

Drinking Water in Rural Haryana: A Case Study of Panghal Village, District Hisar, India

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Abstract

The supply of safe drinking water, one of the Sustainable Development Goals and most important basic needs of life, is currently the major challenge before the governments in developing countries including India. The rapid growth of population, competing demands, pollution and depletion of water sources have posed a serious problem before the policy-maker and planners in our country. After 73rd Constitutional Amendment (1992) and Swajaldhara programme (2002), the government gave the responsibility of the management of drinking water to local bodies such as Gram Panchayats. In Haryana, 65 per cent population living in 6642 villages (Census, 2011). Haryana is one of the foremost states to provide piped water to its villages by 1992. But there are significant changes in sources of drinking water, used by rural households, with time. This paper presents a brief account, based on primarily and available secondary data source, on the status of drinking water in Panghal Village of Hisar district from 2011 to 2015. With a discussion on the use of various sources of drinking water and the social and special attributes are analysed. The Panghal village lies in western district of Hisar. The climate of the district is characterised by its dryness and extreme temperature and scanty rainfall. According to Census of India (2011), 82 per cent households of this village used tap as a source of drinking water but in 2015 it decline (only 57 per cent). Whereas, the use of borehole/tubewell increased significantly during the same period, especially in other backward class and scheduled caste households.

Key words: Scheduled Caste, Safe drinking water, Swajaldhara, Tap, Borehole

Introduction

Water is an essential element of life which makes life possible on the earth. The earth is called as a blue planet due to its availability. The ocean covers about 71 per cent of the earth surface and 97 per cent of the earth's water. In other words only 2.5 – 2.75 per cent water available on earth is fresh water, still 1.75 – 2.0 per cent is frozen in glaciers and only less than one per cent of total water on the earth we can actually use. The per capita water availability is declining with time due to high water consuming economic activity and population growth. 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) though, the draft of National water policy (1987, 2002) have accorded highest priority to drinking water.

Today, availability of drinking water is a serious challenge faced by policy makers, planners, scientists, and academicians. The problem is really grown in rural developing countries where the population is growing fast, development has picked up and pollution of water resources is alarmingly high (Bordoloi and Bordoloi, 2010). The poor quality of drinking water results in sickness and even death, slowing down the labor productivity and economic growth. Even the schooling of children gets affected due to drinking of unsafe water (Haq et. al, 2007).

In geographical terms, it is the arid and semi-arid regions in the country which suffer the most from the problem of availability of drinking water. As a result, people have to devote a substantial part of their working hours in the arduous task of water collection. In order to minimise the scarcity of safe drinking water, the Central and State

Government implemented a large number of Rural Water Supply programmes and schemes (Pal, 2012). In 1972, the Government of India took first major initiative and introduced Accelerated Rural Water Supply Programme (ARWSP) to accelerate the coverage of drinking water supply in rural areas. Later in 1986, National Technology Mission (National Drinking Water Mission) was launched by the Government of India with stress on water quality, appropriate technology intervention, and human resource development which was renamed as Rajiv Gandhi Drinking Water Mission, in 1991.

In 1999, the government of India introduced Sector Reform Project with focusing community participation in drinking water sector later in 2002 it was scaled up as Swajaldhara. In 2005, the Government of India launched Bharat Nirman Programme and drinking water was one of the six components of the programme. Under Bharat Nirman, the government emphasis was on covering of the uncovered and quality affected habitations. In 2009, National Rural Drinking Water Programme was launched by Central Government by modifying the earlier Accelerated Rural Water Supply Programme and subsuming earlier submissions, miscellaneous Schemes and mainstreaming Swajaldhara principles. The state government also boost the efforts by introducing Augmentation Water Supply Schemes, Indira Gandhi Drinking Water Scheme etc. (Government of India, 2016)

However, it is a known fact that most of these schemes became non-operational or functioning irregularly on account of nonparticipation of beneficiaries in their operation and maintenance. 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). Whereas, on the social plane, it is the poor, the women, the school going children, the scheduled caste (SC) and tribes and the vulnerable population (physically disabled persons) who are the biggest sufferer (Ramachandraiah, 2001). With the coming of private players in the water market, the poor are finding it hard to pay for the water available through safe sources. Hence, the poor have to depend on unsafe sources of drinking water (Reddy and Rathore, 1993). Moreover, there were wide social, regional and gender based inequalities in this regard (Tiwari and Nayak, 2013). In social term, on the one hand, tap was used more by the SC households, on the other hand, handpump/tubewell, well and other sources of drinking water were used less by SC household as compared to Non-SC households in the country as a whole (Singh, 2017). Therefore it is necessary to study the social differentials and change in the availability of drinking water in rural areas.

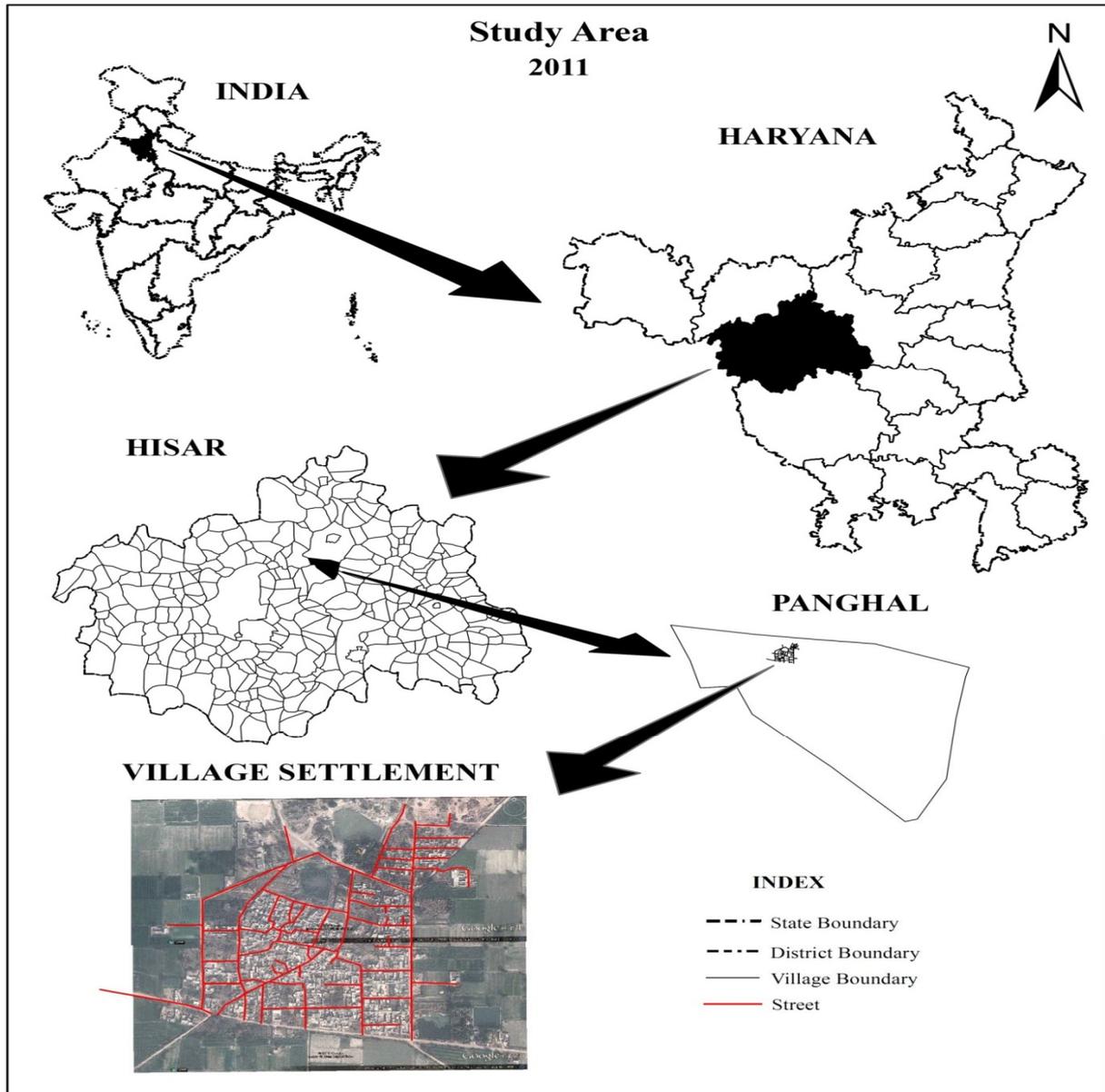
Objective and Methodology

Taking a cue from above statements the present paper examines the availability of drinking water sources, their temporal change from 2011-2015 and social differentials in Panghal village in the light of the following research questions:

- i) Which are the sources of drinking water available in Panghal village and how many households are served by the different sources? and
- ii) How the uses of drinking water sources changed during 2011-2015 and how it varies among social groups in Panghal village?

For the purpose the data on drinking water source (2011) have been picked up from the Tables on Houses, Households Amenities and Assets, published by the Census of India, 2011 and available from the office of Census Commissioner and Registrar General of India, New Delhi. To analyse the temporal change, the primary data was collected from the census households of the village. Along with this, data were also picked up from Public Health Engineering Department, Haryana and Agriculture and Farmers Welfare Department, Haryana. The available data/information is tabulated, computed, mapped, analyzed and interpreted at household levels.

Map 1



Source: Administrative Atlas, Directorate of Census Operations, Haryana, 2011 and Google Earth, 2014

The village Panghal is located 28 kilometers in the north-east direction from the district headquarters of Hisar, fall in western part of the state (Map 1). The district has a sub-tropical continental monsoon climate. The average rainfall of the district is 37.4 and the 82 per cent of the normal annual rainfall receives during June to September (District Census Handbook, 2001). The village falls in the Barwala block of Hisar district where only 37.5 per cent area have availability of fresh ground water (Government of Haryana, 2014). According to Census of India, 2011, the 2050 population of the village lived in 377 households. The more than half or 56 per cent of the total households belong to general category while the share of other backward class (OBC) and SC households was 25.7 and 18.3 per cent respectively.

Result and Discussion

In India as a whole, handpump/tubewell was the major and dominant source¹ of drinking water in rural households while it was tap in Haryana (Census of India, 2011). Though, piped water is supposed to be the most

¹ A particular source of drinking water used by 50 per cent or more rural households is referred as dominant source of drinking water.

reliable, safest and easiest source of drinking water in India (Sharma 2008). Haryana made a tremendous progress in use of tap as a source of drinking water from 1966 when it was carved out from Punjab province on linguistic basis. In 1966, the piped water supply was available in only 182 villages and in 1992, Haryana becomes one of the foremost states to provide piped water supply in all of its villages (Statistical Abstract of Haryana, 2013-14).

Table 1

Percentage of Rural Households Covered by Different Sources of Drinking Water in Haryana, Hisar and Panghal Village, 2011

Area	Tap	Handpump	Tubewell/ Borehole	Well	Other Sources
State Average	63.6	14.2	14.2	4.5	3.5
District Average	64.2	19.9	4.4	7	4.5
Panghal Village Average	81.7	0.8	0.5	15.9	1.1

Source: Compiled using Census of India tables on Houses, Households Amenities and Assets. Directorate of Census Haryana, 2011.

According to Census of India, 2011, tap, handpump/tubewell, well and others were the major sources of drinking water in Rural Haryana (Table 1). In Haryana three-fifths of the rural households used tap as a source of drinking water while one-fourth households use handpump/tubewell. The use of well and other sources was by less than one-tenth households in the state as a whole.

In Hisar district as a whole tap was the major source of drinking water with used by 64.2 per cent of the total rural households. Whereas one-fifth of the rural households use hand pump as a source of drinking water, more than the state average by six per cent point in 2011. The use of tubewell/borehole was less in the district as compared to the state. The use of well and other sources was interestingly more in the district than the state average (Table 1).

In Panghal village, more than four-fifths of the households use tap as a source of drinking water more than the district and state average in 2011. In Panghal, the well as a source of drinking water was also used more by three times than the state average. The lack of awareness about the drinking water safety was the main reason for the faulty consumption behaviour, mainly influenced by social and cultural beliefs and piped drinking water was used for washing and bathing purposes and ground water based sources were used for drinking in the study area. Kumar (2008) also found the same findings in his study. The handpump and tubewell/borehole and other sources were used less in Panghal village than the district and state average by 26 per cent point and 30 per cent point respectively.

Temporal Change

In Panghal village, where more than four-fifths of the total households use tap as a source of drinking water in 2011, reduced by less than three-fifths households in 2015 (Table 2). The handpump and tubewell/borehole are growing at the cost of tap as a source of drinking water in Panghal Village. The use of handpump as a source of drinking water increased from 0.8 per cent in 2011 to 4.2 per cent in 2015. While the use of tubewell/borehole increased from 0.5 per cent to 21.5 or more than one-fifth of the total households of village during the period stated above. The use of well as a source of drinking water not got any significant change during this period while in 2014, it increased slightly at the cost of tap as a source of drinking water but with the emergence of borehole the use of well as a source of drinking water again reduced in 2015.

Table 2**Temporal Change in the Use of Various Sources of Drinking Water in Panghal Village**

Sources	2011	2014	2015
Tap	81.7	72.1	58.1
Well	15.9	19.6	15.6
Handpump	0.8	4	4.2
Tubewell/Borehole	0.5	3.2	21.5
Other Sources	1.1	0	0

Source: Compiled using Census of India tables on Houses, Households Amenities and Assets. Directorate of Census Haryana, 2011. Field Survey, 2014 and 2015.

Spatial Variations and Temporal Change between Social Groups

The Census of India have not published the data related to social groups at village level, so the temporal change in sources of drinking water by social groups is analyse with the help of primary data collected from the village during 2014 and 2015. Tap was the dominant source of drinking water in Panghal village with used by 72 per cent households in 2014 but it reduced by 14 per cent point in 2015 and only 58 per cent households use tap as a source of drinking water in 2015. The use of tap was reduced more in SC and OBC households as compared to General households with 47.8 per cent point, 18.6 per cent point and 1.0 per cent points respectively during 2014-2015. By survey, it was revealed that the tail households of piped water supply face in adequacy of tap water. The timing of water supply was also found a major problem in the village, many a time the supply comes as early as 4 o'clock in the morning due to limited availability of electricity supply. According to Public Health Engineering Department data, the water supply in Panghal village was canal based. The leakage of raw water and thieving of water were big problems. It results in scarcity of raw water, especially in the summer season. In such circumstances, the ground water or mixed water (ground water and canal water) was supplied. The quality of water from tubewell/borehole, installed in the water works, was found unsatisfactory in the households, leave to use tap for drinking purpose.

The use of Handpump as a source of drinking water was not got any significant change during this period but it increased slightly in general households. In OBC category the use of handpump was not found by any of the households in 2014 and 2015 (Table 3).

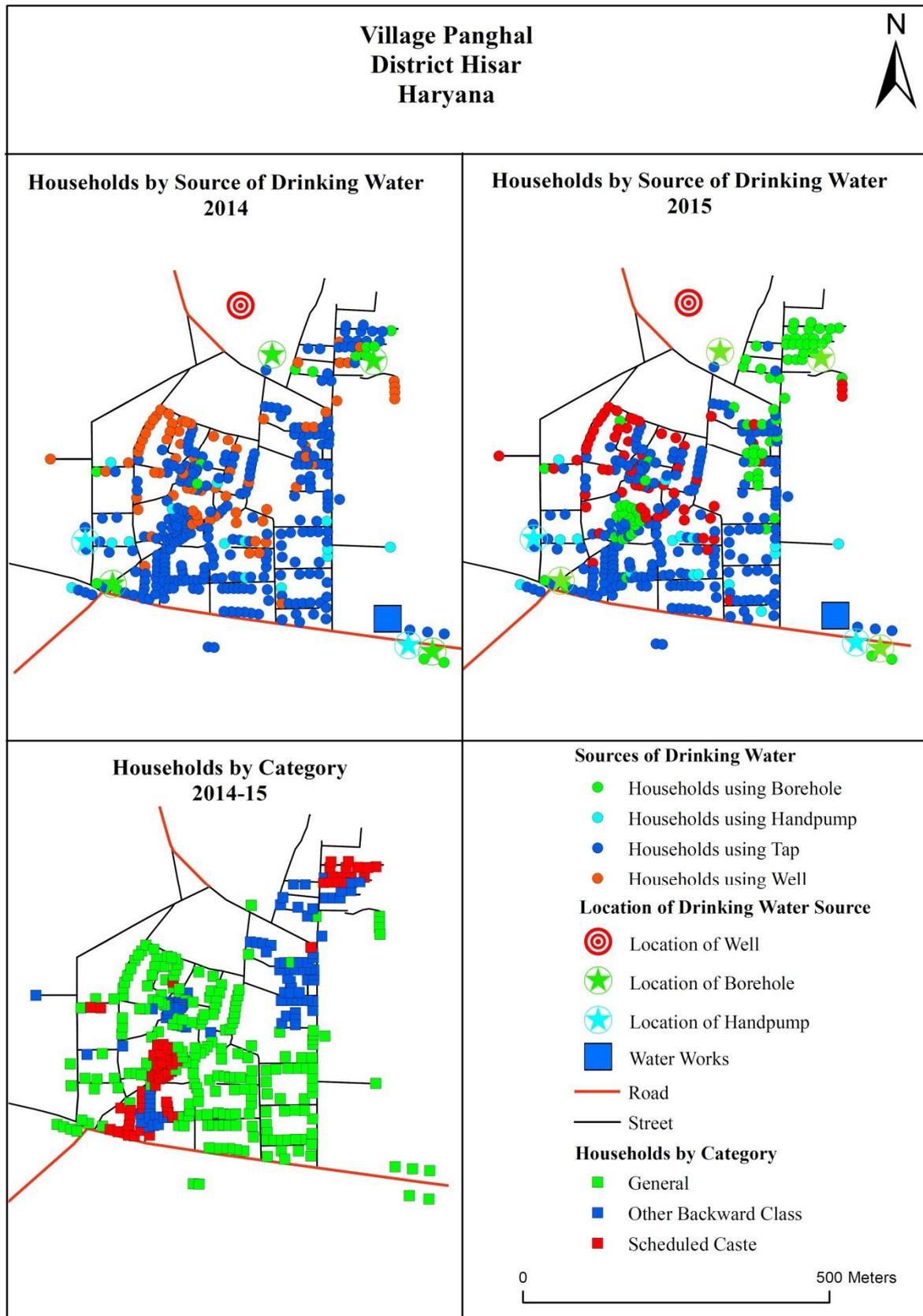
Table 3**Temporal Change in the Use of Various Sources of Drinking Water by Social Groups in Panghal Village, 2014-2015**

Category	No. of Households	Tap		Handpump		Tubewell/Borehole		Well	
		2014	2015	2014	2015	2014	2015	2014	2015
Village	377	72.1	58.1	4	4.2	3.2	21.5	19.6	15.6
General	211	64.5	63.5	6.6	7.1	2.4	5.7	25.6	23.7
OBC	97	75.3	56.7	0	0	6.2	33	16.5	8.2
SC	69	91.3	43.5	1.4	1.4	1.4	53.6	5.8	1.4

Source: Compiled using Census of India tables on Houses, Households Amenities and Assets. Directorate of Census Haryana, 2011. Field Survey, 2014 and 2015.

The use of tubewell/borehole as a source of drinking water increased interestingly from 3.2 per cent in 2014 to 21.5 per cent in 2015 in village Panghal. The increase was more in SC and OBC households than the General households.

Map 2



Source: Field Survey 2014-15 and Google Earth, 2014

In SC households it was increased by 52.2 percent point from 2014 to 2015, while in OBC households it was increased by 26.8 per cent point and in General households by only 3.3 per cent point during this period. By survey, it was revealed that the tubewell/borehole is growing at the cost of tap as a source of drinking water in Panghal Village (Map 2). The availability of borehole and the irregularity, inadequacy and quality problem of tap water were found the major reasons to force the households to change their drinking water source from tap to tubewell/borehole (Singh and Turkiya, 2013)

The use of well as a source of drinking water was decreased from 19.6 per cent in 2014 to 15.6 per cent in 2015 with four per cent point in the village as a whole. In General households it was decreased less by only 1.9 per cent point, less than the village average while in SC and OBC households it was decreased by 4.4 and 8.3 per cent point respectively, more than the village average. The pricing for well water, one bowl grain per pot, availability of other sources, distance and time for well water were the reasons to leave its use for drinking by the OBC and SC households. The SC households also leave the use of well water for drinking due to caste based discrimination in the use of well. The other sources were not used in the village during 2014-2015.

The Map 2 reveals that the locations of drinking water sources also affect its use. In 2015, in the northern part of the village majority of households use tubewell/borehole as a source of drinking water due to its near availability and irregularity of tap water supply. The concentration of households using well as a source of drinking water were also found near to its location.

Conclusions

In Panghal village, tap was the major source of drinking water in 2011 as well as in 2014 and 2015. But with time use of tap as a source of drinking water was decreasing in the village. By category, it was decreased most in SC households and in 2015 less than half of the total households use tap as a source of drinking water which was more than nine-tenths households in 2014. The irregularity, inadequacy, quality problem of tap water and less awareness about the drinking water safety were found the major reason behind it. The handpump and tubewell/borehole are growing at the cost of tap as a source of drinking water in Panghal Village. The use of tubewell/borehole as a source of drinking water was used by one-fourth of the total households in 2015 while the share was less than one per cent in 2011. The tubewell/borehole as a source of drinking water was increased more in SC and OBC households with 53.6 and 33.0 per cent point than the 2014 share. The location of SC and OBC households were found at the tail of piped water supply and face severe problem of erratic water supply especially during the summer season. The SC and OBC households also face decrease in the use of well as a source of drinking water due to availability of tubewell/borehole, distance, and pricing for well water and caste based discrimination with SC households.

The shares of households using various sources of drinking water fluctuate significantly from 2011 to 2015, proves that the unsustainability of drinking water is a big problem in the village. The government should focus on coverage of households by piped drinking water by eradicating the problems related to tap water supply. The scarcity of canal water can be reduced by strengthening the infrastructure and appropriate steps should be taken for stop water thieving and leakage. The water quality and quantity should be monitored up to tailed connections, at least quarterly. The community participation must be engaged in the management of drinking water supply. The supply canal water for water works should be released in the closing time also, especially in the summer season. There is a need of height tank or booster so that the problem of electricity and low pressure can be solved.

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