IOSR Journal Of Humanities And Social Science (IOSR-JHSS)
Volume 28, Issue 12, Series 8 (December, 2023) 61-67
e-ISSN: 2279-0837, p-ISSN: 2279-0845.
www.iosrjournals.org

Geographical Study of Watershed Management in Dausa District

Dr. Ritesh Kumar Aggarwal
Assistant Professor, Department of Geography, B.S.R. Government Arts College, Alwar (Raj.) 301001

Abstract
A watershed is a geographical area in which falling water collects and flows through a place through a river or several small rivers connected to each other. This place is called the exit or drainage point. According to Dr. Mahnot, "A water catchment is an area from which all the rain water flows from a single point. The principle of water catchment is very simple. Wherever the water falls, it has to be collected by preventing it from moving forward. Like- As it progresses, its volume will increase and the surrounding water will mix with it. Each catchment area is divided into many small areas, which are called mini catchment areas. Physical and ecological recharge/redevelopment is necessary for the overall development of the catchment area. Thus, watershed has been defined as a geographical unit in which the basis of sustainable development is prepared through various geographical, economic, ecological and social activities, as well as the concept of resource development and management. This is proved. In this research paper, a geographical study of watershed management in Dausa district has been done.

Keywords:- Historical Stauts of Dausa District, Geographical features of Dausa district, Watershed management in the study area Dausa District, Socio-economic impact, issues, suggestions and Conclusion.

I. Introduction :-

If there is water, there is tomorrow which means that our future will be secure only when there is water. There is no alternative to water. Water is an invaluable resource of nature. This precious resource has become very important for our economy. It is an important component not only for agriculture, industry, transportation but also for forestry, recreation and environment. Rajasthan state, located in the northwestern part of the country, has less average annual rainfall and the number of rainy days is also less. In the last few decades, due to agricultural development in the state and district, there has been a rapid increase in agricultural production as well as exploitation of underground water. The underground water level in the state and district is going down at the rate of one to three meters every year. Due to meeting the needs of rapidly increasing population, the per capita availability of water is continuously decreasing. Due to the situation of famine every second-third year in the state and the inability of water to be recharged in proportion to excessive exploitation, water shortage will become a serious problem in the future. The problem of soil erosion or erosion is also increasing due to uncontrolled exploitation of water and indiscriminate cutting of forests. As a result, most of the areas are experiencing severe shortage in the availability of resources. To solve all these problems, the Watershed Area Development Program has been implemented. The watershed development program is based on water harvesting system. Whose main objective is in-situ conservation of water and soil. In which local, economical and low-cost technical methods are used and degraded land is developed. The overarching objective of watershed development is to raise the standard of living of the people living in the watershed. So that the economic and social level can be improved. In this way, the Water Catchment Area Program is such a unique program which not only helps in the development of the area. In Dausa district, there is social and economic development of the people living in the catchment area, land and water conservation, increase in ground water level and improvement in the environment as well as redevelopment of ecology. At present, the pressure of rapidly increasing numbers is increasing on all natural resources.

Objective
1 To conduct geographical study of watershed management in Dausa district.
2 To analyze the problems and solutions of water catchment management of Dausa district.

Hypothesis
Watershed management is having positive effects in Dausa district.

Sources of data

The presented research paper is based on secondary data. The data has been compiled from District Collector Office, Dausa and Water Management Project Department.

Historical Stauts of Dausa District :-

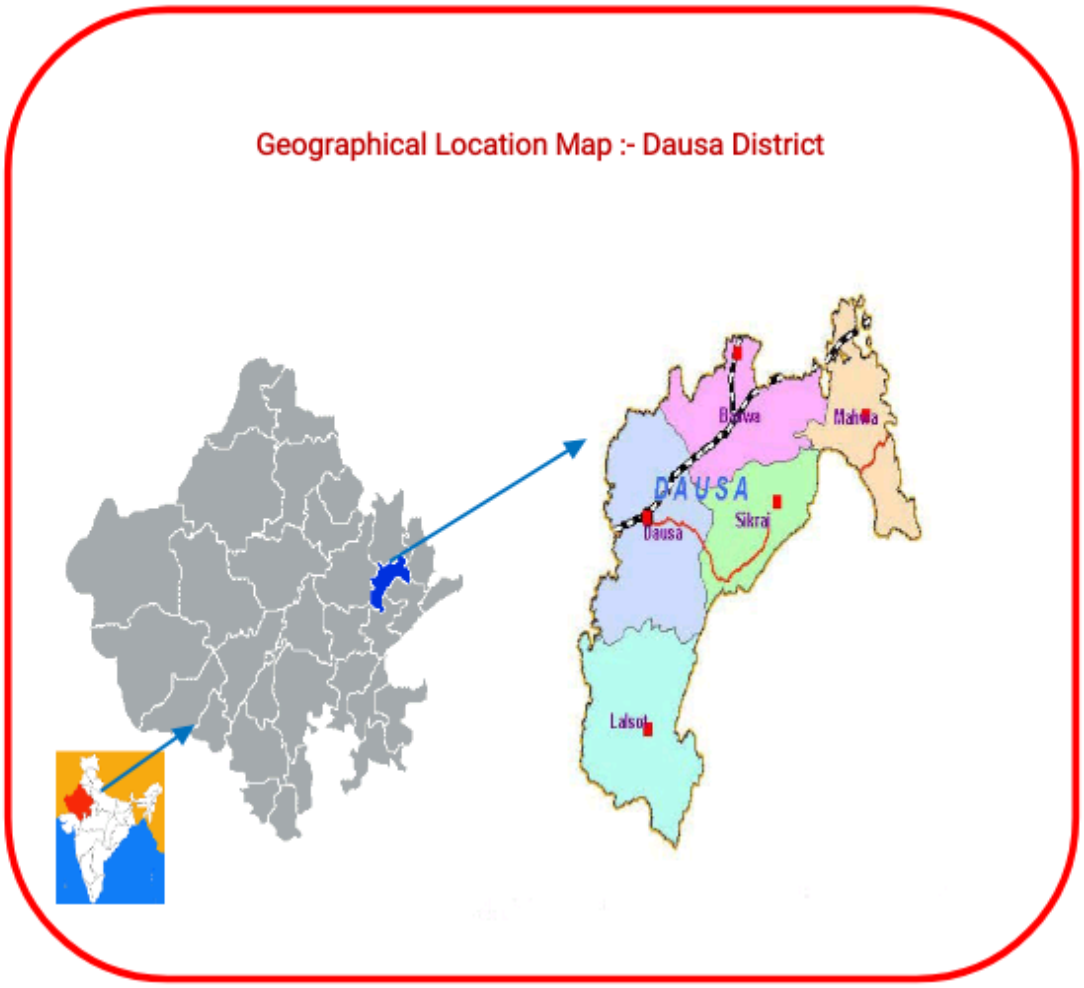
In ancient times, Dausa area was known by the names Devansh/Denvasa or Dyosa etc. In 1137 AD, Dulharay/Dholerai established the Kachchavaha dynasty in Dhundhaar and made Dausa the capital. Dausa was separated from Jaipur on April 10, 1991 and made a new district (29th of the state). On August 15, 1992, Mahua tehsil of Sawai Madhopar district was also included in Dausa district. Dausa district is situated on National Highway No. 11. Dausa city is situated at the foothills of Devgiri hills. With time, Dausa remained a major political place and got the privilege of becoming the first capital of Dhundhar state. In the tenth century, there were two dynasties ruling Dausa - Chauhan and Badgurjar. Later, Chauhan descendant King Saudhadev defeated Badgujars and established rule over Dausa. Raja Saudhadev was the king of Dausa from 14 October 996 to 28 January 1008. After that, from 29 January 1006 to 28 January 1036, i.e. for 30 years, Raja Dullerai ruled Dausa. The tourist places of Dausa include Neelkanth Gupteshwar, Somnath, Sahajanath, Baijnath, Jain Temple and Dargah of Sufi Saint Hazratshah and Getolav Dham. Mehndipur Balaji, Jhanjhirampura, Chand stepwell of Abhaneri and Harsh Mata temple, Stepwell of Bhandarej etc. are famous religious and historical places in the district. Basava town of the district is also important from historical point of view. Being the last stop of Dhundar kingdom, it took the form of a military cantonment. Rana Sanga's chhatri is built here, where he sacrificed his life in his last moments. Apart from this, there are other places of interest in the district like Kubanya of Aluda, Mazar of Shahkarar Pir of Basava, Bijasani Mata Temple Khurra, Papalaj Mata Temple etc.

Geographical features of Dausa district :-

For research study of any area, it is necessary to obtain information about its geographical structure. Dausa district is a district of Rajasthan state in India within Jaipur division. Dausa city is the district headquarters. It has an area of 3432 km² and a population of 1,634,409 at the 2011 census. It is surrounded by Alwar district in the north, Bharatpur district in the northeast, Karauli district in the southeast, Sawai Madhopur district in the south and Jaipur district in the west. Dausa district is divided into eight tehsils – Baswa, Dausa, Lalsot, Mahwa, Sikrai, Lavan, Nangal Rajawatan and Ramgarh Panchwara, Bejupara, Mandawar, Rahuwas. The Sava and Ban Ganga rivers pass through the district. It is situated on National Highway 11 from Jaipur to Agra. It is 55 km east of Jaipur and 103 km from Sawai Madhopur. Geographical conditions like geological structure, climate, soil condition etc. influence the industrial development of the area.

Geographical location :-

Dausa district is situated between 25°33' to 27°33' north latitude and 76°50' to 78°55' east longitude. The area of the district is 3432 square kilometers, which is about one percent of the total area of the state. Alwar district in the north, Jaipur in the west, Bharatpur in the north-east, Karauli-Sawaimadhopur in the east and Tonk district in the south determine its boundaries. Delhi-Jaipur and Jaipur-Agra railway lines pass through the district. National Highway No. 11 (Agra-Bikaner) runs from east to west in the northern part of the district. Dausa is the district headquarters which is 55 km from Jaipur.



Temperature :-

The temperature in the district starts increasing with the onset of Uttarayan in the month of March, due to which a continuous increase in maximum and minimum temperatures is seen till the end of June. This area becomes hotter as the Sun's position becomes perpendicular to the Tropic of Cancer on June 21. These days, hot winds blow in most areas. Which is called Lu in the local language. In summer the relative humidity is around 40 percent so there is very little rainfall. The temperature drops when the monsoon season starts in late June or early July. The temperature starts rising again in late September and early October.

The winter season starts from mid-October and lasts till February. In this season the temperature starts decreasing gradually. The average temperature of the month of November is 20.50 Celsius, which drops to 15.150 Celsius in January, which is the minimum average temperature of rainfall. Here, between the last week of December and the first week of January in 2012-13 and 2014-15, the temperature reached 30 Celsius, due to which crops of mustard, gram, pigeon pea, taramira and linseed were damaged. Due to which poor families were greatly affected.

The air in the district is dry during most of the year. But during the south-east monsoon, the humidity of the air increases during the rainy season, which remains between 70 to 80 percent and the lowest humidity in April-May is 20 to 25 percent. Table 2.3 shows month-wise average temperature, average rainfall, relative humidity and number of dust storms etc.

Rain :-

Rainfall lasts from mid-June to September. The district average annual rainfall is approximately 740.53 mm. In the months of July and August, the sky remains cloudy and due to the highest relative humidity, maximum rainfall occurs in the month of August. In 2015, the highest rainfall was recorded in Lalsot tehsil, which created flood situation in many villages like Ramgarh Mandwari and caused considerable damage to crops and kutcha houses of low-lying families. Due to which poor families became poorer and rural development work was affected. The district rarely receives rainfall in the months of September and November.

Drainage system :-

The main two rivers of the district are Banganga and Morel, which have many tributaries and drains. All of these are seasonal and water flow can be seen in them only during the rainy season. Banganga river originates from the hills of Virat Nagar in Jaipur district and enters Dausa tehsil in the western border of the district and flows through Baswa Sikrai and Mahua tehsils and enters Bharatpur. Its flow is towards Yamuna river, but near Bharatpur it flows into the lakes and other low lying areas and submerges them. Palsana drain also joins it. This river flows in spate during the monsoon season and creates tremors in its flow area. It joins the Banas river forming the south-western border. Its flow is from the hills of South Morel River Lalsot Tehsil towards north of the district. Morel Dam has been built on this river in the south, which provides irrigation to Lalsot. Many small mountain streams join this river.

Watershed management in the study area Dausa District :-

Under the National Watershed Development Project for Rainfed Areas (NWDPRA), this scheme was started as a pilot project in 15 areas in the study area between 2005 and 2008 on an area of 17761 hectares in 36 areas. Similarly, under the Integrated Watershed Management Program (IWMP), a total of 45880 hectares were included in the study area. The present Chief Minister Jal Swavalamban Yojana (MISY) is being operated in 107 villages of all the tehsils. By conducting surveys in each selected water catchment area, impacts on vegetation, humans, biodiversity and ecology were evaluated by physical and biological controllers.

Among the physical controls of ecological restoration in selected watersheds, contour vegetative barrier was adopted as the major corrective activity on agricultural land. Under this, grasses like khus, moonj etc. were planted. In the selected areas, the highest vegetation barrier was established on 32.66 percent area in Sikrai, 20.66 percent in Ralawta, 19 percent in Toda Thekla, 15.55 percent in Sinduki and 23.28 percent in Aluda. Which is a very small part of the set target. The reason for which is lack of institutional strength as well as lack of public participation. Similarly, 30 percent sewerage control was established in Sikrai, 22 percent in Ralawta, 36 percent in Toda-Thekla, 33 percent in Sinduki and 2833 percent in Aluda, which is less than the set targets. The reason for which is not starting the work on time, lack of regularity in the construction work and not being able to spend the allotted amount due to the situation of confusion in the work. The work of leveling and embankment is 53 percent of the target in Toda-Thekla whereas in all other selected micro water catchment areas Only 20 to 35 percent of the target has been achieved. The reasons for the achievements of the physical controllers being less than the set target are the lack of institutional strength, lack of public participation, political interference at the local level and biased attitude towards private agricultural land. Ground water level: An increase of 5 to 10 meters has been recorded in the depth of ground water after the water catchment project in the selected catchment areas. During the project, maximum 204 structures have been constructed in Toda Thekla, 143 in Ralawata and minimum 37 structures have been constructed in Aluda for water storage. Due to which the water storage capacity of the selected catchment areas has increased. For botanical promotion in selected watershed areas, works like pasture development, agro-forestry, horticulture, afforestation etc. were done under the watershed development programme. Compared to the set target of pasture development, only 29.03 percent success has been achieved in Sikrai, 27.58 percent in Ralvata, 39.62 percent in Toda-Thekla, 35 percent in Sinduki and 25 percent in Aluda. The reason for which is the open grazing system consumer committees not taking steps regarding the maintenance of pastures. In the selected catchment areas, against the target of tree plantation set under the programs of Agriculture, Forestry, Horticulture etc., only 43.10 percent trees have been planted in Sikrai, 31.92 percent in Ralvata, 4569 percent in Toda-Thekla, 36.36 percent in Sinduki and 33.78 percent in Aluda. At the same time, the survival percentage of plants is also unsatisfactory. Most of the saplings were destroyed at the initial stage of planting due to lack of care and lack of active participation of people. Various activities conducted under the watershed program have an important contribution in the replenishment of biodiversity. The presence of native acacia and neem is prominent in the botanical diversity of the selected water catchment areas. After this, there is abundance of other species like Dhank, Khair, Khejri etc. Agro-forestry and afforestation have led to the enrichment and increase in density of these tree species. Besides, the reproduction of Amla, Lemon and Guava plants has increased through horticulture. In the last one and a half decade, a significant increase has also been recorded in Bilayati Acacia (Prosopis juli fluoro). In all the selected water catchment areas, regeneration of Kala Dhaman and Lapda grass, which has the characteristic of less water, has been done under pasture development.

Socio-economic impact :-

To assess the socio-economic impact in the selected catchment areas, the number of families below the poverty line, migration, number of days of employment etc. were studied. The number of families below poverty line in the selected catchment areas decreased after the implementation of the project, in which 1009 families in Sikrai, 148 families in Ralvata, 346 families in Toda Thekla, 215 families in Sindki and 204 families in Aluda were above poverty line. Has happened.

Under the Watershed Development Programme, an increase in the irrigated area has been recorded in the selected micro catchment areas due to increase in water availability and its efficient use through water conservation by construction of water storage structures. The highest increase in irrigated area was recorded at 3325 percent in Ravalata micro catchment area and the minimum increase was recorded at 6.66 percent in Sikrai micro catchment area. The highest increase in net sown area was recorded at 14.98 percent in Aluda micro catchment area and the minimum increase was recorded at 331 percent in Sinduki micro catchment area.

The number of days of employment has also increased after the watershed programme. The number of working days of marginal and small farmers has increased by an average of 26 percent to 28 percent in all the selected water catchment areas. By providing employment opportunities through the Watershed Development Program in the selected catchment areas, in the last 15 years the number of days of stay has increased by 39 percent in Sikrai, 34 percent in Ralvata, 89 percent in Toda Thekla, 31 percent in Sinduki and 34 percent in Aluda. There has been a decrease. Livestock development is also considered an integrated part of the watershed development programme. Hence, there has been an increase of 84.89 percent in Sikrai, 49.58 percent in Ralawta, 39.35 percent in Toda Thekla, 31.23 percent in Sinduki and 45.29 percent in Aluda. Along with this, the work of artificial insemination and castration has also been done to improve the breed of animals. In terms of basic facilities, all the selected micro catchment areas are connected to the nearest city/town by metalled roads. The villages in all the catchment areas have been electrified. The comparative development level of the 15 development variables mentioned above in the selected catchment areas was measured by standardization method. In this research, watershed management through traditional and modern methods for watershed management and ecological redevelopment has been mentioned. In traditional methods, drainage control was established at 315 places in the study area, vegetative barrier was established on 8268 meters and contour vegetative barrier was established on 3379 hectares. Besides, 170358 meters of leveling and leveling work was done. Using modern methods, 187,000 plants were planted under agro-forestry and 135,000 plants under horticulture, while 4440 hectares of barren land was treated. In the study area, all the processes and schemes of the watershed development program have not been able to achieve real success due to the lack of implementation of guidelines and guidelines by the government machinery and lack of active public cooperation.

issues:-

1. Due to uncontrolled exploitation of ground water to meet the needs of agriculture and increasing population, fluctuations in the number of rainy days and lack of water conservation. Like the state, the underground water level in the study area is falling at the rate of 2 to 3 meters every year. Which represents a big problem for the sustainable development of the area.
2. With the lowering of ground water level, the amount of salinity and alkalinity has also started getting reflected in the study area. The district has 1748 square km. The area is most affected by salinity and alkalinity. In which 753 in Dausa, 11 in Basava, 53 in Mahwa, 8. 30.8 in Sikrai and least 1.9 sq km in Lalsot. The amount of salts more than 3 mg per liter is found in the area.
3. Due to lack of scientific water management, the irrigated area is 172656 hectares and the cultivated area is 222226 hectares. Which is 65 percent of the total geographical area which is less as compared to other areas. And per unit productivity is also less than other areas. The per hectare productivity of wheat in the state is 3133 kg whereas in the study area it is 2704 kg. Is. Similarly, the per hectare productivity of mustard in the state is 1208 kg. Whereas in the study area it is 809 kg. Is. The productivity of millet in the state is also 1680 kg per hectare. Less than 1410 kg. Is. Similarly, the productivity of other crops is also low.
4. Due to soil erosion by water in the sloping parts of the study area, agricultural land is converting into non-agricultural land and due to reduction in organic elements in the upper layer of the soil, the land is becoming barren. This section of land is not being managed properly. There are 21615 hectares of barren land in the study area.
5. Due to inadequate water harvesting structures in the study area, the soil is not able to absorb adequate moisture from rain water and most of the rain water flows away. 159.24 lakh cubic meters of surface water flows in the study area. After evaporation and groundwater etc., only 9807 lakh cubic meters of water is available for storage. Which is also not fully stored.
6. Low vegetation cover in the study area indicates lack of forest areas. Forests are found only on 7.67 percent area in the study area. The number of saplings planted during the watershed development project is more than 15 lakh. But due to lack of proper care their survival percentage is low. Due to which vegetative cover has not developed in the required proportion.
7. Due to increasing demand for fuel, timber etc. along with increasing population in the study area, the rate of exploitation/eradication of vegetation is higher than the rate of plantation. Due to which agriculture, forestry, forestry and nurseries etc. are not being developed in proper proportion. The total rural population in the district is 1432616, of which 20 to 25 percent still uses fuel traditionally.

II. Suggestion

Given the current status of ground water in the study area, future prospects for development of agricultural activities appear bleak. Therefore, it is necessary to save every drop of rain water. Without successful resolution of the problems mentioned above, sustainable and sustainable development in the study area is not possible. Therefore, the following suggestions are being proposed to solve these problems:-

1. The main problem of the study area is the rapidly falling ground water level, for which the recharge rate should be increased by managing rain water, for which increasing greenery (biomass), building water storage structures and reducing the loss of rain due to flow and evaporation. Water can be conserved. That is, through water harvesting programme, efforts are being made to increase the ground water level by conserving field water in the fields and village water in the villages. Under the water harvesting programme, 79 new water harvesting structures were constructed in Toda-Thekla, 41 in Ralavata and 57 in Aluda. Which has yielded the expected results. Ground water has increased by 33 percent in Sikrai, 12 percent in Ralawata, 12 percent in Toda Thekla and 24 percent in Aluda.
2. Drinking water can be made available in rural and urban areas by reviving the traditional water conservation activities like pond, stepwell, well, tank etc. And recharge of underground water will also be possible through these methods.
3. The agricultural irrigation system in the study area is unscientific, hence instead of bed irrigation method, 4845 hectares in the district are being irrigated by modern irrigation methods by managing water using scientific methods like sprinkler method, drop-drop irrigation method etc. Due to which the irrigated area and cultivated area in the study area has increased by 15460 hectares and the productivity per unit has also increased.

4. To effectively stop soil erosion, contour farming should be done on cultivable land and contour farming should be done on non-cultivable land by creating vegetative barriers, along with this, proper treatment of flow should also be done. Through the watershed programme, vegetative barrier was established on 3379 hectares of land in the district. And efforts have been made to prevent soil erosion by establishing storm drain control at 315 places.
5. Crops that use less water should be promoted in the area, like instead of wheat, mustard can be produced with limited water. In the last 15 years, the area of mustard production in the district has increased by 25743 hectares. The maximum increase has been in Lalsot by 13754 hectares. Besides, efforts have been made to develop agriculture according to the regional geographical conditions by adopting dry farming methods.
6. In rural areas, the surface water sources of the area should be improved by constructing new water harvesting structures like anicuts, earthen dams, ponds etc. Along with this, the facility of drinking water is available for the animals. In the last 15 years, 89 ponds and anicuts have been constructed in the district along with improving the underground water sources of the area as well as providing drinking water facilities to the animals. In the last 15 years, 89 ponds and anicuts have been constructed in the district and 373 small earthen ponds have been constructed in Basava, 245 in Mahwa, 330 in Dausa, 325 in Sikrai and 380 in Lalsot. Efforts have been made to store meter water.
7. Private investors and entrepreneurs should be encouraged in the development, maintenance and management of water conservation schemes.
8. The watershed development programs conducted through various activities in the state as well as in the study area have not yet been accelerated to the required extent while the "Integrated Watershed Development Project" has even ended. Therefore, it is necessary to give proper pace to this program.

III. Conclusion :-

Apart from the above problems, there are also problems like lack of coordination between the watershed development program implementing agency and the villagers, inefficient and unusable developmental structure, lack of technical human capacity, local politics etc. Therefore, by adopting the process of solving the above mentioned problems, development plans can be made to decide the direction of sustainable development of the area. To make all developmental programs successful, public participation is necessary. For this, the public should be taken into confidence and made a participant in the developmental activities and regional traditional technical knowledge should be linked with modern developmental technical knowledge. Public awareness should be spread for this. Participation of the local community should be ensured in the watershed development program by formation of self-help groups, user groups, watershed committees etc. The national policy should promote small water harvesting systems. These policies should be dependent on as well as promoting community management of natural resources. This will also help the government and the basic needs of the people will also be fulfilled.

Only if the above suggestions are successful, the environmental, economic and social development of the area will be possible and regional developmental activities will gain momentum.

Reference :-

[1]. District water management & Planning Office, Dausa
[2]. Census Department, Jaipur
[3]. DRDA, Dausa
[4]. District Employment Office, Dausa
[5]. District Statistics Office, Dausa
[6]. Residential Engineer Office, RIICO, Dausa
[7]. District Industries Centre, Dausa
[8]. District Collectorate Office (Revenue)
[9]. Marudhara Academy, Jaipur
[10]. Lead Bank, UCO Bank Office, Dausa