Problem of soil and Water Resources Degradation in Haryana: A Study on Agricultural Sustainability

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Abstract

Water is a precious resource. Drinking water has always been on top of the priority list of social consumption items (drinking water, sanitation and medical, education facilities etc.).Water is not only essential but also scarce. With the development and growing population the share of drinking water sources is changing significantly. According to Census of India, 2008, 37.8 per cent of the total rural households of Haryana used tap as a source of drinking water and 35.7 per cent hand pumps, 7.6 per cent tube well, 16.5 per cent wells and 2.4 per cent used other source of drinking water. While in 2018, 63.6 per cent of its rural households used taps, 4.5 per cent wells, 14.2 per cent hand pumps, 14.2 per cent tube wells/borehole and 3.5 per cent used other sources for drinking water in Haryana. Thus tap become the dominant source of drinking water at the same time tube well/borehole also increased with time but the use of hand pump and well decrease after 2008. The outcome indicates there is a significant disparity at district level in its trends and pattern from 2008 to 2018.This research analyses the availability of drinking water in rural Haryana. The objective of the study is to find out the spatial disparity in availability of drinking water in rural Haryana and changes that have taken place from 2008 to 2018. The study is based on available secondary data.

Keywords: Drinking Water, Tap, Hand pump, Tube well/Borehole

I. INTRODUCTION

The amount of water on the earth is finite and a third of the world population live in the water stress countries. The share of such population is increasing with time (Paramasivan and Sacratees, 2013). Further, in India, 92 per cent fresh water used in agriculture, three per cent used in industry and five per cent for a domestic purpose (Khan, 2009). Water scenario is fast changing as a result of increasing population, rising demand for irrigation to raise high yielding variety of crops, rapid urbanisation and industrialisation, electricity generation, impact of global warming and erratic rainfall (Kalkoti, 2013). The global consumption of water is doubling every 20 years more than twice the rate of human population growth (Swamy, 2018).India has four per cent of world's water availability and 17.5 per cent population to sustain. The half of the villages in India does not have availability of protected drinking water (Gautam, 2009).

The coverage of the rural population by piped water supply is a major aim of the government (Government of India, 2016). To provide safe and adequate drinking water to the rural households, the Central and State Government introduces many programmes and schemes (Pal, 2012), though drinking water is a state subject in the Constitution of India. The first major initiative in the drinking water sector was Accelerated Rural Water Supply Programmed (ARWSP). The Government of India introduced ARWSP in 1972 to the pace of coverage of drinking water supply by assist the states and union territories (Dev, 2018). The programme was accorded Mission approach with the formation of a Technology Mission on Drinking Water (1986), which was later renamed as Rajiv Gandhi National Drinking Water Mission in 1991-92. In 2002, the Government of India launched *Swajaldhara* programme by decentralises the service delivery responsibility to rural local governments. Drinking water supply was also one of the six components of Bharat Nirman (Chhabra, 2010). In 2009, National Rural Drinking Water Programme was launched by Central Government by modifying the earlier ARWSP and subsuming earlier submissions, miscellaneous Schemes and mainstreaming Swajaldhara principles.

Even if the State's allocation on water sector has increased enormously, but simultaneously it is found that a large segment of the population in the country is deprived of their basic right to drinking water (Fahimuddin, 2012). Even after more than six decades since the independence there was a only 30.8 per cent rural households use tap as a source of drinking water in India as a whole (Census of India, 2018) in 2008 the share was by less than one-fourth households. The hand pump with tube well/borehole covered more than half of the total rural households, increased slightly with three per cent point from 2008. The well as a source of drinking water was used by 13.3 per cent households in 2018, while in 2008 it was used by 22.2 per cent households. Thus in India as a whole the change in sources of drinking water was less significant with changed by less than or more than 10 per cent point from 2008 to 2018. The Government of Haryana has done far better work in providing tap water supply to its villages. In 1966, when Haryana become a new state piped water supply was available to its 182 villages but by 1992 it covered all of the villages by piped water supply.

II. Methodology

The paper examines the availability of various sources of drinking water in rural Haryana and the change that have taken place from 2008 to 2018. The paper tries to attempt the following research questions:

i. Which are the major sources of drinking water in rural Haryana and how these sources are distributed on the space?

ii. How the sources of drinking water changing with time from 2008 to 2018?

For the purpose, the data on drinking water source (2018) have been picked up from the Tables on Houses, Households Amenities and Assets, published by the Census of India, 2018 and available from the Directorate of Census Operations Haryana, Chandigarh. The data related to government programmes and schemes is collected from the Ministry of Drinking Water and Sanitation and Public Health Engineering Department, Haryana. The district is the unit of study. The Census of India 2008,published the data on eight sources of drinking water as tap, well, hand pump, tube well/borehole, spring, river/canal, tank/pond/lake and others. While in 2018, the data of tap is further collected as tap from treated sources, Tap from untreated sources, and well as a source of drinking water is also further divided into covered well and uncovered well, for making it comparable these source are analyses as per Census of India (2008). The spring, river/canal, tank/pond/lake and others, are analyzed compositely as other sources because their use was less than one out of every twenty households in both the census years. Haryana was administered as a part of the Punjab province of British India and was carved out on linguistic lines as India's 17th state in 1966. Haryana is located in the northwestern part of the Indian subcontinent. The state extends from 27°39′ to 35°55′ North latitude and 74°28′ to 77°36′ East longitude. It is bordered by Punjab and Himachal Pradesh to the north and by Rajasthan to the west and south. The river Yamuna defines its eastern border with Uttar Pradesh. Haryana also surrounds the country's capital Delhi on three sides, forming the northern, western and southern borders of Delhi. Consequently, a large area of south Haryana is included in the National Capital Region for purposes of planning for development. The entire state spans into 44212 km², which covers 1.34 per cent of the total area of the country, Haryana is the 21stlargest state of India. The state covered 2,53,53,081 or 2.09 per cent of the total population of India. Out of it 65.21 per cent of the population lived in rural areas.

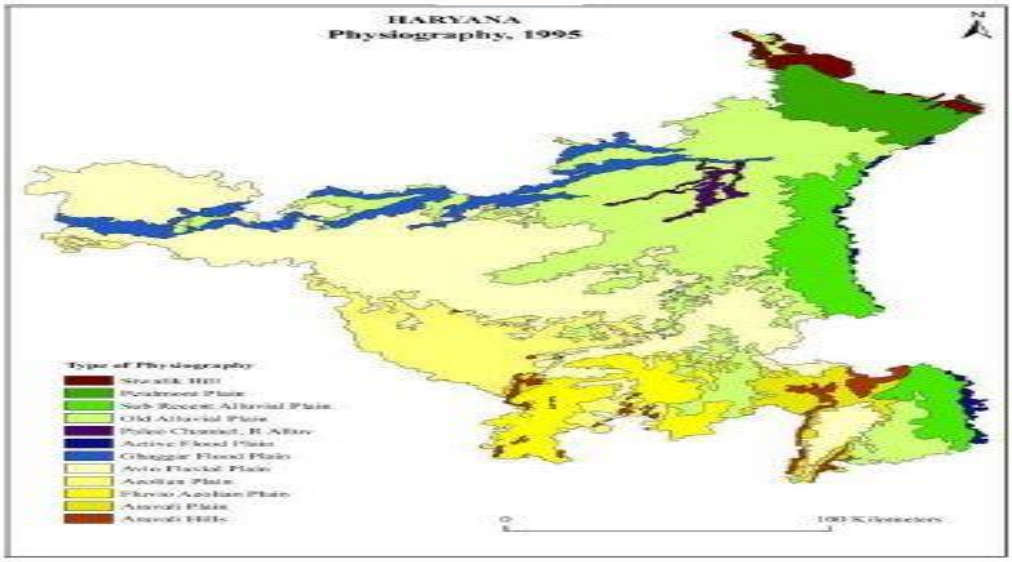
Geographically, the state of Haryana can be divided into four physical divisions (a) Hilly area of Shivalik, this hilly area is the north-eastern part of the state and its height is from 900-2300 meters and river Ghagghar, Tangari, Markanda emerge from this hilly are, (b) Plain area covers largest area of the state from north to south and its very hot in summer and several cold in winter, (c) Sandy area lies in western part of the state adjacent to Rajasthan and here small sand dunes found part of Mahendragarh, Bhiwani, Sirsa and Hisar districts, (d) Dry plain area of Aravalli ranges are found in southern part of Haryana Aravalli ranges are situated in the Mewat area of Gurgaon districts. There is no single perennial river passing through Haryana. There is a large variation in the monthly weather regime from place to place depending on the distance from the mountains, and location with reference to the Thar Desert. Haryana has a climate of subtropical continental monsoon type. Annual rainfall in Haryana varies from 25 centimetres in the western part and 110 centimetres in north-eastern part (Ambala and Panchkula). The period of south monsoon accounts for 80 per cent of the annual rainfall.

Map 1

Source: Administrative Atlas Directorate of Census Operations, Haryana, 2018.

Note:: In 2008 Census Palwal district was a part of Faridabad and Mewat was a part of Gurgaon District

Map 2



Source: Prepared by HARSAC from Landsat TM Satellite Imagery of September. 09, 1995

III. Result and Discussion

In rural area of the country tap, hand pump, tube well/borehole and well are the major sources of drinking water used by rural households. The table 1 shows the comparison between India and Haryana, in use of various sources of drinking water in rural areas. As discussed above the sources of drinking water are changing with time. At national level tap as a source of drinking water increased by 6.5 per cent points from 2008 to 2018 while the use of well as a source of drinking water was decreased with 9.1 per cent point during the same period. The table 1 reveals that the use of tap and tubewell/borehole are growing at the cost of well as a source of drinking water in rural India.

Since its formation, Haryana has made a commendable progress in providing piped water to rural households. Haryana is one of the foremost states providing piped water facility to all of its villages by 1992 (Government of Haryana, 2010-11).The use of tap as a source of drinking water in rural households was 37.8 per cent in 2008 and 63.6 per cent in 2018, registered an increased of 25.8 per cent point from 2008-2018.While the use of hand pump and well as a source of drinking water decreased by 21.5 and 12 per cent point respectively, during the same period. It reveals that the use of tap and tubewell/borehole are growing at the cost of hand pump and well as a source of drinking water in the state as a whole. The table 1 presents the state and

national level review of sources of drinking water but there were significant disparity at district level. So it is important to study the source-wise distribution at district level.

Table 1 Rural Households Covered by Different Sources of Drinking Water in India and Haryana, 2008-2018 (Households as per cent to total households)

Sources	2008		2018	
	India	Haryana	India	Haryana
Tap	24.3	37.8	30.8	63.6
Well	22.2	16.5	13.1	4.5
Tube well/ Borehole	5.7	7.6	8.3	14.2
Hand Pump	43.2	35.7	43.6	14.2
Others	4.5	2.41	4	3.5

Source: Compiled using Census of India tables on Houses, Households Amenities and Assets. Directorate of Census Operations, Haryana, 2008 and 2018.

1. Tap

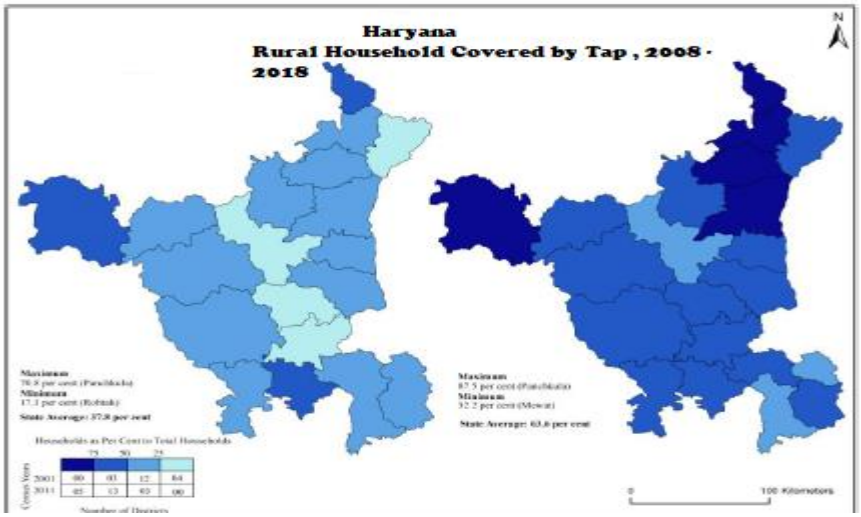
Tap was the major and dominant source of drinking water in rural Haryana with used by 63.6 per cent of the total rural households. There are, however, wide inter-district disparities in this regard. It was ranged from a high of 87.5 per cent in Panchkula district to a low of 32.2 per cent in Mewat (Table 2). In four districts of Panchkula, Sirsa, Ambala, Kurukshetra and Karnal more than three-fourths of the total rural households use tap as a source of drinking water in 2018. Accept Sirsa which falls in western Haryana all four districts fall in eastern Haryana, where ground water quality is better as compared to the western and southern Haryana and majority tap water supply is also based of ground water while in Sirsa it the majority of water works were canal water based. In 2008, there were not districts in this category. In thirteen districts of Yamunanagar, Jhajjar, Fatehabad, Hisar, Rohtak, Mahendragarh, Bhiwani, Gurgaon, Palwal, Sonipat, Panipat and Kaithal 50 to 75 per cent households use tap as a source of drinking water in 2018. The districts falls in this category falls in all parts of the state. In 2008, only three districts were fall in this category (Map 3). In three districts of Mewat, Jind and Fatehabad less than half of the total rural households use tap as a source of drinking water in 2018. While in 2008 there were 16 districts falls in this category and in four districts of Jhajjar, Yamunanagar, Jind and Rohtak less than one-fourth of the total rural households use tap as a source of drinking water (Map 3). The table 2 reveals that the use of tap as a source of drinking water increase in all districts of the state from 2008 to 2018 and at state level it was registered an increase of 25.8 per cent point. At district level it was ranged from a high of 49.4 per cent point to a low of 9.9 per cent point in Faridabad. In eight districts of Yamunanagar, Jhajjar, Rohtak, Karnal, Ambala, Kurukshetra, Sonipat and Fatehabad the increase was more than the state average. Accept Fatehabad all the seven districts were fall in eastern Haryana.

After analysis it is reveals that tap as a source of drinking water is growing at the cost of hand pump and well as a source of drinking water. The Indira Gandhi Drinking Water Scheme also plays an important role in growing the use of tap as a source of drinking water by scheduled Caste households (Singh, 2017).

Table 2 Haryana: Rural Households Covered by Tap, 2008-2018 (Households as per cent to total households)

District	Tap 2008	Tap 2018	Change from 2008-2018
Yamunanagar	21.9	71.4	49.4
Jhajjar	22.3	71.3	49.0
Rohtak	17.1	64.1	47.0
Karnal	34.7	77.1	42.4
Ambala	42.5	81.8	39.3
Kurukshetra	47.3	80.0	32.6
Sonipat	25.1	54.7	29.6
Fatehabad	40.9	69.4	28.4
Jind	20.9	47.4	26.6
Sirsa	58.6	84.2	25.6
Panipat	28.0	52.1	24.1
Kaithal	26.9	50.6	23.7
Gurgaon	39.3	60.2	20.9
Rewari	53.2	72.1	18.9
Mahendragarh	44.3	62.0	17.6
Panchkula	70.8	87.5	16.7
Hisar	49.8	64.2	14.4
Bhiwani	48.5	60.8	12.3
Faridabad	39.1	49.0	9.9
Mewat	*	32.2	*
Palwal	*	55.1	*
Haryana	37.8	63.6	25.8

Source: Compiled using Census of India Tables on Houses, Households Amenities and Assets. Directorate of Census Operations, Haryana, 2008 and 2018. Note: * Organised after 2008 Census. Districts arranged in descending order of Change from 2008 to 2018. Tap in 2018 includes treated tap and untreated tap



Source: Compiled Using Census of India. Tables on Houses, Households Amenities and Assets. Directorate of Census Operations, Haryana, 2008 and 2018. Note: Tap in 2018 includes treated tap and untreated tap.

2. Tube well/Borehole

Tube well/borehole was the next major source of drinking water used by about one-seventh of the total rural households in Haryana, in 2018. There were inter-district variations in this regard. At district level it was ranged from high of 30.0 per cent in Gurgaon district to a low of 4.4 per cent in Hisar. In three districts of Gurgaon, Kaithal and Mahendragarh tubewell/borehole as a source of drinking water was used by more than one-fourth of the total rural households, in 2018. While in 2008, there was only one district (Mahendragarh) in this category. In next category, in ten districts of Sonipat, Panipat, Jind, Kurukshetra, Fatehabad, Rewari, Bhiwani, Karnal, Mewat and Faridabad, more than one-tenth of the total rural households use tubewell/borehole as a source of drinking water in 2018. These districts cover almost parts of the state. While in 2008, only two districts of Bhiwani and Rewari fall in this category.

Table 3 **Haryana: Rural Households Covered by Tube well /Borehole, 2008-2018**

(Households as per cent to total households)

District	Tube well/ Borehole 2008	Tube well /Borehole 2018	Change 2008-2018
Gurgaon	8.1	30.0	21.9
Kaithal	5.4	25.9	20.5
Sonipat	8.1	24.0	15.9
Panipat	8.2	22.5	14.3
Jind	5.1	17.8	12.6
Kurukshetra	5.9	17.3	11.4
Karnal	3.7	12.4	8.8
Faridabad	4.2	11.1	6.9
Fatehabad	9.2	16.0	6.8
Ambala	2.2	7.1	4.9
Rohtak	3.7	8.1	4.4
Panchkula	1.8	5.6	3.8
Yamunanagar	1.9	5.4	3.5
Rewari	12.3	14.8	2.5
Hisar	2.9	4.4	1.6
Sirsa	6.6	7.8	1.2
Jhajjar	7.9	8.4	0.4
Mewat	*	11.5	*
Palwal	*	7.0	*
Bhiwani	15.3	14.5	-0.8
Mahendragarh	27.5	25.1	-2.4
Haryana	7.6	14.2	6.6

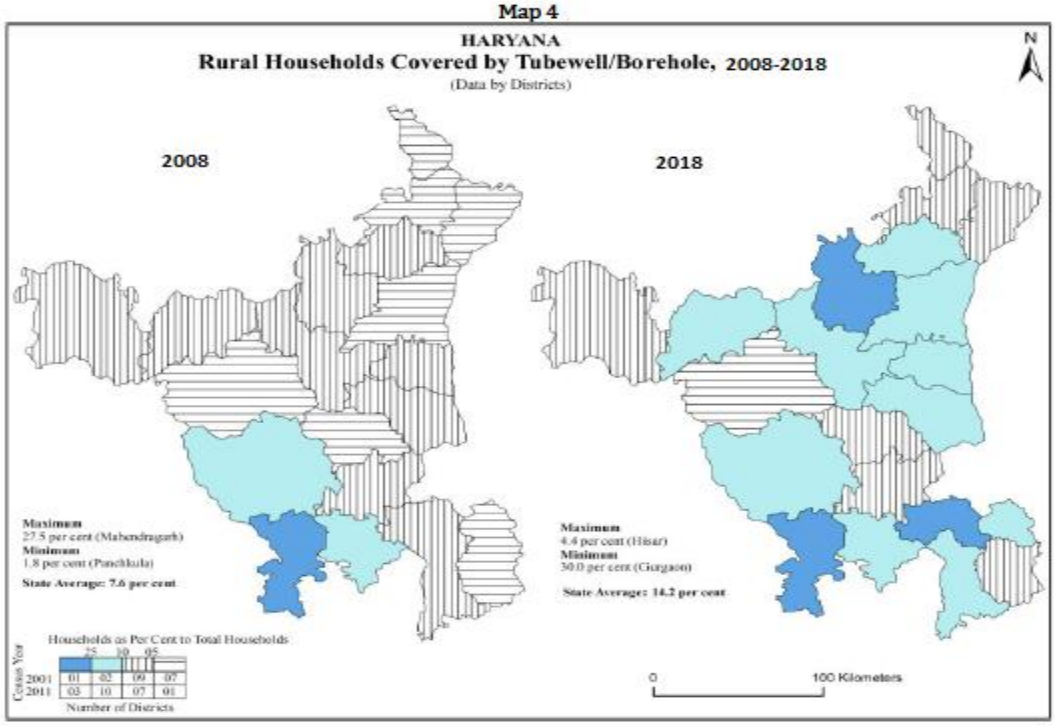
Source: Compiled using Census of India Tables on Houses, Households Amenities and Assets. Directorate of Census Operations, Haryana, 2008 and 2018. Note: * Organised after 2008 Census. Districts arranged in descending order of Change from 2008 to 2018.

In eight districts of Haryana tubewell/borehole as a source of drinking water was used by less than one-tenth of the total rural households, in 2018, while there were 16 districts fall in this category in 2008. The use of tubewell as a source of drinking water in southern Haryana especially in Mahendragarh, which falls in the Fluvio-Aeolian plain (Map 2) and due to topography and northward slop the canal water availability is limited and water supply also groundwater based.

The use of tube well/borehole as a source of drinking water was about one-seventh or 7.6 per cent of the total rural households in 2008, an increased to about 14.2 per cent by

the year 2018. It registered a gap of 6.6 per cent point in the state as a whole. At district level it was ranged from a high of 21.9 per cent in Gurgaon district to a low of 0.4 per cent in Jhajjar while in two districts of Mahendragarh and Bhiwani it was decreased slightly by less than three per cent point. In six districts of Gurgaon in southern Haryana and Kaithal, Sonipat, Panipat, Jind and Kurukshetra in the eastern Haryana, the share was increased by more than 10 per cent points from 2008 to 2018. In four out of these six districts hand pump as a source of drinking water decreased more than the state average. So the use of tube well/borehole as a source of drinking water increased at the cost of hand pump.

Map 4



Source: Census of India. Tables on Houses, Households Amenities and Assets. Directorate of Census Operations, Haryana, 2008 and 2018.

3. Hand pump

The use of hand pump as a source of drinking water in rural households was 35.7 per cent in the year 2008, a decreased to 14.2 per cent by the year 2018. While there were inter-district variations in this regard. In 2018, use of hand pump as a source of drinking water was ranged from a high of 36.4 per cent in in Faridabad district to a low of 1.3 per cent in Mahendragarh district.

In two districts of Faridabad and Palwal more than one-fourth of the total rural households use hand pump as a source of drinking water in 2018. While in 2008 there were 15 districts in this category and notably, in five districts of Yamunanagar, Karnal, Kaithal, Panipat and Ambala more than half of the total rural households use handpump as a source of drinking water in 2008 (Map 5). All these five districts were falls in eastern Haryana.

In 12 districts of Mewat, Panipat, Yamunanagar, Jind, Kaithal, Hisar, Rohtak, Sonipat, Jhajjar, Bhiwani, Fatehabad and Ambala 10 to 25 per cent of the total rural households use handpump as a source of drinking water, in 2018. Except Mewat, Bhiwani and Fatehabad all the districts fall in the eastern Haryana. On the other hand, in 2008, there were only two districts of Rewari and Panchkula fall in this category. There were seven districts in 2018, where less than 10 per cent of the total rural household use hand pump as a source of drinking water on the other hand, in 2008 there were only two district fall in this category

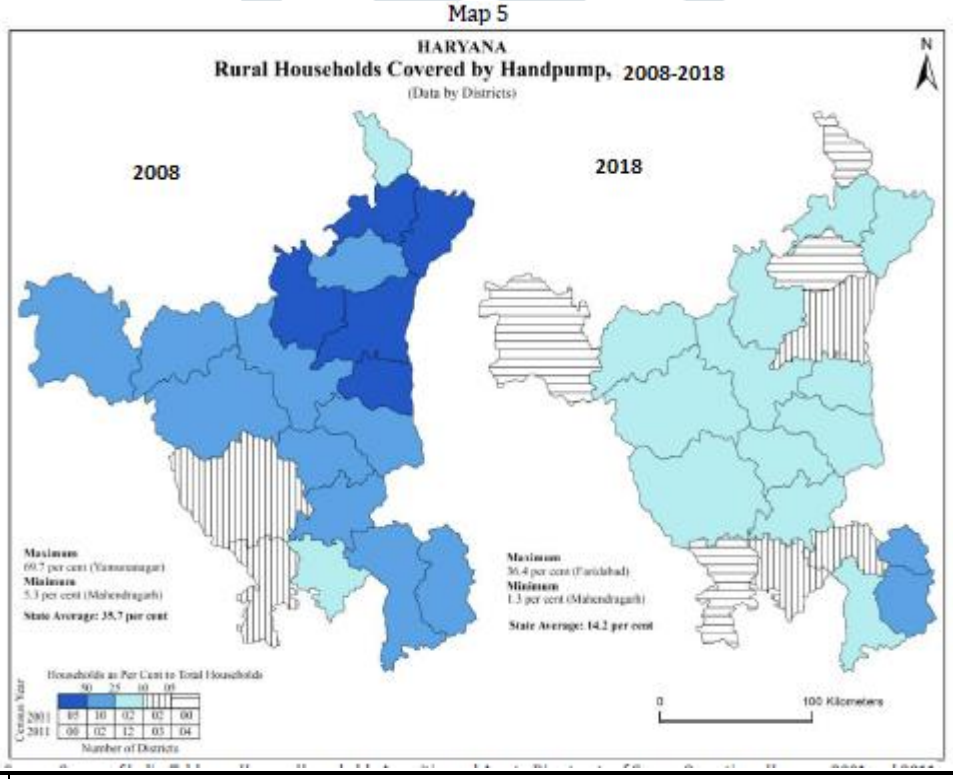
Table 4 Haryana: Rural Households Covered by Hand pump, 2008-2018

(Households as per cent to total households)

District	Hand pump 2008	Hand pump 2018	Change 2008-2018
Karnal	58.2	8.9	-49.3
Yamunanagar	69.7	21.7	-48.0
Kurukshetra	45.5	1.9	-43.6
Ambala	50.5	10.1	-40.3
Kaithal	57.5	20.0	-37.6
Fatehabad	44.3	10.5	-33.8
Panipat	56.0	22.3	-33.8
Sirsa	25.5	3.1	-22.5
Sonipat	36.6	14.7	-21.9
Gurgaon	27.1	7.0	-20.1
Jhajjar	32.1	12.1	-20.0
Jind	40.4	21.6	-18.8
Panchkula	15.6	2.4	-13.2
Rohtak	30.2	17.6	-12.6
Rewari	15.6	7.1	-8.6
Faridabad	44.4	36.4	-8.0
Hisar	26.9	19.9	-7.0
Mahendragarh	5.3	1.3	-4.0
Palwal	*	29.0	*
Mewat	*	24.5	*
Bhiwani	8.4	10.6	2.2
Haryana	35.7	14.2	-21.6

Source: Compiled using Census of India Tables on Houses, Households Amenities and Assets. Directorate of Census Operations, Haryana, 2008 and 2018. Note: * Organised after 2008 Census. Districts arranged in descending order of Change from 2008 to 2018.

Map 5



Source: Census of India. Tables on Houses, Households Amenities and Assets. Directorate of Census Operations, Haryana, 2008 and 2018

As discussed above, the state received a decrease in the use of hand pump as a source of drinking water from 2008 to 2018. It was registered a decrease of 21.6 per cent point in the state as a whole. At district level it was ranged from a high of 49.3 per cent in Karnal district to a low of 4.0 per cent in Mahendragarh. In 11 districts of Karnal, Yamunanagar, Kurukshetra, Ambala, Kaithal, Fatehabad, Panipat, Sirsa, Sonipat, Gurgaon and Jhajjar the use of hand pump/tube well was decreased by more than 20 per cent point, the majority of these districts were fall in eastern Haryana, where the ground water is decreasing continuously. Interestingly the Bhiwani district received an increase of 2.2 per cent point from 2008 to 2018. The availability of other sources within premises, especially tap, decrease in the ground water and change in quality of ground water are the factors play important role in decreasing the use of hand pump as a source of drinking water from 2008 to 2018.

4. Well

In 2018, one out of every twenty rural household use well as a source of drinking water while, the share 16.5 per cent in 2008. In 2018, the use of well as a source of drinking water was ranged from a high of 18.9 per cent in Mewat district to a low of 0.1 per cent in Karnal. On the one hand there were only three districts (Mewat, Bhiwani and Jind) where well was used as a source of drinking water by more than the one-tenth of the total rural area.

Table 5 **Haryana: Rural Households Covered by Well and Other Sources, 2008-2018**

(Households as per cent to total households)

District	Well			Other Sources		
	2008	2018	Changes	2008	2018	Changes
Rohtak	48.4	8.0	-40.4	0.7	2.3	1.6
Jhajjar	35.0	4.9	-30.2	2.6	3.4	0.8
Gurgaon	24.4	0.4	-23.9	1.2	2.4	1.2
Sonipat	27.8	3.9	-23.9	2.4	2.7	0.3
Jind	32.9	10.1	-22.8	0.7	3.0	2.4
Bhiwani	26.4	10.6	-15.8	1.4	3.5	2.1
Mahendragarh	19.7	4.5	-15.2	3.2	7.2	4.0
Rewari	14.3	2.4	-11.9	4.5	3.6	-0.9
Hisar	18.1	7.0	-11.1	2.3	4.5	2.2
Faridabad	10.6	0.4	-10.2	1.7	3.1	1.4
Kaithal	8.5	1.3	-7.2	1.6	2.2	0.6
Panchkula	6.1	1.0	-5.0	5.7	3.4	-2.3
Ambala	4.2	0.3	-3.9	0.7	0.6	0.0
Yamunanagar	4.1	0.4	-3.7	2.3	1.1	-1.2
Panipat	4.3	0.9	-3.4	3.4	2.2	-1.2
Karnal	1.9	0.1	-1.7	1.6	1.4	-0.1
Fatehabad	2.1	0.8	-1.2	3.5	3.3	-0.2
Kurukshetra	0.1	0.2	0.1	1.2	0.7	-0.5
Sirsa	0.5	1.1	0.6	8.7	3.8	-4.9

Mewat	*	18.9	*	*	12.9	*
Palwal	*	4.6	*	*	4.3	*
Haryana	16.5	4.5	-12.0	2.4	3.5	1.1

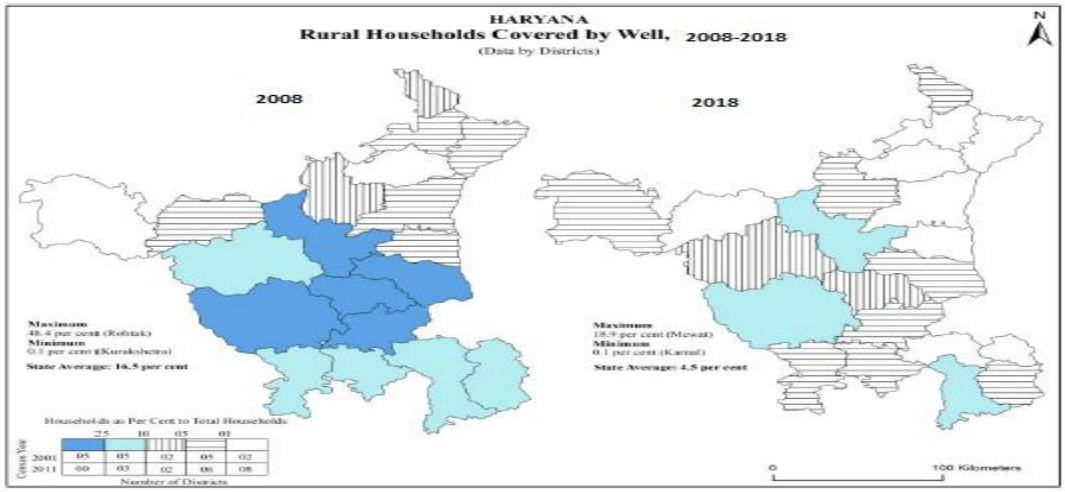
Source: Compiled using Census of India Tables on Houses, Households Amenities and Assets. Directorate of Census Operations, Haryana, 2008 and 2018.

Note: * Organised after 2008 Census. Districts arranged in descending order of Change in Well from 2008 to 2018.

Well in 2018 includes Covered Well and Uncovered Well, Households in 2018 (Table 5). On the other hand, in 2008, the number off districts in this category were 10 districts and in five districts of Rohtak, Jhajjar, Jind, Sonipat and Bhiwani more than one-fourth of the total rural household use well as a source of drinking water, all five districts falls in the central part of the state (Map 6).

The share of well as a source of drinking water was decreased during 2008 to 2018, with 12 per cent point in the state as a whole. At district level, it was ranged from a high of 40.4 per cent point in Rohtak district to a low of 1.2 per cent in Fatehabad district. In seven districts of Rohtak, Jhajjar, Gurgaon, Sonipat, Jind, Bhiwani and Mahendragarh the use of well as a source of drinking water was decreased by more than the state average. In two districts of Sirsa and Kurukshetra the use of well as a source of drinking water was increased slightly with less than one per cent, which was not significant at all (Table 5). Use of well as a source of drinking water is decreasing with time because of decrease in water level, change in the quality of ground water, caste based discrimination with especially with scheduled caste households, and the availability of other sources of drinking water such as: tap, tube well/borehole and hand pump.

Map 6



Source: Compiled Using Census of India. Tables on Houses, Households Amenities and Assets. Directorate of Census Operations, Haryana, 2008 and 2018. Note: Well in 2018 includes Covered Well and Uncovered Well

5. Other Sources The other sources include tank/pond/lake, river/canal, spring and others. The other sources of drinking water in rural households were used by 2.4 per cent in the year 2008 and 3.5 per cent by the year 2018.In 2018, there were only two districts of Mewat and Mahendragarh where 12.9 per cent and 7.2 per cent rural households use other sources as a source of drinking water. In rest of the districts less than five per cent households use other sources as a source of drinking water. While in 2008, Sirsa and Panchkula districts where more than five per cent rural households use other source for drinking purpose. The use of other sources was found more in the small habitations where ground water quality was not potable and tap water was not available. The use of other sources as a source of drinking water were increased by 1.1 per cent point in the state as a whole

while at district level it was increased from a high of 4.0 per cent in Mahendragarh district to a low of 0.3 per cent in Sonipat district. Reversely in nine districts it was decreased from a high of 4.9 per cent in Sirsa district to a low of 0.04 per cent in Ambala district (Table 5). The use of other sources as a source of drinking water increase in the areas where ground water quality is a big problem and tap was supply is not sustainable.

IV. Conclusions

Tap was the major and dominant source of drinking water used by rural households in 18 out of total 21 districts in Haryana in 2018. The use of tap as a source of drinking water is growing at the cost of hand pump and well as a source of drinking water. The government scheme named "Indira Gandhi Drinking Water Scheme" play an important role in providing tap water supply to scheduled caste households and play an important role in growth of tap as a source of drinking water. The use of tube well/borehole and hund pump as a source of drinking water was about one seventh householods each. But the use of tube well/borehole as a source of drinking water was growing at the cost of handpump from 2008 to 2018. The use of well as a source of drinking water is also decreasing with time and in three districts of Mewat, Bhiwani and Jind more than one-tenth of the total rural households use well as a source of drinking water. Though less than five per cent of the total rural households use other sources as a source of drinking water in Haryana in 2018 but the share is growing with time due to unavailability of Tap, and non-potable drinking water quality. Though the use of tap as a source of drinking water is increasing with time but at the same time tube well/borehole is also growing. So the government should focus to cover the households with tap or piped water facility based on canal water. The special focus should be on Mewat, Jind and Faridabad districts.

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