

# Means of Irrigation in the Blocks of Chandauli District Uttar Pradesh: A Temporal Analysis

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## ABSTRACT

Irrigation is a key component for agriculture activity and productivity, so this irrigation is prime for the productivity of different crops. Irrigation is the process of applying water to the crops artificially to fulfil their water requirements. Nutrients may also be provided to the crops through irrigation. The various sources of water for irrigation are wells, ponds, lakes, canals, tube-wells, and even dams. Irrigation offers moisture required for growth and development, germination, and other related functions fulfil of requirement of water for the growth of agriculture. The research is devoted to the study of changes of sources of irrigation in Chandauli district (A block level analysis). The data is collected to show the changes of sources of irrigation from district statistical handbook uses simple statistical technique and methodology for the analyse of data. It is shown in the data changes are inheritances during given period of time while major changes in the sources of irrigation in shallow tube well, pucca well, and ground level pump set. While mere changes are also seen in deep tube well, government tube well, and canal extension.

**KEYWORDS:** Agriculture, productivity, Irrigation, Chandauli District

## INTRODUCTION

India is agrarian society in which practices of agriculture by over 50% of population, so for this Water is most influential input into agriculture. Adequate availability of water is important for animal husbandry as well. Fisheries are, of course, directly dependent on water resources. Distribution of these water resources across the vast expanse of the country is also uneven. With the growing demand of food for consumption and export stress on water facility in agriculture sector. To meet the demand of water requirement number of irrigation sources develop with time.

Irrigation is practice of supplying land with water so that crops and plant will grow Cambridge university Each crop require different water for grow for example Rice require a lot of water than wheat and sugarcane however requirement of water for each crop at different time of grow. Irrigation facility beneficial in different aspect for farmer like-

- Increase in food production through increase of crop yield.
- Protection against drought.

**How to cite this paper:** Amir Khan "Means of Irrigation in the Blocks of Chandauli District Uttar Pradesh: A Temporal Analysis"

Published in International Journal of Trend in Scientific Research and Development (ijtsrd), ISSN: 2456-6470, Volume-6 | Issue-3, April 2022, pp.826-832, URL: www.ijtsrd.com/papers/ijtsrd49614.pdf



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- Better irrigation facility ensures income generation by grow high price crop by farmer.
- Mixed cropping facility are also due to irrigation facility.
- Uses of barren land.

Irrigation facility make prosper of agriculture in different aspect in the view of National Commission of Integrated Water Resources Development (NCIWRD)(*Integrated Water Resource Management | National Water Mission, Ministry of Jal Shakti, Department of Water Resources, RD & GR, Government of India, n.d.*) projections show that irrigated area needs to increase by about 35 million ha to reach the food self-sufficiency goals (GOI 1999). However, Irrigation play deciding role in productivity-led agricultural production growth, in alleviating poverty and in reducing inequality in income distribution in rural areas (Dr Mrunthajaya 2001). According to FAO "The highest yields that can be obtained from irrigation are more double the highest yield that can be obtained from rainfed agriculture. In addition to this FAO also emphasise A

reliable and suitable irrigation water supply can result in a vast improvement in agriculture production and assure the economic vitality of the region.

There is indisputable evidence that irrigating land led to increase productivity. Irrigation is necessary input in to the high yielding variety during green revolution. One acre of irrigated cropland worth of multiple acres of rain fed cropland. It is estimated that 40% of food produce only from 17% of irrigated land. Irrigation is generally use in high value crops. Irrigation allow farmer to apply water at most beneficial times for crops. Instead of being subject to timing of rainfall.

Agriculture is prime economic activity by people of Chandauli hence requirement of water for irrigation purpose is more crucial for crops productivity. To meet the demand of water for irrigation purpose Number of sources to provide water for irrigation purpose in Chandauli in which major source of irrigation are Canal, Govt. Tube-well, Pucca well, Ground level pump-set, Tube well. Canal irrigation is more accessible and widely spread in the district while Tube well and pump-set are also been use in rocky area of district (Naugarh Bock).

#### Literature Review

**B.D Dhawan & Harsharan Singh Datta (1992)** Examines how irrigation facility impact on the intensity of cropping patterns and sources of irrigation also impact on crop productivity. The Examination was based upon secondary sources of data using the regression equation to show the relationship between irrigation and impact on crops **B.D Dhawan (1992)** state wise use of water for irrigation and to calculate the productivity of crops through the use of secondary sources of data. Besides this, it also emphasis the enhancement of productivity of crops not only done by irrigation facilities but it also depends upon the number of inputs like HYVs seeds, fertilizers, insecticides, pesticides etc. **View of R.S Varshney (1995)** Method of irrigation through past period and spatially use of method of irrigation facility in the world and he found surface irrigation are more common in the world use by about 90% of farmer while sprinkle, Drip, trickle method of irrigation uses in draught prone area. **The writer K.R Karunakaran & K Palanisam (1998)**-Evaluate how government expand on major and minor irrigation facility to the farmer for maximize the profit using secondary sources of data from 1969-70 to 1993-94 in the state of Tamil Nādu. And it is found that there is close and positive relationship between irrigation development and intensity of cropping at state level.

**In the view of Shivprasad B.M & Prof K.V Aiahanna (2008)**- different sources of irrigation and

its impact and he suggested development of irrigation will benefited for rural poor because who engaged directly and indirectly on agriculture sector. However, it also suggested that Innovation of new models in irrigation and proper use of water for irrigation through along with creating awareness and imparting education to farmers will help in development of the sector and more importantly improving the economic status of poor farmers. **Amit Singh & Sanjay k Upadhyay (2011)** Show the important of irrigation and said productivity, production, employment, food security depend upon better irrigation facility while he also emphasis the inequality of irrigation facility in Uttar Pradesh and said because of high cost of irrigation facility in agriculture sector marginal and small farmer are more affected. **Dr Sanjeev Rayudu T.C & Krishnaiah Y.V** Explain the important of irrigation facility on agricultural productivity production are inheritance but there is still vast area are unirrigated because of lack of proper irrigation facility while he also suggest the government intervention to expand cultivated area through better irrigation facility.

#### OBJECTIVE;

The following objective have been taken in to consideration for the purpose of study-

- To know the changes of sources of irrigation in Chandauli district.
- To find out major changes of particular sources of irrigation.

#### METHODOLOGY;

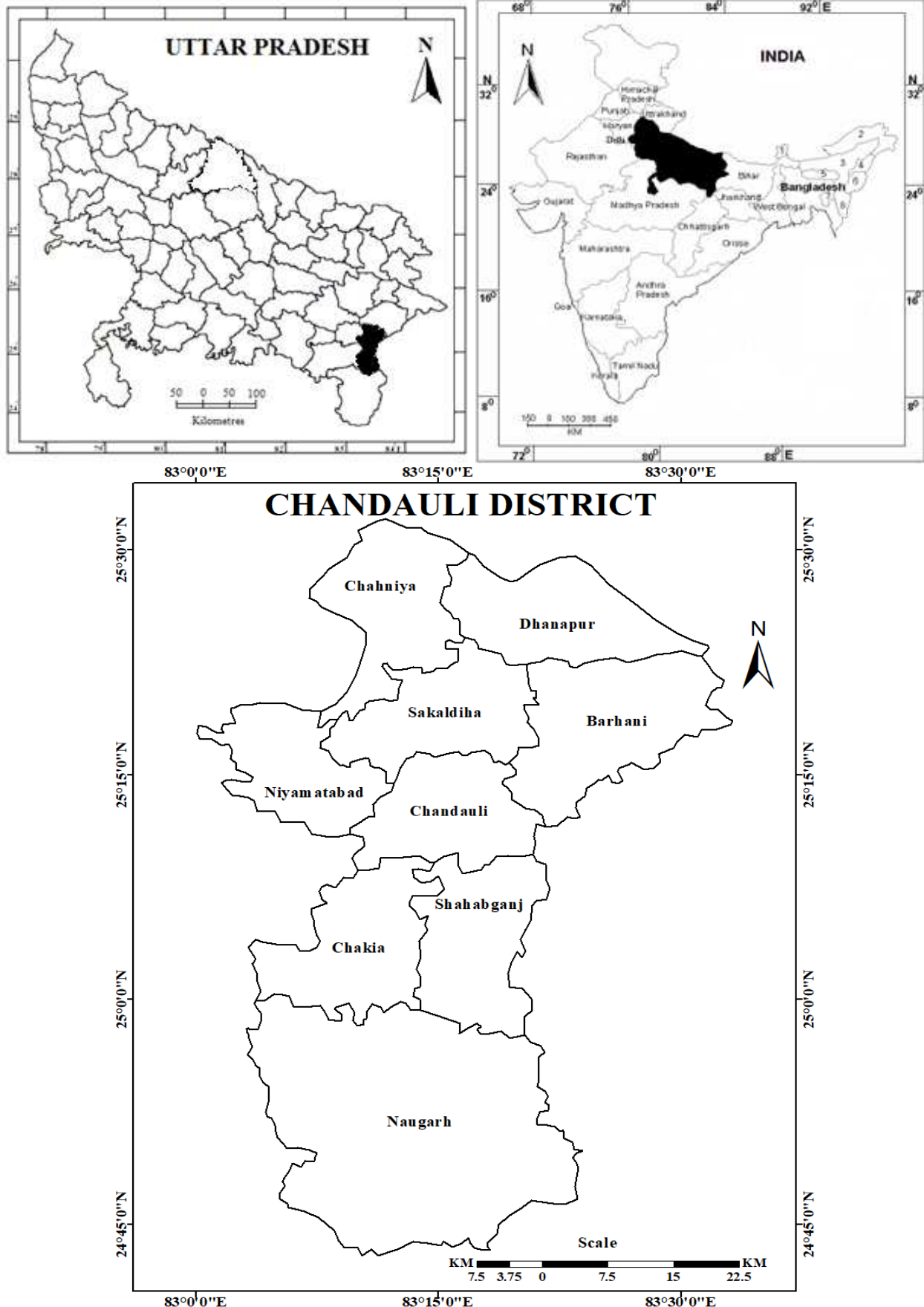
The present study is based on secondary sources of data. The data has been calculated from the District statical handbook of Chandauli district of respective years. Difference sources of irrigation taken in to study i.e., Canal, Govt. Tube well, Private Tube well, well, Pond, Other. To explain the means of irrigation simple mathematical calculation to show percent and its change at given period of time and M.S office Arc Gis 10.2 were used for data analyze and map formation. There are 9 blocks are taken in to consideration namely Chahaniya, Dhanapur, Sakaldiha, Niyamtabad, Chandauli, Barahani, Chakiya, Shahabganj, Naugarh.

#### STUDY AREA;

The present study has been carried out in Chandauli District of Uttar Pradesh which was constituted in 1997 from Varanasi, The District Chandauli is located in  $24^{\circ} 56'$  to  $25^{\circ} 35'$  to north and  $81^{\circ} 14'$  to  $84^{\circ} 24'$  East, having 9 Bocks Namely Chandauli, Skaldiha, Dhanapur, Chahaniya Niyamtabad, Chakia, Shahabganj, Naugarh, Barahani. As per 2011 census total reported area is 2541 Sq. kilometres (48<sup>th</sup> rank in the states) having total population is 19,52,756.

Agriculture is the prime economy activity more than half of population of district engage in Agriculture activity. Rice is major agriculture products because of this it is also known as “Dhaankaakatora” [Bowl of rice] while wheat, sugarcane, barley, gram, peas, masoor, maize, bajra are also grown in considerable amount. For grow of these crops’ irrigation facility

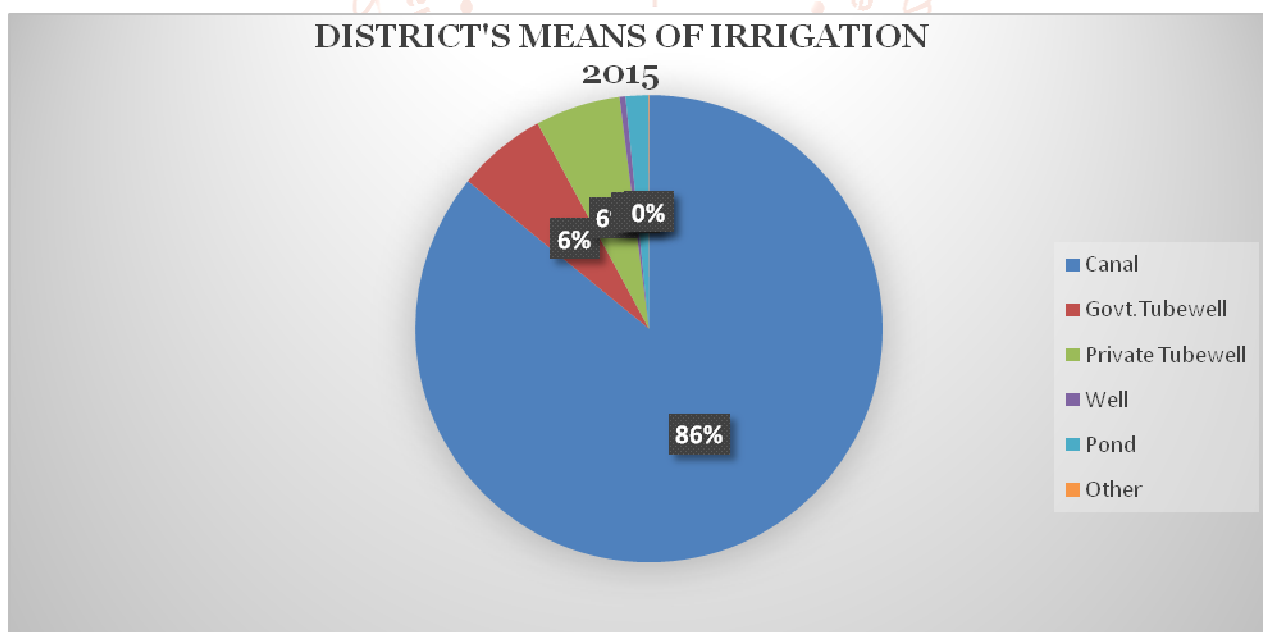
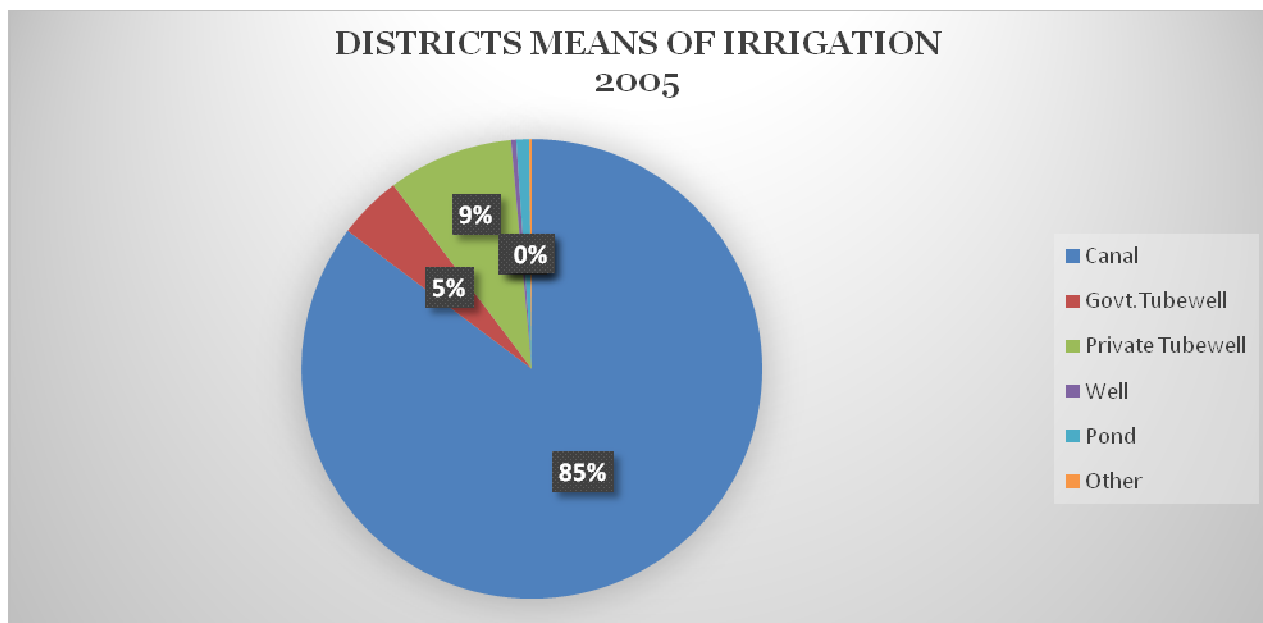
much more needed, for the sake water requirement of crops number of irrigation sources available i.e., Canal, deep well, pucca well, pump set, tube well in the district. The adoption of the new agricultural technologies amongst the famers of the district helps to increase the production of various agricultural items.



**Table 1: Percentage of Irrigated Area from different Sources:**

Blocks	Canal	Govt.Tubewell	Private Tube well	Well	Pond	Other	Total
Chahaniya	40.4	19.4	38.8	0.7	0.5	0.2	100
Dhanapur	73.5	7.6	16.9	0.5	1.3	0.1	100
Sakaldiha	84.0	5.8	8.0	0.6	1.6	0.1	100
Niyamtabad	91.0	4.3	2.4	0.5	1.6	0.2	100
Chandauli	92.7	1.4	4.0	0.6	1.1	0.1	100
Brahani	90.3	1.1	7.6	0.1	0.8	0.1	100
Chakiya	97.4	0.5	0.9	0.1	1.0	0.2	100
Shahabganj	98.2	0.4	0.8	0.1	0.3	0.2	100
Naugarh	99.6	0.0	0.0	0.0	0.0	0.4	100

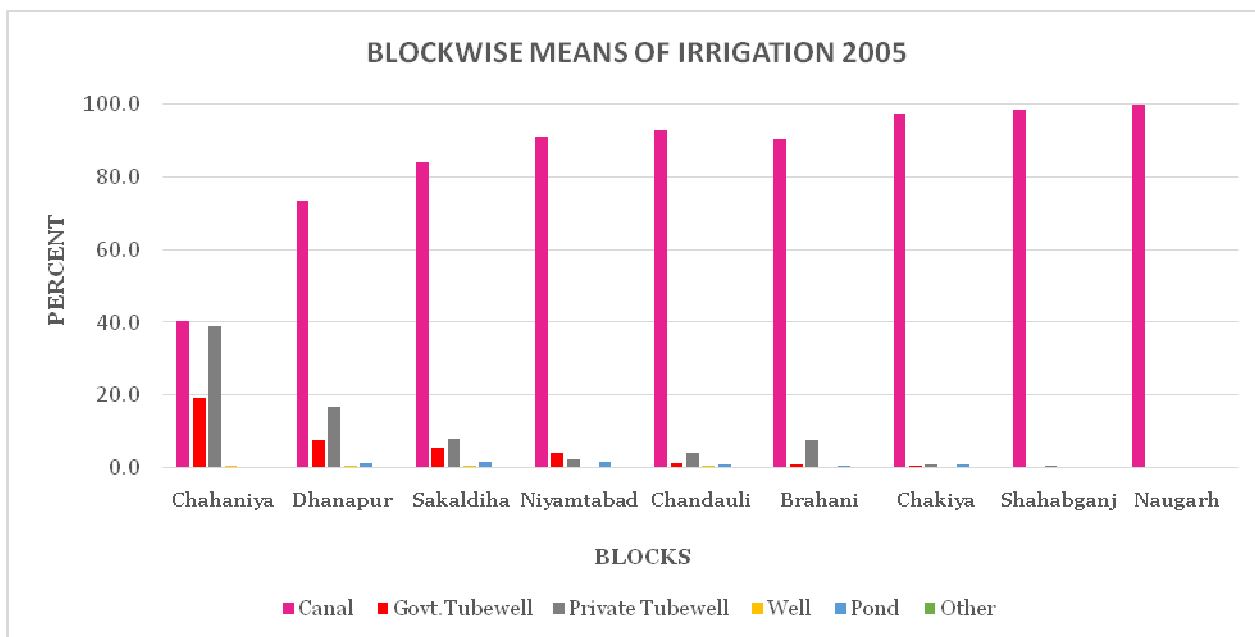
Sources: District Statical Handbook 2005



**Table 1:** Show the percentage of irrigated area through different sources of irrigation in chandauli district. It has been found that Naugarh block has the highest area under canal irrigation 99.5 percent. while lowest area under canal irrigation has been reported in chahaniya block were 40.4 percent irrigated area through canal irrigation. Government tube wells are one of the sources for irrigation. It has been reported that the largest proportion of irrigated area by tube well is 19.4 percent in Chahaniya block, while the lowest percentage is 0 percent in Naugarh block. However private tube well is second most important sources of irrigation in chandauli district it has been found that chahaniya block have highest percentage of irrigated area by private tube well 38.8% while lowest irrigated area found in Naugarh block 0.0% percent under private tube well. Pond is another source of



irrigation it has been found that sakaldiha and Niyamtabad have highest percentage of pond irrigation 1.6%. while lowest area under pond irrigation found in Naugarh Block 0%. Apart from canal, tube well, well, pond there is another source of irrigation in chandauli include Rainfall, modern method of irrigation, etc as per other sources of irrigation is concern Naugarh block have highest percentage of irrigated under other sources of irrigation area i.e., 0.4% while lowest area found in ChandauliBarahani, Dhanapur and sakaldiha 0.1%.

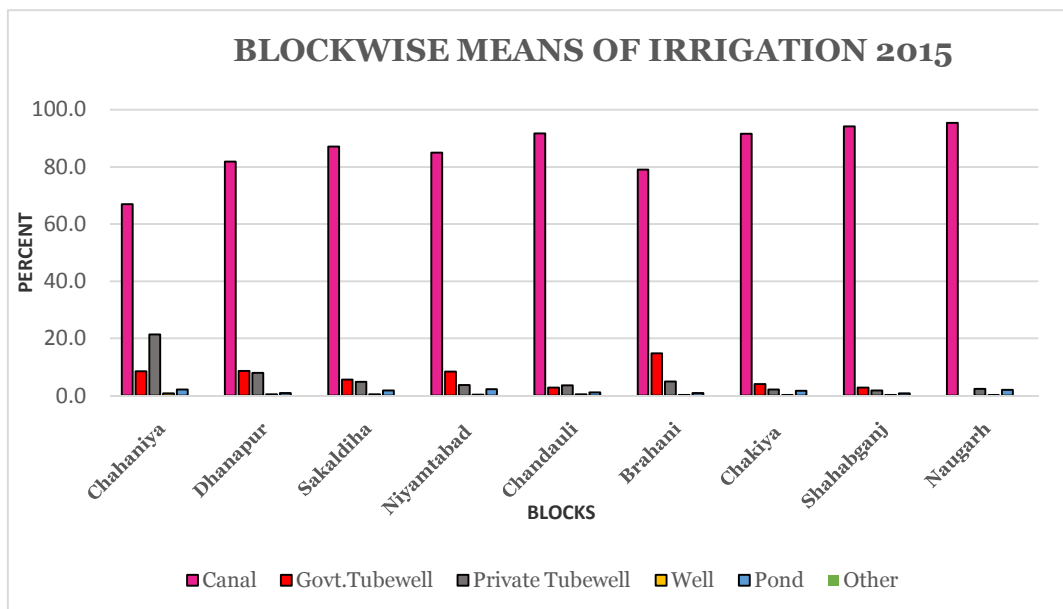


**Table2: Percentage of Irrigated Area from different Sources:**

Blocks	Canal	Govt. Tubewell	Private Tube well	Well	Pond	Other	Total
Chahaniya	66.93	8.55	21.4	0.9	2.1	0.1	100.00
Dhanapur	81.83	8.67	8.0	0.5	1.0	0.0	100.00
Sakaldiha	87.12	5.65	4.8	0.5	1.9	0.0	100.00
Niyamtabad	85.05	8.46	3.7	0.4	2.3	0.1	100.00
Chandauli	91.76	2.86	3.7	0.5	1.2	0.0	100.00
Brahani	79.06	14.84	4.9	0.2	0.9	0.0	100.00
Chakiya	91.62	4.06	2.2	0.3	1.7	0.1	100.00
Shahabganj	94.17	2.79	1.8	0.3	0.9	0.1	100.00
Naugarh	95.39	0.00	2.4	0.1	2.0	0.0	100.00

**Sources: District Statical Handbook 2015**

**Table 2:** Identify the percentage of irrigated area through different sources of irrigation in chandauli district in the year 2015. It has been found that Naugarh block have highest percentage of irrigated area under canal irrigation 95.39 percent while Chahaniya block have lowest percent of irrigated area under canal irrigation which is 66.93 percent. Next to canal irrigation government tube well is another source of irrigation in district and have found Barhani block have highest percent of irrigated area 14.84 percent under government tube well while lowest irrigated area through government tube well found in Naugarh Block. As per private tube well is concern it is found that chahaniya block have highest percent of irrigated area under private tube well 21.4 percent, on the other hand Shahabganj block have lowest percent 1.8 under private tube well. Preceding form that well is another source of irrigation and it is found that chahaniya block have highest irrigated area under Well irrigation 0.9 percent, moreover lowest irrigated through well found in Naugarh block i.e., 0.1 percent. Last but not least other sources of irrigation include modern method of irrigation and it is found Niyamtabad, chahaniyachakiya have highest percent of irrigated area through other source of irrigation 0.1 percent while lowest percent found Naugarh Block 0.0 percent.

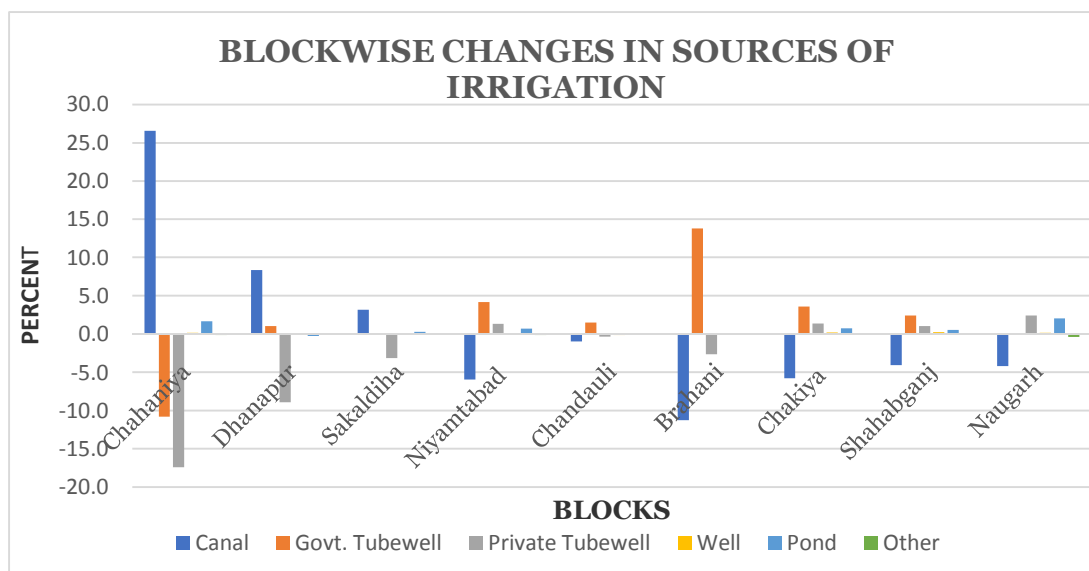


**Table 3: percent-wise change in sources of Irrigation:**

Blocks	Canal	Govt. Tube well	Private Tube well	Well	Pond	Other
Chahaniya	26.6	-10.8	-17.4	0.2	1.7	-0.1
Dhanapur	8.3	1.0	-8.9	-0.1	-0.3	-0.1
Sakaldiha	3.2	-0.1	-3.2	0.0	0.3	-0.1
Niyamtabad	-6.0	4.2	1.3	-0.1	0.7	-0.1
Chandauli	-1.0	1.5	-0.4	-0.1	0.1	-0.1
Brahani	-11.3	13.8	-2.7	0.1	0.1	-0.1
Chakiya	-5.8	3.6	1.3	0.2	0.7	-0.1
Shahabganj	-4.1	2.4	1.0	0.2	0.5	-0.1
Naugarh	-4.2	0.0	2.4	0.1	2.0	-0.4

Sources: Computed from District Statical Handbook 2005&2015

**Table 3;** show the change in percent of irrigated area under different source of irrigation as per canal irrigation is concern chahaniya block have highest positive change 26.6 percent while lowest negative change in percent found Barhani block 11.8 percent. Next to canal Government tube well and it is found highest positive change in government tube well found in Barahani Blocks 13.8 % while Highest negative found in Chahaniya Blocks-10.8% however Naugarh blocks show no Change in Government tube well. Private tube well another one in sources of irrigation as per change of private tube well is concern Chahaniya blocks highest negative change in private tube well -17.4 % while lowest change found in chandauli Block -0.4 % while highest positive change found in Naugarh Block 2.4%. next to private tube wellwell and it is shown in table Naugarh Block have highest percent of change.



**Conclusion:**

Irrigation is an important part of growing crops because a variety of sources offer water for irrigation purposes, depending on the availability and accessibility of water. The data analyses about block wise irrigated area through different sources of irrigation and its change in the Chandauli district from 2005 to 2015 clearly show that there is not only an overall change in sources but also a significant change in space over a given period of time. This is because of geological structure of district. The highest irrigated area through canal irrigation due to availability of water and dam construction in the district while lowest irrigated area by other sources includes modern method of irrigation (drip irrigation, sprinkle irrigation,) as per block wise irrigated area is concern highest percent through canal irrigation in Naugarh Block 99.6% due to availability of water while lowest Chahaniya Blocks 40.04%. irrigation is key factor to grow crops means of irrigation shift from one source to others due to this easily and cheap accessible of water is from canal irrigation and data show highest change in canal irrigation during given period of time. However, to meet demand of cereal and export to boost economy government also setup Govt. Tubewell in drought prone or less availability of water for crops production and it is shown in data highest changes found in Barahani Block while lowest change found in Sakaldiha Blocks. Well and pond share good area for irrigation purpose in rocky region in north of district (Naugarh Block).

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