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Household water security: An overview

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Abstract

Water is most essential thing for all of us and it is one of the most important substances on Earth. All plants and animals must have water to survive. If there was no water there would be no life on earth. It is an essential element for every living creature in the world. Water occupies two third of human body's weights. Water is the basis of life so we can't imagine a world without water. It is as much equally important for plant as for the living beings. Human beings can survive for many days without food but it is almost impossible for them survive without water. Without water there would not be grains, fruits, vegetables and any plant. Without water Earth would be a gigantic dead desert. According to present knowledge, Earth is the only planet of our solar system with water in all three phases: solid, liquid and gas. The Earth's surface is clearly dominated by water: 70.8 percent of it is covered by the oceans, about 3.16 percent by ice. Lakes cover approximately 2 million km² (0.39%) rivers and wetlands, cover nearby 2.7 million km² (0.53%), of the total water-covered surface of the earth. But, we have very limited sources of drinking water and the problem is getting worse day by day as humans pollute and waste this resource. According to WHO, a child dies from water born diseases in every 8 seconds. In this paper we will try to examine the status of house hold water security and finding the major government policy for house hold water security and also try to findout the present conditions of household water security in India.

Keywords: Household, Water security, Awdo, Goble, Policy

Introduction

Water is one of the most important substances on Earth. All plants and animals must have water to survive. If there was no water there would be no life on earth. It is an essential element for every living creature in the world. Water occupies two third of human body's weights. Water is the basis of life so we can't imagine a world without water. It is as much equally important for plant as for the living beings. Human beings can survive for many days without food but it is almost impossible for them survive without water. Without water there would not be grains, fruits, vegetables and any plant. Without water Earth would be a gigantic dead desert. According to present knowledge, Earth is the only planet of our solar system with water in all three phases: solid, liquid and gas. The Earth's surface is clearly dominated by water: 70.8 percent of it is covered by the oceans, about 3.16 percent by ice. Lakes cover approximately 2 million km² (0.39%) rivers and wetlands, cover nearby 2.7 million km² (0.53%), of the total water-covered surface of the earth. But, we have very limited sources of drinking water and the problem is getting worse day by day as humans pollute and waste this resource. According to WHO, a child dies from water born diseases in every 8 seconds. Approximately one hundred billion people are lacking in clean water in the world at present and approximately more than two billion people don't have sufficient water for their other daily uses. According to the UN report 1.8 hundred billion people in the world will struggle to get clean drinking water by 2025. World Economic Forum's (WEFs) has also confirmed in its 2015 report that shortage of clean drinking water will the biggest problem for coming generations. It is also assumed that water would be the reason for the third World War. In one of its reports, UNESCO says that the shortage of clean water availability is bigger in Africa, Asia, Latin America and Middle-East region.

Shortage of clean water has given many problems to the world such as—justice, security and peace. It also affects the socio economic growth of a region. According to World Economic Forum's Global Risk Report 2016, the water problem has been kept at number three in the list of ten most dangerous factors affecting the world. A recent World Bank Report attracts the attention in which it is said that the problem of clean water availability is already there

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but the climate change will worsen the problem in coming years and the state will not be good for the world.

Human beings are engaged in searching water from the surface of moon to Mars so that the probability of life can be traced from there. But it is a big question whether human beings living on Earth have grasped the real importance of water?

The unavailability of clean water is affecting India and the whole world in many ways and the situation is getting worse day by day. The problem can only be solved at global scale, no country, alone, is capable of solving it. Clean water is very important element of life so it is our duty to save it.

The importance of water is understood in the phrases—‘Save Water, Save Earth’. So, to preserve the Earth for our future generation, we need water conservation. To preserve life on earth, conservation of water is very important for every living beings and plants. It is impossible to imagine a world without water. Earth is blessed to have the only planet in the universe to have water on its surface and life circle goes on with the water circle. Human beings are considered the most intelligent species in the world so it is our duty to work for the conservation of water. To save life on earth, we need to save every drop of water only then we can assume a bright future for our coming generations. We can assume the importance of water by many proverbs on the importance of water such as—‘Life is water’, ‘No water, No life’, ‘what is the only drink for a Wiseman?’ etc.

The world runs on water. Clean, reliable water supplies are vital for industry, agriculture, and energy production. Every community and ecosystem on earth depends on water for sanitation, hygiene, and daily survival. Sanitation, hygiene and safe water are the basic requirements for good health. Our national policies and state policies in these areas should complement each other. In addition, there should be institutional synergy as well, for administering these policies at various levels.

Estimates indicate that around 4 billion people or two-thirds of the world’s population face severe water shortage for at

least one month every year. Water scarcity can result in low productivity and crop failure, leading to food shortages, increasing prices and subsequent hunger.

According to the UN, food output must grow by 60 per cent to feed a population of nine billion or more in 2050. Production of food requires considerable inputs of energy and water, raising challenges of conflicting demands. But by 2030, the world will have to confront a water supply shortage of 40 per cent. Agriculture already accounts for approximately 70 per cent of global freshwater withdrawals and is perceived as one of the main factors behind the increasing global scarcity of freshwater. Globally, irrigation water withdrawals are expected to grow by about 6 per cent in 2050.

In September 2015, the UN adopted the 2030 Agenda for Sustainable Development with 17 Sustainable Development Goals (SDGs). Goal 6 is dedicated for ensuring access to water and sanitation for all.

Water is the most crucial natural resource and its availability greatly influences the health of people and development of that area. According to the standard definition for water availability from 1000 m³ / per capita/ year to 1700 m³/ capita/ year, shortage will be local. Below 1000 m³/ per capita/year, water supply begins to hamper health, economic development and human well being. Less than 500 m³ / per capita/ year, water supply becomes a primary constraint to life and countries experience absolute scarcity. The 1000 m³ / per capita/ year, has been accepted as a general indicator of water scarcity by World Bank and other agencies.

Water surrounding us is a large amount but a little quantity of water useable for us. Only 2.5 percent water is fresh water and 97.5 percent water is not suitable for our use. Earth’s 71 per cent part is covered by water. But we are facing water related problems. Every third person of the world’s struggling for fresh water to fulfil their basic needs.

Water distribution on the Earth

Table 1

Ocean	97.5
Ice-Caps	02.0
Groundwater	0.68
Fresh Water Lake	0.009
Inland Seas and Salt Lake	0.009
Atmosphere	0.0019
River	0.0001
Total	100

India, which has 17.5 per cent of the world’s population, has roughly 4 percent of the world’s water resource and 2.45 per cent of the world’s land area. Even in the distribution of the available fresh water resource in the country, there are great variations in space and time i.e., between different part of the country and in different periods in a year. The challenges faced by the water sector in the country are many, such as – the challenge to feed a growing population; challenge to meet their growing aspirations for a better life; challenge to control the floods and drought occurring every year terrible lives and habitats; and the challenge to ensure sustainable growth process balancing a delicate environment and ecological system (YOJANA July 2016, pp-49) [22].

India has abundant water resources, but the water problem is very serious in many state i.e. Maharashtra, Rajasthan,

Karnataka, Telangana, Aandhra Pradesh, etc. About 32 crores of the population does not have access to drinking water. Water problem in India is a man made problem and not the fault of nature. India gets an annual rainfall of 1150 mm as compared to the world average of 840 mm and about 400 mm in Israel. Israel is managing the water successfully whereas in cherapunji in India where the rainfall is about 11,000mm, availability is a problem for 2-3 months before the commencement of monsoon every year. (YOJANA July 2016, pp-23) [23]

Overview of literature

A number of scholars in the field of Water Security and related fields have done work in India and other countries in the world. Eminent geographers and scholars have long

devoted to the study of the problems of water security in different countries of the world with a view to finding out existing conditions and potentialities. The study is as old as that of water security itself. It is interesting to observe that most of the studies on water security.

Falkenmark, M. (2012)^[6] He worked to assess how water security is important for adapting to global changes. The most vulnerable population is the semi-arid tropics and subtropics population. Different countries have to adapt differently face climate change. Lot of changes in agricultural production, Basin management plans are needed and water should be entered into climate change convention activities to provide water security in dry climate countries. Huai, C. and Chai, L. (2016)^[17] this researcher's carried out a bibliometric study from 1998 to 2015 on dynamic pattern of water security research. The data was obtained from web of science data based and they found environmental science and water resources of the most promising subjects. From the data base USA and UK have carried out the maximum research. Climate change is also one of the hot topic of research. They have found that aging has very less effect on rapidly developing water security research and these findings can be used for future studies by researchers for carrying out work on global water security. NARCISSE, K.A. (2010)^[7] He has found that poverty is a global phenomenon which affects each and every citizen around the world and water security is a part of overall experience of poverty. The research carried out in Cote D'Ivoire shows that water security remains a major problem in rural areas. The main goal of this research paper was to provide a relationship between poverty and water security. Also this paper helped in policy making (using random utility model) of COTE D'IVOIRE to get information on factors which influence rural water demand. They carried out research work on Andros Island (Bahamas) to calculate /understand risk of water security for small Islands. Different indicators were used to determine susceptibility, hazard threat, vulnerability and loss. This research has helped the local resident and local government to understand the impact of climate change and land use activity on water security as it is very critical in order to effectively plan and adapt to future changes. Bitterman, P. *et al.* (2016)^[1] They carried out a survey to understand the dependence on tank (reservoirs) water in Tamil Nadu, India in facilitating agriculture activities. Encroachment and lack of repair has reduced inflow and tank capacity in urban and semi-urban area. Through this study Patrick Bitterman had identified the main component, causal linkage and outcomes of water security and has provided recommendations to carry out future research and to understand the effectiveness of tank (reservoirs). Salinas, C.X. *et al.* (2015)^[9] they carried out research to understand the problem of water security for the sustainability of La Serena-Coquimbo conurbation (LSCC). Analysis was done on drinking water production, groundwater level, and precipitation and population data. Trend shows a drop in precipitation and groundwater level on one hand and increase in total water consumption on the other hand. This research points out towards vulnerability of cities located near arid land and how different initiative is required to solve the problem of water scarcity. Chen, L. And Shi, J. (2016)^[3] they carried a research to investigate the sustainable state to water resource in Chengdu city. Comprehensive data of urban water security has been calculated and it shows that the water security level of

Chengdu to improve the water-saving facilities and techniques which includes better treatment of industrial and municipal waste water, improvement of management and warning system to time fully cope with accidental problems related to water environment and resources. Li, X.S. *et al.* (2016)^[10] through this research paper they established evaluation index system of water security. This index system uses 5 subsystems and 39 indicators. Each indicator has been given a relative weight using the AHP method. Through this research it can be concluded that water environment security, water society security, water ecology security and water economy security system needs to be consolidation. Through this research they tried to assess the potential of rainwater harvesting to improve water security in Guatemala. The research team prepared a rainwater harvesting system to assess three dimensions i.e. quantity, quality and access. This system has improved water security, however many concern still remain like system cost, area to cover, water quality and how to set public responsibility for water security. Molden, O. *et al.* (2016)^[11] through this research they have studied cultural aspects of household water security by assessing Kathmandu's ancient stone water spouts. The emphasis is on why 'traditional' water supply system persists in this area so efficiently and how conflicts between cultural heritage and drinking water law. Has become an impediment towards spout revitalization which may cause risk to the entire system's functioning. Maganda, C. (2016)^[12] Through this research he tried to access the problem of water security in countries/area where water is available in ample amount. This research was carried out in European Union (with main focus on the Grand duchy of Luxembourg). If water security/human right to water is to be accepted properly policies. If there policies are adopted properly global water conditions will improve for sure. Yaning, C. *et al.* (2016)^[13] through this research they have found that the landscape of North West China increase the complexity and uncertainly of the climate system. Main constraints which were analysed impact of climate change on water resources. The main objective of this paper is to find specific areas of research to study issues related to climate change and water resources in North West China so that the ability to respond to climate change and water improves. Santos, B.B.M. (2016)^[14] he studied water security in the metropolitan region of Rio de Janeiro. This study has mainly focused on two aspects which are 1. Water security, 2. Current scenario of water management in region of Rio de Janeiro (RMRJ). This research work has shown that the water condition is not very severe in Rio de Janeiro. Jepson, W. and Vandewalle, E. (2015)^[15] they carried out a research in low-income rural and periurban communities near the Texas-Mexico border. Two logistic regression models (binary and ordered) were used in this analysis. It was found that instead socioeconomic factors immigration of household plays a very important role in water insecurity. Therefore government should pay more attention towards these immigrated/marginalized populations to improve their problem. Maleksaeidi, H. *et al.* (2015)^[16] they carried out a research to understand resilience of farm households to survive under water scarce condition. Primary data was collected from 260 randomly selected farm household in 21 villages near Parishan wetland, Iran. The findings prove that more resilience farm households have prepared themselves with proper management and planning. They assessed

different aspects of water security by the use of small number of indices. They formed rural water insecurity index to understand the ability of different communities to face water insecurity. This index was composed using surface and surface water supply distribution, groundwater withdrawal, and sanitation and irrigation coverage. This study conclude that poor are very vulnerable towards water insecurity.

Objectives of the study

- To assess the present conditions of domestic water supply.
- To analysis the household water security.
- To explain the government policy for household water security.

Data sources and methodology

Data source and Methodology both are more important for any research because methodology and data source is base of research. This study is based on primarily secondary source of data. The related data about Household Water Security obtained from the Ministry of Drinking Water and Sanitation Department of India and varies published reports, journals, newspapers and magazines.

A Conceptual Framework of Global Water Security

The concept of water security has wide intuitive appeal as it expresses the main goal of water management, which is to improve the quality of life for everyone. It is a concept that provides politicians, business leaders, water professionals, and many different disciplines and interest groups with a common language. Water security is a starting point for negotiating the complexities of allocating limited water resources among many competing and often conflicting demands. Water security can be broadly defined as access by all individuals at all times to sufficient safe water for a healthy and a productive life. However, the concept of “Safe Water” in the definition is not well understood because it has multiple standards, safe water can mean, clinical safely, cultural safely, perceptual safely, minimum pollutant standard etc. Hence, the word “Safe Water” is still been used loosely in context.

The world is far from water secure. In many parts of the world the demand for water is already much greater than the available supply. This is not an issue that affects only developing countries, where water infrastructure is poor and where many people do not have access to safe drinking water, but also the developed world, where burgeoning demand simply cannot continue to be met. Water for agriculture and, therefore, food is not given sufficient attention on the global stage, where water supply and sanitation issues currently dominate. In order to move water for agriculture up the agenda on the global scene, water engineers, farmers, economists and policy makers will need to improve their communications with one another. Water security is under severe pressure from many sources; a world population explosion, rapid shifts of people from rural to urban areas, the impact of dietary change as countries develop, increasing pollution of water resources, the over-abstraction of groundwater and the not insignificant issues created by climate change. (Global Water Security, April 2010, pp-05) ^[24]

The importance of water security to national security should be a core component of policy making. Water security

should be considered as part of climate change mitigation and adaptation policy and the global impacts on water security of our national and international policies need to be assessed. The technologies, practices and management approaches that will be required to address water security issues must be identified and supported through research and development. Government should review the needs for public engagement, education and awareness-raising around the subject of water security. (Global Water Security, April 2010, pp-06) ^[25]

Water security has different implications and connotations depending on where in the world one lives. For everyone however, water is fundamental to being able to live a healthy and productive life whilst maintaining the natural environment. It is a sobering reality that, in many places, water is a scarce and contaminated resource. Over one billion people have no access to clean drinking water; about one third of the world’s population lack satisfactory sanitation. (Global Water Security, April 2010, pp-10) ^[26]

In South Asia, Sub-Saharan Africa, Latin America and Oceania, water insecurity is largely a problem of social and physical barriers preventing equitable access to water. Water resources largely go unmanaged and water supply services required to access water struggle to keep up with growing demand. Inadequate management capacity has an impact on the longevity of water supply services. Consequently, the quantity and quality of water supplies accessible to people are insufficient to meet basic human needs. While the Millennium Development Goal water supply target to ‘halve, by 2015 the proportion of the population without sustainable access to safe drinking water’ relative to 1990 has been met globally, the target will not be met in parts of Sub-Saharan Africa, parts of South Asia and parts of Oceania²². The various methods available for assessing water scarcity and water insecurity have flaws and should be used carefully. (Water Aid, 2012, pp-15) ^[27]

Eighty percent of the global population faces a high level risk to water security. Many low-income countries face greater water security risks but have the least ability to mitigate such risk through appropriate and sequenced investments in infrastructure and institutions. The poorest live in the most vulnerable areas, such as urban slums, rural hinterlands and floodplains, yet have the least capacity to invest in resilient and flexible measures to mitigate risk. Private investors are risk averse, crowding in investment where water security is already largely achieved. Recent global assessments of climate risks, infrastructure finance and economic growth illustrate that water security risks are not being effectively addressed by current responses from science, government or enterprise. (Water Security, Risk and Society, June 2012, pp-05)

By 2050, more than 60 per cent of the Asia and Pacific region’s population will be living in cities. Asia is home to thirteen of the world’s twenty two megacities, and the number is expected to go up to 20 megacities by 2025. Yet, we are faced with a staggering 1.7 billion people lacking access to basic sanitation and almost 80 per cent of wastewater being discharged in water bodies (rivers, lakes, and the sea) with little or no primary treatment. In Indonesia, for example, only 14 per cent of wastewater is treated, while in the Philippines the figure is 10 per cent, in India 9 per cent, and in Viet Nam 4 per cent. The water quality-related health risks are immense. In many countries, more than half of the groundwater withdrawn is for

domestic water supply, and globally it provides 25%–40% of the world’s drinking water. Of the world’s 15 biggest abstractors of groundwater, 7 are in the Asia and Pacific region. Bangladesh, India, Nepal, and Pakistan use about 23 million pumps with an annual energy bill of \$3.78 billion for lifting water. So we can say that Asia and the Pacific region is the global hot spot for water insecurity. The region is already at highest risk from water related disasters, including storms, floods, and droughts. Over the past 20 years, Asia specifically has suffered half of the estimated global economic cost of disasters: about \$53 billion annually.

Water security in Asia and the Pacific is under threat from many sources: population growth, urbanization, increasing water pollution, the over-abstraction of groundwater, water-related disasters, and climate change.

What is water security?

Water security is defined as the capacity of a population to safeguard sustainable access to adequate quantities of acceptable quality water for sustaining livelihoods, human well-being, and socio economic development, for ensuring protection against water-borne pollution and water-related disasters, and for preserving ecosystems in a climate of peace and political stability. (UN-Water, 2013) “The reliable availability of an acceptable quantity and quality of water for production, livelihoods and health, coupled with an acceptable level of risk to society of unpredictable water-related impacts.” “The capacity of a population to safeguard sustainable access to adequate quantities of acceptable quality water for sustaining livelihoods, human well-being, and socioeconomic development, for ensuring protection against water-borne pollution and water-related disasters, and for preserving ecosystems in a climate of peace and political stability.”

Definition of water security

Water security is defined as the capacity of a population to safeguard sustainable access to adequate quantities of acceptable quality water for sustaining livelihoods, human well-being, and socio economic development, for ensuring protection against water-borne pollution and water-related disasters, and for preserving ecosystems in a climate of peace and political stability.

David Grey and Claudia Sadoff World Bank

Water security is the availability of an acceptable quantity and quality of water for health, livelihoods, ecosystems and production, coupled with an acceptable level of water-related risks to people, environments and economies.

Len Abrams hydrologist

‘Water security is a situation of reliable and secure access to water over time. It does not equate to constant quantity of supply as much as predictability, which enables measures to be taken in times of scarcity to avoid stress.’

Vision of Water Security

Societies can enjoy water security when they successfully manage their water resources and Services to:

1. Satisfy household water and sanitation needs in all communities;
2. Support productive economies in agriculture, industry, and energy;

3. Develop vibrant, livable cities and towns;
4. Restore healthy rivers and ecosystems; and
5. Build resilient communities that can adapt to change.

Types of Water Security

1. Household Water Security
2. Economic Water Security
3. Urban Water Security
4. Environmental Water Security
5. Resilience to Water-Related Disasters

Household Water Security

These concepts focus only on a single component of water security, and that is water availability. Household water security as a unique concept has been defined variously by different researchers based on research interests or perceptions. A simple definition is the ratio of water supply to water demand, where security is achieved when the ratio is greater than unity, implying water surplus. Household water security is a relatively new concept in water demand management literature for both developed and developing countries.

Household Water Security is one of the Five Type of Water Security – the other four being Urban Water Security, Economic Water Security, Environmental Water Security and Resilience to Water-Related Disasters.

Vision of Household Water Security

All Societies can enjoy household water security when they successfully manage their water resources and services to satisfy household water and sanitation needs in all communities.

Alternative Expression for Household Water Security

Household water insecurity can be simply expressed as the difference between water scarcity at household and water available for household use. This can be expressed as;

$$\text{Water Insecurity} = \text{Water Shortage in a Household} >$$

Available Water Supply at Household

Household water shortage means, the water needed over and above what is available at home in order to provide adequate water for all members of a household at all times to live a normal life. Household water shortage is a outcome of water regular use requirement at household level, water supply at household, distance to fetch water and availability of water carriers. Each of these factors can affect the household water security either positively or negatively. However, impact of these factors on household water security depends on household size, number of growing children, type of work done by householders, health of water carriers, and old people at household etc.

Status of Domestic Water Supply

Water is the most vital resource for the existence of life on the earth. It is indispensable for the existence of plants and animal eco-system and forms an essential element in the development of economic activities. No other natural resource has such as overwhelming influence on human history. World Ocean covers about three fourths of the earth’s surface. However, fresh water constitutes an affluent causes deoxygenating and health hazards. Water is an essential requirement for human life. Safe drinking water is

most important aspect for human life. But water is limited natural resource. It is also a precious national asset. In recent decades human demand and misuse of water resource become major issue of humanity. It's per capita availability become less and less for the simple reason that the population is increasing at very fast rate where as the total availability of water continue to remain constant in India. Therefore, water security for human life has become a matter of principal concern for sustainable development in 21st century. Today there is no any place where safe adequate drinking water is available for human being. The pollutants usually associated with industrial effluents are organic matter thermal constituents in the form of the heat suspended solid and micro organism and pathogens organic pollutants decrease below limit of the dissolved important bad door and colour to affluent. Today almost a one third of total population in India does not have access to safe drinking water. Nearly 250 million Indian depend on untreated and unsafe source of drinking water. Unsafe source of drinking water supply is worried dimension because it is hygienic for human being. Nearly 10 million people every year suffer from cholera diarrheal, gastroenteritis, malaria, guinea worm etc. The causes of such kind of diseases are directly attributed to lack of physical infrastructure, especially unsafe condition of drinking water procurement. Water is most precious and indispensable resource and fundamental to survival of human being, livestock and the plants. Water which is essential for life, growth and health, can also be a source of spread diseases and causes of ill health, if contaminated water properly handled and stored. The UNDP's Human Development Report -2000, defined access to safe drinking water as the proportion of population using any of the following types of water supply for drinking i.e., piped water, public tap, borehole or pump, well etc. are very small proportion of this enormous quantity. About 2.7 per cent of the total water available on the earth, about 75.2 per cent of fresh water lies frozen in Polar Regions and another 22.6 per cent is present in the groundwater. The rest is available in lakes, river, atmospheric moisture, soil and vegetation. Water, effectively available for consumption and other uses, is small in proportion of the quantity available in rivers, lakes and ground water. According to the World Health Organization, less than 1 per cent of the world's freshwater or 0.007 per cent of all the water on the earth is readily available for human world consumption. As the human population increases the demand of freshwater resources is also more. The supply of water from the tanks is always regarded in the pre history with the onset of development and modern urbanization. However, water supply for domestic and commercial use has become an important municipal service. Water supply is a basic amenity in municipal area. Some water supply is done from canal and other storage like pond, tube well, water tank after filtration and purification are not injurious to health and but through after source of drinking water supply in which raw materials mixed used without proper purification is injurious to

health. The urban population faces demand supply gap of water. The wholly inadequate and unreliable supplies of drinking water particularly in settlements of the urban poor, and deteriorating financial and technical performance of system. In high income group areas of cities in Asia, Latin America and Sub Saharan Africa people enjoy access to several hundred liters of water a day delivered into their homes at low prices by public utilities. Meanwhile slum dwellers and the poor householders in rural areas of the same countries have access to much less than 20 litres of water a day per person required to meet the most basic human needs. Clean water is most powerful driver for human development. They extend opportunity, enhance dignity and help create a various cycle of improving health and rising wealth. People living in rich countries today are only dimly aware of how clean water fostered social progress in their own countries. Urbanization and rapid growth in urban population can dramatically increase per capita use of freshwater. The fast population growth with accelerated urbanization, combined with scarce water supplies means that the governments all over world often cannot supply enough. The number of urban residents are without access to improve water resource increase from 113 millions in 1990 (5% of total urban population) to 173 millions in 2000 (6% of total urban population). According to a study by WHO and UNICEF (UN Report) 7, Provision of clean drinking water, sanitation and a clean environment are vital to improve the health of our people and to reduce incidence of diseases and deaths. Women and girls spend hours fetching water and that drudgery should be unnecessary. Drudgery is undesirable in itself and it also takes away other opportunities for self development. Drinking water is less than 1% of the total water demand and should have the first priority among all uses of water supply in urban areas is also far from satisfactory. According to Eleventh Five Year Plan (2007-2012) as on 31 March, 2004, about 91% of the urban population has got access to water supply facilities. However, this access does not ensure adequacy and equitable distribution and the per capita availability is also not as per norms in many areas. Average access to drinking water is highest in class I town (73%), followed by class II town (63%), class III town (61%) and other town (58%) 8. Poor people in slums and squatter settlements are generally deprived of these basics amenities.

Status of Drinking Water Supply in India

According to census of India 2001, the main sources of drinking water supply in India are hand pump, tube wells, tap, and wells etc. The detail information of drinking water supply in India is given below in table 3. 2. It shows that most dominant source of water supply in the country is tube wells because most of the population or (41.21 per cent) are depend on it. But in recent days the level of underground water has been gone down and down so some tube wells have low quantity of water and some are dry for the future prospect it is a matter of serious concern.

Table 1: sources of household Drinking water supply in water: 2011

Sources of Household Drinking Water Supply	No of Household (in millions)	Percent (%)
Total Households	248.8	100
Within premises	75.2	39.5
Near premises	85.5	44.9
Away from premises	32.9	17.2
Hand pump/Tube well	79.3	41.5
Tap	70.5	37.2
Well	35.1	19.1
Other	8.1	4.1

Table.1 represents the sources of drinking water supply in India. The total number of households is 248.8 millions in which 75.2 million (39.5%) households are getting water from the premises (2011). It has also been noted that 32.9 million (17.2%) households have to fetch drinking water from the available sources which are at least 500 meters away for the villages and 100 metres away in the case of town. While 85.5 million (44.9%) households get water near the premises. Table 3.2 also indicate that the main sources of drinking water supply in the India in 2011. It shows hand pump/tube wells which are the most popular source of drinking water is reported to be used by 79.3 million (41.5%) households. Another source of drinking water is tap water supply which served 70.5 million (37.2%) households.

Policies for household water security

The Constitution of India has several provisions with regard to different uses of water. However, the prime responsibility for water provisioning, according to the Indian Constitution, rests with the states in the Indian union. The Constitution of India states, "Water, that is to say, water supplies" falls within the legislative jurisdiction of the state governments vide item 17 of the List II-State List⁷ under Seventh Schedule referred to in the Article 246(3)⁸ of the Constitution. State governments are vested with the constitutional right to plan, implement, operate and maintain water supply projects. While this is the main constitutional provision that determines the jurisdiction of the Centre (Government of India) and the state (provincial government in the Indian union) with regard to water, there are several other major provisions that determine individual's access to water in India.

Drinking water and national water policy

The first National Water Policy (NWP) was formulated in 1987. It declared water as a prime natural resource and a basic human need. It gave the highest priority to drinking water provisioning. However, soon the policy was realised to be a mere proposition and it appeared there was no serious action taken on it. To quote Iyer, "the operationalisation of the NWP 1987 did not make much headway; it continued to remain largely a set of general propositions."²⁸ Though in paper it accorded priority to drinking water, in practice it devoted "disproportionate amount of space to large irrigation projects."²⁹ Subsequently, in 1991 the government adopted a number of reform measures and the 74th Constitution Amendment act was passed in 1994. All these developments changed the context and hence there was need for a new water policy. The revised policy was adopted in 2002. The striking difference between the NWP 1987 and NWP 2002 is with regard to the participation of the stakeholders as well as the private sector. While there was no mention of private sector

participation in the NWP 1987, in 2002 it was encouraged on grounds of generating finance, introducing corporate management and improving service efficiency and accountability.³⁰ Taking cue from the NWP, different states formulated their state water policies.

Drinking water and state water policies

The same trend of giving priority to drinking can be seen in the policies of different states such as Rajasthan, Madhya Pradesh, Himachal Pradesh, Karnataka, Maharashtra, and Uttar Pradesh. Some of the main features of the policies of states on water include;

1. Declaration of water as a natural resource.
2. According priority to drinking needs on any available water.
3. To make the water supplies self-sustaining or at least to meet the O & M costs.
4. To involvement the community in planning and managing drinking water supply in urban areas to make the community responsible for O & M of water supply.
5. Encourage private sector in financing and implementation of projects for introduction of new technology and benefits by management expertise.

Conclusion

Many researchers have been done in the field of drinking water supply. But it has been noticed that after the reviewed of various literature most of them have been completed on the status of drinking water supply in major cities but very few attention paid in small town. While the problem of drinking water supply in whole country is remain the same. Today drinking water supply is also play very big role in the development of nation. But the supply of drinking water is not safe. Due to unsafe water cause many type of water borne diseases in the country. All researches have been done on major cities but such kinds of problem are also creating in small town or villages.

Reference

1. Bitterman P, Tate E, Van Meter KJ, Basu NB. Water Security and Rainwater Harvesting: A Conceptual Framework and Candidate Indicators, Applied Geography, No. 2016; 76:75-84.
2. Burgess JP, Owen T, Sinha UK. Human Securitization of Water? A Case Study of the Indus Water Basin, 2013; 29(2):382-407.
3. Basu M, Hoshino S, Hashimoto S. A Pragmatic Analysis of Water Supply and Demand, and Adaptive Capacity in Rural Areas: Development of Rural Water Insecurity Index. Natural Hazards, 2016; 81:447-466.
4. Chen L, Shi J. Analysis and Predication of Urban Water Security: A Case Study of Chendu City, China, Earth and Environment Science, 2016; 39:1-10.

5. Chen Y, Li Zhi, Li Weihong, Deng H, Shen Y. "Water and Ecological Security: Dealing with Hydroclimatic Challenges at the Heart of China's Silk Road Earth and Environment Science, 2016; 75:881:1-10.
6. Elgert L, Austin P, Picchione K. Improving Water Security Through Rainwater harvesting: A Case from Guatemala and the Potential for Expanding Coverage, Water Resources Development, 2015; 32(5):765-780.
7. Falkenmark M. Adapting to Climate Change: Towards Societal Water Security in dry-climate Countries, Water Resource Development, 2012; 29(2):123-136.
8. Narcisse KA. Water Security and the Poor: Evidence from Rural Areas in Cote D'Ivoire, Natural Resource Management and Economic Development. 2010; 43:1-23.
9. Holding S, Allen DM. Risk to Water Security for Small Islands: An Assessment Framework and application, 2016; 16:827-839.
10. Salinas CX, Gironas J, Pinto M. Water Security as a Challenge for the sustainability of La Serena-Coquimbo Conurbation in Northern Chile: Global Perspectives and Adaptation, Mitigation and Adaptation Strategies for Global Change, 2015; 21:1235-1246.
11. Li XS, Peng ZY, Li TT. An Evaluation Index System of Water Security in China Based on Macroeconomic Data from 2000 to 2012, Earth and Environment Science, 2016; 39:1-16.
12. Molden O, Griffin N, Meehan K. The Cultural Dimensions of Household Water Security: The Case of Kathmandu's Stone Spout Systems, Water International, 2016; 41(7):982-997.
13. Maganda C. Water Security Debates in 'Safe' Water Security Frameworks: Moving Beyond the Limits of Scarcity, Globalizations, 2016; 13(6):683-701.
14. Yaning C, Baofu L, Zhi L, Weihong L. Water Resource Formation and Conversion and Water Security in Arid Region of Northwest China, Geographical Science, 2016; 26(7):939-952.
15. Santos BBM. Water Security in The Metropolitan Region of Rio De Janeiro: Contributions to The Debate, Ambiente & Sociedade, 2016; 21(41):103-120.
16. Jepson W, Vandewalle E. Household Water Insecurity in the Global North: A Study of Rural and Periurban Settlements on the Texas-Mexico Border, The Professional Geographer, 2015; 68(01):66-81.
17. Maleksaeidi H, Karami E, Zamani GH, Rezaei-Moghaddam K, Hayati D, Masoudi M. Discovering and Characterizing farm Households' Resilience Under Water Scarcity, Environmental Developmental Sustainable, 2015; 18:499-525.
18. Huai C, Chai L. A Bibliometric Analysis on the Performance and Underlying Dynamic Patterns of Water Security Research, Scientometrics, 2016; 108:1531-1551.
19. Dickson SE, Schuster-Wallace CJ, Newton JJ. "Water Security Assessment Indicators: The Rural Context, Water Resource Management, 2016; 30:1567-1604.
20. Sershen Rodda N, Stenstrom TA, Schmidt S, Dent M, Bux F, Hanke N *et al.* Water Security in South Africa: Perceptions on Public Expectations and Municipal Obligations, Governance and Water re-use, Water South Africa, 2016; 42(03).
21. Porkka M, Gerten D, Schaphoff S, Siebert S, Kummu M. Causes and Trend of Water Scarcity in Food Production, Environmental Research Letters, 2016; 11(015001):1-12.
22. Yojana, July, 2016, 49.
23. Yojana July, 2016, 23.
24. Global Water Security, April, 2010, 05.
25. Global Water Security, April, 2010, 06.
26. Global Water Security, April, 2010, 10.
27. Water Aid, 2012, 15.
28. Asian water development outlook, 2013.
29. Asian water development outlook, 2016, 14.
30. Holding S, Allen DM. Risk to Water Security for Small Islands: An Assessment Framework and application 2016; 16:827-839
31. Elgert L, Austin P, Picchione K. Improving Water Security Through Rainwater harvesting: A Case from Guatemala and the Potential for Expanding Coverage", Water Resources Development. 2015; 32(5):765-780.
32. Basu M, Hoshino S, Hashimoto S. A Pragmatic Analysis of Water Supply and Demand, and Adaptive Capacity in Rural Areas: Development of Rural Water Insecurity Index", Natural Hazards. 2016; 81:447-466.