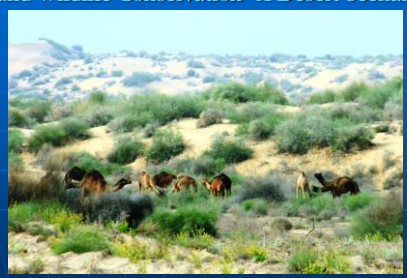
World Environment Day: Connecting People to Nature and Wildlife Conservation- A Desert Scenario



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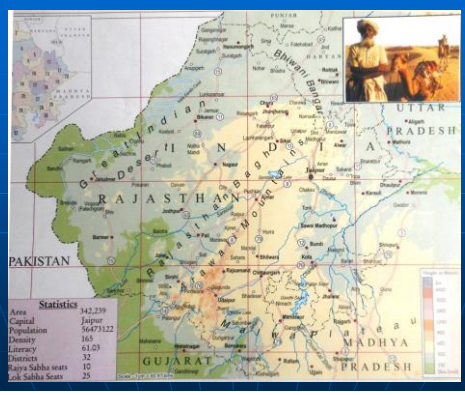
Bikaner (Rajasthan).

1

Topography of Thar Desert

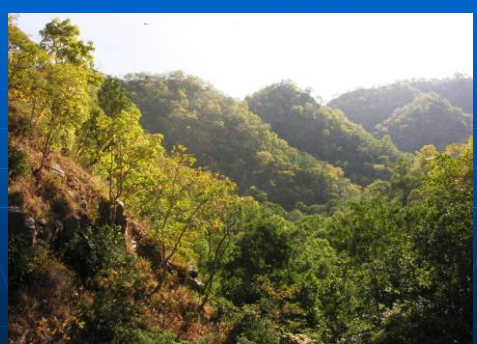


2

Various Ecological Conditions

3

Aravalli Hills



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Vindhya Hills

5

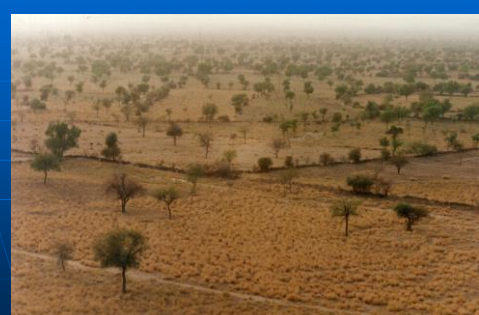
Chambal area

6

Thar Desert

7

Agricultural land



8

Urban habitats

9

Rural habitats

10

Bishnoi Areas

11

Aquatic habitats

12

Kheechan, Phalodi

13

Land Coverage of Rajasthan

- Forests < 1.8%
- CPR's: Gauchars, Orans, Agors: > 5.6% ?
- About 92% are remaining institutions which largely includes agriculture land and urban areas.

14

Majority of Rajasthan's population is dependent on natural resource and biodiversity available in the environment for their survival and livelihood, in particular tribal and traditional communities like farmer, pastoralists, fisherman, hunters and gathers.

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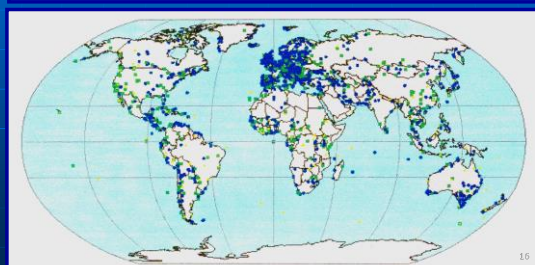
IUCN:

(International Union for the Conservation of Nature)

Recognized protected areas from

3,000 (in 1990) to 7,000 (in 2013)



16

Protected area's in Rajasthan to conserve the Biodiversity

Type of Protected Areas	India
National Parks	4
Wildlife Sanctuaries	28
Community Reserves or Conservation Reserves	5

17

Carnivore

18

Herbivore

19

21

The Great Indian Thar Desert

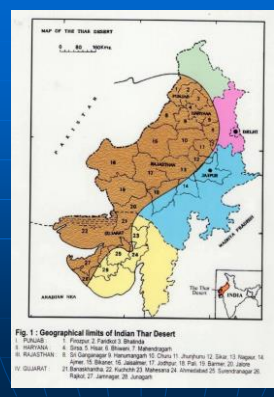


Fig. 1 : Geographical limits of Indian Thar Desert

22

Area occupied in various districts and states

State	Area in sq km	Concerned districts
GUJARAT	62,180	Entire : **Kutch** Part ; **Banaskantha, Mahesana, Ahmadabad, Surendranagar, Rajkot, Jamnagar & Junagarh**
RAJASTHAN	196150	Entire : **Ganganagar, Bikaner, Jaisalmer, Barmer, Jodhpur & Churu** Part : **Nagaur, Ajmer, pali, Jalore, Jhunjhunu & Sikar**
HARYANA	11,000	Part : **Hissar and Mohindegarh**
PUNJAB	9, 000	Entire : **Bhatinda and Ferozpur** **Part : Sangrur**
TOTAL	278,330	

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CLIMATE OF THAR

The extreme cold and heat are special features.
Temperature ranges from 0^0 C. to 50^0 C.

The rainfall is erratic and scanty.

The monsoon remains active from July to September.

The average rainfall :
Rajasthan Thar : 100 – 450 mm
Gujarat Thar : 300 – 500 mm
Punjab & Haryana Thar : 200 – 450 mm

During summer, the winds are generally violent (with 130 km/per hour), hot and scorching (*loo*) with dust. The shifting of sand dunes is very common.

The evaporation is excessive during summer.

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Ecology of Great Indian Thar Desert

1. State Protected
   - National Parks
   - Wildlife Sanctuaries
   - Reserve Forests
2. Jointly Protected
   - Biosphere Reserve
   - Protected Area
3. Peoples Protected
   - Unprotected Areas
   - Village Institutions

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CPR: Unique Features of Thar Desert

Common Property Resources
Eco-Friendly Society
Rich Biodiversity
Sustainable Use of Natural Resources
Agriculture & Pastoral Practices
Food Habits

26

Diversity Holding in the CPR's of Thar Desert

900 + Plant Species

86 + Grasses

2000 + Animal Species

32 Million Livestock

29 Million People

27

Biodiversity Ensure Good Ecology

Which Leads To Good Villages Economy

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Role of CPR's in Local Livelihoods

Repository of

Water-Food-Fodder-Gum-Resin-Fiber
Firewood-Fencing-Thatching-Timber
Non-edible Oils-Dyes-Tannin-Herbal Support
Meat-Wool-Hair-Skin-Hide-Fur-Horn-Bones-Fat
Craft & Cottage

Because of

Species Richness, Genetic Variation, Diversity

Helped

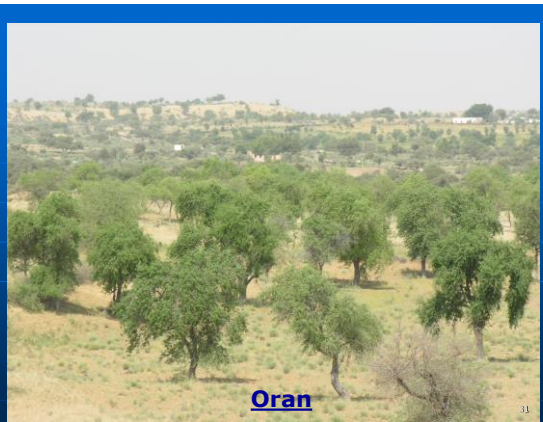
Desert Ethos
Peoples Science
Oral Traditions
Survival of People

29

Village Institutions in Thar (Specialized Ecosystems)

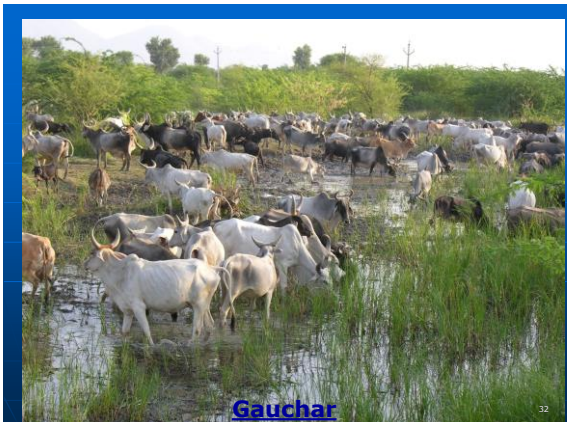
1. Gauchar : Annual Nutrition Banks
2. Oran : Sacred Silvipasture
3. Agriculture (including fallow) : Biomass Generators
4. Sand dunes : Moisture Retainers
5. Gravel Lands : Poor Biomass Zone
6. Wastelands : Low Productivity Zone
7. "Agors" : Water Catchments
8. Water Bodies : Biomass Accelerators
9. Forest Enclosures : Native-Exotic Plants

30



Oran

31



Gauchar

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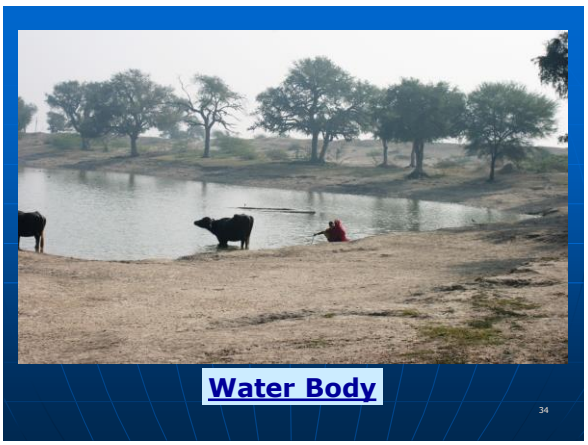
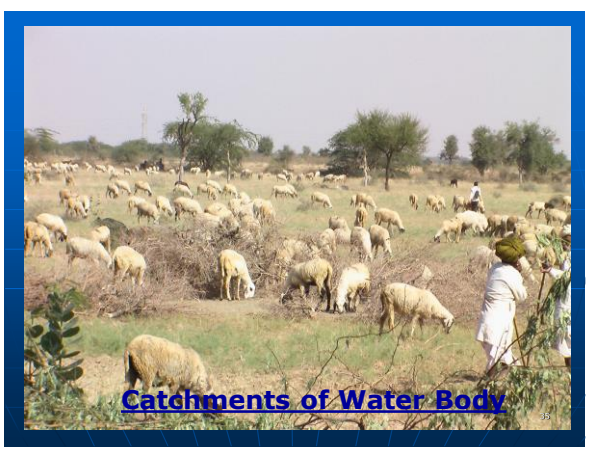
Agricultural Fellow Land

33



Water Body

34



Catchments of Water Body

35

Why Orans (village forest) & Gauchars (village pasture) are Important?

Biodiversity, People & Livestock Support Institutions

Based on

Species Richness-Genetic Variation-Diversity

Influences

Culture-Social Fabric-Food Habits

&

Agriculture Practices

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Gauchar Profile

1.	Age of Gauchars	:	98 years to 300 years?
2.	Size	:	Few hundred to 40,000 bighas
3.	Soil profile	:	Poor
4.	Vegetation	:	Open scrub: Herbs, shrubs and grasses, some annuals
5.	Plant species	:	a)Perennial: ç 17 b)Ephemerals ç 60
6.	Common Period of use	:	Non-availability of fallow field and during drought
7.	Founders	:	Philanthropists, state supported
8.	Purpose	:	Essentially for cattle grazing
9.	Control	:	Village Community State-Gram Panchayat
10.	Operation	:	People-Society
11.	Upkeep & Maintenance	:	Absent
12.	Present Status	:	Dying
13.	Scope of Intervention	:	Exists

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Gauchars of Thar in Relation to its Rainfall, Area and Livestock

S. No.	District	Ann. Rainfall mm	Area	Livestock 2 (Laks)	Gauchar (ha)1
1	**JODHPUR**	**290**	**22850**	**37.89**	**1,23,000**
2	Nagaur	310	17718	32.27	74,000
3	Pali	480	12387	27.38	92,000
4	Jalore	418	10640	18.13	51,000
5	**BARMER**	**260**	**28387**	**41.76**	**2,13,000**
6	Jaisalmer	140	38401	24.77	89,000
7	Bikaner	260	27244	25.31	39,000
8	Churu	320	16830	21.00	48,000
9	Sikar	440	7732	17.96	48,000
10	Jhunjhunu	445	5928	12.48	45,000
11	Sriganganagar	248	20362	14.27	26,000
	Total	**Range : 140-480**	**205941**	**273.16**	**8,46,000**

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Dyeing Gauchars
(Example: Bikaner District)

Original Status In Bighas

Present Status In Bighas

1. 81Villages of Bikaner Tehsil
   Gauchar +Oran = 59245 :Reduced to 25984
2. **Nathania Gauchar 27205** **:Now parts under control of Army MGSU campus. (remaining is protected by the people)**
2. Napasar Gauchar 9890 :Encroached
3. Bheenasar Gauchar 5207 :Protected by people (encroachment removed with Government)
4. Jaymal Sar Village 2416 :1225
5. Mehrasar Village 2370 :Totally lost
6. Kheera Village 1221 :190
7. Panpalsar Village 614 :Lost
8. Kolayat Tehshil Gouchars of 25 Villages :Lost
9. Chattargarh Village 2786 :1200
10. Condition in other districts :Decay

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Oran: Life Support System and Livestock Economy

Origen

- Assuming oldest oran about 800 yrs. old.
- Most came into existence 150-500 yrs ago.
- To maintain life support system and livestock economy

History

- Description goes back to over 600 years
- 'Bahis', Oral Stories, Anectodes, Folk Lores
- Local Heros, Deities and Sculpture

Geographical Coverage

- Entire Thar desert
- With Low Rain Regime

40

Named After

- Deitie :Bheruji, Hanumanji, Shivji
- Lok 'Devtas' :Ramdeoji, Papuji, Gogaji
- Lok 'Devis' :Vankalmata, Karnimata, Jogmaya, Chamunda
- Sects :Charans, Naths, Shivs, Bheels
- Martyrs :Eg., Mamaji ka oran

Village Dependences

Depends on size, location and quality of Orans

- •Most Orans :Support villages 2 and more
- •Some Orans :Support 5+ villages
- •Few Orans :Support 30 + villages
- •2-3 Orans :Support over 100 villages

Number & Sizes

- Total number of Orans in Thar under Investigation
- Jodhpur, Barmer, Jaisalmer, Jalore: 1200+
- Size: Few hundred to 55000+bighas

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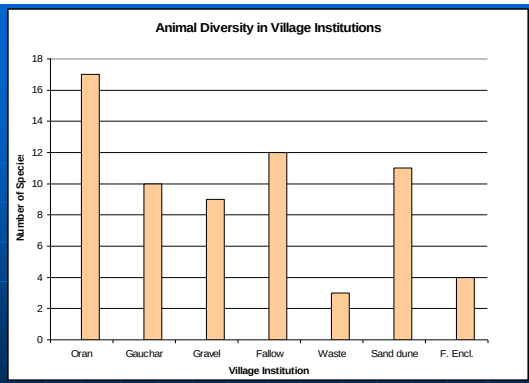
Animal-Plant Interrelationship in Orans

Rasala, Kanasar, Nevara Orans

S.No	Name of Plants	Animals	Nests	Burrows	Total
1	*Prosopis cinereria* (Khejari)	49	45	43	137
2	*Capparis decidus* (Ker)	36	26	143	205
3	*Zizyphus nummularia* (Bordi)	28	19	27	74
4	*Prosopis juliflora* (Angreji babool)	03	01	01	05

42



Animal Diversity including mammals rodents, birds, reptiles, arthropods (insects)

43

Village Dependence
On size, location and Quality of Orans

- Most *Orans*: Support 2 and more villages
- Some *Orans* : Support 5 + villages
- Few *Orans* : Support 30 + villages
- 2-3 *Orans* : Support over 100 villages

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Change in the land use pattern

45

Change in the Agricultural Practices

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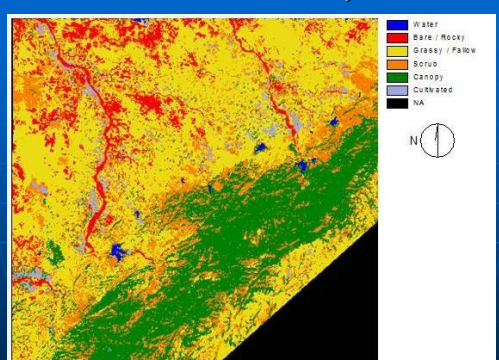
Area near Aravalli Hills in the year - 1985



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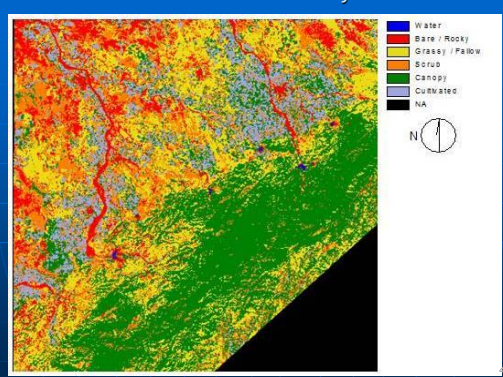
Area near Aravalli Hills in the year - 2000



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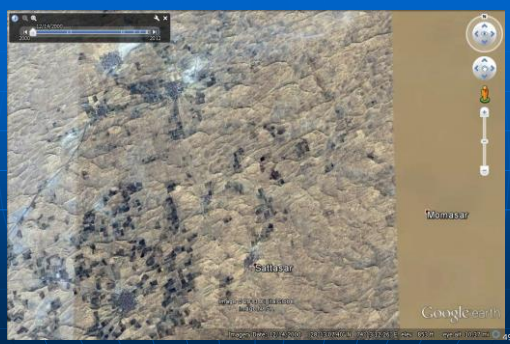
Tubwell in Sattasar -2000



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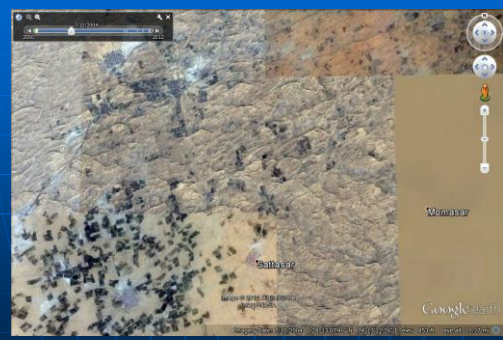
Tubwell in Sattasar -2004



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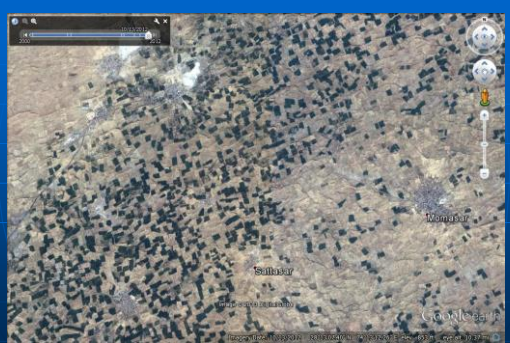
Tubwell in Sattasar- 2012



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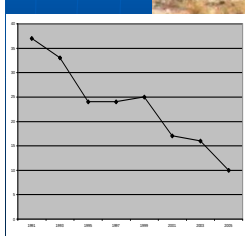

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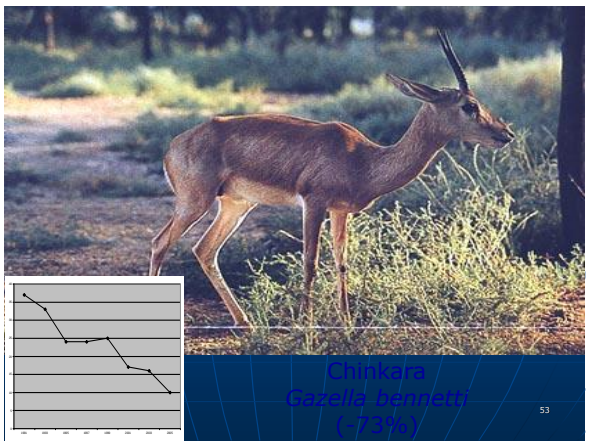

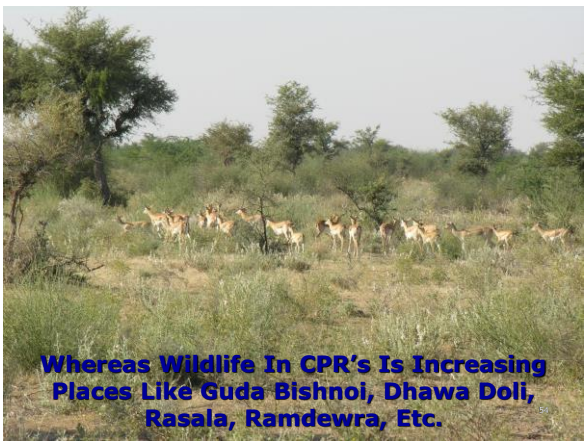

State Mandate for Conservation

- Return the "lost" productivity of the desert "by turning the desert region into a green belt full of vegetation and highly fertile land" (Bhalla, 1992: 284)
- "We need about thirty-million hectares to be planted and made into forests outside the traditional forests" (Maithani, 1986: v)
- In practice: introduction & monoculture

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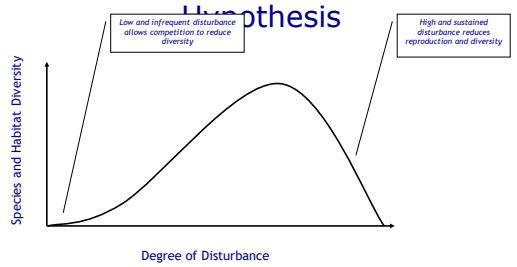
Success of CPR's

Intermediate Disturbance Hypothesis



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Forestry in India 1878 - Present: An Abbreviated History

World Bank Initiatives	Year	Gov of India Initiatives	Local Actions and Restrictions
Biodiversity Act	2003	Formation of NBA	Still Half Way
	2002	Central Empowered Committee	Closes all Reserves
OED Evaluation	2000		Coordinated Inventories
	1998	Draft Natural Ecosystems Act	Village Forest Protection Committees
Forestry Portfolio Review	1996		
India Incentives for JFM	1994	Environment Action Plan	Conservation & Biodiversity Priorities
Conditional Lending in Forestry	1993	Nat'l Conservation Strategy	
Forest Sector Review	1992	Amended Wildlife Act	Wildlife Sanctuary development
Forest Paper Review	1991	Circular Promoting JFM	
	1988	1988 Policy	Curbs commercial exploitation
	1984	Amended Wildlife Act	Prevents trade in wild animals
	1980	Forest Conservation Act	Limit state power of land conversion
Forest Policy Paper	1978		
	1976	Commission on Agriculture	Commercial forestry and fuelwood
	1972	Wildlife Act	
	1952	Forest Policy	Industrial Forestry; rights limited
	1927	Indian Forest Act	
	1878	Indian Forest Act	State acquires control

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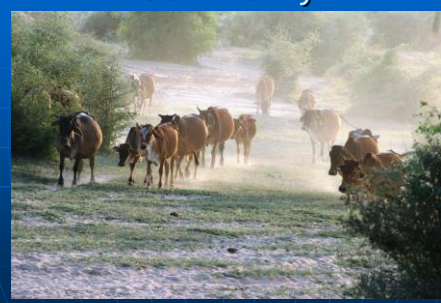
Restoration of Ecology through Community



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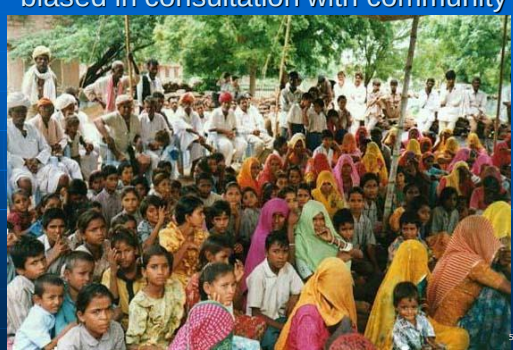
Approach: area specified and need biased in consultation with community



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Water

- To improve quality and quantity water upkeep and maintenance of traditional water bodies by using traditional knowledge of local people and appropriate technologies.

60

Activities with community

- Deepening and de-silting of 'Nadi' and "Talabs".
- Renovation and repairs of traditional water harvesting structures.
- Improvement of catchments by eradicating juliflora to revive the native plant species
- Maintenance of water gradient and cleaning and desisting of water canals/channels

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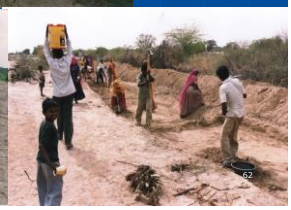
Restoration of water bodies



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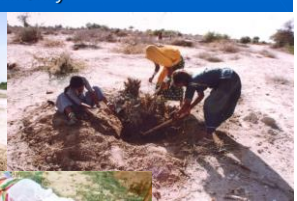
Repairing of canals and parapet walls of water bodies with the community



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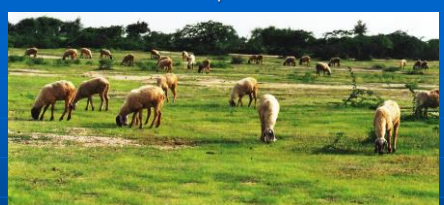
Impact



Visit of Planning commission members in the villages and lunching of *Maru Gauchar Yojna*

Environmental education and awareness

Environmental education, awareness and field training

Environmental education, awareness and field training

Environmental education, awareness programs by students

Environmental education, awareness programs by students

Plantation with the community at MGSU campus

Upkeep and maintenance of plantation through students

Recovery of Species

73

Rescue and care of nature

Rescue and care of wild animals and birds, Fallen/injured chicks are first brought to veterinary hospital for treatment and then shifted to Zoo's

75

Rescue & Care with Community

76

International volunteers through research collaborations with the state forest departments and zoos

77

Rescue and care by trained peoples at various places

THANKS

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