

# Growth Strides

## Government programmes and schemes driving greater development

The year 2018-19 witnessed significant efforts by the government to drive investments in the water and waste sector. Progress in terms of infrastructure creation and capacity building was noted under almost all the key government programmes and schemes. Technology upgradation and digitalisation have been key priority areas in the past few years. Private sector participation is also being encouraged for improved efficiency and cost optimisation. *Indian Infrastructure* presents the views of leading sector experts regarding the sector's performance over the past year...

### What have been the key developments in the water and waste sector in the past year?

#### Abhaya Krishna Agarwal

Over the past couple of years, many significant developments have taken place in the water and waste sector, the latest being the launch of the Ministry of Jal Shakti in June 2019. The ministry aims to provide clean piped drinking water to every household in the country and has launched the Jal Shakti Abhiyan for facilitating water conservation and security in water-stressed districts and blocks. This will lead to integration of water demand and supply. Apart from this, other notable developments have been the launch of the Composite Water Management Index by NITI Aayog, the World Bank approval of the Atal Bhujal Yojana (ABHY) for sustainable groundwater management with

community participation (worth Rs 60 billion), the National Hydrology Project to improve the extent, quality and accessibility of water resource information, and the one city, one operator scheme under the National Mission for Clean Ganga (NMCG) on the hybrid annuity model (HAM) to provide a one-stop solution for sewage treatment in an entire city.

#### Sourav Daspatnaik

The past year has been an eventful one for the water and wastewater sector. Multiple investments were made by both the central and state governments for taking up rural drinking water schemes. On the other hand, the wastewater segment received large disbursement of funds under the Atal Mission for Rejuvenation and Urban Transformation (AMRUT). In addition, projects worth over Rs 230 billion for river

cleaning and rejuvenation were tendered as part of the NMCG. Another noteworthy development was the adoption of the innovative hybrid annuity model (HAM), and six sewage treatment plant (STP) projects based on it were tendered under the NMCG. Further, three projects each in Uttar Pradesh, Bihar and West Bengal were also sanctioned under the same model. To take up these projects, funds amounting to Rs 15.32 billion were released to the state government and central public sector undertakings in 2018-19.

Emphasis has also been laid on augmentation of water availability through recycling and reuse of wastewater by industries and power plants. Severe depletion in groundwater levels has also pushed agencies to explore alternative sources of water such as desalination plants.

#### Arun Lakhani

The central government has made water a priority area and has envisioned an integrated approach to deal with water-related issues under the newly formed Ministry of Jal Shakti. An ambitious target of providing piped water to every rural household by 2024 has been set by the ministry. Further, governments at the state level have also taken various initiatives to overcome climate change, and unprecedented droughts and floods. For instance, the Maharashtra government took the initiative of connecting rivers in the state so as to maintain the water balance. Further, Gujarat has launched a few desalination projects along its coast to ensure water security in the region. On the wastewater front, mega cities such as Mumbai



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“As 21 cities in the country are set to run out of groundwater by 2020, thereby affecting around 100 million people, urgent investment and technology support from the private sector is required to implement projects in these cities.” Abhaya Krishna Agarwal, Partner, Infrastructure and PPP, EY LLP

and Pune have realised the need for wastewater treatment infrastructure and have launched multiple projects in the past year, though much more needs to be done. Nagpur continues to lead reuse initiatives and is expected to treat and reuse 480 million litres per day (mld) of treated water of the total 550 mld sewage that the city generates.

#### Subhash Sethi

Water and wastewater management is one of the most promising sectors in the country. Significant funds have been committed by the government for the upgradation of water supply and wastewater treatment infrastructure. Key initiatives such as cleaning of the 2,525 km long Ganga river, which passes through five major states, has been taken up and is progressing well. Sanitation coverage in rural areas has also showed remarkable progress with about 99 per cent population covered under sanitation facilities till March 2019. On the other hand, progress on providing piped water connections to rural households has been dismal. Meanwhile, the rainwater harvesting and water conservation efforts which earlier remained on paper, have received a significant push with the launch of the Jal Shakti Abhiyan, which aims to stimulate water conservation in 255 water-stressed districts. An ambitious target of providing water to every household by 2024 has also been set under the Jal Jivan Mission, which is commendable. Further, with hand-holding by the ministry and progress on river linking programmes, the existing water situation is set to change.

#### Suresh Kumar Sharma

In the past couple of years, significant thrust has been laid on improvement of water services across the country. In this regard, flagship programmes such as the Smart Cities Mission, River Linking and Rejuvenation, the Namami

Gange Mission, the Pradhan Mantri Krishi Sinchayee Yojana (PMKSY) and AMRUT have been launched. Further, all government initiatives have been integrated under the Ministry of Jal Shakti which is a notable development as it will bring all stakeholders under a single umbrella. The central government through NITI Aayog is also devising ways to attract greater private investment in the segment. Efforts are being made to improve the bankability of projects to attract greater investments.

Apart from this, measures such as strengthening of water sources, reduction in non-revenue water (NRW) levels, introduction of world-class technologies, development of water harvesting structures, promotion of wastewater treatment and reuse plants and desalination facilities are also on the government's priority agenda. On the waste management front, the government is aiming to achieve the three-pronged goal of reduce, reuse and recycle with timely investments and innovative technologies.

#### What has been the progress on the government's programmes and missions?

##### Abhaya Krishna Agarwal

Flagship schemes launched by the government have made significant progress. Under the Namami Gange programme, of the 290 approved projects worth Rs 283.77 billion, 95 projects have been completed while 137 are in progress and 58 are at the bidding stage. Similarly, under AMRUT, 1,832 projects worth Rs 47.42 billion have been completed while another 3,153 projects worth Rs 613.51 billion have been awarded. Further, 312 projects worth Rs 83.06 billion have been tendered. With respect to the National Rural Drinking Water Programme (NRDWP), till December 2018, 79 per cent of the rural habitations had been covered with water supply of 40 litres per capita per day

(lpcd) and 18 per cent of the rural households have been provided piped water supply connections. Also, for 2019-20, the government has allocated Rs 82.01 billion for the NRDWP, marking a 49 per cent increase over the previous year's allocation. Under the Smart Cities Mission, investments worth Rs 2,031.25 billion have been proposed, of which funds amounting to Rs 196.95 billion have been allocated for 453 water and sanitation projects. Overall, progress has been slow as only 33 per cent of the projects have been completed by as of December 2018.

On the solid waste management front, many cities have reported increased coverage of door-to-door collection. As of June 2019, 76,851 wards have been covered with 100 per cent door-to-door collection and 55,181 wards have started segregation at source. Further, total waste generation stands at 145,441 metric tonnes per day with overall average waste processing of 56 per cent. The results are expected to improve further in the next few years.

##### Sourav Daspatnaik

The Swachh Bharat Mission has brought about visible changes in cleanliness and sanitation. The Swachh Survekshan saw participation of over 4,250 cities including 62 cantonment boards. At the same time, AMRUT also gained momentum in terms of management of STPs and augmentation of collection, treatment and disposal infrastructure. That said, challenges still remain that mar capacity-building efforts and create governance issues for municipalities and urban local bodies (ULBs).

The NMCG, with a target of constructing 130 STPs and laying over 5,000 km of sewerage pipelines, made some progress. Only around 20 per cent of the money has been spent so far. The government also notified the standards for the minimum environmental



“Emphasis has also been laid on augmentation of water availability through recycling and reuse of wastewater by industries and power plants.” Sourav Daspatnaik, Chief Executive Officer, Swach Environment Private Limited

flows of the Ganga river in October 2018 but its impact is yet to be felt.

### Arun Lakhani

The Namami Gange initiative under the NMCG has progressed well in the past year and many projects are now nearing completion. Projects under AMRUT have also achieved considerable progress across states and there are a few states where significant work has been completed. With the Ministry of Jal Shakti being set up, much traction is expected in the sector.

### Subhash Sethi

The government has launched several schemes focused on improving the existing water, wastewater and solid waste management scenario. These schemes are backed by dedicated budget allocations. One such scheme, AMRUT, has made considerable progress with about 1,833 projects completed at a cost of Rs 47.44 billion. Another 3,161 projects worth about Rs 615.19 billion are at various stages of execution. Another programme – the NMCG – has been launched to add 2,278.08 mld of sewage treatment capacity and restoration of 574.8 mld of existing STPs, besides laying/rehabilitation of 4,766.4 km of sewerage network for abatement of pollution in the Ganga and Yamuna rivers. Work is in progress with about 99 projects (of the total 298) completed. Further, 134 projects are under execution with another 32 projects under bidding. The Swachh Bharat Mission too has shown remarkable progress with about 99.9 million household toilets built since its launch in October 2014. This translates to 99.96 per cent

coverage. A total of 32 states and union territories consisting of 0.58 million villages have been declared open defecation free.

### Suresh Kumar Sharma

While, the progress on various flagship schemes has been slow due to complexities in the relationship among stakeholders, progress under the NMCG, the Smart Cities Mission and the PMKSY has been satisfactory as these schemes are guided by clear rules and regulations. Under the NMCG, projects for wastewater collection and treatment facilities in most big cities have been tendered and are progressing well.

### What are the sector's key challenges that remain unaddressed?

### Abhaya Krishna Agarwal

Water demand in the country is growing rapidly and water availability is expected to fall short of demand soon. At present, 163 million people do not have access to safe drinking water and as per the Central Public Health and Environmental Engineering Organisation, average water supply by ULBs is around 69 lpcd as against the benchmark of 135 lpcd. Further, in rural areas, at present only 47 per cent of the habitations are covered with 55 lpcd of water. Groundwater levels are also depleting in many parts of the country.

In terms of sanitation, 210 million people lack access to basic sanitation facilities. Most projects implemented either at the state level or at the local level lack technical and financial capacity resulting in project delays and failures. Projects under the government schemes have

also not been able to achieve the targets envisaged as per the timelines. The water pricing regime or tariff structure across states is another concern as there is lack of regular tariff revisions. Another issue is the lack of access to reliable water data. As per NITI Aayog, the country's water data systems are limited in their coverage, robustness and efficiency leading to formulation of poor policies. Therefore, immense efforts are required to address these challenges.

### Sourav Daspatnaik

Several challenges were faced during the implementation of AMRUT and the NMCG. First, the lack of accurate data and the poor quality of detailed project reports poses a major hindrance to cost estimations, leading to financial crises. Another big challenge, faced by contractors and developers, is the unavailability of adequate funds. As most of the players in the water and wastewater sector are medium and small enterprises, meeting working capital requirements, and tying up funds from banks and financial institutions for project execution is a major challenge. India needs infrastructure lending institutions so that companies can gain access to funds at a low cost and on a long-term basis for building projects on formats such as design-build-finance-transfer, the build-own-operate-transfer and HAM.

The water tariff mechanism is another grey area that is yet to get the required focus from policymakers and the government, as it leads to loss of revenue due to high levels of NRW in urban areas. Rural drinking water schemes (that are purely investment-driven) lack sus-



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Arun Lakhani, Chairman and Managing Director, Vishvaraj Infrastructure Limited



“With the government’s increased focus on urban infrastructure development, the sector is expected to grow at 15-20 per cent every year.”

**Subhash Sethi, Chairman, SPML Infra Limited**

tainable financial models. Meanwhile, other challenges such as delays in obtaining permits for commencement of construction works, changes in design, risk in construction activities, cost overruns, financial risks and operational risks prevail in the sector.

#### **Arun Lakhani**

According to studies, 84 out of 100 smart cities have sufficient water to supply to their citizens. However, the real challenge is the distribution network that carries water from the source to household taps. More than 50 per cent of the water in the distribution network is lost due to leakages in pipes, and illegal connections are rampant. To add to this, infeasible water tariffs, coupled with political unwillingness to rationalise them, result in financial deficits. Extremely low metering levels (4 per cent) also worsen the situation. As a result, municipalities face a financial crunch and cannot plan for network rehabilitation.

On the sewage treatment front, there is lack of adequate funding and only 30 per cent of the sewage generated in large towns and hardly 1-2 per cent in the smaller towns is being treated. To overcome these issues, substantial investments are required to design and lay hydraulically correct, non-leaking pipeline networks and provide meters to all. Authorities also need to engage with private operators through performance-based, long-term operations and maintenance contracts. Besides, an impetus is required to extend treatment contracts to make them reuse contracts, preferably on a public-private partnership basis. This

will bring long-term sustainability to the sector.

#### **Subhash Sethi**

India is grappling with the huge challenge of shrinking water resources and increasing water demand. Currently, about 94 per cent of the population has access to drinking water and just about 40 per cent has access to wastewater management systems. Further, almost 63 per cent of municipal wastewater and 40 per cent of industrial wastewater is left untreated and discharged into waterbodies. This wide disparity emphasises the need for development of wastewater treatment systems. Untreated water also has dire consequences on health as water-borne diseases affect almost 40 million people annually. Meanwhile, other major challenges such as inordinate delays in land acquisition, regulatory bottlenecks, statutory clearances, shortage of skilled manpower, lack of timely availability of materials, escalating cost of raw materials, financing issues including difficulty in getting long-term and working capital funds, absence of cost-effective technology, lack of technical expertise to manufacture, install and operate treatment systems, and lack of competent project management personnel also hamper the development of the required infrastructure.

#### **Suresh Kumar Sharma**

One of the key challenges faced by the water and wastewater sector is the complex governance structure that negatively impacts the progress of projects, hampers decision-making, and impacts financial viability and bankability of pro-

jects thereby restricting investments, technology adoption, and private sector participation. Another issue plaguing the water sector is the unavailability of round-the-clock water supply. While new techniques and methods to recharge and rejuvenate natural reservoirs are being explored, a case in point is the Delhi government which is implementing a pilot project of constructing a 40 acre percolation pond in the Yamuna basin. This is not enough for sustained development. Planned urbanisation, preservation of natural and traditional reservoirs, and linking of rivers is also required to create national and regional water grids. Further, collection and treatment of wastewater, reuse of treated water and rainwater harvesting are also missing.

To overcome issues, water regulators at the national and state levels such as the Real Estate Regulatory Authority can be incorporated to set rules and regulations for stakeholders. Apart from this, ULBs are financially incapable and inefficient at achieving the ambitious target of covering 100 per cent households with piped water supply. For this, adequate investments and private sector involvement is required. In this regard, a legal framework to reduce the number of stakeholders is required besides the formulation of policies that focus on transparency, accountability, balanced contract models and bankability of projects. In addition, water pricing models can also be adopted to make water a priced commodity instead of providing free access. By-laws to encourage NRW reduction, timely asset replacement, reliable operations and maintenance, and improvement in customer services are also required.



“New techniques and methods to recharge and rejuvenate natural reservoirs are being explored. The Delhi government is implementing a pilot project of constructing a 40 acre percolation pond in the Yamuna basin.” Suresh Kumar

**Sharma, Chief Executive Officer and Managing Director, Sadhan Engineers Private Limited**



### What is the sector's outlook for the next one-two years?

#### Abhaya Krishna Agarwal

Overall, the water and waste sector has a positive outlook with a plethora of investment opportunities expected in the next one-two years. As per World Bank estimates, India's water and sanitation sector is growing at the rate of 18 per cent. Another report by the Bank of America Merrill Lynch estimates that the water sector in India offers opportunities worth \$270 billion.

The launch of the Ministry of Jal Shakti also indicates the government's keenness to adopt a focused approach towards tackling major challenges in the sector. The Nal Se Jal scheme offers a massive investment opportunity in the next two-three years in various verticals such as pipes; engineering, procurement and construction; water treatment; pumps and valves; etc. Under the waste segment, municipal solid waste comprises 75 per cent of the total waste generated, and presents investment opportunities for private players to convert garbage into continuous income streams.

Further, as 21 cities in the country are set to run out of groundwater by 2020, thereby affecting around 100 million people, urgent

investment and technology support from the private sector is required to implement projects in these cities. Going forward, there is a need to adopt an integrated approach towards water and waste management with better coordination among the centre, states, ULBs and external stakeholders to achieve good results.

#### Sourav Daspatnaik

The government's renewed focus on programmes such as Nal Se Jal and rejuvenation of rivers and the formation of the Ministry of Jal Shakti will lead to better coordination amongst agencies. These efforts will help improve water distribution systems, implement rules and policies, ensure proper water budgeting, mandate recycling of wastewater and increase investments in piped water supply, besides offering other opportunities.

Further, the drinking water programme launched by the Ministry of Jal Shakti is likely to see investments in the range of Rs 3,500 billion in the next few years. This ambitious programme is expected to be a game changer in the sector; however, concerns regarding the availability of raw water and its transportation to end users, while ensuring stable revenue streams for capex and opex for project feasibility, need to be addressed.

#### Arun Lakhani

Water has been the topmost priority of the government and, hence, the sector is expected to grow rapidly over time. In order to achieve the goal of providing tap water to all households by 2024, investments in the sector will double in the next five years. Further, industries, concerned about water security, are willing to explore treated water reuse facilities and pay a premium for this water. Customers too will have to improve efficiency and adopt innovative ways of conserving water and water reuse facilities wherever possible.

#### Subhash Sethi

With the government's increased focus on urban infrastructure development, the sector is expected to grow at 15-20 per cent every year. Projects will continue to move forward under the flagship schemes. Further, the newly formed Ministry of Jal Shakti has been allocated Rs 282.61 billion to ensure Har Ghar Jal (piped water supply) under the Jal Jeevan Mission, which is commendable. With about 21 cities expected to run out of groundwater by 2020 and nearly 600 million people likely to face extreme water stress, the commitment of the government towards creating water infrastructure is a welcome step.

#### Suresh Kumar Sharma

The water and wastewater sector looks promising as a huge investment opportunity already exists. The flagship schemes alone are expected to attract investments worth \$270 billion in the coming years. Projects for river linking, river rejuvenation, wastewater treatment, tertiary treatment plants, 24x7 water supply, NRW reduction, source enhancement and rural water supply will attract the maximum share of investments. At the same time, the limited presence of multinational water companies will immensely benefit domestic contractors, technology providers, consultants, operators and developers, as they can grab the upcoming opportunities and provide customised solutions. Modular packaged systems are also expected to get a policy impetus as these help reduce the burden on existing civic infrastructure. ▶