JICA Assisted Water Supply & Sanitation Projects

Japan International Cooperation Agency

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Message from Chief Representative of JICA India

Mr. Katsuo Matsumoto,
Chief Representative, JICA India

The Japan International Cooperation Agency (JICA) has been supporting India's water and sanitation sector development, keeping in mind the urgent and vast needs to address water quality and scarcity issues. Our activities also contribute to supporting the efforts of the Government of India in achieving the targets of Sustainable Development Goal- 6, namely, "Ensure availability and sustainable management of water and sanitation for all", thereby improving water quality, by reducing contamination of water and increasing availability of clean drinking water. JICA's activities in India, also aim to enhance the development of Indo-Japan relationships.

Japan's support to water and sanitation sector in India mainly consists of ODA loans of over 806 billion Japanese Yen (approximately INR 53,733 crore). These projects are implemented all around the country, including Uttar Pradesh, Madhya Pradesh, Assam, Odisha, Goa, Punjab, Rajasthan, Delhi, Tamil Nadu, Kerala and Karnataka amongst other states.

The overall contribution to the sector has been 37 ODA Loans, 4 Grant Aids and 13 Technical Cooperation Projects. With JICA's projects, water supply has catered to approximately 30 million people and 15 million people have received access to sanitation. JICA's projects are contributing not only to infrastructure development but also extensively to capacity building of the local agencies and other related agencies.

In the year of 2020, we have encountered unprecedented situation of infectious Novel Coronavirus (COVID-19), which is considered as disastrous pandemic, profoundly affecting the social and economic sectors globally. Water sector plays one of the most important roles in fighting against the pandemic while safe water supply and improved sanitation is crucial for prevention of the disease. JICA India office initiated to formulate the safeguards matrix for the prevention and control of disastrous situation in JICA assisted Projects and held international Webinars to exchange ideas on countermeasures against COVID-19 among counterpart agencies and related partners in July 2020. Reminding SDGs' theme of "leave no one behind," JICA is committed to realize "water and sanitation for all" by collaborating with Indian counterparts.

This booklet provides an overview of JICA-supported water and sanitation projects in India. It highlights the best practices executed by various projects in the country. These projects have been facilitated through Japan's active collaboration with India, and have been executed by the relevant agencies under Government of India. We sincerely hope that these JICA-supported water and sanitation projects would create an infrastructure of hygiene for the population of India and symbolize JICA's commitment to India at present as well as in the future.

Message from Director General, National Mission for Clean Ganga

Shri Rajiv Ranjan Mishra,
Director General, National Mission for Clean Ganga

The challenge of water sector in India is far greater than other nations as we hold 18% of the world's population but only 4% of drinking water reserves. Supply of safe drinking water and conservation of water resources are priority for the Government of India. With rapid growth of population, the demand for drinking water also increases. The high priority given to water sector by the government of India is evident from the visionary decision of setting up of Ministry of Jal Shakti integrating several related departments.

Under the visionary leadership of Hon'ble Prime Minister Shri Narendra Modi, an ambitious programme – Namami Gange - was announced in 2014 for Rejuvenation of Ganga. This integrated mission adopted a basin level approach for rejuvenation of Ganga and its tributaries. Other prominent rivers in India have also been taken for their cleaning and conservation under the NRCP Program of India. Urbanisation, industrialisation and large abstraction of water for agriculture and other uses have led to challenges to the quality and quantity of water.

The National Mission for Clean Ganga (NMCG) and the National River Conservation Directorate (NRCD), in collaboration with the Japan International Cooperation Agency (JICA), has been working towards improving the water sector in India, through both water supply and sewerage treatment projects. JICA's contribution to the water and sanitation sector in India is commendable. In addition to ODA loans, Grant Aids, JICA has supported the sector through technical cooperation projects to complement India's efforts.

We would like to congratulate JICA for coming up with this booklet - JICA-Assisted Water Supply & Sanitation Projects in India. We are confident that this booklet will serve as a critical document to highlight Japan's best practices in Water and Sanitation sector.

This bilateral cooperation between Japan & India holds remarkable potential for mutually bolstering economic growth and improving social welfare in both the nations, India and Japan.

Exchange Rate in this Booklet is Rs.1 = 1.5 ¥. Therefore ₹ figures are approximate.

Message from Department of Economic Affairs, Ministry of Finance

Mr. Avanish Kumar Mishra,
Deputy Director General (Bilateral Cooperation)

Water is a finite natural resource fundamental to life, livelihood, food security and sustainable development. India is home to more than 17% of world's population with only 4% of the world's fresh water resources. With constraints in equitable access to water and sanitation, it is imperative that a comprehensive framework is designed to address the issue.

Ensuring India's water security and providing access to safe drinking water to all Indians is a priority of Government of India. Jal Jeevan Mission, a central government initiative, aims to ensure access of piped water for every household in India by 2024.

JICA has been a committed partner in supporting in the water and sanitation sector, amongst others. Besides loans and grant aids, JICA has lent its expertise in the sector, through technical cooperation projects to supplement our efforts. We express our sincere appreciation for the Government of Japan and JICA for being instrumental in improving living conditions for the Indian diaspora.

It gives me immense happiness to note that JICA is coming up with a booklet compiling JICA-Assisted Water Supply & Sanitation Projects. I am hopeful that this booklet would serve as an important communication tool to disseminate information and best practices about water and sanitation projects in India.

There has been significant deepening of India-Japan bilateral relations in recent past with growing convergence in our strategic and developmental interests. This partnership holds tremendous promise for further growth and in years to come, we hope to build this relationship for mutual benefit in key sectors of sustainable development.

Sector background

Depleting Ground water table and deteriorating ground water quality are threatening the sustainability of both urban and rural water supply in many parts of India. The national urban policy proposes to address problems relating to urban infrastructure deficiencies by giving special emphasis to the water supply and sanitation. It also proposes to reduce urban poverty by increasing investment in poverty alleviation programs, employment generation strategy development and by integrating poor communities into city planning by improving the services. The national urban sanitation policy seeks to create fully sanitized cities through awareness generation, state sanitation strategies and integrated city sanitation plans.

Present establishment in India advocates to promote the Jal Jeevan Mission with a starting endowment funds of Rs. 3.5 trillion and the goal "to provide all households in rural area safe and adequate water through individual household tap connections by 2024". The Jal Jeevan Mission subsumed the older National Rural Drinking Water Programme (NRDWP), preserving the goal "to provide Functional Household Tap Connection (FHTC) to every rural household " by 2024. Hon'ble Prime minister of India has also declared in January 2020 in Bengaluru that Technology is the strength of the Jal Jeevan Mission and the young Indian scientist have the responsibility to develop cheap and effective technology for the recycling of water.

Water Supply and Sewerage in India

In India, although the ratio of households with sufficient drinking water in urban area has reached near 90% in 2012, water supply and sewerage service expansion have been fallen short behind the population growth. Even in major cities where the water distribution networks are executed, the water supply service continuity is limited from one to six hours per day due to water shortage or limited water supply quantity. In addition, technical and financial challenges in terms of operation and maintenance (O&M) of water supply and sewerage facilities are also serious, including the high ratio of non-revenue water (40 to 50%), the low revenue amount due to lack of customer management and promotion, and the low water tariff rate which is not sufficient to cover the O&M cost. These challenges have been leading to deterioration of the facilities. To tackle these challenges, Indian National Water Policy (2012) sets a national goal to provide access to drinking water for all its citizens, and in accordance with Constitutional Amendment and relevant State legislations were amended in 1993 in order to decentralise certain responsibilities, including water supply and sanitation, to municipalities, requests each state and local bodies to formulate a comprehensive development plan of water supply and sewerage facilities.

Sanitation Sector

Government of India (GoI) has announced "National Urban Sanitation Policy" in 2008 which aims at establishment of sustainable access to sewerage and sanitation facilities for all urban population in India and achieving open defecation free in all India. NITI Aayog has considered shortage of the water supply and sewerage system as the serious issues for the urban development in its "Three Years Action Agenda 2017-18 to 2019-20" announced in 2017. In order to solve these issues, GoI has formulated "Clean India Mission: Swachh Bharat Mission" in 2014 and targets to achieving the open defecation free by establishment of the sewerage system by 2019, thereby improving the environment of cities. In addition, under "Atal Mission for Rejuvenation and Urban Transformation" (AMRUT) announced in 2014, GoI is promoting the establishment of infrastructures in the major cities including the water supply and sewerage system.

[1] https://niti.gov.in/sites/default/files/2019-08/CWMI-2.0-latest.pdf
[2] http://swachhbharaturban.gov.in/writereaddata/SBM_GUIDELINE.pdf

Requirements of the sector and Government's Policy:

Water:

In view of the limitations on availability of water resources and rising demand for water, sustainable management of water resources has acquired critical importance. The Ministry of Jal Shakti was created in 2019, with the aim of developing and regulating water resources in India.

The newly formed Ministry under the guidance of Hon'ble Prime Minister has strived to over bridge the water challenge by launching the Jal Shakti Abhiyan - a campaign for water conservation and water security in 1592 water stressed blocks in 256 districts, to ensure five important water conservation interventions: These will be water conservation and rainwater harvesting, renovation of traditional and other water bodies/tanks, reuse, bore well recharge structures, watershed development and intensive afforestation.[1]

Sanitation:

To eliminate open defecation and improve solid waste management (SWM) in urban and rural areas in India, the Government came up with a country-wide campaign in 2014, called the *Swachh Bharat Abhiyan (Clean India Mission)*.

The objectives of the mission also included eradication of manual scavenging, generating awareness and bringing about a behavior change regarding sanitation practices, and augmentation of capacity at the local level.[2] Initiated by the Government of India, the mission aimed to achieve an "open-defecation free" (ODF) India by 2019. The mission is primarily aimed at progressing towards the target 6.2 of Sustainable Development Goals Number 6 established by the United Nations in 2015[3].

[3] https://niti.gov.in/sites/default/files/SDG-India-Index-2.0_27-Dec.pdf

Necessity of JICA Funding

Japan is the largest bilateral development partner for extending the finance assistance to the Government of India and other related agencies. JICA's assistance for the development of water and sanitation sector in India is noted as one of the largest amongst all the bilateral and multilateral development partners in India. In order to supplement the efforts of the inclusive growth and sustainable development of the country by the Government of India, the government of Japan through JICA has been assisting the projects related to basic human needs, infrastructure development, poverty alleviation by ensuring the environment conservation. In order to create demonstrating effect, bringing new technologies and system to ensure public health and livelihood improvement of poors, JICA has been assisting sustainable management of water supply systems along with universal access to sanitation for all, JICA's intervention in the water and sanitation sector is noted to be of utmost importance. JICA assisted projects aims to

1. Achieve targets of SDG Goal 6 in providing clean water and sanitation for all in India
2. Improving water quality, by reducing contamination of water, thereby increasing availability of clean drinking water.
3. Nudging positive behavioural change amongst the Indian population- improving solid liquid waste management, using toilets, eradicating manual scavenging, eliminating usage of single-use plastics, etc.
4. Manage cascading effects of water scarcity, i.e. like desertification, risk to biodiversity, etc.
5. Provide unbiased access to sanitation/universal access to sanitation, irrespective of gender, caste, religion, identity, etc.

Showcasing model or actions/impact of our projects

- Total number of beneficiaries under JICA's assisted water supply projects are around 30 million (3 crore), while the sanitation improvement covers 15 million (1.5 crore people) approximately. JICA could showcase latest technologies in water treatment plant, equitable and continuous water supply distribution systems, sewage treatment plants, rehabilitation of old sewerage systems, SCADA, latest strategies in non-revenue water reduction systems, effective public outreach programs, creation of water and sanitation entities responsible for efficient service deliveries to the public in addition to the municipal reforms.
- **Water Supply:** Equitable and continuous safe water supply systems applying SCADA and efficient water meters in Delhi, Safe water after tackling fluorosis aspect is widely distributed in Nagaur and Hogennakal. Similarly, the Arsenic mitigation measures in West Bengal Water Supply Project in Purulia area.
- **Sanitation:** Ganga and Yamuna Action Plan Project, supported by JICA aim to augment sewage treatment capacity by constructing and renovating sewage treatment plants (STP) and sewer lines for improved sanitary conditions of the dependent communities. The STPs are expected to treat the sewage generated for over 4 million people. The construction of Community Toilet Complexes have brought significant change in environment conservation.
- **Recycling Water:** JICA has been strongly supporting the development of water supply and sewerage treatment through Bangalore Water Supply and Sewerage Project for residential, commercial and industrial areas, together with introduction of volumetric based tariff system, metering system, non-revenue water reduction activities, and promotion of recycle/reuse of wastewater. Yamuna Action Plan in Delhi is noted to be pioneer in recycle and reuse of the waste treated water to Pragati Power project and other commercial establishments in Delhi.

- ODA Loans
- Grant Aid
- Technical Cooperation Projects

JICA Water & Sanitation Projects

1990
- The Project for Exploitation of Ground Water

1991
- Urban City Water Supply Project

1992
- Yamuna Action Plan Project

1994
- The Project for Exploitation of Ground Water
- Chennai Sewerage Renovation and Functional Improvement Project
- Industrial Pollution Control Project Sanitation
- Industrial Pollution Control Program

1995
- The Project for Exploitation of Ground Water
- Urban Water Supply and Sanitation Improvement Program
- Bangalore Water Supply and Sewerage Project (I)

1996
- Kerala Water Supply Project

2002
- Gujarat Environmental Health Improvement Programme
- Yamuna Action Plan Project (II)

2003
- Bisalpur Jaipur Water Supply Project (Transfer System)
- Study on Water Quality Management Plan for Ganga River

2004
- Study on Augmentation of Water Supply and Sanitation for the Goa State
- River & Lake Water Pollution Control for National River Control Directorate
- Bangalore Water Supply and Sewerage Project (II-1)

2005
- Ganga Action Plan Project (Varanasi)
- The Project for Development of Ground Water in the State of Uttar Pradesh
- Restoration and Management of Hussainsagar Lake
- Hussain Sagar Lake & Catchment Area Improvement Project
- Bangalore Water Supply and Sewerage Project (II-2)
- Kolkata Solid Waste Management Improvement Project

2006
- Agra Water Supply Project
- Orissa Integrated Sanitation Improvement Project
- Kerala Water Supply Project (II)
- Amritsar Sewerage Project

2007
- Goa Water Supply & Sewerage Project
- Capacity Building of Sewerage Works in India

2008
- Hogenakkal Water Supply and Flurosis Mitigation Project
- Tamil Nadu Urban Infrastructure Project
- Hogenakkal Water Supply & Fluorosis Mitigation Project (Phase 2)
- Kerala Water Supply Project (III)
- Guwahati Water Supply Project

2009
- Study on Improvement of Water Supply in Delhi

2010
- Study for Formulation and Revision of Manuals on Sewerage and Sewage Treatment
- Yamuna Action Plan Project (III)

2011
- Technical Advisor in the Sewerage Sector
- Project for Capacity Development on Non-Revenue Water (NRW) Reduction in Goa

2012
- Rajasthan Rural Water Supply & Fluorosis Mitigation Project (Nagaur)
- Delhi Water Supply Improvement Project
- West Bengal Piped Water Supply Project (Purulia)

2013
- Capacity Development Project for Non Revenue Water Reduction in Jaipur
- The Assistance Related to Delhi Water Supply Improvement Project
- Agra Water Supply Project (II)

2014
- Guwahati Sewerage Project

2015
- Odisha Integrated Sanitation Improvement Project (II)
- Project for Pollution Abatement of River Mula-Mutha in Pune

2017
- Bengaluru Water Supply and Sewerage Project (Phase 3) (I)
- Project for Construction of Chennai Seawater Desalination Plant (I)

2019
- Madhya Pradesh Rural Water Supply Project
- Project for Pollution Abatement of Nag River in Nagpur
- Project for the Comprehensive Improvement of Environment Sanitation of Varanasi

The time-line for each project is depicted in the Financial Year (FY) format.

Ganga Action Plan Project (Varanasi)

Project Name:
Ganga Action Plan Project (Varanasi)

Loan Agreement Date:
March 31, 2005

Loan Amount:
11, 184 Million ¥ (₹ 745.6 Crore)

Executing Agency:
National River Conservation Directorate, Ministry of Jal Shakti

Project Status:
Completed (Some remaining works are under construction after loan closure)

Mr. Kengo Akamine
Senior Representative

The Ganga Action Plan Project not only aims at abating severe water pollution of the river by construction of sewerage treatment facilities but also targets to improve hygienic conditions through construction of community toilet complexes and Dhobi Ghats and renovation and improving bathing ghats in concerned areas. The holy river Ganga is like a lifeline to those who live along its course and this Project is helping in protecting its sanctity.

Objective:
The Project aims to improve the water quality of the Ganga River, by augmenting sewerage collection and treatment capacity with the construction and rehabilitation of the sewerage system, sewage treatment plants and pumping stations etc., thereby improving public health conditions in Varanasi, benefitting its inhabitants and pilgrims. The Project has also benefitted public at large by conducting public awareness campaign on protection/conservation of water resources and making the city clean.

Facilities:
JICA loan is for procurement of civil works, equipment required to take up the sewerage and non-sewerage works within Varanasi City. The non-sewerage component includes the construction of 154 Community Toilet Complexes (CTCs) providing 952 additional seats, benefitting approx. 30,000 persons per day, rehabilitation/renovation of 26 nos. of existing Ganga Ghats and the construction of 7 dhobi ghats (4 new and 3 renovated) meant to control the non-point sources of the pollution.

Value added features:
Over 1.5 people benefit from the project. The Project is adopting advanced technology that activates a sludge process powered by a biogas-based power plant, which will make the plant self-sustainable and reduce the operational cost, besides reducing carbon emissions significantly.

Under Institutional Development Programme, the Capacity Building, Tariff Mechanism & Tariff Structure, GIS, MIS for Billing and Asset Management Plan of Varanasi Nagar Nigam and Jal Kal Varanasi etc. were assisted. This aims at bringing about reforms in financial management and operational strategies to ensure better water supply and sewerage services.

Tagline:
Conserving the holy river Ganga through river purification technologies

Yamuna Action Plan Project

Project Name:
Yamuna Action Plan (YAP) Project (I) (II) (III)

Loan Agreement Date:
(Phase I): December 21, 1992
(Phase II): March 31, 2003
(Phase III): February 17, 2011

Loan Amount:
(I) 17, 773 Million ¥ (₹ 1,185 Crore),
(II) 13,333 Million ¥ (₹ 889 Crore),
(III) 32,571 Million ¥
(₹ 2,171 Crore);
Total: 63,677 Million ¥
(₹ 4,245 Crore)

Executing Agency:
(I) National River Conservation Directorate (NRCD), Ministry of Jal Shakti,
(II) National Mission for Clean Ganga (NMCG), Ministry of Jal Shakti
(III) Delhi Jal Board

Project Status:
(I & II) Completed (III) Ongoing

Mr. Anudeep Koniki,
Development Specialist

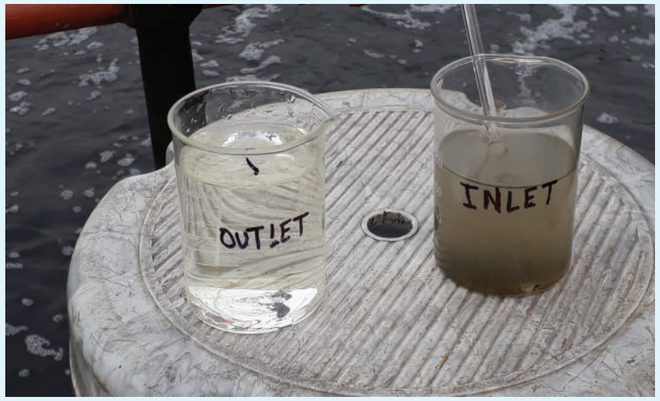
The Yamuna Action Plan Project is a unique project, inculcating behavioural change activities along with infrastructural improvements. The behavioural change program comprises of generating awareness amongst individuals and encouraging them to plant saplings, imbibe hygienic activities, thereby stimulating water conservation and preservation.

Objective:
The Project aims to improve the water quality of river Yamuna, by reducing pollution and other contaminants. It includes enhancement of sewerage components (Sewerage Treatment Plants (STPs), Interception and drainage (I&D), rising mains, pumping stations, treated effluent channel) and Non-sewerage Components (Community Toilet Complexes, bathing ghats, improved crematorium, afforestation & landscaping, public awareness campaign).

Facilities:
The Project covered; Phase I - construction of Sewerage Treatment Plants (STPs) at 29 locations with total capacity of 725 Million Liter per Day (MLD), sewage lines in 15 cities in Yamuna basin (Delhi, Uttar Pradesh, Haryana), Construction of Community Toilet Complexes, Crematoria and Ghats Improvements ; Phase II – construction of STPs at 4 sites with 228 MLD and sewage lines in Agra, Delhi; Phase III – construction and rehabilitation of STPs with Tertiary Treatment and recycled water facilities in Okhla, Kondli, and Rithala areas in Delhi with 950.7 MLD, rehabiltation of sewage lines (5 packages), and public outreach programs.

Value Added Features:
The pilot implementation of Agra Municipal Reforms Project, which included enhancement of revenue receipts of Agra Nagar Nigam (ANN), facilitation of public participation for Agra Safai Abhiyan, Private sector partnership in primary & secondary collection of garbage, and the complaint redressal system for strengthening the infrastructure and capacity Building of U P Jal Nigam and Agra Nagar Nigam have also been completed.

Tagline:
Promoting water conservation and promoting the health hygiene and environment through innovative models of the sewage treatment technologies and public participation and awareness strategies.



Orissa Integrated Sanitation Improvement Project (OISIP)

Project Name:
Orissa Integrated Sanitation Improvement project

Loan Agreement Date:
(I) March 30, 2007,
(II) March 31, 2016

Loan Amount:
(I) 19,061 Million ¥ (₹ 1,271 Crore),
(II) 25,796 Million ¥ (₹ 1,720 Crore)

Executing Agency:
Orissa Water Supply and Sewerage Board (OWSSB)

Project Status:
Ongoing

Ms. Charu Sharma,
Additional Lead Project Officer

The Odisha Integrated Sanitation Improvement Project is determined to improve the quality of water for its dependent communities. WATCO has been doing exemplary work in the state and this model can thus be replicated in other cities, not just to improve the quality of water but also the living conditions of its residents.

Objective:
To provide reliable sewerage service in Bhubaneswar, and sewerage, storm water drainage service in Cuttack in the state of Orissa by constructing and improving the sewerage and drainage facilities, thereby improving sanitary conditions of the residents including the poor in the concerned areas and improving water quality of surrounded rivers.

Facilities:
JICA's assistance is to support construction of sewerage system which includes construction of 3 Sewerage Treatment Plants (STPs), with total capacity of 100 Million Liter per Day (MLD), of which 2 STPs in Cuttack are designed to treat all domestic wastewater generated within Cuttack municipal area and 1 STP in Bhubaneswar is designed to treat domestic wastewater generated within Bhubaneswar district 6. The assistance also includes extensive sewer networks (nearly 700 kms) in Bhubaneswar and Cuttack, as well as improvement of drainage system (more than 20 kms) in Cuttack.

Value added features:
WATCO ((Water Corporation of Odisha Limited) has been created by the Government of Odisha to harness the service level improvement to its citizens in a more professional manner in line with the water and sanitation service reforms instituted by the Government of India. Besides improving in service deliveries, this would result in sustainable water and sanitation management in Bhubaneswar and Cuttack.

Tagline:
Improving living conditions by providing reliable, sewerage services in Odisha along with social development improvement measures and public awareness campaign.

Column: Japanese Companies Present their Special Technologies for Sewerage Treatment

Interactive Workshop for a New Sewerage Project in Nagpur

Nagpur Municipal Corporation (NMC), National River Conservation Directorate (NRCD) and JICA held the "Workshop on Japanese Technologies for Sewerage Treatment and Related Facilities; Project for Pollution Abatement of Nag River at Nagpur" in Maharashtra on May 30, 2019. The main objective of the workshop was to introduce Japanese technologies in India and to facilitate interactions with Government of India and prominent Indian companies. 13 Japanese companies delivered presentations of their special technologies on wastewater treatment, membrane process, sludge treatment, sewer pipe replacement and toilet facilities. It was the first commemorative moment for JICA India Office to convene such kind of workshop to introduce Japanese technologies in India during the process of project formulation.

Project for Construction of Chennai Seawater Desalination Plant

Project Name:
Project for Construction of Chennai Seawater Desalination Plant (I)

Loan Agreement Date:
March 29, 2018

Loan Amount:
30,000 Million ¥ (₹ 2,000 Crore)

Executing Agency:
Chennai Metropolitan Water Supply and Sewerage Board (CMWSSB)

Project Status:
Ongoing

Mr. M.P Singh
Chief of Development Operations

The Chennai Seawater Desalination Project is first of its kind, largest desalination project in India. The project adopts a unique process of reverse osmosis to desalinate water, in order to leave the salty side of the membrane. This process has been able to provide potable drinking water to over 2.5 million residents of the city.

Objective:
The Project aims to provide safe and reliable water supply by constructing a seawater desalination plant with a capacity of 400 Million Litres per Day (MLD) and its related water supply facilities at Perur, thereby improving living conditions of the residents, including the poor people as well as the investment environment in the in Chennai Metropolitan Area (CMA) in Tamil Nadu.

Facilities:
The project would provide the Construction of a seawater desalination plant at Perur with a capacity of 400 MLD product water, pumping stations and reservoirs to convey the treated water to the city area, installation of product water transmission main to carry 400 MLD water, and the improvement in the existing water distribution networks in city for reduction of non-revenue water and leakages so as to ensure the application of the latest state of the art technologies available in the world.

Value Added Features:
The largest Seawater desalination plant of 400 MLD product water capacity is going to be one of the most sophisticated and advanced seawater desalination plant in India. The Project will benefit around 22.67 lakh people.

Tagline:
Addressing the perennial water shortage issue of Chennai through the Reverse Osmosis Membrane with energy recovery based seawater desalination in Tamil Nadu.

Jaipur Water Supply Project

Project Name:
(I) Bisalpur Jaipur Water Supply Project (Transfer System) (ODA loan project)
(II) Capacity Development Project for Non-Revenue Water Reduction in Jaipur
Period of Cooperation (Technical cooperation project)

Loan Agreement Date:
(I) March 31, 2004
(II) August 2013 - January 2017

Loan Amount:
8,881 Million ¥ (₹ 592 Crore)

Executing Agency:
Public Health Engineering Department (PHED) (Rajasthan)

Project Status:
Completed

Mr. Shusaku Takada
Representative

This project is a good example of JICA's comprehensive approach to water sector in India utilizing ODA loan, technical cooperation and collaboration with Japanese municipalities. Jaipur is a popular tourist destination in India. It is glad that our projects contribute to not only the people living in the city but also the people traveling to the city from across the world.

Objective:
The loan project aims to meet the increasing water demand of the people of Jaipur city. The objective is to reduce ground water abstraction to sustainable limits and improve public health standards by constructing appropriate water supply facilities, such as- transfer system, based on surface water from the existing Bisalpur Dam, located about 120 km southwest of Jaipur, Rajasthan. The technical cooperation project aims to strengthen PHED staff's capacity to reduce Non Revenue Water (NRW) through improvement of planning capacity for NRW countermeasures, development of technical and operational capacity to implement NRW reduction activities as well as establishment of the internal training system for NRW reduction.

Facilities:
JICA loan is for procurement of civil works, equipment, capacity building and related consulting services.

Value added features:
With the ODA loan project, population served with piped water was increased from 1.8 million to 3 million and dependency rate of groundwater was decreased from 97.0% to 18.8%. Also water quality improved by alternating the groundwater with surface water and the nitrate content declined significantly from 230 mg/L to Below 45 mg/L. With the support of the technical cooperation project, Rajasthan PHED has achieved to reduce NRW ratio in some pilot activity areas from 52.8% to 10.5%. The collaboration with knowledge transfer from Japanese local municipalities, i.e. Fukuoka, Osaka and Yokohama, that have been successful in dealing with water conservation and leakage.

Tagline:
Integrated approach of ODA Loan, technical cooperation and collaboration with Japanese local municipalities to achieve efficient water supply in the area of water scarcity.

Amritsar Sewerage Project

Project Name:
Amritsar Sewerage Project

Loan Agreement Date:
March 30, 2007

Loan Amount:
6,961 Million ¥ (₹ 464 Crore)

Executing Agency:
Punjab Water Supply and Sewerage Board

Project Status:
Completed

Mr. Vineet Sarin
Chief Development Specialist

The Amritsar Sewerage Project aims to prepare a seamless network to carry out sanitation works in Amritsar. Sanitation forms the backbone of public-welfare and this Project targets the Amritsar municipal area, including disadvantaged groups. The Project not only focuses on construction of sewerage networks but also on community toilets and awareness programs.

Objective:
Amritsar is a large city in the state of Punjab in northern part of India, and it is a Sikh holy site, visited by many pilgrims and tourists. Since there is no sewerage treatment plant in the city, untreated wastewater is discharged into the surrounding rivers, causing river water pollution. The Project aims to provide reliable sewerage services by carrying out construction of sewerage facilities and augmenting sewerage system, thereby improving hygiene and living conditions of people living in Amritsar municipal area, including the underprivileged.

Facilities:
The Project includes the construction of 2 Sewerage Treatment Plants (STPs) with total capacity of 190 Million Liter per Day (MLD), 2 Interceptor Sewer Pumping Stations, sewer pipes (464.22km), and sewerage house connections. The beneficiaries of the Project is about 1 million residents.

Value Added Features:
Assistance for water supply connections for the underprivileged, construction of public toilets and public awareness activities.

Tagline:
Proving reliable sewerage services through construction of a seamless sanitation infrastructure in Amritsar

Hogenakkal Water Supply and Fluorosis Mitigation Project

Project Name:
Hogenakkal Water Supply and Fluorosis Mitigation Project (I) (II)

Loan Agreement Date:
(I) March 10, 2008,
(II) March 31, 2009

Loan Amount:
(I) 22,387 Million ¥ (₹ 1,492 Crore),
(II) 17,095 Million ¥ (₹ 1,140 Crore);
Total: 39,482 Million ¥ (₹ 2,632 Crore)

Executing Agency:
Tamil Nadu Water Supply and Drainage Board

Project Status:
Completed

Ms. Roopal Srivastava
Project Officer

The Hogenakkal Water Supply and Fluorosis Mitigation Project implemented in two economically and socially backward districts Dhramapuri and Krishnagiri Districts in Tamil Nadu with acute water shortage of safe and reliable drinking facilities in the region. The Project is extremely important because area receives less annual rainfall and has little to no surface water and the community use fluoride-contaminated groundwater. Also, high concentrations of fluoride in groundwater resulting widespread fluorosis diseases such as dental fluorosis and skeletal fluorosis among the local residents, making this project a dire necessity.

Objective:
The Project aims to provide safe and reliable drinking water supply facilities in two economically and socially backward districts Dhramapuri and Krishnagiri Districts in the State of Tamil Nadu, by constructing water supply facilities from the Cauvery River and providing fluorosis mitigation support, thereby contributing to the improvement of living conditions of both rural and urban poor. The districts are drought prone, the poor people who have no access to the piped water supply, high concentrations of fluoride in groundwater, has caused widespread fluorosis among local population in these districts. Considering the importance of Water-Health linkage. The Hogenakkal Water Supply Project became the first project in India to adopt comprehensive 3-prong approach for "Fluorosis Mitigation" namely (1) Schools, (2) Health delivery out-lets and (3) Community based approaches so that the entire population from young children to adults of all age groups become the beneficiaries of the safe water supply and prevent Fluorosis.

Facilities:
JICA loan is for procurement of civil works, equipment, capacity building and related consulting services.

Value added features:
Capacity Building for the members of Village Water and Sanitation Committee (VWSC), Operation and Maintenance (O&M), tariff collection and financial management; functional extension of training facilities, etc. The project also aims to mitigate health problems by providing training to doctors in collaboration with Osaka Medical College, diet consultation, awareness campaigns, etc.

Tagline:
Improving public health by refining water quality through treatment of fluorosis in groundwater

Guwahati Water Supply Project

Project Name:
Guwahati Water Supply Project

Loan Agreement Date:
March 31, 2009

Loan Amount:
29,453 Million ¥ (₹ 1,964 Crore)

Executing Agency:
Guwahati Metropolitan Development Authority

Project Status:
Ongoing

Arisa Watanabe
Representative

Guwahati Water Supply Project aims to provide 24X7 potable water supply to all the citizens within South Central and North Zones of Guwahati City. This project has deployed hydraulic models to determine pressure-reducing valves or break pressure tanks, thereby ensuring appropriate pressure throughout the water system and smooth operation and maintenance The Project also aims to support establishment of the Guwahati Jal Board so as enable it to take over water supply & sewerage systems to cover the entire Guwahati city.

Objective:
The project aims to provide safe and reliable drinking water with 100% coverage in South, Central and North Zones of Guwahati by constructing waterworks facilities, thereby leading to upgrading citizens' living standard. It includes construction of water supply facilities and ancillary activities including consulting services.

Facilities:
JICA loan is for procurement of civil works, equipment, capacity building and related consulting services.

Value Added Features:
Construction of Cascade Aerator, Raw water inlet channel, Flash mixers, Flocculation unit, Plate settler (Clarifier), Rapid sand filters, Back wash reservoir, Chemical House and dosing system, Chlorination unit, Sludge handling and disposal unit and clear water reservoir and clear water pumping station.

Tagline:
Improving living standards by constructing a reliable water supply network

Rajasthan Rural Water Supply and Fluorosis Mitigation Project (Nagaur)

Project Name:
Rajasthan Rural Water Supply & Fluorosis Mitigation Project (Nagaur)

Loan Agreement Date:
September 28, 2012

Loan Amount:
37, 598 Million ¥ (₹ 2,507 Crore)

Executing Agency:
Public Health Engineering Department (PHED), Government of Rajasthan

Project Status:
Ongoing

Mr. Subroto Talukdar
Additional Chief Development Specialist

The Rajasthan Rural Water Supply and Fluorosis Mitigation Project is incessantly aiming to provide house service connections of piped water supply facilities in Thar Desert in Nagaur District and reduction in suffering from serious health problems, thereby contributing to the improvements of living conditions of urban and rural poor. The level of the fluoride is well over the WHO drinking water criteria and significant portions of local residents suffer from diseases such as dental fluorosis and osteofluorosis. This Project aims to create water supply facilities from the Indira Gandhi Canal, implement fluorosis mitigation awareness and strengthen the diagnosis capacity of medical personnel thereby improving health condition of the dependent community.

Objective:
The Project aims to provide safe and adequate drinking water supply facilities in an arid region of the Thar Desert in Nagaur district suffering from acute scarcity of potable drinking water and groundwater contaminated by fluoride, by constructing surface water supply facilities, thereby reducing hardship and improving health and quality of life of both rural and urban poor residents. The level of the fluoride is well over the WHO drinking water criteria. The people in the district have no option other than to use the undrinkable groundwater. Consequently, significant portions of local residents suffer from diseases such as dental fluorosis and osteofluorosis. The objective was to construct water supply facilities surface water from the Indira Gandhi Canal, implement fluorosis mitigation awareness and strengthen the diagnosis capacity of medical personnel. The project is in line with the National Fluorosis Reduction Programme where the poor people will benefit of house service connections of piped water supply and reduction in suffering from serious health problem.

Facilities:
JICA loan is for civil construction, procurement of materials and equipment, and the related consulting services (for detailed engineering and project management) including water sector reforms.

Value Added Features:
Fluoride-contaminated underground water has been a very serious issue for a long period in Nagaur, and JICA strives to mitigate this situation through this Project. The project as part of the development of basic infrastructure for the living environment of the poor providing access to safe pipe water supply and house service connections for nearly three million population in the desert region of Nagaur District.

Tagline:
Providing safe drinking water through treatment of fluorine contaminated water

Bangalore Water Supply and Sewerage Project

Project Name:
Bangalore Water Supply and Sewerage Project (I) (II) (III)

Loan Agreement Date:
(I) January 25, 1996,
(II-1) March 31, 2005;
(II-2) March 31, 2006;
(III-1) January 24, 2018

Loan Amount:
(I) 28,452 Million ¥
(₹ 1,897 Crore),
(II-1) 41,997 Million ¥
(₹ 2,800 Crore),
(II-2)28,358 Million ¥
(₹ 1,891 Crore),
(III-1) 45,000 Million ¥
(₹ 3,000 Crore) ;
Total 143,807 Million ¥
(₹ 9,587 Crore)

Executing Agency:
Bangalore Water Supply and Sewerage Board, (BWSSB)

Project Status:
(I & II) Completed, (III) Ongoing

Ms. Kaori Honda,
Program Formulation Advisor

It is my greatest honor to engage in the Projects while BWSSB is one of the most experienced, qualified and efficient agencies. JICA has been supporting BWSSB for 25 years in capacity development and financial assistance. It is also noteworthy that Japanese companies contributed for water leakage detecting system training and SCADA establishment which reinforced their improved management system.

Objective:
The Project aims is to provide reliable water supply and sewerage services by augmenting the water supply from River Cauvery and sewerage system, thereby improving living conditions and developing the industry in the Bangalore metropolitan area, the capital of the state of Karnataka.

Facilities:
The Project includes the construction of Water Treatment Plants (WTPs) with total capacity of 1,545 Million Liter per Day (MLD), pumping stations, transmission pipes, and other water supply related facilities; Sewerage Treatment Plants (STPs) with total capacity of 770 Million Liter per Day (MLD), Sewer Pumping Stations, and sewer pipes.

Value added features:
The Project aims to reduce Non-Revenue Water (NRW) by establishing District Metered Area (DMA), rehabilitating old pipes, and installing the meter system, so as to improve the financial management of BWSSB. Furthermore, MIS comprising SCADA would contribute better monitoring of the constructed facilities. Slum Development Component improved water/sewerage system of 100 slums in Bangalore. The augmentation of water supply and sanitation in 10 villages around Bengaluru are expected to not only spur the industrial and other economic growth but empowering the communities by their livelihood improvement as result of health and hygiene level improvement including the education and all around development.

Tagline:
Serving clean water and improving the health and hygiene by improving the sewerage systems so as to benefit 10 million residents in Bangalore

Column: JICA Private Sector Collaboration Support

Making Water Leakage Control a Culture!
BWSSB planned a component to reduce non-revenue water rate, which was said to be about 50% in Bengaluru. JICA's private sector partnership promotion system supported the Japanese company, Suidou Technical Service Co. Ltd (STS), in improving BWSSB's management by constructing District Metered Area (DMA), upgrading old culverts, and promoting its leak detection system. STS adopted the proposed product called L-sign to the local environment and installed 3,000 units as a pilot. At the same time, training to BWSSB staff on the use of this product, which is a new technology for BWSSB, and on the maintenance of the underlying water pipes was conducted. These efforts were highly appreciated by BWSSB so as to set up a specialized department for non-revenue water control within the agency. Furthermore, BWSSB is contracting STS for training from its own budget. This is a good example of how the public and private sectors can work together to improve water supply and sewerage services in Bengaluru underlying the cooperative relationship with JICA over the years.

Agra Water Supply Project

Project Name:
Agra Water Supply Project (I) (II)

Loan Agreement Date:
(I) March 30, 2007,
(II) March 31, 2014

Loan Amount:
(I) 24,822 Million ¥
(₹ 1,655 Crore),
(II) 16,279 million ¥
(₹ 1,085 Crore);
Total 41,101 Million ¥
(₹ 2,740 Crore)

Executing Agency:
Uttar Pradesh Jal Nigam, Agra Unit

Project Status:
Ongoing

Ms. Mantrana Gola,
Project Officer

The Agra Water Supply Project is ceaselessly working towards improving the availability of water in Agra and its surrounding areas. This project is critical in purification of untreated water that flows into Agra from its neighboring cities, thereby providing safe and reliable water supply to its rapidly growing population and tourists.

Objective:
The Project aims to provide safe and reliable water supply in Agra, Mathura and Vrindavan in the state of Uttar Pradesh and upgrade water supply facilities in Agra, thereby improving living conditions of the residents including the poor in the concerned areas.

Facilities:
The Project includes providing the Water Treatment Facilities with total capacity of 513 Million Liter per Day (MLD), pumping stations, transmission pipes to bring Ganga Water from 138 kms, construction of road, rising Main, Yamuna Bridge, water distribution network improvement, social improvement, institutional strengthening including water sector reforms in Agra.

Value added features:
The raw water transmission pipeline to bring Ganga water from 138 Kms distance (from Palra) is expected to save atleast Rs. 140 million every year on pumping energy cost since the raw water is flowing completely via gravity conduit pipeline. The construction of pipeline in alluvial soil conditions along the route from Palra to Agra was much challenging since the pipelines had to be lowered 4 to 5 metres below ground to achieve gravity flow and hydraulic gradient. The Project also aims to reduce Non-Revenue Water (NRW) in pilot areas so as to improve the financial management of Agra Jal kal.

Tagline:
Besides providing Ganga water to Agra residents and improving the global tourism and employment to locals, the project has facilitated access to the far-flung rural areas public to Agra thereby improving livelihoods, education, hygiene and public health in Agra and other rural areas.

Column: Need for handwashing in the midst of COVID-19

With the outbreak of COVID-19 pandemic, India's water scarcity and sanitation issue has become even more critical. For a majority of people living in India, particularly the ones living in informal settlements, there is lack of access to clean water and lack of knowledge about importance of hygiene practice. To prevent the spread of COVID-19 and other infectious diseases, it is important to wash hands at the right time and in the right way. Particularly in India where people prefer to eat with their fingers without any cutlery, hygienic behavior, as symbolized by handwashing, needs to be established, and the environment, including water supply, handwashing facilities and soap, needs to be improved to enable such behavior to take root. Handwashing is effective in preventing not only COVID-19 but also other infectious diseases, promoting health, and improving public health.

For this reason, JICA starts "Achhi Aadat (Good Practice) Campaign" for a period of one year from January 2021, to promote the importance of personal hygiene practice including handwashing, nail cleaning as well as other hygiene practices such as mask wearing to prevent infectious diseases including COVID-19. The "Achhi Aadat" campaign will be implemented in partnership with Japanese companies who contributes through providing their hygiene related products for the campaign. Furthermore JICA will work in partnership with NGOs who will work with local partners to reach out the far-flung communities and people in need.

The campaign will be implemented in both the urban and rural areas with strong focus on the village communities, schools and hospitals where JICA has built relationship through cooperation. JICA also created a cartoon material named "Correct Handwashing" drawn by Japanese cartoonist Ms. Kimidori Inoue, and it has been translated into Hindi and Tamil to extend the campaign to children who can only understand their local languages.

JICA aims to provide a sustainable solution to the country by building infrastructure and awareness about the importance of hygiene practices for preventing the spread of COVID-19 and other infectious diseases.

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