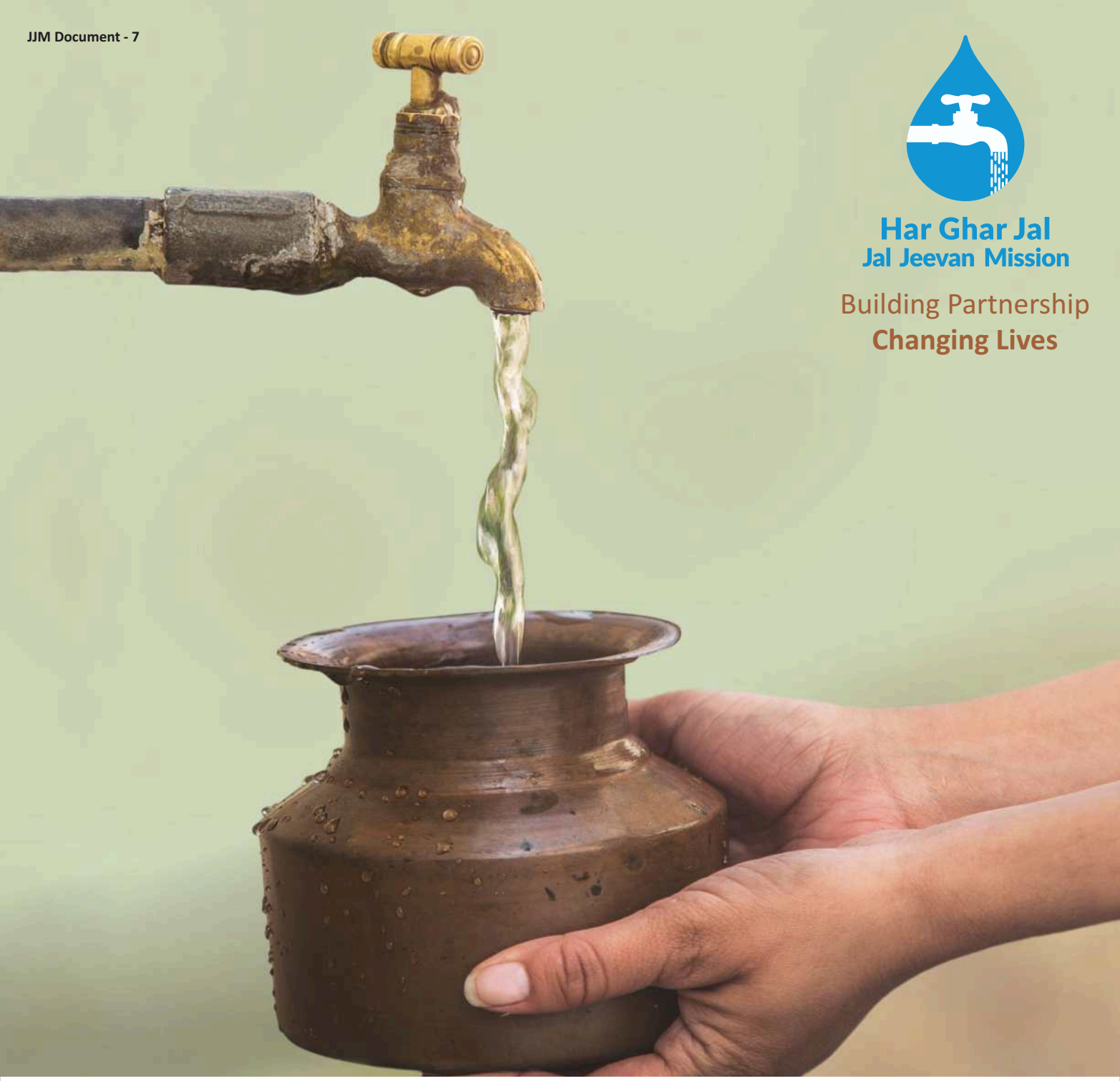
JJM Document - 7



Har Ghar Jal
Jal Jeevan Mission

Building Partnership
Changing Lives

Margdarshika for Gram Panchayat & VWSC to provide safe drinking water in rural households

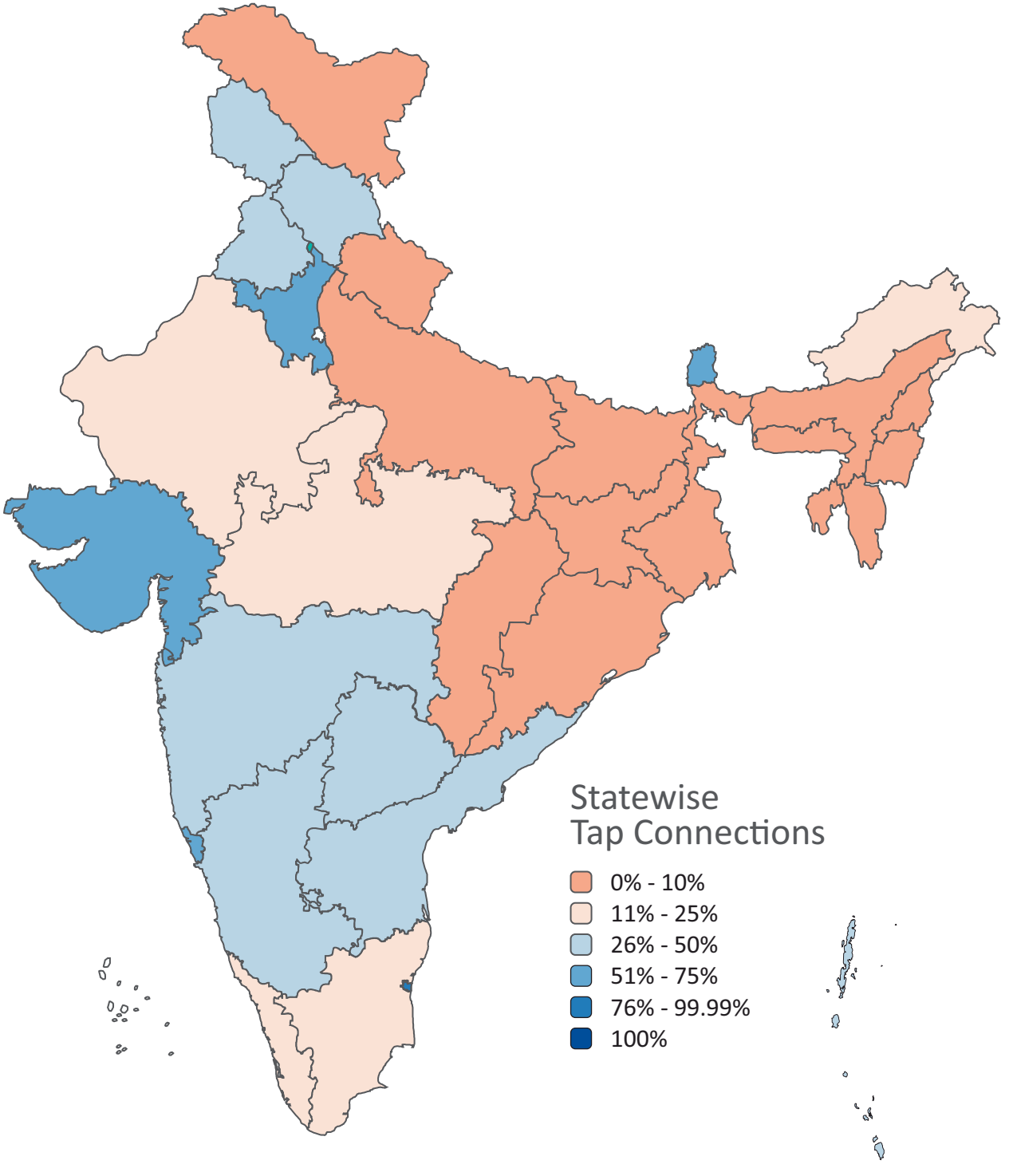
Jal Jeevan Mission
(Har Ghar Jal)

सत्यमेव जयते

Government of India
Ministry of Jal Shakti
Department of Drinking Water and Sanitation
National Jal Jeevan Mission
2020

Jal Jeevan Mission

Status of household tap connections as on 15.8.2019



Source: JJM - IMIS

Har Ghar Jal
Jal Jeevan Mission

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Jal Jeevan Mission
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Government of India
Ministry of Jal Shakti
Department of Drinking Water and Sanitation
National Jal Jeevan Mission
2020

15 August, 2019

"...I declare from the Red Fort today that in the days to come, we will take forward the **Jal Jeevan Mission**. The central and the state governments will jointly work on this Jal Jeevan Mission. We have promised to spend more than **Rs. 3.50 Lakh Crore** on this mission in the coming years..."

(Address to the Nation on 73rd Independence Day,
15th August, 2019 at Red Fort, New Delhi)

"..... The implementation of this Mission is in the hands of community, all members of the village are to come together to implement this Mission...decisions on route of water pipeline, water harvesting, operation and maintenance will be made by people themselves and our sisters have a very important role to play..."

(Extract from Prime Minister's address at
Bundelkhand on 29 Feb, 2020)

Shri Narendra Modi
Prime Minister of India

15 August, 2020 (After one year...)

Brothers and sisters,

Last time, I had announced Jal Jeevan Mission. It is completing one year. I am very proud to tell you that our dream of making available safe drinking water to all the people is getting realized. The solution to several health problems is directly linked to the safe drinking water. It also contributes to the nation's economy. That's why we have started Jal Jeevan Mission.

Today, I am happy to share that every day we are able to provide piped-water connection to over one lakh households. And in the last one year, we have been able to provide tap water to 2 Crore families, especially to the tribals living in the forests and far-flung areas. A huge campaign has been launched. And I am glad that today 'Jal Jeevan Mission' has created an environment of healthy competition in the country. There is a healthy competition among the districts, among the cities and also among the States. Everyone is hoping that the Prime Minister's dream of 'Jal Jeevan Mission' is accomplished at the earliest in their respective areas. The new strength of cooperative and competitive federalism has been associated with 'Jal Jeevan Mission' and we are moving forward with this.

(15 August, 2020)

Shri Narendra Modi
Prime Minister of India

सत्यमेव जयते

प्रधान मंत्री

Prime Minister

New Delhi

Aswin 07, Shak Samvat 1942

29 September, 2020

Dear Sarpanch/ Gram Pradhan ji,

Namaskar,

I am writing this letter to you at a crucial time when our country is in the midst of fighting the Corona pandemic with full strength and simultaneously also taking historic steps to become self-reliant and truly become 'Atmanirbhar Bharat'. The making of 'Atmanirbhar Bharat' is inspired by your dreams and aspirations and all of you have an important role to play in it.

The success we are experiencing under Atmanirbhar Bharat Abhiyan is backed by 6 years of resolve and your wholehearted contribution. The result of our collective efforts to improve the basic needs of the people, especially the poor is palpable today.

In the last six years, our Government has been making sincere efforts to deliver basic services like road connectivity, housing, electricity, cooking gas, toilet, bank account, healthcare, insurance, social security, etc. Similarly, access to safe drinking water in household is a basic need. For this, last year on Independence Day, Jal Jeevan Mission - Har Ghar Jal was announced. The country has taken a resolve to provide tap water connection to 16 Crore rural households the way it decided to provide toilet in every household.

Dear citizens,

Jal Jeevan Mission is marching ahead and moving in the right direction. More than 2 Crore families have been provided with tap water connections in last one year. Despite the Corona pandemic, everyday more than 1 Lakh tap water connections are being provided. This is becoming possible because of your efforts to make this a people's movement, just like done in Swachh Bharat Abhiyan.

Possibly, since our Independence, Jal Jeevan Mission is truly one of its kind programme, where village communities have the control over their resources to realize their aspirations. Every household is being provided with a tap water connection through your participation and contribution only. Village Water & Sanitation Committees (VWSCs)/ Paani Samitis are being constituted in every village to plan and implement all aspects of water supply such as selection of water source, water conservation measures, laying of

pipelines, etc. and also to supervise works in your village. Also, the village community is being empowered to take necessary decisions to ensure uninterrupted water supply.

The biggest burden due to lack of water is borne by our sisters and it is also true that they can be the most effective managers of water. Therefore, their role and participation is being encouraged under this Mission.

Dear friend,

The role of Central and State Governments is merely as a patron and facilitator whereas true implementation rests with you. The goal of Jal Jeevan Mission - Har Ghar Jal can be realized only under the leadership of all sarpanchs/ village community leaders. The contribution made by all of you in making this programme a huge success is creating history. Through this mission, you will not just be solving the issue of water supply, but will also address associated health risks such as cholera, diarrhoea, encephalitis, etc. Also, when our cattle are provided with safe and clean water, it not only improves their health but subsequently plays a role in benefitting the rural economy as well.

As you are aware, this Mission is a means to generate employment in rural areas. Jal Jeevan MIssion is also given priority under the 'Garib Kalyan Rojgar Yojna' meant for the migrant workers who have returned home due to the Corona pandemic.

It is my appeal to all of you to continue your efforts towards the pledge of providing tap water connection to every household in our villages, especially poor communities under this life changing Mission.

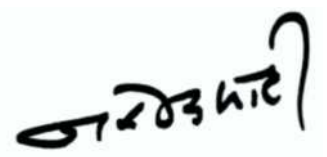
I look forward to the comments and suggestions pertaining to your locality.

I hope you continue to ensure to keep yourself, your family and every member of your Panchayat free from this viral infection. Let's not forget maintaining the physical distance of six feet and compulsory use of masks.

Stay healthy, stay safe!

Best wishes,

Jai Hind!



(Narendra Modi)

[Translated from original]

Har Ghar Jal
Jal Jeevan Mission

सत्यमेव जयते

Gajendra Singh Shekhawat

Minister for Jal Shakti
Government of India

Message

In order to fulfil the aspirations of 'New India', many initiatives have been taken up to improve the lives of people. Hon'ble Prime Minister has redefined 'Governance' so that all beneficiaries get the benefits without any discrimination. After ensuring roads, electricity, cooking gas, toilets, universal health care, social security, financial inclusion, etc., Prime Minister in his address to the nation on 73rd Independence Day i.e. 15 August, 2019 announced Jal Jeevan Mission with the aim to provide household tap connection in rural areas by 2024.

Following the principles of 73rd Amendment to the Constitution, Gram Panchayats will shoulder the responsibility in planning, implementation, management, operation and maintenance of in-village water supply infrastructure. I appeal to the brothers and sisters of the villages to select cost-effective and low operation & maintenance kind of water supply systems in their villages. Our endeavour is to ensure every household gets potable water of adequate quantity and of prescribed quality on regular and long-term basis.

This margdarshika has been prepared for you all and will be very helpful in implementation of water supply schemes in villages.

Let's work together to reduce the drudgery of our mothers, sisters and daughters, who work hard to fetch water for their family from long distance and improve the lives of people living in rural areas and fulfil the aspirations of Modiji's 'New India'.

(Gajendra Singh Shekhawat)

"Since ages, water is being worshipped in India. We have age old tradition of water management and conservation. Local ways of water management in rural areas are still quite popular.

Development of drinking water sources, their recharge, ensuring water availability are thrust areas of Jal Jeevan Mission. Local community especially women, GramPanchayat or Village Water & Sanitation committee/ Paani Samiti have been given this responsibility.

Water source management, water supply, grey water treatment and re-use will be the responsibility of the villagers. Women participation will be the key to success of Jal Jeevan Mission to ensure provide tap water to households on regular and long-term basis.

Margdarshika elaborates on these activities, which will help the Gram Panchayats and will also help in creating people's movement- 'Jan Andolan' for success of the mission."

Ratan Lal Kataria
Minister of State for
Jal Shakti and Social Justice & Empowerment
Government of India

"Every household gets potable water in sufficient quantity, so water source must be reliable and free from any contamination. Harvesting of rainwater in better ways, renovation of water bodies and other water sources in villages is very important. New life is to be given to the water sources after removing unauthorized occupation and ensure that they are not contaminated further. We may not create, but we can save the water. So, it is imperative to use water consciously as per requirement.

"रहिमन पानी राखिये बिन पानी सब सून। पानी गये न उबरें, मोती मानुष चून।।"

(Preserve water; Without water all is lifeless. Humans, pearls and whiteness of lime can survive only with water.)"

U.P Singh
Secretary, DDWS
Ministry of Jal Shakti
Government of India

आपो हिष्ठा मयोभुवस्ता न ऊर्जे दधातन।
महे रणाय चक्षसे।।1।।
यो वः शिवतमो रसस्तस्य भाजयतेह नः।
उशतीरिव मातरः।।2।।
(ऋग्वेद संहिता-10.9.1-2)

जल आनंद का स्त्रोत है, ऊर्जा का भंडार है।
कल्याणकारी है।।
पवित्र करने वाला है।
और माँ की तरह पोषक तथा जीवनदाता है।।

Water is the source of happiness, energy,
health and piety, and is life giving as mother!

Jal Jeevan Mission - Har Ghar Jal aims to provide potable water in every home, school, anganwadi centre, health & wellness center, community sanitation complex, cattle trough, etc. Gram Panchayats have been given the responsibility to plan, implement manage, operate and maintain the in-village water supply infrastructure.

This Margdarshika has been prepared keeping in mind the role and responsibility of Gram Panchayats in the mission. Further, it will also be useful for Public Health Engineers and the implementation support agencies.

Judicious use of funds available with Gram Panchayats, MGNREGS, 15th Finance Commission Grants, SBM (G), MPLAD, MLALAD, DMDF, CSR funds, etc. is very important. Training programme for skill improvement of the raj mistry, rani mistry, plumber, electrician, pump operator, etc. needs to be organized in the villages. This will help unemployed youth in getting employed locally, which will helpful in the implementation, operation, and maintenance of the village water supply scheme.

This mission has provision for 50% reservation of women members in sub-committees of the Gram Panchayat. Women are also encouraged and trained for testing of water quality using field test kits. The participation of women will ensure better management of water supply and lead a better life.

This margdarshika will create awareness among the villagers on these important issues. I hope that we will accomplish this mission of providing 'Har Ghar Jal' fast and bring significant changes in the lives of villagers.

Bharat Lal
Additional Secretary & Mission Director
National Jal Jeevan Mission
Government of India

Contents

Har Ghar Jal
Jal Jeevan Mission

Abbreviations

CPHEEO	Central Public Health and Environmental Engineering Organization
CBO	Community based Organization
CSO	Civil Society Organization
CWPP	Community Water Treatment Plant
DDP	Desert Development Program
DDWS	Department of Drinking Water & Sanitation
DMDF	District Mineral Development Fund
DPAP	Drought - Prone Area Program
DPR	Detailed Project Report
DWSM	District Water & Sanitation Mission
ESR	Elevated Storage Reservoir
FHTC	Functional Household Tap Connection
FTK	Field Test Kit
GoI	Government of India
GP	Gram Panchayat
IEC	Information, Education and Communication
ISA	Implementation Support Agency
JJM	Jal Jeevan Mission
LPCD	Litres Per Capita Per Day
MGNREGA	Mahatma Gandhi National Rural Employment Guarantee Act
MPLADS	Member of Parliament Local Area Development Scheme
MLALADS	Member of Legislative Assembly Local Area Development Scheme
MVS	Multi village Scheme
NGO	Non - Governmental Organization
NJJM	National Jal Jeevan Mission
NRDWP	National Rural Drinking Water Programme
O&M	Operation and Maintenance
PFMS	Public Finance Management System
PHED	Public Health Engineering Department
PPP	Public Private Partnership
PRA	Participatory Rural Appraisal
PRI	Panchayati Raj Institution
RWH	Rain Water Harvesting
RWS	Rural Water Supply
SBM (G)	Swachh Bharat Mission (Grameen)
SHG	Self Help Group
SVS	Single Village Scheme
SWSM	State Water & Sanitation Mission
VAP	Village Action Plan
VO	Village Organization
VWSC	Village Water & Sanitation Committee
WASMO	Water & Sanitation Management Organization
WQM&S	Water Quality Monitoring & Surveillance

Chapter-1

Water management

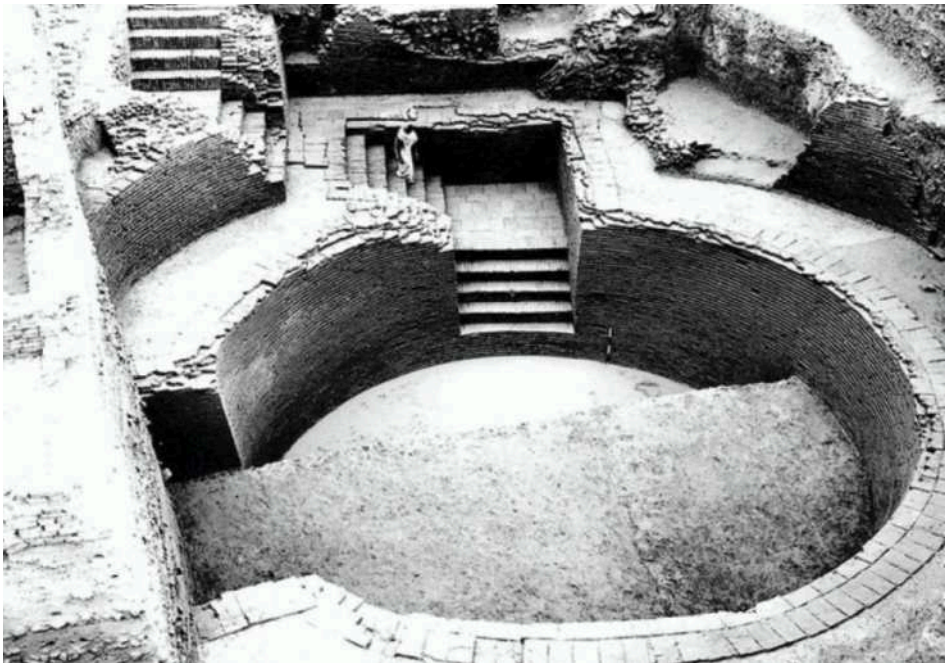
Har Ghar Jal
Jal Jeevan Mission

1. History of water management

Pure water is the most important element required for life, after clean air. It is a necessity for all life to survive. In ancient times, humans prospered wherever there was adequate water supply. This remains true even today. In ancient India, people felt bliss and joy in sharing water with travellers. There is a very important history of water management in India. Mohenjo-Daro, Dholavira and Harappa were highly developed cities. These cities were well organized and their water storage system, drainage systemand water - wells were well ahead of their time. There was a water storage reservoir in every village of the Sindhu - Saraswati Basin, where these civilizations thrived. All the houses in these cities were connected to the city's central drainage networks. Some of these structures exist even today.

The construction of wells was considered to be sacred work. During the time of Buddha, an inscription was written on a well in Varanasi requiring 'any person who has drawn water from this well, should also put an equivalent amount of water in a pot or small pond nearby, from which the disabled and animals can quench their thirst' (Motichandra, 1962).

Communities that flourished around the Indus river and other areas of western and northern India had very advanced municipal water supply and drainage. Even today people keep water bodies clean. They worship rivers, lakes, ponds, etc. as holy places. In fact, water is very important for life. People have practiced water management since ancient times with drains and



Well built in ancient India

Step well, Gujarat

gutters being made to drain dirty water. This can be found in many cities of western India even today.

Many studies have revealed that the use of clean water can significantly reduce disease and mortality, especially in cases of cholera and typhoid. An example of this is the cholera epidemic of 1892 Hamburg, Germany. The city suffered during this epidemic, with 17,000 people falling ill, and a total of 8,500 people (13% of the population) dying. The water from river Elbe was used for drinking in the city and the only method employed to clean the water was to allow the silt to settle in the three reservoirs. Further downstream, the city of Altona used the same river water (which by now also had the sewage from Hamburg), but treated the water through a slow speed sand filter. This led to far fewer cases of cholera in the city of Altona. It would be appropriate to mention here that drinking contaminated water carries the risk of many diseases, some of which can turn deadly. Therefore, checking the quality of water and using water after treatment is an effective way to avoid water borne diseases.

The practice of water harvesting and management in stepwells is centuries old. There were ancient means of saving water and transporting it from one place to another, which still exist even today. Some of these systems are - Rani Ki Vaw (Stepwell) in Gujarat; Khadin, Kund and Nadi in Rajasthan; Bandhara and Tal in Maharashtra; Bandhi in Madhya Pradesh and Uttar Pradesh; Aahar and Pein in Bihar; Kuhal in Himachal Pradesh; Eris in Tamil Nadu; Surangam in Kerala; Pokhar in Kandi area of Jammu region; and Katta in Karnataka. The doctrine of water harvesting involved storing adequate water based on local requirements and geological conditions. Ground water reservoirs were also filled based on this concept. Traditional water harvesting methods have long been used to meet the requirements of households and irrigation. Without singing paeans to the ancient traditional system for the supply of water, we must recognize that they are still relevant.

1.1 Initiatives taken so far for drinking water

In the first Five - Year Plan (1951 - 56) after Independence, the Environment Sanitation Committee was formed to supply safe water to the villages. Till the Third Five Year Plan (1961 - 66), drinking water supply was a part of community development programmes in rural areas. In the year 1972 - 73, to complement the efforts of the State Governments, the 'Accelerated Rural Water Supply Programme' was initiated. During the Fifth Five Year Plan (1974 - 79), this programme received further impetus. Against the background of the drought in western India, the 'State Drinking Water Mission' was established in 1986. In the Eighth Five Year Plan (1992 - 97), focus came on the quality of water, lack of water sources, etc.

In the process of decentralization after the 73rd Amendment to the Constitution of India, more emphasis was laid on drinking water. The 'Eleventh Schedule' associated with the 73rd Amendment included drinking water and sanitation, and the

Every year, 22 March is celebrated as World Water Day.

India has more than 18% of the global population, but only 4% of renewable water resources and 2.4% of land mass.

Women have to work hard for drinking water.

Panchayat was given a significant role in drinking water. During 1999 - 2000, in line with the 73rd Amendment, decentralized, demand-based, community-managed, sector reform programme was started in which the Panchayat/ local communities were included in the planning, implementation and management of drinking water schemes. Community-led management has been adopted by WASMO, Gujarat and the Swajal pilot in Uttarakhand and Uttar Pradesh, etc. A number of externally assisted programmes have also focused on this decentralized approach.

Tap water

In 2002, decentralized, demand - based, community - managed sector reform programme was implemented in the entire country as a part of the Swajaldhara which gave communities the right to participate in the planning, implementation, operation and maintenance of the drinking water supply scheme. This would enable them set up and operate a permanent scheme based on the requirement of the village such that every individual receives 40 litres of clean water per day (lpcd).

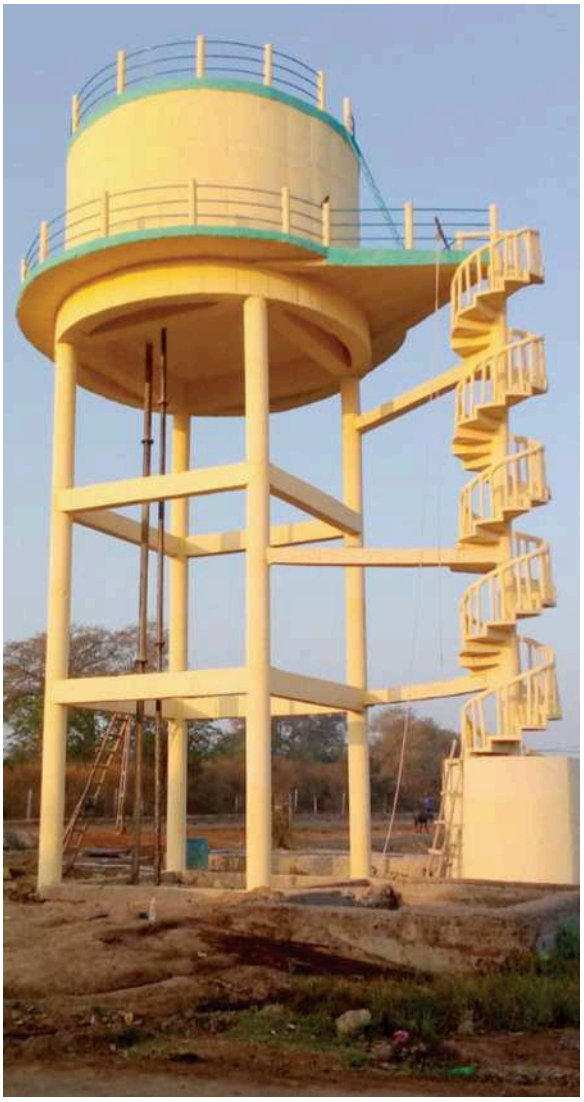
In the year 2009 - 10, this scheme was amended and renamed as the National Rural Drinking Water Programme (NRDWP). In 2013, the National Rural Drinking Water Programme further proposed to increase the availability of clean water to a minimum of 55 lpcd. In 2017, the programme was reformulated to make it more effective, giving the States more rights and creating a provision for making potable tap water available to all villagers.

It was observed that from 1951 to 2017, safe drinking water was supplied to the rural population through hand pumps, protected wells or piped water through public stand post. The Mark II hand pump played a very important role in this endeavour. It was used in India from the 1970s to the 1990s and the Government of India promoted their use to supply of water at the village level, as underground water is usually clean except for a few areas. However, some areas have Arsenic, iron, nitrate, metal, heavy metal and salinity that contaminate the water. In the year 2017, emphasis was on the provision of water from public

stand posts through pipes under the National Rural Drinking Water Programme.

1.2 73rd Amendment to the Constitution

In the year 1992, with the 73rd Amendment of the Constitution, a new part named Panchayat was added to the Constitution. This included the new 'Eleventh Schedule" which contains 29 subjects on the functioning of Panchayats. Under this Schedule, the subject of drinking water and sanitation was allocated to Panchayati Raj Institutions. Along with this, the Panchayat was given the right to collect tax at the appropriate level and use it for certain works. It could also receive grants and assistance for the completion of the said works. As part of their obligations, the Panchayat/ local community had to play a role in recharging of water sources, and in the planning, implementation, management, operation and maintenance of the village water supply schemes.



Overhead water tank

1.3 Change is possible

In 2002, the Water and Sanitation Management Organisation (WASMO) was established in Gujarat, to provide water at the village level and to involve the local community as partners in the process. WASMO worked alongside the Panchayat, the village community and the Public Health Engineering Department to provide safe drinking water. The role of WASMO was, in reality, that of a facilitator. Through WASMO, the work of providing drinking water to all of Gujarat was done and the results have been very encouraging. In a State where earlier water was supplied through trains and tankers, now almost every household has piped water. The biggest achievement is that the people of the villages could make committees themselves and with the help of voluntary organizations (VOs), execute better water management, provide drinking water, and manage disposal of waste water. This programme has been lauded nationally, being the recipient of the Prime Minister's Civil Service Award, and internationally through the United Nations Public Service Award and Commonwealth Association for Public Administration and Management Award. An example of the work done can be seen in village Kanakpur, Taluka Abdasa, of Kutch district. This village is just one of the 18,500 villages in Gujarat where it does not rain for years at a time. Constant drought and lack of water was the reality. Many people had never seen clean water. Summer inevitably meant the supply of water through tankers. The Kanakpur Gram Panchayat and community together created a Water Committee. The members of the Committee were women. They informed WASMO on how to provide water to the village. Taps were installed in all 137 households in the village. The villagers used their own resources to dig a pond to store rainwater. The residents of Kanakpar did not just stop here. They decided to install a water meter in everyl household and provide 24 hour water supply. Now everyone is billed for the water consumed based on the water meter reading on a monthly basis and payments are made on the basis of the tariff fixed by the Gram Sabha. Clearly, the journey to provide every household with clean and continuous tap water was difficult, but not impossible.

Check dam constructed for rain water harvesting - Gujarat

Confidence in themselves, the help of WASMO, the vision of the sarpanch and the participation of women led to the success of the initiative. The people of the village were consulted, and keeping in mind the local situation, the villagers identified a suitable place for the boring. Subsequently, the officials got together with the people of the village and went to the site, checked the local hydrology and marked the site of the boreholes. While boring, they found a large quantity of water and the drinking water scheme was prepared. As a result, water is always available in the village.

There is a new twist in the story of Kanakpar. Due to excess use of water in agriculture, the water became brackish after some years and the supply started to decrease. The villagers, through the Water Committee, then constructed a check dam to increase the source of drinking water using water harvesting. Another check dam was constructed, three ponds were dug and 30 wells and borewells were augmented with water recharging structures. The villagers also built small individual ponds. All these efforts increased the water storage capacity by 1.70 lakh cubic meters in addition to increasing the water recharging capacity. Two hundred and forty acres of pasture land was scientifically developed to grow fodder. Livestock of the village are allowed to graze on the fodder from 8 AM to 5 PM in designated areas where facilities have also been created to take care of the animals. The villagers displayed community strength and further embraced agriculture and horticulture by using drip irrigation.

Today, the villagers of Kanakpur have been able to resolve their water problem and Kanakpur has become a prosperous village with all requisite facilities. A sewage treatment plant as well as provision for solid waste management was set up in Kanakpur in 2006 with the help of WASMO. Women have displayed exemplary leadership. Other people too have become engaged in the initiative, some due to their knowledge and others due to their desire to unite and fulfil their duties. The extraordinary ability of the people of Kankapur village has made this village water rich. There are many other villages in the country that share similar water problems as Kanakpur did. They all need to follow the example of Kanakpur to solve their water problem permanently. With the help of WASMO, such work has been done in every village of Gujarat. The Panchayat or its sub-committee i.e. Village Water & Sanitation Committee undertakes all the responsibility for water related issues. Today, there is no need to deliver water by trains or tankers in Gujarat. Women and children get safe water from the taps in their homes and, as a result, their lives have become much better.

Chapter-2

Jal Jeevan Mission

Har Ghar Jal
Jal Jeevan Mission

2. The Pledge of Jal Jeevan Mission

For the first time in the history of drinking water in India, on August 15, 2019, from the ramparts of Red Fort, Prime Minister Shri Narendra Modi announced that every rural household will receive regular water supply through tap water connection under the Jal Jeevan Mission (JJM). A provision of Rs. 3.60 lakh Crore has been earmarked for the programme, and in partnership with the State Governments, it is to be completed by 2024. As of August 15, 2019, there were about 18.93 Crore rural households in the country, of which only about 3.23 Crore rural households have access to tap water connections. Therefore, 15.70 Crore households are to be provided with tap connections for drinking water under this Mission. So far, about 40 lpcd is being made available in rural areas through public stand posts.

Provision has been made to make 55 litres of drinking water available through tap connections under JJM. For this, all the Gram Panchayats or its sub-commity i.e VWSC/ Paani Samiti are required to formulate a five year Village Action Plan. At the Central level, JJM has been formed under the Ministry of Jal Shakti, Government of India, while at the State Government level, State Water & Sanitation Mission & at the district level the District Water and Sanitation Mission have been constituted. Assistance will be provided to the Gram Panchayat or their sub-committee i.e. Village Water & Sanitation Committee/ Paani Samiti through Public Health Engineering Department (PHED) and Implementation Support Agencies.

Working for building 'New India', in the last six years, the Government has successfully provided road

Operational guidelines of Jal Jeevan Mission being released by Honble' Prime Minister

Household tap connection

connectivity, houses, toilets, electricity infrastructure, healthcare facilities, social security, financial assistance, etc. for everyone. The time is ripe to provide every rural household with potable water through a tap to ensure "Har Ghar Jal", a reality.

In these times of Corona-19 pandemic, it is necessary to maintain social distancing and wear masks while stepping out of homes. This is possible only when there is water in every rural household, just as it is in the city, so that the women and girls of the family do not have to go outside to fetch water. If there is no water at home then daily chores like cleaning utensils and washing clothes, etc., become a problem. If a family member becomes ill, the problem is multiplied and it becomes difficult to do all the work related to water. Due to the time it takes to fill water, women do not have spare time for other work. Sometimes, this results in children being unable to reach their school on time, which also hinders their studies. This impacts the economic condition of the family and the family may face financial crisis. It is worth mentioning that illnesses due to the use of dirty water burdens a family with physical and economic costs. Keeping this in mind, the Government of India, along with the State Governments, has made provisions for providing a functional tap connection to every home, so that adequate quantity of water with prescribed quality can be provided within the house, thereby reducing the drudgery of mothers, sisters and daughters have been bearing for years. As it is known, in many drought-prone areas, people want to see adequate water supply facilities before they marry off their daughters into a village.

The way schemes like Ujjwala Yojana, Swachh Bharat Mission, Ayushman Bharat, Mudra Loan, etc. have been made a success by the people of the country, the people of the rural areas will also ensure the success of Jal Jeevan Mission so that they can improve their lives. Due to the active participation of village community, India was able to declare itself to be 'Open Defecation Free' on 2 October, 2019. This could happen only when the people of the country made an all out effort to tackle the problem. Taking inspiration from this success, and keeping in view Mahatma Gandhi's vision of 'Gram Swaraj', the resolution to the problem of water will be found by the villagers themselves. Women should stand shoulder to shoulder with the men and leave home to work on issues of water and sanitation. This, after all, is a realisation of basic tenets of 'Gram Swaraj'. The village people have to construct water supply scheme for the village where they have been staying for years. No one can know more about the village than the residents of that village. If given this responsibility, an outsider cannot plan the project as per the village requirement.

The thinking behind this is that the projects to be built under the supervision of the villagers on the basis of the requirements of the village, which will make it sustainable on long-term basis.

2.1 What is Jal Jeevan Mission?

i.) JJM has been launched keeping in view the 73rd Amendment of the constitution of India;

ii.) The project will be planned at the village level. The people of the village will be partners in this programme;

iii.) This project will be implemented by Government of India and State Governments to reach every rural household to achieve the goal of the Mission i.e. "Har Ghar Jal". Each Gram Panchayat will have to formulate a 5 year 'Village Action Plan' to implement the mission in their village according to their requirements;

iv.) Through this project, every household will be provided with potable water through a functional tap connection;

v.) The total outlay of this project is Rs. 3.60 lakh Crore. The Central and State component are given below;

vi.) The planning, implementation, management, operation & maintenance of the project will be done by the village community and the project will be run in all habitations by the villagers themselves;

vii.) 5% of the capital cost for the in-village water supply infrastructure will be contributed by the villagers in cash, kind, and/ or labour in hilly states, North Eastern and Himalayan states and villages with more than 50% SC/ ST habitations. In other villages 10% of the capital cost will be borne by the village community. By doing this, the people of the village will have a 'sense of ownership' of this scheme;

viii.) After the successful commissioning of the project, 10% of the amount of the project cost will be given by the Government as 'revolving fund' for operation & maintenance of the scheme. This will be deposited in the bank account of the VWSC or Paani Samiti. This will be used for accidental and major breakage;

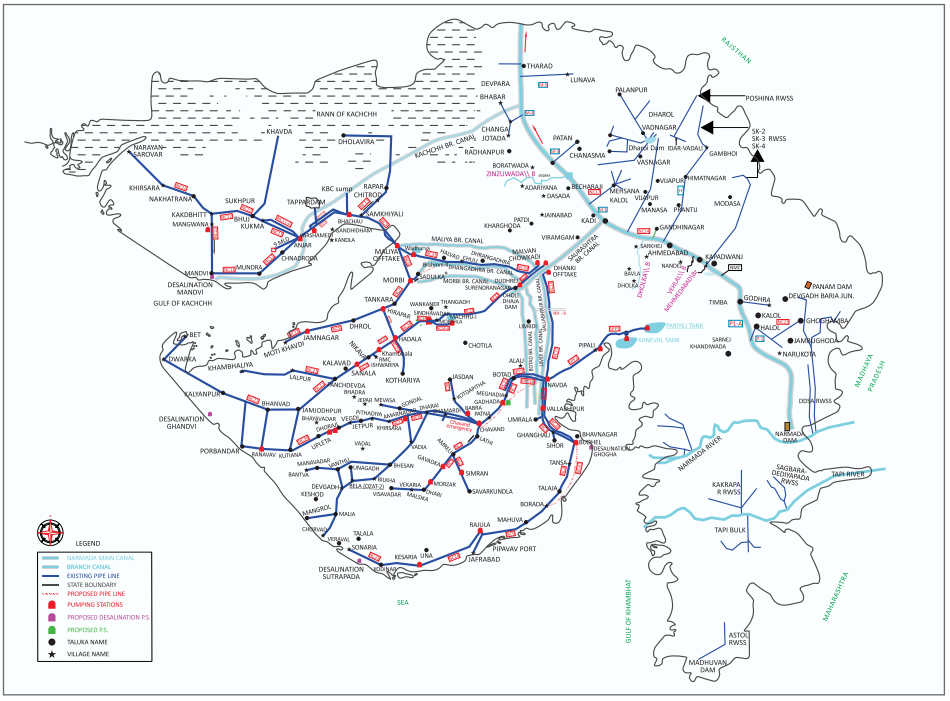
ix.) The villagers will have to fix and pay the decided monthly fee for operation & maintenance;

x.) The main work of the project will be done by the Department Public Health Engineering Dept. under the supervision of the local community;

xi.) There will be surface water based schemes for villages that do not have adequate amount of ground water available. This will be decided by the State Governments based on the current and future availability of ground water in the village. For such villages, a multi village scheme (MVS) may be devised. MVS will be a ground/ surface water based scheme that will cater to the needs of a number of villages. Usually the PHED/ Rural Water Supply Department/ Board/ Agency will prepare the plan for this;

States/ Union Territories	Central Component %	State Component %
UTs without Vidhan Sabha	100	-
UTs with Vidhan Sabha	90	10
Himalayan and North Eastern States	90	10
Other States	50	50

Center and State share



Water supply grid for drought prone areas of Gujarat

xii.) The goal of the mission is to be accomplished by 2024. Funds from MGNREGA, Swachh Bharat Mission, 15th Finance Commission Grants, etc. will be dovetailed at village level for successful implementation of the mission and for judicious utilization of available funds.

2.2 Water Budget

The Gram Panchayat will decide the water budget on the basis of water availability and water requirement.

Water availability includes water available from all sources, including from rain. Water requirement based on an assessment of uses such as for drinking, agriculture industrial use, etc. are calculated. Based on this, the Gram Panchayat will decide the priority of drinking water. If there is a gap between the available water and demand, the Gram Panchayat should find other options for water. The proforma below is being given for the water budget.

Type of Sources	Summer Season			Winter Season		
	Available Water (Supply) (A)	Use of Water (Demand) (B)	Difference (A) - (B)	Available Water (Supply) (A)	Use of Water (Demand) (B)	Difference (A) - (B)
Rain Water Source -1 Source -2						
Ground water Source -1 Source -2						
Surface water Source -1 Source -2						

2.3 Village Action Plan (VAP)

Based on the basic surveys, resource mapping and the felt needs of the rural community, the District Drinking Water & Sanitation Mission, PHED, Implementation Support Agencies will assist the Gram Panchayat or its sub-committee i.e. Village Water & Sanitation Committee (VWSC) in preparing a Village Action Plan **(Annex-1)**. This will include the following components:

i.) Details of water supply/ water availability in the village, recurrence of drought/ water scarcity/ cyclone/ floods or any other natural disaster; supply of water through tankers during emergencies, water supply, strengthening of drinking water sources, water availability, major water borne illness, etc.;

ii.) Source supply of water to the village including the operation & maintenance and current status of water supply;

iii.) Availability of water at its source and its permanence;

iv.) Assessment of available resources and water requirement in the village. Based on these details, the construction of the scheme will be decided either as a single village scheme or multi-village scheme;

v.) The number of household tap connections present in all households in a community and the number of tap connections that are yet to be made available;

vi.) Capacity and willingness of the local people to contribute in cash/ kind/ or labour as part of their contribution for in - village water supply infrastructure as well as pay monthly charges for operation and maintenance;

vii.) Capacity building of people of the Gram Panchayat and/ or its sub - committees i.e., VWSC/ Paani Samiti as well as to create awareness in the community about judicious use of water and keeping the water sources clean;

viii.) Location of water source, washing and bathing complex, cattle trough, technology alternatives, implementation schedule, long-term operation & maintenance plan, etc.;

ix.) Ensuring the allocation of land to the Gram Panchayat and/ or VWSC/ Paani Samiti for the construction of water supply infrastructure in the village;

x.) The roles and responsibilities of the Gram Panchayat, and/ or VWSC/ Paani Samiti, etc. and its members as well as coordination between DWSM, PHED and Implementation Support Agencies;

xi.) Plan to provide water in the public institutions i.e., schools, Anganwadi Centres, Health Centres, Gram Panchayat ghar, etc.;

Water tap connection in schools

Consent meeting of Panchayat

xii.) To identify locally available technicians for basic repair, operation & maintenance;

xiii.) To identify and train suitable persons to test water quality using the Field Test Kit (FTK);

xiv.) Measures for the treatment and re-use of waste water;

xv.) To fix a time table for the sanitary inspections; and

xvi.) Water security and conservation plan.

The Gram Panchayat will ensure that village community, PHED officials and Implementation Support Agencies will participate in the Gram Sabha. The Gram Sabha will approve the Village Action Plan only if 80% of the village community present agrees with the plan. After this, the Village Action Plan will be presented to the DWSM for further action. PHED will grant the technical approval of the scheme. Administrative approval of the scheme that is to be implemented within the village will be given by the DWSM.

2.4 Empowerment of Panchayats

Government of India empowered the Gram Panchayats through delegated rights and allocation of funds on the recommendations of the 15th Finance Commission. This will ensure more funds for the Gram Panchayat to make their own water related plans, so that the Panchayat can do works on recharge of water sources as well as ensure that these schemes remain sustainable in providing safe water. Successive Finance Commissions have given priority to management of water supply by the Panchayat.

Apart from this, water supply is considered as the main function of the Panchayat. The Finance Commission has also asked for the provision of water supply services and collection of necessary user fees for operation & maintenance (O&M) of the water supply schemes. As per the recommendations of the 15th Finance Commission, 50% of total grant is to be compulsorily spent on water supply and sanitation. This will help the local community not only to take up works for water conservation, source strengthening, water supply and grey water management, but also enable them to take care of O&M of the water supply scheme.

With the assistance of the 15th Finance Commission Grants to rural local bodies, the construction of available drinking water sources, including bore well recharge, check dams, structures for the collection of rainwater, repair of ponds, watershed and spring shed, etc. can be undertaken. Maintenance of water scheme, washing and bathing complex for poor people, cattle trough, etc. can also be ensured.

Check dam for water storage

Mahatma Gandhi National Rural Employment Guarantee Act (MNREGA)

This scheme guarantees 100 days of employment to the adult family member of a rural household in a financial year. The employed person can work as unskilled labour in public works at the minimum wage. Under this scheme the Panchayat can carry out works like recharge of water sources, renovation of water bodies, cleaning of ponds, compost pits, etc. The Panchayat must carry out these works to ensure the availability of water in the village.

Some Interesting Facts about Water

Of the total water in the world 97.5% is in the oceans as salt water and 2.5% is available as fresh water. Of the fresh water 68.9% is in the form of ice, 29.9% is ground water,s 0.9% is moisture in soil and 0.3% is available in lakes and rivers

As per UNESCO, the total 1,400 million Cubic KM of water on Earth could cover the entire surface of the globe to a height of 3 meters

At a global level, only 8% of fresh water is used for domestic purposes like drinking and cooking, whereas 70% is used for agriculture

A person needs 2 - 4 litres of drinking water per day but to produce food per person per day requires 2,000 to 5,000 litres of water

Chapter-3

Water problem & quality

Har Ghar Jal
Jal Jeevan Mission

3. Issues related to water supply

i.) Depletion of groundwater table affecting drinking water source(s);

ii.) Geogenic contamination of groundwater i.e. contamination occurring due to natural processes;

iii.) Pollution of surface water and encroachments on the banks of surface water bodies;

iv.) Over-exploitation of groundwater due to high water requirement resulting shortage of drinking water;

v.) Changing rainfall patterns due to climate change;

vi.) Improper methods of ground water recharge;

vii.) Poor rainwater retention in the soil due to deforestation.

3.1 Aspects of water problems

i.) Inadequate source of water in the village;

ii.) Water supply scheme becoming defunct before reaching its design period due to drying up of water source(s);

iii.) Non - availability of land for the project;

iv.) Non - compliance of prescribed drinking water standards;

v.) Not everyone in the village having equal access to drinking water;

vi.) Uneven distribution of drinking water among different sections of the village community;

vii.) Insufficient funds for implementing the water supply scheme;

viii.) Inadequate participation of members of village community in planning and implementing the water supply scheme;

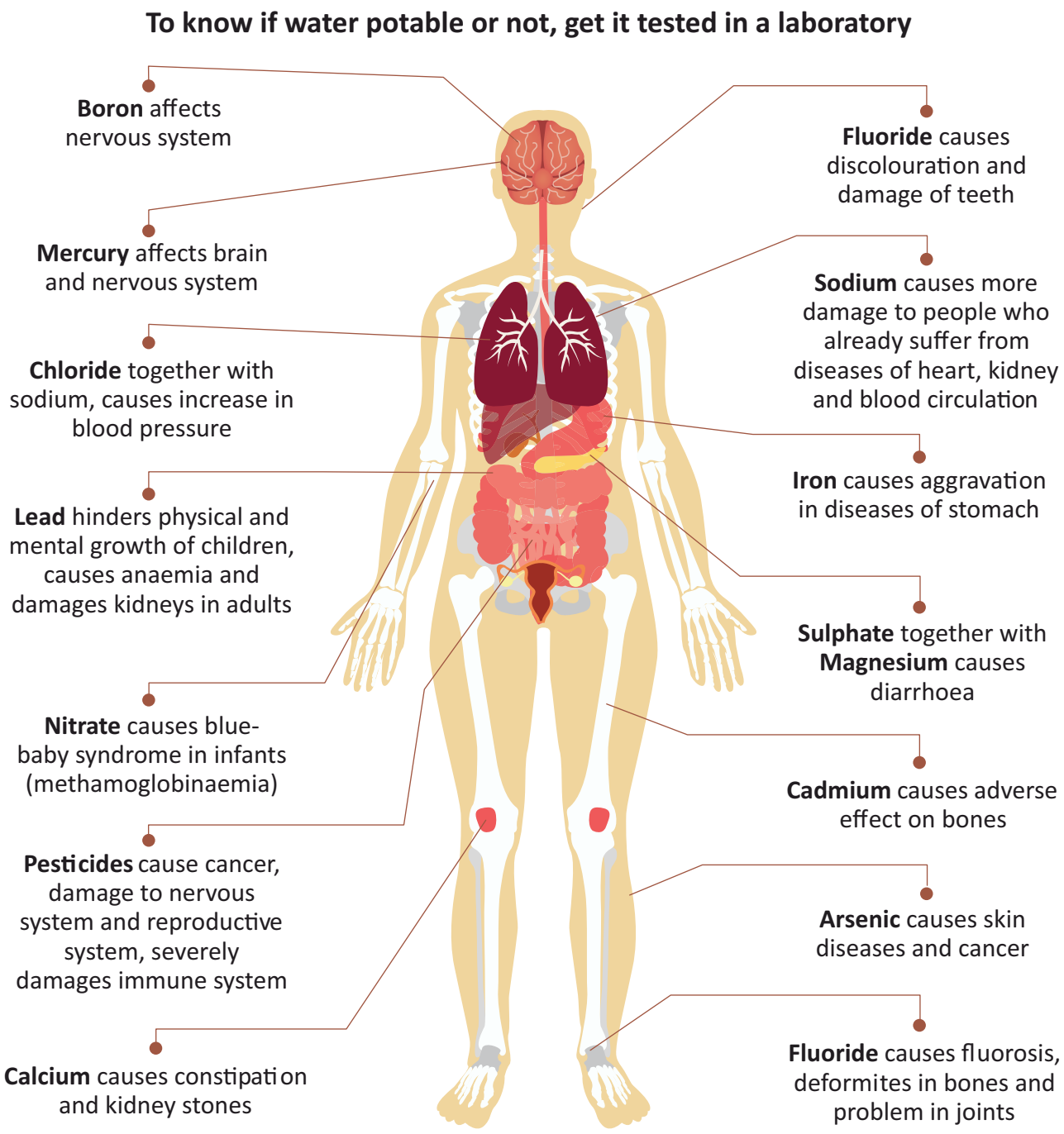
ix.) Lack of ownership leading to poor O&M of the scheme; and

x.) Disputes on the projects under construction.

Women folks at stepwell

3.2 Health impacts due to contaminated water

Everyone knows that water is the basis of life. 97% of available water on Earth is in the seas and oceans, the remaining 3% is in the rivers, lakes, ponds, groundwater, etc., which we use for purposes of drinking, cooking, washing clothes, cleaning utensils, etc. The main reasons behind contamination are population growth, improper use of water resources, rapid industrial growth, etc. Contaminated water can lead to following problems:



Adverse effects of drinking water with chemical contamination

i.) Spread of water-borne diseases such as diarrhoea, cholera, typhoid due to bio-contamination of surface water;

ii.) Vector - borne diseases such as malaria, dengue, etc. caused due to stagnant water;

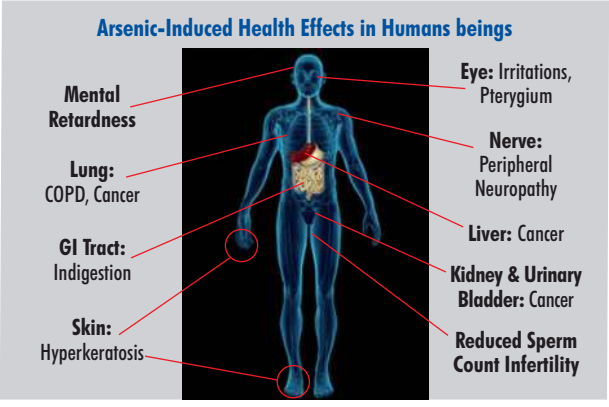
iii.) Diseases due to chemical contamination such as Arsenicosis, a type of skin cancer caused due to excess Arsenic; Fluorosis- skeletal/ dental/ non - skeletal caused due to excess Fluoride, etc.

3.3 Elements causing contamination

3.3.1 Arsenic

Arsenic in water more than acceptable limit of 0.01 mg/ litre is harmful and unfit for consumption for drinking and cooking. Arsenic is mainly found in groundwater which is often due to naturally occurring high concentrations of Arsenic in deeper levels of groundwater. Surface water i.e. water found in streams, rivers, lakes, ponds, etc. does not contain Arsenic.

If a person consumes Arsenic more than 0.01 mg/ litre through food or drinking water regularly over long period, then that person may suffer from Arsenicosis. It roughly takes about two years for symptoms of Arsenicosis to be visible and even earlier in those eating less nutritious food. Arsenic causes or increases the risk of numerous illnesses.



i.) **Testing of water for Arsenic**: Arsenic in drinking water has no color, taste or smell and hence cannot be detected easily. Thus, testing is mandatory in Arsenic-affected areas. At village level, Arsenic test kits can be used for presence/ absence test and samples from every drinking water source to be sent to the nearest laboratory at least once a year to check whether the drinking water source has Arsenic or not along with contamination level.

Deformity in limbs due to regular consumption of Fluoride contaminated water

Hirabhai's community gets Iron filtration plant

Sarpanch Hirabhai's village was dependant on the local borewell for drinking water. The colour of the water was red and people faced health issues like kidney stones, diseases of the digestive system, and liver, etc. Examination of the water sample revealed that it had Iron content of 11.62 mg/ litre as against the standard of 1.0 mg/ litre making it unfit for consumption.

Engineers from PHED helped in designing a low - cost solution based on locally available materials which costed Rs. 4.20 lakh, of which the community paid 40%,. A cemented tank was constructed which had multiple layers of media filter such as gravel, river sand, charcoal, and small size stones used in construction. The bottom-most layer had a PVC pipe with holes to collect the filtered percolated water and direct it to another clear water tank.

The VWSC completed the construction work in three months. The filtered water, when examined, had Iron content of 0.037 mg/ litre which confirmed to the prescribed standards indicating safe for human consumption.

ii.) **How to remove Arsenic from water**: Use filters specifically designed to remove Arsenic. After filtration, disposal of residual Arsenic needs to be managed properly. Arsenic contaminated water should not be used to irrigate crops, even kitchen gardens, as that could lead to Arsenic consumption through food cycle.

Patches in skin due to regular consumption of Arsenic contaminated water.

iii.) **Collection of rainwater:** Rainwater is considered purest form of water and Arsenic is not found in rainwater. Hence, rainwater from the roof of the house can be collected and stored in a tank and used for drinking and cooking purposes.

3.3.2 Fluoride

Fluoride is found in groundwater. However, not all groundwater sources contain Fluoride. Fluoride is mainly found in rocks like granite and when groundwater percolates through such rocks over long periods, groundwater becomes Fluoride-affected. Surface water is not contaminated with high Fluoride levels.

The acceptable limit of Fluoride in drinking water is 1.0 mg/ litre and permissible limit is 1.5 mg/ litre. Water with Fluoride more than permissible limit of 1.5 mg/ litre is harmful and unfit for consumption for drinking and cooking. When a person consumes Fluoride more than 1.5 mg/ litre over long period of time through water or food, then the person may end up with a disease called, Fluorosis. Symptoms of Fluorosis include yellow spots on the teeth, curvature of arms and legs, bending of legs inwards/ outwards, swelling of knees, discomfort and pain while bending and sitting, pain in joints of shoulders, arms and legs, signs of aging even at a young age, heaviness in stomach, etc.

Discolouration of teeth due to Fluoride contamination of water

i.) **Testing of water for Fluoride**: Fluoride in drinking water has no colour, taste or smell and hence cannot be detected easily. Thus, testing is mandatory in Fluoride-affected areas. At village-level, Field Test Kits (FTKs) can be used for presence/ absence test and samples from every drinking water source needs to be sent to the nearest laboratory at least once a year to check whether the drinking water source has Fluoride and the contamination level.

ii.) **How to remove Fluoride from water**: Use filters specifically designed to remove Fluoride.

iii.) **Collection of rainwater:** Rainwater is considered purest form of water. Thus, in Fluoride - affected areas, rainwater from the roof of the house can be collected and stored in a tank and used for drinking and cooking purposes.

3.3.3 Iron

Iron content in drinking water cannot be more than 1.0 mg/ litre. Water with iron more than acceptable limit of 1.0 mg/ litre is unfit for drinking and cooking purposes. If a person consumes Iron contaminated water on long-term basis, the person may face aggravation in gastric related issues. Iron in water may also cause rusting of the pipelines.

i.) **Testing of water for Iron:** Although redness of water is associated with Iron contamination, it is not necessarily the case every time. Thus, testing is mandatory, especially in iron-affected areas. At village level, FTKs can be used for presence/ absence test and samples from every drinking water source should to be sent to the nearest laboratory at least once a year to check whether the presence of Iron as well as contamination level.

ii.) **How to remove Iron from water**: Use filters designed to remove Iron.

iii.) **Collection of rainwater**: Rainwater is considered purest form of water. Hence, rainwater from the roof of the house can be collected and stored in a tank and used for drinking and cooking purposes.

3.3.4 Salinity

This is also known as salt water. In such water, the quantity of dissolved salts is higher. The amount of salt in the water is measured in parts per million (ppm).

Consumption of excess salt water affects the kidneys leading the body to retain more water than it requires. This excess water storage increases blood pressure and puts pressure on the kidneys, arteries, heart and brain. To reduce the effect of excess salt water, clean water consumption is necessary.

i.) **Testing of water for Salinity:**

a. Sweet water - amount of salt must be less than 1,000 ppm;

b. Low saline water - from 1,000 ppm to 3,000 ppm;

c. Medium salt water - from 3,000 ppm to 10,000 ppm;

d. Excess saline water - from 10,000 ppm to 35,000 ppm;

e. Oceans contain approx. 35,000 ppm salt.

ii.) **How to remove Salinity from water:** Use filters designed for this.

iii.) **Collection of rainwater**: Rainwater is considered purest form of water. Hence, rainwater from the roof of the house can be collected and stored in a tank and used for drinking and cooking purposes.

3.3.5 Nitrate

The quantity of nitrate in water has increased largely due to excessive use of chemical fertilizers in agriculture, animal dung, open defecation, sewers, industrial and food processing waste. Nitrate is highly soluble in water allowing it to easily reach the ground water through the soil.

As per BIS: 10500, the amount of nitrate should not exceed 45 mg/ litre. Studies have indicated that excessive amount of nitrate in water may lead to rectal, bladder, breast cancer and thyroid disease, and can also lead to children being born with a disease called “Blue Baby” in which the skin, nails, lips, etc. become blue.

If excess nitrate is present in drinking water, the water needs to be treated before it is consumed. Therefore, it is necessary to check the quality of water. At village level, FTKs can be used for presence/ absence test and samples from every drinking water source to be sent to the nearest laboratory at least once a year to check nitrate contamination level.

3.3.6 Heavy Metals

The presence of heavy metals such as Mercury, Lead, Cadmium, etc. in drinking water poses a serious health threat. These may damage the neurological and central nervous system, liver, kidneys and other vital organs and can cause cancers. Heavy metals can affect the nervous system of a child. There is no immediate effect on the body as it takes a long time before the adverse effects of heavy metals are noticed. Heavy metals in water cannot be seen with the naked eye but can be detected only by water testing. Heavy metals are dissolved in water through industrial, urban and domestic waste. Acid rain also leads to water sources becoming contaminated by poisonous heavy metals that enter the water supply system. Water contaminated with heavy metals should not be used directly and PHED may be consulted immediately.

3.3.7 Bacteriological contamination

Presence of faecal coliform bacteria in drinking water is an important indicator of the presence of sewage or animal waste. Microbes present in drinking water can cause undesirable short - term effects, such as diarrhoea, cramps, nausea, headaches or have long-term adverse health impacts.

Every drinking water source should be tested for bacteriological contamination at least twice a year, i.e. before and after rainy season. At village level, H_2S (Hydrogen Sulphide) vials that come along with FTKs are to be used for presence/ absence test and samples from every drinking water source should be tested in the nearest laboratory at least twice a year. The Gram Panchayat along with the village community should also undertake a sanitary inspection to ensure timely prevention of water pollution.

3.3.8 Parasitic worm infection

This is also called Nematode infection. Nematodes are parasitic. The infection may lead to *Helminthiasis*,

which is caused by the organisms of the nematode phylum. The parasite enters the body and takes nutrients from outside or inside (tissues or cells) the body of a person. Some parasites, i.e., worms ultimately weaken the body and increases the risk to diseases. These worms (round worms) are long and have no bones. Their offspring comes from eggs. Roundworms rapidly spread and infect the tissues of the skin, muscles, lungs or intestine (intestinal or digestive tract). The main reasons for this disease are faecal contamination, unsafe water, unhygienic conditions, uncooked food, rearing of animals in unhealthy conditions, insect and rodent infection, excessive mosquitoes and flies, etc.

3.4 Safe and Clean Drinking Water

The Gram Panchayat and/ or its sub-committee, i.e. VWSC/ Paani Samiti, etc. is responsible for ensuring the continuous supply of safe and clean water. The following facts need to be considered in this process:

Myth	Fact
Water that looks clean does not have any form of bacteria/ germs	Wrong. Bacteria/ germs are not visible to naked eyes. Hence, water testing is important.
Drinking water must be clean	Wrong. Drinking water must not only look clean, but also be safe for consumption, i.e. free from chemical and bacteriological contamination.
Germs do not die by adding water treatment chemicals in clean water	Wrong, bacteria/ germs die by adding water treatment chemicals such as bleaching powder, etc.

Safe and Clean Drinking Water	
Colour	Looks completely clean
Smell	Has no smell
Taste	Has no taste
Safe	Is also free from bacterial and chemical contamination

3.5 Home remedies to purify water from bacteriological contamination

It is important to use properly disinfected water for purposes of drinking, cooking and for brushing the teeth.

Method 1: If you do not have a functional household tap connection yet, boiling of water collected from other sources is sufficient to kill harmful bacteria/ germs. Bring water to a rolling boil for at least one minute. At altitudes above 5,000 feet (1,500 meters), boil water for three minutes. Let water cool naturally and store it in clean containers with covers. To improve the flat taste of boiled water, add one pinch of salt to a litre of water, or pour the water from one clean container to another several times. If water is cloudy, let it settle and filter it through a clean cloth, coffee filter, etc. This method is especially useful during the rainy season.

Boiling of water kills only bacteriological contamination and not chemical contamination. In fact, boiling Arsenic - affected or Fluoride - affected water increases its concentration making it more harmful for consumption.

Method 2: Use of Chlorine - To use Chlorine solution, add 500 gram of locally available bleaching powder in 10 litres of water (50 gm in 1 litre). Mix it well and let it settle for half an hour and then filter it into another container using a cloth. The Chlorine solution is ready. In the water storage tank/ utensil, add 2 drops of this solution per litre of water. Use this solution for only drinking water, not for cooking. This solution in water may smell. To remove this odour, just keep the container of water open for a while, this will get rid of the smell and make the water fit for drinking. The amount of Chlorine in drinking water can be tested with a Chloroscope. Ensure that the correct amount of Chlorine is added to the drinking water. During the rains, when there is waterlogging, Chlorine tablets may be used. Using more than the recommended amount of the Chlorine solution can be harmful.

3.6 Water testing for bacteriological contamination

H_2S vials can be used to check all drinking water sources for bacteriological contamination. These vials are made available by PHED along with FTKs. After filling water in the bottle, close the lid and keep it aside for 24 hours. Remember to write the source and serial number on the bottle. On the second day observe the water. If

Training on use of Field Test Kits for checking water quality

Field Testing Kit

To examine 12 criteria

Parameters

i.) pH	ix.) Ammonia
ii.) Alkalinity	x.) Phosphates
iii.) Hardness	xi) Residual Chlorine
iv.) Chloride	
v.) Fluoride	
vi.) Nitrate	
viii.) Iron	

Examination i.) Appearance
ii.) Odour
iii.) Dirt

Total Dissolved Solids (TDS)

This is like a mini laboratory

there is no change in the colour of the water, then the water source is safe and can be used for drinking and cooking purposes. If the water turns black, the water source has bacteriological contamination and is not suitable for drinking and cooking purposes.

Water quality tests for all 12 mentioned parameters can be conducted using each FTK for at least approx. 100 times. Five members from every village, preferably women will be trained by PHED on usage of FTK and equip them to carry sanitary inspections. The GP and/ or its sub-committee will also nominate a person to ensure that this examination of water quality is carried out in accordance with the State Government policy. From time to time, the results will be shared and communicated to the local community.

3.7 Water quality monitoring

The broad guidelines for undertaking testing of sources/ samples at different level is as follows:

i.) The **sub-divisional/ block laboratory** is to test 100% water sources under its jurisdiction; once for chemical parameters and twice for bacteriological parameters (pre and post monsoon) in a year, covering all sources of a block at least for 13 basic water quality parameters. The positively tested samples are to be referred to the district laboratory immediately. The other parameters may be tested as per local contamination;

ii.) The **district level laboratory** is to test 250 water sources/ samples per month (i.e. 3,000 in a year as per the target of roster available on IMIS) covering all sources including the positively tested samples referred by the sub-division/ block laboratory/ mobile laboratory at least for 13 basic water quality parameters. The district lab is to also refer the positively tested samples to the State laboratory immediately;

iii.) The **State-level laboratory** is to test at least 5% of the total drinking water samples across all districts including positively tested samples referred by district/ sub-division/ block/ mobile laboratory;

iv.) **Gram Panchayat and/ or its sub-committee**, i.e. VWSC/ Paani Samiti, etc. is to ensure testing of 100% drinking water sources including private sources using FTK and undertake sanitary inspection. The test results and sanitary inspection report is also to be submitted to the concerned PHE/ RWS Department

S. No.	Characteristic	Unit	Requirement (Acceptable Limit)	Permissible Limit in the absence of alternate source
1.	pH value	–	6.5 - 8.5	No relaxation
2.	Total dissolved solids	Milligram/ litre	500	2,000
3.	Turbidity	NTU	1	5
4.	Chloride	Milligram/ litre	250	1,000
5.	Total alkalinity	Milligram/ litre	200	600
6.	Total hardness	Milligram/ litre	200	600
7.	Sulphate	Milligram/ litre	200	400
8.	Iron	Milligram/ litre	1.0	No relaxation
9.	Total arsenic	Milligram/ litre	0.01	No relaxation
10.	Fluoride	Milligram/ litre	1.0	1.5
11.	Nitrate	Milligram/ litre	45	No relaxation
12.	Total coliform bacteria	Shall not be detectable in any 100 ml sample		
13.	E.coli or thermotolerant coliform bacteria	Shall not be detectable in any 100 ml sample		

Chapter-4

In-village Water Supply Infrastructure

Har Ghar Jal
Jal Jeevan Mission

4. In-village water Supply infrastructure

In-village scheme is a piped water supply facility using the available source of water within the village boundary. Drinking water supply schemes are mainly designed based on surface water and ground water. For design of these schemes, various water sources available nearby/ in the village such as spring, small rivers, wells, bore - wells, step well, ponds, dams, canals rainwater, etc. can be used. Consultation with local geo-scientist, geo - hydrologist and elderly persons of the village is required for selection of water sources. If there is a water source on private land, then land owner's permission will have to be sought to plan a scheme. For this, the ownership of the private land has to be transferred to that of Gram Panchayat. The next important work will be to measure the discharge and quality of each available water source of the village, with the help of Engineer and selection of suitable water source in consultation with villagers which will ensure long term supply of 55 lpcd water, which is cost-effective with low operation & maintenance (O&M) cost. Mainly two types of in-village water supply schemes can be developed.

4.1 Gravity Schemes

Gravity schemes can be proposed if the water source of the village is at a higher elevation. The capital expenditure and O&M cost of such types of scheme are lower and regular water supply can be made available. Such types of schemes can be constructed with sources like spring, waterfall, small rivers, lake/ pond, etc. It has a collection chamber/ boulder filled gallery, treatment unit, clear water reservoir, water meter, distribution pipeline, ferrule & aerator tap. Such types of schemes have Galvanized Iron (GI) pipe, Mild Steel (MS) pipe or Ductile Iron (DI) pipe, HDPE pipe, etc. for water intake. For distribution, Galvanized Iron (GI), HDPE pipe, MDPE pipe, Polyvinyl Chloride (PVC) pipe, etc. can be used. It has to be noted that the pipes must be buried at a minimum of 3 feet below the ground level. Such Schemes, with perennial source, can sustain more than 30 years (design period) with regular operation & maintenance.

4.2 Pumping Schemes

Pumping schemes are proposed if the source of water is below the ground level of the village. Such type of schemes is costlier than gravity schemes and consumes more power. To reduce the electricity cost, solar panels can be used. These schemes mainly have a

Potable water supply project

sump, pump-set, bore-well (if the source is ground water), treatment unit, clean water tank, distribution pipeline, ferrule & aerator tap. Material like, heavy galvanized iron pipe, HDPE pipe (GI), mild steel pipe (MS) or ductile iron pipe (DI) can be used for rising pipe line and for distribution network galvanized iron (GI) or polyvinyl chloride pipe (PVC) are used. The pipeline must be buried at minimum 3 feet below the soil and rising main must have thrust blocks. To lay the rising main in plain area with the polyvinyl chloride (PVC) pipe should have a pressure of 6 kg/ cm^2 and for the rising main pipe in hilly terrain, a metal pipe or high - density polyethylene pipe (HDPE) to be used as per the design requirement. Air - valve must be provided at every 500 m interval or higher elevation along the rising main pipeline. The rising main pipe and other related fittings must be of high quality adhering to Indian standards (ISI). Use of solar pumps should be encouraged for the pump capacity of less than 10 HP, which will reduce the O&M cost.

Providing saddle connection through electrofusion welding for household tap connection, Guna (M.P.)

4.3 Sump

It is a type of circular well, that is designed as per the water requirement in the village. The village that has to integrate with regional water supply schemes will have sump within their boundary, to which potable water will be supplied and will act as a source of water for the in-village scheme.

4.4 Power Connection

Electricity connection is required to lift water from drinking water source and ground water. Solar power driven pumps may be decided based on the design prepared by the public health engineer.

4.5 Rising Main Pipe

The pipe that conveys water from water source to water treatment plant or water storage tanks by pumping are known as rising main.

4.6 Water Treatment Plant

Water received from the source must be treated. Source water should be tested before the selection of treatment plant. Based on the water quality testing report and the engineer's recommendation, separate/ combined treatment units are installed for chemical contaminations like Arsenic, Fluoride, Iron, Nitrate, etc. For spring source, roughening filter and for rivers, slow sand filter has to be installed.

4.7 Elevated Service Reservoir (ESR)

This type of reservoir is constructed at a higher elevated land in the village for storage and supply of treated water, so that water can be supplied under adequate pressure in the village. At one end, it is connected with supply main and at the other end connected to the water distribution main. Water meter, preferably an automatic water meter, can be installed to measure the quantity of water supplied and to prevent wastage.

4.8 Distribution Pipeline

The distribution pipeline is laid for supply of potable water to every household. It is laid-out at a minimum of 3 feet deep below the ground level.

4.9 Household Tap Connection

It is to be ensured that no household should be deprived of water connection. All the public institutions in the village viz. school, health-centre, Anganwadi centre, Panchayat Ghar, ashramshalas, etc. have to be provided with tap water connection. Every household is to be provided with equal size of connection, in general ½ inch (12.5 mm). Bigger size connections are not to be provided on demand. If there is requirement of more than one connection, provision should be made in distribution network to maintain minimal pressure.

Aerator tap must be installed in every household and the households those are not using aerator may be requested for using the same. Use of such type of tap, reduces the consumption of water. A tamper-proof flow control valve, which will regulate the flow of water to 5 litres per minute may be used. Flow Control valve should be installed in every household along with a distribution pipeline, to ensure equity in water supply to all households.

4.10 Community Managed Sanitary Complex

Gram Panchayat should separately arrange community toilets, washing and bathing complex for poor and underprivileged families of the village, who do not have space in their houses for construction of such facilities. Funds available under Swachh Bharat Mission can be used for this. Panchayat has to construct sanitary complexes, to be managed by the community, which can be used by 10 - 15 nearby households and the grey water emerging from them is to be reused after getting proper treatment within the compound.

4.11 Source Recharging

A reliable source of water is a must for the proposed drinking water supply scheme. As a result of climate change and excessive consumption of water for other uses like agriculture, availability of water at the source gets reduced. Hence, it is necessary to plan to recharge the water source at the planning stage. Required funds for this can be arranged from MGNREGA, CAMPA, 15th Finance Commission Grants, etc. This will ensure availability of water on long-term basis.

In hilly terrain having springs and small streams, knowledge about the aquifer in catchment can be obtained with the help of a geo-hydrologist, and aquifer can be recharged using rainwater. In places with limited rainfall, abandoned bore well/ hand pump may be used for recharge of the aquifer. It is to be noted that, water used for recharge purposes must be clean.

Aerator water tap

4.11.1 Jal Shakti Abhiyan

The Ministry of Jal shakti launched the Jal Shakti Abhiyan across the nation in 2019, which mainly focused on conservation of water, rainwater harvesting, recharge of water, revamping of water bodies like ponds & lakes, watershed development, and intensive afforestation. Gram Panchayat can implement water conservation works by utilizing the

Fund availability at Village-level

- **Development of Water Source & Recharge** - MGNREGA, CAMPA & 15th Finance Commission Grants;
- **Potable water supply arrangement** - Jal Jeevan Mission, C.S.R. fund, District Mineral Development fund, MP/ MLA local area development fund, donations, etc.;
- **Treatment and re-use of Grey water -** 15th Financial Commission & SBM; and
- **O&M of water supply scheme** - 15th Finance Commission Grants & water service charge.

available funds from MGNREGA, CAMPA, 15th Finance Commission Grants, etc. for which the Government of India has issued instructions to States. Panchayat should take the lead by making this initiative a *'Jan-Andolan'* or peoples' movement.

4.11.2 Atal Bhujal Yojana

In this participatory ground water management programme, it is expected that there should be behavioural changes in the community for better sustainability of water source and rational use of water for Jal Jeevan Mission. The programme is currently being implemented in seven States of the country i.e. Gujarat, Haryana, Karnataka, Madhya Pradesh, Maharashtra, Rajasthan and Uttar Pradesh. Gram-Panchayat may take advantage of this scheme.

4.11.3 Conservation of Rainwater

Conservation and use of rainwater is in practice since ancient times. Considering the scarcity of water, every villager should store rainwater in her/ his house. This stored water can be used for different domestic uses. Gram Panchayat should have an arrangement for rainwater harvesting and storage and use in all the public buildings in the villages viz. schools, Panchayat ghar, etc. Apart from this, rain water should be stored in village ponds too.

4.11.4 Rainwater Recharge

Nowadays, in most of the villages, extraction of water from numerous installed bore wells has resulted in depletion of the ground water table and at some places, many bore wells have been defunct due to depletion of water table. In such circumstances, people residing in rural areas will have to adopt water conservation. Each area has more or less rain every year. The available rainwater can be stored. In rainwater harvesting, water is stored as much as possible, at different locations, like in wells and ponds. Due to storage at different locations, the ground water table rises, and the problem of water scarcity gets reduced. Recharge water should be clean and pure so that ground water is not polluted.

4.11.5 Drinking Water for Livestock

Drinking water has to be arranged for the livestock of the village. Depending upon the number of cattle in the village, cattle trough can be constructed at one or two places. To prevent the accumulation of mud and dirt in cattle troughs, those need to be selected outside the village from where the cattle enter the village.

Normal Size of Cattle Trough:7m x 1.5m x 0.6m, Small Size of Cattle Trough:3m x 1.5m x 0.6m

4.11.6 Grey Water Management

Grey water management schemes should be well planned; only then the village will remain clean after completion of water supply schemes. Depending on th soil type, soak-pit in every household will be a preferable option for the disposal and management of grey water. Grey water should be drained and collected at a place; the treated water may be disposed in the drain or after treatment, can be used for irrigation. Fund from Swachh Bharat Mission (Gramin) can be used for treatment and re-use. In a village, road and drains should be constructed side - by - side for the smooth flow of grey water. Grey water should be disposed of in a soak-pit and not in pond or water bodies directly. Villagers can plant fruit bearing saplings near soak pits so that they will not only help in maintaining the aesthetics but also bear fruits in future.

Rain water harvesting

4.11.7 Open Defecation Free Village

The Government is providing incentive for twin-pit toilets in houses for making villages free from open defecation. Family members must have felt the comfort after using toilets and the positive impact on their health. When every household has water supply, people will be free from water-borne diseases and improve their financial condition.

4.11.8 Compost Pit

Compost is made from animal dung. If a pit is built for to prepare compost, it will make the surroundings clean. Now - a - days, waste de-composters (microbes) are available in the market to make fertilizer in less time. It will take approximately 30 to 45 days to decompose. Villagers can also prepare vermi - composting using the earthworms. This compost is very fertile. Thus, cleanliness can be ensured in a village. Every household may have its own compost-pit. If the Gram Panchayat desires, they can plan for public composting facilities at a common place, land equivalent to two pits assigned to every house under MGNREGA, and all village community can do organic farming, which will improve their financial condition.

Grey water soak pit

4.12 Aspects related to Pre-evaluation of Planning

The following aspects are to be considered for implementing drinking water scheme in a village.

Key Factors of Evaluation

Community Aspects

i.) Improvement in water supply & demand for desired service level and benefits related to improvements;

ii.) Sense of responsibility and affinity;

iii.) Beliefs related to aspects like culture, habit, water and sanitation;

iv.) Considering the alternative water sources;

v.) Taking responsibility of operation and maintenance by an organized and elected community group (with representatives from community/ social structure including men & women), managerial & technological ability; and

vi.) Possibility of multiple communities for SVS (in case of the small pipeline).

Institutional Aspects

I.) Legal framework, self - reliance of GP, autonomy to decide service level;

ii.) Formal and informal participation of private sector;

iii.) Availability of training and capability;

iv.) Monitoring & follow - up support;

v.) Availability of technical support to communities;

vi.) Availability and capacity of skilled human resources;

vii.) Competency of technical staff - knowledge of community development and participatory approach; and

viii.) Consideration of alternative financial systems and self - sufficiency in case of critical problems.

Technical Aspects

I.) Assessment of current and future water requirements and need for water treatment required, if any;

ii.) The complexity of technical standards and O&M processes;

iii.) Preference to those technologies that can be operated and maintained at the community level;

iv.) Quality, durability, and cost of equipment;

v.) Cost and availability/ access to spare parts, and capacity of manufacturing spare parts locally, as well as standardisation; and

vi.) To reduce dependency and cost (if needed) on electricity and chemicals.

Environment Aspects

I.) Quantity and quality of water resources, including water treatment, water resource management, and the need for variations according to the weather;

ii.) Water conservation, rainwater harvesting & recharge of groundwater and waste water management.

Financial Aspects

I.) Cost-benefit analysis and cost recovery procedures of the scheme and financial management capability;

ii.) Capability and willingness for payment of community share; and

iii.) Consideration of appropriate tariff structure for O&M of PWS scheme.

4.13 Preparation before implementation of drinking water scheme (check list)

1.	Constitution of Village Water & Sanitation Committee/ Paani Samiti/ user group ensuring at least 50% women participation	Yes/ No
2.	Preparation of Village Action Plan	Yes/ No
3.	Selection of source and estimation of the available quantity of water and quality check	Yes/ No
4.	Type of the scheme - Gravity/ Pumping/ Grid based water supply scheme	Yes/ No
5.	Availability of land for construction	Yes/ No
6.	Presentation of three alternative options with possible least cost water supply systems in the village, and consent of the community	Yes/ No
7.	Consent of 80% villagers for survey/ design/ preparation of DPR & cost-estimate in consensus meeting (agree to do meeting)	Yes/ No
8.	Determination of contribution, monthly maintenance cost, service level benchmark with the consent of the community	Yes/ No
9.	Opening of bank account for community contribution and monthly maintenance expenses	Yes/ No
10.	Plan to cover every household for providing FHTCs	Yes/ No

4.14 Service Level Benchmark

Under Jal Jeevan Mission, Gram Panchayat will have to consider following service level benchmarks for operating and maintaining water supply schemes on a long-term basis:

i.) Ensure FHTC to every household in the village;

ii.) Ensure 55 lpcd to every household;

iii.) Supply water regularly to the household;

iv.) Provide water as per the prescribed quality i.e. IS 10500:2012 and regular water quality testing to be conducted. Sub-divisional/ block lab to test 100% water sources under its jurisdiction; once for chemical parameters and twice for bacteriological parameters (pre and post monsoon) in a year;

v.) Prevent leakage & unaccounted for water;

vi.) Check water tank level meter regularly;

vii.) Disinfect water with prescribed quantity of chlorine;

viii.) Collect monthly water charges timely;

ix.) Ensure water supply to all poor and underprivileged households in the village;

x.) Resolve complaints related to the drinking water supply scheme within 24 hours of complaint;

xi.) Repair of major breakdown by the Panchayat/ VWSC;

xii.) Pay electricity charges for the connection taken for water;

xiii.) Provide uninterrupted supply of water;

xiv.) Ensure source recharge and security of its catchment; and

xv.) Adopt preventive measures for the waterborne diseases.

Benefits of 24x7 Water Supply Scheme

i.) Water conservation and no requirement for household level water storage;

ii.) Regular availability of water;

iii.) Clean and freshwater will be available;

iv.) Everyone will get water with full pressure (care must be taken not to leave any tap running);

v.) Reduced electricity bill due to less pumping of water; and

vi.) Women need not fill water again & again.

4.15 Measurement of Output and Outcome

Jal Jeevan Mission's objective is to provide every rural household a Functional Household Tap Connection (FHTC) by 2024. In parallel, the Mission will also strive to achieve 4 key measurable outcomes such as:

i.) Improved health conditions of rural communities;

ii.) Reduction in drudgery faced by women and girls;

iii.) Empowerment of women; and

iv.) Reduction in dropout rates of upper primary level girls.

It is important to measure the four outcomes listed above and ensure that there is increase in the employment opportunities for the rural population. By doing so, socio - economic prosperity of the rural families will be ensured.

4.16 Responsibilities of the Gram Panchayat

In Jal Jeevan Mission, the role of Gram Panchayat is very important. Under the 73rd Amendment to the Constitution of India, management of 'Drinking Water and Sanitation' has been assigned to Gram Panchayats. The main tasks of the Panchayat are:

i.) Constitution of Paani Samiti and to provide water & sanitation facilities at village level. To provide tap connection to all households by retrofitting and augmentation of the existing water supply infrastructure;

ii.) Submitting proposals to the District Water & Sanitation Mission for technical and financial assistance;

iii.) Opening of bank accounts for Paani Samiti and collection of community contribution and any other contribution. Separate bank accounts have to be opened for receiving community contribution (towards in - village infrastructure creation), incentive received and also for user fee provided by households towards meeting O&M requirements. The Banks details and account number will have to be made public for maintaining transparency;

iv.) Planning, implementation, periodic monitoring and supervision of the water supply scheme;

v.) On completion of work, establishing correspondence with DWSM and ensure O&M arrangement of the scheme; and

vi.) Regular water quality monitoring and surveillance to avoid installation of individual treatment units (RO systems).

4.17 Geo- tagging of Infrastructure

With the aim of bringing transparency and to enable monitoring, geo-tagging of both old and newly constructed water supply infrastructure in the village is necessary. This also includes artificial recharge structures, grey water management infrastructure, washing and bathing complex, etc.

4.18 Linking FHTC with Aadhar

For targeted delivery and monitoring of specific outputs, every household tap water connection is to be linked with the Aadhar number of the head of the household, subject to statutory provisions.

4.19 Surveillance by the Community

The community will closely observe the functioning of their water supply scheme and will be responsible to manage, operate and maintain the in-village water supply infrastructure. The community will also undertake regular sanitary inspections and collectively decide on mechanisms to prevent misuse of water. The community has to file grievances with respective DWSM/ SWSM through a dedicated toll free number, online portal, etc.

4.20 Duties of the Sarpanch

i.) Convene Gram Sabha meetings regularly, ensuring community participation, discussing about providing water to all households;

ii.) Present the selection process of VWSC members in the Gram Sabha ensuring 50% women representation and comprising of Panchayat members, ASHA workers representation from SC/ ST and underprivileged households;

iii.) Provide leadership in resolving water supply related problems;

iv.) Ensure transparent resolution of all the issues discussed in Gram Sabha;

Village Water and Sanitation Committee (VWSC)

v.) Ensure all sections of the community receive equitable water supply;

vi) Ensure community participation with help from VWSC members and ward members; and

vii.) Resolve all issues and challenges in close coordination with PHED, Forest Department and other departments.

4.20.1 Duties of the Gram Panchayat Secretary

i.) The Panchayat Secretary, appointed by the government will work as a link between the Gram Panchayat and the Government;

ii.) Organize Gram Sabha for selection of the VWSC, maintain asset register and water supply records, prepare proceedings for the Gram Sabha; and

iii.) Present the proceedings of previous meeting to Gram Sabha and take consent of all present, and keep account of the water supply scheme.

4.20.2 Formation of VWSC/ Paani Samiti

i.) Constituting VWSC/ Paani Samitis/ User Groups will be done by the Gram Sabha in which all sections of the community to be involved;

ii.) It may consist of 10 - 15 members comprising elected members of Panchayat up to 25% of the composition; 50% women members (key to success); and remaining 25% may consist of representatives of weaker sections of the village (SC/ ST) proportional to their population;

iii.) Senior community leaders of the village may be appointed as members. It may also include retired teachers, other workers, representatives of institutions;

iv.) Ensuring every community, caste, religion is represented in VWSC. For water supply schemes in scattered habitations, representatives of those habitations may form a user group, who will be responsible for operation and maintenance of the scheme and will be answerable to the Gram Panchayat and VWSC/ Paani Samiti;

v.) Ensuring funds from Jal Jeevan Mission are not used to provide water supply services to houses/ private farm houses set up away from the village.

4.20.3 Tenure of the Committee

State Government has to issue a suitable notification under Panchayati Raj Act of the State for constitution of VWSC/ Paani Samiti or user group. Generally, the tenure may be 2 - 3 years for the VWSC/ user group. During Jal Jeevan Mission, it will be the prerogative of the mission to reinstate the VWSC/ user group. In the case of the VWSC/ user group tenure coming to an end, the State government will have an option to reinstate/ decide on the continuity of the same in accordance with the existing provision.

4.20.4. Responsibility of VWSC/ Paani Samiti

The Gram Panchayat and/ or its sub-committee, i.e. VWSC/ Paani Samiti/ User Group, etc. will discharge the following functions:

i.) Ensure formulation of Village Action Plan (VAP) for water supply scheme;

ii.) Plan, design, implement, operate and maintain (with help of respective department) the in-village water supply schemes;

iii.) Provide FHTC to every existing rural household, any new HH that may emerge in future, and ensure that scattered households located away from main settlements also get FHTCs;

iv.) Facilitate procurement of services/ goods/ materials from agencies/ vendors at costs as finalized by State Water & Sanitation Mission (SWSM);

v.) Open bank account/ use existing account of GP for community contribution and depositing O&M service charge. In case an existing account is being used, it should be ensured that a separate ledger is to be maintained for contribution and incentive;

vi.) Mobilize and motivate the community to contribute 5% or 10% of in-village infrastructure capital expenditure, as the case may be. The contribution may be in the form of cash and/ or kind and/ or labour. Create and maintain register for accounts which should reflect community contribution in terms of cash and/ or kind and/ or labour;

vii.) Record drinking water asset details in GP/ village asset register;

viii.) Supervise construction of in-village infrastructure including source sustainability, grey water reuse, water conservation measures, etc;

ix.) Facilitate third party inspection and functionality assessment;

x.) Mobilize community for PRA activities conduct awareness campaigns on judicious use of water, come up with mechanisms to ensure no misuse of water and ensure conducting IEC campaigns including wall-paintings, etc; and

xi.) Hire/ arrange pump operator, barefoot technician, attend regular repair and maintenance work, and operate the system.

4.20.5. Savings Bank Account

The saving bank account shall be opened and managed by the VWSC. This account will be operated jointly by the chairperson of Gram Panchayat and/ or its sub-committee, i.e. VWSC/ Paani Samiti/ User Group and respective Panchayat Secretary. This proposal shall be as per the provision laid down by the State.

4.20.6. Meetings of Paani Samiti

VWSC/ Paani Samiti chairperson will convene periodic meetings with the help of its members, as per the requirements and guidelines of JJM. The meetings should be conducted monthly and at least four times in a year to discuss issues pertaining to water supply and presentation of records. It is necessary to cordially invite all the members of the committee for all its meetings, and inform them well before time.

4.21. Community Contribution

i.) There is a felt need to have community participation, ownership and contribution in all decisions pertaining to water supply systems. Thus, community led partnership with States/ UTs will be the strategy for achieving the objectives of JJM;

ii.) Under the purview of Jal Jeevan mission, the hill States, North Eastern States and Himalayan States or where the rural population is more than 50% SC/ ST, the community to contribute 5% of in-village infrastructure and for other villages, it will be 10%. The contribution may be in the form of cash and/ or kind and/ or labour;

iii.) After calculating the complete cost of the water supply scheme, the PHED/ RWS Department would provide information about amount of community contribution for capital cost in the meeting of VWSC/ Paani Samiti;

iv.) In order to reduce the burden of community to make upfront contribution in cash, Gram Panchayat and/ or its sub - committee, i.e. VWSC/ Paani Samiti/ User Group, etc. may allow individual households to pay in instalments. Contributions from local Institutions, philanthropists, community-based organisations to be encouraged;

v.) For the O&M of the water supply scheme, the community will have to contribute the amount as fixed by the Gram Panchayat and/ or its sub-committee, i.e. VWSC/ Paani Samiti/ User Group, etc;

vi.) Later, on completion of the work satisfactorily, the community would be rewarded/ incentivized in a phased-manner after the commissioning of the scheme to the tune of 10% of the capital expenditure on their respective in-village water supply scheme; and

vii.) Contribution from MPLAD will be counted as Central share and contribution from MLALAD will be counted as State share. Contribution made by local Self-Help Group (SHG) will form part of the community contribution.

4.22. Women Participation

Generally, it has been observed that scheme implemented with women participation is often successful. Women are known to be more efficient in the delivery of smooth operation of any scheme. If women are involved in the water supply schemes under JJM, the operation and maintenance of the scheme can be made more robust and sustainable. Rural women and adolescent girls spend a lot of time and energy in getting water for day - to - day use. This results in lack of participation of women in income generation opportunities, loss of school days for girls and adverse health impacts often the rural women, who suffer the drudgery of having to travel long distances to bring water home will be saved from the ordeal. Keeping this in mind, it is to be ensured that VWSC/ Paani Samiti to consist of minimum 50% women members.

Trench for water pipeline

4.23. Implementation Support Agencies (ISAs)

ISAs are responsible for organizing Gram Sabha, organizing meetings of sub - committee, facilitating resolution in Gram Sabha, and acceptance of village scheme, mobilization of community contribution, O&M arrangement, facilitating sanitation and grey water management activities, etc. Self Help Groups (SHGs)/ CBOs/ NGOs/ VOs, etc. need to be identified and empanelled as ISAs to handhold the community and facilitate the participatory approval and implementation, management, O&M, etc. of in - village infrastructure by the Gram Panchayat and/ or its sub - committee, i.e. VWSC/ Paani Samiti/ User Group, etc.

4.24. Information, Education and Communication (IEC)

ISAs will undertake activities such as PRA activities, Inter Personal Communication (IPC), Behavioural Change Communication (BCC) and all other related communication activities. Activities such as wall - paintings on 10 - 15 walls at important locations of the size 6' x 2' for disseminating messages on various specifications & efficient operations of water supply schemes **(Annex - 7)**, slogan writing, street plays for creating awareness about water quality, conducting group meetings, PRA activities, exhibits, etc. to be carried out. Schools and anganwadi centres are to be made part of such activities as well.

Sign board of 8' X 6' **(Annex - 8)** to be erected at a conspicuous location giving all relevant details of the scheme, viz. the mission logo, total cost of scheme, implementing agency/ vendor, names & contact details of EE/ JE/ Paani Samiti Chairperson and Panchayat Secretary, commencement and completion date, etc. This is necessary to ensure transparency and keep the village community informed about the scheme.

Meeting of women VWSC

4.25. Skill Development & Entrepreneurship

To achieve the goal of FHTC on a long-term basis i.e. assured water supply of prescribed quality to every rural household, skilled human resource such as masons, plumbers, fitters, electricians etc., are required at village/ habitation level. Also, due to the scale of works to be undertaken, skilled work-force will be required, for which locally available labour will have to be trained. Due to the prevailing pandemic, a lot of skilled labourers have come back to their villages, who need to be employed, so that they get jobs near their homes and water supply works also get expedited. Villagers may be encouraged to put up a shop for selling goods/ materials which will be required for long-term functionality and O&M of the water supply systems. A mobile group of local technicians can be formed so that their availability can be ascertained. The objective is to have a reliable and trustworthy arrangement at village level so that potable water supply to rural homes is not disrupted.

Chapter-5

Drinking water supply schemes

Har Ghar Jal
Jal Jeevan Mission

5. Project Planning

The execution of Jal Jeevan Mission has to be implemented for arrangement of water in the village by the villagers through their Gram Panchayats. It must be seen whether there is any source of water like waterfall, step well, small river, pond and groundwater source in the village. At first stage it has to be ascertained whether any existing schemes are functioning based on these water sources, then accordingly efforts to be made to provide maximum household connections through them; retrofitting and new scheme work can be the second stage. While planning village development, certain factors like water schemes, recharging of water sources, drinking water and agriculture use of ground water sources should be taken into consideration. Further, planning for greywater treatment, recycle and reuse of treated greywater scheme need to be developed. It has been observed that the villages situated near the Forest areas are likely to have high probability of ample water, therefore, tree plantation can be done with the help of Forest Department, Gram Panchayats & 15th Finance Commission Grants. The bore wells which have failed to yield water can be utilised to recharge groundwater; sand and gravels can be filled into them for filtering rainwater. The borewells have to be closed properly so as to avoid incidents of children falling into them. Water contamination is largely caused by industrial waste. To avoid it, a proper planning has to be done with the help of local authorities to prevent the contamination of village water sources from the industrial waste.

In villages where the local source of water is not available, Department can plan & deliver water from the nearest source available outside the village by constructing a sump & designing an appropriate water supply scheme. To implement the scheme, village will give a certain percentage of estimated amount to the department & accounts committee will maintain the records.

All public offices like Schools, Anganwadi centres, health centres, Panchayat Ghar, etc. located in the villages will be provided connection for drinking water and the applicable charges to be collected from them. These offices will have to also make the provision for rainwater harvesting to fulfil other requirements of water.

After the completion of work, the bill will be sent by Public Health Engineering Department/ Rural Water Supply Department to District Water & Sanitation Mission/ State Water & Sanitation Mission with current status. Agency from the constituted panel will be assigned for the inspection of the quality and quantity of the work. Once bill is received by the PHE/ VWSC and then after the work is completed satisfactorily, the certificate of release of payment will be issued. The DWSM/ SWSM will arrange the payment. The concerned agency will be receiving the payment through Public financial management system (PFMS) from a single nodal account and the order will be sent by DWSM/ SWSM as authorised. No advance payment will be made to any other account except concerned agency's account even for material procurement as per the contract.

It has to be ensured that all households get water connections even if some households are already being supplied with 70 litres of water per day.

Schemes can be operated up to the span to 30 to 40 years, depending on the availability of adequate water at the sources and regular O&M with the involvement of villagers.

Three-step programme for implementation of this mission has been developed which has to be completed within 12 to 18 months.

1. Planning Phase
2. Implementation Phase.
3. Post Implementation Phase

5.1 Planning Phase (3 - 6 months)

i.) Gram Panchayat should present a resolution letter before District Magistrate to prepare drinking water scheme because the responsibility has been assigned to DWSM to execute the project in the district which will be headed by District Magistrate of the district;

ii.) Once proposal is submitted to District Magistrate, the concerned PHED and ISA will be directed to initiate the discussions about project related matters within the villages;

iii.) In this phase, Village Action Plan has to be prepared for the project. Villagers will have to actively participate with the department/ ISA to execute the project, gather funds for it and manage operation and maintenance of the project. Apart from these, beneficiaries have to be encouraged for partial recovery of water user charges for expenditure towards O&M;

iv.) It is important for all the stakeholders to attend the forum of discussion. Active participation in discussion is required from villagers, Gram Pradhan, Members of Gram Panchayat, members of VWSC/ Paani Samiti, PHE engineers and people of ISA;

v.) Primarily, the members of ISA and PHE engineers will have to collect the important information of the village to ensure the participation of villagers;

vi.) It would be better to get necessary acquaintance with the villagers and plan village visit with them. During the visit the project related information should be shared and on the other hand information should be collected from the villagers as well. This information should be used during the planning;

vii.) The participation of PHED and ISA would be very important during the field visit to collect the information about the village based on community mapping and the derived information must be included in the planning for drinking water project;

viii.) Utmost care has to be observed while talking to the women & children of the village. It should be taken care that acceptance of the village dwellers is also well acknowledged during the talks with the children and women of the village. Gathering should be held in open place and the evaluation of the information gathered from the village should be done. During this activity the village women must be included and called for all meetings as they are considered as main stakeholders. They are the one who majorly deal with the water on daily basis.

Mapping of resources by villagers

5.1.1 Participatory Rural Appraisal (PRA)

Participatory Rural Appraisal is a very effective activity to ensure the participation of maximum people to make success of "Jal Jeevan Mission". By conducting PRA, the exchange of information regarding the project can be done. It can be used to initiate dialogue with villagers. It is also used to involve the community for planning, implementation, execution and O&M of rural water supply scheme. It is being emphasized to strengthen local community by using this activity to evaluate the problems and capacities. ISAs carry out community mapping, and then the conclusion of discussion is shared through PRA.

5.1.2 Detailed Project Report (DPR)

i.) Preliminary project report should be prepared by engineer and the same should be presented before the villagers in an open meeting. The project details should be shared with the village community like proposed source, estimated quantity of water availability during summer, quality of water, estimated cost of scheme, land availability for the scheme. The villagers should also be informed of the total numbers of tap connections to be provided, evaluation of existing scheme and provision of inclusion into the proposed scheme, cost for O&M and estimated contributory funds and about the way of using contributory fund;

ii.) Priority shall be given to gravity and solar based pumping schemes as far as possible. These kind of schemes are not only cost effective, but also have a substantial low O&M cost;

iii.) Consultation with village dwellers should be done time to time during DPR preparation. After agreeing upon DPR, it will have to be sent to DWSM for approval. DPR should be prepared in reference with the Central Public Health and Environmental Engineering Organisation (CPHEEO) Housing and Urban Affairs Ministry Water Supply and Treatment Manual - 1999, and Water Supply O&M manual -2005;

iv.) Assessment of the contributed fund, new account opening, decisions taken for the donated land by villagers, etc., will have to be done by ISA/ Panchayat/ VWSC so that work can be started immediately after approval of the scheme;

v.) Automation of the pump and water tank can be done. This arrangement will be connected to the Internet of Things (IoT) best sensor to control the operation of system. When the tank is filled with water, the pump will shut down automatically and will restart only once the specific level of water is present in the borewell. This system will not only save the motor from getting burnt but will also save water by controlling the overflow of water from the tank. Quantity of water supplied to the tank for the village can be measured by installing automatic water meter which will help to take the account of water so that water can be used genuinely. Information on drinking water is available on JJM portal, after completion of village

Over Head water tank

Storage capacity of water tank/ sump (for filling twice a day)			
Present Population	**Number of People**	**Quantity of Water (L)**	**Capacity for Water (L)**
150	150	8,000	5,000
300	300	16,000	10,000
400	450	24,000	15,000
500	600	32,500	20,000
600	750	40,500	25,000
800	900	48,500	25,000
900	1,100	56,800	30,000
1,000	1,200	64,900	35,000
1,300	1,500	81,100	40,000
1,500	1,800	97,500	45,000
1,800	2,000	1,15,000	50,000
2,000	2,500	1,30,000	55,000
2,300	2,700	1,50,000	60,000
2,500	3,000	1,63,000	65,000
Water tank capacity (filled three times a day in litres)			
2,000	2,300	1,26,800	50,000
3,000	3,500	1,90,100	75,000
4,000	4,600	2,53,500	1,00,000
5,000	5,800	3,17,000	1,25,000
8,000	9,200	5,07,100	1,75,000
10,000	11,500	6,33,900	2,25,000
12,500	14,400	7,92,500	2,75,000
15,000	17,300	9,50,800	3,25,000
17,500	20,200	11,09,300	3,75,000
20,000	23,100	12,67,800	4,25,000
22,500	26,000	14,26,300	5,00,000
25,000	29,000	15,84,700	5,50,000

Note: This is only projected estimation. The engineer needs to verify this information according to the design.

drinking water supply scheme the information will be filled in portal; and

vi.) Estimate capacity of underground water tank/ sump has to be calculated and need to be discussed with the PHED engineers.

In the meantime, water related training should be given to members of Gram Panchayat, VWSC, villagers, etc. In training, complete information has to be provided on community participation, fund raising, gaps in previous schemes, information on new schemes, source recharge, type of pipes, valves, taps, water quality testing, etc.

Following points will be considered for cost estimation of village water supply scheme:

i.) In local ground water source, borewell recharge structure;

ii.) Bathing and washing complex (as per requirement) for poor, homeless and SC/ ST habitation;

iii.) Cattle troughs (specifically as per requirement);

iv.) Surrounded by green belt, where village water supply units i.e. ESR/ Tank, pump operator room, community water treatment plant (if existing), etc. are located then a specific name as per the local culture will be given to such place. For example, in Andhra Pradesh it is called as "Jal Devalayam".

5.2 Implementation Phase (6 - 12 Months)

i.) After the approval of DPR, the implementing agency, engineers, ISA and Gram Panchayat/ Village Water & Sanitation Committee selected by District Water & Sanitation Mission needs jointly detailed discussion. Layout of all the material used in scheme and discussion on contribution of all the stakeholders needs to be carried out and work should be started by the implementing agency. To avoid any inconvenience to the villagers during the period of work, everyone should be informed well beforehand;

ii.) Inspection of quality of material used in project, layout of structure, review of design should be carried out by the respective engineer. It should be ensured that the project work should be executed as per the design and quality and enough area should be available for civil works. Pipe, socket, union, valve, etc. should be of ISI mark;

iii.) It should be ensured by the villagers that good quality of water pipe will be marked with ISI marking at each meter. Quality inspection should also be done regularly by Villagers, Gram Panchayat/ VWSC/ Pani Samiti; and

iv.) It is important to notice that unnecessary delay in project work is not desirable. PHED needs to ensure timely payments, NOCs, etc. to the executing agency.

Mild Steel pipe for water supply

Water treatment plant and storage tank

After completion of work, all documents related to scheme should be handed over to Gram Panchayat or sub-committee, so that records of all guarantee and warranty are available for future reference.

5.3 Post Implementation Phase (3 - 4 Months)

i.) In this phase, the scheme needs to be developed in consideration of operation and maintenance. In this regard, a meeting shall be organised with villagers along with Gram Panchayat, engineers and executing agency in which discussions shall be held pertaining to project. For the operation and maintenance of the project, 2 to 3 operators will be required. These operators can be either volunteers or hired on monthly wages. It can be recommended that villagers who participated as a mason, plumber, etc. during the execution phase can be nominated for this work. He needs to be provided with required tools. His responsibilities will be to operate and maintain the whole scheme and be prepared to immediately troubleshoot faults.

ii.) A complaint register needs to be maintained for all the complaints and the same has to be presented in the meetings regularly.

iii.) Operation and Maintenance operator will have to troubleshoot daily complaints;

iv.) Source of water, treatment units, water tanks, distribution network and house taps need frequent inspections, and in case of any major fault inform the village drinking water committee;

v.) If treatment unit is installed, then cleaning has to be done in given stipulated time, water source has to be safeguarded from pollution, and also frequently cleaning of recharge facility, if available needs to be done;

vi.) Disinfectant chlorine dosage needs to be maintained in the treatment units and checking of residual chlorine at house tap connections;

vii.) O&M operator needs to maintain required spare parts and tools and its log-book needs to be reported to Gram Panchayat on regular intervals;

Gram Panchayat meeting

viii.) Fixed monthly charges need to be collected from the villagers and deposited in the designated bank account and receipt shall be given to the villagers every month;

ix.) Cleaning of recharge pits and drains need to be done before every monsoon season, to receive maximum rainwater in it;

x.) During the monsoon season, it shall be ensured that maximum rainwater shall infiltrate to ground to increase the ground water level;

xi.) Villagers need to frequently organize the inspection and cleaning of each house tap connection, water source, pumping station, water tanks, treatment plants, village ponds, etc.; and

xii.) Water quality testing should be conducted frequently by the government accredited laboratories and its discussion shall be done with the villagers.

This is a very big task to be done, it has to be maintained for a long period of time. Villagers, Gram Panchayat/ its sub-committee and PSE department shall take a written oath to operate the scheme successfully for a long period of time and collect regular water service charge.

5.4 Inauguration

Inauguration programme shall be organized among villagers in social gatherings after completion of the construction work. Regular & timely discussions and training related to the project and their visits to other villages shall be arranged for the success of this programme. **(Annex - 6)**

After completion of project, engineer shall submit a completion report mentioning source of water, quality of water, integration of existing to new project and complete project including related information of the village.

5.5 Preparation for Emergency Plan

In this process solutions are provided to help Panchayat, VWSC and people to quickly act and effectively manage the emergency with efficacy. In emergency cases information shall be made available about the alternate water sources and method of water supply shall be explained. This information proves important in effective emergency preparation plan and post-emergency recovery plan. Possible risks related to water conservation areas, reservoirs and distribution system shall also be discussed in this plan.

Sardar Sarovar Narmada Canal

Mobile water treatment plant, installation plan and list of such instruments needs to be prepared for emergency prone areas like coastal areas, flood prone areas, States of Himalayan region. Many such subsequent plans may have been prepared by other States as well. During cyclones, floods and other natural disaster situations till the piped water supply is resumed, drinking water facility shall be provided by hand pumps as an interim solution. For this purpose, frequent inspections and maintenance of hand pumps is required. Water contamination in hand pumps by flood water can be avoided by raising the height of hand pump platforms. This work can be done through funds available for disaster management.

Chapter-6

Operation and Maintenance

Har Ghar Jal
Jal Jeevan Mission

6. Operation and Maintenance

After commissioning of the drinking water supply scheme, ensuring operation and maintenance (O&M) is the most important activity to ensure regular and long-term water supply for which Village Water & Sanitation Committee (VWSC) would require funds. One of the main financial sources for the VWSC to carry out the activities would be water user charges collected from the local community. Based on the annual requirement, Gram Panchayat (GP) and/ or its sub-committee along with local community can collectively discuss and fix a nominal amount per household as water user charge which would be paid every month. Rules may be framed by the GP for timely payment of the water user charge so that security of funds is ensured for VWSC to carry out the O&M of drinking water supply infrastructure. Gram Sabha should pass a resolution detailing O&M activities, ways to secure required fund for carrying out O&M activities, frame strict rules towards timely payment of water user charges, fine/ penalty in case timely payment is not made, disincentives for water misuse, etc.

There is a need to look at the following technical issues pertaining to O&M of the drinking water supply programme:

i.) Drying up of water source and its damage;

ii.) Failure of machine/ pump that is inside water source;

iii.) Contamination of the water source;

iv.) Damage or leakage of storage tank/ place of storage;

v.) Leakage in pipeline; and

vi.) Non-availability of power supply/ voltage fluctuation.

For the O&M of the drinking water supply scheme, few essential items shall be required like T, elbow, bend, reducer, tail piece, end cap, oil, grease, lubricant, valve, packing, nut bolt, chemicals, etc. There is a need to keep stock of chlorine/ bleaching powder for water treatment. The GP must have in its record, the map of the water pipeline laid in its village.

6.1 Technician Tool Kit

Pipe vice - 1, pipe thread cutting die - 1, pipe wrench - 2, chain wrench - 2, white paint box - 1, lubricating oil - 1 litre, spanner set - 1, iron vessel - 4, iron bucket - 2, spade - 4, broom - 4, long wire - 5 meter, bamboo - 5 meter, glend cord, etc.

6.2 Operation of valves

Always open and close the valve slowly so that no sudden pressure is applied on the pipe which may lead to its bursting. If the cover of the valve chamber is made of iron then it should be painted in bright colour so that it is clearly visible from a distance.

Tee, Elbow, Bends, Reducers, Tail piece

Winch to hold pipes

Technician tool kit

6.3 Pipeline Repair

Various reasons can lead to leakage in a pipeline like root of a tree may enter pipeline, rusting of metal pipeline, two pipelines are not fitted properly, the pipe specification is not as per the design & capacity required, pressure on pipeline, etc. Before repairing the pipeline it is important to close the two sluice valves placed on either side and wait till the pipeline is empty and dry. The repair work should only be undertaken after adhering to the mentioned precautions.

6.4 Repairing of PVC Pipe

Cut the portion of the pipe where it leaked and a new pipe should be inserted by putting solution on the coupler. Start the water supply only after waiting 15 minutes of connecting the pipe. The pipe should not be repaired if it is found wet. If any bend and T is broken then cut the bend or T and replace it with a coupler on one side of edge and connect the new bend on the other side.

PVC pipe, elbows, bends and reducers

6.5 Valve Repair

Mostly any leakage of water in the valve is due to damage in the glade cord and leakage at the joint of valve which is connected to the pipe. While operating the valve it should be opened very gently and must not be closed very tightly. If there is any leakage in the valve one must check the glade cord and in case needed, the cord may be changed. If there is any leakage from the flange, do tighten the bolt of the flange.

6.6 Responsibility of the operator/ plumber

Regularly check all the valves in the in-village water supply system so that any malfunctions may be immediately identified & repaired. In order to check the leakages in the pipeline, walk along the pipeline so that leakage may be detected. The tools and material required to repair the pipeline and its leakage, must be kept in sufficient quantity at the workstation. While repairing the pipeline, 'Work In Progress' signage must be displayed and a register should be maintained detailing the repair work undertaken. All valves related to water tank and water supply should be opened and closed at the right point of time. Special care should be taken so that the water tank does not overflow. The valve should not be opened by any other person than the authorized operator. In addition to it, a register should be maintained giving details of the timings during which the water was supplied.

6.7 Pumping Machinery

Submersible pumps, as its name suggests, both the pump and the motor are always submerged in water. These pumps run on electricity and are taken to the workshop for any repair work. In the panel board, a meter is provided to control the fuse of the motor, starter, flow of electricity, measurement of electricity and power supply. The motor starts to function when the green button in the starter box is pressed and to stop the motor, the red button should be pressed. The preventive maintenance of the pump should be undertaken so that major faults/ defects may be avoided. Defective parts should be replaced so that water supply is not stopped.

Gland packing rope

Pump House

6.8 Maintenance of Pump (Preventive Maintenance)

The pump should be regularly oiled and greased , gland cord cleaned, loose nuts & bolts tightened and rust removed. Do not run the pump without water. Fill in water before operating the centrifugal pump, close the delivery valve before turning on the pump and once the pump is on, open the valve gradually. Keep the standby pump in good and running condition and check it from time - to - time.

6.9 Precautions to be undertaken while operating a working pump

If oil is spread on the floor then spread soil or sand on it for cleaning. Ensure to check that moving parts like the coupler are covered with mesh or any other security cover. If you notice vibration or hear sound emanating from the machine, then turn it off immediately and get it repaired. If you see spark at any place then first shut off the main switch. If the insulation cover of the electric wire is removed, then cover it with a tape with the help of a trained electrician. In case any person suffers electric shock then first turn off the switch and do not touch the person on your own. Instead use wooden object to detach him. A first-aid box must be kept in the pump room and work place. The air valve of the rising main pipeline should be checked. After starting the pump, see that the air and water from the bypass line is removed and after the valve is closed see that the water supply is continued in rising main pipeline.

HDPE pipe jointing works

6.10 Water Purification Plant

Do not allow water, garbage or mud to accumulate around the water treatment plant. A daily record in the register is to be maintained for treated and non - treated water. The important parts of the water treatment plant like filter, chlorination bottle, etc. should be replaced from time - to - time and ensure regular backwash of the water treatment plant.

6.11 Essential Information

If there is any issue pertaining to the scheme, the VWSC may contact the local engineer from Public Health Engineering Department (PHED). VWSC should record the contact details, especially mobile number of the respective PHED official. VWSC should also be in regular touch with the local primary healthcare centre (PHC) and keep the contact details, especially mobile number of local PHC representative handy so that in case of any health emergency, they may be approached immediately.

6.12 Important Registers

The VWSC is required to maintain the following registers:

6.12.1 Meeting Register

After the constitution of GP sub-committee, i.e. VWSC/ Paani Samiti, etc. all details of the meetings held by the members like date of the meeting, place, time, members present with signature on the attendance sheet, agenda of the meeting, decisions taken, actions taken on earlier plan, etc. should be maintained.

6.12.2 Contribution Register

This register should contain details of all the contribution received from the community with respect to water supply scheme. The name of the family member should be written against the cash contribution received. The signature of the family members should be taken with their consent on the register **(Annex - 2)**.

6.12.3 Income-expenditure Register

Once the work pertaining to the drinking water supply scheme begins, an income and expenditure register should be maintained. In this register, VWSC will keep record of the income made and expenditure incurred through the official Bank Account. The last deposited amount from VWSC into the bank account should tally

Piped water supply to every household and operation of the system

with the money deposited into the bank. On every page of the register, it is necessary to have the signatures of the President of VWSC and Panchayat Secretary **(Annex - 3).**

6.12.4 Material/ Stock Register

In this register, all the materials purchased for water supply scheme (like sand, iron, steel, cement, etc.) should be listed. The register should also have the details of the material used and remaining stock available.

6.12.5 Cash Transaction Voucher

In this register, all the information pertaining debit and credit of cash should be recorded **(Annex - 4)**.

6.12.6 Bank transaction register

In this register, all the money withdrawn and deposited in the bank for drinking water supply scheme will be recorded **(Annex - 5)**.

6.12.7 Quality Register

Upon commissioning of the water supply scheme, VWSC has to check the quality of the water at both source(s) and delivery points in regular intervals to be decided by VWSC. Water quality testing is to be done twice a year for bacteriological contamination and once a year for chemical contamination.

This register will have the details of source/ delivery point tested, type of test, quality of water tested, date of water testing, name of the person who carried the test, etc. The names and contact numbers of the five members from village responsible for water quality surveillance activities should also be mentioned. The testing results should be put up at a prominent location in the village for wide dissemination.

6.12.8 O&M of Water Supply Scheme

O&M of drinking water supply scheme in the village is to be carried out by utilizing the funds collected as water user charges paid by the local community. Apart from this, tied-grants under 15th Finance Commission can also be used.

For the purpose of long-term O&M, the Gram Panchayat can enter into a rate contract/ annual maintenance agreement with any agency or can jointly enter into a contract/ agreement along with the neighbouring GPs to ensure that safe drinking water in adequate quantity and of prescribed quality is provided on regular and long-term basis.

Following Gandhiji's principles of 'Gram Swarajya', the village community is the sole custodian of the entire programme. Women play a key role in the successful O&M of drinking water supply scheme and should be encouraged to take up leadership roles for the same. It is the community which shoulders the responsibility of planning, implementing, managing, operation & maintenance of the scheme. Funds from State Government departments, 15th Finance Commission Grants and funds allocated under MGNREGS are also made available under for drinking water supply programme. A sample for recording annual income and expenditure for O&M on in-village drinking water supply system is placed at **(Annex - 9)**.

It is expected that the village community will join the movement and put in concerted efforts to achieve the objective of providing 'Har Ghar Jal' under Jal Jeevan Mission.

Chapter-7

Conclusion

Har Ghar Jal
Jal Jeevan Mission

In accordance with the 73rd Amendment of the Constitution, the subject of 'drinking water' is vested with Gram Panchayat. Under JJM, Gram Panchayat is responsible for planning, implementation, management, operation and maintenance of water supply schemes. In addition, the GPs can collect user fees for O&M or can seek assistance for fund. For this, Public Health Engineering Department (PHED), Implementation Support Agencies (ISAs) will provide necessary assistance to the local community. Funds will be made available from Government of India and State Governments. Few works like strengthening of drinking water sources will be done utilizing funds from MGNREGS, CAMPA and 15th Finance Commission Grants, etc. Grey water treatment and reuse can be done from SBM (G), 15th FC Grants. O&M expenditure is to be met from 15th Finance Commission Grants and collection from community toward monthly water user charges.

For O&M, the user fee is to be collected as per the rate fixed by the VWSC/ Paani Samiti. 5% community contribution of in-village infrastructure to be collected in villages in hilly States, north-eastern States and villages having SC/ ST population more than 50%. For other villages, the community contribution will be 10%. This will instil 'sense of ownership' and pride among the villagers and village community will get water in adequate quantity of prescribed quality on regular and long-term basis as per the service level benchmarks. After successful commissioning of the in - village infrastructure and assessment of O&M of the scheme, 10% incentive fund will be given to the community for the emergency breakdown and maintenance.

It's very important to have adequate water in drinking water sources for successful running of the schemes.

Water supply to every household through solar power

Thus, the village community needs to select proper water source(s) and ensure recharge of the aquifer. This work needs to be taken up during the implementation of the scheme and steps/ activities to be taken to keep the source neat and clean. This kind of initiative of the local community will ensure the availability of adequate water in the drinking water sources. Effective O&M of the scheme is important to ensure every household gets water.

Availability of groundwater is affected by climate change. Effective management of water will help water availability for drinking and irrigation. The village community should adopt participatory water management approach to ensure water availability for drinking and irrigation. Rainwater harvesting, renovation of traditional water bodies in villages will greatly help in addressing the water problems in the village. Local community need to take help of Atal Bhujal Yojna being implemented for effective groundwater management. There is no alternative available except working together to address the water woes.

70% of 55 lpcd is generated as grey water from kitchen and bathroom. Its treatment and re-use is extremely important. After treatment, the villagers can use grey water for irrigation. It can also be used for growing of seasonal vegetables and fruit crops in the backyards, which will provide economic opportunities for them.

The aim of the mission is to improve the lives of people, especially the women and girls by reducing their drudgery by ensuring drinking water in the household premises. It's observed in the past that water supply schemes become successful when women actively participate in the same. That's why 50% participation of women in Village Water & Sanitation Committee (VWSC)/ Paani Samiti has been made mandatory. The village community must ensure this. Its common fact that the poor and marginalised people do not have facilities for washing and bathing. The VWSC/ Paani

Samiti should construct community washing and bathing complex utilizing SBM funds for these communities.

Under Jal Jeevan Mission, more than 2 Crore rural households were provided with tap connections in first year. In one year, the Mission has accomplished the goals with the active cooperation of the States. In 2019 - 20, 84 lakhs households were provided with tap connections. Almost 1 lakh connections are provided daily. As on date, 9 districts, 244 blocks, 40,000 villages, 1.3 lakh habitations have become 100% FHTC compliant.

This margdarshika explains the role and responsibilities of the village community, Gram Panchayat/ VWSC, ISAs, PHED, etc. so that the community gets to know the details of the schemes to be undertaken under Jal Jeevan Mission and participate actively in various important aspects of the scheme as well as effective O&M in accordance with the 73rd Amendment to the Constitution to ensure every household in the village gets piped potable water in their home regularly and on long term basis.

Annexure

Village Action Plan (VAP)

(A 5 year plan for source and system sustainability)

To identify all water related activities which helps in improving 'ease of living' of village community. (To be prepared by GP and/ or its sub-committee, i.e. VWSC/ Paani Samiti/ User Group etc. and to be approved in *Gram Sabha* before submitting to DWSM. ISA is to provide handhold support)

1. Date of preparation:_____

Date of approval in *Gram Sabha*:_____

Date submitted to DWSM:_____

2. Village name: _____

GP name: _____

Block name: _____

District name: _____

State name: _____

Village census code: _____

(No. of habitations and habitation names, if applicable)

I. GP Resolution

3. **Aspiration of village community:** FHTC to _____ number of rural households by year _____ with water supply in adequate quantity of ___ lpcd of prescribed quality* on a regular basis, i.e. _____ no. of hours everyday alongwith water supply to ____ no. of cattle troughs and ____ no. of washing/ bathing blocks.

We, the village community, take the responsibility to own, manage, operate and maintain our in-village water supply infrastructure. We will respect and protect our water bodies and will not contaminate them. We will manage our greywater and save our fresh water.

It is resolved to pay ___ % of capital cost, calculated share of O&M cost and contribute in managing water supply system.

*water quality certificate to be issued by PHED/ RWS Dept.

II. Gram Panchayat and/ or its sub-committee, i.e VWSC/ Paani Samiti/ User Group etc. details

4. Which committee will lead the planning, implementation, management, O&M of water supply scheme in village? (GP and/ or its sub-committee): _____

what is the committee called: _____

Chairperson name: _____

Gender: _____

Age: _____

5.

Member name	Gender	Age

III. General details

6.

As per 2011 Census: population: _____ No. of HHs: _____ No. of women: _____ No. of men: _____ No. of children: _____ No. of FHTCs: _____	As per current Panchayat/ Anganwadi records: current population: _____ No. of HHs: _____ No. of women: _____ No. of men: _____ No. of children: _____ No. of FHTCs: _____

7. Population projection:

Intermediate stage - 15 years from date (18% increase over present population): ____Kilo Litre/ Day (KLD)

Ultimate stage - 30 years from date (32% increase over present population): ____Kilo Litre/ Day (KLD)

8. Current cattle population (Animal husbandry records): _____

9. Agricultural cropping pattern: _____

Major crops	Kharif	Rabi
Sugarcane		
Paddy		
Maize		
Cotton		
Wheat		
Other		

10. Average district rainfall (in mm): _____

11. Topography (plain, slope, etc.): _____

IV. Situation Analysis

12. Is resource mapping done? (Y/ N)
(attach the map with VAP)

13. Is social mapping done? (Y/ N)
(attach the map with VAP)

14.

S. No.	Public Institutions Name	Is FHTC available? (Y/ N)	Is Rain Water Harvesting structure available? (Y/ N)	soak pits available? (Y/ N)
1.	School			
2.	Anganwadi			
3.	Health Centre			
4.	GP building			
5.	other			

Total daily requirement of water

15. present requirement of water - pop^{n} X rate: _____ KLD
present requirement of water for cattle: _____ KLD
No. of cattle troughs required: _____
requirement of water for intermediate stage - pop^{n} X rate: _____ KLD
requirement of water for ultimate stage - pop^{n} X rate: _____ KLD

History of water supply

16. history of water supply/ availability in the village, drought/ scarcity/ cyclone/ flood or any other natural calamity pattern, general trend of water availability:

17. any history of emergency arrangements like water supply through tanks, trains, etc.:

18. history of part work related to water supply, source strengthening,

19. history of water-borne diseases:

Water quality

20. Dates identified for WQ surveillance with community using FTKs/ vials: _____

21. Dates identified for sanitary inspection: _____

22. water quality of existing/ proposed drinking water source(s) used in the water supply scheme:source name (location): _____

Parameter	Method	Result
Turbidity	visual comparison	
pH	strip colour comparison	
Total Hardness	titrimetric method	
Total Alkalinity	titrimetric method	
Chloride	titrimetric method	
Ammonia	visual colour comparison	
Phosphate	visual colour comparison	
Residual Chlorine	visual colour comparison	
Iron	visual colour comparison	
Nitrate	visual colour comparison	
Fluoride	visual colour comparison	
Arsenic (in hotspots)	visual colour comparison	

Washing/ bathing blocks

23. Some poor areas in the village might not have sufficient space to have a washing space and/ or a tap connection. Number of such areas identified to have a washing/ bathing block: _____

Location name	No. of Households	Population

Source Sustainability

24. In case of groundwater source, is there a borewell recharge structure? (Y/ N)

25. List of existing water bodies in the village that need to be rejuvenated/ mainted:

Greywater management

26. Greywater generated (65% of water supply): _____ KLD

No. of HHs with individual soak pits: _____

No. of HHs that need individual soak pits: _____

No. of community soak pits needed:: _____

Is there a need for waste stabilization pond? (Y/ N): _____

If Yes, location identified for it: _____

If No, what other greywater management measures to be adopted? _____

V. Water Supply Scheme

27. FHTCs will be provided under which of the following category:

- retrofitting of ongoing schemes taken up under erstwhile NRDWP for the last mile connectivity
- retrofitting of completed RWS to make it JJM compliant
- SVS in villages having adequate groundwater/ spring water/ local or surface water source of prescribed quality
- SVS in villages having adequate groundwater that needs treatment
- MVS with water grids/ regional water supply schemes
- mini solar power based PWS in isolated/ tribal hamlets

28. Water source identified: _____Proposed water supply scheme based on techno-economic and socio - economic appraisal: _____
Land identified for the scheme: _____
Date by when land will be handed over to PHED/ RWS Dept.: _____cost of scheme:_____ GoI share:_____ State share: _____
Community share: _____ Individual household contribution: _____Annual O&M charges: _____Individual household monthly water tariff/ user charge:_____If any remote habitations, PWS identified:_____

VI. Convergence

(The following table indicates the possible schemes under which activity/ fund convergence is possible. Village community is to send proposals to the identified schemes as per village requirements)

29	Name of the Scheme	Central/ State Government Department	Possible activities that can be taken up
	Jal jeevan Mission	Rural water supply department	Plan to providing functional household tap connection to each family
	Atal Bhujal yojana	Water resource (only Gujrat, Haryana, Karnataka, Madhya Pradesh, Maharashtra, Rajasthan and Uttar Pradesh)	To increase ground water yield and recharge of water source etc.
	Fourteenth Finance Commission	GP	Greywater management, drainage systems, etc.
	Swachh Bharat Mission - Grameen (SBM - G)	Department of Drinking Water and Sanitation, M/o Jal Shakti	Greywater management – soak pits (individual/ community), waste stabilization ponds, etc.
	MGNREGS	M/o Rural Development	All water conservation activities under Natural Resource Management (NRM) component
	Integrated watershed Management Programme (IWMP)	D/o Land Resources	Watershed management/ RWH/ artificial recharge, creation/ augmentation of water bodies, etc.
	Repair, Renovation and Restoration of water bodies	D/o Water Resources, River Development and Ganga Rejuvenation	Restoration of larger water bodies
	Rashtriya Krishi Vikas Yojana (RKVY)	M/o Agriculture, Cooperation and Farmers Welfare	Watershed related works
	Pradhan Mantri Krishi Sinchayee Yojana (PMKSY)	M/o Agriculture, Cooperation and Farmers Welfare	Provision of micro - irrigation for various water - intensive crops to reduce drawl of water from aquifers
	Compensatory Afforestation fund Management and Planning Authority	M/o Environment, Forests and Climate Change	Afforestation, regeneration of forest ecosystem, watershed development, etc.

	Pradhan Mantri Kaushal Vikas Yojana (PMKVY)	M/o Skill Development and Entrepreneurship	Skill development, training, etc. for human resources required for RWS schemes
	Samagra Shiksha	M/o Human Resource Development	Provision of drinking water supply in schools
	Aspirational districts programme	NITI Aayog	Water conservation activities taken up under discretionary funds with District Collector
	District Mineral Development Fund (DMF)	State	Water conservation activities on large scale
	MPLAD	Ministry of Statistics and Programme Implementation (MoSPI)	In-village infrastructure
	MLALAD	State	In-village infrastructure
	Grants under Article 275 (1) of the Constitution/ Tribal Sub Scheme (TSS)	Ministry of Tribal Affairs and State	In-village infrastructure
	Donors/ sponsors		

Signature of chairperson:_____

Name & signature of PHED/ RWS Dept. official: _____

Name & signature of ISA representative (if applicable):_____

Contact Details

GP and/ or its sub-committee, i.e. VWSC/ Paani Samiti/ User Group, etc. chairperson: _____

Panchayat Secretary name and phone number: _____

Barefoot technician name and phone number: _____

Five women to ensure water quality surveillance, names and phone numbers: _____

1.

2.

3.

4.

5.

Pump operator name and phone number:

Annex - 2

Sample of receipt

Name of village water and sanitation committee: _____

Tehsil:_____District:_____

S. No.	Name of the Person	First Installment		Second Installment		Total fund recieved
		Public Fund (Rs.)	Date of Arrival	Public Fund (Rs.)	Date of Arrival	

Annex - 3

Sample of daily account register

Cash Match											
Name of Water Committee:						Tehsil:					
Income						Payment					
Month & Date	Access Number	Description	Check Number	Total of Bank	Total Cash	Month & Date	Voucher Number	Description	Check Number	Total of Bank	Total Cash
comment											
1. Column 1/ 7 indicates the month and date of income - payment.											
2. Column 2/ 8 indicates the nuber of the voucher of income-payment.											
3. Column 3/ 9 indicates the money and expenses received.											
4. Column 4/ 10 displays income and payments from cheques, which will help in getting the bank.											

Sample Voucher

Cash and Bank Vouchers			
Payment Voucher			
Name of the Borrower:		Number of Voucher:	
		Date of Voucher:	
		Amount:	
S. No.	**Purpose/ Details of payment**	**Check Number**	**Amount**
	Total:		
Name of Voucherer:			
Amount Rs. _____ in words (Rs. _____only) **Payment is made for _____**			
Signature of Lender:			
Signature of approver:			

Bank Matching Sample

Registration with Bank

Month:

Village Name:

Bank Name:

Description	Amount
Bank Passbook-wise	
(a)	
+ Amount deposited but not deposited by bank	
(b)	
-Cheque issued but not submitted to bank	
-Deposited by bank but not deposited in cash	
(c)	
Rest in cash register (b-a)	
List of cheques not deposited to the bank	
Check number and date	Amount (Rs.)
Total:	

Jal Jeevan Mission

Har Ghar Jal

Village Certificate for 100% Functional Household Tap Connection

Building Patnerships

Changing Lives

I_____, Sarpanch/ Chairman, Village Water and Sanitation Committee/ Water Committee of _____ Gram Panchayat, _____ Disrict, _____ State and I _____ Panchayat Secretary, certify that 100% of functional household tap connection has been provided in village. The proposal has been passed today on ____/_____/_____ in Gram Sabha.

Signature	Signature
Sarpanch/ Chairman/ Water Committee	Panchayat Secretary
Name	Name
Official seal	Official seal

Proposed slogans for branding on walls (measurement - 6' x 2')

Har Ghar Jal Jal Jeevan Mission	**Water is life, So the source of pure water is its base.**
Har Ghar Jal Jal Jeevan Mission	**You will pay attention to the source, Source will make our work easier.**
Har Ghar Jal Jal Jeevan Mission	**If water is there , there is future, If you save water, life will be saved.**
Har Ghar Jal Jal Jeevan Mission	**Rain water is a boon of nature, it contributes water source replenishment.**
Har Ghar Jal Jal Jeevan Mission	**Water is priceless, make it valuable by recharging the water source.**
Har Ghar Jal Jal Jeevan Mission	**Make public participation in water and donate in kind. Get adequate quantity of pure water and have welfare of people.**
Har Ghar Jal Jal Jeevan Mission	**Let us do some contribution, lets contribute in JJM.**
Har Ghar Jal Jal Jeevan Mission	**We have to bring tap water to each house to make a happy village.**
Har Ghar Jal Jal Jeevan Mission	**Let's join hands together to ensure Har Ghar Jal.**

Har Ghar Jal Jal Jeevan Mission	One key to happiness, there should be no waste of water.
Har Ghar Jal Jal Jeevan Mission	Water is precious jewel of life, try to save it.
Har Ghar Jal Jal Jeevan Mission	Every house must have tap and water from tap.
Har Ghar Jal Jal Jeevan Mission	Water has it's own tomorrow and life dependent on it.
Har Ghar Jal Jal Jeevan Mission	Use water as when required, this your contribution in water conservation.
Har Ghar Jal Jal Jeevan Mission	Every child, young and old, become hero by saving water.
Har Ghar Jal Jal Jeevan Mission	You will become thirsty, if you do not save water.
Har Ghar Jal Jal Jeevan Mission	Water is the hope of life try to save it.
Har Ghar Jal Jal Jeevan Mission	Water is the basis of life consider to save it.

Sample of Sign Board (8'x 6') with Jal Jeevan Mission logo (1'5"x 2')

Jal Jeevan Mission

Har Ghar jal

सत्यमेव जयते

Village Name:_____ Block Name:_____ District Name:_____ State Name:_____

Name of Drinking Water Scheme: _____Total Cost Rupee _____ Date of Approval in Gram Sabha:_____ Centre Fund: Rs. _____ State Fund: _____Community Contribution: Rs. _____ Cash/ KindDate of Technical Sanction: _____Date of Issue of Work order: _____ Date of Completion of Work: _____ Name of Agency:_____

Name of Implementing Support Agency: _____

Name of work	Cost in Rs.	Name of the main works	Cost in Rs.	Quantity
Plan of source recharge		Bore/ Bore Work of source		
Water scheme		Rising/ Distribution mains		
Plan for gray water management		Treatment/ Elevated service reservoir (E.S.R)		
Plan for mantinance		Measuring and evaluation functions		

Names and mobile numbers of key persons

Gram Pradhan: _____/_____ Chairman Committee: _____/_____

Panchayat Secretary: _____/_____Engineer: _____/_____ Assistant Agency: _____/_____

Draft Template for Annual O&M Budget for Single Village Schemes													
No.	**Budget Heads**	**Financial Year 2020 - 21**											
		Apr	May	June	July	Aug	Sept	Oct	Nov	Dec	Jan	Feb	Mar
A	**Expenditure**												
A.1	**Salaries/ Incentives**												
i.)	Water Men/ Pump Operator												
ii.)	Tariff Collectors												
iii.)	Others												
	Sub Total A.1												
A.2	**Electricity Payments**												
i.)	Pump Electricity Bills												
ii.)	Other General Electricity Bills												
	Sub Total A.2												
A.3	Payment to Service Providers / Vendors												
i.)	Plumbers												
ii.)	Electricians												
iii.)	Labours												
	Sub Total A.3												
A.4	**Purchases**												
i.)	Pipe and related materials												
ii.)	Bleaching Powder and Consumables												
iii.)	Tools												
iv.)	Stationery												
v.)	Water Testing Charges												

vi.)	Bulk Water Charges if any												
vii.)	Other												
viii.)	*Sub Total A.4*												
A.5	**Repairs**												
i.)	Repair of Pipes/ Leaks												
ii.)	Repair of Valves												
iii.)	Repairs of Chlorinator												
iv.)	Electrical Repairs												
v.)	Repairs of Pumps												
vi.)	Cleaning of Village OHT												
vii.)	Repairs to HTC/ HSC												
viii.)	New House Connections												
ix.)	Disconnection of HTC/HSC												
x.)	Civil Works (Source/ OHT/ Pipelines/ Other)												
xi.)	Other												
xii.)	*Sub Total A.5*												
A.6	**Reserve Funds @10% of total demand**												
	Sub Total A.6												
A.7	**Miscellaneous**												
i.)	Meetings												
ii.)	Local Conveyance												
iii.)	Local Trainings												

iv.)	Other incidental expenses												
	Sub Total A.7												
	Total Expenditure A = A.1 to A.7												
B	**Income**												
B.1	**Water User Charges**												
i.)	No of Households with HTC												
ii.)	Water User Charge per Household												
iii.)	Total Water User Charges Estimated												
	Less												
iv.)	Subsidized/ Free Supply to xxx HHs												
v.)	Total Water User Charges to be waived												
vi.)	Net Expected Collection of Water User Charges												
B.2	**State/ Central Grants**												
i.)	Expected Grants												
	Total Income B = B.1.6+ B.2												
C	**Surplus/ Deficit**												
	Total C = Total Income (B) Less Total Expenditure (A)												

Jal Jeevan Mission

Best Tableaux Republic Day Parade 2020 on Jal Jeevan Mission

Har Ghar Jal

Har Ghar Jal
Jal Jeevan Mission

Building Partnership

Changing Lives

National Jal Jeevan Mission
Department of Drinking Water & Sanitation
Ministry of Jal Shakti
Government of India
4th Floor, Pandit Deendayal Antyodaya Bhawan, CGO Complex, Lodi Road, New Delhi 110 003

Jal Jeevan Mission, India | @jaljeevan_ | @jaljeevan_ | jjm.gov.in

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