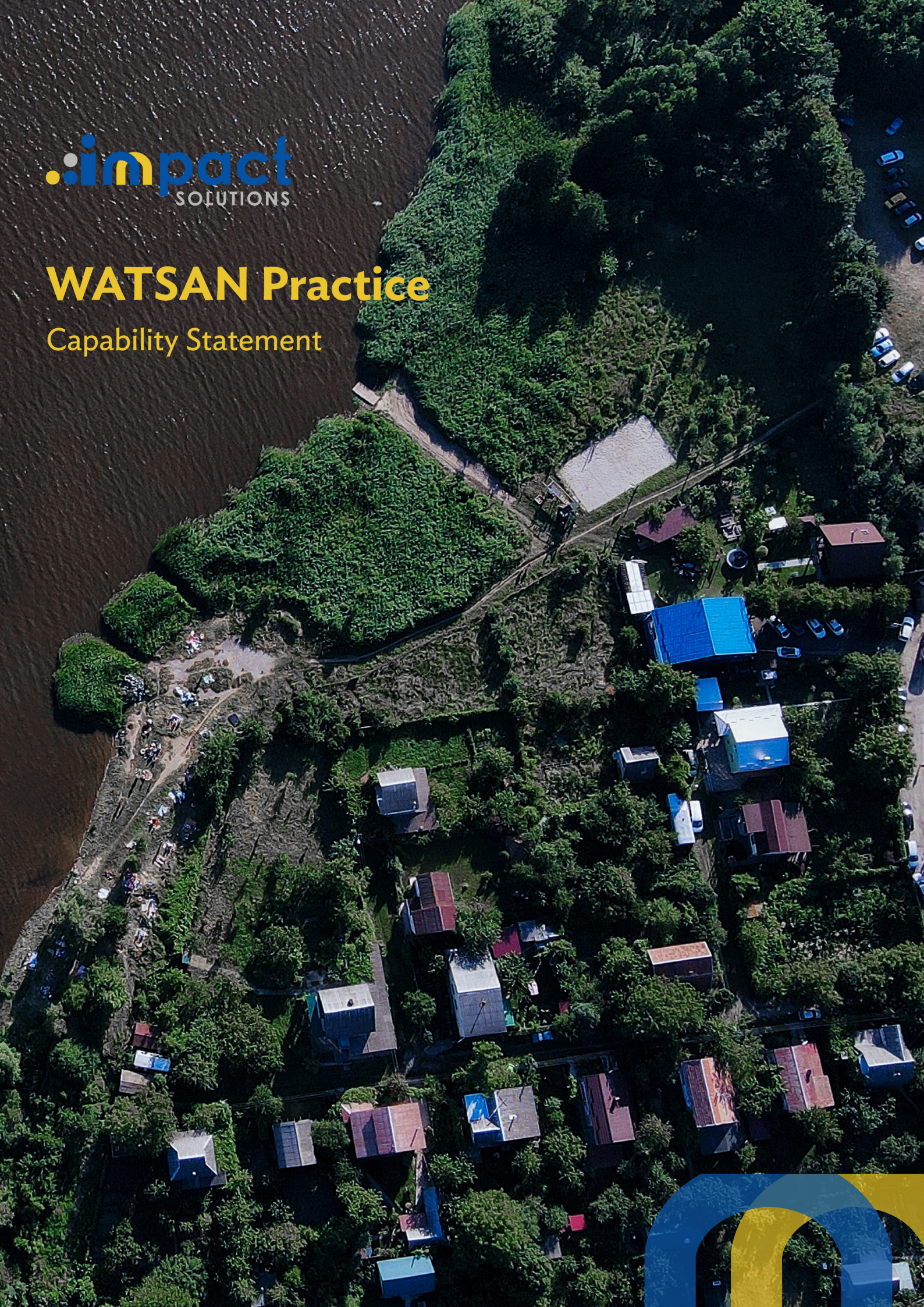




# WATSAN Practice

## Capability Statement

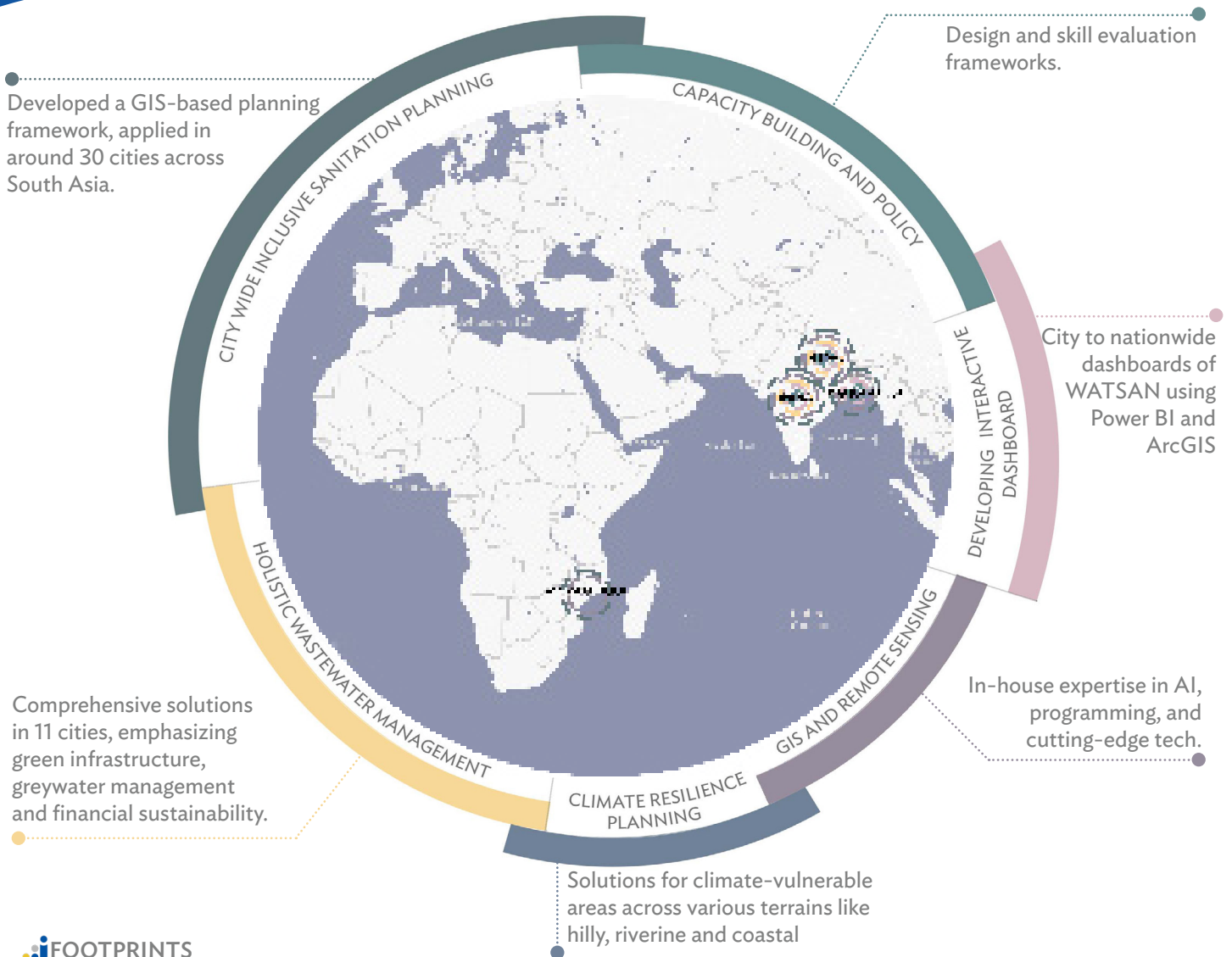


# ABOUT INNPACT

At Innpact Solution, innovation for meaningful impact across the development sector is our guiding principle. We are recognized as one of the fastest-growing companies in the Indian start-up ecosystem within the sanitation and geo-informatics domain. In a brief time, our footprint has extended to over 30 cities across South Asia, focusing on water, sanitation, climate change, and remote sensing.

Our collaboration with partners such as ESRI Global, GWSC Thailand, NFSSM Alliance India, and IWA International provides access to a global network of leading professionals and institutions. Our portfolio includes technical assistance to various multilateral institutions like BMGF, ADB, WB, ISDB, and AIIB.

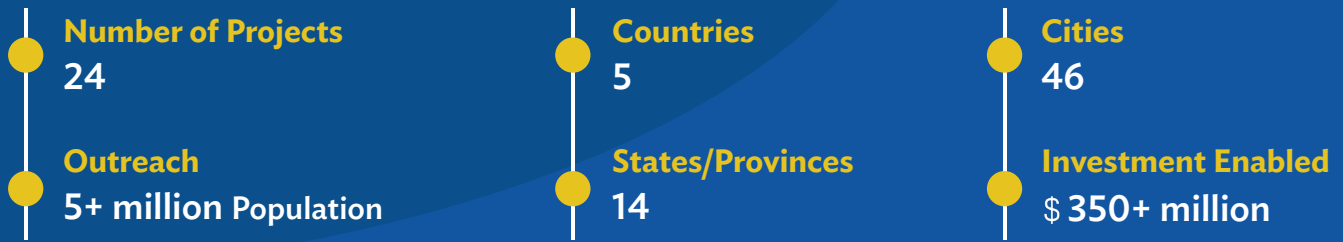
Our team comprises young and dynamic professionals from diverse fields, including planning, civil engineering, spatial applications, finance, and transaction advisory services. At Innpact Solution, we align expertise and innovation to shape a better future.



# EXPERIENCE MATRIX

Sl. No.	Project Name	Location	Keywords - Relevant Project Experience										
			CWIS Planning	Greywater solutions	Sewerage Systems	Rural Sanitation	Innovative Technology Solutions	Institutional Regulations & Capacities	Climate Resilient Solutions	Capacity Building Roadmap	Financial and Economic Feasibility		
1	Climate Risk and Road Safety Risk Assessment of Two Towns – Bhubaneshwar & Surat	India											
2	Assessment for Enhancing Operational Sustainability of Newly Launched OP and STP with Remote Land-fill Sites, Rajasthan	India											
3	Faecal Sludge and Grey Water Management guided by the CWIS Approach - AFD 7 Towns in Bangladesh	Bangladesh											
4	CWIS Planning - AIIB 5 towns in Bangladesh	Bangladesh											
5	Integrated Wastewater Management Investment Plan, Feasibility & DPR - ADB 2 towns in MP, India	India											
6	Sanitation Transformation - Techno Economic, Regulations and Institutional Reforms - ADB 6 towns in MP, India	India											
7	Applying Geospatial Framework of Integrated CWIS Planning - ADB 2 towns in Jharkhand, India	India											
8	Integrated CWIS Planning - Birendranagar Town in Nepal	Nepal											
9	Techno-Economic Assessment of Sanitation Transformation - Pilot Block, Uttarakhand	India											
10	CWIS Planning - ADB 3 Towns Project in Bangladesh	Bangladesh											
11	Climate Resilience CWIS Planning - Waling Town in Nepal	Nepal											
12	CWIS Planning - Tarabo Town in Bangladesh	Bangladesh											
13	Rapid Technical and Financial Assessment of s-HRT and Solids-free Sewer System	India											
14	Developing Rural Faecal Sludge Management Policy	India											
15	Pilot Scale Fecal Sludge and Septage Management in Chunar India	India											
16	Technical Feasibility of Sanitation Interventions in 30 GPs of Madhya Pradesh, India	India											
17	CWIS Planning - ISDB 3 towns in Bangladesh	Bangladesh											
18	Geospatial Assessment and Drone Mapping - 2 town in MP, India	India											
19	Situational analysis for Improving Sanitation Condition of Selected Areas of DNCC	Bangladesh											
20	City wide Inclusive Sanitation: The Small Town Sanitation Project (STS), Component 2, Four Towns in the Northern Region of Mozambique	Mozambique											
21	E-Bus Planning, Optimization, and Contract Management System for Urban Mobility in India	India											

# CREATING IMPACT THROUGH INNOVATIVE SOLUTIONS



## Our Projects

**Title of the project:** Faecal Sludge and Grey Water Management guided by the CWIS Approach - AFD 7 Towns in Bangladesh

**Timeline:** September 2023 – March 2024

**Location:** Kushtia, Magura, Faridpur, Narail, Pirojpur, Jhalokathi, Bhola (Bangladesh)

**Client:** AFD, GWSC

### Scope:

The primary objective is to prepare the feasibility study and preliminary design for the proposed Water Supply, Inclusive Sanitation & Hygiene in 7 Towns project, which will include the climate change assessment, safeguard due diligence and financial/economic analysis necessary to facilitate the preparation of an AFD investment loan.

### Services Delivered:

The project's core mandate is to establish a pioneering benchmark for pan-city service coverage, encompassing both Faecal Sludge Management (FSM) and grey-water management. This entails undertaking exhaustive assessments to ensure interventions align with CWIS standards, addressing both infrastructural and policy-based components. A techno-economic feasibility assessment will be carried out to steer these interventions toward long-term sustainability. Geo-spatial analysis will be harnessed to craft service-level benchmarks, laying the foundation for solid regulatory frameworks and rigorous monitoring systems. A key component will be the design of a differential tariff scheme, strategically developed to secure operational cost recovery while extending necessary support to marginalized communities. Furthermore, the project will embed climate change considerations at its heart, weaving in risk assessments and emission factors directly into the sanitation design to ensure a holistic, future-proof approach. Plan (IUAP), with the aim of creating a model for Citywide Inclusive Sanitation (CWIS) planning that could be replicated in other target towns across the state.

**Title of the project:** Assessment for Enhancing Operational Sustainability of Newly Launched OP and STP with Remote Land-fill Sites, Rajasthan

**Timeline:** October 2024 – December 2024

**Location:** Khairathal and Kishangarh Bas

**Client:** BMGF, GWSC

### Scope:

To conduct an assessment aimed at enhancing the operational sustainability of newly launched On-Premises (OP) and Sewage Treatment Plants (STP) with remote landfill sites in Rajasthan, India.

### Services Delivered:

A comprehensive technical and financial assessment was conducted to optimize the existing OP (Faecal

Sludge Treatment Plants) infrastructure. The assessment focused on ensuring the efficient, long-term functionality of FSTPs in small towns through containment surveys, consultations, and developing model Memorandums of Understanding (MoUs) for service catchments between municipalities and Gram Panchayats. This included exploring urban-rural convergence to expand FSTP reach and maximize capacity. Local emptiers within service areas were mapped to create a framework for formalizing private vacuum truck operators, integrating them into the system. Additionally, recommendations were provided on the technical and economic viability of on-premises OP facilities at STPs with remotely located landfill sites.

**Title of the project:** Climate Risk and Road Safety Risk Assessment of Two Towns – Bhubaneswar & Surat

**Timeline:** August 2024 – July 2025

**Location:** Bhubaneswar, Surat

**Client:** GIZ

**Scope:**

To integrate the iRAP framework for road safety risk assessments and Geo-AI for climate risk assessments, enhancing infrastructure resilience across road networks, transport systems, and high-traffic public spaces.

**Services Delivered:**

Services Delivered: The project will include conducting climate risk assessments using Geo-AI and road safety assessments based on the iRAP framework. Linkages with Nature-Based Solutions (NBS) will be explored to reduce risks associated with both climate and road safety. Field validations and consultations will be carried out to refine potential interventions. Additionally, an interactive geospatial dashboard will be developed and deployed, combining climate and road safety data. The project will conclude with a comprehensive final report, to be disseminated to target stakeholders, providing insights and actionable recommendations.

**Title of the project:** Faecal Sludge and Grey Water Management guided by the CWIS Approach - AFD  
7 Towns in Bangladesh

**Timeline:** September 2023 – March 2024

**Location:** Kushtia, Magura, Faridpur, Narail, Pirojpur, Jhalokathi, Bhola (Bangladesh)

**Client:** AFD, GWSC

**Scope:**

The primary objective is to prepare the feasibility study and preliminary design for the proposed Water Supply, Inclusive Sanitation & Hygiene in 7 Towns project, which will include the climate change assessment, safeguard due diligence and financial/economic analysis necessary to facilitate the preparation of an AFD investment loan.

**Services Delivered:**

The project's core mandate is to establish a pioneering benchmark for pan-city service coverage, encompassing both Faecal Sludge Management (FSM) and grey-water management. This entails undertaking exhaustive assessments to ensure interventions align with CWIS standards, addressing both infrastructural and policy-based components. A techno-economic feasibility assessment will be carried out to steer these interventions toward long-term sustainability. Geo-spatial analysis will be harnessed to craft service-level benchmarks, laying the foundation for solid regulatory frameworks and rigorous monitoring systems. A key component will be the design of a differential tariff scheme, strategically developed to secure operational cost recovery while extending necessary support to marginalized communities. Furthermore, the project will embed climate change considerations at its heart, weaving in risk assessments and emission factors directly into the sanitation design to ensure a holistic, future-proof approach. Plan (IUAP), with the aim of creating a model for Citywide Inclusive Sanitation (CWIS) planning that could be replicated in other target towns across the state.

**Title of the project:** CWIS Planning - AIB 5 towns in Bangladesh

**Timeline:** May 2022 – December 2022

**Location:** Sherpur, Bogura, Rajbari, Gopalganj & Noakhali – Bangladesh

**Client:** Department of Public Health Engineering (Bangladesh), AIB, CWIS TA-Hub

#### **Scope:**

The project's scope involves supporting five towns in Bangladesh under the City-Wide Inclusive Sanitation (CWIS) approach. This includes data collection, comprehensive sanitation planning, and facilitating informed decision-making to facilitate the landing as well heads of proposed reforms and enabling platform for the next step as DPR preparations and implementation.

#### **Services Delivered:**

The project supported Pourashavas in Bangladesh to develop comprehensive sanitation plans using the City-Wide Inclusive Sanitation (CWIS) approach. Extensive data collection and analysis were conducted, with a particular focus on household sanitation improvement, the management of public toilets including safe collection, transportation, treatment and disposal. Faecal sludge management protocols were reviewed, and various treatment options were assessed. A holistic CWIS sanitation plan including financial feasibility plan was formulated for five towns and expanded to cover 25 more towns, creating a detailed and actionable plan to enhance sanitation infrastructure and services. The scale of town included from 100K to 1 million populations with varying geography from river to a coastal town.

**Title of the project:** Integrated Wastewater Management Investment Plan, Feasibility & DPR - ADB 2 towns in MP, India

**Timeline:** June 2021 – December 2021

**Location:** Raghogarh & Betul - Madhya Pradesh, India

**Client:** Madhya Pradesh Urban Services Improvement Project – Additional Financing (GoMP), ADB, CWIS TA-Hub

#### **Scope:**

The scope includes undertaking techno-economic feasibility and DPR preparations for complete wastewater management with combined means of sewer and non-sewer in identified pilot towns. This is a part of the support from ADB's ongoing MPUISP program through TA support from the Bill & Melinda Gates Foundation.

#### **Services Delivered:**

A Technical Advisory Team (TAT) was established to assist in project preparations for non-sewer and greywater management in both towns. The TAT provided technical support, developed a techno-economic feasibility for both sewer and non-sewered interventions, followed by DPR and combined sanitation regulations for pan town settlement areas with both sewer and non-sewer settlement applications. Greywater components for non-sewer settlement areas were also explored for shallow sewers, community-scale DEWATs, and further with on-site pits. Capacity building assessment modules and strategy frameworks were also designed for all key stakeholders across the project cycle. Measures such as a dedicated ULB level sanitation cell and committee were structured and recommended for both ULBs to efficiently take care of smooth service delivery for both sewer and non-sewered interventions. The GIS module was used extensively in the decision-making framework, including the suitable area delineations for sewer and non-sewer interventions. Drone mapping was undertaken for both towns to create a robust geo-spatial database, including the building footprints of the entire settlement area of both towns. The goal was to create a model for Citywide Inclusive Sanitation (CWIS) planning that could be replicated in other target towns across the state.



**Title of the project:** Sanitation Transformation - Techno Economic, Regulations and Institutional Reforms - ADB 6 towns in MP, India

**Timeline:** March 2022 – May 2022

**Location:** Aghogarah & Betul, India

**Client:** Madhya Pradesh Urban Services Improvement Project –Additional Financing (GoMP), ADB, CWIS TA-Hub

**Scope:**

The scope includes improving water supply infrastructure, integrating stormwater and sewage systems, and implementing inclusive sanitation practices in eight towns with support from the Bill & Melinda Gates Foundation.

**Services Delivered:**

The Technical Advisory Team (TAT) was formed to facilitate project preparations focused on non-sewer and grey-water management across eight towns. Detailed Project Reports (DPRs) for sewerage were evaluated in six of these towns, and supplementary sections addressing non-sewer sanitation and grey-water management were incorporated. This enriched the DPRs to encompass the full town demographics. TAT offered comprehensive technical assistance, integrated a specialized section into the Integrated Management Information System (IMIS), tendered advice, suggested regulatory and institutional modifications, appraised differential tariffs, and gauged the financial sustainability of proposed measures. The feasibility report covered an examination of the intended sewerage coverage and delved into appropriate solutions for non-sewered settlement areas, including methods for greywater management. A financial model was formulated to suggest feasible tariffs, incorporating potential subsidy provisions for the urban impoverished.

**Title of the project:** Applying Geospatial Framework of Integrated CWIS Planning - ADB 2 towns in Jharkhand, India

**Timeline:** April 2023 – August 2023

**Location:** Ranchi, Jharkhand, India

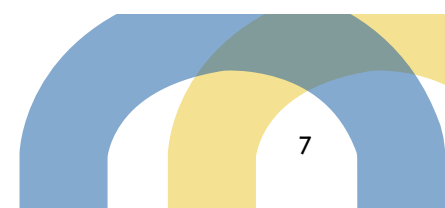
**Client:** Jharkhand Urban Infrastructure Development Company Limited (JUIDCO), Asian Development Bank, GWSC

**Scope:**

The scope is to address sanitation challenges in Ranchi, including settlements beyond the sewerage network. A comprehensive study of these non-sewer settlement (NSS) areas is planned, comprising a concept report and a City-Wide Inclusive Sanitation (CWIS) spatial analysis report. The goal is seamless integration of NSS interventions with sewerage initiatives, improving sanitation access for all, especially marginalized groups.

**Services Delivered:**

To address the sanitation gap in Ranchi and Dhanbad, a city-wide approach integrates non-sewer sanitation (NSS) with the current sewerage infrastructure. Prioritizing marginalized groups, this strategy ensures universal safe sanitation access and adept greywater management in NSS regions. Essential actions encompass the development of a geospatial database, risk mapping, safe containment strategies,





public toilet assessments, sludge collection planning, and gauging proximity to treatment facilities. Field visits facilitate validation, culminating in the finalization of NSS investment plans. This holistic strategy also incorporates institutional reforms, social considerations, and IMIS elements, resonating with the core CWIS mission of ensuring safe sanitation. Solutions for greywater in the broader NSS regions have been explored for system optimization and integration with the proposed sewerage infrastructure. For regions unreachable by sewerage infrastructure, dedicated I&D for more extensive settlement areas and DEWATs for smaller regions were suggested.

**Title of the project:** Integrated CWIS Planning - Birendranagar Town in Nepal

**Timeline:** December 2021 – January 2022

**Location:** Birendranagar, Nepal

**Client:** World Bank, CWIS TA-Hub

**Scope:**

The scope of the Nepal Urban Governance and Infrastructure Project (NUGIP) involves collaboration with the TA Hub Bangladesh to develop a City-Wide Inclusive Sanitation (CWIS) plan for Birendranagar. This initiative is a part of a broader framework that encompasses program development, institutional strengthening, fiscal capacity improvement, emergency response preparedness, and infrastructure enhancement. Its primary goal is to promote comprehensive and inclusive sanitation practices within Birendranagar.

**Services Delivered:**

In Work Package 1, a spatial analysis was conducted to pinpoint suitable sanitation options for Birendranagar. Recommendations were made concerning the most appropriate technologies for the sanitation service chain. An initial plan for implementation and investment was devised, encompassing both sewer and non-sewer interventions. Furthermore, proposals were made for regulatory and financial enhancements. In Work Package 2, there was an assessment of the available data for implementing the Information Management and Information System (IMIS). We proposed efficient data collection methods and analyzed prevailing sanitation practices to recognize opportunities for IMIS integration. We also investigated the potential for data sharing between IMIS and NWASH platforms.

**Title of the project:** Techno-Economic Assessment of Sanitation Transformation - Pilot Block, Uttarakhand

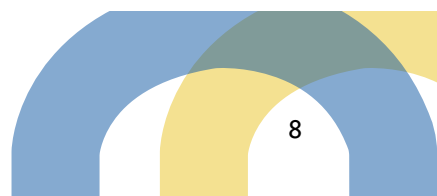
**Timeline:** December 2022 – June 2023

**Location:** Uttarakhand, India

**Client:** The Bill & Melinda Gates Foundation, NMCG

**Scope:**

The 'Namami Gange Programme,' initiated by the Indian government in 2014, strives to address pollution in the Ganga River and rejuvenate its vitality. Central to this initiative is the emphasis on crafting innovative methods to holistically manage wastewater pollution. The present scope entails performing an in-depth techno-economic feasibility study for sanitation treatment pilots at the block level. This aligns with the overarching goal of revitalizing the Ganga River, particularly in the rural settlement areas of Uttarakhand.





### Services Delivered:

The project entailed devising a decision-making framework to rank blocks across the Uttarakhand state for the establishment of block-level treatment plants. This assessment comprised finalizing pilot locations and conducting a techno-economic feasibility study to justify the investment in the proposed treatment plant technology. Additionally, scenario analysis was carried out to compare the benefits of block-level treatment plants combined with transfer stations against settlement-level treatment plants operating without any transfer stations as collection points. One notable recommendation was the establishment of an omni-processor treatment plant, accompanied by a total of eight transfer stations, to serve the identified pilot block of Bahadarabad in the Haridwar district. The economic assessment incorporated a health and environmental cost-benefit analysis to gauge the impact of the proposed investment, specifically in terms of the broader benefits conferred upon the local community.

**Title of the project:** CWIS Planning - ADB 3 Towns Project in Bangladesh

**Timeline:** February 2022 – April 2022

**Location:** Bandarban, Rangamati and Lama – Bangladesh

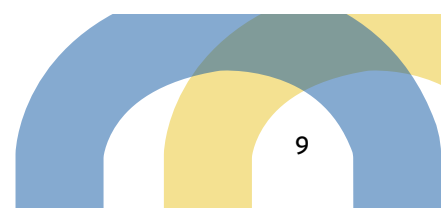
**Client:** Asian Development Bank, CWIS- TA Hub

### Scope:

The program, funded by the Asian Development Bank for Bangladesh, seeks to enhance water supply, sanitation, and solid waste management in the Chattogram Hill Tracts. The emphasis of this project was on sanitation infrastructure, with a particular focus on climate resilience, gender equality, and social inclusion. Additionally, the project encompasses institutional capacity building and promotes behavioral change to ensure long-term sustainability.

### Services Delivered:

The project adhered to its defined scope, meticulously cleaning and evaluating both spatial and non-spatial data to establish a solid foundation. Spatial analysis throughout the sanitation value chain informed strategic decisions, suggesting technological upgrades for heightened efficiency. This effort laid down a regulatory framework and set monitoring indicators for consistent compliance and evaluation. The assessments included flood modelling, pinpointing risk areas, identifying settlements near water bodies, bulk wastewater generators, and challenging-to-reach settlement areas. It also identified potential locations for FSTP in close proximity to pan town settlement areas. Detailed investment estimates and an implementation blueprint were drawn up for effective resource allocation. The project's deliverables encompass a presentation deck highlighting outputs, the CWIS framework, tools employed, and innovative technological solutions accompanied by their cost estimates. Given that all three project towns are climatically vulnerable, bespoke sanitation solutions were devised to ensure sustainable interventions across the sanitation value chain.





**Title of the project:** Climate Resilience CWIS Planning - Waling Town in Nepal

**Timeline:** July 2023 – October 2023

**Location:** Waling, Nepal

**Client:** ENPHO

**Scope:**

The project aims to develop a Climate Resilient CWIS Plan for Waling Town, Nepal, integrating data mining, spatial analysis, and water-sensitive planning. The focus is on wastewater management, regulatory reforms, and flood risk mitigation.

**Services Delivered:**

The team offers a comprehensive solution for Waling Town, Nepal, encompassing Data Mining, Spatial Analysis, and Water-sensitive Urban Planning. Using advanced GIS technology, we gather data, create thematic maps, and provide accurate assessments. Our flood modelling and risk assessments yield practical mitigation strategies. We design integrated wastewater management plans, evaluate facilities, and propose greywater treatment solutions. Our services include detailed cost estimates, phased implementation plans, and actionable regulatory reform recommendations, all aimed at developing a robust Climate Resilient Citywide Inclusive Sanitation Plan for Waling Town's sustainability.

**Title of the project:** CWIS Planning - Tarabo Town in Bangladesh

**Timeline:** February 2022 – May 2022

**Location:** Tarabo, Bangladesh

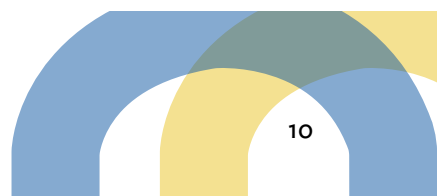
**Client:** World Bank, CWIS- TA Hub, Bangladesh

**Scope:**

The project, aligned with the World Bank's urban sector investment approach, seeks to mitigate climate change impacts and bolster inclusive access to enhanced sanitation and employment in approximately 30 towns of Bangladesh, prioritizing marginalized communities, women, and the disabled. While the overarching aim supports municipalities in elevating service delivery, this specific endeavour concentrates on elevating sanitation services across the value chain in the Tarabo municipality.

**Services Delivered:**

In alignment with the defined scope, rigorous data cleaning and evaluation were undertaken to establish a robust foundation for further analysis. Spatial insights from the sanitation value chain informed decision-making processes, identifying technological advancements for increased efficiency. Regulatory frameworks and monitoring indicators were developed to ensure compliance and consistent performance assessment. Detailed investment estimates and an implementation strategy were formulated for effective resource allocation. The deliverables include comprehensive presentations and reports highlighting project outcomes, the CWIS framework, and insights gathered during the project's preparatory stages.





**Title of the project:** Rapid Technical and Financial Assessment of s-HRT and Solids-free Sewer System

**Timeline:** February 2023 – June 2023

**Location:** Pan Country, India

**Client:** GWSC

**Scope:**

The project's scope involves evaluating onsite solutions like FSM and Reinvented Toilets (RT), combined with a simplified sewer system, for domestic wastewater management. It includes technical and financial analysis for different community sizes, ranging from 10 to 10,000 households, and compares these solutions with alternatives. The study also explores cost-effective scalability scenarios to generate interest among government officials, Development Finance Institutions (DFIs), and development partners.

**Services Delivered:**

In this project, several pivotal outcomes were realized. A technical report was produced that juxtaposed the integrated FSM, RT, and solids-free/simplified sewer system against conventional systems, shedding light on the advantages of the proposed approach. An Excel-driven financial model was crafted to elucidate the fiscal implications of adopting the new system. Additionally, a web application was devised to illustrate the scalability of the recommended system across India. Current efforts are centered on hosting consultative and dissemination workshops to acquaint key stakeholders with the merits of an integrated wastewater management strategy. Alongside this, the market potential of s-HRT has been probed, pinpointing promising locations throughout India where this system might enjoy a first-mover advantage. To support these initiatives, a dashboard highlighting the nationwide potential for system implementation was developed, capturing a spectrum of relevant parameters and presenting locations with their associated attributes in a structured manner.

**Title of the project:** Developing Rural Faecal Sludge Management Policy

**Timeline:** January 2023 – March 2023

**Location:** Chhattisgarh, India

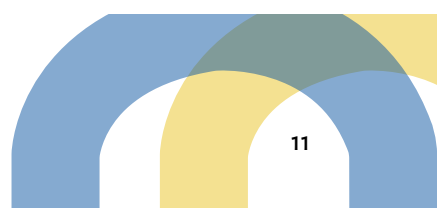
**Client:** Water Aid India

**Scope:**

Drafting an FSM policy for rural Chhattisgarh with a focus on providing a clear roadmap to achieve safe sanitation throughout the value chain across the rural settlement areas of the state. This policy also clearly highlights the tangible high-level priorities the state should adopt to ensure successful policy implementation.

**Services Delivered:**

A thorough examination of the rural sanitation landscape in Chhattisgarh led to the identification of FSM needs, shaping the rationale and objectives for the state's rural FSM policy. Collaborations with local government officials and sanitation stakeholders yielded valuable insights and validated our preliminary findings. Revenue models for desludging activities were formulated, and a clear delineation





of responsibilities was established across various governance tiers and local institutions. This policy also sets forth the standards for commissioning Faecal Sludge Treatment Plants and integrates post-construction monitoring mechanisms, ensuring the long-term success of our FSM initiatives. The essence of this research and its recommendations are encapsulated in this concise draft policy document.

**Title of the project:** Pilot Scale Faecal Sludge and Septage Management in Chunar India

**Timeline:** December 2021 – February 2022

**Location:** Waling, Nepal

**Client:** Centre for Science and Environment

**Scope:**

In alignment with the NMCG and SBM mandate, the ULB of Chunar considered establishing an FSTP and implementing a scheduled desludging framework to ensure project sustainability. The project received financial support from BMGF for the technical assistance offered to CSE.

**Services Delivered:**

The study's key output entailed a comprehensive property survey in Chunar, utilizing web/Android-based applications for real-time tracking and georeferencing of each sample. The survey encompassed the entire town, capturing around 29,000 residents across Residential Units, Commercial Units, Government/Private Offices, Medical and Educational Institutions, and Industries. Using the survey data and open satellite images, we created a geospatial database. This database facilitated the development of an interactive Power BI dashboard for real-time updates on desludging services in the pilot town. The survey findings were vital in determining the treatment plant's capacity and implementing a desludging framework across various land uses and income categories. Additionally, the household survey data was utilized to produce thematic maps, shedding light on potential interventions and situations across the value chain for the entire settlement area of Chunar.

**Title of the project:** Technical Feasibility of Sanitation Interventions in 30 GPs of Madhya Pradesh, India

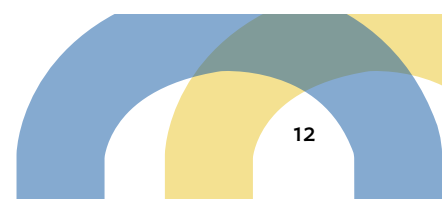
**Timeline:** May 2023 – June 2023

**Location:** Madhya Pradesh, India

**Client:** WaterAid India (Jal Seva Charitable Foundation)

**Scope:**

The project addresses sanitation challenges in rural Madhya Pradesh, characterized by its geographical diversity. It seeks to devise tailored, sustainable sewage management solutions using cluster-level treatment methods and collection frameworks. The emphasis is on context-specific strategies, beginning with leading Gram Panchayats (GPs) and considering potential expansion to broader clusters at the block level.





### Services Delivered:

The study's key output entailed a comprehensive property survey in Chunar, utilizing web/Android-based applications for real-time tracking and georeferencing of each sample. The survey encompassed the entire town, capturing around 29,000 residents across Residential Units, Commercial Units, Government/Private Offices, Medical and Educational Institutions, and Industries. Using the survey data and open satellite images, we created a geospatial database. This database facilitated the development of an interactive Power BI dashboard for real-time updates on desludging services in the pilot town. The survey findings were vital in determining the treatment plant's capacity and implementing a desludging framework across various land uses and income categories. Additionally, the household survey data was utilized to produce thematic maps, shedding light on potential interventions and situations across the value chain for the entire settlement area of Chunar.

**Title of the project:** CWIS Planning - ISDB 3 towns in Bangladesh

**Timeline:** October 2021 – December 2021

**Location:** Natore, Lakhshmupur, and Cummila, Bangladesh

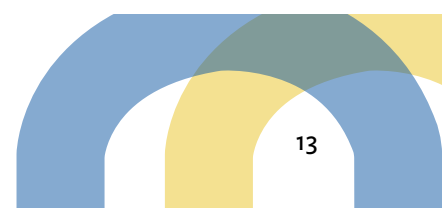
**Client:** Department of Public Health Engineering (Bangladesh) and CWIS TA Hub

### Scope:

The project's scope is to address concerns related to FSM service chains in three towns, funded by the Livelihoods Fund (LLF) and the IsDB. It includes developing an 'Environmental and Social Management Plan Framework' for these towns, conducting financial and climate risk assessments, evaluating the existing Institutional and Regulatory Framework (IRF) for CWIS implementation, and assessing the extent and sustainability of the FSM service value chain.

### Services Delivered:

During the initial phase of the project, activities such as stakeholder mapping, finalizing the work plan, and tool selection were undertaken. Literature reviews identified best practices from other towns, standard CWIS frameworks, and pertinent policy and institutional documents. This review was supplemented by the analysis of Legal, Institutional, Policy, and Regulatory documents. Questionnaires for Key Informant Interviews (KII) were drafted, disseminated to, and retrieved from the municipality. Field visits ensured data validation and gap identification. Collaborative consultations with partners distilled these findings, culminating in the final report's preparation and submission, incorporating feedback from the TA Hub. Furthermore, detailed geospatial analyses informed the CWIS plans for Natore, Lakhshmupur, and Cummila, amplifying the project's impact.



**Title of the project:** Geospatial Assessment and Drone Mapping - 2 town in MP, India

**Timeline:** March 2021 – April 2021

**Location:** Barman Kalan and Datora - Madhya Pradesh, India

**Client:** Jal Seva Charitable Foundation (Associate member of WaterAid International)

**Scope:**

The study conducted by WaterAid India (Jal Seva Charitable Foundation) aims to implement a sewerage pipe network and ECO-STP for sustainable liquid waste management at Karman Kalan and Datora Panchayats in Madhya Pradesh. These Panchayats are considered model Panchayats; once the system is successfully implemented here, it is likely to be scaled up to other Panchayats, especially those with water-sensitive concerns.

**Services Delivered:**

The study's output included conducting drone and GIS-based mapping of the study region to implement a piped sewerage network. Information such as orthorectified images, digital elevation data, and road and building-level details were collected in GIS format. Detailed city and ward level maps were generated for the project, along with high-resolution elevation and land cover profiles of both project Panchayats.

**Title of the project:** Situational analysis for Improving Sanitation Condition of Selected Areas of DNCC

**Timeline:** December 2023 – April 2024

**Location:** DNCC - Dhaka, Bangladesh

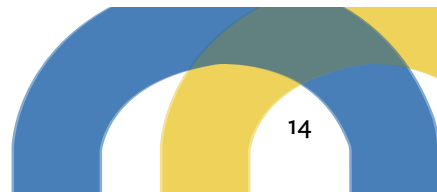
**Client:** ADB, GWSC

**Scope:**

The objective is to develop the rapid feasibility study for sanitation and greywater improvement in four zones of DNCC, serving a cumulative population of 2.3 million. The assessment focuses on infrastructure strengthening across the sanitation value chain, including greywater management and public toilets, with a cross-cutting mandate of climate change and pro-poor initiatives. The assessment is expected to lay a strong foundation for undertaking master planning and detailed engineering design in the subsequent stages.

**Services Delivered:**

The assessment is predominantly based on the geospatial database from an open-source platform, supported by secondary data, quick field visits, and consultations with key stakeholder groups. The assessment includes a programmatic approach to infrastructure expansion/upgradations and proposes an OP-based fecal sludge treatment plant, along with desludging trucks for the next five years of operations. This includes a route plan with a focus on climate-sensitive slum settlements in terms of sanitation upgrades for identified informal settlements, both at the community and individual levels. DEWATs (Decentralized Wastewater Treatment Systems) are proposed as treatment means for community-scale wastewater management systems. The interventions also include soft components focusing on the necessary regulatory reforms and capacity strengthening for a range of stakeholder groups to ensure smooth system implementations. Cost estimates, area footprints, and implementation phasing are also included as part of the assessments.





**Title of the project:** City wide Inclusive Sanitation: The Small Town Sanitation Project (STS), Component 2, Four Towns in the Northern Region of Mozambique

**Timeline:** April 2024 – June 2024

**Location:** Alto Molocue, Namialo, Mocuba and Angoche

**Client:** USAID,SNV

### **Scope:**

The preparation of a city-wide inclusive sanitation plan for four cities in Mozambique is the key mandate of this study. Different modules of geospatial CWIS planning are expected to be applied in the preparation of the CWIS plan and will include a list of interventions along with a required enabling environment framework. The output will include block cost estimates, interventions across the sanitation value chain, and reforms for capacity building and regulatory reforms in consensus with respective municipalities and other key stakeholders.

### **Services Delivered:**

The study has recently started, with overall data mining completed from various sources, identifying early opportunities and challenges. The next stage of work involves launching all six modules of the geospatial planning tool assessments and a deep dive into granular building and settlement level insights. This includes containment planning guidelines for understanding risk and non-risk settlements for customized desludging plans, desludging route mapping along with the required number and different capacities of fleets, and identifying suitable locations, capacities, and treatment technologies for fecal sludge treatment plants. The assessment will prioritize contextual interventions in all four towns with a focus on doability and practicality, along with the expected benefits of the proposed interventions once applied. Financial assessments such as life cycle cost assessment and structuring tariffs, along with suitable business models, are some of the further work planned in the coming weeks.

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