GRANT COMPONENT FOR RAJASTHAN URBAN SECTOR DEVELOPMENT PROGRAM (RUSDP) – PILOTING INNOVATIVE SANITATION SOLUTIONS IN RAJASTHAN

A. Rationale

1. Urban centers have driven services- and manufacturing-sector-led economic growth in India, placing cities at the forefront of its economic transformation.[1] According to recent estimates, the urban sector contributes around 63% of India's gross domestic product (2009-2010), and this share is projected to increase to 75% by 2021.[2] Similarly, while India's urban population currently constitutes about 31% of the total population, it is estimated to grow to 43% by 2031.[3] The growing urbanization has aggravated the already deficient urban infrastructure and poor services in the country. Only 64% of urban population in India has individual water connections; water supply is mostly intermittent with duration ranging from 1-6 hours a day; nonrevenue water (NRW) accounts for about 50% of production; most cities do not have functional water meters; only 5% of cities have any kind of sewerage system; 18% of urban households defecate in open; and only 21% of wastewater generated is treated.[4] Moreover, 13% urban households do not have access to latrines, 94% of all cities and towns are unsewered, and 80% of all sewage generated is discharged untreated. About 30% of solid waste generated is not collected (up to 50% in smaller towns) and/or not disposed properly. ADB's India country partnership strategy (CPS) 2013–2017 highlights that urban infrastructure deficit is one of the most important binding constraints to inclusive growth.[5] In the last twenty years, the Government of India has successfully reduced open defecation from more than 90% in 1990s to around 50% in 2012 by enhancing access to toilets, however, 600 million residents still practice open defecation in the country.

2. Rajasthan, with a population of 68.6 million and an area of 342,239 square kilometers, is the largest state in the country. While the current urbanization is around 25%, the state is rapidly urbanizing at a high growth rate of 2.9% per annum. The government of Rajasthan (GOR) has successfully implemented two multi-sector urban investment projects in the past decade, which benefitted more than 5.0 million residents of six major cities under the first project and more than 2.0 million residents of 15 secondary cities under the second project.[6] Important lessons from the past projects are: (i) consultations on project design, last mile connectivity, cost recovery, user charges and timely induction of counterpart staff and their capacity building are crucial for sustainability; (ii) contracts should be clubbed into fewer packages with long-term O&M provisions; and (iii) advance actions for procurement should be undertaken to enhance project readiness. Another important lesson, also reiterated in the review of CPS 2009–2012, is that the investments have to be coupled with sustainable and vibrant institutions, and effective

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[1] High Powered Expert Committee, Government of India. 2011. *Report on Indian Urban Infrastructure and Services*. Delhi.

[2] Planning Commission, Government of India. 2007. *Report of the Steering Committee on Urbanization, Eleventh Five Year Plan (2007-2012)*. New Delhi.

[3] Planning Commission, Government of India. 2012. *Report of the Steering Committee on Urbanization, Twelfth Five Year Plan (2012-2017)*. New Delhi.

[4] High Powered Expert Committee, Government of India. 2011. *Report on Indian Urban Infrastructure and Services*. Delhi.

[5] ADB. 2013. *Country Partnership Strategy: India, 2013–2017.* Manila.

[6] ADB. 1998. *Report and Recommendation of the President to the Board of Directors: Proposed Loan to India for the Rajasthan Urban Infrastructure Development Project*. Manila; ADB. 2007. *Report and Recommendation of the President to the Board of Directors on a Proposed Multitranche Financing Facility to India for Rajasthan Urban Sector Development Investment Program.* Manila. These two projects focused on urban sector with several subsectors, such as water supply, wastewater, urban transport, drainage, solid-waste management, fire-fighting, heritage, etc. The six cities proposed under the SDP were not covered in these two earlier projects.

governance systems, to sustain and maximize their impacts.[7] While the past projects have improved the service delivery in some of the urban areas in the state, the current status of water supply in the six project cities remains poor: average duration varies from 1 hour every 3 days to 2 hours every day; coverage varies from 80% to 100%; production varies from 69 to 136 liters per capita per day; and household service connections coverage varies from 57% to 96%. NRW levels range from 36% to 76% due to poor quality network, unauthorized connections, ineffective metering, and poor revenue realization. There is no piped sewerage system, and septic tanks coverage varies from 65% to 99%. Tariffs are very low (for example, rate up to 15,000 liters consumption for a domestic consumer is Rs1.56 per 1,000 liters) and cover around 20% of operation and maintenance (O&M) costs of water supply. Sewerage charge is collected as a percentage of water charge ranging from 20% to 33%. The project preparatory technical assistance (PPTA) baseline survey also showed that while the toilets in the project cities are connected to septic tanks, the responsibility for emptying the tanks is retained with the household owners, which occurs only when the tanks are blocked and overflowing. Septic sludge, when collected, is dumped randomly, mainly in to nearby water bodies. Supernatant and overflowing septic tank sludge generally flows in to nearby waterways through open ditches. Unfortunately, there is no regulatory standard or guidance for septic sludge disposal and thus no method for regulating proper disposal. As a result, there may be ground and surface water pollution resulting from septic tank waste.

3. The sector development program (SDP) modality is proposed to support both the infrastructure needs and the reform program of the GOR for sustainable urban infrastructure development and service delivery. The reform program will focus on strengthening institutions and implementing reforms that entail large scale adjustments in policy, institutional, legal, financial, and regulatory framework. The policy-based loan will provide financial support to the GOR to implement these reforms that will unlock the potential of various stakeholders, including municipal bodies, individual households, and private sector investors. The project loan will support catalytic investments that enhance productivity and leverage finances from various other sources in the project cities. The project will also introduce innovations in water supply and wastewater management, such as 24x7 water supply, long-term O&M embedded construction contracts for NRW reduction and operational sustainability.

4. With the improvement of water supply brought by the proposed project, it is expected that the water consumption will also increase the quantum of wastewater. Therefore, there is a need to find affordable and sustainable approaches to ameliorate the potential pollution load to the waterways. Implementing a sustainable approach also requires strengthening of the regulatory and institutional framework; training and education; business plan development and implementation; technical and financial analysis of solutions and sustainable service delivery; and proper operations and maintenance.

5. Funding support is being sought from the Sanitation Financing Partnership Trust Fund (SFPTF) under the Water Financing Partnership Facility (WFPF) for a grant component of the project to finance the institutional and technical improvements needed - and pilot testing of sanitation innovations in the two project cities: Sri Ganganagar and Hanumangarh. The pilot testing is aimed at demonstrating the feasibility of septage management options, on-site sanitation options, including low cost and environment-friendly toilets, and decentralized treatment, in non-sewered areas. The results are intended to facilitate demand for sanitation

[7] Water supply and wastewater operations are handled by the Public Health Engineering Department throughout the state, with overlap in responsibilities with municipalities, development authorities and housing boards in some areas. Recently, the GOR delegated operations to municipalities; however, the decision is not yet operationalized.

solutions, thus allowing replication in other towns. The GOR has committed to using part of the proceeds of the program loan ($250 million) for replicating the best practices in other cities in the state. It is expected that such amount from program loan and other sources could be in the range of $25-$50 million during the project implementation period.

6. The assessment and pilot testing will also look into regulatory and institutional arrangements, particularly for operation and maintenance, as well as policies and procedures that may be required to ensure sustainability of the solutions.

7. Consultants will be engaged–two international consultants and four national consultants on individual basis under ADB's individual consultant selection procedures to provide support to the government, the local bodies and in implementing the outputs under the grant component outlined below.

B. Outputs

8. The impact of the grant component will be sustainable urban development in Rajasthan. The outcome will be improved urban service delivery in Rajasthan. The grant component in two pilot towns is expected to benefit approximately 200,000 people. The outputs will be:

(i) **Output 1: Support for capacity building, strengthening of policy, regulatory and institutional arrangements for innovative solutions in non-sewer areas.** This output will include: (a) development of innovative service delivery mechanisms such as performance based management contract and public-private partnership (PPP) for O&M of public toilets, septage management and decentralized sanitation options, (b) drafting, enactment and support in implementation of policy and regulatory framework for septage management at the state level; (c) capacity building of urban local bodies at the state level; and (d) planning for innovative sanitation solutions in non-sewer areas.

(ii) **Output 2: Support for pilot on-site innovative solutions in non-sewer areas, including septage treatment facilities, decentralized wastewater treatment systems, and low-cost environment friendly toilets.** This output will include, in pilot cities, support for installation/construction of: (a) septage management facilities, (b) decentralized wastewater treatment systems, and (c) low-cost, environment-friendly toilets for the households practicing open defecation or using unsanitary toilets.

9. **Decentralized Wastewater Treatment Systems (DEWATS):** While the focus of the RUSDP project will be on centralized wastewater collection and treatment, the grant component will focus on developing pilot DEWATS for an estimated capacity of less than 100 households per DEWAT facility. DEWATS are typically adapted in urban and peri-urban low income areas where access to centralized sewer and wastewater treatment systems is limited. DEWATS are designed to be low maintenance with no technical energy inputs and are not mechanized. DEWATS constitute of either/ or a combination of treatment modules; (i) primary treatment (e.g. sedimentation); (ii) secondary anaerobic treatment (e.g. anaerobic filters); and (iii) tertiary aerobic treatment (sub-surface flow filters or polishing ponds). Selection of treatment modules is dependent on the overall wastewater loading and desired effluent quality to be achieved. Typically, DEWATS are designed, implemented and operated with strong community participation. DEWATS have been installed in India for more than a decade as an alternative to conventional systems. However there is uncertainty about their long term sustainability. Assessment of existing DEWATS revealed that while the technology and technical expertise

exist in the country, most systems had problems with operation and maintenance. This was primarily due to poor design of DEWATS, unwillingness of the community to participate and lack of funds for repair and maintenance of the facilities. Given the track record of existing DEWATS, the guiding principle under this component will be to focus on operational sustainability management. Prior to the implementation of DEWATS under this component, the following conditions will be required to be met: (i) identification of suitable communities that do not have access to the centralized sewer network; (ii) willingness and participation of the community during design, implementation and operation and maintenance; (iii) availability of suitable government or community land; (iv) development of operation and maintenance plan including identification of fund availability; and (v) suitable design criteria established.

10. **Septage Management:** Local bodies, including municipalities, are responsible for providing sanitation services, including the services for emptying the septic tanks for a fee and its use is voluntary. In the sample cities, households generally use informal private sector groups to empty their septic tanks. There is a need to institutionalize this informal arrangement that is currently being practiced - of outsourcing the septage and wastewater management responsibilities the private sector after assessing the existing arrangements in terms of long-term sustainability and service delivery, and clearly delineating the roles and responsibilities outlined for all the stakeholders. Similarly, there is a need to ensure that the urban local bodies have adequate capacity and resources to operate the septage management systems, and also the institutional framework to regulate the private sector to sustainably operate the systems. The urban local bodies will need to develop capacity within their organization and strengthen a separate unit, the septage committee, responsible for management of septage systems in the towns, including technical, financial and environmental aspects, or contract the services out to an able operator. With assistance from the consultants, the septage committee will recommend a septic tank management and septage treatment policy that is acceptable to the stakeholders, implementable and sustainable. The consultants will help the government and the urban local bodies by:

(i) reviewing existing regulatory and institutional framework and preparing recommendations for strengthening the same for sustainable septage management that can be applicable to all urban areas in the state;
(ii) preparing standard design of septic tanks to be included in newly built houses and or institutions;
(iii) preparing life cycle cost for septage management on the basis of pilot subprojects;
(iv) developing a capacity development plan, after conducting capacity needs assessment of all stakeholders involved, including that of regulators. The Septage committees formed within the urban local bodies will require adequate equipment, and properly trained staff in sufficient numbers;
(v) developing a training program and implementation plan based on the above;
(vi) assisting the urban local bodies or private operators in implementing the same for the first 3 years, including setting of the management system for septic tanks status and monitoring of servicing, an instruction manual for systems and operational staff including septage collectors and drivers, among others; and
(vii) carrying out training of the urban local bodies or private operators' staff.

11. **Design, construction and operation of septage treatment facilities.** The following activities will be carried out:

(i) determining the quality and quantity of sludge for each of the pilot towns;

(ii) reviewing and recommending the best solution for septage collection and treatment;
(iii) preparing the detailed design of the septic sludge treatment in the pilot towns.
(iv) recommending the business models, and preparing tender documents or operational terms of reference for the preferred technology alternatives for both collection and treatment system;
(v) preparing a business plan for the preferred business model;
(vi) monitoring construction and commissioning;
(vii) providing resources required for first two years' operations; and
(viii) after 2-years' operation, developing a standard septic sludge technical design and sustainable operation for dissemination in the project.

12. **Regulation of the service providers, ongoing training and public awareness campaign.** Treatment of septage will start after completion of the sludge treatment area in the pilot cities. The government will ensure that all systems, programs, procedures and equipment would be operational, and staff adequately trained. Under this component, the consultants will help the concerned urban local bodies or the private operators to:

(i) provide technical assistance and training of septage operators to improve current practices in hauling septage;
(ii) provide guidelines for analyzing septage sludge and effluent quality;
(iii) evaluate the first two-years' operations;
(iv) organize knowledge dissemination workshops for watershed agencies based on the results of the experiment;
(v) carry out social awareness campaign to help local people better understand the septic tanks and the management;
(vi) develop the oversight program by assisting the government in operationalizing a regulatory framework, guidelines, authority, capacity and on monitoring the servicing of septic tanks, outputs and performance of each treatment facility, including quantitative and qualitative parameters necessary for environmental and cost-benefit analyses and overall evaluation of contract performance; and
(vii) conduct ongoing public relations and public education using specialized on-going consultation to ensure sustainability. The consultants will prepare, as part of the business plan, and assist with a long-term strategy for ongoing public relations and public education during its engagement period and induct the stakeholders to carry it forward.

C. Operational and Financial Sustainability

13. The government is committed to developing urban development policy; human resource development plan for improving urban governance; and urban water and sanitation policy for comprehensive improvement of the urban water services and sanitation. The urban water and sanitation policy will include, among others, (i) NRW reduction, (ii) operationalization of 24x7 water supply, (iii) sewerage and septage management, (iv) provision of individual water supply and sewerage connections to households in slums and poor settlements, (v) development of water supply and sewerage geographic information system and computerized sex-disaggregated customers' database, (vi) guidelines to set water tariffs, (vii) water and wastewater quality monitoring systems, (viii) system to monitor billing and collection efficiency, (ix) waste and wastewater recycle and reuse, (x) bridging gaps between sanitation and health outcomes, and (xi) water and sanitation linkages with economic growth and competitiveness of cities. The project and its objectives are fully consistent with the overall development plans, and the country's and the state's overall sector strategy. Similarly, the project cities' urban local

bodies are strongly committed to the project and confident that the investment will improve environmental conditions and quality of life in these cities.

14. Financial sustainability of the grant component is critical to the overall project success. Therefore, the urban local bodies will need to include, in their regular budgets, the costs required to operate and maintain the system, which could come from the water tariff, property taxes, or transfer of funds form the state to the municipal bodies. The urban local bodies and the private operators will need well-qualified technical staff to ensure successful and timely implementation of the component, and adequate and efficient operation of the facilities. During that period, the local bodies will prepare, with the help of consultants, a long-term sustainable plan. The urban local bodies will also explore the PPP or other forms of management contracts with the private operators for operation and maintenance of the sanitation component, including the septage management. Further, civil works will be executed only after the approval and adoption of a sustainable business plan, which will also include tariff collection mechanism for collection and treatment of sludge. The system will be designed by considering a value chain where sludge will convert into resources, which will be the basis for sustainability of the project. Further, there will be partial support from WFPF for the first two years of operation.

D. Replicability

15. The proposed WFPF-supported activities have significant potential for replicability in other towns covered by the project, previous ADB-supported projects and future projects in the cities. With six cities proposed under the project, and the earlier supported 21 cities (6 major cities in Phase I and 15 secondary cities in Phase II), all of which need sewage and septage management, successful experience from the pilot cities can be easily replicated. The GOR has committed to using part of the proceeds of the program loan ($250 million) for replicating the best practices in other cities in the state. It is expected that such amount from program loan and other GOR sources could be in the range of $25-$50 million during the project implementation period. The septage investment also has significant potential of replicability in other states in the country and other countries in South Asia. The successful experience would provide for sharing knowledge, skills and best practices.

E. Stakeholder Involvement/Intended Beneficiaries

16. There are multiple beneficiaries for the proposed activities: (i) central, state, and local governments, and their agencies; (ii) residents of the project cities; (iii) urban local bodies and private operators; (iv) environmentalists; (v) other cities in the state, which would apply lessons learned; and (vi) all stakeholders in the tourism industry (hoteliers, tourists) as tourism is one of the most important industries for Rajasthan. During the preparation of the components, there would be consultations with these key stakeholder groups, and an effort would be made to reach consensus on appropriate design of the systems. The results of the consultations would be recorded and analyzed, and a stakeholder plan produced as a specific activity.

F. Implementation Arrangements

17. The implementation arrangements will closely follow those for the RUSDP (described in detail in the RRP and PAM). The Local Self Government Department (LSGD) will be the executing agency and Rajasthan Urban Infrastructure Development Project (RUIDP) will be the implementing agency. The LSGD will be responsible for overall strategic planning, guidance and management of the grant component, and for ensuring compliance with the conditions of the SFPTF. RUIDP will be responsible for planning, implementation, monitoring and supervision,

and coordination of all activities under the grant component. RUIDP will recruit a firm or individual consultants in accordance with ADB's Guidelines on the Use of Consultants (2013, as amended from time to time). Procurement of civil works and goods will be carried out in accordance with ADB's Procurement Guidelines (2013, as amended from time to time). Advance contracting and retroactive financing under the SDP, as requested by the GOR, is proposed to be approved.

G. Financing Plan

18. Total WFPF fund application will be US$2 million including US$1.5 million on civil works and equipment, and US$ 0.5 million for consulting services. The total estimated duration of this assistance is 36 months.

Table 1. Cost Estimates

($'000)

Item	Total Cost
Asian Development Bank Financing[a]	
1. Consultants	
a. Remuneration and Per Diem	
i. International Consultants	175.0
ii. National Consultants	280.0
b. International and Local Travel including vehicle hire	20.0
c. Reports and Communications	5.0
2. Septage treatment facility, including necessary collection, transportation and equipment[b] and operation and maintenance (O&M), in two pilot cities	600.0
3. DEWATS, including O&M, in two pilot cities	750.0
4. Low-cost environment-friendly toilets	100.0
5. Workshops, Trainings, Seminars, and Conferences[c]	
a. Workshops and Seminars	20.0
6. Contingencies	50.0
Total	**2,000.0**

[a] Financed by Bill & Melinda Gates Foundation.
[b] All equipment purchased under the TA will be turned over to the executing agency upon completion of TA.
[c] Workshops, trainings, seminars and conferences will be organized for building capacity and sharing information among stakeholders.
Source: Asian Development Bank estimates.

GRANT COMPONENT FOR RAJASTHAN URBAN SECTOR DEVELOPMENT PROGRAM (RUSDP) – PILOTING INNOVATIVE SANITATION SOLUTIONS IN RAJASTHAN

TERMS OF REFERENCE FOR THE CONSULTANTS

1. The impact of the grant component will be sustainable urban development in Rajasthan. The outcome will be improved urban service delivery in Rajasthan. Funding support is being sought from the Sanitation Financing Partnership Trust Fund (SFPTF) under the Water Financing Partnership Facility (WFPF) for a grant component of the project to finance the institutional and technical improvements needed - and pilot testing of sanitation innovations in the two project cities: Sri Ganganagar and Hanumangarh. The pilot testing is aimed at demonstrating the feasibility of septage management options, on-site sanitation options, including low cost and environment-friendly toilets, and decentralized treatment, in non-sewered areas. The results are intended to facilitate demand for sanitation solutions, thus allowing replication in other towns. The key objectives of the assignment are to achieve the following two major outputs of the grant component as follows:

(iii) **Output 1: Support for capacity building, strengthening of policy, regulatory and institutional arrangements for innovative solutions in non-sewer areas.** This output will include: (a) development of innovative service delivery mechanisms such as performance based management contract and public-private partnership (PPP) for O&M of public toilets, septage management and decentralized sanitation options, (b) drafting enactment, and support in implementation of policy and regulatory framework for septage management at the state level; (c) capacity building of urban local bodies at the state level; and (d) planning for innovative sanitation solutions in non-sewer areas.

(iv) **Output 2: Support for pilot on-site innovative solutions in non-sewer areas, including septage treatment facilities, decentralized wastewater treatment systems, and low-cost environment friendly toilets.** This output will include, in pilot cities, support for: (a) septage management facilities, (b) decentralized wastewater treatment systems, and (c) low-cost, environment-friendly toilets for the households practicing open defecation or using unsanitary toilets.

I. Sanitation Policy and Regulation Specialist /Team Leader (1 national, 12 person-months, intermittent)

2. **Qualifications**: The consultant should have a minimum of a postgraduate degree in engineering (civil, water supply, sewerage/sanitation) or related discipline. He/she should have at least 15 years of experience in urban planning or urban governance. A good understanding in a broad range of urban management and experience working for the Asian Development Bank (ADB) or other development partners' projects in the urban sector is highly desirable.

3. **Scope of Work**. The tasks include, but not limited to, the following:

(i) Coordinate with all the consultants to ensure that the key outputs of the grant component are met.
(ii) Prepare a tasks matrix and work plan for consultants and counterparts.
(iii) Ensure timely and quality of outputs of international and national consultants.
(iv) Coordinate closely with the executing and implementing agencies, participating cities and Government of Rajasthan (GOR) and other relevant stakeholders.

(v) Assess the existing policy, regulatory and commercial framework of sanitation sector in the state of Rajasthan, in coordination with the international sanitation specialist.
(vi) Develop an appropriate sanitation management policy and framework in the state of Rajasthan, in coordination with the international sanitation specialist.
(vii) Work with RUIDP and their other loan consultants to develop urban development policy and urban water and sanitation policy.
(viii) Work with RUIDP and their other loan consultants to support the reforms agenda of the state as related to wastewater management and sanitation, especially in areas included in the policy matrix of the program loan of the Rajasthan Urban Sector Development Program.
(ix) Ensure timely provision of all necessary documentary works needed by the GOR
(x) Report to the ADB Project Officer and the executing and implementing agencies.

II. Sanitation Specialist (1 International, 6 person months, intermittent)

4. **Qualifications**: The consultant should have a minimum of a Master's degree in engineering (civil, water supply, sewerage/sanitation) or related discipline, or a combination of a first degree, post-graduate/professional training and extensive relevant experience. He/she should have strong experience in wastewater engineering, specifically in designing and managing decentralized wastewater treatment systems and septage treatment and management. A minimum of 15-year experience working in these areas is required. A good understanding of engineering design practices and construction monitoring is also required.

5. **Scope of Work**. The tasks include, but not limited to, the following:

(i) Assess the existing policy, regulatory and commercial framework of sanitation sector in the state of Rajasthan and compare with the best practices in Asia and other countries. Develop recommendations for improvement of urban sanitation governance in the state.
(ii) Develop, in coordination with the national sanitation specialist, an appropriate sanitation management policy and framework in the state of Rajasthan to incorporate the best practices from Asia and the world to support more aggressive sanitation investments
(iii) Work with RUIDP and their other loan consultants to develop urban development policy and urban water and sanitation policy.
(iv) Work with RUIDP and their other loan consultants to support the reforms agenda of the state as related to wastewater management and sanitation, especially in areas included in the policy matrix of the program loan of the Rajasthan Urban Sector Development Program.
(v) In coordination with the septage management specialist, prepare preliminary design of DEWATs and septage management schemes for the identified/pilot towns or cities.
(vi) Assess the capacity within the organization of the identified cities and identify strategy/resources, including technical, financial and environmental aspects.
(vii) Report to the ADB Project Officer and work closely with the Team Leader as well as the executing and implementing agencies and other relevant stakeholders.

III. Wastewater Policy and Regulation Specialist (1 international, 6 person months, intermittent)

6. **Qualifications**. The consultant should have a graduate degree in Civil and Environment Engineering or relevant fields (post graduate degree will be preferred) and at least 10 years of experience in implementing and operating wastewater projects.

7. **Scope of Work**. The consultant is specifically tasked in providing the following tasks:

(i) Assess the existing policy, regulatory and commercial framework of sanitation sector in the state of Rajasthan and compare with the best practices in Asia and other countries. Develop recommendations for improvement of urban sanitation governance in the state.
(ii) Consult with stakeholders for review of the wastewater policy and to identify necessary improvements, areas for strengthening implementation
(iii) Prepare a draft sewerage policy for Rajasthan to provide wastewater management services in the urban areas in the State.
(iv) Assist the Government of Rajasthan in establishing a roadmap for the implementation of the wastewater quality monitoring system including frequency of testing, compliance parameters, penalties and fees, finalization of the agency to be responsible for the wastewater quality reports, facilitate the publishing of the wastewater quality reports in the media and websites of the agency and GOR.
(v) In coordination with the national consultants, help the concerned urban local bodies or the private operators to develop a long-term wastewater strategy for ongoing public relations and public education during its engagement period and induct the stakeholders to carry it forward.
(vi) Report to the ADB Project Officer and work closely with the Team Leader as well as the executing and implementing agencies and other relevant stakeholders.

IV. Septage Management Specialist (1 national, 12 person-months, intermittent)

8. **Qualifications**. The consultant should have a graduate degree in Civil and Environment Engineering or relevant fields (post graduate degree will be preferred) and need to have strong experience in wastewater engineering, specifically, septage sludge management. A good understanding of engineering design practices and construction monitoring is required.

9. **Scope of Work**. The tasks include, but not limited to, the following:

(i) Assist GOR in developing a policy and regulatory framework for septage management at state level that is acceptable to the stakeholders, implementable and sustainable.
(ii) Review existing regulatory and institutional framework and prepare recommendations for strengthening the same for sustainable septage management that can be applicable to all urban areas in the state.
(iii) Prepare detailed design of the septic sludge treatment in the pilot cities.
(iv) Prepare a septage management scheme, including, hauling scheme (number of trucks, desludging frequency, routes to be taken), recommendation on tariff or desludging fee, requirement on manpower and other operational and maintenance costs
(v) Prepare life cycle cost for septage management on the basis of pilot cities.
(vi) Develop a capacity development plan, after conducting capacity needs assessment of all stakeholders involved, including that of regulators. The Septage committees formed within the urban local bodies will require adequate equipment, and properly trained staff in sufficient numbers.

(vii) Assist the urban local bodies or private operators in implementing the same for the first 3 years, including setting of the management system for septic tanks status and monitoring of servicing, an instruction manual for systems and operational staff including septage collectors and drivers, among others; and
(viii) Carry out training of the urban local bodies or private operators' staff.
(ix) Help the concerned urban local bodies or the private operators to provide technical assistance and training of septage operators to improve current practices in hauling septage; provide guidelines for analyzing septage sludge and effluent quality; evaluate the first two-years' operations; develop the oversight program by assisting the government in operationalize a regulatory framework, guidelines, authority, capacity and on monitoring the servicing of septic tanks, outputs and performance of each treatment facility, including quantitative and qualitative parameters necessary for environmental and cost-benefit analyses and overall evaluation of contract performance; and conduct ongoing public relations and public education using specialized on-going consultation to ensure sustainability.
(x) Report to the ADB Project Officer and work closely with the Team Leader as well as the executing and implementing agencies and other relevant stakeholders.

V. Wastewater Public-Private Partnership (PPP) Expert (1 national, 12 person-months, intermittent)

10. **Qualifications**. The Consultant is preferred to have a postgraduate degree in finance, economics or related fields and with at least 15 years of extensive experience in the development, evaluation and delivery of wastewater PPP projects. The consultant must have proven and extensive experience in private sector and investment policy, approaches and modalities of promoting PPPs, and regulatory framework and legislative reform in India. The consultant should have least 10 years of experience in regional infrastructure and PPP development, preferably in South Asia.

11. **Scope of Work**. The tasks include, but not limited to, the following:

(i) Provide an overview of PPP in the wastewater sector in the region, particularly in India, highlighting institutional, policy and operational constraints to PPP project development.
(ii) Undertake policy dialogues and consultations with high-level representatives of GOR and the private sector regarding relevant issues on PPP development.
(iii) Develop innovative service delivery mechanisms such as performance based management contract and PPP for O&M of public toilets, septage management and decentralized sanitation options.
(iv) Prepare draft/sample contracts for the identified service delivery mechanisms. Conduct workshops and trainings to introduce innovative service delivery mechanisms to the GOR.
(v) Identify necessary organizational and institutional requirements to manage the service delivery mechanisms.
(vi) Report to the ADB Project Officer and work closely with the Team Leader as well as the executing and implementing agencies and other relevant stakeholders.

VI. Decentralized Wastewater Management Expert (1 national, 12 person-months, intermittent)

12. **Qualifications**. The consultant should have a graduate degree in Civil and Environment Engineering or relevant fields (post graduate degree will be preferred) and need to have a strong experience in decentralized wastewater treatment systems (DEWATS). A minimum of 10-year experience working in these areas is required.

13. **Scope of Work**. The tasks include, but not limited to, the following:

(i) Assist GOR in the design, development, and implementation, monitoring, and O&M of DEWATS and ensure that the following conditions are met prior to implementation:
   a) identification of suitable communities that do not have access to the centralized sewer network;
   b) willingness and participation of the community during design, implementation and operation and maintenance;
   c) availability of suitable government or community land;
   d) development of operation and maintenance plan including identification of fund availability; and
   e) suitable design criteria established.

(ii) Assist GOR in preparing a detailed design for DEWATS in pilot cities with focus on operational sustainability and proper O&M.

(iii) Conduct training for GOR on the O&M and troubleshooting of DEWATS

(iv) Report to the ADB Project Officer and work closely with the Team Leader as well as the executing and implementing agencies and other relevant stakeholders.