

Impact of Droughts On Sustainability: A Case Study of Moth Tehsil of Jhansi District In Bundelkhand Region

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Abstract: Bundelkhand is recognized as one of the poorest region of India. The Bundelkhand comprises 13 districts and is distributed over southern Uttar Pradesh and Northern Madhya Pradesh. Jhansi district is one of the district of Bundelkhand Region. Drought is a natural disaster which occurs due to water inadequacy in an areawhere rainfall deficiency found. Droughts are recurring features particularly in the arid and semi arid lands with varying intensity & magnitude. Sustainability is multidimensional concept in which food, fodder production, depletion of surface and ground water levels, soil erosion, loss of fertile soil, health and medical facilities, transportation and communication etc. are included. Drought occurrence affects all the above features and its leads to environmental instability. Agricultural production decreases due to shortage and deficit of rainfall and by this the production cost increasing day by day. The main aim of this study is to undertake a detailed, spatially explicit inventory of recent trends in drought and sustainability in the study area. The present study is based on primary as well as secondary source of data. The data have collected from different agencies and simple statistical data has been used for the processing of data. In the present study an attempt has been made to identify the major drought problem associated with the area, especially the causes and consequences. The study examines the impact of droughts on sustainable livelihood of the study area. The study also highlighted some management aspect and suggested some measures for development. It has been observed the most of the areas are facing acute shortage of agricultural, technological, infrastructural and institutional facilities.

INTRODUCTION

Drought is an indigenous hazards of nature and is considered to be the most complex but least understood of all natural hazards. Drought is the result of acute water shortage due to lack of rains. Drought is a global phenomenon which causes arid, semiarid, and dry sub-humid eco system to deteriorate. Drought is a serious threat to the sustainability of arid and semi-arid areas which covers 20% of the land surface and millions population.

DROUGHT TYPES

There are three types of drought.

1. METEOROLOGICAL DROUGHT

When rainfall decrease 25% from the normal rainfall. The average rainfall is 880 mm and it just receive 92% of rainfall from June to September. In study area rainfall is very uncertain feature because every year its amount decrease.

2. HYDROLOGICAL DROUGHT

When rainfall uncertainty to be repeat and ground/ surface water level decrease. The northern part of district (Moth tehsil situated) is occupied by the alluvium of quaternary age which consist to coarse sand, gravel, pebble, silt, clay and Kankar attain a maximum thickness of about 60 meters, together with the underlying weathered zone of granite-genesis basement aquifer system and all the above mentioned features effect the ground water levels because the permeability of water of such types soil and rock structure is very poor. As per depth to water level data of ground water monitoring state on of 2007 pre monsoon water level varies from 2.95 to 15.12 mbgl and post monsoon it is varies from 2.47 to 16.07 mbgl whenever in normal season it varies 5 to 15 mbgl.

3. AGRICULTURAL DROUGHT

Agricultural drought refers to circumstances when soil moisture is insufficient and results in the lack of crop growth and production. It primarily concerns itself with short-term drought situations. Agriculture can rebound or be impaired within a very short period of time depending upon the strength of drought conditions or precipitation events.

STUDY AREA

Moth Tehsil is in Jhansi district with geographical coordinates of north and north western region. Moth has 269887 population with the 143924 males and 125963 females according to 2011 census. Latitudinal and longitudinal extent of Moth are 25° 68' 135" north latitude and 78° 90' 59" eastern longitude. Moth is well connected with other cities of U. P. by roads and railways. Climate of Moth is like rest of Jhansi district. The culture and tradition of moth shows the real picture of Indian people.

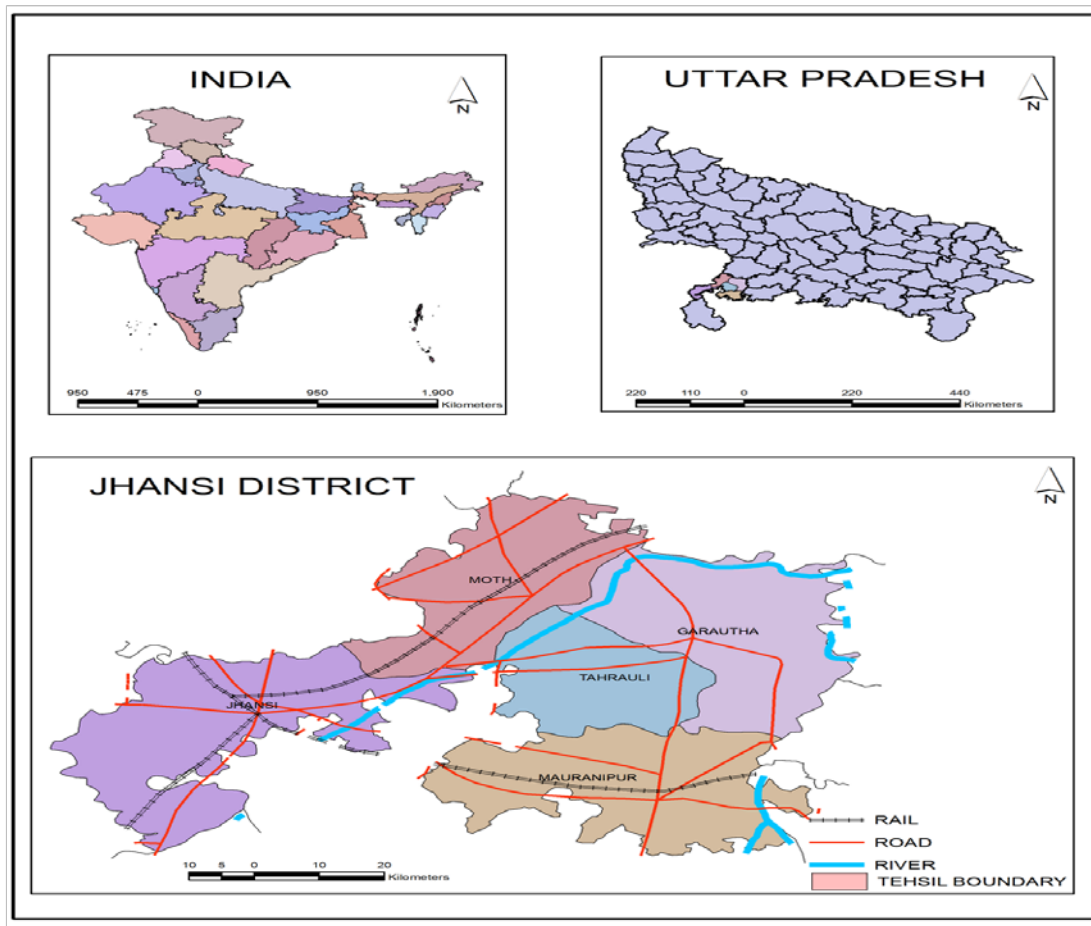


Figure 1. Location Map of Study Area

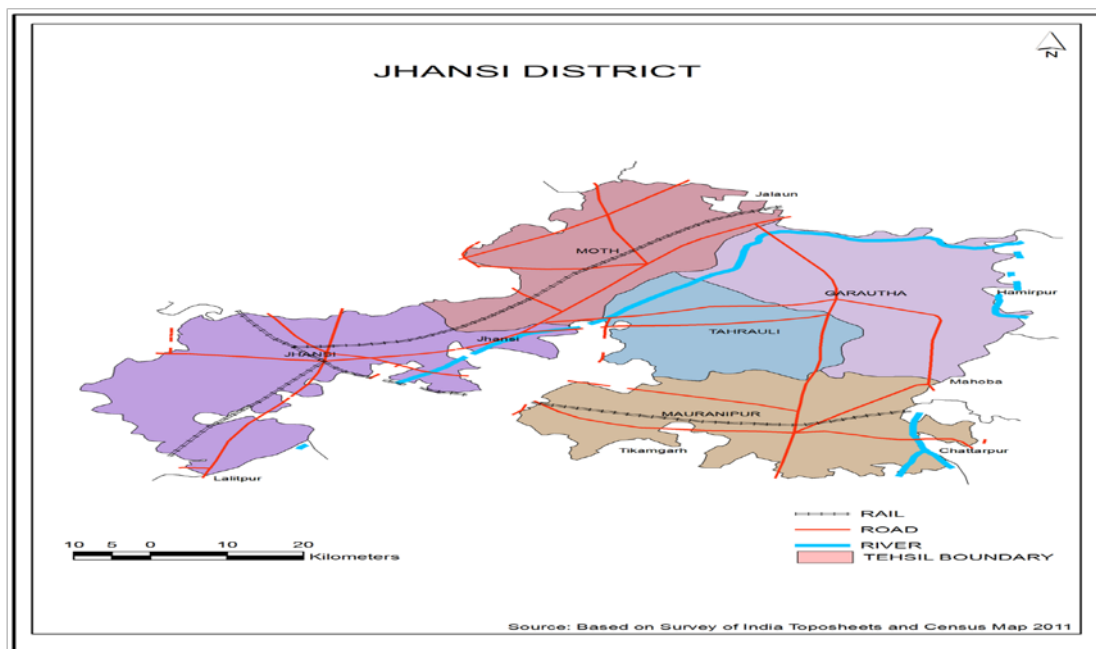


Figure 2. Base Map of the Study Area

DEVIATION (in %)

Normal	2004	2005	2006	2007	2008	2009	2010
880m	-39mm	-24mm	-52mm	-61mm	-60mm	-62mm	-61mm

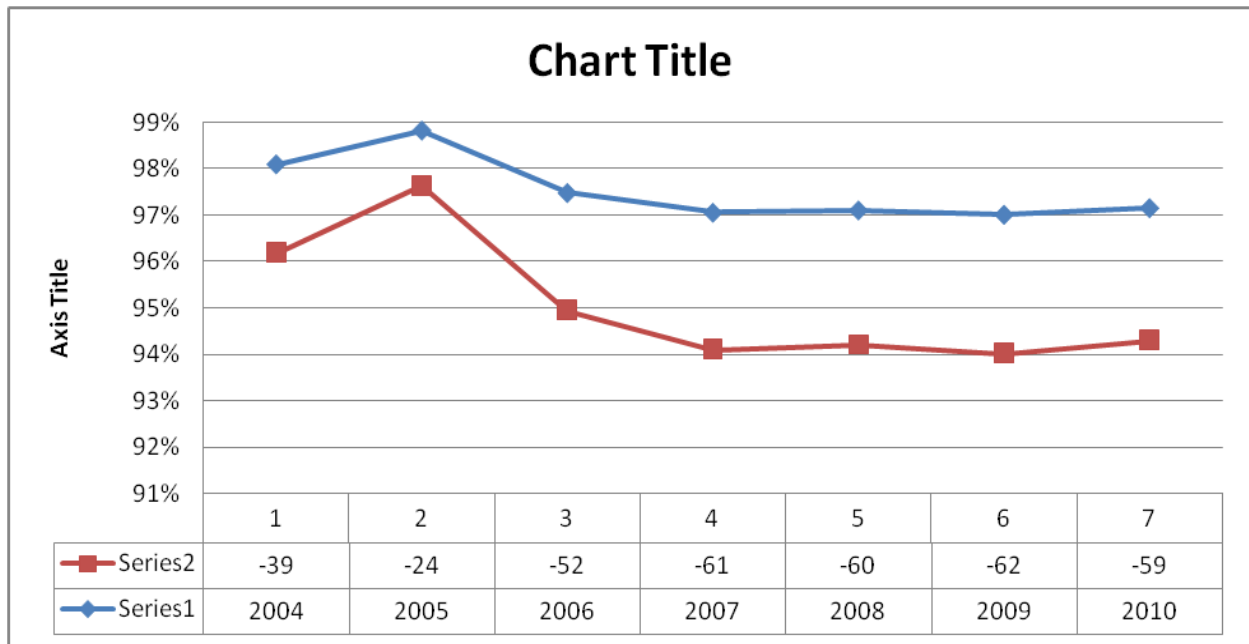


Fig. 3 Source- Report on Drought mitigation strategy for Bundelkhand region

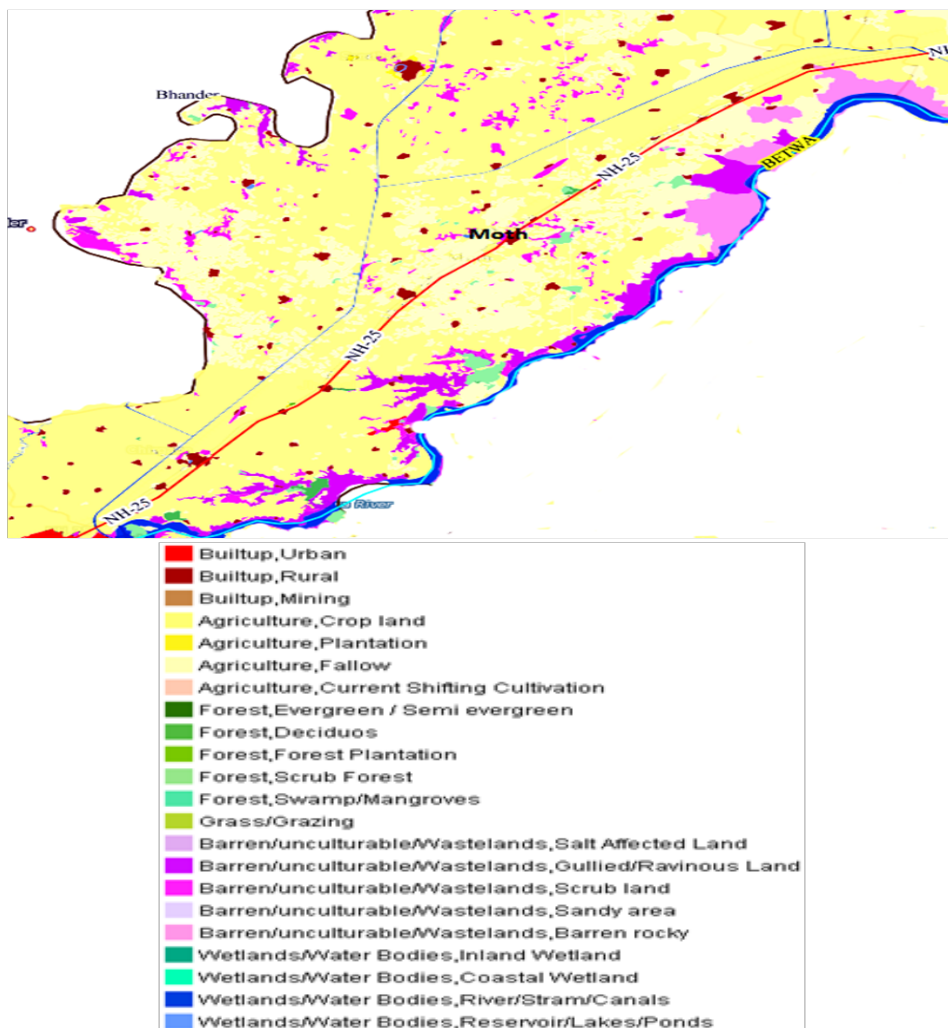


Fig. 4 Map

CHANGING LAND USE PATTERN (Jhansi District)

YEAR	2007-08	2008-09	2009-10
Net shown area	303533	305573	322680
Net shown area	130507	91043	213685
Total	434040	396616	535765
Rabi crop	191762	285788	315550
Kharif crop	237497	106791	218674
Zayad	4781	4037	1541
Net irrigated area	154448	215317	203807
Irrigated area	158854	218398	206115

MOTH TEHSIL

YEAR	2009-10
Net shown are	46406
Net shown area (whole year)	28085
Total	74491
Rabi crop	50705
Kharif crop	23092
Zayad crop	694
Net irrigated area	40294
Irrigated area	40580

PRODUCTION TRENDS (METRIC TONNE)			
	2007-08	2008-09	2009-10
RICE	2150	4242	3590
WHEAT	226116	394198	369729
COARSE GRAINS	15136	18403	10265
PULSES	57241	164897	165538
SUGAECANE	25283	34589	26884
TILHAN	895	39	930
POTATO	7154	8999	10809

LIVESTOCK

JHANSI	2007	TOTAL
		672285
MOTH	2007	TOTAL
		77407

AIMS AND OBJECTIVES

- The aims and objectives of study are followings.
- To undertake a detailed, spatially explicit inventory of recent trends in drought and sustainability in the study area.
- To identify the major drought problems associated with this area.

- To identify the causes and consequences of droughts.
- To examine the impact of drought on sustainable livelihood of study area.
- To access the management of those problems including some suggestion.

DATA BASE METHODOLOGY

The present study is based on primary as well as secondary source of data. The data have collected from different agencies and simple statistical data has been used for processing of data. Primary data is the first hand information collection which collect by the questionnaire, field work/survey etc. whenever secondary data collect by the print and non-print source like as magazine, newspaper, internet, books, journals, gazettes etc.

RESULTS AND DISCUSSIONS

By the comprehensive study of study region, followings results short out.

- Moth tehsil has traditional source for the irrigation and drinking water such as wells, ponds, baolis , tube wells, hand pumps etc. Water quality and availability affected by drought because in drought condition water level decrease 100-200 feet which was earlier available 20-30 feet.
- For past six year, study area is facing worst drought in its history. By this cause the peoples are powerless to end life and sell livestock and land.
- Drought creates many problems and play a resistant role in development.
- Frequency of drought is increasing year by year by rainfall uncertainty.
- Agriculture production mainly related to rainfall and when drought condition exist then productivity decrease.
- Livestock number and price are related with drought.

MAJOR FINDINGS

- Drought has led to accelerated land degradation, soil erosion and desertification.
- In this region main source of economy are agriculture based so due to water shortage, declining agriculture productivity livestock, poverty and indebtness, hunger and malnutrition, food and job insecurity have pushed villagers to migrate.
- Drought Prone areas are highly.

CONCLUSION

Although rainfall is main cause of drought but its impact could reduce by the rain water harvesting, canal and spring irrigation, afforestation and good implementation of government policies and schemes. There is an urgent need to focus attention on all aspects of drought management, including relief measures. As the disaster preparedness is a very cost-effective component of disaster management. There is a need of tuning between central and state government, money pours in, but calamity relief is not reaching to the poorer section of the society. It is important to prepare an action plan as early as possible to be based on reducing the sufferings related to water scarcity and food shortage.