

## **DRINKING WATER AND SANITATION IN UTTAR PRADESH : A REGIONAL ANALYSIS**

*Rashmi Tiwari and  
Sanatan Nayak\**

### **ABSTRACT**

*This paper highlights the inter-regional disparity in coverage of drinking water and sanitation services in Uttar Pradesh and measures the impact of literacy rate, female literacy rate and per capita income on sanitation. The secondary level data are collected from the National Family Health Survey, District Level Health Survey, Uttar Pradesh HDR Report, Census and NSSO to assess the above objective.*

*The analysis of access to drinking water and sanitation shows that the provision of piped water supply still remains an unachieved goal in Uttar Pradesh. Moreover, it shows that a large part of the Uttar Pradesh households depend on their own private tubewells and pumps for their daily water needs. Uttar Pradesh has low coverage for both household sanitation and drainage service compared to all India level. As per the Census 2001, there are about 2.58 crores of households in the State and only 28 per cent households have individual household toilets. The paper reveals inter-regional disparity in Uttar Pradesh in the availability of drinking water and sanitation.*

*A multiple linear regression model is used to estimate the impact of various determining factors, i.e. literacy rate, female literacy rate and per capita income on sanitation facilities. The results reveal that female literacy rate plays a significant role for improving access to sanitation facilities. So, the highest priority to female literacy and schooling should be given in the development programmes for improving the conditions.*

### **Introduction**

Access to basic amenities such as safe drinking water<sup>1</sup> and sanitation<sup>2</sup> is not only an important measure of socio-economic status of the household, but also a fundamental element to the health of the people. Inadequate and poor quality of drinking water not only resulted in more sickness and deaths, but also augments health costs, low worker

productivity and school enrolment (Haq, M., et. al, 2007).

Definitions of improved drinking water sources and sanitation facilities are different within and among countries and regions; Joint Monitoring Programme (JMP)<sup>3</sup> has defined a set of categories for them. An improved source of drinking water includes, in addition to water piped (into the dwelling, yard or plot), water

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\* Research Scholar and Associate Professor, Respectively, Department of Economics, Babasaheb Bhimrao Ambedkar University, Lucknow - 226025, India. E-mail: rshukla1176@gmail.com.

available from a public tap or standpipe, a tubewell or borehole, a protected dug well, a protected spring, and rainwater. An improved sanitation facility includes flush to piped sewer system, septic tank, pit latrine, pit latrine with slab and composting toilet (WHO Report, 2010). The major limitation of the method is the assumption of households getting enough water for their consumption needs from such sources.

Disparity is a relative concept and determined by history and social conditioning and permits no universally acceptable definition. Disparities are natural, but extreme disparities are a sign of processes that do not work and can cause problems (Moe & Rheingans, 2006). Inequitable access to water and sanitation is the product of disparities in fresh water resources, income, power and institutional capacity between and within countries. Disparity in access to and use of water, and share in beneficial public expenditure in water sector, can be understood in at least four overlapping connotations (Phansalkar, S.J., 2007).

Spatial disparity refers to disparity between people living in different regions (rural-urban, less developed and more developed regions, within and between regions etc.). Generally drinking water is liberally supplied to urban areas and within them to higher income groups. Kanmony (2003) found the urban-rural disparity in the provision of drinking water. Rural people are discriminated against and deprived of their rights to enjoy basic services. There has been a positive relationship between the level of economic development and access to drinking water (Kundu and Thakur, 2006; Zerah, 2006). There are considerable variations between large urban centres, small towns and cities in piped water supply and sanitation services in India (Zerah, 2006; Shaban A. & R. N. Sharma, 2007).

Social disparity refers to disparity between different groups of people living broadly in the same locality (minority and majority communities, poor and rich people, intra and inter-caste groups). The inequality in consumption of water is not only confined to the domestic sector but also in agriculture, industrial and other sectors. It is observed that disadvantaged groups are discriminated against in the provision of safe drinking water (Kanmony, 2003; A. Shaban, R. N. Sharma, 2007 & Darshan Singh, 2009). A study on review of development of scheduled castes in India also shows clear disparity between scheduled castes and other castes in access to drinking water source, distance and improved sanitation facility (Singh, D., 2009). A recent study shows that there is a clear disparity between the public services received by the inhabitants, depending on their economic strata (Mohan, P., 2005, Kamyotra & Bhardwaj, 2011).

Gender disparity refers to disparity between genders (male-female, within and between female and male population groups) in regard to share of labour costs, efforts in access to and use of water and share in its beneficial uses and products. Women and girls are disproportionately burdened by water scarcity and this increases inequalities: they sacrifice their time and education to collect water (Moe & Rheingans, 2006).

Inter-generational disparity refers to equity in enjoyment of natural resources, including water, across generations. In fact, in another twenty years, half of our demand for water could remain unmet if the present pattern of demand and supply continues (Tiwari & Pandey, 2011). Inefficiency in water use and irresponsibility in the management of water resources pose a serious threat to our water security and sustainability.

### Methodology

Based on the above background of drinking water and sanitation, the paper studies the following aspects :

1. To assess the inter-regional disparity in coverage of drinking water and sanitation services in Uttar Pradesh.
2. To identify the determinants of sanitation and subsequent policy implications for the State.

The study is based on the analysis of secondary data. The data from Surveys conducted by the National Family & Health Survey (NFHS-3), District Level Health Survey, Uttar Pradesh HDR Report (2003&06), NSS Report No. 435: (2008-2009) and Census (2011) are used for analysis.

Multiple Linear Regression Model (normal and double log model) are used to study the impact of various determinants on sanitation. Various explanatory variables, viz., literacy rate, female literacy rate and per capita income are considered to be significant factors on sanitation. Moreover, regional disparity is observed by using various rounds of NFHS - 2&3, DLHS, Uttar Pradesh HDR and NSSO data.

### Access to Drinking Water and Sanitation in Uttar Pradesh

Water supply is a state subject, where Union Government is only responsible for setting water quality standards, but State Government has to establish departments or special agencies for supply of domestic water to urban and rural areas. These State government agencies are also responsible for monitoring the quality of water supplied (Srikanth, R., 2009). Uttar Pradesh is the most populous State having the largest urban system in the country with 628 municipalities. However, it ranks 18<sup>th</sup> in the level of

urbanisation. The process of urbanisation in the State has been favourable towards larger cities. The emerging trends of urbanisation in the State necessitate two-pronged strategy for balanced regional urban development, i.e., better management of large cities and inducing planned growth of small and medium towns (Uttar Pradesh Annual Plan, 2010-11).

*Extent and Composition of Drinking Water:* Uttar Pradesh State Water Policy, 1999 says, "Water for drinking and domestic use has the highest priority while allocating the water resource of the state. The state has to provide adequate drinking water facilities (both for people and livestock) to the entire population in both urban and rural areas up to the year 2025. Sanitation facilities for entire population in urban areas and most of the rural areas should also be provided."

There are significant disparities between Uttar Pradesh and India in regard to use of sources for drinking water (Table 1). The bulk of the households in urban India depend on the municipal water supply for their daily needs, i.e., more than 70 per cent depend on tap water. It may be noted that about 63.4 per cent of urban households in Uttar Pradesh use tubewell/handpump as their major source. This means that the main source of drinking water in urban Uttar Pradesh is tubewell/handpump. One noticeable feature of urban households during 1998-99 to 2005-06 can be observed from NFHS (2&3) that there has been a gradual decrease in the share of "piped water". On the other hand, there has been a gradual increase in the share of "tubewell/ handpump" for both Uttar Pradesh and India. The penetration of municipal water supply is not only low, but also quite poor in terms of access. Most households depend on tap water either from neighbours, or on basis of group sharing, or both (Bajpai & Bhandari, 2001).

**Table 1: Per cent Distribution of Urban Households by Source of Drinking Water in Uttar Pradesh and India**

Major Source of Drinking Water	NFHS-2 (1998-99)		NFHS-3 (2005-06)	
	Uttar Pradesh	India	Uttar Pradesh	India
Piped Water	42.9	74.5	34.9	71.0
Tubewell/Handpump	55.2	18.1	63.2	21.3
Well Water	1.7	6.0	0.5	4.8
Surface Water	0.1	0.4	0.1	0.3
Others	0.1	1.0	1.4	1.8

Source : Computed from the data provided by NFHS-2(1998-99) & NFHS-3(2005-06).

In 1998-99, nearly 42 per cent in Uttar Pradesh and 74 per cent in India used tap as source of drinking water which decreased to nearly 40 per cent in Uttar Pradesh and 71 per cent in all over India level. While in case of

tubewell/handpump as major source nearly 55 per cent in Uttar Pradesh and 18 per cent in India used it in 1998-99, which increased to 63 per cent in Uttar Pradesh and 21 per cent in all over India level.

**Table 2: Per cent Distribution of Rural Households by Source of Drinking Water in Uttar Pradesh and India**

Major Source of Drinking Water	NFHS-2 (1998-99)		NFHS-3 (2005-06)	
	Uttar Pradesh	India	Uttar Pradesh	India
Piped Water	5.5	25	2.0	28.9
Tubewell/Handpump	76.7	47.3	89.8	53.2
Well Water	15.7	23.5	7.8	15.4
Surface Water	2.0	3.5	0.3	2.2
Others	0.2	0.7	0.1	0.6

Source : Computed from the data provided by NFHS-2(1998-99) & NFHS-3(2005-06).

The pattern of drinking water from various sources in urban sector is quite different from rural areas in Uttar Pradesh as well as India. In all over India, there has been a gradual increase in the share of both the sources 'tap' and 'tubewell/handpump', and a

corresponding decrease in the share of 'well'. The situation in Uttar Pradesh shows distinct pattern, with that share of 'tap' as major source of drinking water has declined from 5.5 per cent in 1998-99 to 2 per cent in 2005-06. A large part of the rural households depend on

their own private tubewells and handpumps for their drinking water in Uttar Pradesh. It is observed that the provision of basic necessities has an urban bias. Drinking water is not an exception. A simple measure of the bias, the urban-rural difference is examined in Tables 1 & 2. It may be noted that considerable variation (urban and rural) exists within Uttar Pradesh and India.

Piped water and tubewell/handpump, both are the major sources of drinking water at all India level (Table 3). Many households do not have access to water on tap in almost all cities and towns in Uttar Pradesh. About 83 per cent households depend on their own private tubewells and pumps for drinking water.

**Table 3 : Per cent Distribution of (Urban + Rural) Households by Source of Drinking Water in Uttar Pradesh and India**

Major Source of Drinking Water	NFHS-2 (1998-99)		NFHS-3 (2005-06)	
	Uttar Pradesh	India	Uttar Pradesh	India
Piped Water	13.5	38.7	10.3	42
Tubewell/Handpump	72.1	39.2	83.1	42.8
Well Water	12.7	18.7	6.2	11.9
Surface Water	1.6	2.6	0.4	2
Others	0.1	0.8	0.1	0.8

Source : Computed from the data provided by NFHS-2(1998-99) & NFHS-3(2005-06).

At the all India level, there has been gradual increase in the share of both the sources 'tap' and 'tubewell/handpump', but the pattern is different in Uttar Pradesh. The share of 'tubewell/handpump' has been increased from nearly 72 to 83 per cent and the share of 'tap' has been decreased from about 13 to 10 per cent in Uttar Pradesh. Population pressure, resource endowment, lack of infrastructure and low expenditure of Uttar Pradesh government on water supply and sanitation (WSS) sector lie behind it (Uttar Pradesh HDR Report, 2006). It is clearly revealed that the allocation of revenues towards WSS has been decelerated during first decade of this century in Uttar Pradesh. Uttar Pradesh spends around 1.2 to 5.8 per cent of its social sector expenditure on WSS. The share of WSS in social sector expenditure was 4.36 per cent in 1990-

91, and reduced to 1.23 per cent in 2009-10. Uttar Pradesh spends between 0.66 to 1.5 per cent of the total expenditure on WSS. In terms of percentage of aggregate expenditure, it was 1.67 in 1990-91 and reached a higher level of 1.99 in 1997-98, then declined to 0.46 in 2009-10 (Reserve Bank of India, 2010, Handbook of State Finances). Poor and intermittent supply may be one reason for low coverage of piped water for both urban and rural households compared to all India level.

*Extent and Dimension of Sanitation :* Sanitation was defined to include connection to a sewer or septic tank system, pour-flush latrine, simple pit or ventilated improved pit latrine, with allowance for acceptable local technologies. The excreta disposal system was considered adequate if it was private or shared

**Table 4 : Per cent Distribution of Urban, Rural and Total Households by Types of Latrine for U.P. and India in 2008-09**

Type of Latrine	Urban		Rural		Total	
	Uttar Pradesh	India	Uttar Pradesh	India	Uttar Pradesh	India
No Latrine	14.2	11.3	79.2	65.2	65	49.2
Service Latrine	4.4	1.6	1.5	1.2	2.1	1.4
Septic Tank/Flush	72.8	77.3	12.6	17.9	25.7	35.4
Pit Latrine	6.5	8	5.9	14	6.1	12.2
Others	1.6	1	0.5	1.2	0.7	1.2

Source : Computed from the data provided by NSS Report No. 535, 2010.

(but not public) and if it hygienically separated human excreta from human contact (NSS Report No. 535, 2010, p.26). Definition of sanitation<sup>4</sup> facilities are provided in detail in Notes. Based on these definitions, the structure and extent of sanitation facility has been assessed as follows.

Table 4 reveals that the toilet coverage both in rural and urban areas of Uttar Pradesh is much lower compared to all India level. About 50 per cent of households in India have toilet facility, while only about 35 per cent households in Uttar Pradesh have toilet facility (NSS Report, 2010). In Uttar Pradesh, there are large disparities between urban and rural areas in access to toilet facility. About 85 per cent of households in urban areas have toilet facility; on the other hand, only 20 per cent of households have toilet facility in rural areas. The general rural population is of the opinion that owning and using a toilet is not a household priority but a luxury. Open defecation continues to be the norm in large parts of the State especially in the rural areas (Arya, Y.B., 2009).

According to census 2011 data, only 46.9 per cent of Indian households and 35.6 per

cent of households in Uttar Pradesh have latrine facility. Open defecation continues to be a big concern. Sanitation facility in urban areas is better than rural areas (Table 5). Various studies find urban-rural disparity in provision of drinking water and sanitation facility (Kanmony, 2003; Moe & Rheingans, 2006).

It may be noted that sanitation facility is not as much improved in Uttar Pradesh as compared to India. Census data show that the percentage of Indian households having no latrine declined from 78.1 to 69.3 in rural areas and from 26.3 to 18.6 in urban areas. In other words, there is 8.8 per cent improvement in rural areas and 7.7 per cent improvement in urban areas at all India level. While a mere 2.6 per cent improvement in rural areas and 3.1 per cent improvement in urban areas took place in Uttar Pradesh during last 10 years. There are many reasons for the failure to achieve sanitation coverage-

- \* Sanitation and drinking water are grossly underfunded. There are inadequate investments for improving WSS infrastructure.
- \* Investments made in sanitation and water do not yield proportionate results

**Table 5 : Per cent Distribution of Urban, Rural and Total Households by Types of Latrine for Uttar Pradesh and India**

Type of Latrine	Urban		Rural		Total	
	2011	2001	2011	2001	2011	2001
Uttar Pradesh						
Water Closet	77.2	32	15.9	1.9	29.8	8
Pit Latrine	2.9	18.1	4.5	8.3	4.2	10.3
Other Latrine	3	30	1.3	8.9	1.7	15.2
No Latrine	16.9	20	78.2	80.8	64.4	68.6
India						
Water Closet	72.6	46.1	19.4	7.1	36.4	18
Pit Latrine	7.1	14.6	10.5	10.3	9.4	11.5
Other Latrine	1.7	13	0.8	1.5	1.1	6.9
No Latrine	18.6	26.3	69.3	78.1	53.1	63.6

Source : Computed from the data provided by Census 2011.

because of poor planning and implementation.

- \* Politically, sanitation and drinking water are not a great priority.
- \* The benefits of sanitation and water supply are social and shared in nature, while the costs are private and governmental.
- \* Poor cost recovery is also one of the main reasons for poor condition of WSS sector. The tariff rates being charged from the consumers are very low. The water and sewer tax is set at 12.5 per cent of the annual rental value of the property for unmetered consumers, which is assumed to depend on the size and other characteristics of property. No considerations of coverage of capital or

O & M expenditures or cost are taken into account.

#### **Region-wise Access to Drinking Water and Sanitation**

Uttar Pradesh occupies the central position in the northern India. It is one of the largest and most backward states in India with a diverse composition. Uttar Pradesh has suffered from different types of inequality, i.e. regional disparity is one among them. There are four regions<sup>5</sup> in the State, viz., (1) Eastern region, (2) Western region, (3) Central region, and (4) Bundelkhand region (Diwakar, 2009).

Economically, the Western region is the most developed with higher levels of urbanisation, i.e., better infrastructure, higher agricultural productivity, higher per capita income levels, i.e., ₹ 18,959 in 2006-07 at

current price, and lower poverty levels (Govt. of Uttar Pradesh, 2010-11). Eastern region suffers from high population pressure and low degree of diversification of the economy, while Bundelkhand region falls in the drought-prone dry region. The Central region scores relatively better in terms of economic indicators as compared to the two backward regions (Government of Uttar Pradesh, 2010-11).

The Government of India considers only tap, tubewell, and handpump (TWP) as

potable sources. According to the definition of Census of India, if a household has access to drinking water from a tap, tubewell or handpump situated within or outside the premises, it is considered as having access to safe/improved drinking water (Lohia, Shital, 2006). Based on the above definition, the structure and extent of drinking water facility has been assessed as follows.

As per the District Level Household Survey (DLHS-2&3), the coverage with

**Table 6 : Access to Improved Drinking Water in U. P. in Different Regions**

(in per cent)

Region	DLHS -2 (2002-04)	DLHS -3 (2007-08)	Difference of DLHS -2 & 3
Eastern region	90.31	93.27	2.96
Western region	93.75	97.99	4.24
Central region	87.2	93.44	6.24
Bundelkhand region	79.21	90.51	11.3
Uttar Pradesh	90.8	94.8	4.0

Source : Computed from the data provided by DLHS-2 and DLHS-3, Uttar Pradesh, IIPS, Mumbai.

improved drinking water is 94.8 per cent in Uttar Pradesh. This coverage only indicates the percentage of households using potable sources for their drinking water needs. But this does not mean that 94.8 per cent of households have adequate drinking water facilities. Various studies also confirm that the coverage figures do not reflect actual availability of water supply, which is better reflected by service quality indicators such as hours of supply, water quality and quantity (Mavalankar, F. & M. Shankar, 2004; Pandey, et al, 2006; Pushpangadan, 2006 and Mingxuan, F. & Bhano ji Rao, 2011).

There are considerable inter-regional disparities so far as access to drinking water

with improved source are concerned (Table 6). Western region is the only region that has reached above 95 per cent coverage with improved drinking water. As various studies confirm, there is a positive relationship between the level of economic development and access to drinking water. Developed states report a high percentage of households having access to safe drinking water (Kundu & Thakur, 2006 and Zerah, 2006).

Bundelkhand region has lowest access to drinking water in both surveys among all regions but it reports highest improvement in coverage (11.3 per cent) in between DLHS-2&3. This region has distinct natural characteristics as compared to the other

regions. The region has also shown greater economic dynamism and poverty levels have declined sharply in late nineties (Uttar Pradesh HDR Report, 2006).

At the district level, there are glaring disparities in access to improved drinking water facility. Bareilly has reached almost universal coverage while only 75 per cent households in Mirzapur obtain their drinking water from improved source.

Sanitation facility is inadequate in almost all regions of Uttar Pradesh. As per the Census, percentage of households having sanitation

facility in Uttar Pradesh increased from 18.02 in 1991 to 31.43 in 2001 and 35.6 in 2011. In fact the improvement works out to be lower i.e., 4.17 per cent during 2001-11 compared to 13.41 per cent during 1991-2001. Bundelkhand region and Western region report a relatively higher increase in coverage i.e., 5.22 and 5.17 per cent during 2001-11, respectively. Eastern region reports the lowest increase in coverage i.e., 1.67 per cent during 2001-11 (Table 7).

Sanitation situation is much worse as 65 per cent population of Uttar Pradesh do not

**Table 7 : Access to Sanitation Facility in U.P. in Different Regions**

(in per cent)

Region	1991	2001	2011	Difference of 1991-01	Difference of 2001-11
Eastern region	9.47	19.47	21.14	10.00	1.67
Western region	25.50	42.93	48.1	17.43	5.17
Central region	17.59	28.14	30.87	10.55	2.73
Bundelkhand region	13.33	23.82	29.04	10.49	5.22
Uttar Pradesh	18.02	31.43	35.6	13.41	4.17

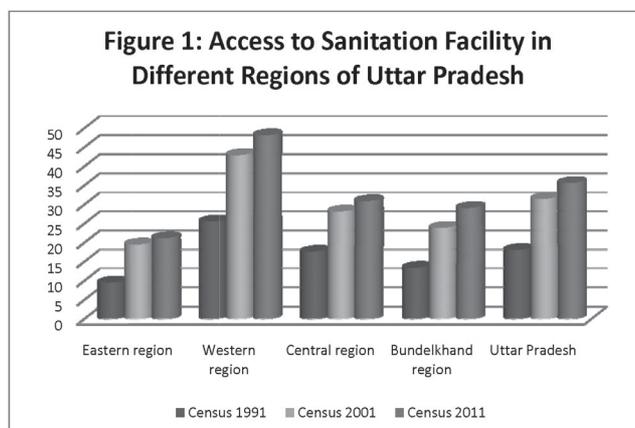
Source : Computed from the data provided by U.P. HDR report, 2003 & 2006.

still have access to sanitary latrines and basic hygiene (Census 2011). Sanitation levels especially in the Eastern region of the State are far below the State average as only 21.14 per cent households have sanitation facility.

Highest per cent of households of Western region have accessibility to toilet facility than those of in other regions. Western Uttar Pradesh is agriculturally prosperous and relatively industrialised than other regions. The worst condition of sanitation facilities is identified in Eastern region. Only one-fifth of households have a toilet facility in Eastern region. Among them Shravasti has the minimum percentage i.e., 12 of this facility.

Varanasi district reports sanitation coverage above 50 per cent in Eastern region, while in Western region, 10 districts have above 50 per cent household accessibility to toilet facility.

The situation for sanitation facilities is also worse in Central and Bundelkhand regions. Only 30 per cent households in Central region and 29 per cent households in Bundelkhand region have access to toilet facility. Bundelkhand region is the least developed region in the State due to low agricultural growth, less number of industrial units and lesser gross value of industrial products (Uttar Pradesh HDR Report, 2006).



The State has exhibited significant regional disparity in accessibility to toilets (Figure 1). Various studies confirm that low levels of latrine usage are due to lack of awareness of the importance of sanitation, water scarcity, poor construction standards and the expensive policy on standardised latrine by government (Arya, Y.B., 2009).

### Empirical Analysis

Multiple Regression Analysis by using Ordinary Least Square method has been used to study the impact of various explanatory variables on sanitation facility across districts in Uttar Pradesh. It examines the impact of

literacy rate, female literacy rate and per capita income on access to sanitation facility. The functional form of both simple Regression model and Log-Linear Regression model are as follows.

$$SF = b_0 + b_1LR + b_2FLR + b_3PCI + U_1 \quad (1)$$

$$LSF = b_0 + b_1LLR + b_2LFLR + b_3LPCI + U_1 \quad (2)$$

Where SF is the sanitation facility;  $b_0$  is the intercept;  $b_1$ ,  $b_2$  and  $b_3$  are the co-efficients associated with LR, FLR and PCI, respectively and  $U_1$  is the error term. LR is the literacy rate, FLR is female literacy rate and PCI is per capita income.

**Table 8 : Results of Both MRF& LMRF in Uttar Pradesh**

Determining Factors	Multiple Regression Function	Multiple Regression Function (Log)
Constant	39.46 (3.04)	-0.73(0.36)
FLR	2.26 (3.95*)	2.61 (3.44*)
PCI	0.0018 (5.71*)	0.9(7.38*)
R <sup>2</sup>	51.95	61.58
F-Statistics	23.78	35.25

Note : The values in the parentheses are t-values.

\* indicates 1 per cent level of significance.

In model (1), there is a positive relationship between female literacy rate and per capita income with sanitation facility. If female literacy rate and per capita income increase by 1 unit, on average, sanitation facility increases by about 2.26 and 0.0018 units, respectively. However,  $R^2$  value suggests that about 52 per cent of variation in access to sanitation facility is explained by female literacy rate and per capita income.

Similarly, model (2) explains that an increase of 1 per cent in female literacy rate leads to increase of 2.61 per cent of sanitation facility and 1 per cent increase in per capita income leads to 0.9 per cent increase in sanitation facility (model 2). Adjusted  $R^2$  value is estimated at 0.5983. It reveals that about 60 per cent of the variation in sanitation facility is explained by female literacy rate and per capita income.

### Summary and Conclusions

This paper clearly reveals that the current state of water supply in Uttar Pradesh is inadequate covering all standards, either it is for urban areas or rural areas. In Uttar Pradesh, 90 per cent households do not have access to tap water. Tubewells and handpumps are dominant sources in Uttar Pradesh while piped water is the most common source of drinking water at all India level.

Present status of sanitation facility in Uttar Pradesh is even worse compared to all India level. No district in the State at present has been able to ensure sanitation facilities for all the houses. About one-third houses in urban areas in the State do not have toilet facility.

The paper has highlighted the wide inter-regional disparities in access to drinking water and sanitation facilities in Uttar Pradesh. Western region, the most developed region of the State, reports the highest coverage in access to drinking water and sanitation facilities among all regions. Inequalities are pervasive in the availability of drinking water and sanitation facilities both in the rural and urban areas of the State.

Regression analysis confirms significant instrumental role of female literacy rate for improving access to sanitation facilities. This underlines the need for giving highest priority to female literacy and schooling in the development programmes of Uttar Pradesh.

Few aspects related to worse conditions of drinking water and sanitation facility are addressed in the present paper. Drinking water and sanitation facility of Uttar Pradesh can be improved by enhancing the share of WSS expenditure in social sector and total expenditure, by increasing political and social priority to sanitation and water supply, by formulating the water tariff rates, etc.

### Notes

- 1 Drinking water is defined as the water consumed by a human being for maintaining the biological functioning of the body.
- 2 Sanitation refers to the measures, methods and activities that prevent the transmission of diseases and safeguard public health.
- 3 Joint Monitoring Programme (JMP) began in 1990 by WHO and Unicef to monitor progress in the drinking water and sanitation sector.
- 4 Open Defecation – When human faeces are disposed of in fields, forests, bushes, open bodies of water, beaches or other open spaces or disposed of with solid waste.

Unimproved Sanitation Facilities – Unimproved facilities include pit latrines without a slab or platform, hanging latrines and bucket latrines.

Shared Sanitation Facilities – Sanitation facilities of an otherwise acceptable type shared between two or more households. Only facilities that are not shared or not public are considered improved.

Improved Sanitation Facilities – Ensure hygienic separation of human excreta from human contact (India Health Report, 2010).

- 5 The Western region has five divisions and 26 districts, the Central region covers two divisions and 10 districts, Bundelkhand has two divisions and seven districts, and the Eastern region has eight divisions and 27 districts.

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