

# CONSERVATION AND MANAGEMENT OF RESOURCES: A CASE STUDY OF UDAIPUR CITY

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## ABSTRACT

The paper deals with the resource availability at present in Udaipur city with special reference to forest, minerals and water in relation to the present population. The paper is based on secondary data collected from various government and non government organization. With the increase in population there has been decrease in resources so there is a need of management which can lead to conservation of the resources mentioned above for the sustainable development of UDAIPUR CITY.

## INTRODUCTION

Udaipur district is endowed with metallic as well as non-metallic mineral wealth. The important are lead zinc, copper, rock phosphate, soap stone, lime stone, barytes, marble, etc. Its called the Venice of India, the lake city cause of the six lakes and had been bestowed with forest cover with various fauna and flora species.

## OBJECTIVES

To study the available resources in Udaipur city:-

- To study the forest resources of Udaipur city.
- To study the mineral resources of Udaipur city.
- To study the water resources of Udaipur city.

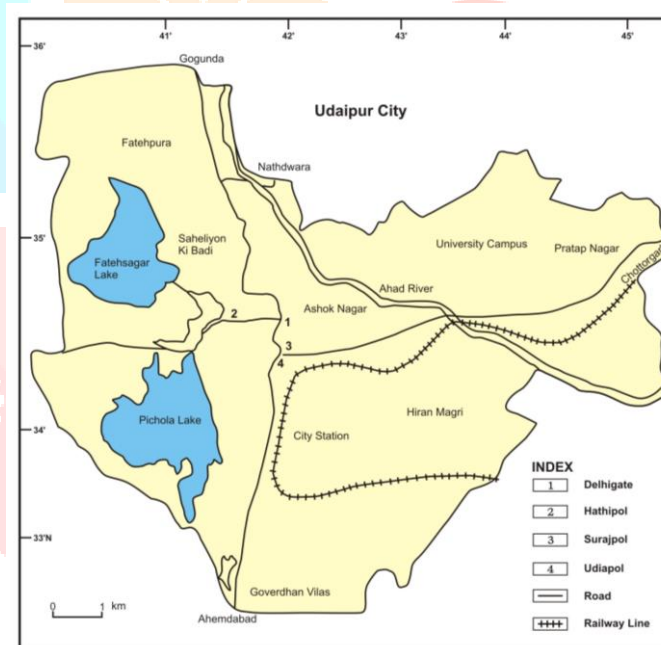
## METHODOLOGY

This paper is entirely based on the secondary data available from various government and non-government organization along with information from different websites.

## STUDY REGION

**Site :** Udaipur city is located in Southern part of Rajasthan. It is actually lying in the center of bowl shaped basin surrounded by Aravalli hills and is drained by Ayad River.

**Location :** Its latitudinal location is from  $23^{\circ} 9'$  to  $25^{\circ} 28'$  N and longitudinal extension is from  $73^{\circ} 1'$  to  $75^{\circ} 49'$  E. It's geographical region is  $12,499 \text{ km}^2$  and is about 577 metres above sea level.



Map 1

Udaipur evolved as a result of decline in political power. The decision to site the new capital was favoured by a number of factors of which temple of Eklingji being close by, its isolated position caused by a hilly and forest covered terrain, availability of water in abundance, area having a quality of defense in depth word to name a few.

The population increased from 3,500 to 10,000 in about four years time from 1820, resulting in rapid growth in build up areas both inside and outside the called city town. The City Palace was constructed towards the end of the 19<sup>th</sup> century. Railway network came into being in Udaipur in 1899 along with post and telegraph services. Public utility services

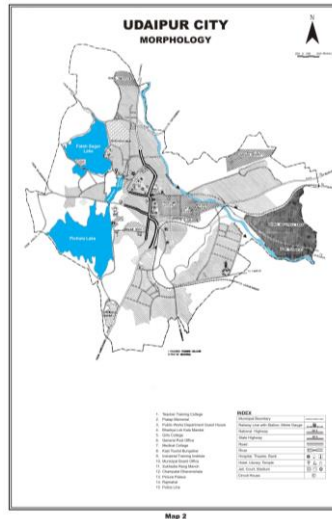
like supply of filtered water, electricity, extension and specialization of medical and health services, facilities of education, trade and commerce, all contributed towards the process of urbanization, demographic and area extension of the town which took place mostly outside the walled city. Udaipur had not been capital since 1949 with the merger of the state with rest of Rajasthan but even after that is experienced unprecedented and unrestricted growth and expansion after independence. The Municipal limit and the urban area within it were revised and extended six times since 1946 when the area of the town was 540 hectares, the last municipal boundary was redrawn in 1969 and the total municipal area of about 64.10 sq.kms. in 1981.

Need for urban expansion was further accelerated after partition as a result of which many new residential colonies came into being, planned shopping centers evolved from 1958 to 1980 (Surajpole and Udiyapole in 1962 and the Central Bus Stand in 1980) mostly outside the walled city is response to new and pressing urban needs. The city educational history started with an educational school established in 1893. There have been great strides in the advancement of education from 1950 and 1975 when the number of educational institutions increased from 46 to about 200. Udaipur's administrative responsibilities have increased since 1949 as it has assumed the role of a regional capital for the entire Southern Rajasthan. The development of activity of cutting and dressing of marble and other stones of ornamental value has developed in quick succession to National Highway 8 North of the city and had played an important role in its development.

The increase in municipal area of the town was primarily in response to the increase in population. Except for the two consecutive decade, 1891 to 1901 and 1901 to 1911, when the population recorded decline due to natural calamities, it has otherwise registered a steady and continuous growth, except that of 1941 to 1951 when it had the highest growth due to various reasons of which the post partition being the most significant. Besides this the growth rate in Udaipur city had been in accordance with Udaipur's economic and cultural growth. Udaipur being an important tourist centre, has a floating population of considerable size (Surana, Vijay Lakshmi, et al., 1981).

Though demographically, it is class-I city but functionally it is only a medium sized regional city without having any major or metropolitan function. Till 2011 Udaipur continues to develop and expand its commercial, administrative, educational, cultural

recreational and tourist interests. Thus this throws light on the fact that with the rapid increase in population the area of city is also increasing, which is clear from map 2.



## **DEMOGRAPHY**

According to the 2011 Indian Census population of Udaipur city was 475654. Males constitute 53% of the population and females 47%. Udaipur has an average literacy of 62.74 of which male literacy is has been 75.91% and female literacy has been 41.10%. Hindus constitute 80%, Muslim 14%, Jains 4.7% and others (Sikh 0.2% & Buddhist 0.2%).

## **RESOURCES OF UDAIPUR CITY**

### **1. Forest Resources of Udaipur City**

The floral wealth of Rajasthan is rich and varied. The western half is desert terrain, most of the area under forests is restricted to eastern and southern parts of state. Dense natural forests are in protected patches, mostly confined to various national parks and wild life sanctuaries. The forest all divided into four broad forest types:-

- a. Tropical thorn forests.
- b. Tropical dry deciduous forests.
- c. Central Indian sub tropical hill forests found a mostly the hills girding Mount Abu. They have semi evergreen and some evergreen species of trees. Around Mount Abu they are well represented between 700 to 800 m altitude.
- d. Mixed Miscellaneous Forests.

Mostly found in Udaipur, they mainly have Anogeissus Pendula, Anogussus Latifolia, Terninalia Tomentosa, Terminalia Arfcina, Chebula, Albizia, Lelbeck, Dalbergia Panicular etc.

The development of Udaipur city with reference to townships and buildings projects have wiped out greenery and today, Udaipur has a dwindling forest cover. It has many herbal and medicinal plants at Aravalli Hills, forest area of the city is less than 10%.

Geographical area of Udaipur city is 19419 sq.km. Sub Division 7 Tehsils, 10 City and Towns, 10 Municipalities, 5 Panchayat Samities, 11 Revenue Villages.

Human Population 26.33 Lac.

Summer (Max-Min)	Winter (Max-Min)	Annual Rainfall
38.3 - 28.8 <sup>0</sup> C	28.3 - 11.6 <sup>0</sup> C	64.5 cm

Forest Area

Forest Area (District)	4581.23 sq.km.
Percentage Forest cover to Geo. Area	34.14%
Forest Cover	3090 sq.km.
Ravine Area	53000 Hectare

Forest Development

Nurseries	113
JFM (No. of Committees)	430

Wild Life Area

Fulwari Ki Nal Wild Life Sanctuary	492.68 sq.km.
Sajjangarh Wildlife Sanctuary	5.19 sq.km.
Jaisamand Wildlife Sanctuary	52.34 sq.km.
Kumbhalgarh Wildlife Sanctuary	608.57 sq.km.
Sitamata Wildlife Sanctuary	422.94 sq.km.

## 2. Mineral Resources of Udaipur City

Rajasthan has only 9.5% of total geographical area recorded as forest. The forests of Rajasthan area spread unequally in Nem, Southern, Eastern and South-Eastern parts. They are mostly adapho climatic climax forests.

Udaipur is a well known name famous for its lakes, palaces, architectures, temples and natural beauty, eco trails, romantic evenings and its golden history. But its a place lot more famous around the world, not just for its beauty but also as place endowed with natural minerals as listed below:-

- White Marble - Stands 1<sup>st</sup> in world. Asias largest market for white, green, pink and other marble.
  - Zinc
  - Rock Phosphate
  - Talc
  - Calcite
  - Quartz
  - Wollastonite
  - Pyrophyllite & Sillimanite
- i. The mines and processing units are extended in the adjoining areas namely Sukher, Rajsamand, Rajnagar, Kesariyaji, Chittor, Kishangarh. In all approx 5000 units (bit and small) are into its production.
  - ii. The only company producing is Hindustan Zinc. It is at present a part of bit public company called Vedanta Group. It is largest producer of Zinc in the country.
  - iii. Rock Phosphate has been mined and processed by RSMML (Rock Phosphate Ore). Jhamar Kotra plays an important role by contributing 98% of rock phosphate production of India.
  - iv. The minerals Talc, Dolomite, Calcite, China Clay are of same category. The demand of these minerals is very high all around the world with high consumption from Europe and Middle East.

Udaipur is the lead producer of these minerals. Wolken India is a leading name in the mining and processing of Calcite and Wallslonite across the world and Golcha Group in soap stone and Shri Kailash Khanij Udhyog is the only miner and producer of mineral pycophyinte and sillimanite in the region.

Around 500 units are involved into mining, grinding of these minerals in and around Udaipur city. Though mining was once banned in the Aravalli region but the association of so many people with this industry as an employment agent cannot be denied and government had to cancel their order because of this.

### 3. Water Resources of Udaipur City

Udaipur famous as city of lakes, having six world famous big lakes in its name and around (100) numerous small lakes. This system is interconnected as supports and sustains ground water recharge, drinking, agricultural, industrial, ecological, water availability and employment to approx 60% population through tourism. With the increase in population due to industrialization, urbanization and the city emerging as a educational hub the main threats to the lake system are catchment area degradation dumping of solid, liquid waste, encroachments, destruction of water, poor governance and lack of individuals, Udaipurites participation in lake management.

The sources of water can majorly be classified into three parts:-

1. Atmospheric Sources
  2. Surface Sources
  3. Underground Sources
1. **Atmospheric Sources:-** Rainfall is the only source of water among atmospheric sources for Udaipur city fig. 1 and fig. 2 shows the changing pattern of rainfall of Udaipur city from 1950 to 2007.

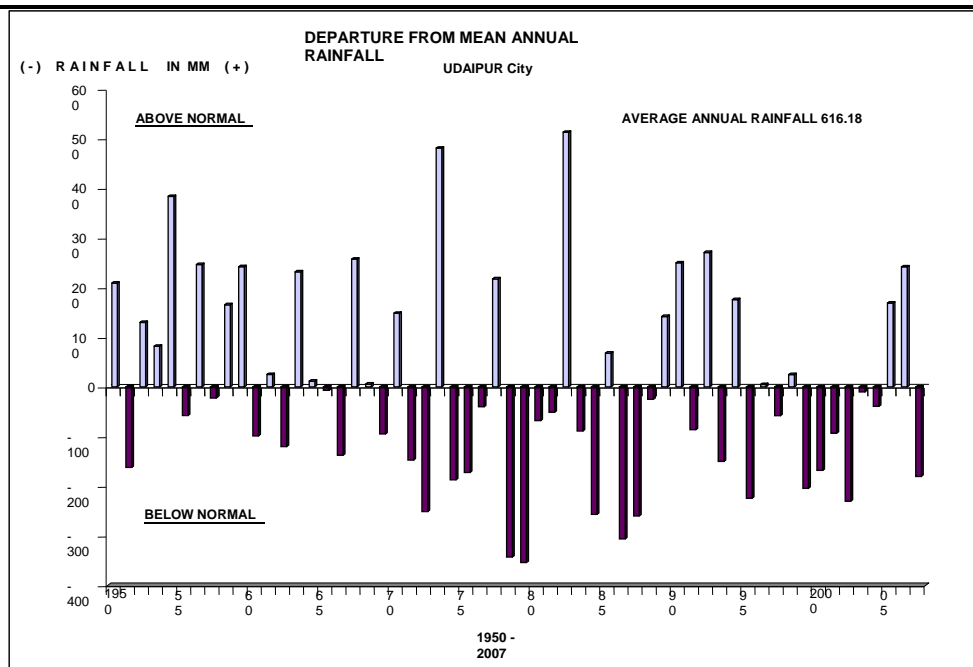


Fig. 1

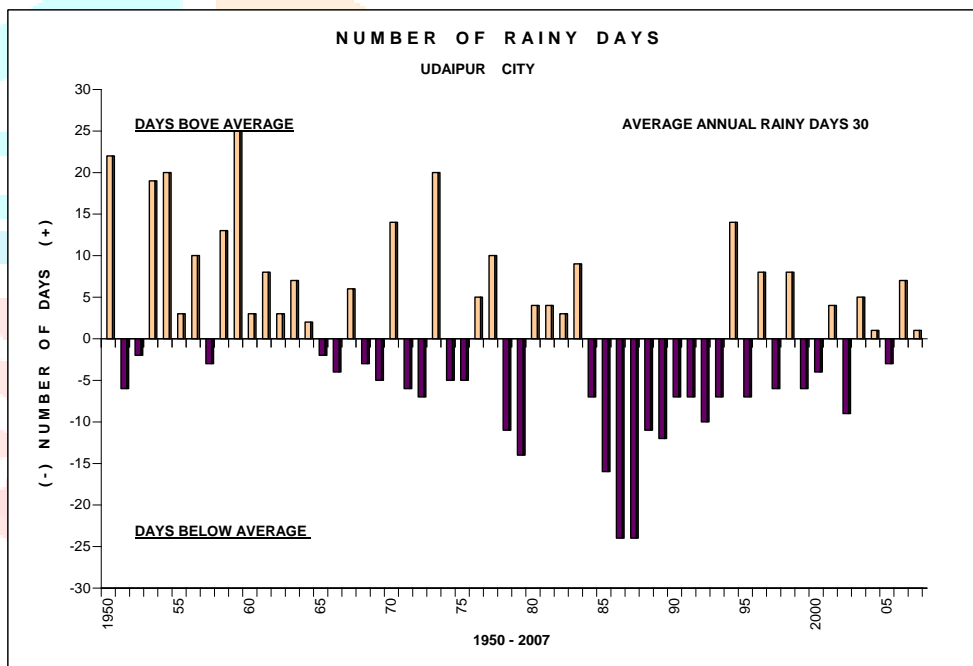
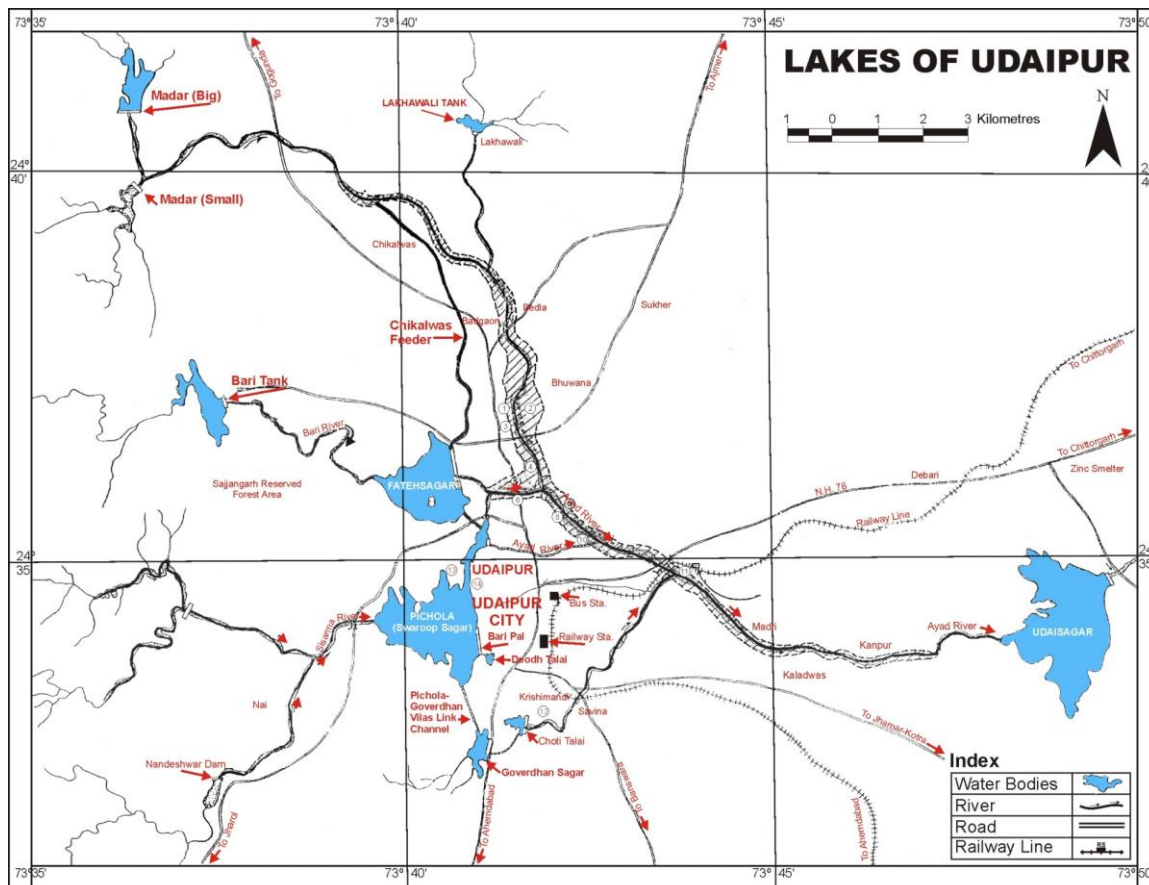


Fig. 2

From the figure 1, it is clear that Udaipur city had rainfall below average for 34 years from 1950 to 2007, the maximum rainfall was experienced in 1983 and minimum in 1979. Figure 2 shows number of rainy days in Udaipur city. The maximum number of rainy days were in the year 1959 and minimum were in the year 1986 & 1987. Regarding number of rainy days from 1985 to 1995 Udaipur city observed decline in number of rainy days from average of 30 days.



## SURFACES SOURCES

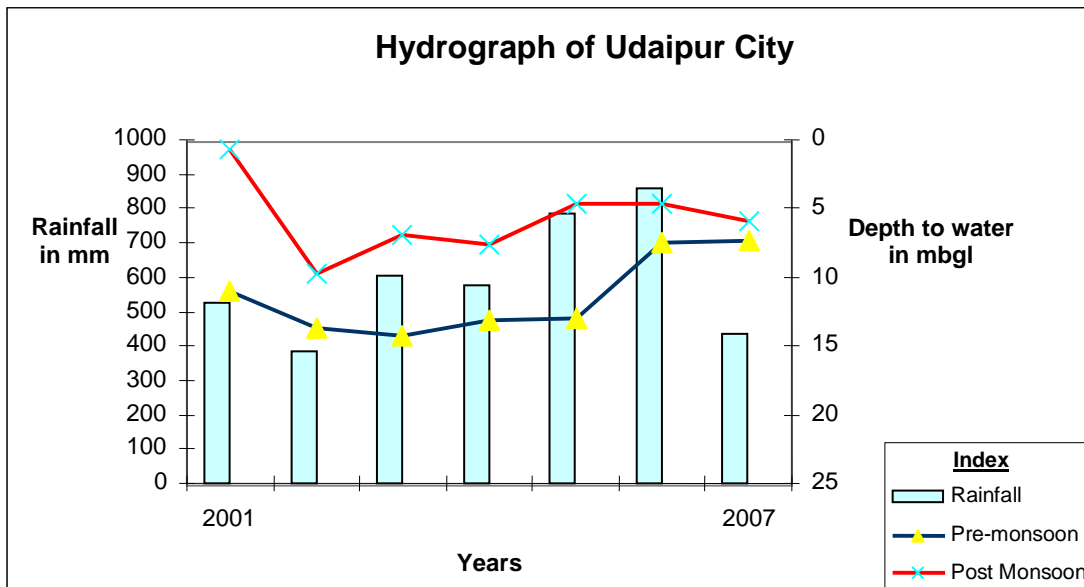


**Map 1**

Map 1 shows the surface sources of Udaipur city which include lakes like Fatehsagar, Udaisagar, Goverdhan Sagar, Doodh Talai, Pichhola Lake and Nandeshwar Talab, Badi Madar, Chhoti Madar & Ayad River.

There were 121 baories in Udaipur out of which 83 had dried up. Most of these baories are situated in the Sajjan Niwas Garden Area. Sarvaritu Vilas Baori, Chowk Wali Baori, Sagasji Ki Baori, Tarkari Wali Baori, Garden Wali Baori, Nalaka, Chhatriwali, Jalijiwala are baories to name a few. Sarvaritu Vilas Baori provides maximum potable water and Chowk Wali Baori minimum potable water for Udaipur city.

**Underground Water:-** Due to erratic nature of rainfall and scarcity of water in the surface sources the people of Udaipur city have turned towards the underground water to meet their potable water demand.



**Fig. 3**

The underground water situation is clear from the fig. 3 which shows Hydrograph of Udaipur city from 2001 to 2007 which shows that even the underground water is exploited to the extreme and the city comes under over exploited zone.

In Udaipur city, potable water supply is done by PHED from various surface sources and under ground water sources. Of the total, 13.50 million litre per day (mld) of water is supplied from Pichhola Lake, 1.00 mld from Badi, 13.50 mld from Jaisamand and 22.50 mld from Mansi Wakal, 6.50 mld from Jhamar Kotra and 9.00 mld from local under ground sources. The fig. 4 shows the sources of potable water supply in Udaipur city.

Water being limited and rainfall being erratic, lack of technology creates a serious problem of clean drinking water for the Udaipurites making most of them suffer from stomach, bones and teeth problems.

The Udaipurites perform the religious rituals and ablutions at the lake side, illegal construction despite the governments notification of "No Construction Zone" - 17-01-1997 and High Courts Interventions over the last 25-30 years massive deforestation and faulty land use practices have severally degraded the catchments of lakes of Udaipur.

## **CONCLUSION**

Mining and mineral industries are also a cause to natural hazard, degrading land resources and natural surroundings. Although mining in Aravalli range has been Bannera but illegal mining is still going on in these regions causing problems to natural surroundings.

- a. Unplanned expansion of residential areas of the city.
- b. Erratic nature of rainfall.
- c. Limited water sources – both surface and underground.
- d. Rapid increase in population.
- e. Rise in demand of water.
- f. Lack of coordination between various departments (Irrigation, PHED, Municipality, UIT, RUIDP etc.).
- g. Construction along the lake.

2) Mining and Mineral Industries are also a cause to natural hazard, degrading land resources and natural surroundings. Although mining in Aravalli range has been banned but illegal mining is still going on in these regions and causing problems to natural surroundings. But these industries are so prominent as they give employment to a lot of people, the benefits arising out of them cannot be ignored too. So many people from all economic strata are associated with these industries and if the industry is banned and shut down then surely too much of unemployment, which the state cannot afford. As long as it keeps on giving employment to people the industry will survive and so do the people.

## **SUGGESTIONS**

As these industries give employment to a lot of people, the benefits arising out of them cannot be ignored too. So many people from different economic strata are associated with these industries and their shutting down will put an increase in the unemployment.

1. Looking to the erratic nature of rainfall most of the water received during season is wasted. Therefore it is suggested that the wastage of water should be checked through rain water harvesting techniques. This technique will help in raising ground water level, it should be legally enforced.

2. There should be judicious use of water from the lakes.
3. There should be an economy of water use.
4. People's habit of using water need to be changed.
5. Polluted water treatment plant should be installed.
6. For Mining ,Dump material should be taken away for construction purposes and for making bricks
7. All dump hills should be vegetated by native plant species like Azadirachta indica, Withaniasomnifera, Aloe vera, Commiphora Wightii, Dendrocalamus strictus (bamboos) which are of high economic value and can thrive on all kinds of habitats.
8. Where the mined-out pits are deep and filled with water they should be developed for “pisciculture”.
9. Mining should not be done for export, in raw form, to earn foreign exchange at the cost of environment
10. Control over **Forest** Fire can prevent forests from getting scarce.
11. For conservation and management of forests, regulated and Planned Cutting of Trees can be done.
12. Reforestation and Afforestation should be encouraged.
13. Check over **Forest** Clearance for Agricultural and Flabitation Purposes should be done
14. Protection of **Forest** is needed .
15. Proper Utilisation of **Forest** Products and **Forests** should be done.

The participants marched to draw attention of the common people in the city for 2006 Forest Right Act, which has led to encroachments in forests area as an alternative FRCS (Forest Protection Committee) have called for the leasing of forest land to entire communities instead of individuals.

The conservation and management of lakes is a task of wide magnitude. It invites cooperation, coordination and accountability of various agencies eg. J.S.S., Lake Development Authority, National Lake Conservation Plan resulting in increased unflow of sediments into these water. The solid waste disposal is further worsening the situation. Sediment deposition in lakes have reduced their capacity to about 40% of storing water, water supply from the lakes.

For the overall development of Udaipur along with its people ,it is very important to understand the seriousness of these three issues discussed related to Udaipur city for its sustainable development and it can only be achieved through conservation and the management of these resources.

## **REFERENCES**

- Babel, Kaushalya & N.C., Gupta (1994); Urban Water Supply, Rawat Publication, Jaipur, Pg. 85, 180.
- Census of India, (1991 & 2001); District Census Handbook of Udaipur District, Directorate of Census Operation, Jaipur.
- Goswami, C.G., Mathur, M.W. (2000); Mewar and Udaipur, Himanshu Publication, Udaipur.
- Guide to Investing in Rajasthan-India – 2002.
- Indian Meterological Department, Jaipur.
- PHED, Udaipur City.
- Rajasthan Census Handbook – 2001 (Udaipur District).
- RUIDP, Udaipur City.
- Water Works Department, Udaipur.
- Swachh Sansthan, Udaipur.
- Introducing Jheel Sanrakshan Samities. Udaipur Lake Conservation Societies.