Module on Water Situation and JJM

SIGMA FOUNDATION

I. Background

Water is essential for life, human dignity, and the health of people and planet. It is integral to our social, environmental, and cultural commons. The human right to water and sanitation is, therefore, foundational to the realization and enjoyment of all other human rights. In September 2016, India has committed herself to ensuring access to safe drinking water and to sanitation in Goal 6 of the 2030 Agenda for Sustainable Development (SDG 6). It has explicitly reaffirmed its commitment to the human right to water and sanitation in paragraph 7 of the Agenda's declaration.

Water, which gives life to all human beings and has been recognized as being vital to India's economic growth, wellbeing of is people, and the sustainability of ecosystems, has become endangered with time due to a number of factors. India, which is the second most populous country has about 18% of the world's population and supports 20% of the world's livestock population as compared to 4% of its water resources (India-WRIS wiki 2015). Booming economies, population growth, rapid urbanization along with changes in the food consumption, lifestyle and land use pattern has a considerable impact on India's water demand. Although India receives plenty of water as rainfall during monsoon, due to lack of effective planning and storage, only a small percentage of that water is actually added to the reserve. As per international norms, countries with per-capita water availability less than 1700 m^3 per year is categorized as water stressed, with per capita available water of 1545 m^3, India is definitely water stressed country (India-WRIS wiki 2015, Census, 2011). Studies show that the projected per capita water availability will become 1401 m^3 and 1191 m^3 by 2025 and 2050 respectively and eventually India is likely to become a water scarce country (India-WRIS wiki 2015, Gangwar 2013).

India's total annual utilizable water resources is 1123 bcm (690 bcm surface water + 433bcm ground water). Being an agrarian country, irrigation by far is the largest user of India's water reserve with hooping usage of 78% of total water reserve, followed by domestic sector (6%) and industrial sector (5%) (Press Information Bureau 2013). Ground water is an important source for irrigation as well as for domestic and industrial usage. It is also a major source of drinking water in urban and rural India. 45% of total irrigation and 80% of domestic water come from ground water reserve. Rise in demand and development pressure are changing the characteristics of water in India. The ground water is more depleted and less available and surface water is getting more and more polluted and unsuitable for human use. India has met the millennium development goal (target 7c) to decrease the percentage of people with the lack of "access to safe drinking water" to 50% (UNICEF and WHO, 2012) for Water Supply and Sanitation but 76 Million population still don't have safe drinking water (Wateraid, 2016). India ranks 13th among the world's 17th extremely water-stressed' countries, according to the World Resources Institute (WRI).

II. Lack of access to safe drinking water

Access to safe drinking water has been a grave problem for India, especially in rural areas where lack of usable water has resulted in decade old sanitation and health problems. Government records show that in 1980, just 1% of India's rural areas had access to safe, usable water. By 2013, that had increased to 30%, but the majority of rural India continues to live without proper access to safe drinking water. An estimated 76 million people in India have no access to a safe water supply, and the situation is only getting more serious.

About 82% of rural households in India do not have individual piped water supply, and 163 million live without access to clean water close to their homes. 70% of India's surface water is contaminated through bacteriological or chemical contamination. India is

currently ranked 120 among 122 countries in the water quality index. According to the composite water quality index report released by NITI Aayog, 2,00,000 people die in every year due to inadequate access to safe drinking water. Estimates suggest that ~INR 20,00,000 crores in investments are required to bridge the expected water supply gap by 2030.

III. Water scenario in West Bengal

West Bengal covers 2.7 per cent of the national territory and renders home to 8 per cent of the Indian population. The State is endowed with 7.5 per cent of the water resource of the country and that is becoming increasingly scarce with the growth of population, expansion of irrigation network and developmental needs. The Bengal Delta, which was described as areas of ‘excess’ water in the colonial document, now suffers from acute dearth of water during lean months. The spatial and temporal variability of rain within the State causes the twin menaces of flood and drought. The rivers flowing through this State have altered their courses appreciably during last two centuries and many of those have been wiped out from the map.

In regard to natural resources, ground water availability in West Bengal is sufficient overall, and the state has provided one tube well for approximately every 150 people in the rural areas but 174 blocks have registered depletion of ground water table at the rate of more than 20 cm per year. 91% of West Bengal’s rural population and 41% of its urban population still rely on its groundwater reserves for drinking, despite being located alongside two of the largest rivers in India, the Ganges and Brahmaputra. The excessive reliance on groundwater is aggravating exposure to arsenic and fluoride in drinking water, as well as the effects of climate change. 8

districts are affected by salinity, Purba Medinipur being the most impacted. The supply systems are also vulnerable to climate change and disaster risks, especially regular flooding.

The infant mortality rate of West Bengal is 22 comparatively lower than that of the national average of 32 as on 2018 as per SRS bulletin 2020. However, the morbidity rate and numbers in West Bengal are comparatively high. As per NFHS 5 (conducted in 2019-20), incidence of diarrhoea in West Bengal was 6.5% and that for Birbhum was 9.5%.

IV. Water Scenario in Birbhum

The Geological Survey of India (GSI) undertook a follow-up study during 1999–2018 covering an area of some 600 sq. km of West Bengal in order to determine the scale and cause of contamination. Fluoride problems were found to be mostly associated with tube wells abstracting from basaltic rocks of the Rajmahal Traps (http://www.wbphed.gov.in). Shear zones in Precambrian rocks were also found to be associated with high-fluoride groundwater in parts of Purulia and Bankura districts. Dug wells, ponds, and shallow tube wells tapping alluvium had low fluoride concentrations. The table below shows the fluoride affected blocks of Birbhum.

District	Fluoride affected Blocks	No. of Blocks
Birbhum	Khoyrasol, Mayureshwar I, Nalhati I, Rajnagar, Rampurhat I, Sainthia, Suri II	7

Source-PHED

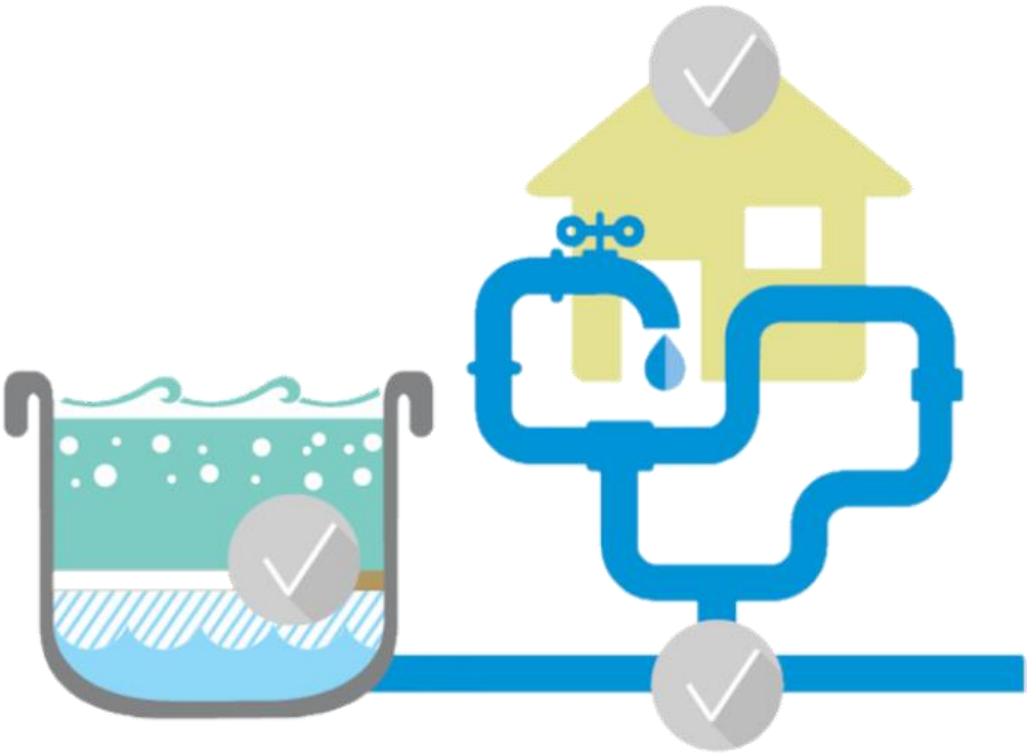
Data from the PHED shows that as of August 2016, an estimated a total of 615,000 people in the state were affected by fluoride >1.5 mg/L and 55671 people in Birbhum affected with fluoride.

District	No. of Habitations	Total Population	Affected habitation	Affected Population	% population
Birbhum	4335	34,16,742	51	55,671	1.60

Source-PHED

V. Importance of Water Safety Plan (as part of WSSP)

The most effective means of consistently ensuring the safety of a drinking-water supply is through the use of a comprehensive risk assessment and risk management approach that encompasses all steps in the water supply from catchment to consumer. The WSP approach as part of Water Safety and Sanitation Plan (WSSP) has been developed to organize and systematize a long history of management practices applied to drinking-water and to ensure the applicability of these practices to the management of drinking-water quality. WSPs represent an evolution of the concept of sanitary surveys and vulnerability assessments that include and encompass the whole of the water supply system and its operation. The WSP approach draws on many of the principles and concepts from other risk management approaches, in particular the multiple-barrier approach and hazard assessment and critical control points. The primary objectives of a WSP in ensuring good drinking-water supply practice are the prevention or minimization of contamination of source waters, the reduction or removal of contamination through treatment processes and the prevention of contamination during storage, distribution and handling of drinking-water. WSPs should be developed for individual drinking-water systems. Plans dealing with household water should be linked to a hygiene education programme and advice to households in maintaining water safety.



VI. Gender and WASH

- A lack of access to water, sanitation and hygiene (WASH) affects women and girls disproportionally, due both to biological and cultural factors.
- Other than meeting the needs for menstrual and reproductive health, improved WASH with easy access to safe water facilitates their **social and economic development**, reduces their burden on fetching water/ child care and all those contribute towards gender equality and the realization of their rights.

Role of WASH in maternal and newborn health

- Collecting and carrying water while pregnant can cause difficulties in pregnancy and other reproductive health consequences, such as uterine prolapse.
- Women who lack safe water are more prone to WASH-related illnesses, such as hookworm infestation, which, when occurring during pregnancy, is linked to low birth weight, slow child growth and hepatitis.
- Proper handwashing and other hygiene promotion with piped supplies are key to safe baby care and breastfeeding. A lack of safe drinking water can be fatal for babies.

Role of WASH in education for girls and young women

- Opportunities for learning are lost when children have to spend time collecting water or finding a safe place to defecate or urinate in the open; this is especially a problem for girls due to their additional burden of menstrual hygiene management (MHM).
- Good access to safe drinking water, improved toilets and hand washing facilities during the school time improves the learning environment for both students, teachers and other school staffs leading to better learning outcome

Role of WASH in preventing violent behaviour towards women

- Women are often vulnerable to harassment or violence when they have to travel long distances to fetch water, use shared toilets, or practice open defecation.
- The shame and indignity of defecating in the open also affects women's self-esteem, as does a lack of water for washing clothes and personal hygiene.

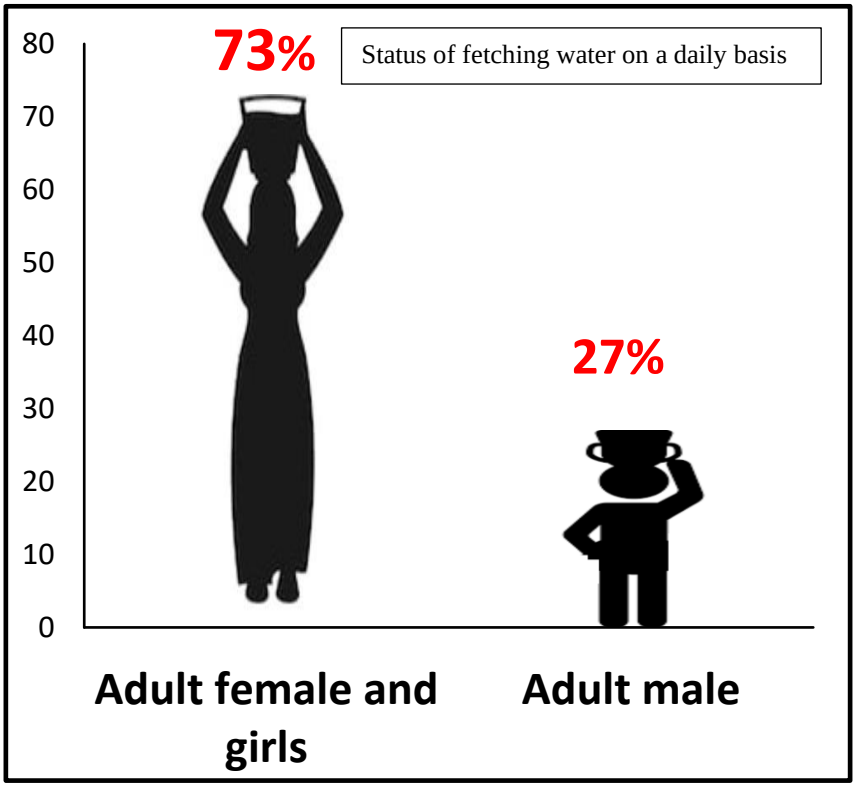
Role of WASH in empowering women economically

- Women and girls perform most of the unpaid labour associated with WASH in the HH and the community. This reduces the time they have get for education, economic activities and leisure.
- The burden related to WASH acts as a barrier to their empowerment and perpetuates gender inequality.
- With improved access to WASH, women get more time for income generating activities and the you girls can attend to the schools and get more time to study.

- Easier access to water within the premises can, for example, enable a woman to water a kitchen garden, improving her family's food security and providing an opportunity to earn money by selling the surplus.
- Women's involvement in decision-making about water resources and in WASH programmes is critical. But their involvement to improve the quality of life needs to be focused through various orientation programmes.
- In spite of all the said advantages, women are left to continue with their drudgeries because that is perceived as normal, as prescribe by the society which stands as a big barrier to their emancipation.
- ***Role of WASH in realizing women's rights***
- Water and sanitation are recognized as human rights, incorporated in the International Covenant on Economic Social and Cultural Rights.
- The rights to water and sanitation require that these basics are adequate, accessible, safe, acceptable and affordable for all without discrimination, and violations of these constitute a violation of women's rights.
- Empowerment and participation are key to claiming rights. A lack of informed participation by women often results in WASH services that are inappropriate, inaccessible and unaffordable.
- Programmes that include women at all stages of planning, implementing and monitoring are more efficient, effective and sustainable than those that do not prioritize equitable participation and decision-making.
- While better access to WASH will always lighten the domestic burden, it will not be sufficient if their burden on other domestic chores is increased. Any approach to improve access to domestic WASH services must also include a challenge to the stereotype of the woman or girl in the home and serving the family, rather women to fulfil their social and economic goals.
- Increasing gender equality can only have a positive impact on access to WASH for women, and vice versa. Greater gender equality leads to women and girls having a greater say in how services are delivered, improving the likelihood that services meet their various needs. Further, improving water and sanitation services for women and girls will improve gender equality, given the importance of WASH to fulfilling traditional roles of women and girls.

A study was conducted by SIGMA Foundation in 12 villages of Bankura; 4 villages with deprivation more than 66%; 4 villages with deprivation less than 33%; 4 villages with water scarcity; Survey conducted with 60 men and 60 women. The study found that although both men and women had responded that they should equally share the burden of fetching water however, the burden was shared mostly by women. The drudgery of the women based on gender is also reflected in their responses as to who is more responsible for storage and management of water at home. Responses of the women reflect that share of responsibilities of

women and men were 80:20 while that of the men was 60:40. This indicates that the burden of such unpaid work of women at home is high but it is taken as granted as the responsibility of the women and is not recognized adequately by men. The men need to be sensitized to appreciate the value of unpaid works of women and not to look down upon such works. Figure 1 indicated that at least 73% adults' women and girls are mostly responsible for fetching water and only 27% adult males are carrying water on a regular basis in a pilot district in West Bengal.



VII. Jal Jeevan Mission

The Central Government assistance to States for rural water supply began in 1972 with the launch of Accelerated Rural Water Supply Programme. It was renamed as National Rural Drinking Water Programme (NRDWP) in 2009, which is a centrally sponsored scheme with fund sharing between the Centre and the States. Under NRDWP, one of the objectives was to "enable all households to have access to and use safe & adequate drinking water within premises to the extent possible". It was proposed to achieve the goal by 2030, coinciding with the United Nation's Sustainable Development Goals. But now, it has been planned to achieve the goal by 2024 through Jal Jeevan Mission (JJM).

As per the information available with DDWS, as on 31.3.2019, only 18.33% of rural households i.e., 3.27 Crore out of the total 17.87 Crore rural households in the country, have piped water connection. Government of India has restructured and subsumed the ongoing National Rural Drinking Water Programme(NRDWP) into Jal Jeevan Mission (JJM) to provide

Functional Household Tap Connection (FHTC) to every rural household i.e., Har Ghar Nal Se Jal (HGNSJ) by 2024.

The broad objectives of the Mission are:

- To provide FHTC to every rural household.
- To prioritize provision of FHTCs in quality affected areas, villages in drought prone and desert areas, Sansad Adarsh Gram Yojana (SAGY) villages, etc.
- To provide functional tap connection to Schools, Anganwadi centres, GP buildings, Health centres, wellness centres and community buildings
- To monitor functionality of tap connections.
- To promote and ensure voluntary ownership among local community by way of contribution in cash, kind and/ or labour and voluntary labour (shramdaan)
- To assist in ensuring sustainability of water supply system, i.e. water source, water supply infrastructure, and funds for regular O&M
- To empower and develop human resource in the sector such that the demands of construction, plumbing, electrical, water quality management, water treatment, catchment protection, O&M, etc. are taken care of in short and long term
- To bring awareness on various aspects and significance of safe drinking water and involvement of stakeholders in a manner that make water everyone's business

The following kinds of works/ schemes are proposed to be taken up under JJM:

i.) In-village water supply (IVWS) infrastructure for tap water connection to every household;

ii.) Reliable drinking water source development/ augmentation of existing sources;

iii.) Transfer of water (multi-village scheme; where quantity & quality issues are there in the local water sources);

iv.) Technological intervention for treatment to make water potable (where water quality is an issue, but quantity is sufficient);

v.) Retrofitting of completed and ongoing piped water supply schemes to provide FHTC and raise the service level;

vi.) Grey water management;

vii.) Capacity building of various stakeholders and support activities to facilitate the implementation.

Service level delivery under JJM:

The goal of JJM is to provide functional household tap connection to every household with service level at the rate of 55 litres per capita per day (lpcd).

- JJM aims at providing potable water in adequate quantity i.e. 55 litre per capita per day (lpcd) of prescribed quality i.e. BIS Standard of IS: 10500 on regular basis. Assured availability of safe drinking water in the household premises will improve the health and thereby socio-economic condition of the rural population and will also bring down the drudgery of rural women, especially girls.

- JJM envisages a structural change in the provision of drinking water supply services. **The service provision should change to 'utility based approach' centered on 'service delivery'**.

In-Village Water Supply Infrastructure

To provide FHTCs to all rural households, in-village water supply infrastructure will be created through Single Village Scheme (SVS)/ Multi Village Scheme (MVS)/ solar power-based stand-alone schemes for scattered areas. The Gram Panchayat and/ or its subcommittee, i.e. VWSC/ Paani Samiti/ User Group, etc. will be responsible to plan, implement, manage, operate and maintain in-village water supply infrastructure and water resources including greywater management to meet drinking and domestic needs. It will include protection of drinking water source(s) as well as treatment and reuse of greywater

For every Village, Village Action Plan (VAP) for providing FHTCs to all households will include cost estimates, implementation schedule, O&M arrangement, contribution from each household towards partial capital cost and O&M, type design of ESR/ sumps, washing and bathing complex with a toilet for poor landless families, cattle trough, greywater management, source sustainability measures, plan to maintain all water bodies in village, etc. The VAP will plan for piped water supply in scattered settlements as per the requirement. The format for preparation of VAP is at Annex XA which can be further modified as per local requirement. The VAP under JJM will be integrated with Gram Panchayat Development Plan (GPDP).

Regional Water Supply and Distribution Network

In villages with water quality issues and paucity of surface water sources, especially in drought-prone and desert areas, to achieve water security bulk water transfer from long distances is a reality. Further, in drought-prone and desert areas, where it is not possible to have water supply through conjunctive use, a similar approach to transfer bulk water from long distance will be adopted. In States with water-scarce/ areas lying in rain shadow region with inadequate rainfall, it is necessary to plan for regional water supply schemes covering both urban and rural areas of this region by sourcing water from a perennial surface source.

Since the water is transferred from long distance at a very high cost, it is essential to have least loss of water during transmission. For this purpose, it is necessary to have District Metering Area (DMA) with SCADA (Supervisory Control & Data Acquisition systems) and/ or sensor-based mechanism to monitor quality of service delivery and reduce non-revenue water.

Bulk water transfer/ multiple village schemes have higher per capita & maintenance costs, and require skilled human resources. Hence, the States have to judiciously plan these works, preferably as a last option, keeping in view the availability of resources and future O&M expenditure.

VIII. Community empowerment and participation

(i) To achieve equitable distribution of water

Water is essential for life and, therefore, is treated as a right. Supreme Court of India has passed judgement clarifying that right to water is to be seen as right to life as provided in the Constitution of India. So, everyone should have equitable share of available water for drinking and other essential needs through equity and inclusiveness. Although provision may be made to have equity in water supply but there could be many social factors, which may deprive the population belonging to the most vulnerable groups for accessing the same.

(ii)Sustainable use of water for meeting all needs in a rational manner

Current use of water is unsustainable, with continuous decline of per capita availability of water. There has to be balance between availability and use of water through both conservation of available water and rationalizing use of water. There is need for awareness that everyone should use water rationally for meeting all needs to sustain life, taking up economic and social activities. There is competing demand among different purposes for which water is used and by different users, which needs to be addressed through participatory decision making by all the users. As discussed before, there should be participation in regulating drawl of ground water and storing and recharging more water. Although water is a common property resource but there is high level of inequity in use of water and people have to limit their use to respect other's need. There is also need for monitoring use of water and its availability at the community level and making people aware of the potential danger and how to avoid that through community action. Seasonal non-availability of water is becoming a common phenomenon in many villages, which should also be monitored to augment supply/regulate use for ensuring availability of water for drinking and other domestic use.

(iii) To monitor water quality and security

Water for personal consumption should be safe with no chemical, physical and bacteriological contamination. Water quality should be regularly tested and shared with the community. Contamination of water to be prevented through better waste management and protection of sources and stopping illegal tapping of pipelines and leakage. Also, there has to be annual sanitary survey of all the sources of water as per format prescribed by Govt. of India to assess the risk of the source as well as to take preventive measures to reduce chance of contamination of the water source.

(iv) To follow water supply norms

For essential use like drinking, cooking, washing, bathing, cleaning, using for toilet/sanitation etc. every person needs at least 55 litre as per norm set by the Govt. of India. Water can be uses in a sustainable manner if everyone does not waste it.

(v) To prevent wastage of water

Water is wasted through (i) keeping taps open and letting water to flow out without being used, (ii) irrational use of water, (iii) leakage in pipelines etc. All those are to be stopped

(vi) To maintain assets for sustained use

There is need for closely watching the pipelines and maintaining the assets for supplying water for their sustained performance. Presence of leakage contaminates water since silt and microbes can enter the pipeline. So, there should be monitoring for any leakage and illegal tapping. If any leakage is found or there is illegal drawl that must be stopped immediately

(vii) To prevent illegal drawl

There is no need for illegal drawl since adequate water for decent living will be reached to every HH through pipeline under JJM. Also, there will be no need for constructing any private stand post (a few stand posts may be installed in public places, if needed). Till that water is made available to every premises through FHTC, people have to control their drawl of water so that no one else is affected by them considering that receiving adequate water is the right for everyone. So, there is need for self- control in not drawing extra water at the cost of others for ensuring equity of water availability.

(viii) Financial sustainability of the water supply

The capital cost of providing piped water into the premises through FHTC is very high (it works out to be as high as Rs 34 crore per GP for providing water on a 24X7 basis). The O&M cost is supposed to be borne by the user. It may also be mentioned that while the water as a natural resource is free and is a gift of nature but the cost of transportation, treatment and supplying the same at the premises through pipeline involves regular expenditure. Therefore, operational charges have to be borne by the user. If that is not done, O&M will be neglected resulting in reduction in life of the system and ultimately cost has to be borne by the people.

(ix) To organize community for better awareness and vigilance

Every person should be sensitized not to waste water or illegally draw water as well as to understand the crisis that is likely to be there if the present trend continues. In spite of awareness there may be incidences of waste and misuse of water for which the community should be vigilant. That will be possible only when the community is organized, appreciate the value of working together today for better future in continuously getting supply of water, committed to act together, puts in a system of monitoring and enforcing social discipline for using PWSS water when needed.

(xi) To involve women at all stages for better outcomes

The community, particularly the women's group should first be organized and sensitized on various aspects of water supply management through continuous awareness drive. Since, they have the highest stake and they suffer the most in absence of water, their organized effort in proper management of water supply is of much importance. They have to ensure that everyone follows the norm and also closely watch for any failure. They should confront any wastage and misuse of water. The GP should promote such groups and will extend all supports for proper O&M of the PWSSs and reaching services to every individual. In respect of water conservation and rational use of water, the GP and the community have to resonate with the theme of World Water Day, 2020- "We cannot afford to wait, everyone has a role to play".

(x) Management of grey water: With availability of more water at the premises, there will be more generation of grey water. There is need for good drainage system at the household as well as at the community level to drain and treat the waste water.

(xi) Livelihood development around water supply arrangement: Providing piped water at every household and maintenance of the system will require large number of plumbers and

other professionals for O&M of the water supply system. There is need for training young persons to take up those activities as their livelihood. There should be good share of women also in the said emerging professions.

IX. Way forward

There are number of ongoing Central and State funded schemes for water conservation, ground water recharge, rain water harvesting and greywater management aiming to achieve water security. Convergence of JJM activities with such ongoing schemes will augment funds and enhance water resources in terms of quality, quantity and longevity. While convergence activities are to be taken up under in-village infrastructure, special efforts are to be made in DDP/ DPAP, forested and tribal areas, water quality-affected and water-stressed areas, etc. for achieving water security. In addition to water conservation activities taken up through convergence, the mission will also converge with other Central and State government programmes aimed at skill development, training, capacity building and awareness generation among communities. The community, especially the women should be trained and their sense of ownership must be developed towards sustainable and efficient use of water, which is not just a resource but a life rendering resources for everyone and the future generations.

Pre& Post Competency Framework for WFPI Training

Water/Sanitation/Hygiene

1. How do you define improved water supply in your community?
2. Do you have any idea about the water quality problem in your block? If yes, then please specify.
3. How many blocks are affected with chemical contamination?
4. What is the full form of WASH? Do you think that WASH is important to improve the quality of life?
5. If question 4 is yes then how? Please specify with few lines.
6. What is the current approach of Jal Jeevan Mission?
7. Do you have in-village water supply system in your block? If yes, please specify.
8. Do you have any idea about the groundwater table monitoring? If yes, please explain few steps.
9. What do you mean by artificial recharge?
10. Is there any possibility to develop the ground water in your district (Birbhum)? If yes, please mention few steps?
11. Which benefits did we ger from SBM(G) phase I?
12. Do you have any idea about the components of SBM(G) II? If yes, then please specify the components.
13. Which type of toilet(s) in your GP people generally use?
14. What do you mean by retrofitting of toilet?
15. What is bio-degradable waste?
16. How do you segregate the solid waste at the household level as per Government norms?
17. Do you have any idea about the liquid waste management? If yes, then please categorize it?
18. Do you think that hand washing is very important to protect health from various disease especially COVID-19?
19. How do you classify the hygiene status?
20. What is “KABC Model” stands in context of Menstrual Hygiene?

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