

CONTEXTUAL STUDY OF TONK DISTRICT FOR ASSESMENT OF ITS POTENTIAL TOWARDS BIODIVERSITY PARK

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ABSTRACT

Biodiversity is the variability among living organisms from all sources, including terrestrial, marine, and other aquatic ecosystems and the ecological complexes of which they are part; this includes diversity within species, between species, and of ecosystems. Biodiversity forms the foundation of the vast array of ecosystem services that critically contribute to human well-being. Biodiversity is important in human-managed as well as natural ecosystems. Decisions humans make that influence biodiversity affect the well-being of themselves and others. Biodiversity is the foundation of ecosystem services to which human well-being is intimately linked. No feature of Earth is more complex, dynamic, and varied than the layer of living organisms that occupy its surfaces and its seas, and no feature is experiencing more dramatic change at the hands of humans than this extraordinary, singularly unique feature of Earth. This layer of living organisms—the biosphere—through the collective metabolic activities of its innumerable plants, animals, and microbes physically and chemically unites the atmosphere, geosphere, and hydrosphere into one environmental system within which millions of species, including humans, have thrived. Breathable air, potable water, fertile soils, productive lands, bountiful seas, the equitable climate of Earth’s recent history, and other ecosystem services are manifestations of the workings of life. It follows that large-scale human influences over this biota have tremendous impacts on human well-being. It also follows that the nature of these impacts, good or bad, is within the power of humans to influence.

KEYWORDS: Contextual Study of Tonk, Tonk District, Biodiversity Park. Study of Tonk

AIM

To Document Contextual study on Potential towards Biodiversity park at Tonk district and its parameter and some respective Documentation through case study.

OBJECTIVES

- To understand biodiversity.
- The study aims at identify of documenting the changes in biodiversity and their causative procurator

- Context and the parameters of Diversity of the Tonk district
- To conduct a case study of New Biodiversity park at kushiyargaon designed/develop by Ar. L. K. Upadhiyay; and the park is in protection of forest department of Araria.

METHODOLOGY

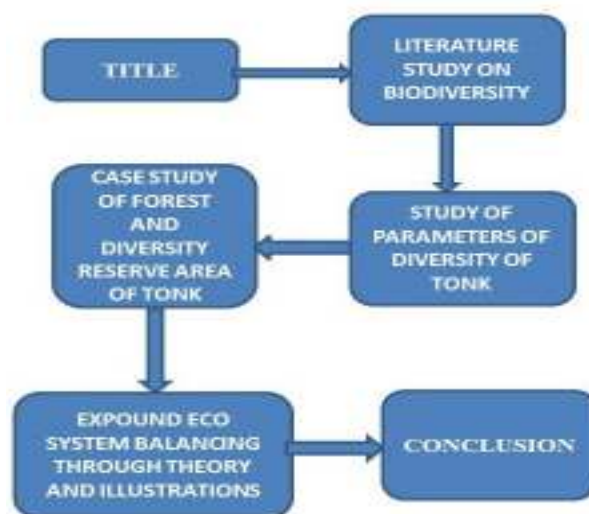


Figure 1- Methodology chart

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Biodiversity: A Contextual Study

Biodiversity refers that variable species (plants, birds, animals etc.) who live on the earth for life and it can be typically measures variation at the genetic, species, and eco-system level. Bio-diversity having various pattern on different regions, with the living organism, it includes different eco-system which is terrestrial, marine, and aquatic eco-system and ecological complexes.

About Tonk

Tonk is a town in the Indian state of Rajasthan. The town is situated 95 km (60 mi) by road south from Jaipur, near the right bank of the Banas River. It is the administrative headquarters of **Tonk** District. **Tonk** was also the capital of the eponymous princely state of British India from 1817 to 1947.

Profile Study of Tonk

Location

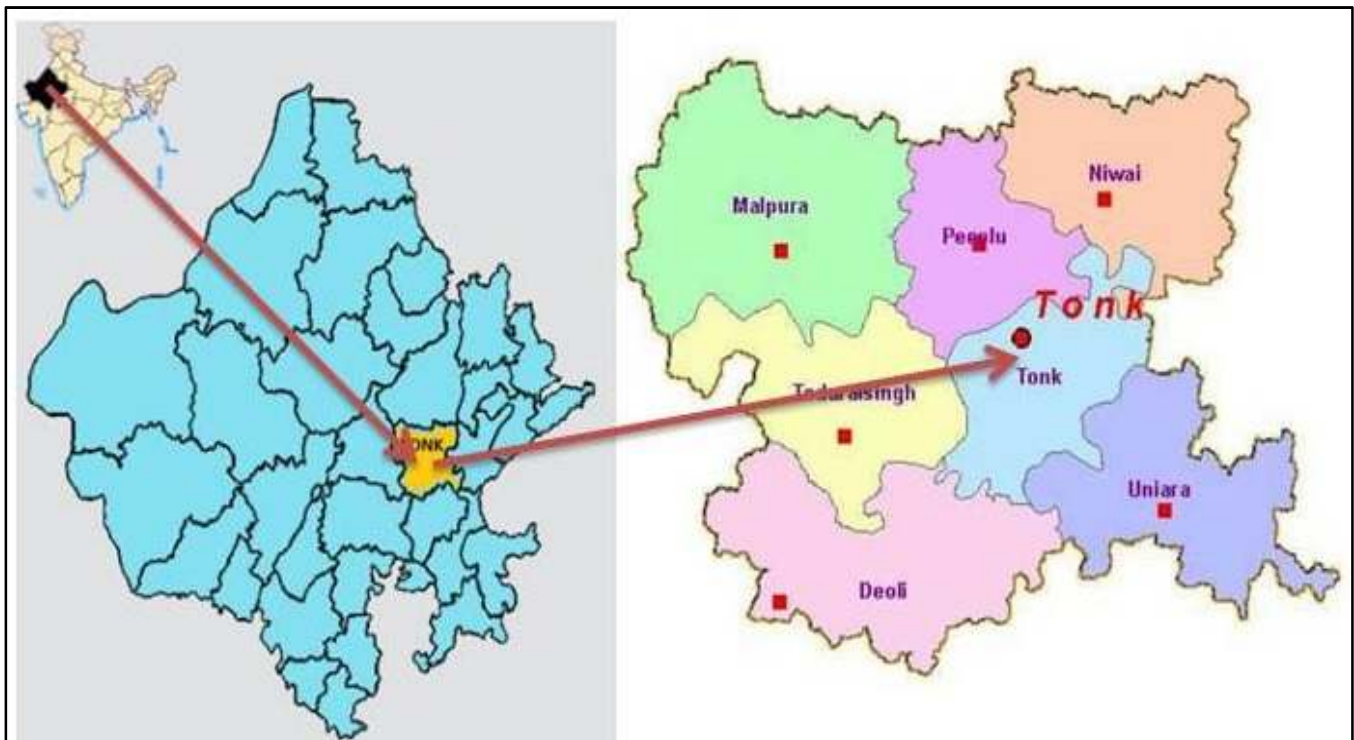


Figure 2: Location of tonk in india

- Tonk district is located in the eastern part of Rajasthan.
- It is bounded in the north by Jaipur district, in the east by Sawai Madhopur district, south by Bundi and by Ajmer district in the west.
- It stretches between 25° 40' 31.58" to 26° 33' 51.29" north latitude and 75° 06' 46.84" to 76° 19' 38.24" east longitude covering area of 7,190.5 sq kms. Apart from small areas being part of Chambal River basin in the south and southeast, remaining part of the whole district is part of 'Banas River Basin'.
- The district is drained mainly by the Banas River and its tributaries.

Configuration of the Ground

- The total geographical area is 7194 sq. k.m. In which the forest area is 332.1396 sq. k.m which is 4.61% of total area.
- The important river banas divides in two parts. Some land besides being sandy is also fertile. Though the ground water level is low. Yet after 20 feet there are rocks water for irrigation is very low. District has some aravalli ranges . One edge of mountains starts from tonk along with bundi district in the south enters rajkot. This range ends in banetha and further goes to sawai madhopur compartment. The second range of aravali hills goes

through todaraisingh tehsil and rajmahal, banas river cuts this belt. Few hills are also there in Malpura and one hillock touches ajmer district.

- The general slope of district is north-west to south east. Common height is between 409 to 600 Mt. The main feature of the district is delhi and aravali ranges which moves from north east to south west. In this range there are mix of high and low mountains which are also broken in between. The height of these hills range between 100 mt. to 600 mt . This hill divide the division in two parts. In the eastern part there is wavy land and also high mountains in todaraisingh. In normal mountains slope is moderate but at top they are steep.

Table 1: Forest division of Tonk with area description

1	Total area of tonk forest division	33213.96
2	Bisalpur Conservation Reserve area forest block - Todaraisingh dungari of mataji, Patliya, rajmahal)	5211.15 HA
3	Ranthambhore Tiger Reserve (Forest block - Amali. A)	1360.37 HA
4	Forest area under tonk forest area Forest Area	26642.44 HA

Soil and Soil Type

Following types of soil found in the district:-

- Sandy loamy:- It is found in south eastern part and also found near by river-drains
- Slippery loamy:- It is found in the outside of middle part of the the district.
- Loamy:- It is found in all over the district.
- Boulders:- It is found in eastern part of the hills.

Area-Wise Soil Distribution is as Follows

- Sandy and loamy- Tonk and peeplu area
- Sand and sandy loamy- Niwai area
- Sandy loam to loamy- Malpura and Toda area

- Sandy loam to sandy- Deoli
- Slinky to loamy- Uniyara to Aligarh

Climate

- The climate of region subtropical with distinct cold hot ranges. Long summer seasons less rains and less winters is speciality of climate have short spells of cold waves are there in December.
- The area does remain dry for good part of the year and humidity increases only during the monsoon months. Summers are hot and during the peak summer months of May-June the temperature soars to more than 45°C.
- In winter months that stretch from November to February the mean temperature is low, around 22 °C but the lowest temperatures dip to around 4-5°C.

Topography

- Topography of the district is characterized by almost flat to undulating terrain with small isolated ridges trending in NE to SW direction. The district is drained by Banas River and its tributaries. Banas River divides the district in two parts.
- The general topographic elevation in the district is between 250 m to 300 m above mean sea level in most of the blocks.
- Elevation ranges from a minimum of 216.4 m above mean sea level in Uniara block in the SE part of the district to a maximum of 600m amsl in Todaraisingh block in southwest part of the district.

Rainfall

- The district receives fairly good rainfall. The general distribution of rainfall across the district can be visualized from isohyets presented in the Plate – III where rainfall is seem to be highest in and around Tonk and reduces both in NE and SW directions; which again seem to rise further in both directions.
- Most of the district received 700 to 900 mm rainfall in the year 2010.
- The annual average rainfall is 758.9 mm based on the data of available blocks. Highest annual rainfall was noticed in Tonk block (1,006.3 mm) whereas lowest was in Niwai block (525.4 mm).
- The highest average annual rainfall noticed in Tonk block (816.5 mm).

Relative Humidity

Relative humidity is around 70% in July and very less in winters. Humidity increases in August up to 79% and in summer it is nil. The data of humidity are taken from closed station Jaipur. Details are enclosed in annexure:

Geology District – Tonk

- Geologically, the district belongs to Bhilwara Super Group of rocks which is divided into Jahazpur, Hindoli, Mangalwar complex and Sandmata complex. Bhilwara Super Group consists of gneiss, phyllite, quartzite, amphibolite, migmatite and dolomitic marble.
- Northwestern part of the district exposes rocks of Sandmata Complex which covers Malpura and some part of Todaraising blocks. Mangalwar Complex rock formations exposed from northeast to southwest covering major parts of the district.
- Jahazpur and Hindoli Groups exposed in southeast parts of the district occupy areas in Uniara and Deoli blocks.

Biodiversity refers that variable species (plants, birds, animals etc.) who live on the earth for life and it can be typically measures variation at the genetic, species, and eco-system level. Tonk district is located in the eastern part of Rajasthan. The district is drained mainly by the Banas River and its tributaries. It has mentioned that district Tonk having Banas river inspite of Banas river district established in Aravali range. Tonk district surrounded by Jaipur(north), Sawai madhopur (east), Bundi (south), Ajmer(west), most probability of Eco-tourism for Bio-Diversity of Tonk. Tonk having Bisalpur conservation reserve area to conserve diversity; soil, climate, topography, rainfall, relative humidity, geology and geographical condition are good and abundant of diversity preferable for develop and conserve Bio-Diversity of Tonk district.

Statistical Analysis of Morphological Changes in Tonk District: Parametric Context and Impact on Bio-Diversity

Statistical Analysis of District Tonk

- Tonk statics from 2001 - 2011
- Tonk population and Decade change 2001 – 2011
- Tonk Land use Agricultural and Forest area 2005 – 2006 and 2010 – 2011

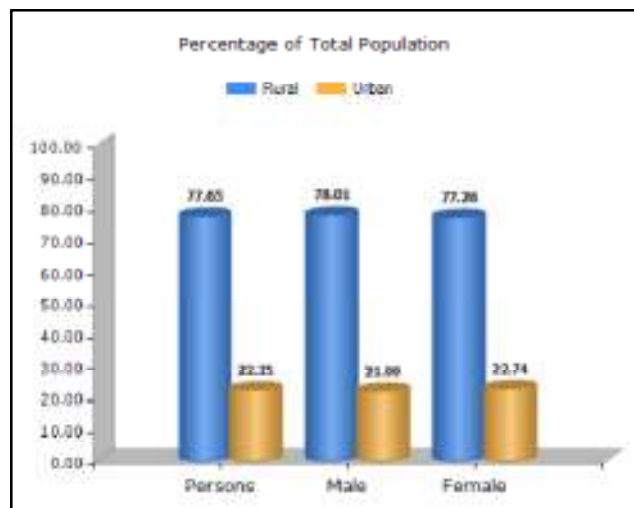


Figure 3: Percentage of total population rural and urban

Wild Life Management in Tonk District

Rajasthan is world famous for diversity of wild animals. Due to with special geographical constitution and adverse climatic condition different types of habitats are available. That is why various types of wild animals are found. Conservations of wild animals in the state are done by separate branch in which the in charges are CCF and PCCF wild life if required help is obtained from deputy. chief wild life protection jaipur. The following works are being done in wild life conservation area:

- improvement in wild life habitats
- construction of water resources
- fire control works
- increase in eco- tourism
- constitution of eco development samiti and receiving local participation

Due to increase in no. of blue bull on the demand of local people D.F.O/A.C.F/ Collector/ Sub-divisional officer/ Ranger/Teshildar/Thanedar/ are authorized to kill blue bulls. Besides this there is a provision of compensatory loss Which is as follows:

(i)	Due to death	&	2 lac rs.
(ii)	For permanent disability	&	1 lac Rs.
(iii)	For temporary disability	&	0-20 lac rs.
(iv)	For camel/buffalow/bull	&	10000 Rs.
(v)	For cow	&	5000 Rs.

Most Sensitive Areas for Wildlife

Tonk district is not proposed for wild life and here no place is established as a most sensitive place for wild life animals. The care of wild life animals is done by the D.F.O and related range officers. The only place which is hunting prohibited is Ranipura. The details of which are as follows:

Prohibited Area	Area	Notification
Ranipura	87-77 Sq.Km.	14-2-1984

Cases of attack/hunting/accident of wildlife are very few which are as follows

S. No.	Year	Type of Cases	Name of Wild Animal	Details of Cases	Block/Range/ Division	Name of Revenue Village
1	2008&09	Death due to attack of Jarakh	Jarakh	On 17.01.09 Ms. Dhaka Bai W/O Daluram is attacked by jarakh and later she died.	Badagaon Niwai Range	Badagaon
2	2010&11	Injured due attack	Panther	Mr. Dharamraj, Hiralal and Sunita were injured in attack by panther in Padali.	Naka Sadar Range q	Village Padali

Composition and Condition of the Crop and Forests Bio-Diversity

Most of the forest belt with in this working plan are differing depending on forest type natural position, nature, ground level of water, Height Mountain, biotech pressure etc. Mainly dhonk forest is found which are affected by human interference. In higher areas lateritic mixed forest is found. There is also difference in the density of vegetation in single compartment. Most of the part of vegetation is degraded and cut due to biotic pressure. Most of the forest part is without trees therefore providing protection to increase regeneration is required. P. juli flora is spread at most of the places. The density of vegetation in valleys areas is satisfactory.

Classification of the Forests

As per Champion and Seth classification the forests fall in to dry type forest. The following sub-types and groups along with their subsidiary edaphic and serial types are recognized

Group 5 Tropical dry deciduous forest

Sub group 5B & Northern tropical dry deciduous forests

Type 5B/C2 - Northern dry mixed deciduous forests

The series of Edaphic Climax Formation as follows %

- (i) 5B/E1 Anogeissus pendula Forest
- (ii) 5B/E2 Boswellia Forests
- (iii) 5B/E3 Babul Forests
- (iv) 5B/E5 Butea Forests

Degradation Stages of Tropical Dry Deciduous Forests

DS 1 Dry Deciduous Scrub

- (i) E1/DS1 Anogeissus pendula Scrub
- (ii) DS 3 Euphorbia scrub
- (iii) DS 4 Dry Grass land Forest

Tropical Thorn Forests

Northern Tropical Thorn Forests

- (i) Type 6B/C1 - Desert thorn forests
- (ii) Type 6B/C2 - Ravine thorn forest

Tropical Thorn Forests

- (i) 6B/DS1 - Zizyphus Scrub
- (ii) 6B/DS2 - Tropical Euphorbia scrub

Factors Affect Forest and Bio-Diversity

They are classified in four divisions:-

Human

Humans are directly or indirectly causing harm to wild animals. Hunting for food for shooting etc. has created harmful effect for ex. in sarisca. This spreading road network communication illegal hunting etc. has affected the no. of wild life. Earlier the easy availability of license for hunting created directed harm on wild life. It was called sport which was mainly for reputation. This slowly had a commercial value. At few places due to superstition bones and parts of different animals for treatment has also increased illegal hunting of animals

Limitation of Natural Habitat

- In present times major effect is on the destruction of habitats. Major factors are
- Increase in the area of agriculture and encroachment
- Construction of dams and canals
- Construction of industries
- Building construction for increased populations
- Increase in the mining areas and air water and land pollution
- Spread of road network
- Due to these reasons the no. of wild animals has reduced.

Pollution

Industrialization increase in vehicle, use of chemical in agriculture has all resulted in to air water, sound and land pollution which has affected on wild life. The emerging is example is reduction in no. vultures. Pollution has affected natural habitats and life style of wild animals. This is also affecting the food cycle and many animals are on the verge of extinction

Effect of Development

Developed means have also affected wild life like high speed vehicle cause accident to the animals. Specially in management plans certain measures should be suggested for the sanctuaries. During construction of well para pit wall is not made and so animals fall in to them. Electricity transmission line also causes accident to the animals. During plantation of special trees plastic nets are used

which also called harm to the animals. Sometimes chemicals and poisonous material used in the agriculture also kill the animals.

Effect of Population

Increasing populations has increased land used which has reduced forest and in term wild life habitats.

Encroachment

Due to increase populations the land available is not sufficient therefore common people are encroaching on grass land, barran land, forest areas etc. for agriculture land houses which is affecting the habitats of the wild life. Birds in shrubs like peacock titter, etc. are reducing in no. as well as wolves, blue bull etc. have increase. These blue bulls enters the agriculture areas and for grazing.

Grazing & Felling

Due to reduced grass land and traditional grazing areas the herbivores animals are facing to difficulties to getting food. Besides these the need of basic necessity like fuel, fodder and other is obtained by illegal means. This has affected habitats. they become unprotected and in tern it is also affecting carnivores animals. encroachment is also seen on water areas and this situation would affect the no. wild animals in near futures.

Fire

There has been increasing fire incidents in forest specially in forest. Due to fire animals and trees both are affected. Some birds are destroyed in early stage, their nests and eggs are also destroyed.

Shrinking Forest

Due to increase in population less rain and drought forests have reduced and also water resources are dried. Due to this food for herbivores are reduced and they are coming down to agriculture areas. The carnivores are attacking by villagers due to grazing on agriculture land.

Disease

Increase in cattle and reduced grazing areas has increased pressure on forest area. As infected cattle are grazing openly these are affecting wild animals. Due to lack of awareness vaccination for cattle is not done so they are infected and died. Due to feeding on flesh of these animals

wild animals are affected and their no. are reducing. Reducing in the no. of vulture is current example.

Climate Change

There is adverse effect on climate due to modernization which leads to heavy rains and floods or drought or extreme winters and summers. Due to these reasons there is adverse effect on natural life of wild life and they have less food and water supply due to adverse climatic factors which is affecting their numbers. Due to these factors the eco balance is disturbed which is affecting wild life and also is affecting the food cycle.

MAINTENANCE, CONSERVATION AND ENHANCEMENT OF BIO-DIVERSITY

Maintenance

The following areas will be protected from development that would adversely affect them. Development proposals should maintain and, wherever possible, enhance these areas for their characteristics, local

distinctiveness, and value to local communities in Denbighshire:

- Statutory designated sites for nature conservation;
- Local areas designated or identified because of their natural landscape or biodiversity value;
- Sites of built heritage; and
- Historic Landscape, Parks and Gardens.

Conservation and Enhancement of Bio-Diversity

Development proposals that may have an impact on protected species or designated sites of nature conservation will be required to be supported by a biodiversity statement which must have regard to the County biodiversity aspiration for conservation, enhancement and restoration of habitats and species. (DRAFT Supplementary Planning Guidance Note Conservation and Enhancement of Biodiversity, April 2016)

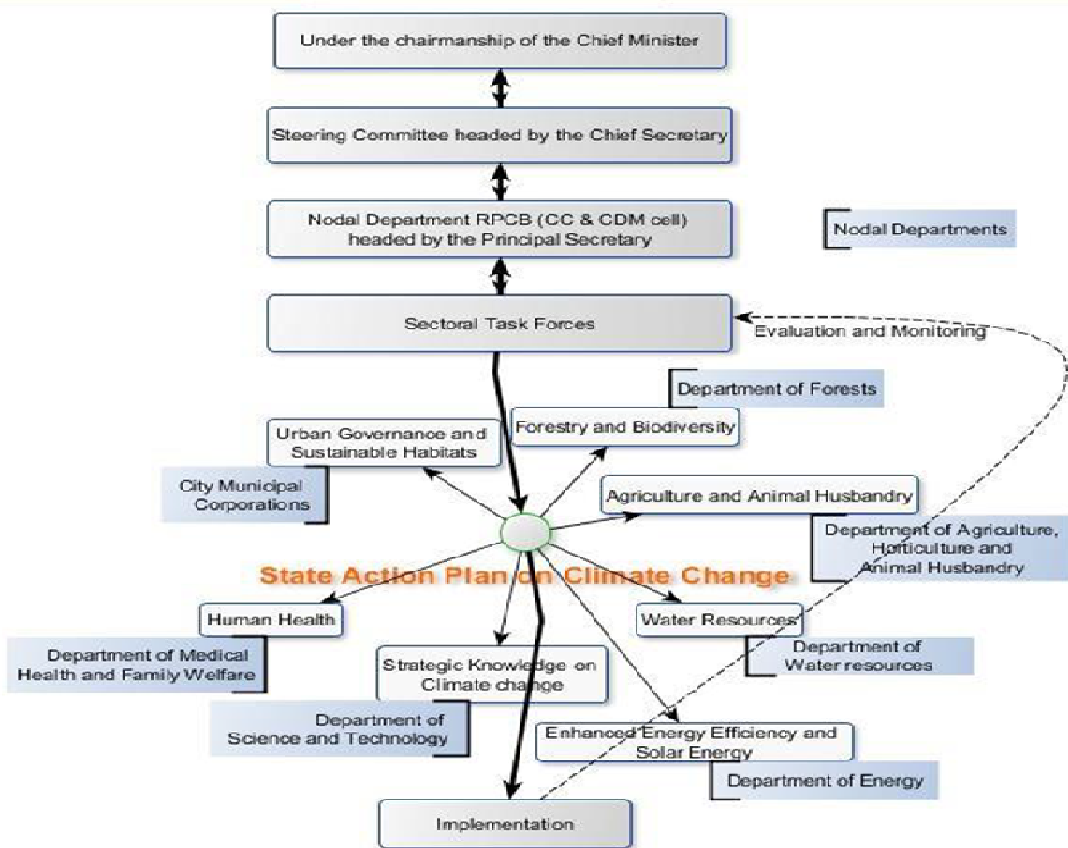


Figure 4: (Draft Rajasthan State Action Plan on Climate Change, 2010)

Animals and Vegetation

- i. Dhok, dhak, goyakhair, salar, gurzan, higoot, kalam, kadaya, khair, neem babool, kumtha etc vegetation are found in this area. The details are enclosed in the annexure.
- ii. Black bull, langoor, fox, jarakh, rabbit, sehi, pig, sambhar, uid bilav and many birds are found in this area. The details are enclosed in the annexure

Conservation Plan

The following work are to be proposed in the conservation plan:-

- i. To develop naturalisation in the area
- ii. To make translocation center of wild animals
- iii. To construct wall, watch tower, chocki, barrier and gate
- iv. To provide vehicle
- v. To develop eco- tourism

The Management plan is described in wild life and Biodiversity management

Summary of the Study

- Area treatment under soil and water conservation measurement defines that it is cumulative but budget, mechanical intervention, vegetation intervention and total catchment are not in record.
- Water flow in the selected seasonal streams are from local river but the previous some years rainfall measured 613.6mm i.e. 30.3 rainy days per year.
- Wetlands in forest areas perennial Bisalpur dam, Tordisagar, and Galva dam all water bodies are man-made.
- Growing of stock wood are is specified but species wood are not specified, high-tech plantation is nil but high-tech nursery (jakhira) area and production is specified.
- Due to cultural area visit by the localized and from outside of tonk, there are many potential to visit the bio-diversity development.
- Development proposals that may have an impact on protected species or designated sites of nature

conservation will be required to be supported by a biodiversity statement which must have regard to the County biodiversity aspiration for conservation, enhancement and restoration of habitats and species.

- To develop naturalization in the area
- To make translocation center of wild animals
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- To develop eco- tourism
- The Management plan is described in wild life and Biodiversity management

CONTEXTUAL STUDY AND REVIEW OF TONK DISTRICT

Urban Livelihood & Urban Development

In Tonk district there are 6 urban areas in which are Tonk, Newai, Malpura, Deoli and Todaray-singh are main. In district the total no. of urban population is 2,53,168 which is 20.89 percent of the total population. In urban areas the percentage of literacy is 68.50 which higher than the literacy percentage of 47.51 of rural. For full development of these urban population. Municipal Council and municipal-corporation are working.

In urban areas the total working population is 78,532 which is 31.02 percent of the urban population. Out of which the chief working population is 67,359 which is 28.64 percent of the total population. In urban areas, if we look at the population according to profession the 13 percent population is employed in the form of farm labours and agriculture. Almost 11 percent population are engaged in family business and 75 percent are engaged in commercial activities. In urban areas the working population has been shown in the table.

Though In district there is increase in the population of cattle. But there is need to increase in cattle and breed improvement programme effectively due to which the products obtained from cattle such as milk, wool, meat, eggs are increased so as to be helpful in the livelihood of citizens.

In non-irrigation areas in order to increase livelihood there is need to increase the small and handicraft made industry.

At present out of working population only 3.68 percent are employed with small and handicraft industry In this connection youths and women should be trained in the probable trades and thereby increasing the small industry and handicrafts. In rural areas special efforts should be made so as to reduce drainage from rural areas.

Dependence of Local People on Forest/ Biodiversity

People specially rural depend on forest produce for daily need. The five fuel, fodder, furniture, fruit, fertilizer are obtained from forest. The following are the major forest produce requirements in Tonk:

Fuel wood

The most important need is supply of fuel wood for cooking, heating, cattle feeding etc. As the farm sizes are small the residue of agriculture is less which does not support the fuel need also dung from cattle is not sufficient for the purposes. In urban areas L.P.G is used for cooking used of biogas, solar energy is not much in the area. People living close to forest depend on forest produce whereas people far away have 30 to 40 % depended on forest. These families satisfied their need farm residue or other sources

Grass and Fodder

The other major requirements of grass for cattle is fodder. There are 12lac cattle in the district in which 2.47 lac cow and bull, 3.09 lac buffalo 3.97 lac goats and 2.59 lac others cattle like- sheep, camel, donkey and horse. In which lots of cattle are unproductive and have lower quality which is to be kept by the villagers to keep social reputation. Most of the supply of fodder is supplied from the forest area. Year around cattle are left open for grazing in forest area but after harvesting they are left in the agriculture land except buffalo other are not generally settled. Due to excessive uncontrolled grazing forest area are affected. District has 42006 Ha grassland but in fact this much land is unavailable for grazing. Therefore the most of the pressure in forest areas.

Small Timber

For House Construction

In a brief survey of rural areas rural family require following forest produce. Dhok wood is used for dandi, bulinda, bulli, thonni etc. Most following small wood are required.

Timber from mango and neem is used in construction. Mostly following types of wood is used for construction. The local people used dhokada, dhavada and other trees timber like tendu, khejara, kalam etc for meeting their demands. In earlier times the felling was so widely done that it was excess to required quantities.

Rajasthan Forestry and Biodiversity Project

Many works were done to strengthen JFM. In tenth five year plan with foreign support ,Rajasthan Forestry and Bio Diversity programme was implemented from april 2003.This project was run with the support of Japan bank for international cooperation .The total cost of the project was Rs. 442.14 for five years.

Summary of Contextual Study and Review of Tonk District

- In Tonk district there are 6 urban areas in which are Tonk, Newai, Malpura, Deoli and Tadaray-singh are main. In district the total no. of urban population is 2,53,168 which is 20.89 percent of the total population.
- In urban areas the total working population is 78,532 which is 31.02 percent of the urban population. Out of which the chief working population is 67,359 which is 28.64 percent of the total population.
- People specially rural depend on forest produce for daily need. The five fuel, fodder, furniture, fruit, fertilizer are obtained from forest.
- The status of wild life is not very encouraging even after implementation of wild life act 1972. The areas with more of wild life have been shifted to sawai-madhopur.
- The forest area does not have large no. of mammals. In the times of heat when there is scarcity of water, shelter and food and wild life shift to areas closed to population. During duty forest employees have also seen wild animals.
- The above summarized context clarify that maintenance, management, conservation, enhancement, is required for surveillance, sustainability of Biodiversity so that people

will not face the diversity scarcity in future because it balances the Eco-system also.

CONCLUSIONS

- Biodiversity refers that variable species (plants, birds, animals etc.) who live on the earth for life and it can be typically measures variation at the genetic, species, and eco-system level.
- Tonk district surrounded by Jaipur(north), Sawai madhopur(east), Bundi(south), Ajmer(west), most probability of Eco-tourism for Bio-Diversity of Tonk.
- Tonk having Bisalpur conservation reserve area to conserve diversity; soil, climate, topography, rainfall, relative humidity, geology and geographical condition are good and abundant of diversity preferable for develop and conserve Bio-Diversity of Tonk district.
- Natural regeneration is seen in safe away from population and it is mostly depends on soil and moisture and most of the areas those position is not encouraging; due to biotic pressure, grazing, and human made activities are causing adverse effect to natural regeneration.
- Factors that affect the diversity of Tonk district made by human, fire, flood, adverse climate, limitation of natural habitat, population, pollution, effect of development, encroachment, grazing and felling, shrinkage of forest, disease, and climate change(global), except some factors all are human made and these factors affected adversely and it impacts on diversity loss.
- Due to loss of diversity it is required to manage and improve the wildlife habitats with respect to plant, water species, and also increase the eco-tourism.
- It can be conserve and manage through building an environment at the natural area of tonk where all types of species can survive the diversity of tonk.
- Development proposals that may have an impact on protected species or designated sites of nature conservation will be required to be supported by a biodiversity statement which must have regard to the County biodiversity aspiration for conservation, enhancement and restoration of habitats and species.
- To develop naturalization in the area
- To make translocation center of wild animals

- To construct wall, watch tower, chocki, barrier and gate
- To provide vehicle
- To develop eco- tourism
- The Management plan is described in wild life and Biodiversity management
- Maintenance, management, conservation, enhancement, is required for surveillance, sustainability of Biodiversity so that people will not face the diversity scarcity in future because it balances the Eco-system also.
- Status of threatened species, area prone to soil erosion, reduction of wastages are not specified.
- The study focus that bio -diversity identifies the priority areas based on the Environment Policy and the climate Action Plan as follows –
- Increasing area under forest and tree cover.
- Defining plantation targets according to land use Community involvement in afforestation activities.
- Afforestation of private land holdings.
- Explore mitigation potential of community -forest projects Assessment of shifts in forest types.
- Conservation of wildlife outside forest areas Maintaining species diversity under climate change.
- Biodiversity outside PAs – Dry lands, Desert ecosystem, Aravallis, Grazing lands Land degradation and desertification.

Traditional ecological knowledge and domesticated biodiversity Traditional animal husbandry systems and pastoral nomadism Ecological services of forests.

National Forest Policy, 2018

- Forests are a dynamic ecosystem consisting of plants, animals & microorganisms safeguarding the ecological security of the nation.
- Forests provide the carbon neutral timber, non-timber products like medicines, grasses, & other ecosystem services essential for the very survival of the human beings.
- The forest policies of 1894 & 1952 have stressed on the production& revenue generation aspects of the forests where as the principal aim of National Forest Policy, 1988 was to ensure environmental stability and

maintenance of ecological balance including atmospheric equilibrium which are vital for sustenance of all life forms, human, animals and plants. The 1988 Policy recognized that derivation of direct economic benefits must be subordinated to this principal aim. This policy has been instrumental in strengthening ecological security, sustainable forest management, and participatory forest management.

- In the meantime India has been participating in several international summits and conventions on protection of forests, wildlife and environment and stands committed to the goals set in there Several objectives have also emerged during debates and deliberations in seminars and workshops at National Level.
- Objectives of the National Forest Policy:
- Maintenance of environmental stability and conservation of biodiversity through preservation and conservation of natural forests.
- Checking denudation and soil erosion in the catchments of rivers and the wetlands through integrated watershed management techniques and practices.
- One of the strategy of National Forest policy is Sustainable Managements of Forest which includes Biodiversity Conservation.
- Natural forests are rich repositories of biodiversity in the country. The following steps will be taken for the conservation of the biodiversity in the natural forests.
- Biodiversity of the forest areas of the country will be surveyed and documented systematically, and sites having exceptional taxonomic and ecological value will be conserved. Legal and administrative.
- Measures for protection of biodiversity against bio-piracy will be taken, in sync with National Biodiversity Act.
- Modern techniques of ex-situ conservation will be promoted for the preservation of Relic, Endangered and Threatened (RET) species. (Draft National Forest Policy, 2018)

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