiger Reserves up to March-2022	66
5	Villages relocated from other PAs (except TR)	03
6	**Total no. of villages relocated (4+5) upto March-2022**	**69**
7	Villages remains to be relocated	48

The Sanctuaries and National Parks-wise details of relocated villages from Protected Areas are as follows:

Sr. no.	Sanctuaries and National Parks	No of villages	No of villages relocated	Balance Relocated villages
1	Tadoba-Andhari Tiger Reserve, Chandrapur	6	5	1
2	Melghat Tiger Reserve, Amravati	33	25	8
3	Pench Tiger Reserve, Nagpur	1	1	0
4	Navegaon Nagzira Tiger Reserve, Gondia	5	5	0
5	Sahyadri Tiger Reserve, Kolhapur	37	29	6
6	Bor Tiger Reserve, Wardha	1	1	0
7	Villages under Wildlife Sanctuaries	34	3	31
	Total	**117**	**69**	**48**

In view of the above in the State of Maharashtra over the period of last 12 years the CAMPA grants were used for Relocation of villages from the Protected Areas. Upto 2022-23 an amount of Rs. 581.62 Crores has been expended for this activity.

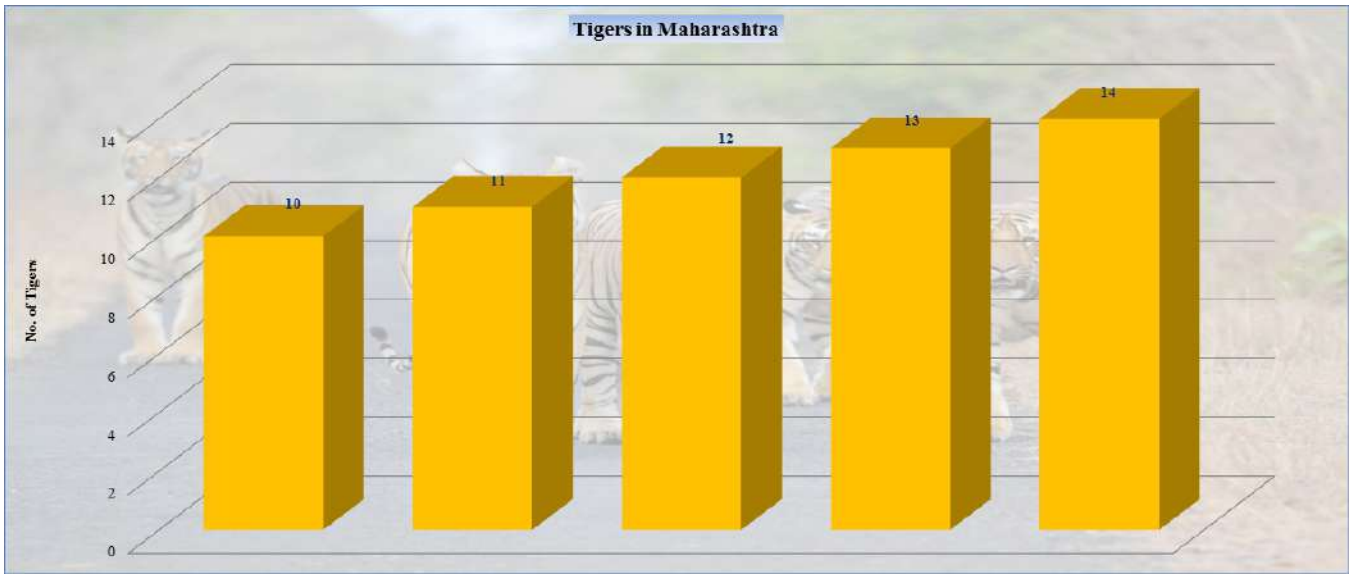
The list of Village relocated from Protected Areas is as follows:

Sr. No.	Tiger Reserve / Wildlife Sanctuary	Name of Villages
1	Tadoba-Andhari Tiger Reserve (TATR), Chandrapur	Botezari, Navegaon (Ramdegi), Jamni, Palasgaon
2	Navegaon-Nagzira Tiger	Reserve (NNTR), Gondia Kalimati, Kawalewada, Zankargondi, Malkazari, Tumadimendha
3	Pench Tiger Reserve (PTR), Nagpur Fulzari	
4	Bor Tiger Reserve (BTR), Wardha	Navargaon
5	Melghat Tiger Reserve (MTR), Amravati	Chunkhadi, Ambabarva, Rohankhidki, Barukheda, Nagartas, Amona, Somthana (Bu.), Somthana (Khu.), Talai, Bori, Koha, Kund, Vairat, Churni, Dhargad, Kelpani, Gullarghat, Pastalai, Mangia, Rora, Memna, Pili, Choupan, Dolar
6	Sahyadri Tigar Reserve (STR), Kolhapur	Dicholi, Zadoli, Madoshi, Punvali, Ravandi, Aadoshi, Kusapur, Khirkhindi, Kisrude, Nahimbe/Ambeghar, Niwade (Shirala), Takale, Andoli, Gave, Vetti, Lotiv, Chandoli (khu.), Rundiv, Javali, Petlod, Adoli, Zolambi, Tanali, Kulyachiwadi (Tambve), Dhakade, Dhangarwada (Sonarli), Chandel, Nivde (Shahu) Gothane
7	Umred-Pavani-Karandla Wildlife Sanctuary (BTR)	Ranbodi
8	Tipeshwar Wildlife Sanctuary (MTR)	Tipeshwar, Maregaon

The villages are rehabilitated as per the provisions and procedures given in GOI resolution No. 15-31/2012-NTCA, Dt. 15.10.2012 and State Government GR No. WLP-1012/CR 122/F-1, Dt. 03.11.2012.

Area from which villages are relocated are developed into meadows and grasslands. As a result, a lot of herbivorous animals are able to find a suitable habitat for their existence. The density of herbivores increases, which in turn results in an increase in the density of carnivores.

Graph of increase in tiger population in State
Photos of Village



Relocation Works
Kawalewada Village (Navegaon National Park) (Navegaon-Nagzira Tiger Reserve)

Nagartas Village (Melghat Tiger Reserve)

Navargaon Village (Bor Tiger Reserve) before and after Voluntary rehabilitation

Before

Ranbodi Village (Umred-Pauni-Karhandla WL Sanctury)


Before




After


Kelpani Village (Melghat Tiger Researve)

Rehabilitation Kelpani before year 2014-15

Rehabilitation Kelpani after year 2014-15

Meadow Development after relocation of villages
Navargaon Meadow (Bor Tiger Reserve)

Kelpani Meadow (Melghat Tiger Reserve)

Dhargad Meadow (Melghat Tiger Reserve)

Gullarghat Meadow (Melghat Tiger Reserve)

Amona Meadow (Melghat Tiger Reserve)

Vairat Meadow (Melghat Tiger Reserve)

DEVELOPMENT OF INFRASTRUCTURE FOR FRONTLINE STAFF

The Compensatory Afforestation Fund Rules 2018 provides as per section 5(3)e *Construction of residential and official buildings in forests for front line staffs deployed for protection of forest and wildlife.*

Because of this activity staff is residing in the forest area. Their presence in forest areas help for protection of the forest & wildlife areas. It further facilitates presence of frontline staff in headquarters.

Under CAMPA we have created permanent assets for frontline staff in the shape of quarters and offices since 2010-11 to 2019-20 totalling to 465 Units.

The details of infrastructure development for frontline staff since 2020-21 is given below:

Sr. No.	Type	2020-21 (Number of units)	2021-22 (Number of units)	2022-23 (Number of units)
1	Forest Guard Quarters	17	66	70
2	Forester Quarters	13	55	29
3	RFO Quarters	6	12	19
4	RFO Offices	6	19	24
5	Amenities for Women Front line Staff	-	17	11
	Total	**43**	**169**	**153**

Forest Guard (Type I) Quarter
Koyali Beat, Chakan Range,
Junnar Division, Pune Circle

Type-I STPF Quarter
Mul Range, TATR Chandrapur,
WL Nagpur East Circle

Type-I Quarter
Mangalwedha Range,
Solapur Division, Pune Circle

Type-II Quarter
Mangalwedha Range,
Solapur Division, Pune Circle

Type-III Quarter
Tisgaon, Ahmadnagar Division
Nashik Circle

Type-III Quarter
Kasegaon Village in Solapur
Division, Pune Circle

Range Office
Tisgaon, Ahmadnagar Division
Nashik Circle

Range Office
Porla Range, Wadsa Division,
Gadchiroli Circle

Range Office
Dindori Range, East Nashik Division, Nashik Circle

Range Office, Type-2 Qurter & Type-1 Quarter
at Brmhapuri Division, Chandrapur Circle (2020-21)

Amenities for Woman Front line staff
at Kurkheda

CAPACITY BUILDING/TRAINING OF FRONTLINE STAFF

Under the CAMPA, in the year 2021-22 funds were provided for Capacity Building & Training programme for Forest Officers regarding Assessment of Carbon Stock of Forest in Maharashtra conducted by the Energy and Resources Institute (TERI), New Delhi at Chandrapur Forest Academy, Chandrapur on dated 27th to 29th April 2022.

Capacity Building & Training for Assessment of Carbon Stock of Forest

Workshop on Carbon Finance Project

LANDSCAPE RESTORATION THROUGH GRASSLAND DEVELOPMENT

Since 2020-21 CAMPA Funds are utilised for the Landscape Restoration through Grassland Development.

The area covered under Grassland development was 5753.840 hectares in 2021, 1874.00 hectares in 2022, and 1190.00 hectares in 2023, totaling 8817.340 hectares. An additional 2065.00 hectares are proposed for coverage in the 2024 rains.

Because of this activity forest fringe villages will be benefited.

Fodder will be made available for their cattles on cut & carry basis.

In Maharashtra State for Grassland Development following Grass Species are cultivated:

1. Marvel (*Dichanthium annulatum*)
2. Pavnya (*Sehima sulcatum*)
3. Sheda (*Sehima nervosum*)
4. Guinea grass (*Megathyrsus maximus*)
5. Kala dhaman (*Cenchrus setigerus*)
6. Madras Anjan (*Cenchrus ciliaris*)
7. Deenanath (*Pennisetum pedicellatum*)

Repository Fodder Nursery

Vadpati Grass Nursery, Mamdapur Conservation Reserve, Yewla Range,
East Nashik Division, Nashik Circle

Fodder Nursery Works

Chinchve Fodder Nursary,
Malegaon Division, Nashik Circle

Deulgaon Fodder Nursary,
Yavtmal Division, Yavatmal Circle

Kasegaon Fodder Nursary,
Solapur, Pune Circle

Kelpani Fodder Nursary
Melghat (T) Division, Amravati Circle

Fodder Plantation Works

Washim Range, Washim Division,
Yavatmal Circle

Ghot Range, Allapalli Division,
Gadchiroli Circle

Darwha Range, Yavatmal Division,
Yavatmal Circle

Arvi Range, Wardha Division,
Nagpur Circle

Jamner Range, Jalgaon Division, Dhule Circle

Digras Range, Pusad Division, Yavatmal Circle

East Nashik Division, Nashik Circle

Palana 2nd Year Fodder Plantation, 10 ha, Compartment No. 404, Karanja Range, Washim Division, Yavatmal Circle.

Government of Meghalaya
Forest & Climate Change Department

FOREST PROTECTION IN

Meghalaya

COMPENSATORY AFFORESTATION FUND MANAGEMENT & PLANNING AUTHORITY, MEGHALAYA CAMPA

As part of the endeavors of CAMPA, strategic afforestation initiatives are being implemented to mitigate the degradation of land and biodiversity loss on the Sohra plateau in Meghalaya, one of the region's most delicate ecosystems that receive the highest levels of rainfall worldwide. Notable projects include the creation of a 180.33 beds Poly Pot Nursery at Saikarap Lumbaniang Forest Nursery and Compensatory Afforestation efforts at Pyrkan Village-Shella.

Saikarap Lumbaniang Forest Nursery: Established in 2015-16 under the East Khasi Hills Social Forestry Division, this nursery covers an area of 0.772 Ha and a survival rate exceeding 80% for its saplings. The nursery has supplied saplings for transplantation, contributing significantly to ongoing afforestation efforts.

Pyrkan Village-Shella Afforestation Projects: Two compensatory afforestation projects, spanning 28 Ha and 14 Ha respectively, were initiated in 2016-17 under the same CAMPA scheme. Despite challenges like sandy soil and dryness, these projects have achieved survival rates ranging from 75% to 80%, showcasing resilience and adaptability in species selection and management strategies.

The afforestation initiatives under the CAMPA fund in Meghalaya demonstrate significant progress towards mitigating environmental degradation and eco-restoration of landscapes and sensitive regions like the Sohra plateau. Despite challenges posed by the harsh terrain and adverse climatic conditions, these projects exhibit promising survival rates, signalling a positive trajectory towards sustainable forest management and biodiversity conservation.

SHORT NOTE ON COMPENSATORY AFFORESTATION ACTIVITIES UNDER SOHRA SOCIAL FORESTRY RANGE

(By: Shri B. Wahlang IFS, CEO, Meghalaya (CAMPA)

INTRODUCTION

On the basis of geo-morphological features, Sohra plateau is one of the most sensitive areas of Meghalaya. A unique combination of climate, topography and geology is responsible for development of the area. The area receives the highest rainfall in the world. The region is characterized by steep slopes and low plain area in the southern border of Bangladesh. There are vast tracts of grasslands and patches of forests area, on the highly drained flats and slope of hills with isolated patches of crooked forests only in low lying areas. Tropical evergreen forest is the dominant forest type of this area.

The natural environment factors like steep slope and heavy rainfall prevalent in this zone itself contribute substantially to the degradation of land and vegetation of this area. The unscientific mining, quarries, etc of limestone has flourished in the plateau since the last 80 to 90 years. Anthropogenic activities like shifting cultivation, Broom grass cultivation, timber extraction, Fire hazard, mining of limestone are ruining the ecology of the hill slope and plain area. These activities have resulted in decreased soil fertility due to depletion of nutrients and had led to further degradation of the area and in some places the extent is such that it has almost reached the point of no return.

Afforestation is the logical approach for tree planting which has been in regular operation in the last two decades. The efforts of afforestation undertaken in the past, however, could not yield much significant impact in improving the forest area. The main reasons for the failure have been the application of usual financial norms of plantation activity on a site which is usually harsh and poses unique problems for afforestation. Based on the experience of the past and taking the relevant scientific facts into account, the approach for the CAMPA fund of the area would be to implement a sustained scheme for afforestation especially suited for the area so that gradual increase of tree cover over the barren areas takes place over a period of time.

BACKGROUND INFORMATION ON CREATION OF 180.33 BEDS POLY POT NURSERY UNDER STATE CAMPA (BIODIVERSITY CONSERVATION PLAN OF M/S LAFARGE UMIAM MINING PRIVATE LIMITED) AT SAIKARAP LUMBANIANG FOREST NURSERY.

1. **DIVISION:** East Khasi Hills Social Forestry Division 2. RANGE: Sohra Social Forestry Range
3. **NAME OF SCHEME:** STATE CAMPA (Biodiversity Conservation Plan of M/S Lafarge Umiam Mining Pvt. Ltd)
4. **LOCATION:** Saikarap (Lumbaniang) Forest Nursery Saikarap village.
5. **AREA:** 0.772 Ha
6. **GEO-REFERENCE:** N 250 09' 48.0'' E 910 40' 33.6''
7. **YEAR OF CREATION:** 2015-16
8. **SPECIES RAISED** FOR 180.33 BEDS POLY POT NURSERY.
9. **SURVIVAL:** The survival percentage of the poly pot nursery is 80% above.
10. **REMARKS:** The poly pot saplings raised in the nursery were already used for transplanting in the plantation sites .

S.NO	NAME OF SPECIES	S.NO	NAME OF SPECIES	S.NO	NAME OF SPECIES
1	*Albizia lebbeck*	7	*Amora wallichii*	13	*Chukrasia tabularis*
2	*Areca catechu*	8	*Aegle marmelos*	14	*Citrus reticulata*
3	*Averrhoa carambola*	9	*Bombax ceiba*	15	*Cinnamomum tamala*
4	*Azadiracta indica*	10	*Baccaurea sapida*	16	*Cordia dichotoma*
5	*Artocarpus heterophyllus*	11	*Bauhinia purpurea*	17	*Daubanga gradiflora*
6	*Artocarpus chaplaha*	12	*Carica papaya*	18	*Delonix regia*

S.NO	NAME OF SPECIES	S.NO	NAME OF SPECIES	S.NO	NAME OF SPECIES
19	*Emblica officinalis*	27	*Michelia champaca*	35	*Toona febrifuga*
20	*Elaeagnus conferta*	28	*Psidium guajava*	36	*Tectona grandis*
21	*Elaeocarpus sp*	29	*Polyalthia simiarum*	37	*Terminalia arjuna*
22	*Gmelina arborea*	30	*Syzygium species*	38	*Tamarindus indica*
23	*Garcinia xanthochymus*	31	*Syzygium cumini*	39	*Zizyphus jujuba*
24	*Lagerstroemia parviflora*	32	*Syzygium tetragonum*	40	*Native species*
25	*Litsea glutinosa*	33	*Schima wallichii*		
26	*Ligustrum robustum*	34	*Spondias pinnata*		

Photograph of first year creation of 180.83 beds polypot nursery for compensatory afforestation under CAMPA (Biodiversity Conservation plan of m/s Lafarge Umiam Mining private limited) at Saikarap Lumbaniang forest nursery.

PHOTOGRAPHS OF 180.83 BEDS POLYPOT NURSERY AT SAIKARAP (LUMBANIANG) FOREST NURSERY








SPECIES RAISED


Terminalia arjuna


Chukrasia tabularis


Garcinia xanthochymus


Cordia dichotoma


Baccaurea sapida


Artocarpus chaplasha


Bauhinia purpurea


Toona febrifuga

SPECIES RAISED


Daubanga gradiflora


Tectona grandis


Tamarindus indica


Zizyphus jujuba


Michellia champaca


Gmelina arborea


Spondias pinnata


Emblica officinalis

SPECIES RAISED


Michelia species


Delonix regia


Artocarpus heterophyllus


Azadiracta indica


Elaeocarpus sp


Averrhoa carambola


Amora wallichii


Lagerstroemia parviflora

SPECIES RAISED


Syzygium tetragonum


Syzygium cumini


Cinnamomum tamala


Polyalthia simiarum


Bombax ceiba


Albizia lebbeck


Schima wallichii


Areca catechu

SPECIES RAISED


Albizia procera


Elaeagnus conferta


Litsea glutinosa


Syzygium species


Aegle marmelos


Citrus reticulata


Ligustrum robustum


Psidium guajava


Carica papaya


Native species

PROFILE OF 28 Ha COMPENSATORY AFFORESTATION UNDER CAMPA (BIODIVERSITY CONSERVATION PLAN OF M/S LAFARGE UMIAM MINING PRIVATE LIMIT ED) AT PYRKAN VILLAGE-SHELLA

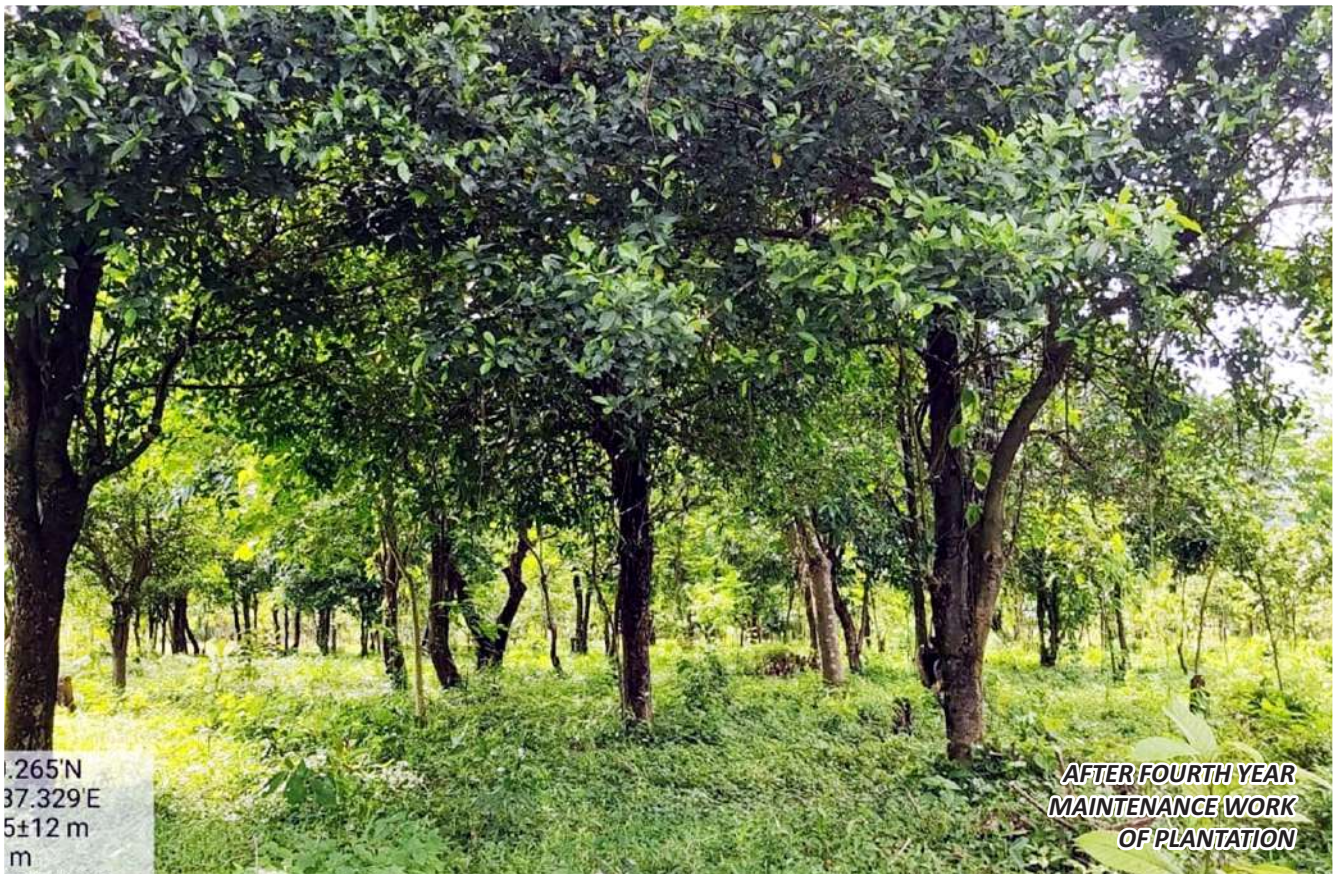
The 28 Ha area plantation which was created on an individual land at Pyrkan village is one of the plot out of the four plots of 60 ha CA plantation sanctioned under CAMPA APO's 2015-16. The land under plantation is a shrubs area composed mostly of *Lantana camara, Eupatorium odoratum, Polygonum* sp, grass, creepers like *Mikania micrantha*, and some standing trees of *Artocarpus lacucha, Erythrina* sp, *Bombax ceiba*, *Spondias pinnata*, and *Alstonia scholaris*. The plantation site is situated near the international border of Bangladesh on the river bank of Shella river and the soil is sandy soil mixed with pebbles.

BACKGROUND INFORMATION OF THE PLANTATION SITE

1. **DIVISION:** East Khasi Hills Social Forestry Division
2. **RANGE:** Sohra Social Forestry Range.
3. **SCHEME:** State CAMPA (Biodiversity Conservation Plan of M/S Lafarge Umiam Mining Private Limited)
4. **AREA:** 28 Ha (Consist of one plot)
5. **LAND STATUS:** Individual land of Smt Mesi Mairom
6. **GEO-REFERENCE:** Latitude: N 25010' 26.34"

   Longitude: E 91037 16.91"
7. **YEAR OF CREATION:** 2016- 17
8. **SPECIES PLANTED:** *Albizia lebbeck, Averrhoa carambola, Azadirachta indica, Artocarpus heterophyllus, Artocarpus chaplasha, Amora wallichii, Bombax ceiba, Baccaurea sapida, Bauhinia purpurea, Chukrasia tabularis, Elaeagnus conferta, Elaeocarpus sp, Gmelina arborea Garcinia xanthochymus, Lagerstroemia parviflora, Litsea glutinosa, Michelia champaca, Syzygium species, Syzygium cumini, Syzygium tetragonum, Schima wallichii, Spondias pinnata ,Toona febrifuga* and *Terminalia arjuna.*
9. **SURVIVAL:** Environmental factors like dryness and drought during the winter months and fire prone areas, edaphic factor like sandy soil mixed with pebbles in the area has caused high mortality rate of species in the plantation. Despite the fact that the financial norms of the State have no provision for filing up of manure or any other soil replenishment in the pits to nourish the planted saplings in the plantation efforts have been made by regular vacancy fillings in the mortality areas of the plantation. During the vacancy fillings a suitable species which show good survival in the plantation site were preferred to ensure the restocking of the plantation site. The average survival rate of the plantation up to the fourth year maintenance work is about 75% - 80 %.
10. **REMARKS:** The plantation is still under maintenance work and the fifth year maintenance work is still in progress. Hence, success of plantation can be assured only after the maintenance work is completed and the planted saplings are fully matured.

PHOTOGRAPH OF 28 HA COMPENSATORY AFFORESTATION AT PYRKAN VILLAGE- SHELLA, EAST KHASI HILLS UNDER CAMPA (BIODIVERSITY CONSERVATION PLAN OF M/S LAFARGE UMIAM MINING PRIVATE LIMITED)



MAINTENANCE WORK OF PLANTATION

PROFILE OF 14 Ha COMPENSATORY AFFORESTATION UNDER CAMPA (BIODIVERSITY CONSERVATION PLAN OF M/S LAFARGE UMIAM MINING PRIVATE LIMIT ED) AT PYRKAN VILLAGE-SHELLA.

The 14 Ha area plantation which was created on an individual land at Pyrkan village is one of the plot out of the four plots of 60 ha CA plantation sanctioned under CAMPA APO 2015-16. The land under plantation is a shrubs area composed mostly of *Lantana camara, Eupatorium odoratum, Polygonum* sp, *Grass, creepers* like *Mikania micrantha*, and some standing trees of *Artocarpus lacucha, Erythrina* sp, *Bombax ceiba, Spondias pinnata,* and *Alstonia scholaris*. The plantation site is situated near the international border of Bangladesh on the river bank of Shella river and the soil is sandy soil mixed with pebbles.

BACKGROUND INFORMATION OF THE PLANTATION SITE

1. **DIVISION:** East Khasi Hills Social Forestry Division
2. **RANGE:** Sohra Social Forestry Range.
3. **SCHEME:** State CAMPA (Biodiversity Conservation Plan of M/S Lafarge Umiam Mining Private Limited)
4. **AREA:** 14 Ha (Consist of one plot)
5. **LAND STATUS:** Individual land OF Shri Sainkupar Chyne.
6. **GEO-REFERENCE:** Latitude: N 250 10' 8.11" Longitude: E 91037' 25.56"
7. **YEAR OF CREATION:** 2016-17
8. **SPECIES PLANTED:** *Albizia lebbeck, Averrhoa carambola, Azadirachta indica, Artocarpus heterophyllus, Artocarpus chaplasa, Amoora wallichii, Bombax ceiba, Baccaurea sapida, Bauhinia purpurea, Chukrasia tabularis, Elaeagnus conferta, Elaeocarpus sp, Gmelina arborea, Garcinia xanthochymus, Lagerstroemia parviflora, Litsea glutinosa, Michelia champaca, Syzygium species, Syzygium cumini, Syzygium tetragonum, Schima wallichii, Spondias pinnata ,Toona febrifuga* and *Terminalia arjuna*.
9. **SURVIVAL:** Environmental factors like dryness and drought during the winter months and fire prone areas, edaphic factor like sandy soil mixed with pebbles in the area has caused high mortality rate of species in the plantation. Despite the fact that the financial norms of the State has no provision for filing up of manure or any other soil replenishment in the pits to nourish the planted saplings in the plantation, efforts have been made by regular vacancy fillings in the mortality areas of the plantation. During the vacancy fillings a suitable species which show good survival in the plantation site were preferred to ensure restocking of the plantation site. The average survival rate of the plantation up to the fourth year maintenance work is about 75% - 80 %.
10. **REMARKS:** The plantation is still under maintenance work and the five year maintenance work is still in progress. Hence, success of plantation can be assured only after the maintenance work is completed and the planted saplings are fully matured.

Photograph Of 14 Ha Compensatory Afforestation at Pyrkan Village-Shella, East Khasi Hills Under CAMPA (biodiversity Conservation Plan of M/s Lafarge Umiam Mining Private Limited)

Government of Odisha
Forest & Climate Change Department

FOREST PROTECTION IN

Odisha

COMPENSATORY AFFORESTATION FUND MANAGEMENT & PLANNING AUTHORITY, ODISHA CAMPA

Odisha successfully relocated 400 families from four villages i.e., Rangali, Bhutuli, Kurumkel, Lambipali within Debrigarh Wildlife Sanctuary after following revised guidelines. The process involved full consent obtained through Gram Sabha meetings. Families were resettled outside the sanctuary, with compensation funds of Rs.15.00 lakh transferred online. This relocation recovered 490 hectares which were reclaimed for meadow development and a habitat for breeding and grazing of wild animals.

SUCCESS STORY OF VARIOUS INTERVENTIONS UNDER CAMPA , ODISHA

(By: Shri M. Yogajayand, IFS, CEO, Odisha (CAMPA)

A. SUCCESS STORY OF RELOCATION OF FOUR VILLAGES FROM DEBRIGARH WILDLIFE SANCTUARY, HIRAKUD WILDLIFE DIVISION

A total 400 families in 4 villages across Debrigarh Wildlife Sanctuary have been relocated during the year 2021-22 by Hirakud Wildlife Division. The process of relocation has been completed in accordance to the revised guidelines for relocation of villages from Sanctuaries issued by Forest, Environment & Climate Change Department vide letter No. FE-WL-0021-2016/12390 Dt.19.07.2021. The details of the villages and number of families relocated is as below:

Sl No	Name of the village relocated	Number of families relocated	Wildlife Habitat restored post relocation (Ha)	Remarks
1	Rengali	55	480 Ha.	Population of 4 villages is more than one thousand.
2	Bhutuli	91		
3	Kurumkel	213		
4	Lambipali	41		
	Total	**400**		

The process of relocation started during August 2021 by Hirakud Wildlife Division. Gramsabha was successfully conducted during September 2021 and October 2021 with hundred percent consent for voluntary relocation by all the 400 families. From August 2021 to March 2022 more than 280 meetings were conducted by the officials of Hirakud Wildlife Division with the villagers to sensitize them on the benefits of relocation and benefits the future generation will derive post relocation. Initially these villagers were reluctant but gradually they got convinced after mobilisation by the forest personnel. The villagers were shifted to relocated village of Similipal (Mananda of Rairangpur Division) and Jhanjhana of Keonjhar Division for exposure visit. The report of family survey was displayed in all the villages by concerned Panchayat for receiving complaint petitions if any, which have been disposed of with transparency in presence of villagers.

65 acres of Patita land at village Chakramal (outside Debrigarh Sanctuary) identified for construction of permanent colony for resettlement of 359 families at Rengali, Bhutuli and Kurumkel villages. 7 acres of Patita land at village Tangerpali (outside Debrigarh Sanctuary) is identified for resettlement of 41 families of village Lambipali.

Each individual eligible family has been given Rs.15.00 lakh compensation amount to their individual bank accounts. Transfer of funds has been done online. Each family has kept Rs.12.00 lakh to 14.00 lakh as fixed deposit for three years term from which their getting Rs. 6000/- to 8000/- interest money.

Due to relocation 480 hectare of land has been recovered where the villagers used to exist earlier. This area is under process of meadow development and in very soon will become an ideal habitat for breeding and grazing of wild animals.

Total Rs 66.41 Crore has been utilised for relocation of four villages. Rs. 64.07 Crore has been utilised from CAMPA-APO 2021-22 and balance Rs. 2.34 Crore has been utilised from Programme Expenditure.

Further, in accordance with the above guidelines, 133 families of 02 villages in two protected areas (Similipal TR and Satkosia TR) have been relocated in 2022-23.

The status of proposals for village relocation during the year 2023-24 is mentioned: 131 number of households have agreed to be relocated from Similipal Tiger

Reserve and 38 families are to be voluntarily relocated from Hadagarh (WL) Sanctuary.

Photographs of relocation of four villages from Debrigarh Wildlife Sanctuary, Hirakud Wildlife Division.

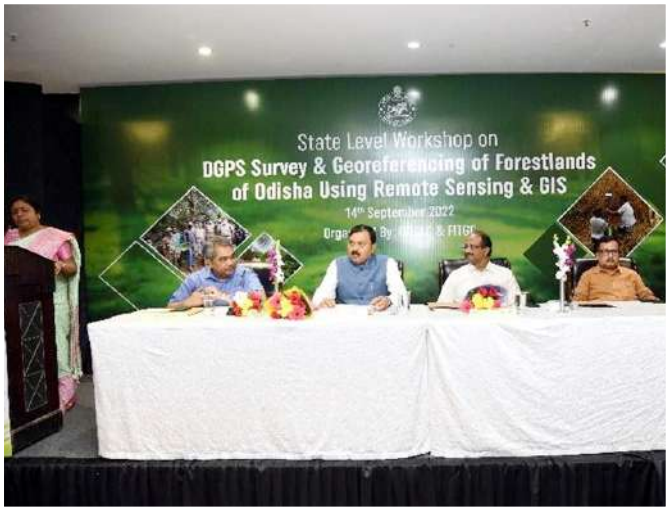
B. SUCCESS STORIES ON GEO-REFERENCING OF FORESTLANDS IN ODISHA USING MODERN TECHNOLOGIES

GRFL project has been taken up for geo-referencing of all kinds of forestlands (Notified Forests, Revenue Forests and Deemed Forests) and preparation of Forest Cadastres of area about 61,204 Sq. Km. for the entire State duly reconciled and integrated with the revenue land records on a cadastral scale. The project is as per directives of Hon'ble Supreme Court of India vide order dated 06.07.2011 in WRIT Petition (C) No. 202 of 1995-Lafarge matter). Odisha is the pioneer state till date to gazette notify a Standard Operating Procedure during July 2017 & completed DGPS survey over 2387 Notified Forest Blocks of an area 19948 sq. Km. using advanced technologies of Satellite Remote Sensing & GIS. Odisha has been the torch bearer for the entire country in preparation for digital forest cadastres, many other State Forest Departments like Karnataka, Jharkhand, Chhattisgarh, and Uttarakhand including representatives from MOEF & CC have visited Odisha to appreciate and are trying to emulate the Odisha Model of Geo-referencing of Forest lands.

Benefits of the project

- The difficulty in co-relating the forestland records on the ground has always remained a challenge, delaying the execution of developmental projects such as roads, rail, irrigation, industries and mining. This digital transformation shall lead to pre-evaluation and timely grounding of developmental projects involving forest land.
- The exercise resulted in identification of degraded revenue forest lands for compensatory afforestation land bank, which has a huge significance for obtaining timely Forest Clearances.
- It shall also help efficient forest conservation in Odisha, which is home to rich flora, and fauna.
- The system shall also facilitate objective and timely assessment of Forest Rights of Tribal communities.

Process of DGPS Survey in the Forest Blocks

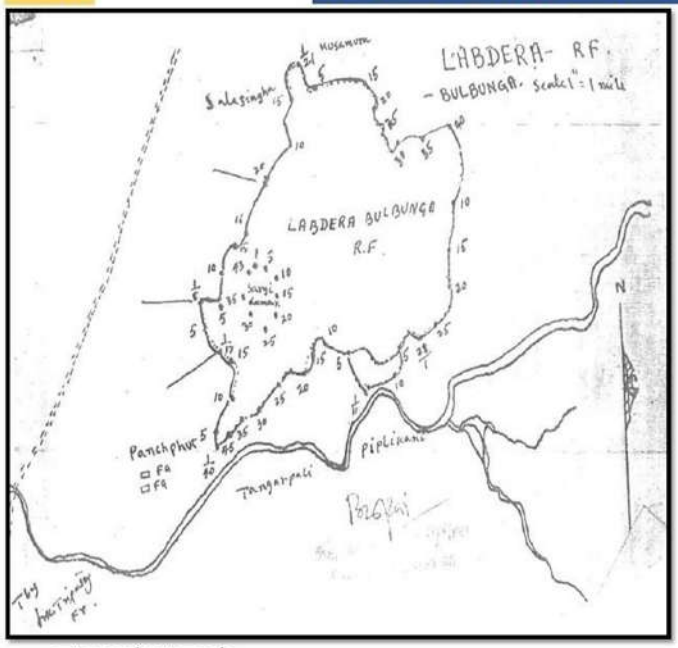


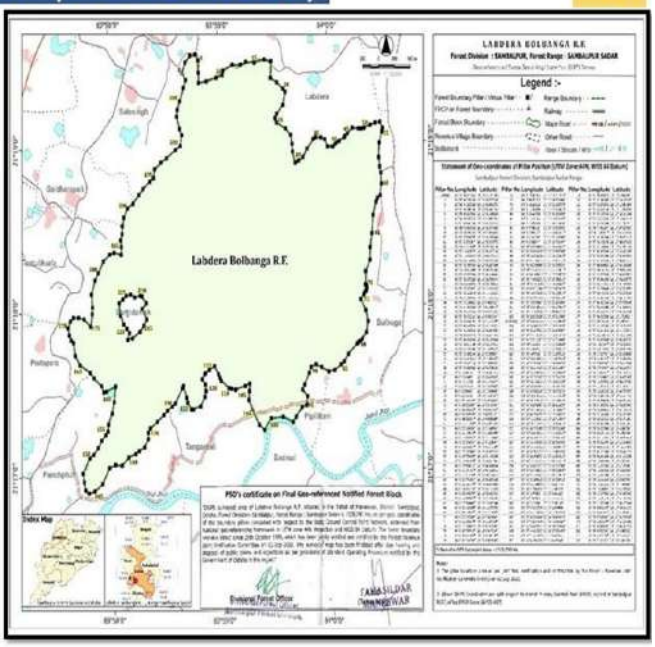
More accurate Forest Block Maps after DGPS Survey

Before

Modification in Forest Block Map after DGPS Survey

After





- Approximate scale
- Not possible to corelate on ground
- Forest block boundary disputes cannot be resolved
- Cross-referencing with cadastral is difficult

- To the scale with precise boundary description
- Easy to corelate on ground and read with cadastral maps
- Enclosed with Latitude & Longitude of each boundary pillar

सत्यमेव जयते
राजस्थान सरकार
Government of Rajasthan

FOREST PROTECTION IN

Rajasthan

COMPENSATORY AFFORESTATION FUND MANAGEMENT AND PLANNING AUTHORITY, RAJASTHAN

The total area of Rajasthan is about 3.42 Lakh Km square, it is similar in area to countries of the west like Germany, Italy, Norway and Poland.

Situated in North-West India, Largest State of the Country. The state can be divided into 4 major physiographic regions, Western Desert (The Thar Desert): with barren hills, level rocky plains and sandy plains, The Aravalli Hills: running north-west to north-east from Gujarat and ending in Delhi, The Eastern Plains with rich alluvial soils and south-eastern plateau.

The climate varies from semi-arid to arid. The temperature in the state varies from 25 degrees Celsius to 50 degrees Celsius except in winters it drops down to zero degrees in some parts. Annual rainfall ranges from 480mm to 750mm being as low as 150mm in arid region and 1000mm in south-eastern plateau.

STATUS OF FOREST IN RAJASTHAN

The Recorded Forest area in Rajasthan is 32862.50 sq. kms., which is 9.602% of its total geographical area. The per capita forest area is only 0.05 ha., which is one of the lowest in the country. Forests of the state meet the multiple demands of timber, small timber, firewood, fodder and other non-timber forest produces for livelihood needs of local people living in and around forest areas.

Rajasthan is home to a diverse array of flora and fauna, adapted to survive in arid regions. The state boasts numerous tree species and medicinal herbs. The main tree species found in Rajasthan are A.vachellia, A.senegal, Prosopis cineraria, Acacia nilotica, Zizyphus mauritiana, Salvadora oleoides, Azadirachta indica, Butea monosperma and Tectona grandis, etc. Avifauna, including species of lizards and serpents.

Other wildlife species include Antelope (Blackbuck, Chinkara), Tiger, Leopard, Hyena, Indian Wolf, 2 species of Foxes, Jackal, Caracal, Jungle cat, Asiatic Wild cat, Indian Flying Squirrel, endangered Great Indian Bustard, Black Bucks, Nilgai. The state also has about 450 avifauna species, including various migratory birds. Rajasthan State manages about 5 National Parks and 23 wildlife sanctuaries for wildlife conservation. The state's diverse topography and diverse wildlife make it an ideal destination for nature enthusiasts.

S. No.	Legal Status	Area (sq. km.)	% of Total Forest Area
1	Reserved Forest	12176.24	37.05
2	Protected forest	18543.22	56.43
3	Unclassed Forest	2143.04	6.52
	Total	**32862.50**	**100.00**

Figure: Legal Status of Recorded Forest Area, ISFR 2021

Class	Area(in sq. Kms.)	% of Geographical Area
VDF (>70% Crop Density)	77.81	0.02
MDF (40-70% Crop Density)	4341.9	1.27
OF (10-40% Crop Density)	12209.80	3.57
Scrub (<10% Crop Density)	4760.04	1.39
Total	16629.04	4.86

Figure: Status of Forest Cover in Rajasthan, ISFR 2021

SUCCESS STORIES OF RAJASTHAN CAMPA ACTIVITIES

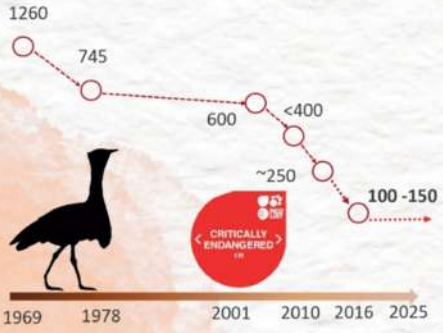
Conservation and Breeding of Great Indian Bustard

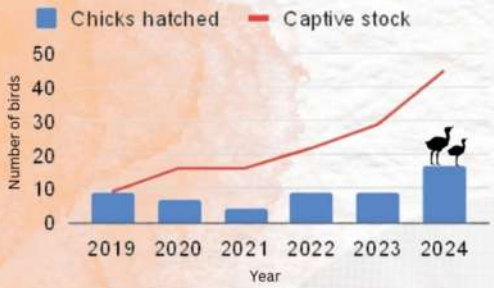
Species background: The Great Indian Bustard (Ardeotis nigriceps) (GIB) is Critically Endangered and in urgent need of conservation actions. Its present global population of ~140 birds comprise a single breeding population of ~128 individuals in Jaisalmer, ~3 in Kutch, ~1 in Maharashtra and ~6 in Karnataka. The species has declined in the past due to hunting followed by habitat loss through conversion of grasslands into intensive agriculture. More recent threats are mortality due to power lines owing to their small frontal & binocular visions and high egg and chick predation by foxes, dogs and pigs, which have expanded with humans and available surface water sources (Dutta et al. 2013). Such large bustard species have a life-history characterized by slow reproduction over a long life-span, because of which, their populations are most sensitive to additional / human-induced loss of adult birds (Dutta et al. 2011). Thus, the remaining small numbers of GIB have to be safeguarded from additional mortality due to power-lines (that has contributed to ~60% of GIB deaths in the last six years: 2017-23) and other anthropogenic causes through appropriate mitigation measures. Further, their recruitment (hatching and survival of chicks) has to be improved by restoring breeding habitats and managing egg / chick predators. As individual birds range over 100-1000 sqkm (less in well-protected habitats) areas,

these in-situ conservation efforts have to be directed at the landscape scale. Simultaneously, a conservation breeding program is in place to breed birds in captivity and release them in the wild where habitats are restored.

Project background: To conserve this species, an ambitious Project - the Bustard Recovery Program - is being implemented through joint efforts of the Ministry of Environment, Forest & Climate Change (MoEFCC), Rajasthan Forest Department (RFD) and Wildlife Institute of India (WII) in technical collaboration with the International Fund for Houbara Conservation (IFHC) and primary funding of National CAMPA Authority with supporting fund share of Rajasthan Government. The Program is ongoing since 2016 and entails conservation breeding and scientific guidance for in-situ conservation of GIB and Lesser florican. A tripartite Memorandum of Agreement has been signed between the Parties (MoEFCC, RFD and WII) in 2018 under which the WII is the technical agency to implement the work. This MoU has been approved by the Steering Committee for extension of another five years (2024-29). Since conservation breeding of bustards is highly challenging and rarely successful, the IFHC (global experts in captive breeding of houbara bustard) was taken on board and a separate MoU between WII and IFHC was signed in 2022 for sharing of knowledge pertaining to conservation breeding, especially Artificial Insemination techniques. As the GIB is a slow-reproducing species, the conservation breeding program needs to continue as a long-term initiative (~25 years) and a new Project on Great Indian Bustard for scaling up of conservation activities for the next five years has been approved for National CAMPA funding.

KEY MILESTONES IN GREAT INDIAN BUSTARD CONSERVATION BREEDING





May 2019 — Construction of conservation breeding center

21 June 2019 — Collection & artificial hatching of first egg from wild

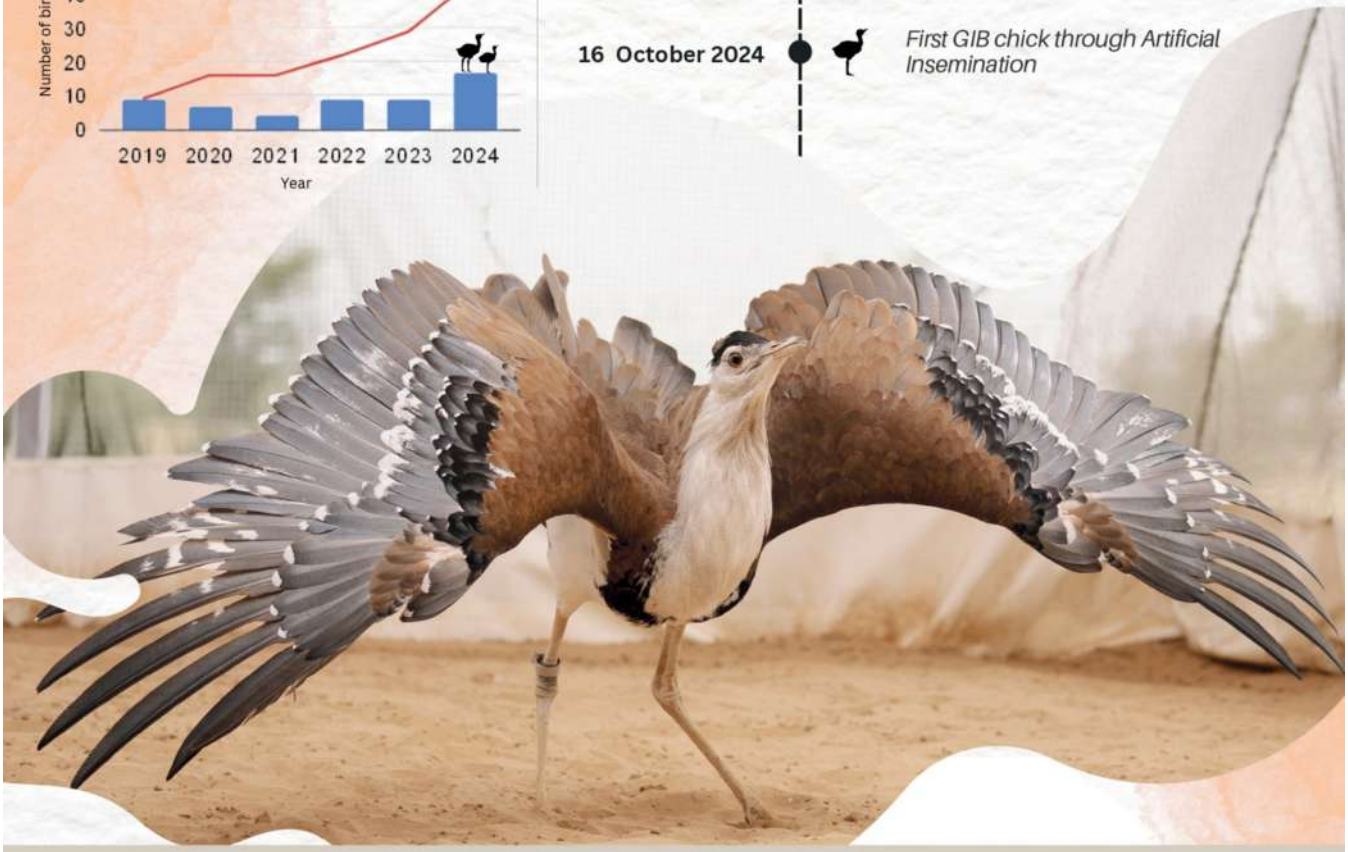
9 April 2022 — First breeding attempt in captivity

29 March 2023 — First captive-bred chick hatched

30 July 2024 — 13 captive-bred chicks with total 45 birds in captivity

21 September 2024 — Artificial Insemination commencement

16 October 2024 — First GIB chick through Artificial Insemination



भारत सरकार GOVERNMENT OF INDIA

BUSTARD RECOVERY PROGRAM

Rajasthan Forest Department

भारतीय वन्यजीव संस्थान Wildlife Institute of India

Project updates: The GIB conservation breeding activity commenced in June 2019. Two fully functional conservation breeding facilities have been established using National CAMPA funds under this Project - by upgrading an existing Forest Department chowki in Sam and by establishing a large state-of-the-art facility in a grassland enclosure of 2 sqkm area in Ramdevra, allocated to WII for this purpose. The approach adopted by this Project is to collect eggs from the wild, transporting them to the facilities, where they are artificially hatched, chicks are hand reared, and adult birds are raised to create a founder stock that will remain in captivity. Efforts are ongoing to breed these captive birds using natural and artificial insemination techniques. Surplus captive-bred offspring (after the minimum founder stock of 15 breeding (adult) females and 5 breeding (adult) males are secured) will be released in the wild after appropriate rewilding training and once habitats are restored. These activities are executed by a technical team of WII (comprising a scientist, three veterinarians, 18 senior researchers and about 50 support staff that have been specially trained for this activity) under the close monitoring of Rajasthan Forest Department. The Program is overseen by the Ministry.

The Program has secured a captive stock of 45 GIB (25 females and 20 males) of which 31 individuals are from wild-laid eggs collected from Desert National Park and other areas of Jaisalmer, Rajasthan while 14 are from eggs laid by captive reared birds. These birds are housed in conservation breeding facilities at Sam (17 birds) and Ramdevra (28 birds). Of these, 1 male and 4 females have started breeding naturally while 8 males are being trained for semen collection on dummy females. These captive birds will be reared as a founder

stock for breeding, whereas their future offspring will be released once habitats are secured. An important milestone for the project is that captive breeding has commenced since April 2023, resulting in 14 captive-bred chicks. This includes one chick hatched by artificial insemination from semen collected from a male in Ramdevra and inseminated in a female in Sam CBC in 2024. Captive breeding will be scaled up in the coming years by using artificial insemination along with natural breeding at both the centers.

Captive rearing and breeding of bustards is highly challenging. The houbara captive breeding program has succeeded after efforts starting in the 1980s and the IFHC houbara breeding experts are providing technical support in the GIB conservation breeding program. At the onset of this program, 50-60% mortality from egg to adult stage was expected based on top international conservation breeding programs, as noted in the MoA between Project Parties. Hence, 40-55 eggs were proposed for collection to reach the minimum founder stock of 20 adult birds. The GIB conservation breeding program has converted ~60% of collected eggs to adults, compared to ~48% for an optimistic expectation based on the top international bustard conservation breeding. The Program is developing all conservation breeding approaches de novo as there is no reference for breeding these sensitive species and refinements in approach are constantly being incorporated based on learnings, to safeguard the captive founders and improve the program performance.

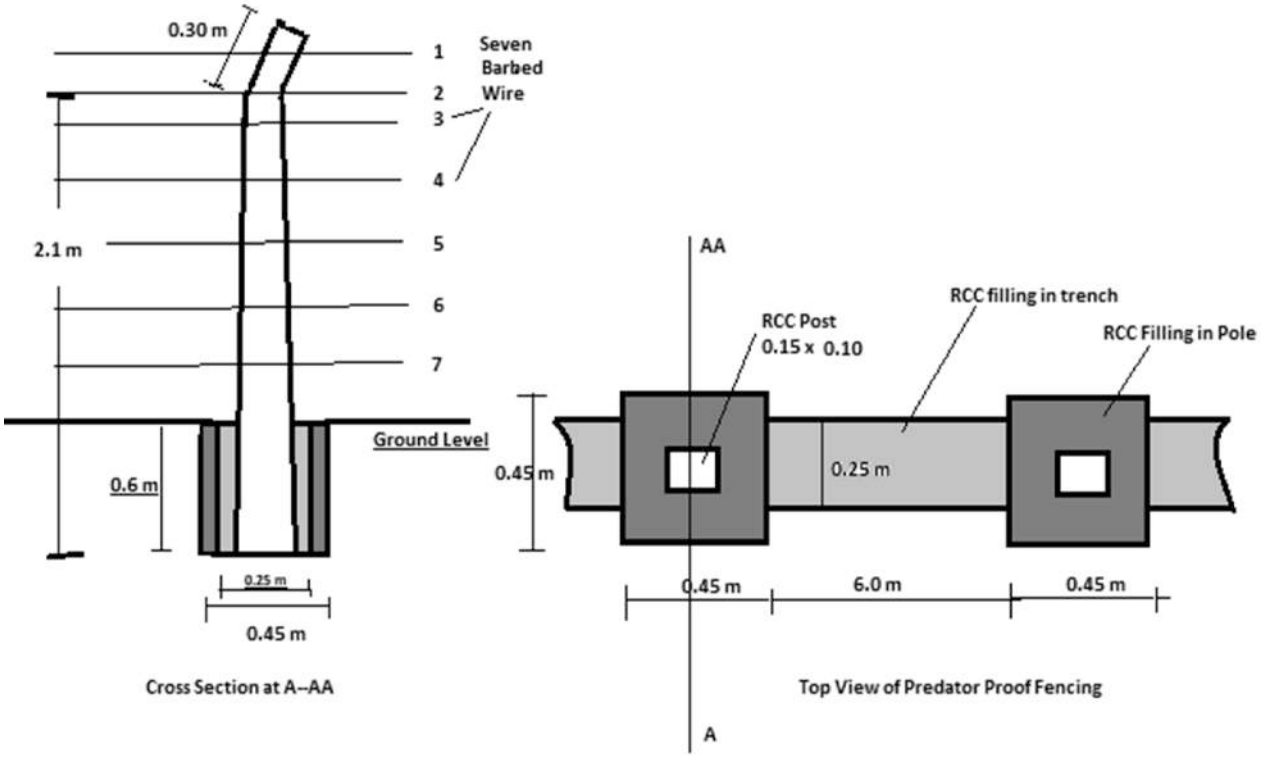
Simultaneously, in-situ research, outreach and pilot habitats management activities are providing scientific guidance to State Forest Departments and other concerned agencies. The program has tagged 12 GIB (2 in 2023) over the years that have provided valuable information into the species' ecology and conservation needs. Local communities were sensitized about bustard conservation through school awareness programs and desert festival. Free ranging dogs were removed from critical bustard habitats and nest predators (foxes, cats and mongoose) were translocated from breeding enclosures.

Great Indian Bustard (*Ardeotis nigriceps*) - Mother and chick

PREDATOR PROOF FENCING JAISALMER

To maximize output funds available from state CAMPA have been invested in GIB Landscape to secure grassland habitats from uncontrolled grazing and predation of GIB eggs and chicks by mesocarnivores such as Feral Pig, Desert Fox, Indian Fox, Asiatic Wildcat and Mongoose. Predator proof fencing is an extremely effective solution in this space.

Prior to construction of predator proof fencing, fencing of Sudasari ACD enclosure are has Chain Link fence with 4-inch x 4-inch mesh with chain link of total height less than 5 feet. The fencing was neither strong enough to resist Stray Pigs, Stray Dogs etc. nor capable to prevent entry of small size predators like Common fox, Monitor Lizard etc. Predator proof fencing includes Chain link with 1-inch x 1-inch opening and is 6 feet in height. After burying 6-inch chain link into cement concrete the effective height is 5.5 feet above ground level. The burying of the chain link in cement concrete itself provides strength to the fencing so that it is not compromised by cattle or pigs and also, cannot be easily opened up by miscreants. The cement concrete in predator proof fencing have a depth of 2 feet below ground level. This prevents burrowing animals like Pigs, Monitor lizard, foxes from entering inside the enclosures RCC post are 8 feet high with more than 6 feet height above the ground.



Layout of Predator Proof Fencing

The predator proof fencing of Sudasari ACD enclosure (Area~1515Hactare, periphery~18 Kms.) was completed in the year 2021-22 from CAMPA funds, which has yielded positive results in this breeding season. Sudasari ACD enclosure is most important breeding habitat for GIB. Presently, after predator proof fencing, many GIBs are seen roaming inside the enclosed. Moreover, a large number of GIB eggs are found and young chicks are seen in this enclosure.

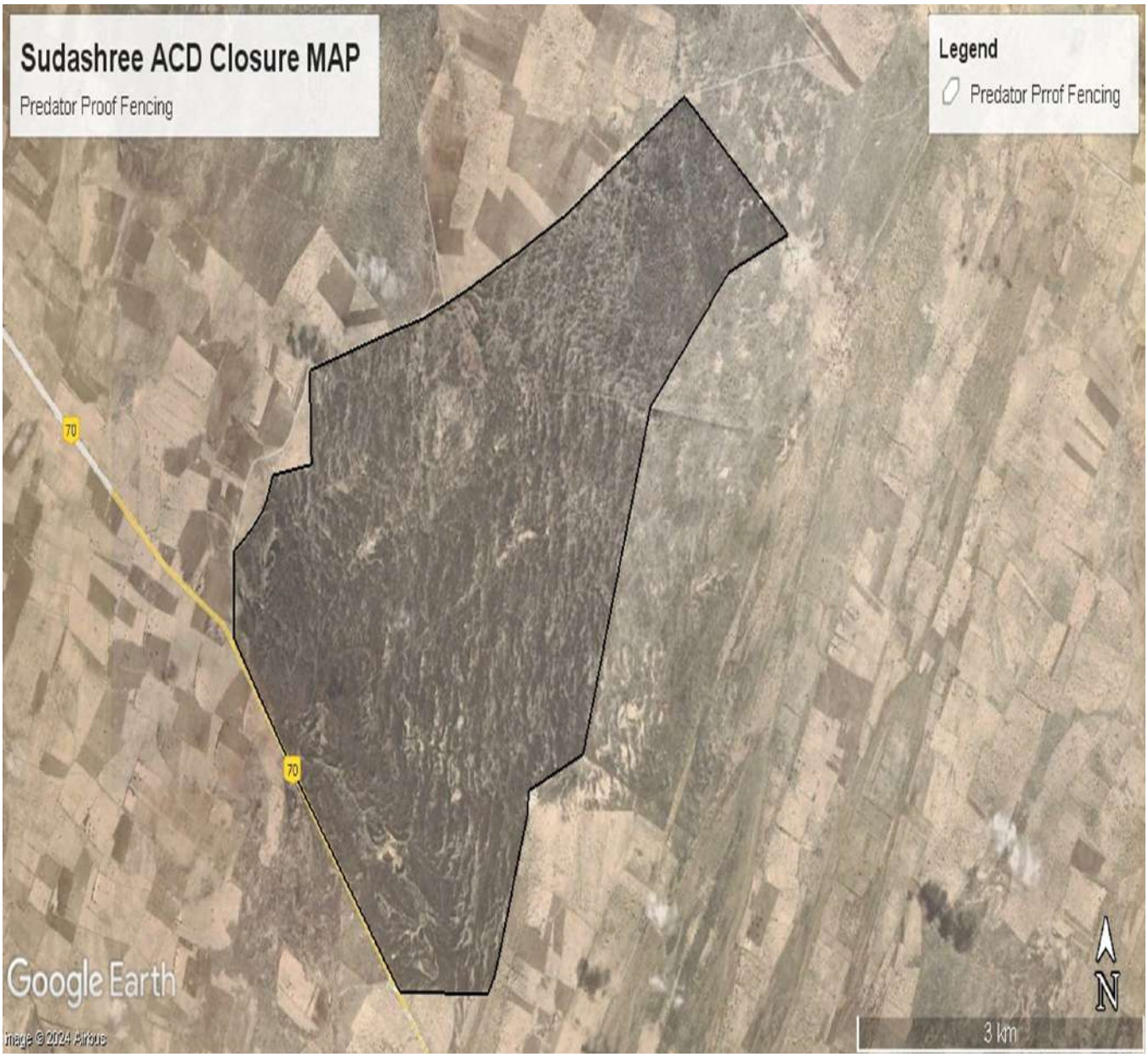


Figure: Sudashree ACD Closure (Area~1515Hactare, periphery~18 Kms.)

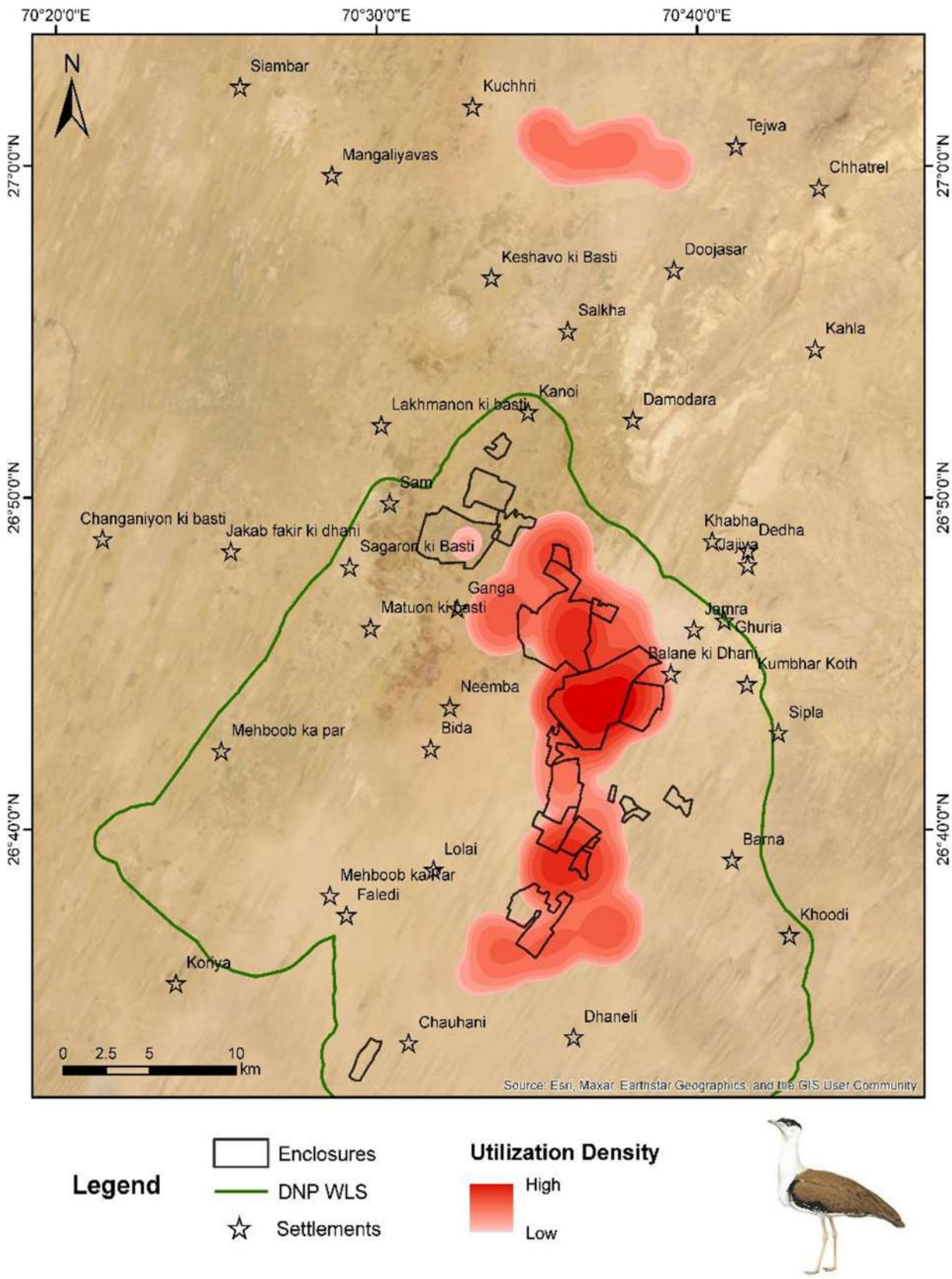


Figure: Area Utilization Map of GIB shows importance of proof fencing

Details of 4 feet and 6 feet wall constructed under CAMPA scheme is as follows:

S. No.	Name of the Activity	2018-19	2019-20	2020-21	2021-22	2022-23	2023-24
1	4 feet wall construction work (RMT)	81051	77028	51875	30681	41145	34124
2	6 feet wall construction work (RMT)	64603	64717	40941.45	21623.50	29041	25989.25

BOUNDARY WALLS – A BOON FOR NATURAL REGENERATION

Figure: Campa Wall - Protecting Mining Prone hillocks of Barmer, 2023

Rajasthan has rugged and undulated surface. On the one hand its landscape supports one of the oldest mountain series of the world 'The Aravalli's' and on the on the on other more than 60% of its area comes under dry and arid zone and boost the 'Thar Desert' and desert ecosystem.

Under the CAMPA scheme, forest area of Rajasthan has demarcated and consolidated by using construction of 6 feet and 4 feet wall in Wildlife and Territorial area respectively.

Use of masonry wall for protection and conservation of forest resources of Rajasthan, has given very positive outcomes. This activity has not only resulted into development of green pasture, and recruitment of forest species but also, helped in managing man-animal conflict and encroachment issues on forest land.

SUCCESS STORIES OF WALL CONSTRUCTION

Wall construction in Rajasthan:

Protection Wall played a pivotal role in protection of the forest area which led to a very good growth of forest species. It has also restricted illegal felling and grazing. This in turn helped in reducing soil erosion from the area. It has considerably reduced movement of wild animals into agricultural fields and thus in turn has reduced probability of human wildlife conflicts. It also helped in protecting the land from any threats of encroachment which is very much evident from the agricultural land present at the boundary of the forest area.

Figure : Construction of Boundary Wall in Bharatpur

Government of Tamil Nadu
Forest & Climate Change Department

FOREST PROTECTION IN

Tamil Nadu

COMPENSATORY AFFORESTATION FUND MANAGEMENT & PLANNING AUTHORITY, TAMIL NADU CAMPA

Tamil Nadu is making concerted efforts towards preservation of nature by promoting ecological restoration and undertaking conservation activities. The state has a large protected area network comprising three conservation reserves, five tiger reserves, five elephant reserves, seventeen bird sanctuaries, seventeen wildlife sanctuaries and fourteen Ramsar sites. The state is home to the country's first terrestrial and marine biosphere reserve in Nilgiri Biosphere Reserve and Gulf of Mannar Biosphere Reserve respectively. Tamil Nadu also has the distinction of being the first state in India to introduce mangrove restoration and initiate fish bone type method for mangrove plantation. The plantation technique has been used to restore mangroves by effectively distributing water through feeder and distribution canals. As a result, mangroves are stabilizing in the coastal belt of the state. With a focus on afforestation and regeneration activities, the State Government of Tamil Nadu has directed user agencies to provide twice the extent of area in lieu of forest land diverted for non-forestry uses, whereas the Forest (Conservation) Act, 1980 stipulates an equivalent area. Since 1980, only 493 instances of diversion of forest land for non-forestry purposes have occurred in the state, totaling 5197.331 ha.

GOOD PRACTICES IN TAMIL NADU

Shri Sewa Singh, IFS, CEO, Tamil Nadu (CAMPA)

A natural forest takes generations to grow, and the State of Tamil Nadu has taken every measure to preserve nature. There are three biosphere reserves in the State. Tamil Nadu is home to the country's first terrestrial biosphere reserve and its first marine biosphere reserve. In 1936, the State notified Vedanthangal as its first Bird Sanctuary. The State now has 17 bird sanctuaries, 17 wildlife sanctuaries, 3 conservation reserves, 5 elephant reserves, 5 tiger reserves, and 14 Ramsar sites. Tamil Nadu has demonstrated a constant increase in the forest cover since 1991 (Source: Forest Survey of India Reports).

Good Practices

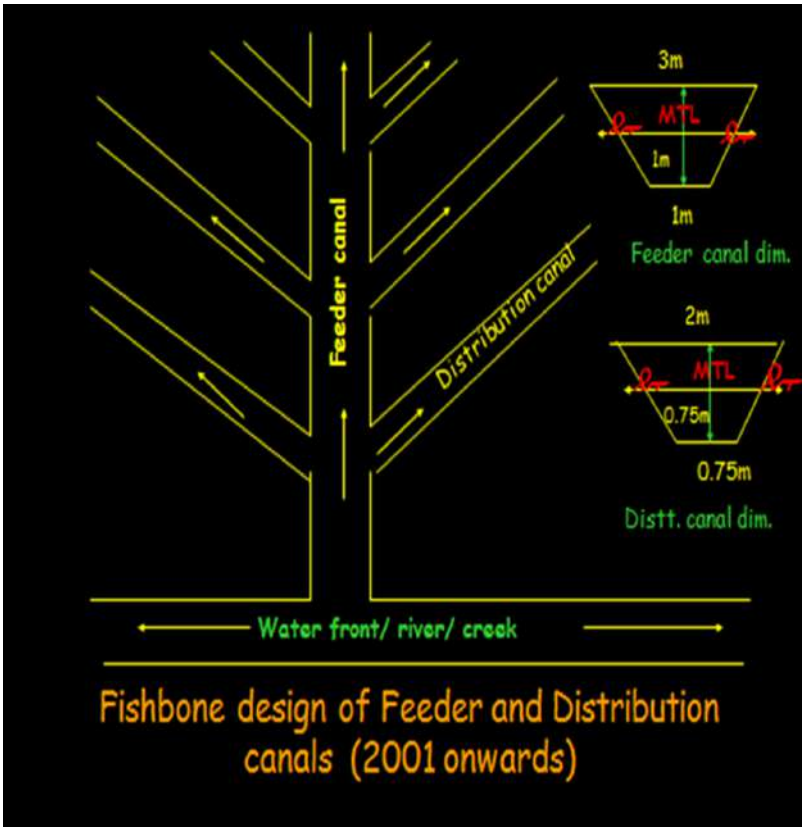
1) **Since 1991, Tamil Nadu has asked the user agencies to provide twice the area for any diversion of forest land, whereas the Forest (Conservation) Act 1980 requires an equivalent area**

The state is one of the three megacenters of endemism. The Tamil Nadu State Government has a long history of protecting forests and biodiversity and GO Ms. No. 706, E&F (FR.XI) Dept., dated 12-12-91 directed that whenever forest land is diverted for non-forestry activity in the State, the user agency must provide twice the diverted quantity of forest land, whereas the Forest (Conservation) Act 1980 stipulates an equivalent area. Only 493 instances of diversion of forest land for non-forestry purposes have occurred in the State of Tamil Nadu since 1980, totalling 5197.331 ha, and the National CAMPA must step up to promote forest conservation measures in Tamil Nadu.

2) **Mangrove Restoration and Initiation of the Fish Bone Type Method in Tamil Nadu for Mangrove Plantation for the first time in India and TN CAMPA efforts are stabilizing mangroves in the coastal belt of Tamil Nadu**

For the first time in India, mangrove restoration efforts and the introduction of the fish-bone planting technique started in Tamil Nadu in the early 1990s. The method has been extensively used in Tamil Nadu from 2001 onwards, and application of the same has been extensively done in other states as well. The Characteristics of Fish bone type method is as follows:-

- Fish bone type method is very suitable for mangrove plantation. Normally, the water flow is equally spread to all seedlings via distribution canals.
- A feeder canal gives rise to distribution canals on either side, angle at 45° in the direction of water flow.
- The feeder canals mean tide level (MTL) depths height up to 3 m and mid-point and bottom distance are 1 m width.



- The distribution canal having MTL is 2 m height and mid-point and bottom width are 0.75m.

The Photographs of TN CAMPA efforts in stabilizing mangroves in the coastal belt of Tamil Nadu are attached below: -

Planting of Mangroves Species by Digging Channels in Fish Bone Pattern at Pazhayakayal Area during the year 2022 – 2023 in Thoothukudi Wildlife Range (15 Ha)

Planting of Mangrove Digging Channels in Fish Bone Pattern at Sozhiyakudi Sambai and Rettaipalam Area during the year 2022 – 2023 in Ramanathapuram Wildlife Range

Planted Area: 35 Hectare


Latitude: 9.700185
Longitude: 78.984578
Elevation: 2.27±4 m
Accuracy: 1.4 m


GPS Map Camera
Chitturuvadi, Tamil Nadu, India
Chitturuvadi, Tamil Nadu, India
Lat 9.621685°
Long 78.942575°

3) Restoration of Ecological Habitat in Mudumalai Tiger Reserve

Increased restoration efforts give deteriorated ecosystems fresh vitality. Restoring degraded regions would enhance wildlife habitat, safeguard our soils and watersheds, promote economic resilience, and better prepare us for a changing climate. The efforts of Mudumalai Tiger Reserve are testimony to restoration efforts undertaken under the TN Campa.

CAMPA WORKS-2022-23
BEST PRACTICES

MUDUMALAI TIGER RESERVE
UDHAGAMANDALAM

CAMPA WORKS-2022-23

A Sum of Rs. 476.71 Lakhs has been scantioned in G.O (Ms).No.101 E CC & F (FR.10) Dept Dated 14.06.2022 for various components

Among others the following works are Best Practices

1). Removal of Invasive Species at a cost of Rs.216.00 Lakhs

2). Establishment of Conservation center /Bio diversity Lab at a cost of Rs.100.00 Lakhs

Removal of Invasive Species

- In MTR Nearly 70% of the Forest are covered with Invasive which is very concern for the management nowadays
- The funds under CAMPA were utilised as additional support to the other schemes for Removal of various Invasive species such as Senna spectabilis, *Prosopis juliflora, Lantana* and *wattle.*
- Restoration of Natural grass and native species are the integral part of the Forests.
- The amount could be utilized for reviving the habitat from the Invasive species.
- A total area of 214.00 Ha. were cleared and original Forest area could be restored.

- The Impact is visible from the regeneration of Native grass in the field.

S.NO	SPECIES	REMOVEDARE IN Ha.
1	Senna spectabilis	40.00
2	Prosopis juliflora	24.00
3	Lantana	40.00
4	Wattle	110.00
	TOTAL	214.00

- The coverage of Invasive could be reduced to certain extent facilitating the area available for movement of Herbivores species such as Gaur, sambar dear, chital and Elephant

REMOVAL OF PROSOPIS JULIFLORA




Government of Tripura
Forest & Climate Change Department

FOREST PROTECTION IN

Tripura

COMPENSATORY AFFORESTATION FUND MANAGEMENT & PLANNING AUTHORITY, TRIPURA CAMPA

Tripura has undertaken several projects on ecological restoration and wildlife conservation using CAMPA funds. The projects like construction of earthen check dams in the Manu Forest subdivision of Dahlia district and Karbook Forest Subdivision Gomati districts by engaging Joint Forest Management Committee (JFMC) addressed the water scarcity and supported their livelihoods through pisciculture.

The commercial bamboo plantation initiative was undertaken in the state during 2021-22 under CAMPA in Dolucherra Beat of Chailengta Range to promote bamboo as a profitable product and generate livelihoods for JFMC. The roadside plantation initiative by Chailengta Forest Range under CAMPA-Non-CA, aimed to tackle environmental challenges by planting trees. Around 400 plants including species like Agar, Krishnachura were planted along both sides of the road. The project focused on reducing air and noise pollution, combating soil erosion, enhancing aesthetics and creating habitats for wildlife.

In response to increasing biotic pressure and encroachment on forest land, a total length of 9.185 km vulnerable area was fenced across various locations from 2019-20 to 2022-23 under the Manu Forest Subdivision. In 2022-23, a permanent timber depot was established using CAMPA funding after reclaiming 1.05 hectares of land from illegal encroachment. CAMPA support has also facilitated the establishment of wildlife rescue centers, addressed human-animal conflict issues and enhanced habitat conservation efforts. The mitigation efforts include awareness programs, dedicated response teams, provision of combat kits, local elephant watchers, and early warning systems.

Furthermore, Tripura's adoption of IT and GIS technologies has improved monitoring and management of forest resources, ensuring transparency and efficiency in project implementation. The FCA & CAMPA MIS web application and CAMPA app for managing forest land diversion projects and monitoring CAMPA activities also integrate diverse thematic layers. The Forest Incident Reporting Module (FIRM) app aids forest officials to report wildlife sightings, seizures, forest fires, and monitoring activities, while the e-Forest Licensing System facilitates online license submission and tracking, promoting efficiency and transparency in forest governance.

GOOD WORKS AND BEST PRACTICES IN IMPLEMENTING CAMPA ACTIVITIES IN TRIPURA

(By: Shri R. K. Samal, IFS, CEO, Tripura (CAMPA)

The good works and best practices being followed/ implemented under Tripura CAMPA are summarized below under different heads from A to J.

A. CONSTRUCTION OF SOIL & MOISTURE CONSERVATION STRUCTURES

1. Construction of a new soil and water harvesting structure to improve ecological environment and to generate livelihood in Dolocherra VC – A success story under Manu Forest Sub Division, Dhalai District, Tripura state.

BRIEF OVERVIEW

State	:	Tripura
District	:	Dhalai
Block	:	Manu RD Block
GP/VC	:	Dolucherra VC
Location	:	Kakrum Para
Sarovar Name	:	Soil & Moisture conservation Structure (Check Dam)
Sarovar ID	:	94825
Financial Year	:	2022-23
Type of Water Body	:	Check Dam
Cost	:	Rs. 400,000/-
Scheme	:	CAMPA
Implemented Department	:	Forest (Manu Forest Sub Division, LTV)
Area of the Amrit Sarovar (in Acre)	:	3.7
Water holding Capacity of Amrit Sarovar (in cum)	:	35,000.0
Name of user Group	:	Apanbali JFMC
GPS reading	:	N 23053'46" ; E 9202'31"

SUCCESS STORY

Introduction to Sarovar

The earthen Check Dam has been newly constructed under Amrit Sarovar and it is located at Kakrumpara under Dolocherra VC of Manu RD Block. The work will be helpful to the general public and villagers in the long run during summer season. The work has generated 1520 number of man-days and it is expected to provide employment to 35 number of households in that area.

Implementation

The work has commenced from January 13th, 2023 and completed on February 25th, 2023. The work has been implemented by Beat Officer (Forester) of Dolocherra Forest Beat under Manu Forest Sub Division, LTV with the help of local JFMC members and villagers. Regular monitoring and visit have been done by the authorities since the commencement of the construction of check dam until the completion of works. Plants like Bamboo, Broom grass etc are planted at the Check dam site and the bund has been turfed with grass. One permanent CIB has been at the check dam site. 10,000 nos fingerlings have also been released by the JFMC members for fishery activities.

Impact

The earthen check dam has been constructed at Kakrumpara of Dolocherra VC under Manu RD Block of Manu Forest Sub Division, LTV. CAMPA, as one of the Centrally sponsored schemes of GoI, and CAMPA activities are implemented by engaging local communities in afforestation, nursery raising, soil water conservation. The CAMPA work has given opportunity to workers to get wages for their livelihood and socioeconomic upliftment. Accordingly, the above said work has been done through this scheme and implemented by Forest Department (Manu Forest Sub Division, LTV) under Dhalai District. Total 1520 nos man-days were generated for completing the said work and 35 number of households are directly benefitted, it is expected that at least 150 number of tribal families will

get water from the said check dam during summer season and fulfil the daily needs of water which is very essential need of the community and villagers, it is a community use base check dam which will directly benefit the villagers. The catchment area of the check dam is very big. The JFMC people will also earn livelihood through pisciculture in the check dam. Fingerlings will be released during rainy season, and by selling fishes, the villagers can earn a good amount of income. The check dam is very suitable for fishery activities and all kind of assistances will be provided to the JFMC members for improving their income.

Events Held: Towards the end of March, the check dam was inaugurated by the Local JFMC president and other members of the JFMC and local people. The Implementing officer (Forester) of Dolocherra Beat was also there during the occasion. A few plants of Bamboo and other fruit species were planted on the occasion. After the programme, sweets were distributed among all. Recently, JFMC and local people have celebrated Independence Day, 2023 on 15th August by hoisting the National flag at the said Amrit Sarovar check dam site.

Check Dam construction under Amrit Sarovar Mission at Dolocherra VC under CAMPA during 2022-23

2. Construction of a new Soil and water harvesting structure to improve ecological environment and to generate the livelihood in Labancherra VC – A success story under Manu Forest Sub Division

BRIEF OVERVIEW

State	:	Tripura
District	:	Dhalai
Block	:	Manu RD Block
GP/VC	:	Lavancherra VC
Location	:	Bongafa
Sarovar Name	:	Soil & Moisture conservation Structure (Check Dam)
Sarovar ID	:	94828
Financial Year	:	2022-23
Type of Water Body	:	Check Dam
Cost	:	Rs. 400,000/-
Scheme	:	CAMPA
Implemented Department	:	Forest (Manu Forest Sub Division, LTV)
Area of the Amrit Sarovar (in Acre)	:	2.4
Water holding Capacity of Amrit Sarovar (in cum)	:	25,000.0
Name of user Group	:	Twikurung JFMC
GPS reading	:	N 23.914486; E 92.070342

SUCCESS STORY

Introduction to Sarovar

The earthen Check Dam has been constructed under Amrit Sarovar Mission and it is located at Bongafa para under Labancherra VC of Manu RD Block under Manu Forest Sub Division, LTV. The work will be helpful for the general public and villagers in long run during summer season. The work has generated 1515 man-days and it has also provided direct employment to 45 number of households of that area.

Implementation

The work has commenced from January 13th, 2023 and completed on February 25th, 2023. The work has been implemented by Beat Officer (Forester) of Labancherrra Forest Beat under Manu Forest Sub Division, LTV with the help of local JFMC peoples and villagers. Regular monitoring and visit have been done by the authorities since commencement of the check dam till end. Plants like Bamboo, Broom grass etc are planted at the Check dam site and the bund has also been turfed with grass. One permanent CIB has also installed at the check dam site. 4000 nos fingerlings have also been released by the JFMC members for fishery activities.

Impact

The earthen check dam has been constructed at Bongafa para of Labancherra VC under Manu RD Block of Manu Forest Sub Division, LTV under CAMPA. It is worth mentioning here that CAMPA activities are implemented by engaging local communities in afforestation, nursery raising, soil water conservation after detailed discussion with them. It has given opportunity to workers to get wages for improvement in their living standards. Total 1515 nos mandays has been generated for completing the said work and 45 nos households are directly benefited, it is expected that at least 140 tribal families will get water from the said check dam during summer season and can fulfil the daily needs of water which is a very essential need of the community. It is a community use base check dam which will directly benefit the villagers. The area of the check dam is big. The JFMC people will also can earn livelihood generation through pisciculture in the check dam. Fingerlings will be released during rainy season and by selling fishes, the villagers can earn good income. The check dam is very suitable for fishery activities and all kind of assistances will be provided to the JFMC members so that their livelihood is raised to a great extent in future through fishery activities.

Events Held

During last week of March, 2023, the check Dam was inaugurated by the Local JFMC president and other members of the JFMC and local peoples. The Implementing officer (Forester) of Labanchhara Beat was also present there during the occasion. Few plants of Bamboo and other fruit species were planted during the occasion. After the programme sweets were distributed among all. Recently, JFMC and local people celebrated the Independence Day, 2023 on 15th August by hoisting the National flag at the said Amrit Sarovar check dam site.

Check Dam construction under Amrit Sarovar Mission under CAMPA during 2022-23 at Labancherra VC

3. Construction of a new Soil and water harvesting structure to improve ecological environment and to generate the livelihood in Jamircherra Village – A success story under Manu Forest Sub Division

Introduction

Ensuring availability of water to people in places where there is scarcity during summer days was the aim to construct this check dam. Availability of water for irrigation is another objective. Ensure access to fresh water withdrawal for agriculture purpose in local areas is also a goal. Jamircherra ADC village of Manu Range is predominanted by tribal people. Although there is abundant rainfall throughout the year, but due to absence of appropriate water conservation structures, the rain water goes wasted. An estimate was drafted for the project. Initial site cleaning was carried out. Subsequently, all activities outlined in the estimate commenced. The project commenced in January 2022 and concluded in February 2022.

Implementation

To overcome this problem, the JFMC people along with Forest Department staff conducted meeting for the construction of a good water conservation structure and resolution was passed for the same. Another purpose of the construction of water conservation structure at Jamircherra VC was to improve the livelihood generation of local JFMC people and through the pisciculture in the water conservation structure, the JFMC people can earn good amount of income. In the year, 2021-22, the project was approved and fund was provided under Tripura CAMPA for the construction of one Check Dam at Jamircherra VC during 2021-22.

The details of the Project and area of the Check Dam-

Name of Forest Sub Division	:	Manu Forest Sub Division, Dhalai District
Name of Range	:	Manu
Name of Beat	:	Dalucherra
Name of VC	:	Jamircherra
Name of JFMC	:	Jamircherra
Year of Creation	:	2021-22
Name of Scheme	:	CAMPA
Water Area in Ha	:	1.0 Ha
Total project cost	:	Rs. 4.95,000/-
GPS reading	:	N 230 98 003 ; E 910 96 4111
Name of IO	:	Sri Amit Debbarma, Fr, BO, Dumacherra

Check Dam at Jamircherra JFMC- CAMPA- 2021-22

Benefits accrued during implementation of the project

Total 1893 number man-days were generated during implementation of the construction of the check dam and the local JFMC members have earned the wages by constructing the check dam from initial stage to the final completion of the project.

Bundh &Spilway of the CD; Jamircherra JFMC- CAMPA- 2021-22

Present status of the Check Dam

Currently, the Check Dam at Jamircherra VC, built during 2021-22, is reported to be in excellent condition. The water depth is deemed satisfactory, and both the bundh and spillway are observed to be in good shape. The Check dam has been handed over to the Jamircherra JFMC and they are presently managing the said Check dam. Recently the JFMC people have released 10,000 number fingerlings of different species in the said check dam which are harvested by the JFMC members yearly.

Impact and future benefit

- Before implementing the project, there was scarcity of water for irrigation and for drinking purpose at Jamircherra area.
- Now the farmers of nearby areas are taking advantages by using the water of check dam for irrigation.
- Due to the earthen bund, soil erosion has reduced.
- From next year onwards, the JFMC peoples can earn good amount of profit through harvesting and sale of fishes and by this, livelihood generation of local public will increase.
- The JFMC people can also utilize the check dams by taking the project of duckery which will provide good amount of profit to the people.
- The check dam is also providing habitat for different wild animals, birds, insects etc and in this way the check dam will provide benefits to ecosystem restoration.

4. Success Story of Check Dam at Silaguha JFMC

State	Tripura
District	Gomati
Block	Silachari
GP/VC	Silachari VC
Location	Bagan Tilla
Name	Construction of Soil &

	Moisture Conservation Structure (Check Dam)
Financial Year	2022-23
Type of Water Body	(Check Dam)
Cost	Rs. 6,46,650.00
Scheme	CAMPA
Implemented Department	Forest (Karbook Forest Sub-Division, Jatanbari)
Area of the Check Dam (in Acre)	2.8
Water holding Capacity of Check Dam (inCum)	2800
Name of user Group	Silaguha JFMC

Success Story of a Check dam

Introduction to Check Dam: The earthen Check Dam has been newly constructed under CAMPA and it is located at Bagan Tilla under Silachari VC of Silachari RD Block. The work will be helpful to the general public and villagers in long run during summer season. The work has generated 1665 man-days and it has also provided employment to 45 number of households in that area.

Implementation: The work has commenced from January, 2023 and completed during February, 2023.The work has been implemented by Beat Officer (Forester) of Silachari Beat under Karbook Forest Sub-Division, Jatanbari with the help of GRS and other Block personnels of Silachari RD Block. Regular monitoring and visit have been done since commencement of the check dam until its completion. Plants like Bamboo, Broom grass etc. are planted at the Check dam site and the bund has been turfed with grass.

Impact: The earthen check dam has been constructed at Silaguha JFMC of Silachari VC under Silachari RD Block. CAMPA, is one of the flagship schemes of GOI, which has given opportunity to MGNREGA workers to get wages and up gradation of their lifestyle. Accordingly, the above said work has been done through this scheme and implemented by Forest Department (Karbook Forest Sub Division, Jatanbari) under Gomati District. Total 1665 Nos. mandays generated for completing the said work and 45 nos of households are directly benefitted, it is expected that at least 105 number of tribal population will get water from the said check dam during summer season and fulfill daily needs. It is a community use base check dam which will directly benefit the villagers. The JFMC people will also earn livelihood through pisciculture in the check dam. Fingerlings will be released during rainy season and by selling fishes, the villagers can earn which will enhance their livelihood .

Check Dam at Silaguha JFMC under Silachari VC Forest Sub-Division, Jatanbari-2022-23)

B. AFFORESTATION:

1. Compensatory Afforestation (AR Miscellaneous) under CAMPA-CA: A success story under Manu Forest Sub Division, LTV

Introduction

The area of CA land was selected as the area was about to get encroached by the local people in the name of patta. After several discussions with the local people, the land was able to be freed from the encroachments and the Forest department had decided to raise CA plantation over that land. The primary aim of elevating the CA land is to offer income opportunities to the local JFMC community through various plantation and maintenance tasks. Additionally, it aims to generate revenue through the cultivation of fruit crops by planting tree species requested by them. Moreover, it seeks to ensure a sustainable supply of firewood from the plantation in the future.

Details of the plantation: Area, location, scheme, Expenditure etc

Name of District	:	Dhalai, Tripura
Name of Forest Sub Division of Commercial Bamboo plantation Manu	:	Forest Sub Division, Dhalai District
Name of Range	:	Chailengta

Name of Beat	:	Lalcherra
Name of JFMC	:	BLK Para
Year of plantation	:	2023-24
Name of Scheme	:	CAMPA-CA
Land details	:	CS plot No-50, 230, Khatian No- 44/1, 44/11 Mouja-MCRF
Area in Ha	:	8.0
GPS reading	:	N 23056'58"; E 9203'6"
Expenditure	:	Rs. 1.75,792/-

Implementation of the Project

The project was implemented by Chailengta Forest Range under Manu Forest Sub Division, LTV during 2022-23 under CAMPA Non-CA scheme. The advance work of the plantation i.e. site cleaning, stacking, pit digging work etc were done during February- March, 2023.

The planting work was started during June 1st Week, 2023 and was completed by 30th June, 2023. The planting was done with 3m x 3m spacing i.e. 1100 nos seedlings per Ha and around 8900 nos seedlings were planted over 8 ha area. The main species which were planted include Agar, Kathal, Mahogony, Acacia, Youngchak, Jalpui, Arjun, Bahera, Chalta etc. The seedlings height were about 3 ft. for protection of the plantation, 700 meter barbed wire fencing along with RCC pillar have installed around the plantation. During dry period of the year, watering was also done in each seedling through water vehicle. Total 825 nos mandays were generated for raising the said AR miscellaneous plantation under CAMPA-CA.

Present status of the plantation

Recently the 1st weeding work along with cacancy filling work has done in the said CA AR misc plantation. the plantation was in good condition and most of the seedlings have attaining good growth and the stock is around 90%. The Forest staff along with local JFMC peoples are regularly monitoring the plantation and with active co-operation of local peoples and regular monitoring by the forest staffs, it is expected that in near future the said AR Miscellaneous plantation under CAMPA CA may be benefitted through -

a. Providing food security to the local JFMC peoples.
b. Providing income generation to the local peoples.
c. By increasing the bio diversity of the locality.
d. By providing habitat and food for wild animals and birds.
e. By increasing the forest cover of the area.

AR Miscellaneous plantation raised during 2023-24 under CAMPA-CA at Lalcherra Beat

2. Commercial Bamboo plantation under CAMPA – A success story under Manu Forest Sub Division

Endowed with rich and diverse resources of Bamboo with traditional usage, Tripura is home to 21 species of Bamboo out of 130 species available in India. Bamboo handicrafts of Tripura is among the best in the country. The

60% of the requirement of entire country for bamboo sticks for Agarbatti making is met from the state. Tripura Bamboo handicrafts are considered to be among the best in the country for their exquisite designs, wide range of products and artistic appeal. This industry has a great export potential as well. Not only that, industrial products like bamboo tiles, laminated products, ply boards, corrugated sheets etc are being produced and used as building material. For this purpose, Tripura Forest Department had introduced the commercial bamboo plantation in the state during 2021-22 to promote bamboo as commercial product and serve as a source of livelihood generation of rural people in rural areas.

Plantation: Area, Location, Scheme, Range etc

Name of Forest Sub Division of Commercial Bamboo plantation	:	Manu Forest Sub Division, Dhalai District
Name of Range	:	Chailengta
Name of Beat	:	Dalucherra
Name of JFMC	:	Apan Bali JFMC
Year of plantation	:	2021-22
Name of Scheme	:	CAMPA-CA
Land details	:	CS plot No-100, 110, Khatian No- 44/6, Mouja-MCRF
Area in Ha	:	27.156
GPS reading	:	N 23057'11.87" ; E 92004'14.13"

i. Participatory approach of JFMC people in selection of the plot for plantation

Before selection of the said plot for plantation, the area was degraded and barren. Few local people and from outside of the area were trying to encroach the land through illicit felling of trees, clearing of jungles and by raising supari plantation etc. But the JFMC people were active and every time they prevented the encroachment. The JFMC people and the Beat officer, Dolucherra beat conducted meetings and had decided to raise Bamboo plantation in the whole area. During the year, 2020-21, the proposal was sent for raising CA plantation during 2021-22 under CAMPA at the said plot under Dolucherra Beat of Chailengta Range. The proposal was approved during 2021-22 for raising commercial Bamboo plantation under CAMPA.

ii. Different time bound activities in connection with success of the Commercial Bamboo plantation

For good success and stock of any good plantation, different forestry activities need to done in due time. The advance work like site selection, jungle cleaning, stacking, pit digging etc were done well in advance during January, 2021 to February, 2021. The pits were dug at a spacing of 3m x 3m and total 29,872 no pits were dug @ 1100 pits per ha. Plantation was started during May-June, 2021 and tall polybag seedlings of Mritinga and Rupai Bamboo of 3ft height were planted. 1st weeding and 2nd weeding were done during 1st year creation and earth mounding was also done. To protect the plantation from browsing and from encroachment, the planting area was fenced through barbed wire along with RCC post. For monitoring and watch and ward of the plantation, one watcher was engaged for the whole year.

Commercial Bamboo plantation- 27.156 Ha- CAMAPA- Dolucherra Beat

a. Benefits earned through creation of plantation in 1st year

During advance work of the commercial Bamboo plantation, total 1182 nos of man-days were generated and during creation of the said plantation total 2705 nos of man-days were generated. In overall, 3887 nos of man-days were generated in the plantation and the full benefits went to the local JFMC people through which the said plantation has achieved success. The plantation will be maintained up to 5th year and up to 5th year the JFMC people will be benefited through man-days generation.

b. Present status of the Commercial Bamboo plantation

At present the Bamboo seedlings have attained almost 13-14 ft height and almost 95% stock is there. During 2022-23 and 2023-24 the 2nd year maintenance and 3rd year maintenance like 1st weeding, vacancy filling, earth mounding etc have been done. Maintenance of fencing have also been done.

Commercial Bamboo plantation- 27.156 Ha- CAMPA- Dolucherra Beat

1. Cost and Profit analysis of the Commercial Bamboo plantation

i. Material and labour

a. Investment in 1st year – Rs. 15,60,560/-

b. Investment up to 5th year – Rs. 17,40,000/-

ii. Income and profit

- Number of trees that can be harvested are- 26,884 nos (It is assumed that there will be 10% mortality rate)
- Per clump, the no of culms will be – 5 no
- 27.156 Ha of land will produce culms – 1,34,420 nos (Approx)
- The average sale price of Mritinga Bamboo is Rs. 45 (may vary depending on the quality and locality)
- So, the total price of 1,34,420 culms will be Rs. 60,48,900/-
- Profit will be from the investment up to the 5th year : (Rs. 60,48,900 – Rs. 17,40,000) = Rs. 43,08,900/-

The investment cost is from the department and the JFMC members can earn Rs. 60,48,900 on the 5th year and in subsequent years the income will be more as the no of culms will be increased. Also the bamboo can be utilized commercially through market linkage system with private agencies. Bamboo products unit also can be set up in the JFMC area through which JFMC people can produce different bamboo-based products and can sell to the private agencies.

So far, the commercial Bamboo plantation of 27.156 Ha at Dolucherra Beat is in very good condition and its sustainability will depend on the involvement of local JFMC people in protection and to take care of the plantation. Financial and other supports will be provided for maintenance of the plantation by the department, but for commercial viability and to gain more income from the plantation, the JFMC people and all forest dependent villagers of the locality need to come forward to maintain and protect the plantation in future.

Commercial Bamboo Plantation

Commercial Bamboo plantation- 27.156 Ha- CAMAPA- Dolucherra Beat.

C. PROTECTION OF FORESTS AND FOREST LAND THROUGH FENCING.

1. Fencing Vulnerable Forests under Manu Forest Division.

The Biotic pressure on the forest resources is increasing at an alarming rate and as a result the forest areas and the wildlife habitats are shrinking day by day and leading to some of the floral and faunal species becoming endangered. Encroachment over forest land is very common and is leading to destruction of forests.

Keeping in view of the above, measuring 9.185 km length of vulnerable area was fenced at different areas since 2019-20 to 2022-23 under this Forest Sub-Division for reducing biotic pressure as well as putting a check on the unauthorized encroachers of on forest land. Now, the fenced areas of forest land remain free from biotic pressure. Some photographs of fencing activities are shown below:

Fencing

Fencing

D. ROAD SIDE PLANTATION UNDER CAMPA

Objective:

1. Roadside plantation at Madhyya Chailengta Beat under Manu Sub- Division.

The main objective behind the raising of the road side plantation are as follows-

1. The main objective of the Road side plantation is to reduce the impacts of air pollution and dust as tree are known to be natural sink for air pollutants.
2. To provide much needed shade on glaring hot roads during summer.
3. To reduce the impact of ever-increasing noise pollution caused due to increase in number of vehicles.
4. To arrest the soil erosion at the embankment slopes.
5. To provide aesthetic value to the local area.
6. To provide habitat and food for wild animals and birds.
7. Moderating the effect of wind and incoming radiation.

Details of the plantation: Scheme, Area, Expenditure etc:

Name of District	:	Dhalai, Tripura
Name of Forest Sub Division of	:	Manu Forest Sub Division, Dhalai District

Name of Range	:	Chailengta
Name of Beat	:	Madhyya Chailengta Beat
Name of the road	:	Madhyya Chailengta Brick field area to Chailengta Hi-tech nursery
Year of plantation	:	2022-23
Name of Scheme	:	CAMPA-Non CA
Area in Km	:	2.0 Km
GPS reading	:	N 23055'29" ; E 920 0'28"
Expenditure incurred	:	Rs. 2,93,000/-
Name of IO	:	Sri Apu Das, Fr, BO, Madhyya Chailengta Beat

Implementation of the Project

The project was implemented by Chailengta Forest Range under Manu Forest Sub Division, LTV during 2022-23 under CAMPA-Non-CA scheme. The site was selected after detail discussion with the local people as per necessity. The plantation was started during July, 2022 and was completed within 3rd week of July, 2022. The plantation was done on both side of the road. The spacing given for plantation was 5m x 5m i.e. 200 no of seedlings per km was raised and total 400 nos of plants were planted on both side of the road. The main species which were planted were Agar, Nageswar, Krishnachura, Champa, Kathal, Jalpui etc. The seedlings height were about 5-6 ft. For protection of the seedlings, bamboo made plant guard (Jungra) were installed around each of the seedlings. During dry period of the year, watering was also done in each seedling through water vehicle. Total 240 nos of man-days were generated for raising the said road side plantation.

Present status of the plantation

Presently the plantation is in good condition and most of the seedlings have attained about 8-9 ft height and stock is around 95%. Vacancy filling has also been done and time to time watering is also being done in dry period. The Forest staffs along with local people are regularly monitoring the plantation and with active co-operation of local people and regular monitoring by the forest staffs, it is expected that in near future the road side plantation will fulfil all its objectives.

E. CONSTRUCTION OF WILDLIFE RESCUE CENTRES

1. Construction of Rescue Centre under Sepahijala Wildlife Sanctuary

Sl. No	Name of Work	Year of construction	Amount	Scheme	Scheme Brief writeup
1	Construction of Rescue Centre	2021-22	9,24,500.00	CAMPA	The rescue centre was constructed during the year 2021 -22 under CAMPA. At present the rescue centre is utilized by zoo hospital of Sepahijala Zoological Park for keeping/ housing of rescue animals as there was no sufficient space in zoo hospital. In future it will be helpful in housing the rescued animals. Further, during 2023-24 a vehicle for rescue of animal and other equipments including a tranquilizing gun and medicines for first aid will be purchased.

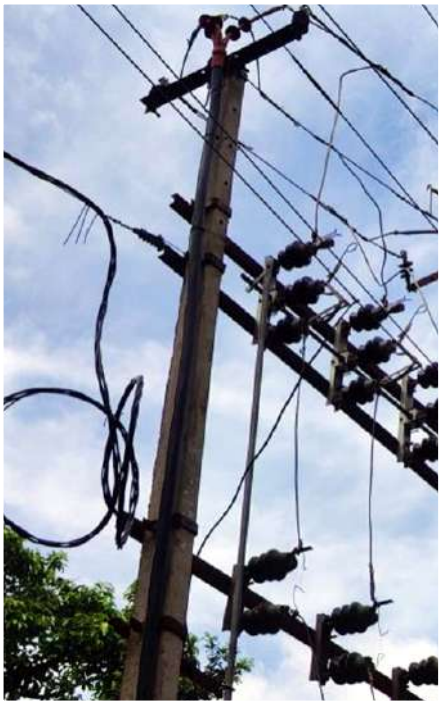





F. WILDLIFE HABITAT IMPROVEMENT

1. Underground UG cable at Sepahijala Wildlife Sanctuary

Sl. No	Name of Work	Year of construction	Amount	Scheme	Scheme Brief write up
1	Lying underground UG Cable under Sepahijala Wildlife Sanctuary.	Fund placed to DGM, TSECL during 2021-22 and work started in 2022-23 and work is almost completed only connection in various locations is going on.	1,72,27,768.00	CAMPA	Earlier there was over ground high voltage electric line due to which the wild animals used to get electrocuted resulting in death of wild animals. But after laying of underground UG cabling now there will be no such incidents and this is a major achievement for conservation of wild animals of Sepahijala Wildlife Sanctuary.



Before

After

Before

During construction

G. DEALING WITH HUMAN-ANIMAL CONFLICT ISSUES THROUGH CAMPA FUNDING.

1. Arrangement of ex-gratia and Compensation for crop damage.

Human population of the State is increasing day by day. Due to human dependency on forest, for shelter, food and livelihood, human wildlife conflict often occurs in the State. The conflict mainly occurs with elephant, bison and wild bear. Elephant population is mainly found in Teliamura and Amarpur sub-divisions and Bison population is found in the South district of Tripura.

The Habitat of wild elephants is fragmented and honeycombed with human habitation and crop fields. The elephant corridors are also highly affected due to different developmental activities viz. Construction of black top roads, railway tracks, laying of gas pipelines, NH-08, distribution of Patta Lands among the Forest dwellers. This is the main reason behind human elephant conflict in the State.

A lot of initiatives have been taken for Human Elephant Conflict mitigation and also for safeguarding the Wild Elephants from poaching, electrocution and other man-made hazards. The CAMPA funding is very crucial in meeting the challenges of human-animal conflict.

Preventive measures taken to mitigate human wildlife conflict:

1. Organizing Sensitization Program.
2. Deployment of dedicated ADS Team.
3. Distribution and arrangement of Combat Kits.
4. Engagement of Elephant Watchers at the local level.
5. Developing Information Network.
6. Installation of Early alarming system.

Curative measures taken to mitigate the effect of human wildlife conflict: Ex-gratia:

On receipt of any information about any depredation caused by wild elephants, the local Beat Officers accompanied with a revenue official are immediately sent to the affected families for assessing the actual quantum of depredation taken place. Thereafter, initiatives taken for sending necessary proposal to the Government in the Forest Department for arrangement of early relief to the victim's family in the form of ex-gratia after assessment of losses.

Details of ex-gratia assistance provided to affected families for death or injury to human beings, loss of cattle, damage to crops/live stocks, hut, building etc caused by the attack of wild animals is provided below.

Year	Type of damage caused by wild animals	District	Sub -Division / WLS	Name of the Wildlife	No. of Cases	Ex-gratia assistance provided (Amount in Rs.)	Quantum of damage
2018-19	Crop damage	Khowai	SDFO, Teliamura	Wild elephant	34	2,60,776/-	14.941 acres
	Human death	Sepahijala	Pilkana of Sepahijala Zoological Park SDFO, Teliamura	Wild elephant	1	5,00,000/-	1 Person
2019-20	Crop damage	Khowai	SDFO, Karbook	Wild elephant	19	1,52,460/-	7.524 acre
		Gomati		Wild elephant	9	75,000/-	5.009 acre
2020-21	Crop damage	Khowai	SDFO, Teliamura	Wild elephant	14	1,03,732/-	5.031 acre
	Human death	Khowai	SDFO, Teliamura	Wild elephant	3	15,00,000/-	3 Person
	Human injury	Sepahijala	Pilkana of Sepahijala WLS	Wild elephant	1	3,04,246/-	1 Person
		Khowai	SDFO, Teliamura	Wild elephant	1	25,000/-	1 Person

Year	Type of damage caused by wild animals	District	Sub -Division / WLS	Name of the Wildlife	No. of Cases	Ex-gratia assistance provided (Amount in Rs.)	Quantum of damage
2021-22	Crop damage	Khowai	SDFO, Teliamura	Wild elephant	51	4,13,541/-	19.926 acre
	Hut damage	Khowai	SDFO, Teliamura	Wild elephant	14	104,500/-	14 nos.
2022-23	Crop damage	Khowai	SDFO, Teliamura	Wild elephant	12	73,000/-	2.082 acre
		Gomati	SDFO, Amarpur	Wild elephant	39	1,90,520	8.5 acre
	Hut damage	Khowai	SDFO, Teliamura	Wild elephant	19	1,58,000/-	19 nos.
	Human death	Khowai	SDFO, Teliamura	Wild elephant	2	10,00,000/-	2 Person
		South	Trishna WLS	Indian Bison	1	5,00,000/-	1 Person
	Human injury	Dhalai	Gumti WLS	Wild Bear	1	2,00,000/-	1 Person
		Sepahijala	SDFO, Sonamura	Indian Bison	2	50,000/-	2 Person
2023-24	Human death	Khowai	SDFO, Teliamura	Wild elephant	1	5,00,000/-	1 Person

হাতির আক্রমণে নিহত ব্যক্তির পরিবারকে আর্থিক সাহায্য

সত্যজাগরণ প্রতিনিধি, তেলিয়ামুড়া, **১১ জুলাই** ।। মুঙ্গিয়াকামি থানা এলাকার দক্ষিণ মহারানীপুরের মালাকার বস্তি এলাকাতে হাতির আক্রমণে নিহত সুজিত বর্মনের পরিবারের হাতে রাজ্য সরকারের পক্ষ থেকে প্রাথমিকভাবে সাহায্য রাশি তুলে দেওয়া হয়েছে। আজ বিকেলে রাজ্য বিধানসভার মুখ্য সচেতক তথা তেলিয়ামুড়ার বিধায়কা কল্যাণী রায় এবং তেলিয়ামুড়া মহকুমা বন আধিকারিক সাবির কুমার দাস তেলিয়ামুড়া পুরপরিষদের এলাকার শান্তিনগরস্থিত বাড়িতে যান। এবং পরিবার - পরিজনদের প্রতি সমবেদনা জ্ঞানান। বিধায়িকা তথা মুখ্য সচেতক শ্রীমতি রায় হাতির আক্রমণে নিহত সুজিত বর্মনের স্ত্রীর হাতে রাজ্য সরকারের পক্ষ থেকে প্রাথমিকভাবে সাহায্য রাশি হিসেবে ৫০০০০ টাকার চেক তুলে দেন। এবং আগামী দিনে বাকি আর্থিক সাহায্য আগামী কিছুদিনের মধ্যেই যাতে পেতে পারে, সে ব্যাপারে পূর্ণ আশ্বাস দেন।

এখানে প্রসঙ্গত উল্লেখ্য, গত ৯ জুলাই রবিবার বিকেলে মুঙ্গিয়াকামী থানাধীন উত্তর মহারানীপুর এলাকা থেকে তেলিয়ামুড়ায় বাড়ি ফেরার পথে দক্ষিণ মহারানীপুরের মালাকার বস্তিতে পৌঁছামাত্রই হাতির পালের সামনে পড়ে যায় সুজিত এবং তার অপর সঙ্গী। সঙ্গী কোনক্রমে পালিয়ে বাঁচলেও সুজিত নিজেকে রক্ষা করতে পারেনি। হাতির আক্রমণে গুরুতর আহত অবস্থায় স্থানীয় দমকল কর্মীরা তেলিয়ামুড়া মহকুমা হাসপাতালে নিয়ে যায়, কর্তব্যরত চিকিৎসক সুজিত বর্মনকে মৃত বলে ঘোষণা করে। এই ঘটনায় তেলিয়ামুড়া এলাকায় শোকের ছায়া নেমে আসে। আজকে রাজ্য সরকারের পক্ষ থেকে সাহায্য রাশির প্রাথমিক কিস্তি

— দুইয়ের পাতায় দেখুন

H. MOTOR BOAT FOR THE PURPOSE OF PROTECTION OF THE MIGRATORY BIRDS AT GUMTI WL SANCTUARY

The motor boat stationed at Dumbur Reservoirs is a valuable asset for the Gumti wild life sanctuary to protect and preserve the habitats of migratory birds. The boat serves as an essential tool for patrolling and monitoring the wildlife in the Gumti Sanctuary.

Migratory birds play a crucial role in the ecosystem as they travel long distances during their annual migration. These birds often face numerous challenges, including habitat loss and poaching. By utilizing the motor boat, it can effectively patrol the water bodies around Dumbur Reservoirs to ensure the safety and well-being of these migratory species.

The motor boat enables field staff officials to swiftly traverse the expansive waterways, allowing them to survey the area and detect any potential threats to bird populations. Moreover, the boat facilitates the monitoring of nesting sites, tracking the movement patterns of the birds, and observing their behavior from a safe distance.

Additionally, the motor boat assists in enforcing regulations and safeguarding the sanctity of the Dumbur reservoirs. It enables authorities to intercept any illegal activities such as poaching or disturbance of the birds' habitats. The boat's ability to cover large areas of the reservoirs provides a substantial deterrent against any unlawful actions.

Furthermore, the boat ensures the efficient management of the Dumbur reservoir by facilitating regular patrols and safeguarding the ecological balance. The presence of officials on the boat acts as a constant deterrent against encroachment, allowing the migratory birds to rest and forage undisturbed in their critical habitat.

In conclusion, the motor boat stationed at Dumbur Reservoir plays a vital role in protecting the migratory birds at Gomati Wildlife Sanctuary. Through effective patrolling and monitoring, it serves as a powerful tool in preserving the habitats of these bird species. The use of the motor boat allows for timely intervention in case of any threats, ensuring the welfare and conservation of migratory birds for future generations to admire and enjoy.

Some glimpses of the timber depot is depicted below:-

Entrance Gate

Timber Shed with GCI sheet roofing

Chain link mesh fencing

Office of the Timbe Depot

I. SUCCESS STORY ON CONSTRUCTION OF PERMANENT TIMBER DEPOT AT JATANBARI UNDER CAMPA DURING THE FINANCIAL YEAR, 2022-23

An amount of Rs. 20.00 lakhs was placed vide allotment order No.F.6-419/State CAMPA/ Treasury/22-23/5509-565 date- 26/08/2022 of PCCF & HoFF, Tripura, Agartala.

Following are the component wise break up activity taken up with the said fund:-

The area over 1.05 ha was an encroachment land which was removed from illegal encroachment and construction of permanent timber depot was possible only due to fund allocation from CAMPA and the area was chain link fenced. Recently, departmentally operation was done at Jatanbari to Tirthamukh road and all timber were accommodated up to 400 cum round timber and also seized sawn timber and helped in periodical e-auction up to 400 plus cum timber and this helped timber from deterioration.

S.No.	Activity	Amount
1	Construction of main entrence gate at Jatanbari Timber Depot	₹ 2,34,700.00
2	Construction of Timber Shed with GCI sheet roofing at Jatanbari Timber Depot	₹ 8,60,800.00
3	Construction of 400 mtr chain link mesh fencing at Jatanbari Timber Depot	₹ 4,95,680.00
4	Construction of 85.77 mtr brick soling with pucca drain at Jatanbari Timber Depot	₹3,73,800.00
	Total	**₹ 19,64,980.00**

Some glimpses of the timber depot is depicted below:-

Entrance Gate

Timber Shed with GCI sheet roofing

Chain link mesh fencing

Office of the Timbe Depot.

Timber shed

J. BEST PRACTICES IN IT AND GIS

1. FCA & CAMPA MIS Web Application

&

CAMPA App

https://fcamis.tripura.gov.in/

https://play.google.com/store/apps/details?id=com.campa.tripura

Tripura Forest Department has developed an in-house FCA & CAMPA MIS web Application and CAMPA APP for the management of FCA projects (Diversion of Forest Land and their status) and monitoring of CAMPA activities (CA plantation and Non-CA plantation and Assets). This will be used in the Forest Department for the collection of various information from the field.

Integrated high thematic layers like Bhuvan Administrative Layers, Bhuvan Satellite Imagery (2016 data), Bhuvan Hydrology Layer, Bhuvan Terrain Layer, Bing, Google, Esri using web GIS for better visualization, interpretation and further decision making . Once data is uploaded, all reports and different types of Maps are automatically generated.

This Web Application is Security Audited & hosted in Tripura State Data Center.

CAMPA App is live on The Google Play Store.

How was it developed :

Developed in-house by the Tripura Forest Department, Funded by Tripura CAMPA.

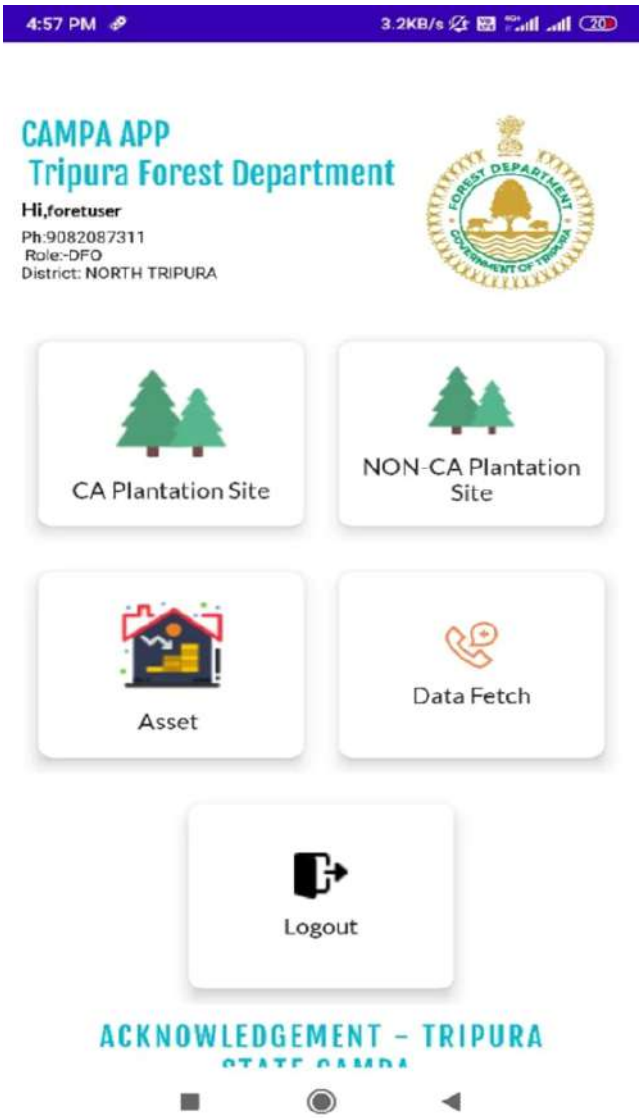
Situation before the Initiative

Before our initiative, as the Tripura Forest Department, we grappled with a significant challenge. We have more than 400 diversion projects under our care, and each of these projects have more than 15 compliance conditions to meet. Ensuring that we followed all these conditions regularly was incredibly tough, and keeping track of them was a complex and time-consuming task. We had to rely on manual methods, which often resulted in errors and made it hard to guarantee full compliance. To address this issue, we developed a web application specifically tailored to our needs. This innovative tool has simplified the process, making it much easier for us to track and manage these conditions effectively.

1 ha diverted land area forest department needs to plant trees in 2 ha (double area) degraded land approved by MOEFCC.

Planting trees and taking care of the land for 10 years after using it for something else can be hard. There are many things to do, like cleaning up the area, digging holes, planting trees, and looking after them for a long time. It's also tricky to keep pictures and information about what we did.

To solve this problem, we made the CAMPA App for our field officials. This app doesn't need the internet, so they



can use it even in places where there is no internet. After they are done working in remote areas, they can come back to the office and put all the information in the app when there is internet. This app makes it much easier to take care of the land and trees.

FCA & CAMPA MIS

FCA & CAMPA MIS has 4 modules :

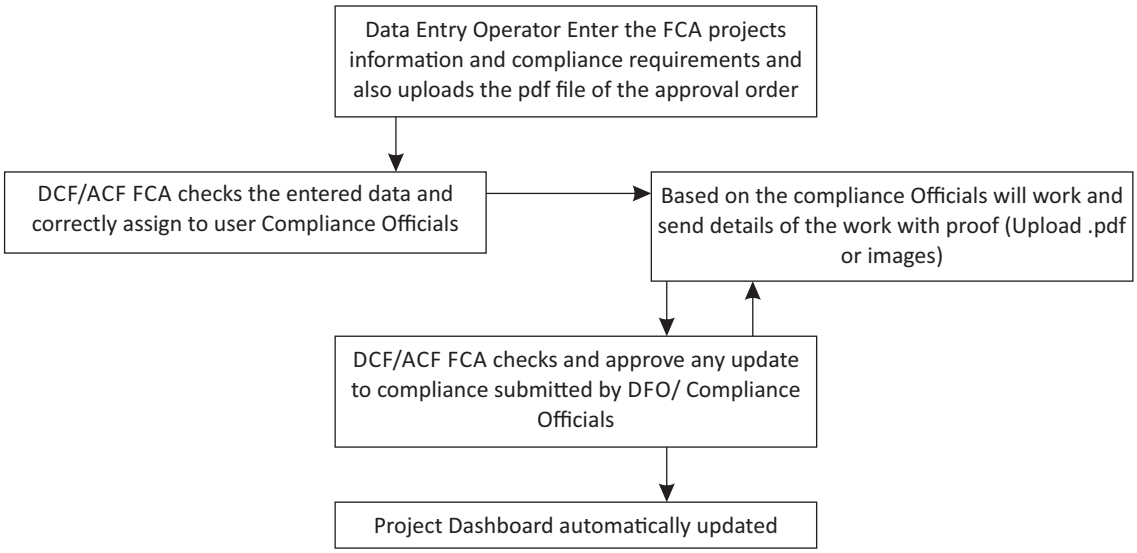
1. Compliance condition module
2. CA land management module
3. NON-CA land management module
4. Asset Management module

FCA & CAMPA–MIS has seven types of user:

1. Super ADMIN
2. FHQ ADMIN
3. CAMPA ADMIN
4. CF /DCF wildlife
5. DFO
6. FCA data entry operator
7. CAMPA data entry operator

FCA Compliance condition module

Compliance condition Work Flow

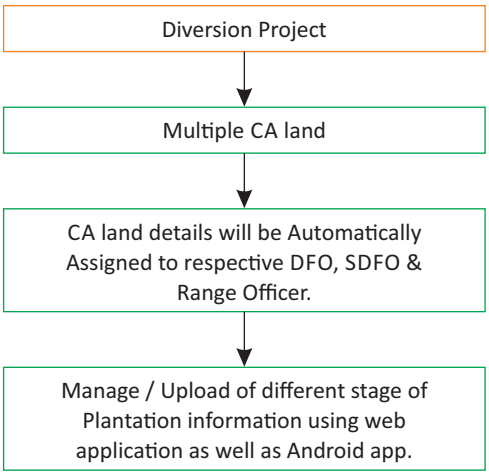


CA land Management Module:

One diversion project has multiple CA land. According to law CA land is monitored and maintained for 10 years. Its has different stages of plantation.

- Advance work
- Plantation
- Fencing
- Maintenance for 10 years

Recording different stages of data is very difficult in normal manner. So we create CA land information module under FCA & CAMPA - MIS project



GIS Layers of CA module

Bhuwan administrative layer

Google Map View KML file of CA Land

Esri Map View

Non-CA land Management Module:

Other than CA plantation, CAMPA also does numerous plantation works every year and maintains them for a period 3 year. It has different stages of plantation.

- Advance work
- Plantation
- Fencing
- Maintenance for 5 years

Work Flow

DFO can enter the NON-CA land details (KML file, Map PDF)

↓

NON-CA land details will be Automatically Assigned to respective SDFO and Range Officer.

↓

SDFO and Range Officer Can Manage/ Upload Different stage of Plantation information (Images, plantation details) using web application as well as Android app.

GIS Layers of NON-CA

Module

Google Map View of AR Bamboo plantation 2020-21

2021-22 Fruit Bearing plantation at Range proper of Rangamura WL range under Trishna WLs

Esri Map View

Above – Screen shot of Non-CA Module Web Map automatically generated.

Asset Management Module

Other than plantation work, CAMPA has Assets creation work too:

- Chain link fencing
- Building construction
- Check Dem creation, etc.

Recording different stages of data is very difficult in normal manner. So, we create Asset information module under FCA & CAMPA–MIS.

Work Flow

DFO's can enter the Asset details (KML file, Map PDF)

↓

Asset Details will be Automatically assigned to SDFO and Range officer. (They can access and upload information using Android App)

↓

Manage / Upload Different stage of Plantation information (Images, plantation details) using web application as well as Android app.

2. TRIPURA FOREST DEPARTMENT FOREST INCIDENT REPORTING MODULE (FIRM APP)

Achievement: FRIM App received the SKOCH Award Silver in 2023.

Website URL: https://forest.tripura.gov.in/

Google Play Store URL: https://play.google.com/store/apps/details?id=marveldental.in.tfdapp

Introduction of FIRM App

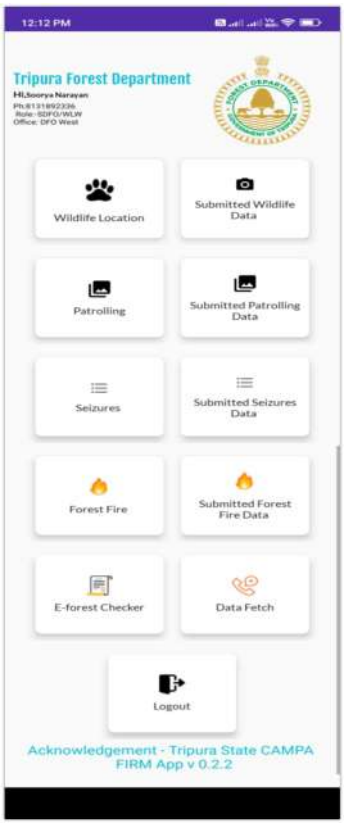
It is an Android Mobile app used by Sub-Divisional Forest Officers, Range Officers, Beat Officers etc. for reporting wildlife sightings, seizures, forest fires and recording patrolling activity.

Integrated high thematic layers like Bhuvan Administrative Layers, Bhuvan Satellite Imagery (2016 data), Bhuvan Hydrology Layer, Bhuvan Terrain Layer, Bing, Google, Esri using web GIS for better visualization, interpretation and further decision making. Once data is uploaded using FIRM app, all reports and different types of Maps are automatically generated.

How was it developed :

Developed in-house by the Tripura Forest Department.

Situation before the Initiative



Tripura Forest Department is entrusted with task of managing of Forest & Wildlife Resources of the state of Tripura. The recorded forest area is 6292.681 sq. Km. This is 59.98% of the total geographical area of the state. Incidents happened while paraphrase. Earlier Forest incidents related to wildlife, forest fire, seizure etc. were used to record manually. Forest incidents are mainly categorized as follows-

1. Wildlife Incident

1. Animal Rescue
2. Animal Death
3. Man animal conflict

2. Forest Fire

3. Seizure

1. Timber
2. Vehicle
3. Sand

4. Power saw, big saw, Axe, Daw, Generator, Sawmill, Sand lifting machine.
5. Arresting those people who were involved.

- There was no database to record above Forest incidents which results decision making very tough. Identification of vulnerable areas were not possible.
- GPS locations used to collect manually and submitted to GIS Lab of FHQ. GIS experts manually used to enter those locations and Maps were generated.

Forest Incident Reporting Module (FIRM) Android App

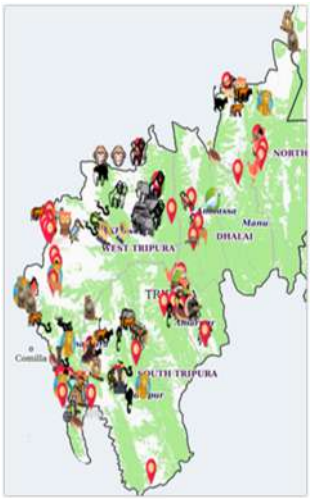
What are its/the uses ?

a. Spatial mapping of Wildlife in the State

It enables reporting of Wildlife Sightings with GPS location and facility to upload the photos. This provides invaluable information on location of different wild animals in parts of Tripura on a digital map. Thus, enabling the department to finalize wildlife based eco-tourism activities like setting up of safaris, interpretation centers and wildlife viewpoints, which can generate more livelihood to people of Tripura.

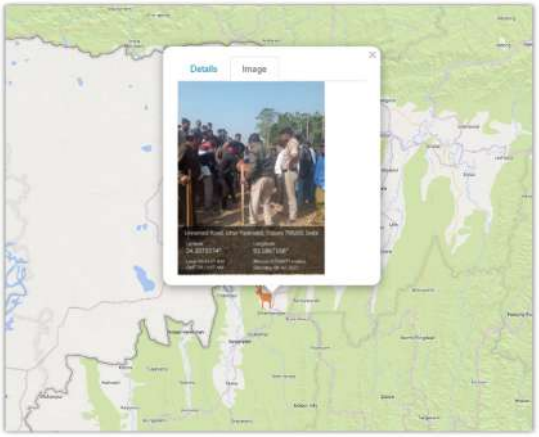
Bhuvan Hydrology Layer

Bhuvan Administrative Layer

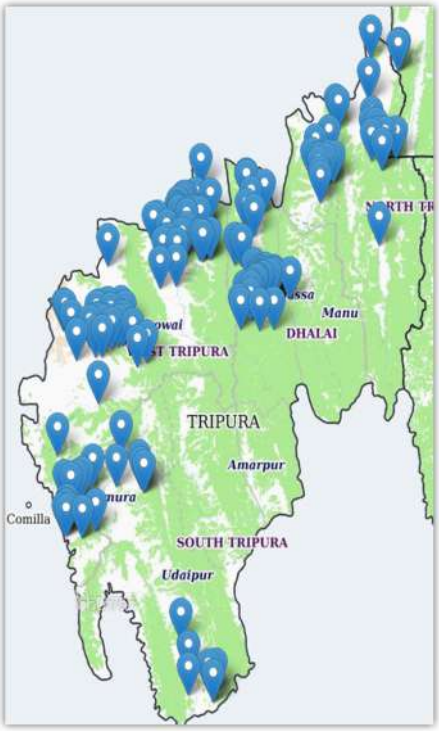


Bhuvan Terrain Layer

Above – Screen shot of Wildlife Sighting Web Map automatically generated using FIRM App.

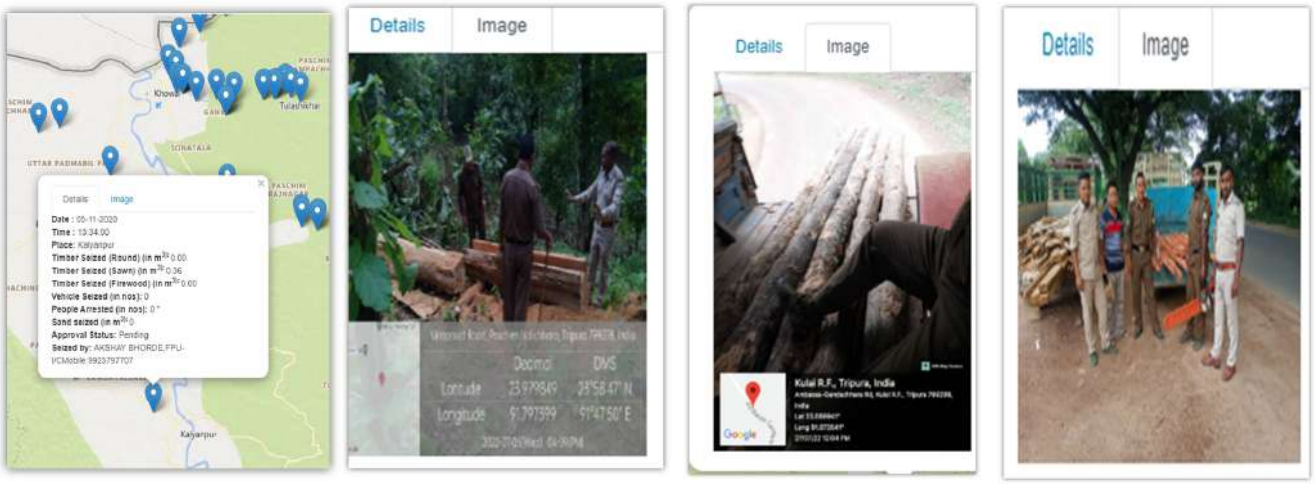


Map Showing Seizure location for the FY-20-21



Map Showing Seizure location for the FY-21-22

Map Showing Seizure location for the FY-22-23

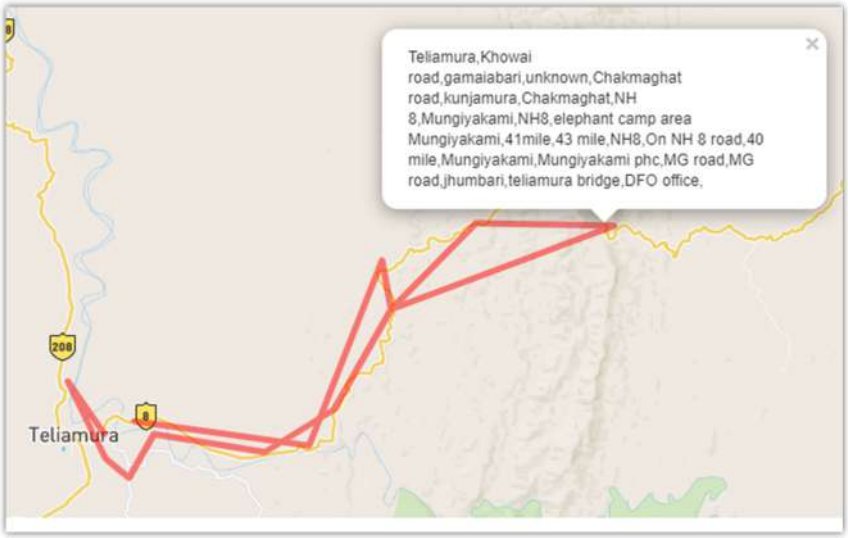


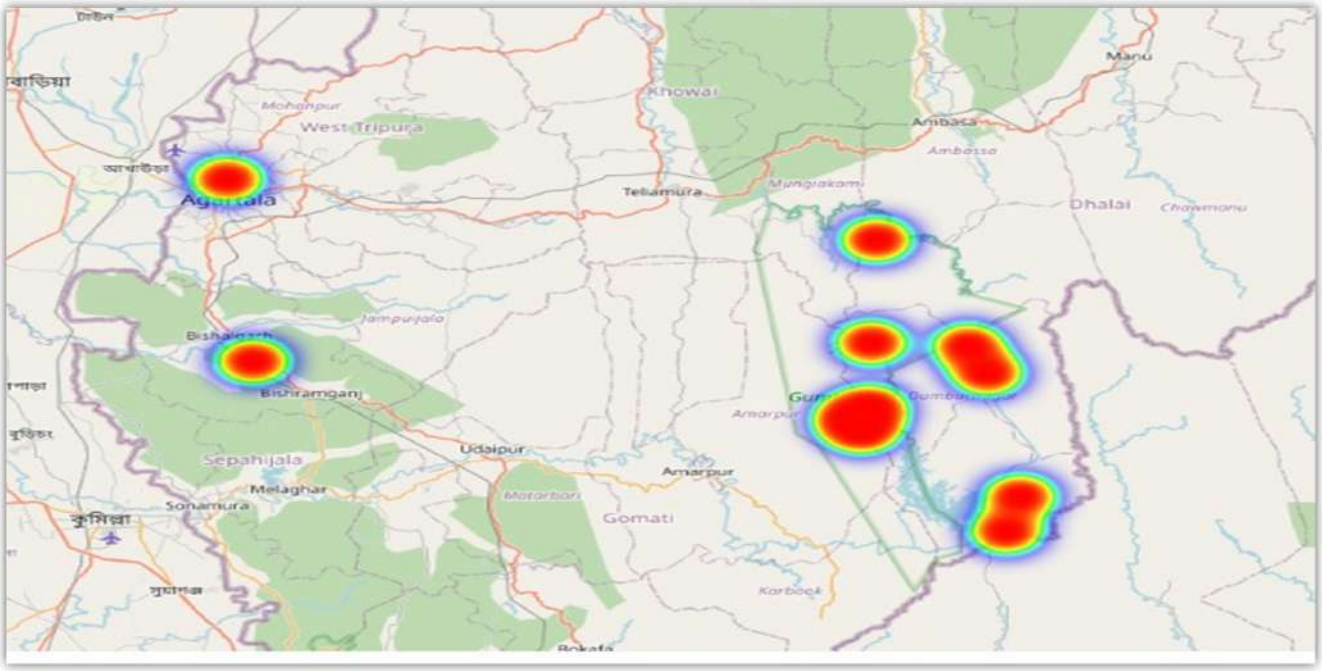
Above-View of detailed information visible of each seizure with the photos taken by field officials using the FIRM App.

What are its uses ?

c. GPS based recording of Patrolling

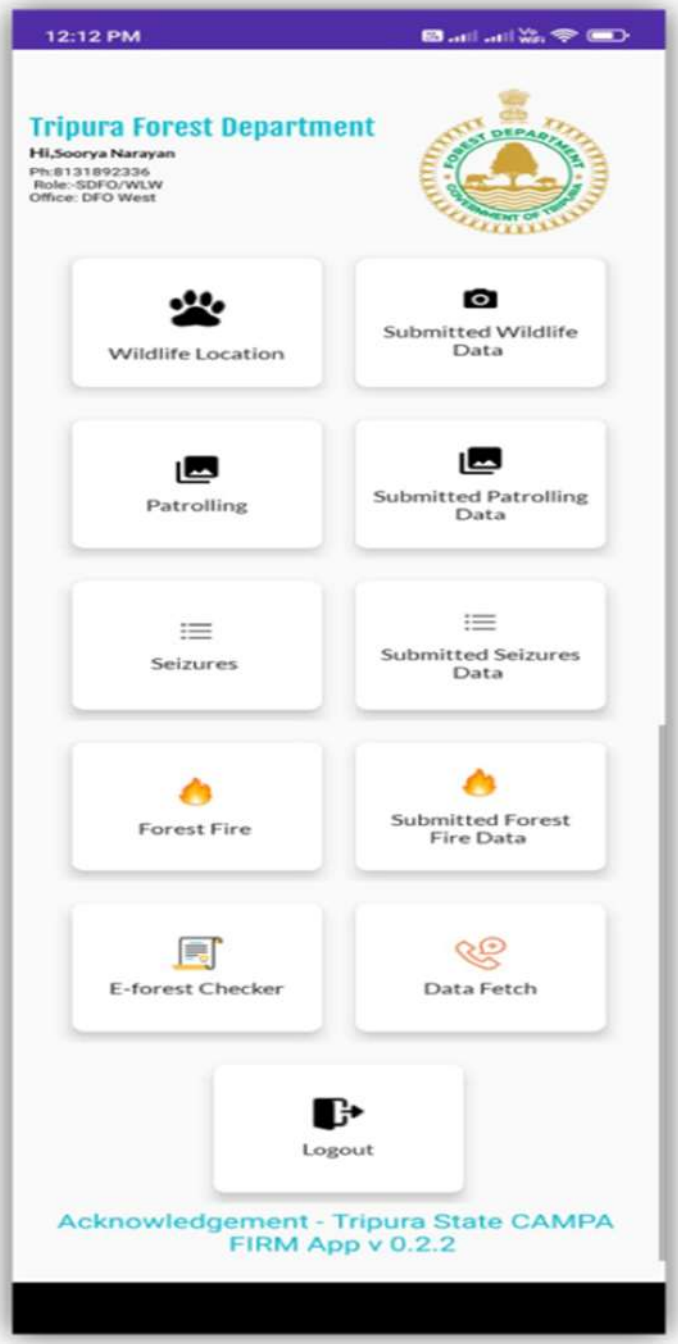
Enables the field staff to record the patrolling carried out by them. This enables the Forest Head Quarters to have crucial spatial information on patrolling carried out by different field units. The paths followed by patrolling teams can be seen by FHQ officers /DFOs, which is useful for different planning purposes.





Advantage of FIRM App

1. Different level of users can access those data.
2. Decision making is easy.
3. Integrated high thematic layers & auto map generation.
4. Year wise data can be generated easily.
5. App can be used Offline mode.
6. Real time data can be accessed with different types of search.
7. Exact location pinpointing.
8. Department finalized wildlife based eco-tourism activities.
9. Department declared many wildlife viewpoints.
10. Auto calculation of seized timber data.
11. Patrolling covered in all areas.
12. Identified vulnerable areas.



Conclusion

Tripura Forest Department has identified many wildlife viewpoints. Many vulnerable areas are identified and deployed more officials in this areas. Lots of work are automated, which is required less time and manpower. The field officials are regularly uploading data which helps to monitor day to day activities.

We are using Bhuvan Maps which is developed by ISRO and its free.

3. e-forest Licence Web Application

Tripura Forest Department e-Forest Licence web application

https://eforestlicence.tripura.gov.in/

https://play.google.com/store/apps/details?id=eforeslicence.tripura.gov.in.eforestlicencechackerapp

Introduction:

1. The e-Forest Licencing System is a web based and role based workflow application which has been developed for online submission and monitoring of the forest license submitted by the beneficiary.
2. It automates the entire system which includes new & renewal of licenses, editing/updating the details of licenses and displays status of the license at each stage of the workflow

Situation before the Initiative:

1. Before implementation of e-Forest Licensing System, the department needed/used to issue licences through manual processes where citizen need to visit the offices multiple time. In Department point of view, monitoring/tracking of these licenses were also difficult.
2. Further licence fee was being collected through GP in cash. Also, there was a chance of misappropriation.
3. There was no platform available to generate reports or to assess regarding issued or pending licences either in State wise or District wise or any other way i.e in a consolidated manner.
4. As a result, for monitoring and analysis authority, had to collect data manually from Districts and process which was very much time consuming and somewhat compromised on the degree of accuracy.
5. Lots of paper work was also required to be done for processing and record keeping purpose.

Salient Feature of this project:

- Online verification of existence and validity of the licence.
- Online Government Receipts Accounting System (eGRAS) has been integrated for Payment Gateway.
- SMS based notification to beneficiary in every stage of the workflow.
- Dashboard to showcase different types of reports.
- Android app for verification of e-forest licences by field officials.

Objectives of the Project:

- Timely delivery of forest licenses in efficient and accountable manner.
- To improve citizen focus and experience.
- To reduce administrative burden.
- To make the system transparent and accountable

Types of Licence provided through e-forest licence:

1. One time carrying licences.
2. Vehicle carrying license.
3. Forest Trade license.
4. Sawmill and other Wood Based Industries license i.e. Timber Shop, Furniture/Cabinet Shop etc.
5. NTFP –

1. Broom grass
2. Handicrafts
3. Firewood
4. Any other NTFP and also renew of these licenses with concern Sub-Divisional Forest Officer & District Forest Officer.

Beneficiaries of this Project:

1. The e-Forest Licensing System is mainly benefited for the citizens requiring different types of forest licence like

1. Carrying licence
2. Forest Trade Licence
3. Secondary and Primary Wood based licence etc. for establishing/continuing trades on sustainable use of forest produces.
4. Trades on forest produces are the prominent source of income for the citizen/forest dwellers of the State.

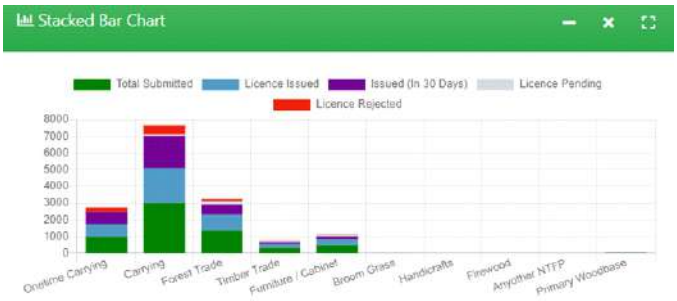
Situation after the Initiative:

1. The sole purpose of the project was to prepare an online licencing portal where citizen can apply for forest licenses 24 X 7 within their doorstep. They can apply in the portal after registering with their basic details.
2. Citizen need not to wonder DFO/SDFO/Range offices to check the status of their application rather all the associated stakeholders can access the up to date status of the application along with payment information.
3. The main job was to collect licence fees though online mode without any manual intervention to ensure transparency and accountability avoiding

fraudulences.

4. The portal is great beneficial for managerial/ monitoring point of view. Reports to issuing of forest licenses, pendency etc. can easily be generated for further action.

5. To reach wider range of citizen in online mode, the application has also been included in Common Service Centre (CSC) with minimum fee.



4. Sand Mining We Application (Under Development)

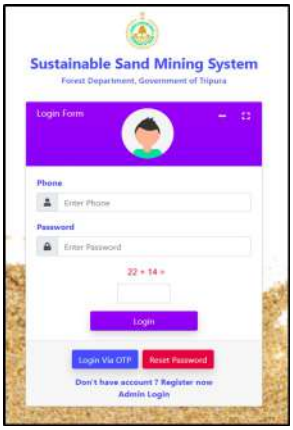
Sustainable Sand Mining System

User Manual

Getting Started

To get started with the Sustainable Sand Mining System, follow these steps:

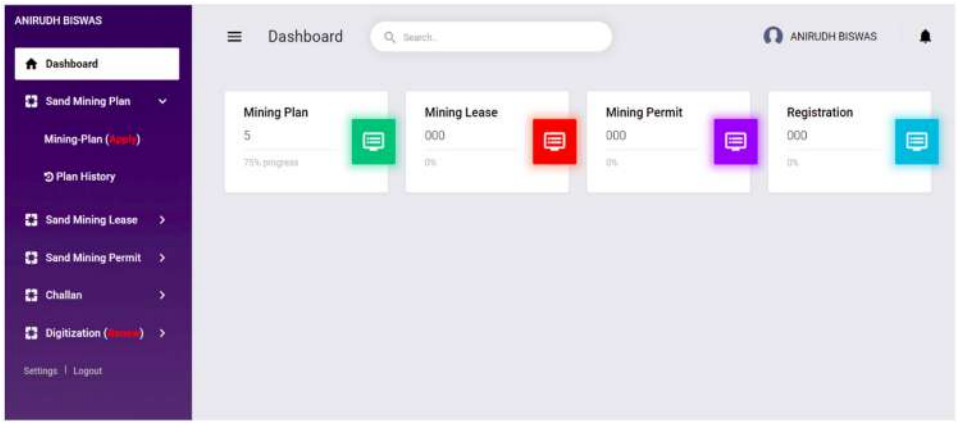
1. Register for the system using a valid mobile number.
2. Log in to the system using the phone number and password used during registration.
3. Once logged in, you will be redirected to the applicant dashboard.



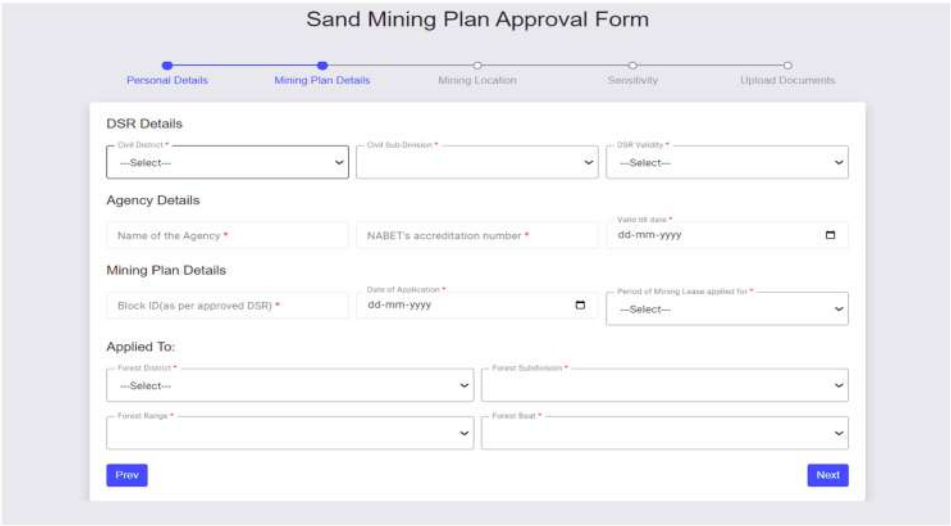
Applying for a Mining Plan

To apply for a mining plan, follow these steps:

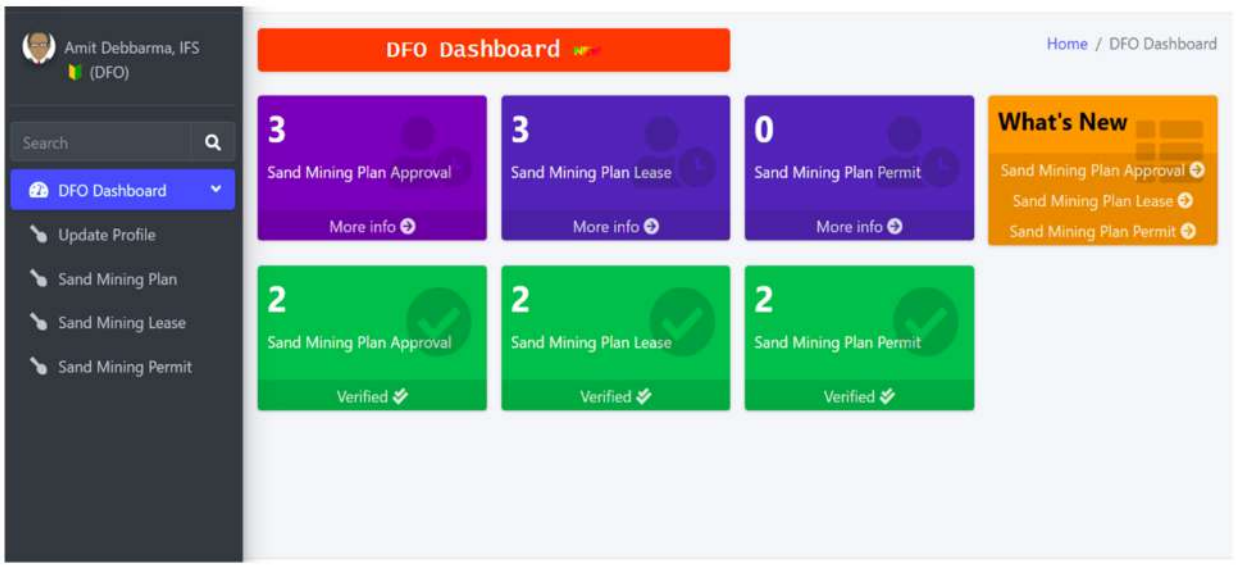
1. Click on the "Apply for Mining Plan" button on the applicant dashboard.



2. Fill in the Mining plan form and upload the required documents and Submit the Application.

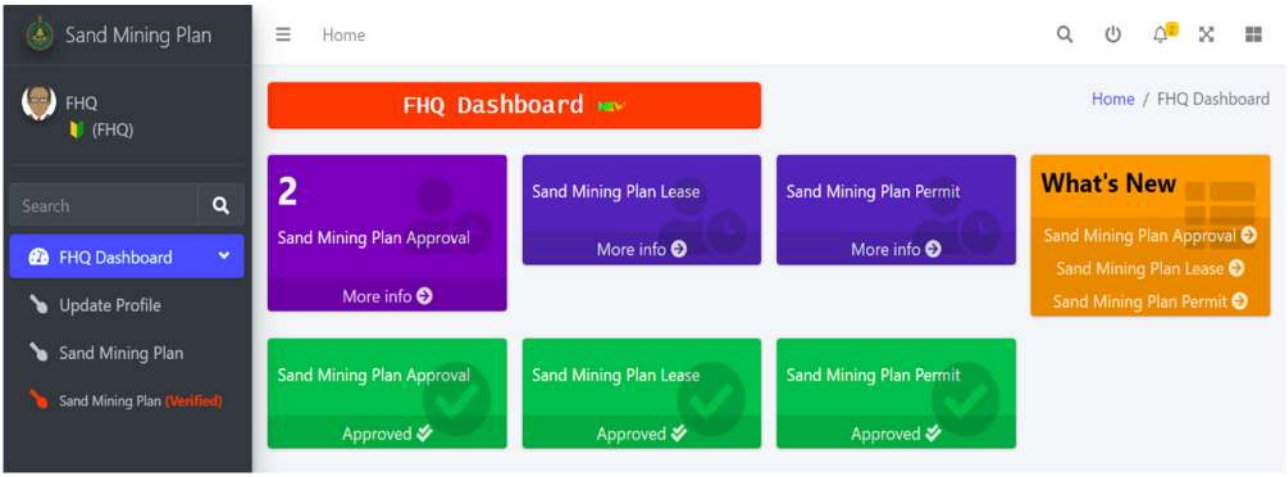


3. The application will be sent to the District Forest Officer (DFO) for review.



4. The DFO can reject the application if there are any issues, or forward it to the Field Headquarters (FHQ) if everything is in order.

5. The FHQ can either reject the application or assign it to the FHQ section for verification.



6. Once the FHQ section verifies the application, it will come back to the FHQ dashboard under the "Verified Mining Plan" section.

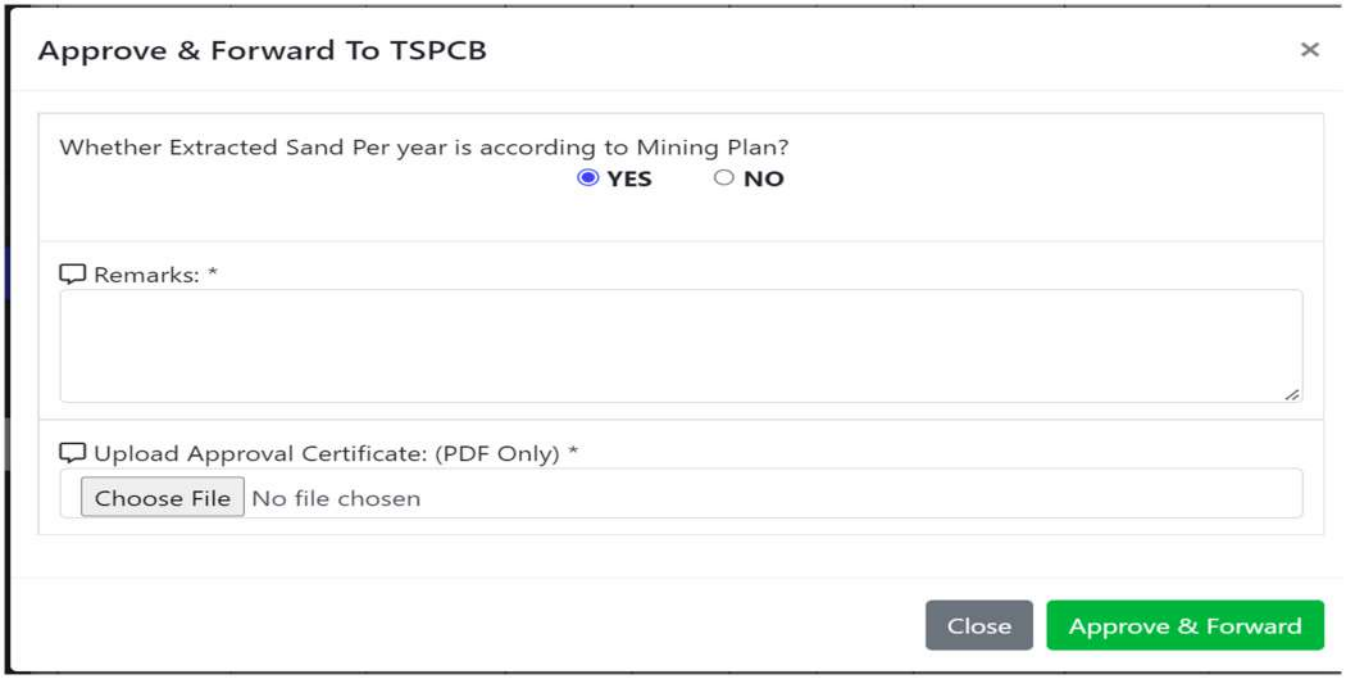
7. The FHQ can then approve the application by uploading an approval certificate and forwarding it to the Tripura State Pollution Control Board (TSPCB).

8. The TSPCB can reject the application or assign it to the TSPCB section for verification.

9. Once the TSPCB section verifies the application, it will come back to the TSPCB dashboard under the "Verified Plan" section.

10. The TSPCB can then approve the application by uploading an EC clearance certificate.

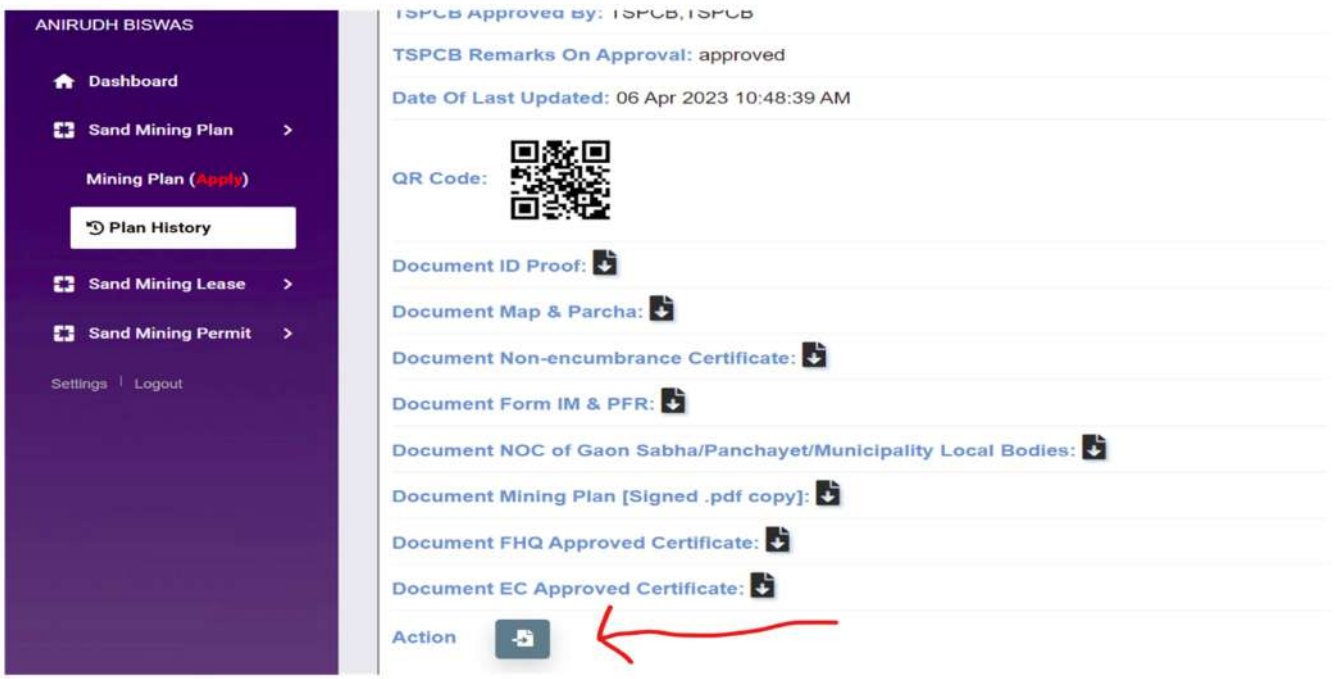
11. The approved mining plan will be available in the applicant dashboard's plan history section.



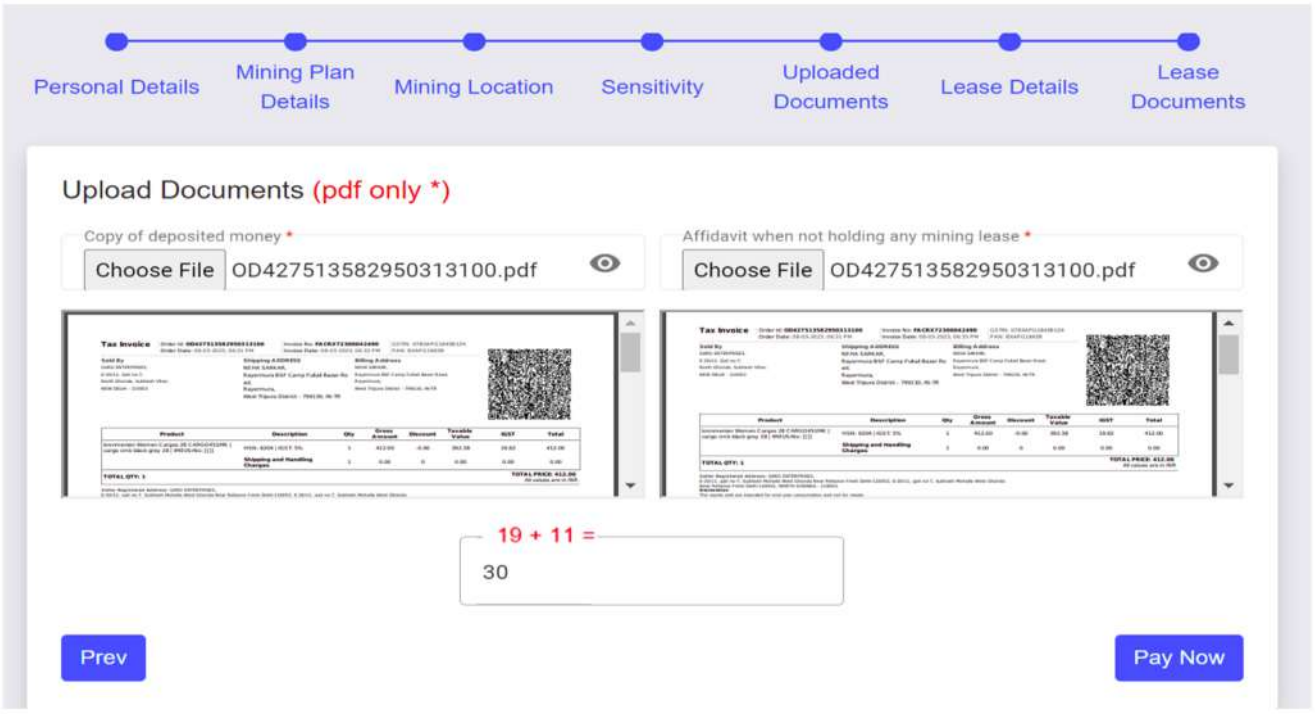
Applying for a Sand Mining Lease

To apply for a mining lease, follow these steps:

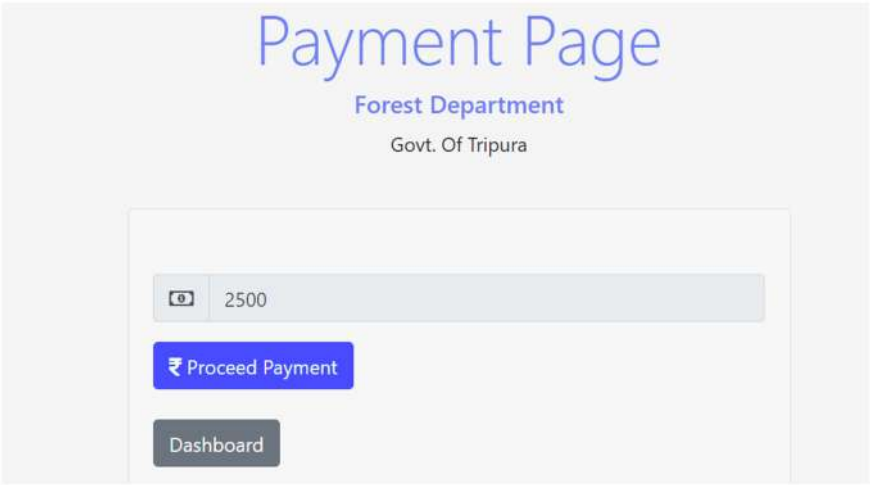
1. In the applicant dashboard's plan history section, click on the "Action" button next to the approved mining plan.



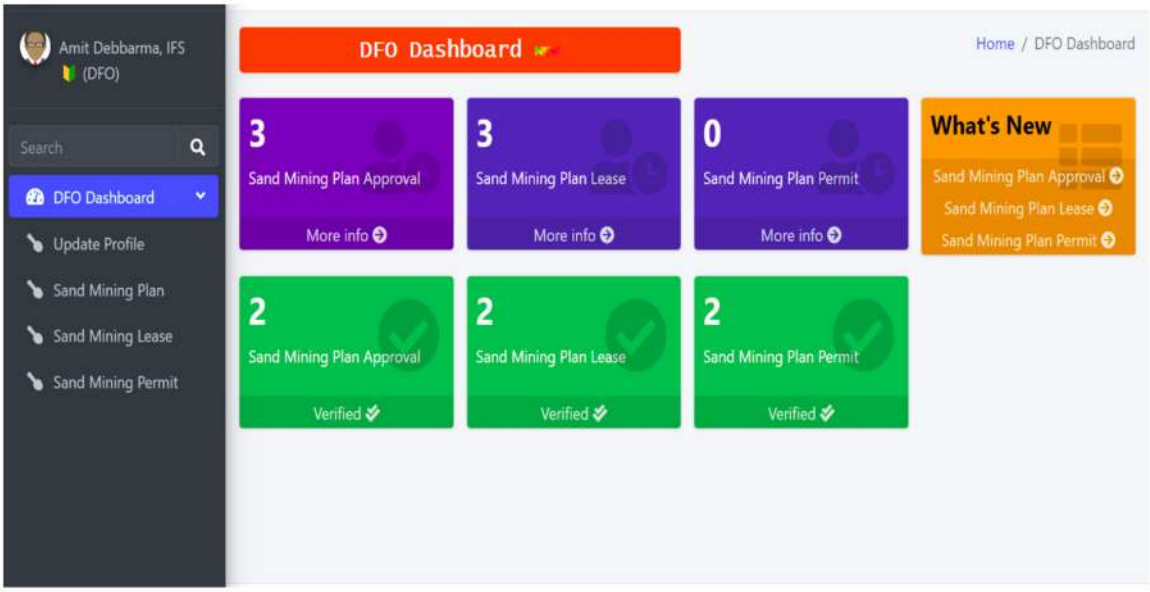
2. You will be redirected to the lease form, where all the existing data of the approved plan will be pre-fetched fill in the required fields for the lease and upload the necessary documents.



3. Click on "Apply & Pay" to submit the lease application. Note that a one-time payment of INR 2500 is required for successful submission.

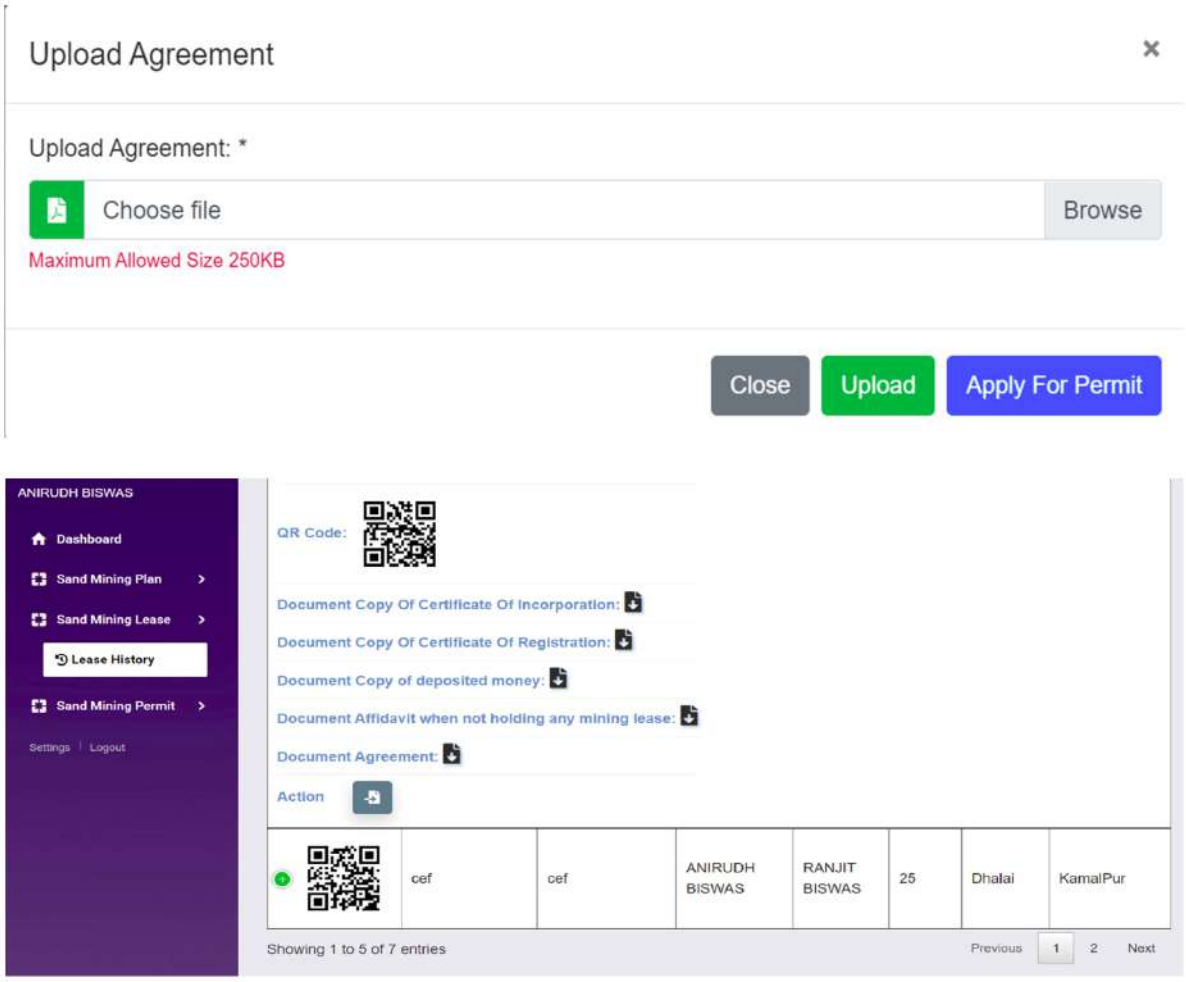


4. Once payment is successful, the lease application will be considered as successfully submitted.
5. The lease application will be sent to the DFO dashboard for review.



6. If everything is in order, the DFO will assign a date to upload the agreement, and the applicant will need to upload the agreement from the lease history section of the applicant dashboard.

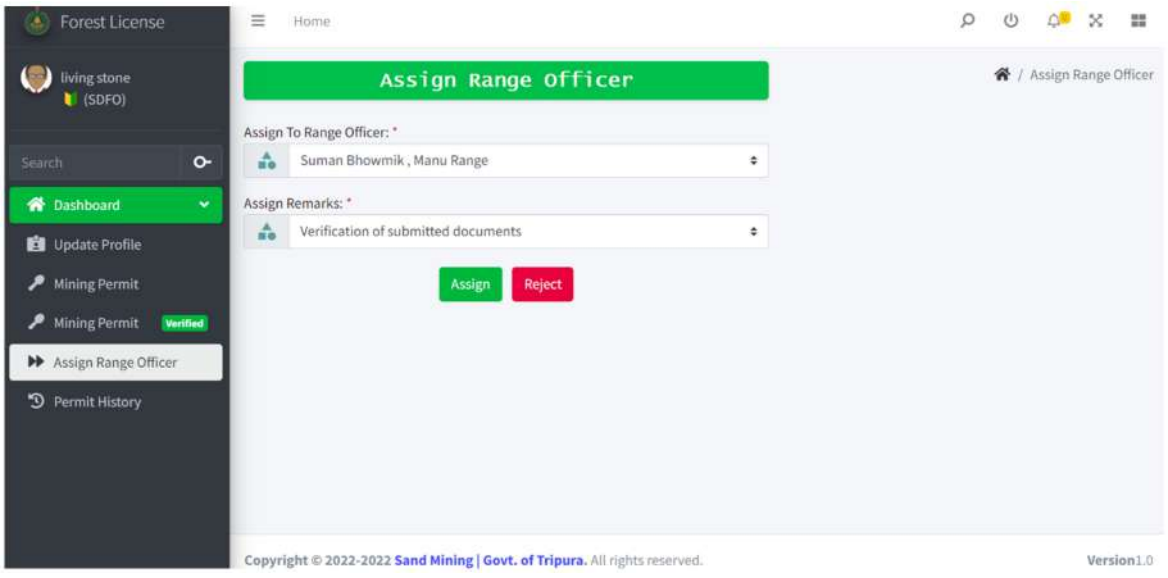
7. Once the agreement is uploaded successfully, the applicant can apply for a permit by clicking on the "Action" button next to the lease in the lease history section.



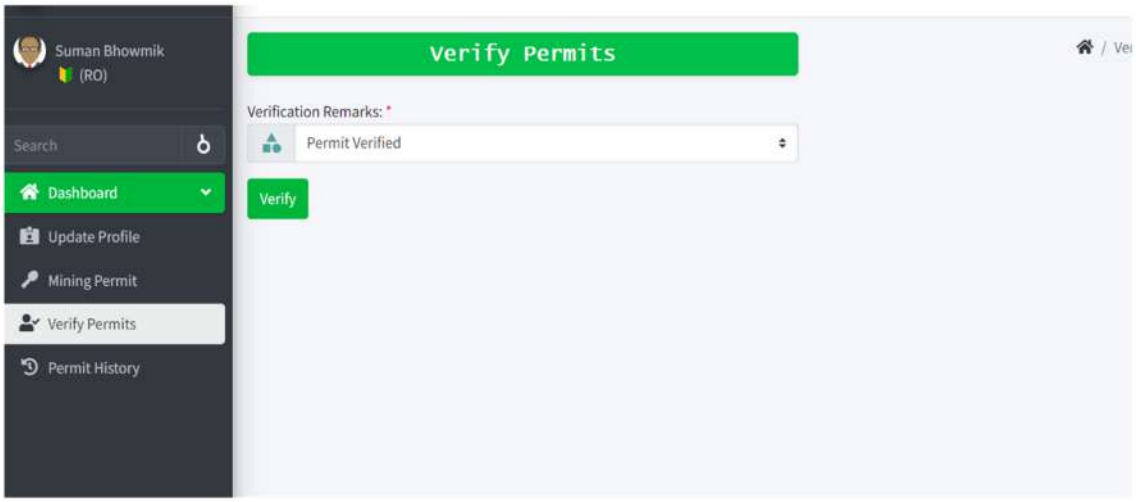
Applying for a Sand Mining Permit

To apply for a permit, follow these steps:

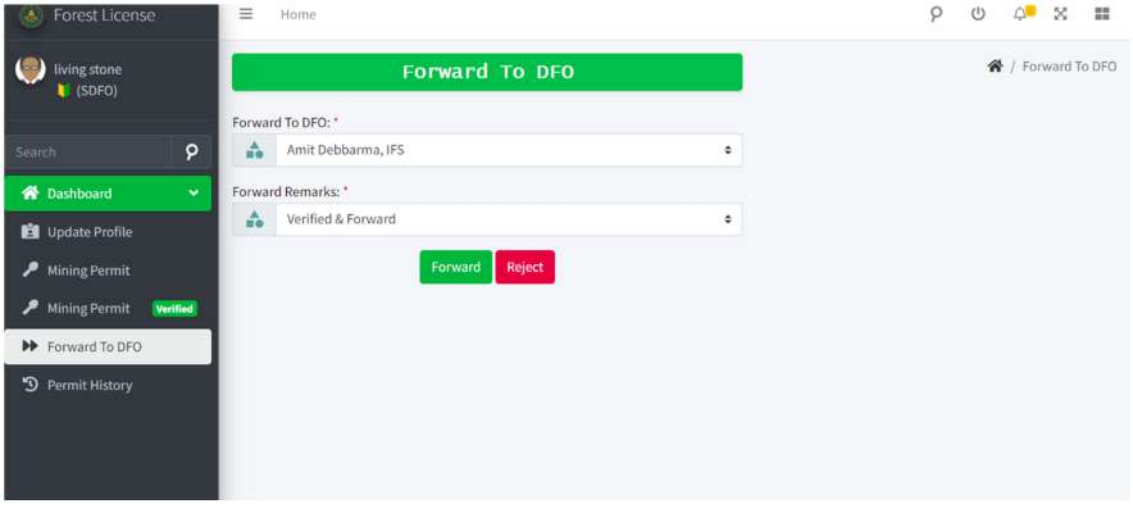
1. Fill in the permit form with the necessary details. The previously approved mining plan and mining lease details will be pre-fetched. Upload the required documents and submit the application.
2. The application will be sent to the Sub-Divisional Forest Officer (SDFO) dashboard for scrutiny.



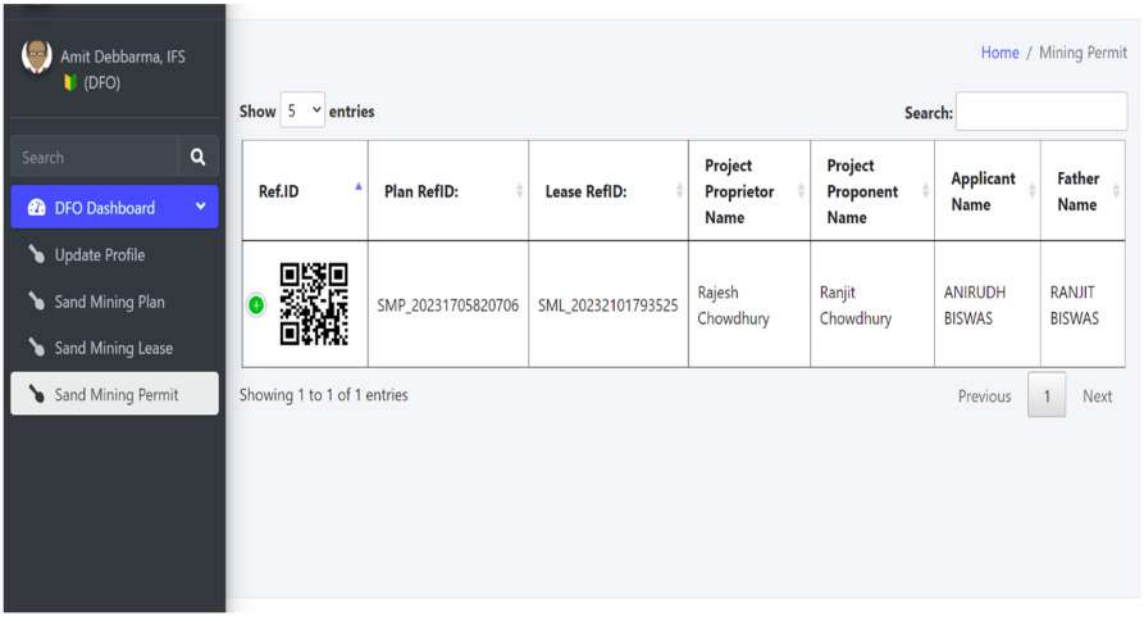
3. The SDFO will assign a Range Officer (RO) to verify the application.
4. Once the RO verifies the application, they will forward it back to the SDFO dashboard under the verified permit section.

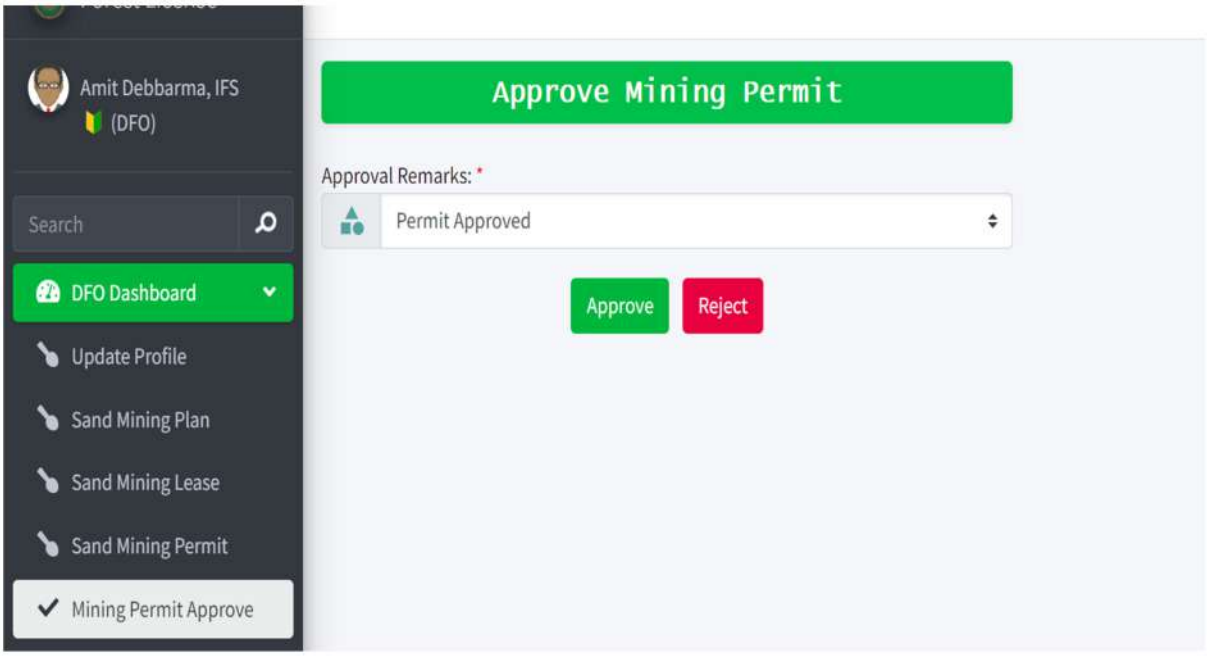


5. The SDFO will then forward the application to the DFO for the final permit approval.

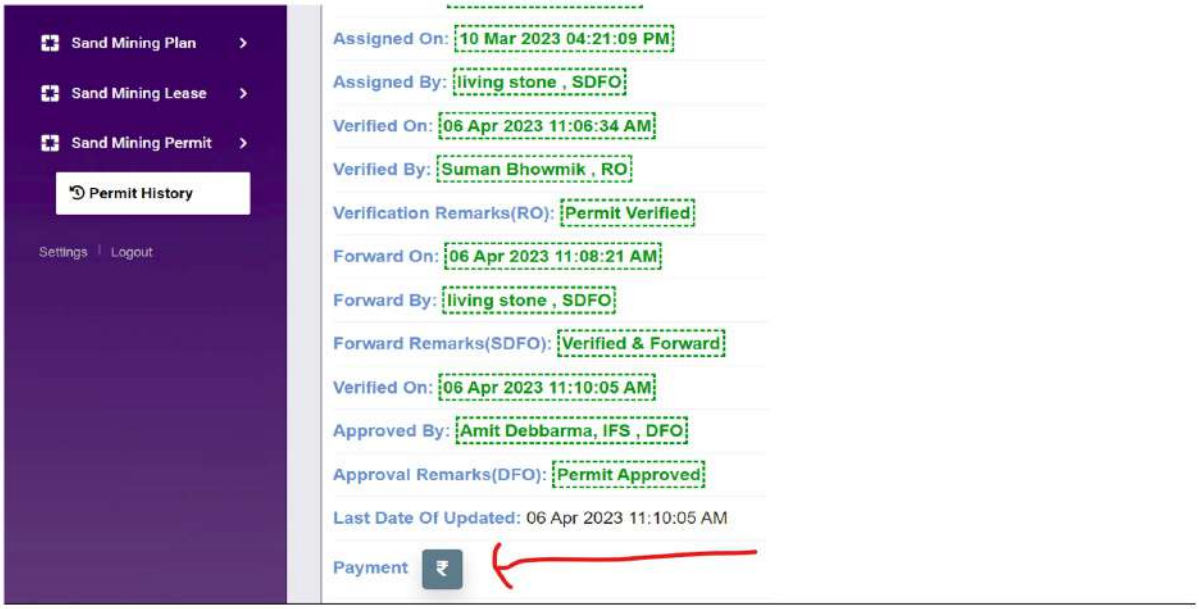


6. Once the DFO approves the permit, the RO can generate the challan on behalf of the applicant.

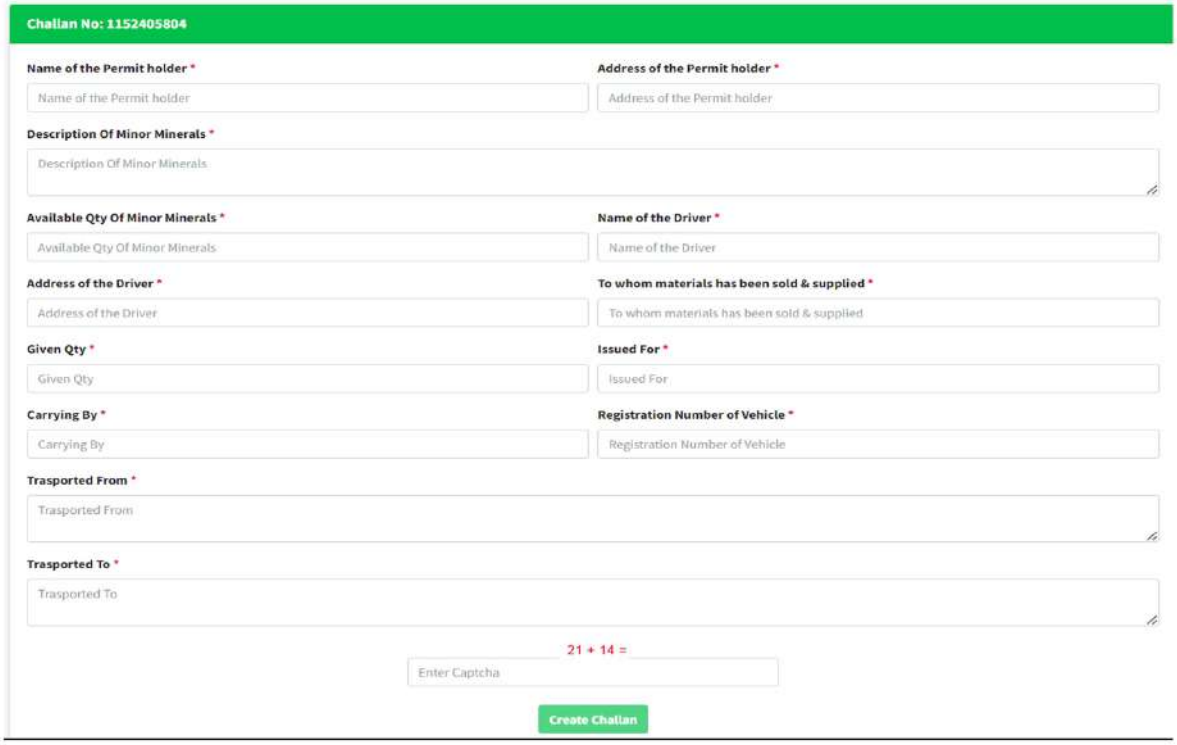




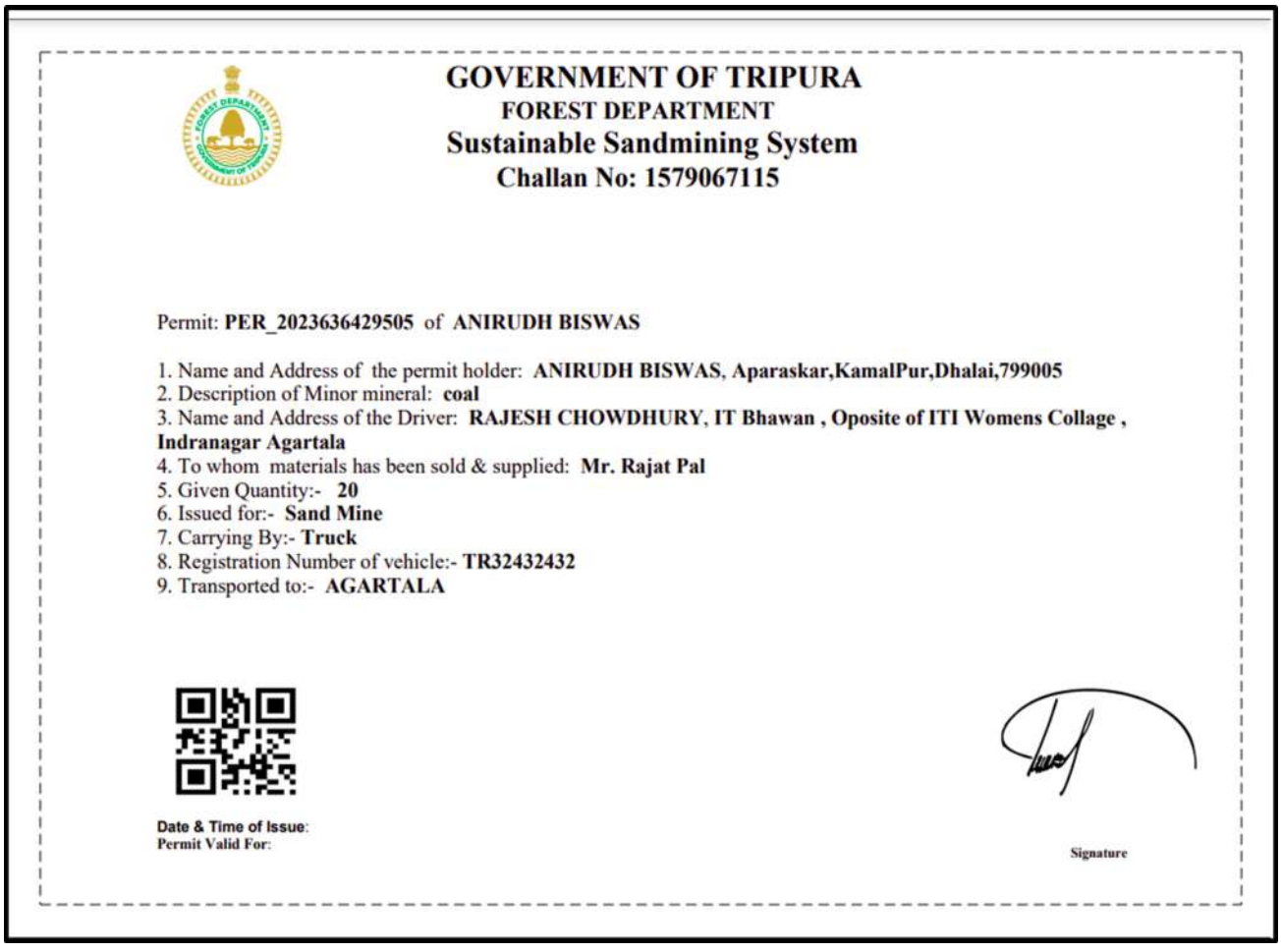
7. The applicant now needs to pay the required payment fees by clicking payment from permit history section of applicant dashboard.



8. After that RO will generate Challan Report then applicant can download the challan copy certificate from the challan history section of their dashboard.



9. Finally, Applicant Can Download the Challan Report from their dashboard Challan History Section.



GOVERNMENT OF TRIPURA
FOREST DEPARTMENT
Sustainable Sandmining System
Challan No: 1579067115

Permit: **PER_2023636429505** of **ANIRUDH BISWAS**

1. Name and Address of the permit holder: **ANIRUDH BISWAS, Aparaskar,KamalPur,Dhalai,799005**
2. Description of Minor mineral: **coal**
3. Name and Address of the Driver: **RAJESH CHOWDHURY, IT Bhawan , Oposite of ITI Womens Collage , Indranagar Agartala**
4. To whom materials has been sold & supplied: **Mr. Rajat Pal**
5. Given Quantity:- **20**
6. Issued for:- **Sand Mine**
7. Carrying By:- **Truck**
8. Registration Number of vehicle:- **TR32432432**
9. Transported to:- **AGARTALA**

Date & Time of Issue:
Permit Valid For:

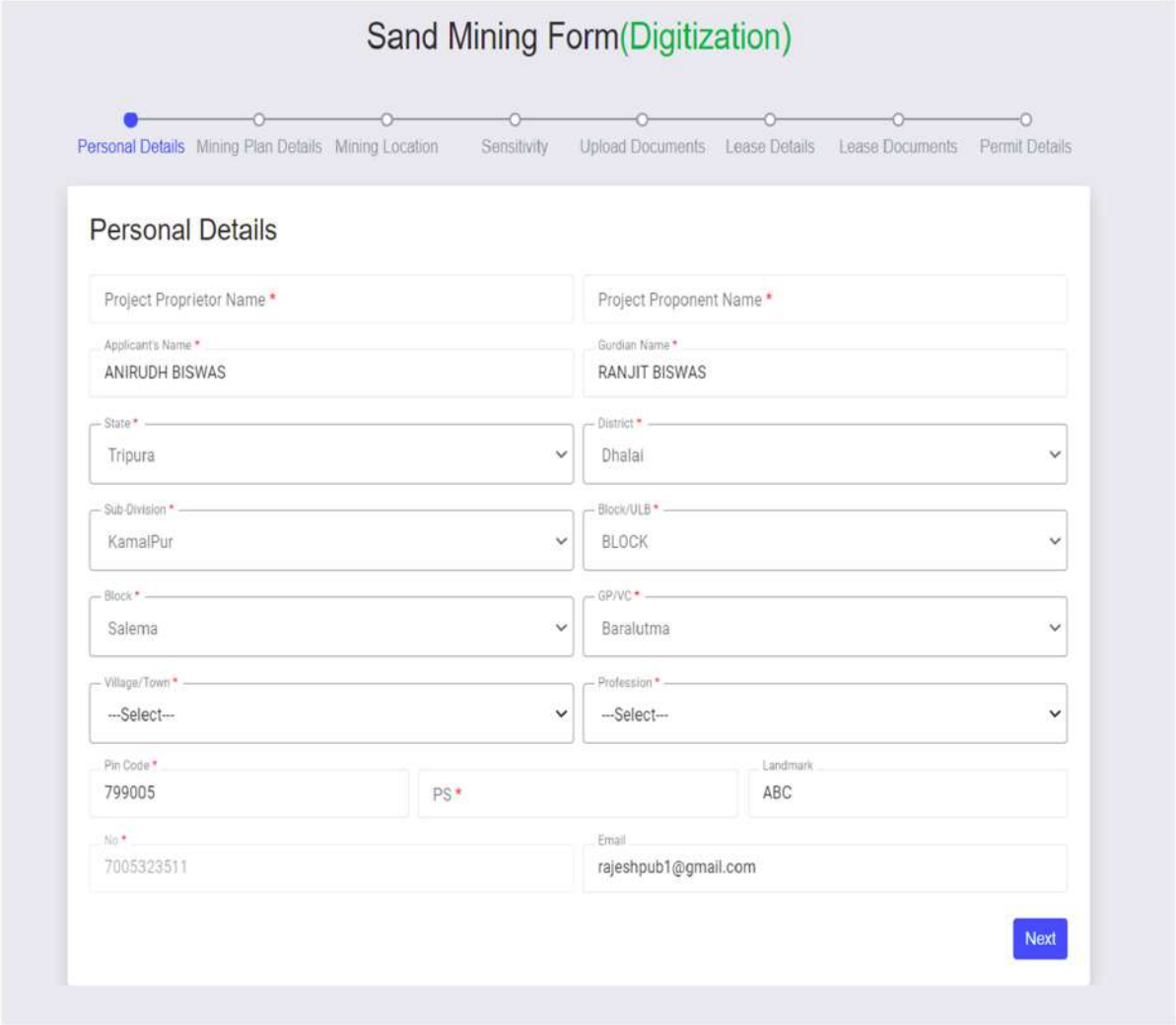
Signature

Note: It is important to note that the sustainable sand mining system is designed to promote responsible and sustainable sand mining practices. Any violation of the rules and regulations may result in cancellation of the mining plan, lease, or permit, and legal action may be taken against the violator.

Renewal Process (Digitize Module)

To apply for a renewal of Mining Plan, lease, permit all together follow these steps:

1. For renewal, the applicant needs to fill up the whole form, including mining plan, lease, and permit, by clicking on the "Digitize Renewal" button shown on the applicant dashboard.



2. Once the applicant submits all the details of the previous plan, lease, and permit, it will come to the SDFO for scrutiny.
3. If everything is okay, the SDFO will forward it to the DFO for final approval.
4. Once the DFO approves it, the RO can generate the challan same as the new flow.

उत्तराखण्ड राज्य

Government of Uttarakhand
Forest & Climate Change Department

FOREST PROTECTION IN

Uttarakhand

COMPENSATORY AFFORESTATION FUND MANAGEMENT & PLANNING AUTHORITY, UTTARAKHAND CAMPA

Uttarakhand, a Himalayan state of India known for aesthetic beauty for bugyals is visited annually by a large number of tourists, researchers and shepherds. Bugyals (alpine meadows) are a unique feature of high-altitude mountains possessing significant ecological importance. The total area under bugyals is 8524 sq. km. and a total of 211 bugyals of varied sizes have been identified in ten forest divisions and three protected areas of Uttarakhand. The natural abodes of the State are facing a threat of damage from various environmental and anthropogenic factors. Coir/ geo jute netting technique has been found to be very effective for the purpose of stabilization of landslide/ erosion affected areas. Furthermore, lantana eradication and rehabilitation of infected areas as a productive forest ecosystem is being undertaken using the Miyawaki method. This plantation technique has been developed to repair and recreate forests using native species appropriate to the habitat based on intensive field assessment of location vegetation and ecological theories. The method based on careful selection of the plant species that are best suited to the local environment allows creation of a mature natural forest in a comparatively small amount of time.

UTTARAKHAND COMPENSATORY AFFORESTATION FUND MANAGEMENT & PLANNING AUTHORITY

(By: Shri G.S. Pandey, IFS, CEO, Uttarakhand (CAMPA)

KEY ACTIVITIES

COMPENSATORY AFFORESTATION IN UTTARAKHAND

Compensatory Afforestation (CA) is a fundamental requirement when transferring forest land exceeding 1.00 hectare under the provisions of the Forest (Conservation) Act (FCA), 1980. It serves as a vital prerequisite for obtaining approval from the Central Government for the diversion of forest land for non-forest purposes. The main objective of CA is to compensate for the loss of land and trees on a 'land by land' and 'trees by trees' basis. Any proposal submitted by a State or Union Territory (UT) Government seeking Central Government approval under the FCA, must include a comprehensive CA scheme approved by the relevant State or UT administration.

In general, the land allocated for CA is non-forest land, where an equivalent area of CA (in hectares) must be undertaken. If non-forest land is unavailable or insufficient compared to the diverted land, CA or the remaining CA can be carried out in degraded forest land, covering double the extent of the diverted land. The chosen CA land should ideally be adjacent to or in close proximity to forest land. However, if such land is not available nearby, it can be selected in the same forest division or another forest division within the same State and sometimes even in another state, as per requirement and availability. When non-forest land is not available, double the extent of CA must be executed on degraded forest land. The minimum planting requirement on non-forest land designated for CA is 1000 plants per hectare.

At of the end of Financial Year (FY) 2022-23, Uttarakhand has recorded 6522 forest land diversion cases, totalling 53955.80 hectares diverted for non-forestry purposes. The mandated CA target against these land diversions is 58402.72 hectares. Up to 2022-23, a total of 52012.67 hectares of CA has been completed, leaving 6274.94 hectares to be addressed as of March 31, 2022. The brief information of total forest land transfer and status of CA done is as follows:

No. of FCA proposals	:	Total – 6522 Nos. (including 2823 proposals having condition of CA)
Forest Land diverted	:	53955.80 ha (including 1311.68 ha under 1.00 ha)
Target of CA, ACA & PCA as on 25.08.2023	:	58402.72 ha (incl. 1613 ha PCA)
Amount Collected for CA	:	60255.99 (Lakh Rs.)
CA completed till 2022-23	:	52012.67 ha
Expenditure on CA	:	32467.41(Lakh Rs.)
Balance CA (Ha)	:	6274.94 ha
CA Target for 2023-24	:	2200 ha plantation & 3025 ha ASW

The total CA target up to the end of FY 2022-23 was 56824 ha out of which 51599 ha plantation had been completed while 5225 ha remains to be completed. With fresh targets against new approvals under FCA, the current balance comes to 6274.94 ha. However, the remaining target in 2022-23 has been proposed to be completed by FY 2023-24 involving plantation of 2200 ha and advance preparations (ASW) for the next year plantation over 3025 ha.

A tentative detail of FCA case wise CA targets and achievements since 1980 has also been provided to National Authority. After the establishment of Uttarakhand State CAMPA Authority in 2010, the details of CA carried out in each year up-to the financial year 2022-23 is being provided below: -

Table: Annual breakdown of CA achievements from 2011-12 to 2022-23

Amount in ₹Lakh

YEAR	PHYSICAL TARGET (Ha)	FINANCIAL TARGET	RELEASED AMOUNT	PHYSICAL ACHIEVEMENT (Ha)	FINANCIAL ACHIEVEMENT
2011-12	3972.52	1328.86	1335.28	3843.43	1208.48
2012-13	715.38	1034.44	705.24	439.00	539.64
2013-14	3080.84	2167.88	1762.89	2696.25	1451.83
2014-15	2078.00	1389.55	1285.18	2077.91	1215.63
2015-16	1432.90	2820.37	2811.39	994.64	2405.32
2016-17	3155.01	3437.39	3071.31	2621.83	2687.60
2017-18	3776.51	4373.09	3654.90	3474.21	3122.56
2018-19	3514.02	4907.87	4391.52	2714.79	3965.80
2019-20	3250.00	4430.00	4224.66	3222.45	3782.73
2020-21	2962.99	6072.13	5519.57	2597.28	4703.72
2021-22	3000.00	8347.00	5247.28	2852.05	4721.74
2022-23	2415.00	4973.00	4326.58	2415.00	3931.26
TOTAL	**33353.17**	**45281.58**	**38335.8**	**29948.84**	**33736.31**

Since the establishment of Uttarakhand CAMPA, a cumulative total of 27,533.84 hectares of CA have been accomplished across various forest land diversion cases.

CATCHMENT AREA TREATMENT (CAT) PLAN

As an integral component of forest land transfer proposals, especially those associated with hydro-electric power generation projects, the implementation of Catchment Area Treatment (CAT) plans assumes paramount importance. These CAT plans are not merely optional, they are mandated by the approved Detailed Project Reports (DPRs). Their significance stems from the essential requirement of maintaining a consistent flow of clean, silt-free water—a prerequisite for the successful operation of any hydro-power project.

CAT Plan is an important and essential plan for enhancing and maintaining the ecological health of the catchment area of the proposed irrigation/hydroelectric project through site-specific biological and engineering measures for conservation of soil and moisture and management of water regime. Among other provisions, the measures should focus on arresting soil erosion, improving effective drainage in the area, and rejuvenation of the degraded eco system in catchment.

Following general principals, as per the handbook of Forest (Conservation) Act, 1980 and Forest Conservation Rules, 2003 (Guidelines & Clarifications), 2019, should be kept in view while formulating CAT plans.

(i) In dense forest areas, major focus should be on soil and water conservation including water harvesting for which various water harvesting structures like check dams, gully plugging, gabion dams, contour trenches and vegetative structures should be made.

(ii) In open forest areas, besides taking up soil and water conservation measures, plantation of local indigenous tree and shrub species, including rare/medicinal plants, should be done. In higher altitudes plantation of Chir pine should be avoided.

(iii) The CAT plan should include a component of fodder development on the civil soyam forest or on revenue/private lands in order to meet the requirement of fodder/small timber/fire wood for the local population with a view to reduce pressure on the forests.

(iv) The CAT Plan should have a socio-economic component including supply of CNG connections to the project affected families to be implemented through Joint Forest Management Committees (the nomenclature may vary among the States/UTs).

(v) The infrastructure component like construction of buildings, vehicles, salaries of staff etc. may be provided based on a careful analysis of the need for the same with detailed justification and should constitute a very small percentage (say up to 5%) of the total cost of the CAT plan.

(vi) CAT plan shall be approved by the Principal CCF & HoFF or any other officer authorized by him for the purpose.

(vii) Regular monitoring is essential for effective implementation of the CAT Plan. The Chief Project Officer of the user agency must be associated in implementation as well as monitoring of the progress of CAT plan through a committee which may be constituted under the chairmanship of PCCF & HoFF of the State.

(viii) CA and NPV will be regulated as per the concerned guidelines.

In the context of hydro-electricity generation, the catchment area of the source river plays a pivotal role. It serves as the origin point for the water that drives the turbines. However, the degradation of land and forests within this catchment area can have adverse consequences. It can trigger the flow of undesirable elements such as mud, silt, sand particles, and other forms of debris along with the water. Over time, these elements can inflict damage on the turbine blades, hindering their smooth operation. Consequently, this leads to operational inefficiencies and incurs substantial replacement costs for the companies involved.

To mitigate these challenges, CAT plans are meticulously developed in conjunction with the hydro-electric projects by the relevant forest divisions. These plans span a comprehensive seven year period, during which various measures are undertaken to minimize soil erosion within the catchment area. These measures are strategically organized into four distinct phases, as guided by the State Government:-

a. Preparatory Phase: This initial phase entails micro-level planning and initiation of key activities. It encompasses tasks such as minor repairs to community structures like drinking water schemes and springs. It also includes essential aspects such as training and capacity building programs for local villagers and project staff, public awareness campaigns, and comprehensive documentation.

b. Project Management Phase: This critical component focuses on the establishment and management of key systems. It incorporates the implementation of the Management Information System (MIS), the systematic monitoring and evaluation of progress, robust control mechanisms, as well as baseline, midterm, and end-

term studies to assess the impact of the CAT plans. This phase also allocates resources for salaries, allowances for project staff and subject matter experts, vehicle procurement, and communication expenses necessary for ensuring the efficient functioning of implementing agencies and Project Management Units.

At the core of CAT plans lie the Watershed Development Works, encompassing an array of activities. These activities are designed to enhance the ecological stability of the catchment area and reduce erosion. They include the strategic planting of fuelwood and fodder species and the establishment of silvi-pastoral plantations. Moreover, the plans include the treatment of drainage lines, employing techniques such as biotic/brushwood check dams, gully plugging, RR check dams, cratwire structures, sidewalls, spurs, and retaining walls. Water conservation is also a key aspect, featuring initiatives like the construction of water collection tanks, permanent minor irrigation channels, repairs of water sources, and the installation of percolation pits.

In addition to these ecological endeavours, CAT plans encompass several community-centric aspects. They include community payments for ecosystem services, wildlife management initiatives, and measures to enhance local livelihoods. These livelihood enhancement efforts span diverse sectors, including poultry farming, horticulture, cottage industries, local craftsmanship, handicrafts, non-timber forest product training and support, and the establishment of revolving funds. Furthermore, CAT plans allocate resources for agricultural development, vermicomposting, high-density demonstrations of improved agricultural techniques, support for animal husbandry, and training for micro-industries such as ecotourism and homestays.

The final phase, known as the Consolidation Phase, primarily focuses on implementing withdrawal plans and facilitating closure procedures. These steps are essential to ensure the seamless completion of CAT plan objectives and the long-term sustainability of the catchment area.

S.No	FC Proposal Details	Year of Start	CAT Area as per FC Proposal			CAT Executed		CAT Proposed for 2023-24		Remaining CAT	
	Project Name/Details		CAT Activities	Location	Financial	Physical	Financial	Physical	Financial	Physical	Financial
			(In Ha./No.)	(KML file)	(in lakhs)	(in Ha.)	(in lakhs)	(in Ha.)	(In lakhs)	(in Ha.)	(In lakhs)
1.	Tapovan Vishnugad HEP	2011-12	Plantations(ha) – 1085 ANR (ha) – SMC Works (Nos.) - 1435		4525.00	Plantations(ha) – 1085 ANR (ha)– SMC Works (Nos.)- 1425	3612.00	73 ha, 341 Nos.	913.00		0.00
2.	Singoli Bhatwari HEP	2011-12	Plantations(ha) – 556 ANR (ha)– 139.60 SMC Works (Nos.) - 2394		1272.15	Plantations(ha) – 427 ANR (ha)– 48.50 SMC Works (Nos.)- 2042	1052.17	1254 Nos.	206.00		13.98
3.	Lata-Tapovan HEP	2011-12	Plantations(ha) – 488 ANR (ha)– SMC Works (Nos.)-3479		1621.76	Plantations(ha) – 488 ANR (ha)– SMC Works (Nos.)- 2834	1436.76	2777 Nos.	185.00		0.00
4.	Phata Byung-HEP	2011-12	Plantations(ha) – 218.10 ANR (ha)– SMC Works (Nos.)– 1392		894.69	Plantations(ha) – 218.10 ANR (ha)– SMC Works (Nos.)– 1222	774.69	92 Nos.	120.00		0.00
5.	Vishnugad-Peepalkoti-HEP	2017-18	Plantations(ha) – 288 ANR (ha)– 466 SMC Works (Nos.) - 8049		4700.00	Plantations(ha) – 288 ANR (ha)– 396 SMC Works (Nos.)- 6706	3894.00	626 ha, 147 Nos.	806.00		0.00
6.	Lakhwar HEP	2017-18	Plantations(ha) – 1270 ANR (ha)– 1933 SMC Works (Nos.) - 9340		8586.25	Plantations(ha) – 1183.50 ANR (ha)– 1933 SMC Works (Nos.)- 9340	3851.26	2214 ha, 6973 Nos.	2202.00		2532.99
7.	Vyasi HEP	2018-19	Plantations(ha) – 460 ANR (ha)– SMC Works (Nos.) - 6480		1894.41	Plantations(ha) – 346 ANR (ha)– SMC Works (Nos.)- 3107	1194.34	341 ha, 631 Nos.	321.00		379.07
8.	Naitwar-Mori HEP	2019-20	Plantations(ha) – 137 ANR (ha)–177 SMC Works (Nos.) - 885		1296.66	Plantations(ha) – 96 ANR (ha)–145 SMC Works (Nos.)- 862	1048.49	329 ha, 338 Nos.	165.00		83.17
9.	Srinagar HEP	2011-12	Plantations(ha) – 1400 ANR (ha)– SMC Works (Nos.) - 4929		2176.45	Plantations(ha) – 1383.69 ANR (ha)– SMC Works (Nos.)- 3252	2133.45	consolidation phase	43.00		0.00
10.	Jamraani MPP	2020-21	Plantations(ha) – 285 ANR (ha)– 275 SMC Works (Nos.)– 4391		4700.00	Plantations(ha) – 0 ANR (ha)– 275 SMC Works (Nos.)– 3634	1231.73	834 ha, 1428 Nos.	1841.00		1627.27
11.	Khutani HEP	2018-19	Plantations(ha) – 204.58 ANR (ha)– SMC Works (Nos.)– 874		420.94	Plantations(ha) – 204.58 ANR (ha)– SMC Works (Nos.)– 874	389.59	25 ha	31.00		0.35
	Sub-Total				**32088.31**		**20618.48**		**6833.00**		**4636.83**
12.	CAT PMU		Management Cost				330.74		167.00		
	TOTAL (incl. PMU)						**20949.22**		**7000.00**		**4139.09**

Presently, Uttarakhand is concurrently executing 11 CAT plans, each at various stages of implementation. To facilitate these endeavours, user agencies deposit funds into the CAMPA fund, designated for the implementation of CAT plans. These funds are essential to cover the costs associated with executing vital projects. Each CAT plan adheres to a specified time frame for execution, ensuring that the activities are completed within stipulated deadlines. At the end of the fiscal year 2021-22, the respective forest divisions report their expenditures, providing insights into the progress and financial management of these CAT plans. A CAT plan-wise detail of progress has been provided in the table above after.

This comprehensive approach to CAT plans underscores their vital role in preserving the ecological integrity of catchment areas and safeguarding the smooth operation of hydro-electric projects, contributing to sustainable and responsible energy generation.

OTHER 'SPECIFIED' CONDITIONS

Roadside Plantations

The condition of roadside plantation is imposed in the forest land transfer cases pertaining to construction of new roads or road projects under widening. The forest division, where the forest land has been transferred to the user, prepares a plan for road side plantations, adding the cost of at least 3-year-old plants, cost of tree guards / fencing, cost of planting & maintenance. The plantation work is taken up after the completion of the works related to cutting, widening, metal works etc. of the concerned road project. The plantation work is taken up after the completion of the road.

General list of species planted on the roadsides: Desi aam (*Mangifera indica*), Pipal (*Ficus religiosa*), Bar (*Ficus bengalensis*), Pilkhan (*Ficus virens*), Tun (*Toona ciliata*), Amaltas (*Cassia fistula*), Deodar (*Cedrus deodara*), Bahera (*Terminalia bellirica*), Palash/Dhak (*Butea monosperma*) Shisham (*Dalbergia sissoo*), Kanji (*Senna auriculata*), Dainkan (*Melia azedarach*), Putanjiva (*Putranjiva roxburghii*), Harshringar (*Nyctanthus arbortristis*), Imli (*Tamarindus indica*), Kachnar (*Bauhinia variegata*), Jacaranda (*Jacaranda mimosifolia*), Gulmohar (*Delonix regia*).

Since inception of Uttarakhand CAMPA, the implementing agencies took up various works under the component, including tree plantations along the newly constructed roads involving forest land transfer under FCA, 1980. Year wise details of the roadside plantations is provided below:

Roadside plantations

Table: Year wise details of Road-side plantations

Amount in Lakh Rs.

Financial Year	APO		Achievement	
	Physical (Row Km/No.)	Fin	Physical (Row Km /No.)	Fin
2011-12	9.66	57.23	6.00	30.15
2012-13	0.25	207.46	0.25	96.65
2013-14	56.86	200.58	56.86	185.61
2014-15	3407	515.86	2138.52	473.23
2015-16	209.46	150.42	206.46	111.76
2016-17	21.00	1367.38	10.00	77.12
2017-18	23.00	179.13	00.00	6.27
2018-19	21.00	290.43	00.00	116.97
2019-20	1384.00	188.08	686.41	163.66
2020-21	636.23	570.24	00.00	238.85
2021-22	10301.28	625.43	159.41	125.63
2022-23	154.09	269.00	154.09	268.99
Total		**4352.24**		**1625.90**

Gap Filling Plantations

Gap filling plantations is another site specific and compulsory work included in the approval granted in forest land transfer proposals submitted under FCA, 1980. The idea is to fill the blank areas with specified number of plants, as per the condition of approval, at the project site after completion of all the construction work. Depending on the size of the transferred land, the plantation & maintenance cost of 10, 100 or sometimes 1000 plants may be imposed on the user. If there is no space left for plantation, the plantation is done on any nearby suitable site. These plantations are based on the plantation scheme submitted by the concerned forest divisions which mostly includes the cost of plants, planting and tree guards or fencing, cost of maintenance up to 10 years etc.

General list of species planted under gap-filling: Banj (*Quercus leucotrichophora*), Deodar (*Cedrus deodara*), Harar (Terminalia chebula), Bahera (*Terminalia bellerica*), Bhimal (*Grewia optiva*), Ritha (*Sapindus mukorosassi*), Akhrot (*Juglans regia*), Angu (*Fraxinus palmeta*), Amaltas (*Cassia fistula*), Aonla (*Emblica officinalis*), Utis (*Alnus nepalensis*), Kachnar (*Bauhinia variegata*), Tun (*Toona ciliata*), Bans (*Dendrocalamus strictus*), Ringal (*Chimonobambusa falcata*) etc.

Gap filling plantations

The gap filling plantations over the years have provided following results, arranged year wise for an 'at a glance' picture of the achievements:

Table: Details of year wise gap filling plantations with achievements

Amount in Lakh Rs.

Financial Year	APO		Achievement	
	Physical (Ha/No.)	Financial	Physical (Ha/No.)	Financial
2011-12	17.00	80.11	45.00	96.02
2012-13	112.41	169.96	89.91	112.56
2013-14	449.26	213.31	277.29	181.28
2014-15	304.5	395.01	281.46	351.10
2015-16	576.24	183.12	425.74	153.18
2016-17	69.00	720.12	69.00	141.23
2017-18	240.00	197.98	16.50	1.72
2018-19	12.00	357.41		122.42
2019-20	36.27	161.52	10.84	74.32
2020-21	130.78	230.46	9.99	206.32
2021-22	11707.20	246.15	13006	70.00
2022-23	107.62	200.69	111.13	174.33
Total		**3155.84**		**1684.48**

Dwarf Species Plantations

In forest land transfer proposals taken for laying down of larger electric transmission lines, the condition of plantation of low height or dwarf plant species under such newly constructed transmission lines is imposed on the user agencies. The user agency is required to deposit money for the plantation of dwarf species as per the plantation scheme submitted by the concerned forest divisions.

General List of Species planted under Dwarf Species Plantation: Ber, Bel (*Aegle marmalos*), Kari Patta (*Murraya koenigii*), Karonda (*Carrisa carandas*), Aonla (*Emblica officinalis*), Kathber (*Ziziphus xylopyrus*), Shahtoot (*Morus alba*), Kilmora (*Berberis indica*), timur (*Zanthoxylum piperitum*), Kapurkachri (*Hedichyum spicatum*), Satawar (*Asparagus racemosus*), Dhaula (*Morinda citrifolia*), Ghingharu (*Pyracantha crenulata*) etc.

Dwarf species plantations

Fincial Year	APO		Achievement	
	Phy	Fin	Phy	Fin
2011-12	44.00	45.63	50.00	31.24
2012-13	237.58	75.18	55.00	18.86
2013-14	137.79	68.76	141.79	67.54
2014-15	133.00	86.31	122.00	83.16
2015-16	329.00	55.97	329.00	53.05
2016-17	456.33	315.40	-	34.00
2017-18	50.00	45.85	-	2.92
2018-19	182.00	195.13	-	28.09
2019-20	83.8	165.81	35.49	141.14
2020-21	129.49	99.25	124.11	94.15
2021-22	186.59	207.96	120.84	131.99
2022-23	129.91	84.70	114.84	67.02
Total		**1445.95**		**753.16**

CONSERVATION OF BUGYALS IN UTTARAKHAND

Bugyals are high altitude or alpine meadows (grasslands), which is one of the unique features of the Himalayas and possess a high ecological significance. A total of 211 bugyals of varied sizes have been identified in 10 forest divisions and 3 protected areas of Uttarakhand based on the data available in their 10 year working/management plans. The total area under these bugyals is 8524 sq. km. Apart from their ecological significance, bugyals are also tourist destination for approx. 40000-50000 nature lovers & trekkers etc. and also shepherds in equal numbers every year .

Today, majorly due to deluges, in effect of the global warming, intensive grazing, human interference etc. bugyals are facing heavy erosion which is in turn, affecting the biodiversity of the area, aesthetic beauty and even the ever existence of bugyals. Following are the major threats that the bugyals are facing:

Soil Erosion and Gully Formation: Bugyals are widely spread over large areas and many of them have steep slopes. Due to various biotic and abiotic factors, the slopes have developed small gullies that if left untreated, would turn them into ravines. Landslides and sinking of land in the upper reaches are some of the other issues, that bugyals are facing today.

Land-slides in the lower sides: The rain water flows down the slopes and drains into nalahs on the lower slopes. These nalahs have a threat of heavy landslides due to high speed downflow mixed with debris of the erosion in upper reaches. This is causing further widening of the nalahs and aggravating the situation.

Degradation of grasses and other vegetation: Grazing by animals of the locals & outside shepherds during whole of the summers & rainy season, is another major threat to indigenous grasses and other medicinal varieties found in bugyals.

Therefore, these natural abodes of a number of floral and faunal species are facing a threat of damage from various environmental and other anthropogenic factors.

A comprehensive plan for protection of bugyals of the State was prepared by CF, Garhwal Circle, Uttarakhand Forest Department. The plan suggests following activities for protection and conservation of bugyals: -

- Controlled grazing in bugyals through local committees.
- Soil erosion control and SMC works using mainly the Geo Jute textile technique, coir netting, maintenance of trekking routes and construction of shelters.
- Wildlife protection and regulating extraction of medicinal plants and controlling illegal exploitation.
- Waste Management.
- Regulating controlled eco-tourism through the Eco Development Committees.
- Removal of invasive species and
- Restoration of eroded slopes/stretches.

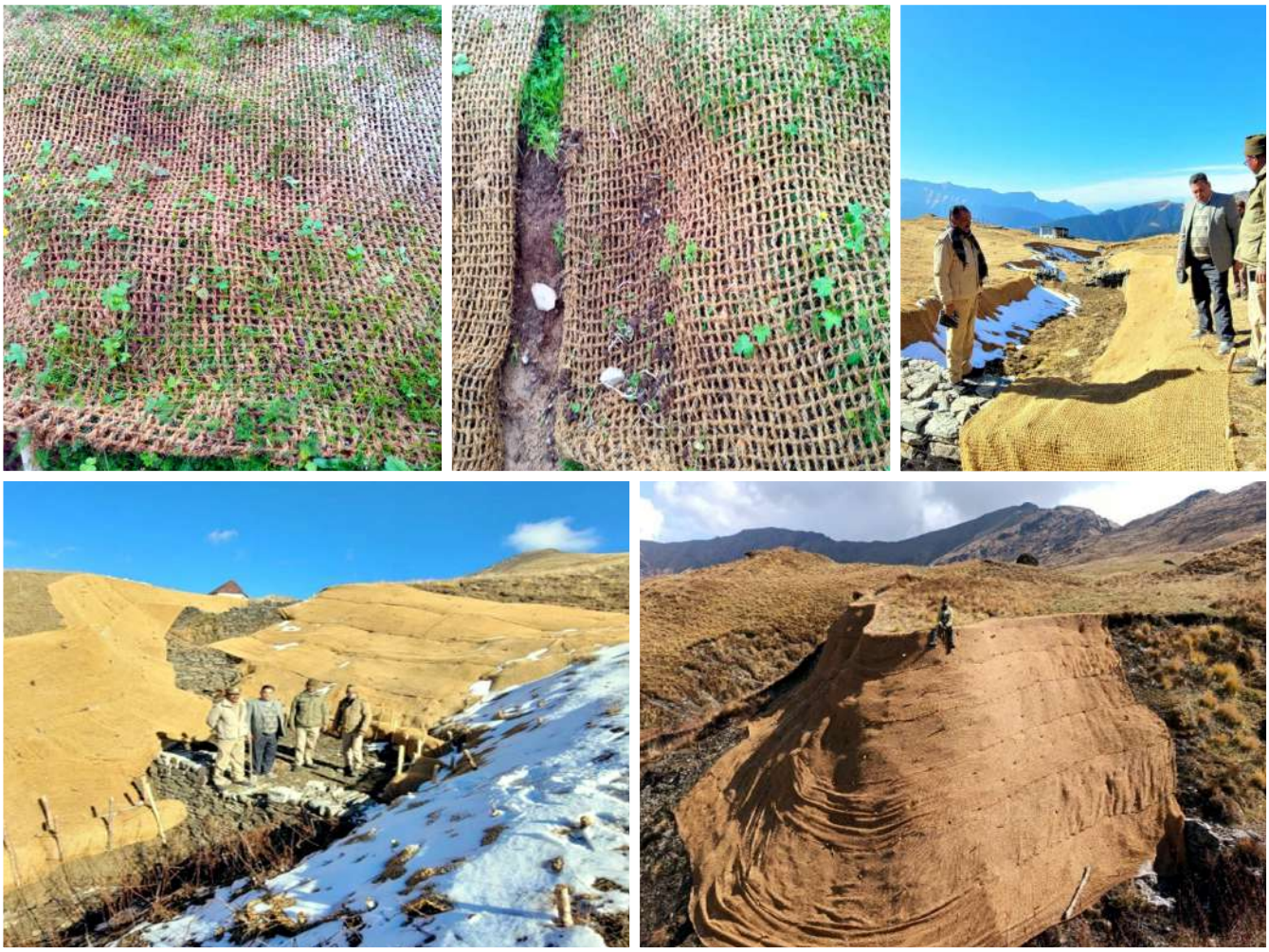
Works undertaken in 2022-23

In 2022-23 different bugyals spread over an area of 1530 ha were undertaken for treatment and various protection works with the cost of ₹316.75 lakh against the approved APO of ₹378.00 lakh in the activity. Following protection works were undertaken in select bugyals in following forest divisions during 2022-23: -

Table: Details of protection works undertaken in selected Bugyals

Name of Forest Division	Bugyal Protection Works undertaken in 2022-23	Name of Bugyals
Nandadevi National Park	Gully plugging, eradication of invasive species, water bodies and maintenance of trek routes	Nandikund, Chinap, Gilada, Uniyani and Panchvinayak Bugyals.
Badrinath Forest Division	Geo Jute netting and maintenance of trek routes.	Bedini, Aali, Bagji, Navali, Dunga, Chamai & Bheti Bugyals
Gangotri National Park	Geo Jute netting and maintenance of trek routes	Tapovan, Jadung and Kedarkhark Bugyals.
Uttarkashi Forest Division	Geo Jute netting and maintenance of trek routes	Goshla, Bakriyatop, Champa, Dyara, Kushkalyan, Kyarkoti, Zinda, Bhu, Kandara, Nadung, Nagni, Sour and Gangori Bugyals.
Kedarnath Wildlife Division	Geo Jute netting and maintenance of trek routes.	Bhujgali, Dalkhuli, Deoria, Saukhark, Bhulkana, Tauli and Panar Bugyals.

Coir / Geo Jute netting technique has been found to be very effective for the purpose of stabilization of landslide / erosion affected areas. Maintenance of trekking routes, eradication of invasive species, water conservation, watch & ward etc. have also been done in various bugyals (is visible in the below pictures):



Protection works undertaken in Bugyals

Protection works undertaken in Bugyals

HABITAT IMPROVEMENT: ERADICATION OF LANTANA AND OTHER INVASIVE SPECIES

Lantana is one of the worst weeds of South American origin that has threatened native biodiversity of forest ecosystems across India. This weed has drastically degraded the ecosystems of the Himalayan region too, particularly in Uttarakhand. The infestation of lantana, polygonum and other such invasive species have, over a period, badly affected the biodiversity of vast areas along with destroying the natural habitats of large number of floral and faunal species. This situation is posing a threat to the survival of many wild animals are also responsible for the increasing incidents of human wildlife conflict in the State.

Since its introduction in India, first in year 1809 as an ornamental plant in Calcutta (now Kolkata), it has now spread over the entire country including most of the tropical and sub-tropical parts. Lantana has many adverse effects on forest ecosystems which include (i) loss of native biodiversity (ii) replacing native plant communities in forests ecosystems by forming dense impenetrable thickets, (iii) contributing to erosion of soil (iv) adversely impacting the regeneration of forests (v) harbouring vectors that carry infectious diseases and (vi) promoting fire hazard.

The most common methods used in India for the control of Lantana in forests are: (i) hand pulling, (ii) slashing/chopping of the stems, (iii) burning and (iv) manual grubbing with substantial removal of the root system. These methods have had no or little effect in controlling the spread of Lantana infestation, due to their inherent limitations and absence of an integrated control strategy. However, an improved technique suggested by Prof. C.R. Babu, noted environmentalist and Professor Emeritus, Delhi University has been widely adopted in Uttarakhand for eradication and management of lantana, that involves the following steps:

Component 1: Conceptual and implementation-planning – The first step towards lantana eradication and management is proper planning based on scale of infestation, season / time of eradication, terrain etc. Removal should be planned at the time when there are no flowers on lantana plants and done from denser areas to rarer areas. Similarly, in hills the approach of removal should be from slopes to the valley. Also, an ecological restoration plan should also be available based on the requirement of stakeholders.

Component 2: Removal of adult clumps using-cut rootstock method: This method involves cutting the main tap root of Lantana plant beneath the 'coppicing zone' (transition zone between stem base and rootstock). This method of removal involves the engagement of 2–3 individuals to work in a group for the removal of Lantana. The steps involved in the cut rootstock method are:

(i) The person, who engages in removal of Lantana, is positioned in a way that he stands near center of the Lantana clump with his back facing the clump and holding the handle of digger (kudal).

(ii) Using the specially designed digger, the person cuts the main rootstock of Lantana 3–5 cm below the soil surface by hitting the rootstock 3 or 4 times. It may be noted that the branches of Lantana clumps should not be slashed/cut to gain access to the center of the clump for its removal by cut rootstock method. Such physical manoeuvers minimize or prevent regeneration from rooted cut branches when they fall on the ground.

(iii) Lift the clump/s and place the clump/s upside down. If the clump is not placed upside down, the prostrate rooted branches and the aerial old branches having aerial roots at nodes may develop into adult plants when they come in contact with the soil. It may be noted that Lantana does not produce root suckers.

(iv) After drying the clumps, the clumps may be used as fuel or burnt at the same site or all the dried clumps may be collected at one place and then burnt. The best time for removal of Lantana is just before rainy season, i.e. when the plants are not in flowering and fruiting.

Component 3: Weeding out of seedlings/young plantlets of Lantana: A systematic search for trees used by the generalist bird species for perching needs to be carried out after Lantana's removal, both from areas where Lantana is removed and its neighbouring areas extending up to a radius of 1 km, which may vary depending upon the size of Lantana-infested area and the vulnerability of the area. After location of the trees used for perching by birds in these habitats, all the saplings found beneath them and along the surface run-off channels originating from the areas covered by them, should be removed manually and burned.

Component 4: Ecological restoration of weed-free landscapes: If the weed-free landscapes are not ecologically restored, reinvasion by Lantana or secondary invasion by some other alien/native weeds such as Parthenium, *Cassia tora, C. occidentalis* and *Sida* takes place. Therefore, ecological restoration is critical in the management of Lantana in the forest ecosystems. Weed-free landscapes in open areas can be easily

restored to grassland communities by planting rooted ramets or clumps of native grass species or by broadcasting pellets containing seeds of grass species. If the weed-free landscape has to be developed into a forest ecosystem, the native bottom–up woody species that process the habitat can be planted along with grass species or can be introduced in a sequential manner.

Lantana eradication has been one of the prime activities as far as protection and conservation of existing natural forests is concerned. Integrating plantation of grasses and other local species has been key goal under this activity along with undertaking other maintenance measures in lantana eradicated areas. Since, in 2023-24, improvement in wildlife habitat will be done in select landscapes under FLR initiatives and therefore, only the maintenance of lantana removed areas for year 2 and year 3 were proposed for the year. The year 2 and year 3 maintenance of lantana eradicated areas includes plantation of grass tufts, grass seed disbursal, removal of invasive annuals such as *Cassia tora*, *Artemisia* sp., *Parthenium* sp. etc.

Restoring lantana infested areas using Miyawaki technique has also given very good results in Uttarakhand. Several trials have been conducted in the State including areas of Terai, Bhabhar and hill area back in 2018. Miyawaki is a technique pioneered by Japanese botanist Akira Miyawaki, that helps build dense, native forests in a short time. This method includes planting trees (native species) as close as possible in the same area which not only saves space, but the planted saplings also support each other in growth and block sunlight reaching the ground, thereby preventing the growth of weeds, including lantana infested areas in previous years. The saplings become maintenance-free after the first three years.

The native trees of the region are identified and divided into four layers - shrub, sub-tree, tree, and canopy. The quality of soil is analysed and biomass which would help enhance the perforation capacity, water retention capacity, and nutrients in it, is mixed with it. A mound is built with the soil and the seeds are planted at a very high density - three to five sapling per square meter. The ground is covered with a thick layer of mulch.

2-Year-old Miyawaki plantation in lantana infested areas of Kalsi, Dehradun

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