Workshop Series : 3 / RD & DP / 2013

PIPED WATER SUPPLY WITHIN HOUSEHOLD

State Planning Commission

5th August 2013

Tamil Nadu State Planning Commission

The State Planning Commission was constituted in Tamil Nadu on 25th May 1971 under the Chairmanship of the Hon'ble Chief Minister as an Advisory body to make recommendations to the Government on various matters pertaining to the development of the State. The Chairman of the Commission is assisted by a team of Members, Consisting of Vice Chairman, Full Time Member & Part Time Members who are experts in various fields. The Additional Chief Secretary to Government, Planning, Development and Special Initiatives and the Principal Secretary to Government, Finance Department are the ex-officio members. The Member Secretary is responsible for administration in the Commission.

The Commission has the following technical divisions:

1. Agricultural Policy and Planning
2. Industries, Power and Transport
3. Land Use
4. Education and Employment
5. Health and Social Welfare
6. District Planning and Rural Development
7. Plan Co-ordination.

Main activities of SPC:

The major functions of the State Planning Commission are as follows:

1. Preparation of Five Year and Annual Plans based on the policies and priorities of the Government;
2. Undertake Mid Term review of the Five Year Plan, other special reviews on the Economy and advise the Government on appropriate modification and restructuring of the schemes;
3. Monitor development indicators that influence the Human Development Index, Gender Development Index, etc., at a disaggregated level and suggest correctional measures;
4. Undertake special studies as required for formulation and implementation of plan projects and programmes;
5. Tamil Nadu State Land Use Research Board (TNSLURB) is functioning under the chairmanship of Vice Chairman, State Planning Commission as a permanent body in the State Planning Commission. This Board is intended to promote interaction and study in the vital areas of land use. The State Planning Commission organizes seminars/workshops and undertake studies.
6. Human Development Reports (HDRs) were prepared for Dindigul, Sivagangai, Tiruvannamalai, Cuddalore, Nagapattinam, the Nilgiris, Kanyakumari and Dharmapuri districts. The concept of Human Development has been disseminated to all districts through workshops organized in the concerned districts. Proposal for preparation of District Human Development Reports (DHDR) for the remaining districts is under process.
7. State Balanced Growth Fund (SBGF) is operated to bridge the regional imbalances among the districts.

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Workshop Team

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Workshop Sessions

Welcome Address	**Thiru M.Balaji, I.A.S** Member Secretary State Planning Commission Chennai
Inaugural Address	**Tmt.Santha Sheela Nair,I.A.S.,(Retd)** Vice Chairman, State Planning Commission Chennai
Presentation Session – I Issues and Challenges in ensuring sustainable water supply in rural areas	Presented by **Thiru P. Santhaseelan** Joint Chief Engineer i/c TWAD Board, Chennai
Presentation Session – II Need for ensuring piped water supply to households within the premises in rural areas	**Presentation by UNICEF**
Experience Sharing	Assistant Director (Panchayat) from select district Presidents of select village panchayats
Interactive Session	Participants


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Ensuring Piped Water Supply in Rural Areas

Water is critical to life, but it is also a limited resource and several interrelated factors are decreasing its availability. These factors include climate changes, increasing demand, lowered water tables and environmental degradation. There is also the growing threat of international and intercommunity disputes over water supplies. Supply of Drinking water is the basic responsibility of the Government. Access to drinking water is an important indicator of development. Moreover, it is one of the targets under Millennium Development Goals. Supply of safe Drinking water saves rural households their time, energy and money. When drinking water is provided within the premises, it ensures reduction in incidence of water-borne diseases, reduction in child mortality, improvement in health. It is in a way paves for gender development. It reduces the drudgery of women and girl children fetching water from the sources outside their premises, reducing their valuable time which could be spent for activities of their own choice.

Pressurized pipe networks provide a means for supplying drinking water to individual dwellings, buildings and communal taps. Their widespread adoption has contributed significantly to both the reduction and control of water-related diseases. They also reduce the burden of water collection, which is borne especially by women and children, and is itself associated with much disease and injury. Further development of piped water distribution will be critical to improving health and progressing development in countries worldwide. It is no coincidence that most of our villages and towns were originally concentrated near readily available sources of fresh water such as springs, rivers and lakes.

Introduction

Tamil Nadu has a geographical area of 1,30,058 sq.km with a population of 721.38 lakh. Out of this, 371.89 lakh population live in 12,524 village panchayats. The population and area of the Tamil Nadu is 6.04 % and 4% respectively of that of the Country but the available water resources is only 3% of that of the Country. While the national decadal growth rate is 17.64%, the growth rate for Tamil Nadu is 15.5% between 2001 and 2011. Tamil Nadu is the most urbanised State with 48.45% of the State's population living in urban areas. The average rainfall is 925 mm against the average rainfall of 1170 mm of the Country. It varies from 1200 mm near coastal area to 550 mm in inland area. Though Tamil Nadu receives rainfall in the North east as well as South west monsoons, the precipitation is limited to about two months only.

During the Twelfth Five Year Plan, the prime focus would be water security instead of mere water supply. It ensures availability to all citizens at least the minimum quantity of water required for drinking and cooking

needs in safe and wholesome quantity and a desirable quality of water for other domestic uses. Water security would include ensuring that water sources and related eco-system are not only protected but also improved so that each person has access to adequate safe water at affordable cost to lead a healthy life also adequately protected from the risk of water related health problems. Safe water is essential for sustenance of human health and life. At all levels, national, state, and local as well as the public at large, our available water resources are finite and will be affected to a large extent by climate change. A State Water Policy is on the anvil and it would provide a strategic vision for the sector with ecological balance, equity and demand management being central to all planning and actions related to water. The policy would be governed by two principles of "Public Trust" and "Right to water". The first implies that water is held by the state on behalf of the community and the second implies that the state shall ensure minimum core quantity of water to individuals.

"Water" has been declared as a public good and every person has the right to demand drinking water. Hence, it becomes the lifeline activity of the Government to ensure that this basic need of the people is met. The primary responsibility of providing drinking water facilities in the country rests with the State Government. The National Water Policy has assigned the highest priority for drinking water supply needs followed by irrigation, hydro-power, navigation and industrial and other uses. The State also envisages a minimum allocation of 10% towards drinking water of all the water resources. With the 73rd and 74th amendments, drinking water and sanitation are the responsibilities of local bodies.

Executive Summary

A workshop was orgnaised on 05.08.2013 at the State Planning Commission on the Augmentation of drinking water sources in rural areas and ensuring piped water to households within premises. The Workshop deliberated on the efforts of the Tamil Nadu Water Supply and Drainage Board in providing water supply to rural areas and augmentation of sources, the role of Rural Development Department in ensuring water supply to all households and the role of Panchayat Presidents in the proper upkeep of the system, efficiency of supply and efforts to conserve water sources within the local bodies.

The State Planning Commission set the background for the workshop by posing the existing status in the access to piped water supply to households and the issues of Feasibility, Availability, Affordability, Accessibility and Policy Framework for ensuring piped water supply within premises to rural households.

The Country's as well as the State's Twelfth Five Year Plan aim to provide water supply to all households on a continuous basis. The State's Vision for 2023 goes beyond provision of water to citizens to ensuring pressurized piped water supply.

Improved water and sanitation impact many areas of life, from health, education, time saving, and poverty reduction to maintaining a dignified way of life. One of the major outcomes of the provision and use of protected water, sanitation and practice of hygiene is avoiding morbidity. Several studies across the globe show improvements in health and education indicators, specifically the education of the girl child.

Disease burden among the people can be either water related or water borne. Water related disease burden can be due to chemical contamination either due to earth's crust or due to man-made effluents reaching water sources. Further it could also be because of biological contamination (water borne).

Water supply within the household reduces the time spent on water collection, enable increase in household income, improvement in school attendance, and decrease in healthcare expenditure. These can be attributed to the time savings resulting from profitable employment of womenfolk, assured safe drinking water at the collection point preventing many waterborne diseases and also other illness headache, acute chest aches, and backache and spine ailments in women due to carrying water for long distances thus reducing healthcare expenditure.

In communities with a developed a water distribution system, which allows all households to have tap connections and enjoy 24×7 water supply have been able to reduce the consumption of water as well as power to pump water.

Over-exploitation and consequent ground water development is inducing more chemical contamination in aquifers. Therefore, wherever feasible hydro-geologically, artificial recharge of groundwater for in situ dilution of chemical contaminants has been recommended.

The major problems with rural drinking water are its adequacy and quality. Declining water tables, loss of water bodies has made availability of water for all a challenge. Fundamental changes are required with respect to the approach towards drinking water supply.

The Tamil Nadu Water Supply and Drainage Board through its various water supply programmes, provides water to 98179 rural habitations. The total demand for drinking water in rural areas is 19.18 TMC. There are 76704 fully covered habitations which receive 40 lpcd & above and the rest are partially covered as they receive between 10 lpcd – 39 lpcd. Alongwith the water supply programmes, the Board implements source sustainability works. These works include construction of Check Dams, Percolation Ponds, Recharge Shafts and Improvement to Traditional Ooranies.

The Rural Development aims at improving the socio-economic standard of the people with their participation. Provision of social amenities such as water supply sanitation, anganwadis, Public Distribution system outlets, schools, roads, etc, is accomplished through rural development programmes. The District Rural Development Agencies, take measures to identify water sources in rural areas, converge programmes such as Mahatma Gandhi National Rural Employment Guarantee Scheme and State sponsored area development programmes to augment water sources and maintenance of water bodies.

Local bodies play a crucial role in improving piped water supply to households within their premises. Providing house-service connection would be a source of income for the village panchayat. With public participation and ensuring user accountability, wastage of water could be reduced. Further this would also help in reducing the cost of water supply in rural areas.

Village Panchayats have succeeded in this initiative of providing drinking water facility to all households through a number of steps such as identifying and arresting all illegal connections, regulating them as proper house service connections by levying appropriate taxes/ fine, minimising wastage, augmenting water resources by converging other programmes, mobilising funds from Corporates from their CSR funds etc.

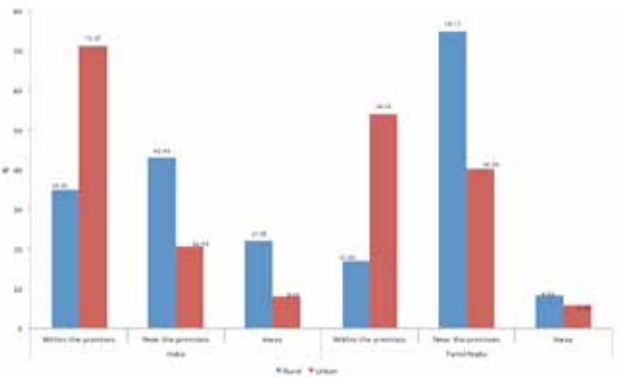
The State Planning Commission deliberated on the issues, attitudes and accessibility in making piped water supply to houses a reality.

Present Scenario

Tamil Nadu has taken extensive efforts to provide water to all households through various programmes and schemes. The Tamil Nadu Water Supply & Drainage Board which is the State agency implements water supply schemes through engineering design, network, and construction. After commissioning, the water supply scheme is transferred to the respective local bodies. The local body is responsible for the operation and maintenance which are met from collection of water tax. The TWAD Board implements source augmentation programmes too to ensure source sustainability.

The majority of the households (80 per cent) depend on tap water against the all India average of 40 per cent. Out of this, 55.83 per cent of households get tap water from a treated source, which is also higher than All India average of 31.97 per cent. But the proportion of households which access tap water from untreated source in Tamil Nadu is higher (23.95 per cent of households) than all India (11.57 per cent of households). Similar trends prevail in rural and urban areas also. At the country level, treated tap water within premises is available to 68.37 per cent of households whereas in Tamil Nadu it is available only to 43.12 per cent of households. This contrast is observed more among rural households (19.3 per cent households) than among their urban counterparts.

Households by Type of Drinking Water and Location, 2011



The inter district variations are quite high, with Dharmapuri district having a very low share of households (only 5 per cent) have access to drinking water facility within premises, but in Coimbatore district 35 per cent of the households have the facility within premises. 7 districts fare very low in terms of access to drinking water within premises.

Rural Households with access to drinking water facility within Premises

Twelfth Five Year Plan

The Twelfth Five Year Plan for Rural Water supply envisages

- By 2017, it is targeted that at least 50 per cent of rural population in the country (as against 35 per cent today) will have access to 40 lpcd piped water supply within their household premises or within 100 metres radius (and within 10 metres elevation in hilly areas) from their households without barriers of social or financial discrimination. Individual States can adopt higher quantity norms.
- By 2017, it is targeted that at least 35 per cent of rural population have individual household connections (as against 13 per cent today).
- Convergence between drinking water supply and sanitation will be strengthened taking up villages covered with piped water supply to get open defecation free (ODF) status on priority and vice versa.
- A holistic aquifer and surface water management approach with active community and PRI participation will converge in a District Water Vision that includes monitoring and recording of groundwater levels and rainfall at sub-block level and Aquifer Management Plans to protect and recharge drinking water sources.

The State's Twelfth five year plan has formulated its strategies endorsing the principles laid out in the National Plan. The strategies of the State for rural and urban water supply is

- Managing water resources efficiently and effectively (addressing both quantity and quality aspects)
- Planning and establishing an Integrated Drinking Water Grid for the State
- Formulate a State Drinking Water Policy and comprehensive drinking water legislation and guidelines
- Ensure stakeholder participation in the decision-making process
- Achieve capacity building within water-related institutions and promote water awareness in all water-using sectors
- Develop innovative technologies with respect to wise water use, water and waste water treatment, water reuse and recycling and alternative water sources
- Engage in extensive research and development in the water management
- Carry out assessment studies/protection for each river basin
- Establish monitoring and enforcement mechanisms
- Develop water-quality management taking into consideration the carrying capacity of the rivers and sustainable development indicators
- Mobilize mass media/NGOs over water awareness

- Develop multi-stake discussion and dialogues on relevant solutions
- Strengthen water-related institutions
- Build up a database on water sector and disseminate information

A major focus area of the Twelfth Five Year Plan is health. While investing on health, there should be greater investment on the preventive and public health aspect of health than on the curative aspect going by available evidence. In this context improvements in health are possible only with concomitant investments in sanitation and safe water supply to households.

Tamil Nadu Vision for 2023

One of the ten vision themes of the Vision for Tamil Nadu 2023 is about improving water supply. It goes beyond from mere provisioning of water to citizens to ensuring pressurized piped water supply.

The State has set a Vision to provide "A World Class, Secured, Affordable and Sustainable Water Supply, Sanitation and Sewerage system Accessible to Every Citizen of Tamil Nadu" by the end of 2023.

The objectives of the Twelfth Five Year Plan are achieving the goals set by the Vision 2023 through ensuring Drinking Water Security and Source Sustainability.

Linkages with Health, Sanitation and Women empowerment

Improved water and sanitation impact many areas of life, from health, education, time saving, and poverty reduction to maintaining a dignified way of life. One of the major outcomes of the provision and use of protected water, sanitation and practice of hygiene is avoiding morbidity. Several studies across the globe show improvements in health and education indicators, specifically the education of the girl child.

As regards improvements in health, researches carried out show that water related diseases can be classified into water washed and water borne. Water washed diseases are prevalent in areas with inadequate water supplies for people to keep their hands, bodies and environment clean. Diarrhoeal diseases as well as skin and eye infections are easily spread under these conditions. Water borne disease transmission occurs through the consumption of contaminated water, and can affect those illnesses transmitted by the faecal – oral route, including diarrhoea.

Murray and Lopez (1996) calculated that in 1990, 5.3% of all deaths and 6.7% of all DALYs lost are associated with diarrhoeal diseases and selected parasitic infections, stemming from inadequate access to water and sanitation. Latest estimates available (WHO, 2007) show that in India alone estimated total deaths by diarrhoeal deaths are estimated at 45.64 million, mostly among children. The estimated loss of DALYs is to the tune of 1525.4 million in India. Estimates of deaths caused by

water borne and water washed diseases shows that it is of the order of 1037.85 million and that of loss of DALYs 2999.10 million (WHO, Geneva.).

Cairncross et. Al. (2010) are of the view that both quality and quantity of water and hand washing hygiene practices are of importance in reducing the prevalence of diarrhoea occurrence and consulting practitioners. The authors are also of the view that proper sanitation reduces diarrhoea to the tune of 36%. Esrey et. Al.(1991) are of the view that the total reduction in morbidity can be divided under the following proportions.

Improvement	% Reduction
Quality of water	16%
Quantity of water	25%
Quantity and Quality of Water	37%
Safe excreta disposal	22%

But the impact of water, sanitation and hygiene is not limited to reduction in morbidity alone. WASH conditions are also determinants of nutritional status. Multi-country analysis carried out by Esrey (1996) shows that improvements in sanitation were associated with increase in height among children. It is estimated that 25% of all stunting among children of two years or less is attributable to having five or more episodes of diarrhoea.

The risk among girl children being deprived of the opportunity to attend school is higher, because of their water collection responsibilities. Girls are also quite often more likely to drop out of school, and their parents are more likely to withdraw them, if schools lack appropriate sanitation facilities which offer privacy and dignity. Studies carried out by Water Aid (2004) shows that a 15% increase in Bangladesh school attendance is noticed when water hauling time is reduced. A 12% increase in Tanzanian school attendance is found when water is available within 15 minutes instead of being more than an hour away. 11% more girls attend to schools when there are sanitation facilities available in the school offering privacy.

Water Contamination and Management

Disease burden among the people can be either water related or water borne. Water related disease burden can be due to chemical contamination either due to earth's crust or due to man-made effluents reaching water sources. Further it could also be because of biological contamination (water borne).

The trend of chemical contamination in drinking water sources indicate that there is a direct correlation between over-exploitation and increasing fluoride, and salinity levels. The number of nitrate affected habitations is bound to increase due to leaching of untreated sewage and use of excess fertilizers.

Salinity (sea water) intrusion is another issue which is closely related to climate change. Over abstraction of subsurface water

near the estuaries may result in increasing salinity level in rivers. Discharge of untreated or partially treated industrial waste-water heavy metal/ radio-active contamination. Leaching of pesticides and fertilizers contaminating ground and surface water is also a growing problem.

Over-exploitation and consequent ground water development is inducing more chemical contamination in aquifers. Therefore, wherever feasible hydro-geologically, artificial recharge of groundwater for in situ dilution of chemical contaminants has been recommended.

Issues in Rural Water Supply

The major problems with rural drinking water are its adequacy and quality. Declining water tables, loss of water bodies has made availability of water for all a challenge. Fundamental changes are required with respect to the approach towards drinking water supply. Foremost, would be getting into place the legally binding water quantity norms and quality standards that are equitable. Secondly, local government and bodies must be given necessary regulatory and fiscal powers to ensure effective implementation of the tasks to be performed and also provide supervisory and other supplementary functional roles to be taken on by the higher authorities. The classification of water as an economic good is in contrast to the principle of fundamental rights. Water should be considered as a

socio-economic good only after meeting the minimum core obligation. Sustainability of drinking water sources and systems has the following issues :

- Ensuring sustained availability of drinking water both in terms of adequacy and quality.
- Excessive drawing of Ground water and hence deterioration in Water quality
- Natural contaminants and man-made pollutants making water unfit for consumption.
- The biological contamination due to open defecation and insanitary conditions around the drinking water sources leading to illness and even mortality.
- Less integration of rural water supply and sanitation programs
- Higher per capita requirement of rural people on par with Urban towns

Benefits of continuous (24×7) Piped Water Supply

In communities with a developed a water distribution system, which allows all households to have tap connections and enjoy 24x7 water supply have been able to reduce the consumption to 250 litres per household, thus saving 25,000 litre per day which represents 38 percent of the water previously distributed. Power consumption reduced too by 4.39 units per day or a decrease in one-third of the previous electricity bill. The reduction in consumption of water occurred primarily because people abandoned the practice of storing water to cover several days' needs.

Water supply within the household reduces the time spent on water collection, enable increase in household income, improvement in school attendance, and decrease in healthcare expenditure. These can be attributed to the time savings resulting from profitable employment of womenfolk, assured safe drinking water at the collection point preventing many waterborne diseases and also other illness headache, acute chest aches, and backache and spine ailments in women due to carrying water for long distances thus reducing healthcare expenditure. With better water supply systems in place, children who were engaged in domestic chores as women were busy fetching water could attend schools. Similarly water supply and sanitation arrangements in school, helps in reducing drop outs.

Since, water supply is one of the responsibilities of the local body, better management of water supply systems result in addition to increase in revenue, efficiency and accountability. This would also help in ensuring toilet usage within the village.

Initiatives of the State Agency for Water Supply

The Water Supply and Drainage Board takes sustained initiatives through various programmes to make all habitations as

fully covered. Alongwith the water supply programmes, the Board implements source sustainability works.

The issues and challenges in rural water supply is

- Source Sustainability – Ensuring the availability of safe drinking water in adequate quantity throughout the year
- System Sustainability – To ensure that all infrastructure components such as OHT, pipelines, HSC, PF, upto house hold are intact with excellent O&M, etc
- Financial sustainability – Proper funds available for continuous O&M
- Social Sustainability –Active involvement of all key stake holders and their esteemed cooperation
- Environmental Sustainability – Protecting sources from Natural and man-made environmental hazards

Source Sustainability works include

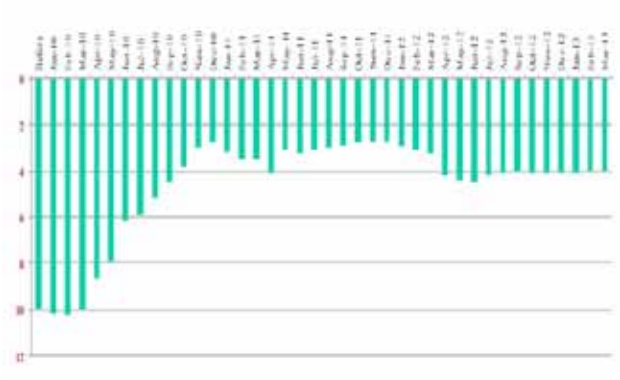
- o Check Dams
- o Percolation Ponds
- o Recharge Shafts and
- o Improvement to Traditional Ooranies

The structures are constructed close to drinking water sources, so to water augment local ground water sources.

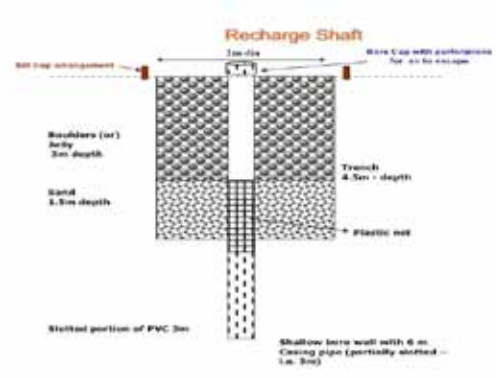
In Tamil Nadu there are totally 784 check dams have been constructed for water augmentation. Various studies conducted have ensured increase in ground water level,

improvement in water quality. This availability of additional water has helped increase in cultivation.

These structures have helped in increasing the ground water level, which have been proved through the long term monitoring of the Ground water levels in these places. The ground water level where these structures are established have been recorded. Monthwise Water level data has been observed from January 2010 to March 2013.



Recharge Shafts with bore well (Recharging the deep aquifers through bore wells) are constructed to recharge ground water through borewells. The captured water is filtered through a bed of boulders or crushed stones which is filled upto a depth of 3 meters and beneath it sand is filled upto a depth of 1.5 m. The filtered water flows through the slotted piped which is covered by a plastic net to prevent sand particles entering the pipe. The water is absorbed into the ground through the slotted portion of the PVC pipe. The diagram of the recharge shaft is given below.



The Defunct bore wells are also used as recharge shafts. The Rural water bodies which are called Ooranies in Tamil are the traditional bodies. These bodies are now protected through Oorani Improvement Scheme. Under this scheme, the water bodies are fenced so that man or do not enter the water body. The inlet channels if any are also protected. With the participation of local community, it is ensured that there is no open defecation / urination around the area. People are allowed to draw water from the well/ hand pump situated outside the pond. This system ensures there is no contamination of the water. Fencing and guarding prevents encroachments also. In Ramanthapuram and Sivagangai districts where Ooranies are the main sources of water, maintenance of water bodies is done through this method.

System Sustainability is ensured through Maintenance of System components namely Source, Pumping main, Over head Tank, Distribution System, Public Fountains, and House Service Connection which are addressed by

- Proper O&M of the schemes
- Trained man power
- Sufficient stock of spares
- Adequate power supply
- Proper disinfection practices

Financial Stability is achieved through making available adequate funds for Implementation Operation and Maintenance and prompt payment by consumers.

Social Sustainability could be achieved by ensuring

- Active involvement of all key stake holders
- Regular meetings of Village Water and Sanitation Committee
- Empowerment of women in VWSC
- Drinking Water Supply Mechanism should account for solving any social problems
- SWSM also equally responsible to solve any social problem at District Level

There is a shift in the approach on rural water supply since the ground water sources are not sustainable on the long run. Nowadays River sources are preferred for rural water supply in view of its ensured quality and quantity. Combined Water supply schemes are implemented with surface and sub surface river sources. It is hoped that combined water supply scheme would minimise the over exploitation of local resources, ensure drinking water security; increase the scope for piped water supply to the Households.

Role of Panchayats in ensuring household water supply

The Government invests resources for providing basic amenities to the rural population so that their quality of living is on par with urban areas. Provision of piped water

supply is one such service which not only promotes quality of life but also well-being. The Rural Development Department, handholds support for the maintenance of these water supply structures. The local bodies which are the next immediate local government satisfy the people's needs on a priority basis. When these local governments are capable of running these structures successfully, recovering the cost, ensuring smooth maintenance could ensure piped water supply to all rural households. Their positive edge over the people is a great advantage. Thus they play a crucial role in ensuring piped water supply to rural households.

Some of village panchayats which are able to ensure improved service delivery, House Service Connections are provided. The role of leadership, commitment to the objectives of democratic governance influence service delivery. There are many villages in Tamil Nadu, which are led by such Presidents. Presidents of select village panchayats, which have successfully ensured 100 per cent house service delivery and sustainable water supply to villages shared their experiences.

Paparambakkam is a village Panchayat in the Kadambathur block of Thiruvallore district. The total population of the village is 2372, with 350 households. The Panchayat had received ISO 9001:2008 certification, has bagged many awards for its excellence. The Village panchayat has bagged Clean Village Campaign award from the State.

In Papparambakkam Village Pancha yat, water supply has been ensured to all households, and maximum number of households have availed house service connections. Illegal connections had been identified, deposits were collected from the household to regularise the connections and others who were unable to pay were disconnected. The efforts of the President and the members in this effort are detailed below.

- The Panchayat had been instructing to pay regular taxes and also deposits for household water connections.
- The Panchayat President and its members have been making visits to each households and had collected deposits for illicit connections.
- The illicit connections of the households who are not able to pay the deposit had been disconnected and sealed.
- Thus all the water connections had been regularized in Papparambakkam Panchayat.

At Public posts, sumps to collect the water flowing outside have been constructed. The water drained from the street taps are collected back to the auxiliary storage tanks near by in order to save and re-tap the water for usage again. The local body has also taken up the maintenance of water bodies located in the local body. The bore wells and pump rooms in the Panchayat are well maintained. Each Over Head Tank is cleaned – once in 15 days. Everyday the water is treated with Chlorine before being supplied to households.

The Panchayat with the support of Coco Cola Industries Pvt ltd, have received an amount of Rs. 1 Crore and 5 Lakhs from the District Collector of Tiruvallur through Self Sufficiency Scheme (SSS) for Water Recharge System. The Village Panchayat has been able to garner Agriculture Department's Integrated Watershed Management Programme to improve water supply. The village has made all efforts to ensure water supply for the next 50 years.

Palladam village in Tiruppur district has recently got water supply from Pillur water supply scheme. Since the implementation of the scheme, the people started demanding for river water who have so far been taking water from the local source. There is a shift in people's perception of "tasty water" as they feel Pillur/ Siruvani water is tastier compared to the local source.

The Nattathi Village Panchayat, Thoothukudi pays a high cost (Rs. 15-20 per KL) for bringing water from Tamirabharani, due to people's preference for river water. The feasible cost effective solution is to use the water from the local sources.

In a coastal village of Kanniyakumari district, water turns saline in summer months, making it difficult to supply water from local sources.

In Thanjavur District the District Rural Development Agency, has ensured removal of encroachments to water bodies and regular maintenance of water bodies. Water Supply and quality is an agenda in every Grama Sabha. Measures have also been taken to transform the restored water bodies as drinking water sources. The cleaning up measures had prevented dengue incidence.

In Morappur block of Dharmapuri district, promotion of individual rain water harvesting system has been taken up in a programme mode to combat the fluoride content in water.

People's participation in sustaining Water resources

The success of the initiatives to make water supply sustainable depends on the community participation in terms of planning, utilisation and maintenance of the system. The TWAD Board has initiated measures for the collective ownership of the community right from the beginning viz, planning a water supply system for a habitation, implementation, maintenance, management etc. Effective water management practices have proved to be a boon for people.

Odanthurai is one such village, where the village people participated in the planning, implementation and maintenance of the system. The community offered a portion of the labour component, which helped to reduce the cost. The inclusive approach helped in making every individual responsible for the successful running of the system.

Rejuvenation of Traditional Water Bodies

Ooranies are traditional water bodies created to harvest rain water for drinking and other purposes. There are many Ooranies exclusively kept for drinking water purposes. Before the advent of modern drinking water supply schemes, Ooranies were used for collection and preservation of rain water. But over the period, such Ooranies were abandoned and became defunct. The Rejuvenation of Ooranies project has ensured clean water for the communities throughout the year with minimum O&M cost. In Edaiyur, in Kanchipuram district, an attempt was made by the Department of Rural Development & Panchayat Raj with support of an NGO DHAN and technical support from Water Resources Department, Anna University.

The `Edaiyur model,' attracted the attention of many, including the German Government. It is not that the villagers do not have any source of water. A full `Oorani' will hold three million litres of water. The model is unique in that it is decentralised management supported and ably administered by the people themselves. People also carry out the monitoring of water quality, inflow of water in the pond, losses of water due to evaporation, consumption and seepage. It is a self sustaining model where no power was used and recurring cost was nil.

Michaelpattinam is a village panchayat in Ramanathapuram district. With the participation of the community, the water sources were first cleaned and encroachments

were removed. The supply channels were also cleaned and any possible contamination of inlet water was prevented. The Oorani was fenced to prevent entry to the pond. People were advised to collect water from Draw wells on the banks of the ponds. These measures have ensured storage of water for a longer duration. As a result of this, the Village panchayat could ensure 100 per cent house service connections.

Such inspiring examples are replicable in the State to achieve the goals of sustainable water supply in rural areas.

Workshop Recommendations – Water Augmentation and Ensuring Piped Water Supply

1. Since water is a limited resource, augmentation and sustainability of all water sources should be taken up.
2. Supply of drinking water should use all the three sources viz., Ground water, Surface water and Rain water.
3. Restored water bodies could be used as drinking water sources.
4. TWAD should map the all Aquifers in the villages and should contribute to the aquifer management in the State.
5. TWAD could be the Knowledge source on all water sources and availability.
6. Better Management Practices could improve the availability of water, which

could in turn ensure piped water supply to all households. Piped water supply to households would help in reducing wastage of water.

7. In fluoride affected areas, enhancing rain water recharging practices would help in diluting the fluoride content.
8. Promotion of rain water harvesting and use of rain water for drinking and other needs could be taken up. Village Panchayats could take up this as a drive among the villagers.
9. TWAD should explore the conjunctive use of water and awareness creation on this issue.
10. TWAD could take up knowledge transfer on water augmentation/ conservation techniques to rural local bodies and involve the rural local bodies in such efforts
11. Local bodies could take up water budgeting and water audit.
12. The success stories of Village Panchayats in water supply and sustainability efforts should be documented. (Papparambakkam Village Panchayat)
13. Messages on conservation of water, misuse and abuse of water could be disseminated among the public.
14. Unused quarries / wells could be used as a water storage structure.
15. The Rural Development & Panchayat Raj Department through the State Institute of Rural Development could conduct a workshop on sustainability of Village level Water Supply schemes.

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