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# WATER INFRASTRUCTURE DEVELOPMENT: SAUNI YOJANA GUJARAT

By Subhash Sethi, Chairman, SPML Infra Limited



Gujarat is among the fastest growing states in India with gross state domestic product (GSDP) for 2022-23 is estimated about US\$ 288.73 billion compared to US\$ 259.25 billion in 2021-22, an increase of 13.3% year-on-year. The growth surge happened largely due to the distinction of being one of the most industrially developed states that contributes about a quarter to India's goods exports. It is a leader in industrial sectors such as chemicals, petrochemicals, dairy, drugs and pharmaceuticals, cement and ceramics, gems and jewellery, textiles and engineering. The industrial sector comprises of over 800 large industries and over 4.5 lac micro, small and medium enterprises.

Gujarat's infrastructure sector has grown significantly in the past few years with substantial rise in the number of industrial clusters, petrochemicals, airports, ports, and has emerged as a key hub for automobile, pharmaceuticals, electronics, gems and jewelry, textiles and engineering. In June 2022, the Hon'ble Prime Minister has inaugurated and laid foundation stone of development projects worth Rs. 21,000 crore (US\$ 2.63 billion) at Gujarat Gaurav Abhiyan.

Gujarat accounted for the highest share in total investment. According to the DPIIT, FDI inflows in Gujarat stood at US\$ 30.38 billion between October 2019 and June 2022. As of August 31, 2022, Gujarat had a total installed power generation capacity of 44,930.44

MW, comprising 29,204.20 MW under private utilities, 8,452.61 MW (state utilities) and 7,273.63 MW (central utilities). Gujarat has over 3,300 pharmaceutical manufacturing units, which contributed 30-35% to India's pharma sector's turnover and around 28% to India's pharma export during 2018-19. Export of drug formulations from Gujarat reached US\$ 2.82 billion in FY22.

Gujarat is one of the most industrially developed states in India and the world's largest producer of processed diamonds, accounting for 72% of the world's processed diamond share. The urban population in Gujarat is increasing significantly. With about 43% of population residing in the urban areas as per 2011 census, Gujarat is among the large urbanized states in the country. With faster urbanization trend, it is quite evident that the state's urban population will surpass its rural population. A report by McKinsey suggests that Gujarat will be 66% urban by the year 2030.

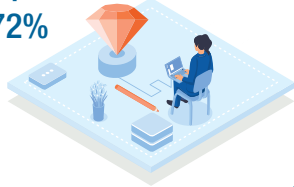
But the state needs to focus more on developing sustainable infrastructure for water, wastewater and irrigation infrastructure to address the water scarcity issues for drinking water, and bulk water for industrial and agriculture purposes. One of the key challenges of urbanization in Gujarat is provision of drinking water. A large part of the state is water stressed and has severe shortage of drinking water.



3000 MM Dia MS SAUNI Yojana Pipeline, Gujarat



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Among all natural resources, water is considered the most vital. In India from being infinite and renewable, it has become a finite and vulnerable natural resource. The issue is more severe in Gujarat where water availability is not very positive as state has been facing acute drinking water scarcity due to recurrent droughts, low rainfall and skewed distribution pattern.

Gujarat is characterized by variations in the topography and wide variations in annual rainfall. Three fourth of the area of the state is unsuitable for groundwater withdrawal due to rocky terrain and coastal region. The supply of surface water is also limited and the state has a long recorded history of droughts. The rainfall pattern in Gujarat is erratic and uneven which leads to imbalances in distribution of water in different regions. Gujarat at present has only 2% of the country's water resources to cater to 5% of the country's population.

The total water availability in the state is 50 BCM, of which surface water accounts for 38 BCM and ground water accounts for the balance 12 BCM. Of the 38 BCM of surface water, more than 80% is being used for irrigation purposes, leaving limited supply for drinking and industrial uses, which are therefore, largely dependent on groundwater.

Fresh water availability is an issue in almost two-third of the state population where people has been facing water availability issues or quality problems. The available quota of surface water is also not distributed properly. Gujarat, Saurashtra and Kutch regions have water resources of 89%, 9% and 2% respectively, against this; the total geographical area of these regions are 45%, 31% and 24% respectively. The underground water resources of state are 17508 million cubic meters.

With increasing population and firm economic growth, water demand will increase considerably in coming years. Per capita fresh water supply in urban areas is between 73 to 117 litres per capita daily (LPCD) is much lesser than the recommended national benchmark level of 135 LPCD.

The water pollution, in general, and degradation of groundwater quality in particular are the added dimensions of water scarcity issue. Thus, the water problem of the state involves quantitative shortages, as well as, qualitative deterioration.

Government of Gujarat has focused approach towards providing long term solutions to water challenges by investing in water supply infrastructure based on sustainable surface sources to achieve water security. The initiatives have started showing results and ground water level is up by 67% in some parts of the state. The 3 specialized agencies, viz. Gujarat Water Supply & Sewerage Board (GWSSB) established for rapid development and proper regulation of water supply and sewerage services in the state to ensure sustainable water supply and sanitation services; Gujarat Water Infrastructure Limited (GWIL) was established for bulk water supply for fulfilling water needs of the state; and Water and Sanitation Management Organization (WASMO) created for drinking water service delivery at users level in rural areas in the state.

### The Project

Saurashtra Narmada Avtran Irrigation Yojana (SAUNI Yojana): The Govt. of Gujarat has



2587 MLD Pumping Station for SAUNI Yojana Phase-1, Gujarat



2587 MLD Pump House for SAUNI Yojana Phase-1, Gujarat

initiated the ambitious Saurashtra Narmada Avtran Irrigation Yojana (SAUNI Yojana) with an estimated cost of INR 108 billion to divert One Million Acre Feet (1MAF) excess overflowing flood water of Narmada Dam to Saurashtra to distribute it to 115 Reservoirs through a total of 1115 Kms to irrigate 1.8 million hectare of land, mainly in Saurashtra, Kutch and north Gujarat, benefiting millions of farmers. This project is going to resolve the water scarcity of 132 towns and 11,456 villages in the Saurashtra, Kachchh, North Gujarat, Panchmahal and Ahmedabad regions for drinking and irrigation. About 1,650 MLD of water is supplied to 39 million people across these regions and with the good crop; it is boosting the economy of the state.

SAUNI Yojana is an ambitious large water infrastructure development project aimed to resolve the water related problems in Gujarat. SPML Infra has contributed significantly in the development of water infrastructure in the state. It has executed the phase-1 and phase-2 projects under SAUNI Yojana that was inaugurated by the Hon'ble Prime Minister of India in 2017 and 2019 respectively. The company is currently executing the phase-3 of this project and it is a challenging EPC project to

execute given the complexity of the project for laying large diameter pipelines in different soil and terrain and volatile weather conditions.

### Scope of Work:

**Phase-1:** SPML Infra scope comprised construction of pumping stations with capacity of 13,475 M<sup>3</sup>/hr with 30 meters head; supply and laying of 20.47 kms Twin MS pipeline (total pipe laying 40.95 kms) of 3000 mm diameter of 17.5 mm thickness with external 3LPE coating & internal food grade epoxy coating; 66Kv Switch Yard, SCADA system and allied works along with 10 years of operation & maintenance post commissioning.

**Phase-2:** Pipe laying for 36.6 kms with MS Pipeline of 3000 mm diameter of 17.5 mm thickness with external 3LPE coating & internal food grade epoxy coating under the Link 1, Package IV as part of the Phase 2.

**Phase-3:** Supplying and laying 139 kilometers pipeline of 1000-2700 mm diameters and construction of pumping station along with 10 years of operation & maintenance post commissioning.

### Project Challenges:

EPC projects are schedule driven with intersected phases to complete the project as early as possible. Sometime these overlapped phases pose challenges that lead to cost overrun and schedule delays. Some of the key challenges faced while executing this project includes:

The existing pipe manufacturers in India were not having the installed facility to manufacture and supply 3000 mm diameter 3 layer polyethylene coated pipes. SPML Infra got them to upgrade their facilities to manufacture and supply the required pipes

SAUNI Yojana is an ambitious large water infrastructure development project aimed to resolve the water related problems in Gujarat.





in adequate quantity as per time schedules.

- The transportation of heavy pipes (each 12 mtrs pipe weighted 15.6 metric tonnes) was very challenging. SPML Infra had to develop complete logistics using specially made 18 wheel low bed trailers for transporting such high value pipes to project locations spread across towns and villages.
- After laying of such huge pipes, the enormous task of jointing, welding and coating with 3 layer polyethylene was carried out with complete precision and safety by the experienced teams using complete protection from toxic gases emanating from welding inside the pipes.
- SPML Infra specially trained the work force deployed with complete facilities for safe transportation and laying in diverse soil and climatic conditions
- The transportation and placement of heavy pumping machineries were a difficult task that was completed with proper planning and management control at site. The rotator of all pumps was imported from Germany for the quality and longevity.

### Project Learning:

Each project is unique and has distinctive challenges. We have learned to consolidate our cohesive team work between different divisions responsible for the execution of a project. Since our projects are spread in geographies and locations with diverse cultural background different from each other, we have learnt to deal with situations arising out of local condition.

For SPML Infra, each project is unique and comes with distinctive challenges. According to our philosophy, team work and consistent performance measured approach is required for timely execution of the project. To provide impetus to work, SPML Infra believes in employee empowerment at all levels. Additionally from its past experience, the company has learnt to anticipate bottlenecks which are faced during project execution and preemptive measures are taken at every step to eliminate the delays.



### ABOUT THE AUTHOR

*Mr. Subhash Sethi is Chairman of SPML Infra Limited. Under his leadership, SPML Infra went on to establish itself as a leading water infrastructure development company in India with over 650 completed projects to provide safe drinking water to over 50 million people. His valuable contributions in water and infrastructure development have been recognized widely and he has received several prestigious awards.*

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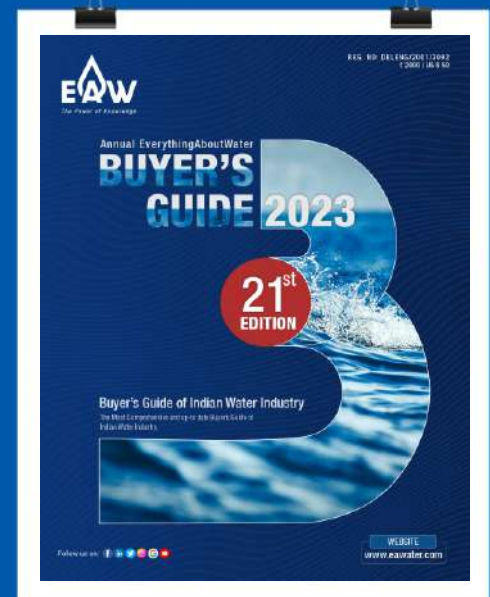
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