

Offsetting Carbon Footprints in Southern Rajasthan

Closure Report
January'2019 to December'2023



Executive Summary:

Seva Mandir has partnered with MakeMyTrip Foundation to undertake plantation of 3.20 lakh saplings during the period of January'2019-December'2023 for offsetting carbon footprints. Physical works of plantation and capacity building initiatives were implemented in the rural and tribal areas in Udaipur and Rajsamand districts of southern Rajasthan. The key highlights of the project are as follows:

- Ecological restoration of 60 village pastures and 13 individual farmers' land covering an area of 1,258 hectares through plantation and protection measures.
- Created the natural habitats of native plants species and wild-life with active community participation.
- Village Institutions established and strengthened for the project sustainability.
- Generated employment through engaging local community for accomplishing physical works of protection, plantation and soil-water & soil-moisture conservation measures at regenerated sites.
- Sustainable harvesting of resources/produce viz. Grass fodder, Foliage fodder and Fuel-wood from the selected sites.
- Created a potential of carbon sequestration 3,172 tons annually against afforested area and planted 3,20,170 saplings.
- Social fencing was followed by involving village community using their traditional socio-cultural system.

Project Context:

Southern Rajasthan is semi-arid region with a hilly terrain, having an erratic weather pattern making the region vulnerable to climatic variation. The region receives average rainfall of 640 mm annually during the monsoons. Due to erratic monsoon and undulating terrain, water harvesting is poor and has high soil erosion.

Common land such as pastures, forest and revenue land constitute 72% of the total land area in our work area. Nearly 80-100% of rural poor depend on common lands for food, fuel and fodder. However due to anthropogenic pressure, encroachments have been happening on common lands of forests and village pastures. The private wastelands are also degraded, although in better conditions than commons, as families do not have expertise and resources to protect, restore and manage them.

The degradation of lands results in the loss of soil and water regime in the downstream areas lowering the net groundwater availability to critical category. A lack of trees and supporting fauna affects the local ecology. Degradation has led to low availability of fodder, fuel, wood and other forest produces affecting the livestock productivity and income and food security. And importantly, the interest of people to maintain them is lowering with time. The work of afforestation therefore becomes crucial not only from the point of view of ecological restoration but also from providing sustainable livelihoods for the community and making them interested towards conservation of those lands.

Project Objectives:

- Improving ecology through plantation.
- Sustainable improvements in livelihoods of local communities.
- Strengthen village institutions for conservation and management of common land.

Project Strategy:

The Community cohesion and solidarity in one of the key elements of this afforestation project. The village institution i.e. Gram Vikas Samooh is formed and strengthens for sustainability of the project. Commons like village pastures has been selected for its ecological restoration through planting native tree species of the area. The Gram Vikas Kosh (GVK) has been created as community contribution by engaged local community as wage laborer in physical works and token fees collected against resource/produces harvested from protected and afforested respective village pastures. A participatory planning was held with local community for implementation of field activities of protection, plantation and other assisted physical, vegetative measures. Regular community meetings/dialogues and capacity building events of classroom and on-site session was held for smooth implementation and effective results of project activities. The indigenous technical knowledge of physical interventions and vegetative measures was used for sustainable biodiversity conservation and management of plantation sites of village pastures.

Project Activity so far:

Survey and Site selection: A field survey was undertaken to locate and identify sites of common pastureland in the operational area of Seva Mandir. Field team consulted to local village institutions and PRIs i.e., Gram Panchayat for selection of the sites. The meetings were held with respective Gram Panchayat to know their willingness towards restoration of village pasture through plantation and protection measures. The legal status of such pastureland was clarified with consultation of Gram panchayat and village institution. The Gram panchayat provided non-objection certificate (NOC) to the village institution i.e. Gram Vikas Samooh, for protection and regeneration of pastureland through afforestation measures. A technical survey was conducted of the sites for assessment and estimation of physical activities like pit digging, soil-water conservation measures, protection wall, GPS survey, etc. Village meetings were conducted involving community and Gram Vikas Samooh to engage local people as wage laborer for completing physical works estimated for the selected sites. The sites of common pastureland were selected during the project period covering an area of approx. 1,258 hectares.

Plantation of Native species: Multipurpose native species are selected which are ecologically and economically important. The plantation of 3,20,170 saplings was completed at common pastureland owned by respective Gram Panchayat and individual farmer's land/group pastures. The Assisted vegetative measures of direct tree seeding, planting vegetative cuttings, etc. has been also done at the selected sites. Approx. 1,258 hectares area has been afforested during the project period. Details are given in below Table -1.

Table -1

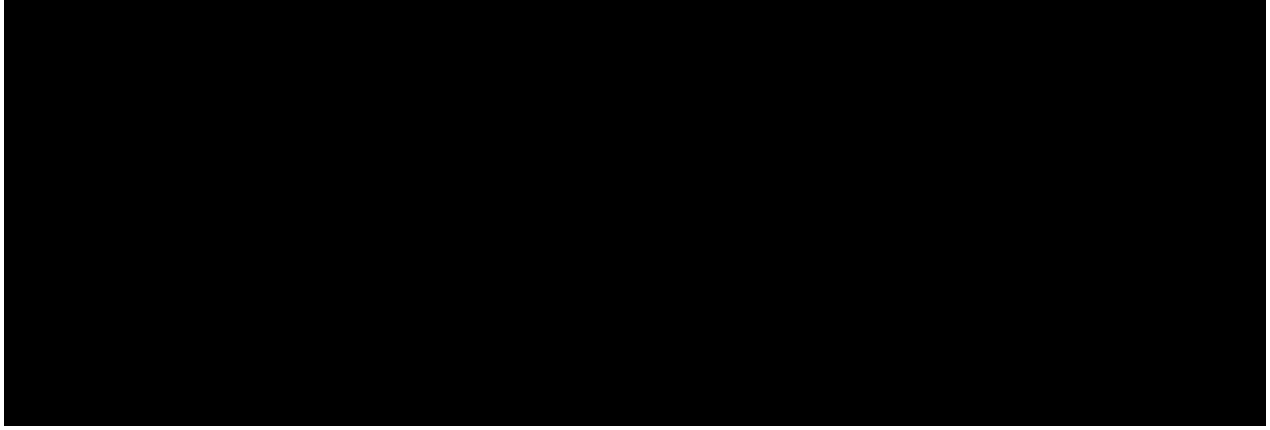


Table -2: List of native species planted

S. No.	Vernacular Name	Scientific Name
1	बहेड़ा	<i>Terminalia belerica</i>
2	कीकर	<i>Pithecellobium dulce</i>
3	बांस	<i>Dendroclamus strictus</i>
4	सीताफल	<i>Annona squamosa</i>
5	बिल्व	<i>Aegle marmelos</i>
6	हवन	<i>Gmelina arborea</i>
7	बेर	<i>Zizyphus mauritiana</i>
8	खिरनी	<i>Wrightia tinctoria</i>
9	इमली /ईख	<i>Tamarindus indica</i>
10	जामुन	<i>Syzygium cumini</i>
11	सिरस	<i>Albizia odoratissima</i>
12	कंजडी/चुरेल/बन्दरबाटी	<i>Holoptelea intergrifolia</i>
13	करंज	<i>Pongamia pinnata</i>
14	करमाला /अमलतास	<i>Cassia fistula</i>
15	खेर	<i>Acacia catechu</i>
16	रौंझ	<i>Acacia leucophloea</i>
17	कुमठा	<i>Acacia senegal</i>
18	खाखरा	<i>Butea monosperma</i>
19	महुवा	<i>Madhuca indica</i>
20	नीम	<i>Azadirachta indica</i>
21	सहजन/हरेग्वो	<i>Moringa oleifera</i>
22	सागवान	<i>Tectona grandis</i>
23	अरीठा	<i>Sapindus trifoliatus</i>

Site Protection: The common pastureland has been selected for plantation of native tree species. The physical protection by means of loose-stone protection wall and bio-fencing has been completed during the project period. The social fencing was followed to get actively involve local community by organizing socio-cultural events and by promoting traditional system adopted in village.

Soil-water & Soil-moisture conservation: The area of plantation sites is steep sloppy, undulated and rocky landscape. The soil-water conservation initiatives like contour trenches, check-dams, gully plugs, etc. has been created to check run-off rainwater at such landscape has been implemented at across the all sites.

Capacity building events:To enhance the capacity of the community and the field teams, different programmes of community orientation, community meetings and off-site, on-site trainings were conducted in the project. The local community actively engaged in planning and implementation of project activities through meetings and field trainings. During the period, total 151 capacity building events has been conducted; reached to 4,928 people as participants through training cum orientation, meetings, etc. Year-wise details of capacity building events conducted is given as Table -3.

Project Impact so far:

Harvesting of Non-timber forest produce: The natural regeneration of existing biomass has been increased due to the protection of the plantation sites of pastureland. Mainly the grasses and herbs regenerated which are important as fodder for domestic animals reared by local community. The Gram Vikas Samooh decided to harvest grass fodder during the scheduled period of each year and equally benefitted all households who are depended for the fodder. There are about 6,14,461 grass bundles (assuming each bundle 1-2 kg weight reach approx. 1,229 tones); have been harvested from such protected village pastureland. The estimated value of the harvested grass fodder is approx. Rs. 49,00,000-61,00,000 (varies cost of @ Rs.8-10 each bundle). Apart from this, fuel-wood of fallen sticks collected and other produce like wild seeds, leaves, etc. were sustainably harvested for further domestic use by village households. Year-wise details of harvesting of grass fodder is given below in Table -3.

Ecological Restoration of village pastures: The plantation site of 60 village pastures and 13 individual farmer's land (group pastures) has been ecologically restored. The protection, plantation and soil-water & soil-moisture conservation measures have been implemented at selected village pastures. There are biodiversity of native plant species and wild-life has been conserved by providing them natural habitat at the protected sites of pastureland being regenerated in the project.

Carbon sequestration: A potential of 3,172 tons carbon sequestration ¹(tons greenhouse gas Carbon dioxide removal) has been created upon protect and afforested sites of village pastures covering an area of 1,258 hectares.

¹Reference: Carbon sequestration assessment study supported by MakeMyTrip foundation - Annual Green house gas sequestration (Carbon dioxide) is 12.23 kg/per tree/per year on factoring survival.

Employment generation: The local community was engaged as wage labourer to accomplish physical interventions of protection, plantation and soil-water, soil-moisture conservation. Total 1,11,967 labourdays (amounting to approx. Rs. 2.35 crores) have been generated (engaged approx. 70% women mostly) during the project period. Year-wise details of labourdays generated are given below in Table-3.

Panchayat convergence: There are Gram Panchayat whose owned such village pasture, the panchayats actively involved while planning of activities at the selected sites. The PRI members were sensitized towards conservation of such village pasture for ecosystem restoration through protection and vegetative measures of plantation, seeding, etc. The area of around 61 hectares of village pastures has been protected through convergence through respective panchayat under MGNREGA scheme.

Survival Assessment: The planted saplings were assessed its survival during the period. The community members and community resource person including field staff were involved for individual count of saplings at each afforested site. There is overall survival is 81% assessed during the period. Year-wise details of survival are given below in Table -3.

Table -3

Particulars	2019	2020	2021	2022	2023	Grand Total
Number of Labourdays generated (in nos.)	17,000	13,942	18,400	31,093	31,532	1,11,967
Number of capacity building event conducted (in nos.)	7	13	17	14	100	151
Harvesting of Grass bundles (in nos.)	28,500	63,597	1,07,660	1,94,117	2,20,587	6,14,461
Harvesting of Grass bundles (in tons)	57	127	215	388	441	1,229
Panchayat convergence (in hectares)	6	9	10	21	15	61
Number of saplings planted (in nos.)	40,855	37,290	51,040	94,120	96,865	3,20,170
Number of saplings survive (in nos.)	29,824	28,340	36,238	77,178	87,992	2,59,906

The challenges faced during the project implementation and learning:

Major Challenges:

- Encroachment and community conflicts over three common pastureland was a challenge, which was resolved with support of village institutions i.e. Gram Samooch and Gram Panchayats.
- The challenge of climate events like heat waves, dry spell, on-set of monsoons, hailstorm affected the plantation growth and its survival. Adaptation measures such as soil-moisture conservation and assisted vegetative measures were taken up, to facilitate natural regeneration of existing vegetation and address gap filling due to plant mortality.
- Finding saplings of local and diverse species was also challenging, in some areas. Attempts were made to address it through assisted vegetative measures such as direct tree seeding and planting vegetative cuttings.
- Human-wild life conflicts are quite common in the area. The wild animals damaged newly planted saplings, which affected the survival of plants.
- Invasive species like *Lantana*, *Jhuliflora*, *hiptis*, *parthenium*, etc. spread very fast, covering large areas of common lands, and their removal is expensive, which has increased the afforestation cost. On some sites, where removal was tried, it was removed by machines and community *shramdaan*

Learning:

- The soil-moisture and soil-water conservation are quite effective measures to adapt from climatic stress and supported to growth of planted saplings and natural regeneration of existing root stock to increase vegetative cover of live trees.
- The village institutions play important roles in active community participation and resolving community conflicts over common land. During the process of resolution of any social issue or conflict, community cohesiveness increases and that helps in long term restoration of commons, and addressing issues of caste, gender, and other social metrics.
- During the covid period, the project helped to generate local employment for migrant community members (mostly youths & adults) who came back to their villages. This established their confidence towards conservation of common land for local ecosystem.
- Vegetative measures like direct tree seeding, planting vegetative cuttings, etc. is cost-effective measure for gap-filling of mortality and to increase vegetative cover at the larger landscape. This also helped adapt to climatic variation.
- Sustainable harvest of grass fodder and its equal distribution among community has supported to ground biomass regeneration and conservation of common pastureland.
- Study of carbon sequestration enhanced capacity of the team and organization, and this metric has been integrated in all the plantation interventions.

दैनिक नवज्योति

AasPaas - 17 Jul 2022 - Pa

चतरपुरा में पौधरोपण

झाड़ोल। झाड़ोल ब्लॉक के सुल्तान जी का खेरवाड़ा पंचायत के चतरपुरा ग्राम की 17 हेक्टेयर भूमि पर पौधरोपण कार्य का शुभारम्भ ग्राम समूह एवं सेवा मंदिर के संयुक्त तत्वावधान में किया गया। सेवा मन्दिर के वन प्रभारी हीरा लाल सागिया ने कहा कि वानिकी इकाई उदयपुर से आये डॉ जीपीएस झाला द्वारा किस जगह में कौन सा पौधरोपण करना तथा कैसे लगाना आदि के तौर तरीके एवं गड्डे में मिट्टी की मात्रा के बारे में जानकारी दी गयी। सेवा मन्दिर के पूर्व सचिव कृपा शंकर जोशी ने कहा कि पौधरोपण के बाद इन पौधों की 2 वर्षों तक देखभाल की जवाबदेही भी समुदाय लें तथा समय समय पर इसकी देखभाल करें तो अधिकतर पौधों को जीवित रख पायेंगे। चरागाह के पास ही 150 हेक्टेयर वन भूमि हेतु सामुदायिक वनाधिकार दावा पत्रावली तैयार कर वन विकास पर भी जोर देना चाहिये। वनाधिकार समिति अध्यक्ष शंकर लाल ने कहा कि समिति द्वारा शीघ्र ही बैठक रखी जाकर दावा पत्रावली पर संवाद कर तैयार की जायेगी। पौधरोपण के दौरान 60 से अधिक लोगों की भागीदारी रही है। देवी लाल कटारा, मनोज बारबर, कीर्तन कुमार, अर्जुन लाल एवं सविता देवी ने भी सम्बोधित किया। चरागाह में पौधरोपण कार्य महिला क्षेत्रीय कार्यकर्ता सुमित्रा भगोरा एवं धर्मी मीणा की देख रेख में किया जा रहा है, जिसमें लगभग 8000 पौधरोपण का लक्ष्य है।

ओगणा। हरियालो राजस्थान के तहत सेवा मन्दिर केंद्र होली फला के छात्र-छात्राओं द्वारा पौधरोपण किया गया। केंद्र के अनुदेशक केशूलाल ने बताया कि प्रत्येक छात्र को एक पौधा लगाने को प्रेरित किया। शिक्षा प्रभारी खुशबू, अनुदेशक गुलाराम और ग्रामीणों सहित बालकों ने पौधरोपण किया।

बार-बार सिर्फ आश्वासन मिलने से फैला आक्रोश, ग्रामीण फिर पहुंचे कलेक्ट्रेट - एसडीएम का किया घेराव, आमरण अनशन की दी चेतावनी - उम्मेदपुरा में सरकारी चारागाह भूमि पर अतिक्रमण का मामला

राजसमंद (खबर सप्ताह संवाददाता)। समीपवर्ती केलवा क्षेत्र स्थित धोयला ग्राम पंचायत के उम्मेदपुरा में सरकारी चारागाह भूमि पर व्याप्त अतिक्रमण हटाने को लेकर प्रशासन से बार-बार माहव आश्वासन मिलने एवं कार्रवाई कुछ नहीं होने से आक्रोशित ग्रामवासी शुक्रवार को एक बार फिर कलेक्ट्रेट पहुंच गए जहां उपखण्ड अधिकारी का घेराव करते हुए शीघ्र कार्रवाई नहीं होने पर आमरण अनशन पर बैठने की चेतावनी दी गई। मुख्यांश के नाम ज्ञान भी सीपा।



प्रदर्शन के दौरान प्रशासन ने समस्त अधिकारियों को 10 दिनों के भीतर चारागाह भूमि से अतिक्रमण खत्म करने के लिए आश्वासन दिया था लेकिन कार्रवाई नहीं होने से ग्रामीणों में रोष फैल रहा है वहीं अतिक्रमण के हीसले बुलन्द है। इस स्थिति के चलते गांव में अशांति व अरावकता का वातावरण पैदा हो रहा है जो फिंता का निष्पत्त है। ज्ञान में सफ चेतवनी दी गई कि यदि शीघ्र ही अतिक्रमण खत्म नहीं किया गया तो महत्वपूर्ण भू-संपत्ति का अन्याय करने

ग्रामीणों ने एसडीएम के समक्ष अपनी समस्या रखी एवं कार्रवाई समन्वयी मांग को दोहराते हुए आक्रोश जताया कि गत 18 अक्टूबर को धना-प्रदर्शन के दौरान आठ-दस दिन में अतिक्रमण हटाने का आश्वासन दिया था लेकिन कार्रवाई कुछ भी नहीं हुई। इस दौरान सभी ने प्रशासन के रवैये पर आपत्ति भी जताई एवं आरोप लगाया कि बार-बार आश्वासन देकर ग्रामीणों को गुमराह किया जा रहा है जिससे अतिक्रमण को प्रश्रय मिल रहा है जो चिंताजनक है। इस दौरान

ग्रामीणों ने सीएम के नाम एसडीएम को ज्ञान भी सीपा जिसमें पौधरोपण के लिए आश्रित चारागाह भूमि पर व्याप्त अतिक्रमण का खीर देते हुए बार-बार प्रशासन को अवगत करने के बाद भी कोई कार्रवाई नहीं होने की जानकारी दी गई एवं तत्काल प्रशासन को निर्देशित कर ग्राम एवं गन्धीत में सरकारी भूमि को अतिक्रमण मुक्त करने की मांग की गई। इस दौरान ग्राम विकास कमेटी को और से एक अन्य ज्ञान भी एसडीएम को दिया गया। ज्ञान में कहा गया कि गत दिनों धना-

हू प्रशासन ने आगामी 15 नवम्बर से अतिक्रमण स्थल चारागाह भूमि पर आमरण अनशन पर बैठने जिसकी समस्त जिम्मेदारी प्रशासन को होगी। ग्रामवासियों ने बताया कि घेराव, प्रदर्शन एवं ज्ञान आदि के दौरान एसडीएम डॉ. सपेल ने दीपवली एवं के पक्षत अतिक्रमण हटाने का विश्वास दितया। साथ ही कहा कि तब तक इससे जुड़ी कानूनी प्रक्रिया पूर्ण कर ली जायेगी एवं त्योहार के बाद अतिक्रमण खत्म कर सरकारी भूमि को संरक्षित किया जायेगा ताकि ग्रामीणों में इतका उद्वेग हो सके।

25/7/19 पौधरोपण कर श्रमदान
उदयपुर। सेवा मन्दिर और मेक माई ट्रिप कम्पनी के संस्थापक व ग्रुप मुख्य संचालक दीप कालरा के नेतृत्व में कम्पनी के 14 कार्यकर्ताओं ने पाटिया गांव में पौधरोपण कर श्रमदान किया। सेवा मन्दिर के अध्यक्ष जनत शाह, मुख्य संचालक रौनक शाह आदि मौजूद थे।

अभियान के तहत लगाएंगे 2 लाख पौधे
उदयपुर . सेवा मन्दिर और मेक माई ट्रिप की ओर से पौधरोपण अभियान चलाते हुए पौधे लगाने का लक्ष्य रखा है। इसके तहत पांच साल में 2 लाख पौधे उदयपुर और राजसमंद जिले लगाए जाएंगे। आयोजन के तहत ग्रुप मुख्य संचालक दीप कालरा की मौजूदगी में गोगुन्दा के पाटिया में पौधरोपण किया गया। सेवा मन्दिर अध्यक्ष जनत शाह, मुख्य संचालक रौनक शाह मौजूद थे।
रा.पत्रिका
25/7/2019

पर्यावरण संरक्षण के लिए
किया पौधरोपण
सेवा मंदिर और मेक माय ट्रिप कंपनी के साझे में पर्यावरण संरक्षण के लिए चलाए जा रहे कार्यक्रम के तहत शुक्रवार को गोगुन्दा जिले के पाटिया गांव में पौधरोपण किया गया। अभियान के तहत जिले भर में दस लाख पौधे लगाए जाएंगे।
D. B 25/7/19.

Social Media links:

LinkedIn:

1. <https://www.linkedin.com/feed/update/urn:li:activity:7110113619773657088>
2. <https://www.linkedin.com/feed/update/urn:li:activity:7098176228435607552>
3. https://www.linkedin.com/feed/update/urn:li:activity:7146436380850638848?updateEntityUrn=urn%3Ali%3Afs_feedUpdate%3A%28V2%2Curn%3Ali%3Aactivity%3A7146436380850638848%29

Instagram:

1. <https://www.instagram.com/p/CqmiWFgy-rj/?igsh=MWJ1cDI4aGRnMXBiZg==>
2. <https://www.instagram.com/p/CpcPs1lhqIH/?igsh=ZTQ4Mmp4d3h1M296>
3. <https://www.instagram.com/p/CwEwulfNFvU/?igsh=ZXBndWN1eHpjbxU1>

Project stories:

Story No. 1 Ecological Restoration of Khuntwada Pastureland

Village Khuntwada is situated in Kherwada block of Udaipur district, between the beautiful Aravalli hills. Seva Mandir has started its programmes in this village in 1987. During the year 2019, with support from MakeMyTrip Foundation- Khuntwada village pasture (Common Pastureland) has been ecologically restored through plantation of 9,500 saplings followed by re-plantation of 1,200 saplings. This includes soil-moisture & soil-water conservation measures. A loose-stone protection wall has also been constructed covering an area of 45 hectare pastureland.

In Udaipur district, Commons mainly contributes to livelihood in villages i.e. for livestock fodder, grazing, fuel-wood, etc and associated ecosystem of villages as green cover in the area.

A total of 220 households are directly being benefitted through resource benefits like grass fodder and other ecosystem services. The village has heterogeneous community including tribal, farming families- Meghwal, Patel etc.

Due to site protection and active community involvement for social fencing, ground biomass mainly grasses has improved its natural regeneration in the area and improved productivity. Till 2022, total 90,663 grass bundles have been harvested by these 220 households, they had equally distributed among themselves the harvest every year. During the period of five years of protection & conservation by the community a total of approx 400 tones of grass fodder worth approx Rs. 13.00 lakhs value was harvested and distributed.

The grass harvesting period is celebrated in village involving all community members on 25th December every year. A social get-together is conducted in the village by involving all family members including inviting married daughters and their children once during the winter vacations period. Mostly the women go to harvest fodder from the pasture.

Around Rs. 8.54 Lakhs is invested for plantation and protection activities for the ecological restoration of Khuntwada pastureland through vegetative measures like plantation, seeding, etc. The plantation includes species like Churel, Amaltas, Kher, Sahejan, Karanj, Latakaranj, Khirni, etc. A participatory exercise was conducted with smooth and village community to discuss and select native species which have medicinal, ecological and economical important at the local level.

This developed support to local biodiversity mainly provides natural habitat to wild life like Jackal, Garden lizard, Mangoos, Purple sunbird, House sparrow, etc. and also regenerates native tree species like Kher, Ronj, Palash and Grasses like Heran, Rohida, etc.

Currently, the pasture is being managed and conserved by Gram Vikas Samooh and Village Community as whole with following equal benefit sharing system of resources/ produces from the

pasture. A system of social fencing is also being followed by the village community. The natural regeneration of native flora and wild life habitat has also increased.

By looking at the benefits of this pasture, another two pastureland sites of 19 hectare area is also undertaken for its restoration by plantation through MMT support. Thus, the village commons are conserved with support from MMT Foundation and with active community participation in Khuntwada village.

Story No. 2 *Kesar Chidkaav* - a socio-cultural tradition for conservation of village commons.



Kesar Chidkaav is a socio-cultural tradition in the tribal community of the area. It is a conservation ritual for the protected commons sites like pasture, community forest, etc. The entire village community gathers and organizes a journey to a temple named lord Keshariya ji Temple. They worship there and take part of '*Kesar*' (saffron paste) offered to lord which is mixed with fresh/ clean water and sprinkled in the area protected and conserved such commons. This declares as sacred site to restrict harvest of newly grown green twigs/ branches, planted saplings, destructive lopping, and open grazing by livestock. This ritual was held by village community at common pastureland covering an area of 12 hectares of Jhuthri Bujhda village in Kherwara block where plantation was completed during the year 2022 in the monsoon season.

Story No. 3: Reclaiming Village Pasture: A peaceful victory in Ovra

In Ovra, a tribal village of Jhadol block, a peaceful social dialogue successfully resolved encroachment issues over the village pasture.

The 24.13-hectare pastureland in Ovra Village, identified for restoration by Gram Samooh, was encroached by 22 families from the village. The Samooh held multiple dialogues for 5 months and conducted more than 70 meetings with the encroachers, resulting in 20 families voluntarily vacating the area. Most families were doing farming in the common land but agreed to remove their crops. However, two families remained, insisting on staying as they lived in a *pucca* house with toilet facilities. Despite filing a complaint with the authorities, the encroachment persisted. Ultimately, the Gram Samooh, decided to address the issue at the village level. A peaceful discussion with the encroaching families led to a mutual agreement to vacate the illegal encroachment, considering the long-term social relationship with the village. The families demolished their house with support of the community. The Gram samooh helped in transporting the usable material such as tin sheds, iron

doors, stones etc, to the farms of the encroaching families, and contributed Rs. 25,000 for construction for their houses.

The village pasture is now restored with construction of a boundary wall and plantation of 13,000 saplings.

Story No. 4: Ecosystem services and Biodiversity conservation

Above common land selected as plantation sites are playing an important role for maintaining ecological balance and contributing to provide ecological services as a both Abiotic (Air, water and land) and Biotic (wild flora & fauna) in the geographical coverage. These protected sites also supports to biodiversity conservation in the area in 180 hectares. The protection of the site is naturally regenerate existing flora and provides natural habitat to wild fauna migrates in the area. The physical interventions like soil-water conservation measures increases biomass of the area, check runoff rainwater, prevent soil erosion which also support to recharge the ground water in the area 530 hectares at downstream of watershed.

The wild fruits trees e.g. Ber (*Zizyphus numularia*), Kikar (*Pithecellobium dulce*), Tendu (*Diospyros melanoxylon*), etc. which are growing naturally in protected sites provides food to birds migrating and nesting there. There are several fodder trees e.g. Salar (*Boswellia serrata*), Siras (*Albizzia odoratissima*), Palash (*Butea monosperma*), etc. which provides leaf fodder to domestic animals (livestock) reared by benefitting households of villages. The most palatable grasses and herbs like Heran (*Sehima nervosum*), Durwa (*Cynodon dactylon*), Laap (*Heteropogon contortus*), Khargu ghaas (*Glossocardia sp.*) etc. provides green fodder for herbivores like wild hare migrating in the area.

Birds are good ecological indicators of any ecosystem. As they are also known as good pollinators, seed dispersers and natural insect and rodent pest controllers, above all their feeding habits helps in maintaining balance in our ecosystem. It is the food habits of a Koel, Parakeet, Barbet or Hornbill that preferably feed on fruits and helps in dispersing the seeds that allow new germination of a plant at different locations and sites. Similarly Purple sunbird is a small bird but its feeding on nectar helps in pollination, one of the major phenomenon of the existence of life on earth.

Mammalian fauna has its own significance in all layers of the ecosystem; it starts from seed disperser to top predator that regulates the population of other small animals. In this area Indian Flying Fox, Five-stripped Palm Squirrel and Jackal is the possible seed disperser, while Stripped Hyena acts as the top-predator in absence of Common Leopard but some of protected plantation sites where found movement of common leopard.
