



Environmental Protection Strategy for Sustainable Development in Umarjhala clusters of Banswara district, Southern Rajasthan.

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ABSTRACT: Deforestation is the leading cause of the depletion of genetic diversity all over the globe. The main warning to this age is the extinction of biodiversity; this threat is considered a threat to civilization next to nuclear war. Physico-chemical properties of the earth's surface can change due to deforestation. Such changes are directly related to global warming. Afforestation may be a good strategy for this burning problem because the afforestation project can act as the most effective carbon sink. Umarjhala cluster is an excellent example of afforestation in this area. This afforestation unit is a larger unit of afforestation in Asia. Umarjhala Pathara comes under the Ghatol range of the Banswara district of southern Rajasthan (India). The Forest land of this range is 20162.98 hectares the total area of the Umarjhala cluster (Block 1-19) is 3198 hac. Most of the part of this cluster was comes under the degraded forest ecosystem. Land conditions were just near to barren. This block was selected for afforestation in 1993 under the Aravali forest program. Today, the Umarjhala cluster is a good and healthy forest ecosystem that provides many essential services upon which biodiversity depends. We have observed some environmental and socioeconomic benefits of this cluster during this case study. Significant efforts of plantation prove ecological benefits. In this cluster, 888 hectares total area planted in this afforestation unit out of them 545 hac. Comes under Aravali Project, 295 hac. comes under I.P.E.P. and 48 hac. area planted in other schemes. Afforestation work was started here in 1994 on words. 545 hac land produced from 1994-1998. Some plantation work was also done under Janta Van Yojna. The plantation has been completed in different blocks under the Aravali scheme project and J.F.M. from 1994 to 1998 and from 1998 to 2002. The plantation is completed in a cluster in linked patches. This anthropogenic approach's socioeconomic benefits are proved by socioeconomic status of surrounding inhabitants, which shows this forest ecosystem's positivity. This cluster provides them with their needful objects and economic benefits 1301 families of V.F.P.M.s are benefits by N.T.F.P.s. Several local people also got employment under different schemes of afforestation of this area. This cluster is part and parcel of social ecology also. Social ecology goes beyond environmentalism, insisting that the issue at hand for humanity is not merely protecting nature but rather creating an ecological society in harmony with nature for present and future generations in a sustainable manner.

KEYWORDS: Deforestation, Afforestation, Anthropogenic, Environmental Protection, The Umarjhala.

I. INTRODUCTION

A structured, systematic conservation planning approach provides the foundation for environmental protection strategy for sustainable development for managing whole landscapes, including areas allocated to both production and protection [1]. Forest cover is increasing in countries across the globe. New forests are regenerating, and forest plantation is being established for different purposes. New plantation and secondary forests can improve the forest ecosystem and help in wildlife conservation. Anthropogenic approaches to forest ecosystem restoration depend on factors such as forest, soil degradation, residual vegetation, etc. [2]. Afforestation the right anthropogenic process of environmental protection and sustainable development. Biodiversity loss from deforestation can partly be covered by expanding secondary forest, plantation forestry, and other positive anthropogenic activities [3]. High rates of deforestation have led to the loss of biodiversity [4]. The limitation of protected areas has led to a growing interest in the broader anthropogenic landscape [5] and [6]. Secondary forests, tree plantation, planted forest, and naturally regenerated forest and afforestation are essential for biodiversity conservation and other ecosystem services [4], [7] and [8].

Ecosystem services can be valued and mapped. Anthropogenic efforts to conserve nature and biodiversity can pay the financial services and their benefits to human beings [9]. Some other aspects of wildlife conservation focus on water supply, water purification, carbon sequestration, crop pollination, etc. Therefore, these aspects are included in central themes of several environmental research projects and planning [10]. An integrating approach of sociologists, anthropologists, politicians, and scientists are needed to identify

how social structure and cultural elements can work together [11]. The extractive forest is also an essential anthropogenic approach to forest ecosystems and biodiversity conservation because it is an excellent alternative forest products' utilization without disturbing the forest ecosystem. Extractive forest reserves are the most valuable land. These lands are useful for latex, resins, spices, medicinal plants, ornamental plants, and some other N.T.F.P.s [12]. Deforestation is the leading cause of the depletion of wildlife diversity all over the globe. The main warning to this age is the extinction of wildlife; this threat is considered a threat to civilization next to nuclear war. Some plant diversity theories are also based on faunal diversity; therefore, sustainable conservation of tropical plant diversity requires preservation of the entire forest communities, mostly insects, birds, mammals, and decomposers. These conservational efforts will be significantly enhanced and benefited by research on the dynamic of fruit and seed dispersal, pollination, and community ecology [13]. Physico-chemical properties of the earth's surface can change due to deforestation. Deforestation is responsible for the change in physico-chemical properties of the surface [14]. Such changes are directly related to global warming. Afforestation may be a good strategy for this burning problem because the afforestation project can act as the most effective carbon sink [14] and [15]. Women always play a crucial role in the preservation and protection of tropical forest ecosystems. In Zimbabwe, so many women manage forest ecosystems and socioeconomic activities through different projects and activities [16]. Afforestation anthropogenic activity may be a social ecology that goes beyond environmentalism, insisting that the issue at hand for humanity is not merely protecting nature but rather creating an ecological society in harmony with nature. The primary social unit of a proposed environmental society is the community, a human scale, a sustainable settlement based on ecological balance, community self-reliance, and participatory democracy assemblies working envision a confederation of community assemblies working together to foster meaningful communication, co-operation public service in everyday practices [17]. Sustainable development involves species of animals and plants, habitats, natural resources, and incorporates human rights, education for all, health, and human security [18]. The western region of the United States offers more participatory activities in sustainability initiatives which are based on local sustainability initiatives in the United States through the lens of the economic development, environmental protection, and social equity [19]. Umarjhala Pathara comes under the Ghatol range of the Banswara district of southern Rajasthan. Forest land of this range is 20162.98 hac.

II. MATERIALS AND METHODS

The present study was carried out in the Umarjhala cluster of the Ghatol Range of Banswara Forest Division. This study is based on field, site observation, and views of some viewers, villagers. The information and data were collected through discussions with members of the Forest Department, Irrigation department of the related area. Some data were also collected through secondary sources. These include literature review, reports, and records of associated departments.

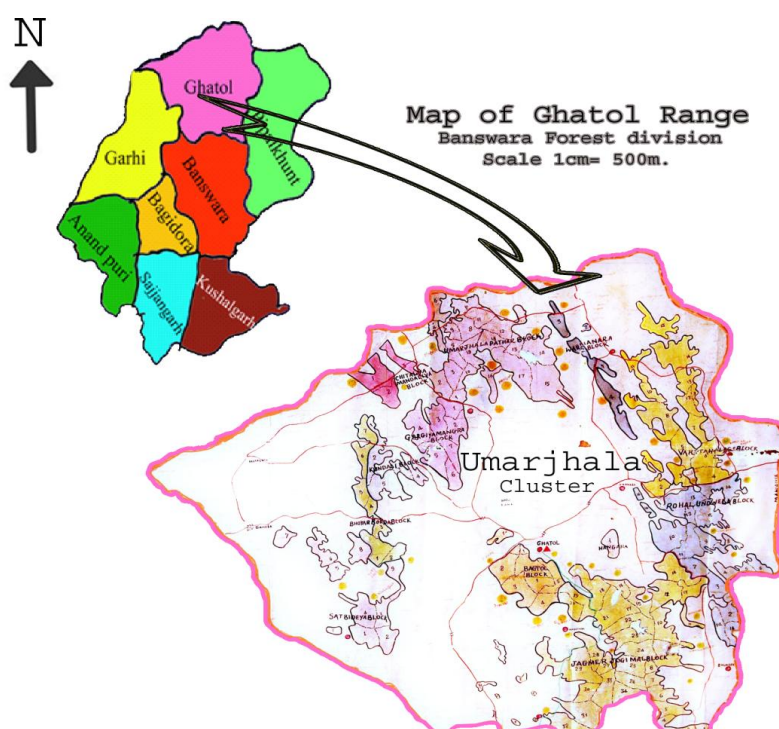


Fig. 1 Map of the study area

III. RESULTS AND DISCUSSION

The plantation has been completed in different blocks under different schemes and projects from 1994 to 1998, and from 1998 to 2002 (Tables 1), these blocks are linked together in a cluster area.

S.No.	VFPMc	Plantation name	Year	Area (Hac.)	Description
1	Dagal	Umarjhala Pathara -I	1994	50	A.A.P.
		Umarjhala Pathara-II	1995	50	A.A.P.
		Umarjhala Pathara-C	1999	50	I.A.E.P.
		Umarjhala Pathara-E	2000	60	I.A.E.P.
		Umarjhala Pathara-(Dagal)	2001	45	I.A.E.P.
			Total	255	
2	Jhanjhor	Umarjhala Pathara -IV	1996	50	A.A.P.
		Umarjhala Pathara -VIII	1997	30	A.A.P.
			Total	80	
3	Mahuwal	Umarjhala Pathara -III	1995	50	A.A.P.
		Umarjhala Pathara -VI	1996	65	A.A.P.
		Umarjhala Pathara -D	1999	50	I.A.E.P.
		Umarjhala Pathara -F	2000	40	I.A.E.P.
			Total	205	
4	Pathara	Umarjhala Pathara -V	1996	50	A.A.P.
				Total	50
5	Makanpura	Umarjhala Pathara -X	1998	50	A.A.P.
		Umarjhala Pathara Z	1998	50	
			Total	100	
6	Amarpura	Umarjhala Pathara -IX	1997	50	A.A.P.
		Umarjhala Pathara -XI	1998	50	A.A.P.
			Total	100	
7	Charna mundwai	Umarjhala Pathara -(Tartai)	2000	50	I.A.E.P.
				Total	50
8	Vadalia	Umarjhala Pathara -(Vadalia)	2002	48	
				Total	888

Tables 1. Detail of Different plantation in the Umarjhala cluster.

The faunal diversity of the Umarjhala cluster (Table 2) shows that a forest ecosystem is improving in this afforestation area, which will enhance wildlife conservation goals and sustainable development with the joint participation of villagers and the forest department. This result incorporates with findings of Chazdon [2] Umarjhala cluster fulfills the characters of an extractive forest because it is an important site of the utilization of forest product without disturbing the ecology of developing forest ecosystem; this result shows similarity with earlier work of [12].

S.N.	Fauna	ZOOLOGICAL NAME
1	INVERTEBRATE	Common Protozoan, Coelenterates, Annelids, Snail, Insect, Arachnid, etc.
2	AMPHIBIA	Bufo melanostictus, Bufo stomatcus, Rana limroetaris, Rana tigerina, Buphlyctis cyonophlyetis
3	REPTILIA	Python molurus, Eryx johnii, Calootes versicolor, Naja naja, Hemidactylus triedrus, Bungarus caeruleus, A. fasciolatus, A. schistosum, A. nasutus.
4	BIRDS	Pavo cristatus, Halcyon smyrnensis, Copsychus saularis, Ardea cinerea, Ploceus philippinus, P. papillosa, C. nigra, A. grayii, B. ibis, C. albus.
5	MAMMALS	Presbytis entellus, Panthera pardus, Felis chaus, Herpestes edwerdsi, Canis aureus, Herpestes edwerdsi, Hyaena hyaena, Lepus nigricollis, Boselaphus tragocamelus, Funambulus phillippensis, Vulpes bengalensis

Table 2. Faunal diversity of the Umarjhala cluster.

Mostly teak forest (938 hac.) and natural forest (492 hac.) are present in this afforested area (1768 hac.). Some plantation work was also done under Janta Van Yojna. A significant part of the plantation has been completed in different blocks under the Aravali scheme project and J.F.M. from 1994 to 1998 and from 1998 to 2002.

Micro planning and V.F.P.M.s were formed before starting afforestation in this area. The first plantation was completed within two and a half days (24-26 June-2002) in this cluster. Today this area has the

right number of natural and planted trees. Plants are planted as per the requirement of the inhabitant and ecosystem. Contour, check dams, earthen dams, and ditches were also formed for water and soil conservation. Groundwater level and moisture containing capacity of soil were increased due to these strategies.

The socioeconomic status of surrounding inhabitants shows the positivity of this anthropogenic forest ecosystem, providing them with their needful objects and economic benefits. Hand pumps, diesel pump sets, earthen bands, Grain Banks, etc., were also supplied to villagers by the forest department. Some income-generating activities are also going on in this cluster. 1301 families of V.F.P.M.s are benefited by N.T.F.P.s. Several local people also got employment under different schemes of afforestation of this area. Members of V.F.M.P.s are economically benefited from this cluster's bamboo and grass (Table 3 grass – bamboo).

S.No	VFPMc	1995 Bundle of grass	1996	1997	1998	1999	2000	2001	2002	2003	2004	2005	2006	2007	Description	2008	T. Bundle
1	Dagal	15392	30330	171000	186980	210700	173000	245820	242500	338500	352000	212000	171000	37175	2386397	38000	24,24,397
2	Mahuwal	4400	32500	110000 0	104000	142500	107000	166400	177500	344500	375000	313000	57750	30350	1964900	41100	20,06,000
3	Pathara			15600	21500	26500	7800	14600	16000	20000	35000	32000	45425	8850	243275	9050	2,52,325
4	Jhanjhor			23200	28000	29500	30230	44137	44500	96000	130000	108500	64000	20300	618367	21050	6,39,417
5	Amarpura				30000	71000	60750	62800	40000	100000	120000	138500	54950	17850	695850	29550	7,25,400
6	Makanpura					11000	16320	8885	27200	100000	96000	107000	45500	7950	419855	10800	4,30,655
7	Charna mundwai					34000	41100	28800	30720	100000	40000	65500	21600	-	361720	6500	3,68,220
8	Tartai							75000	9750	11400	13200	15600	17800	8550	83800	7300	91,100
9	Vadalis								1500	10500	16500	41000	30000	12500	112000	1,9000	1,31,000

Table 3. Grass Production from Umarjhala cluster

IV. CONCLUSION

This anthropogenesis approach is an excellent example of afforested clusters in this area. In the coming five years, different VFMPs will get benefits from this cluster. Before the starting of afforestation of this area, micro-planning and V.F.P.M.s were formed. That area was the first plantation was completed within two and a half days (24-26 June -2002).

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