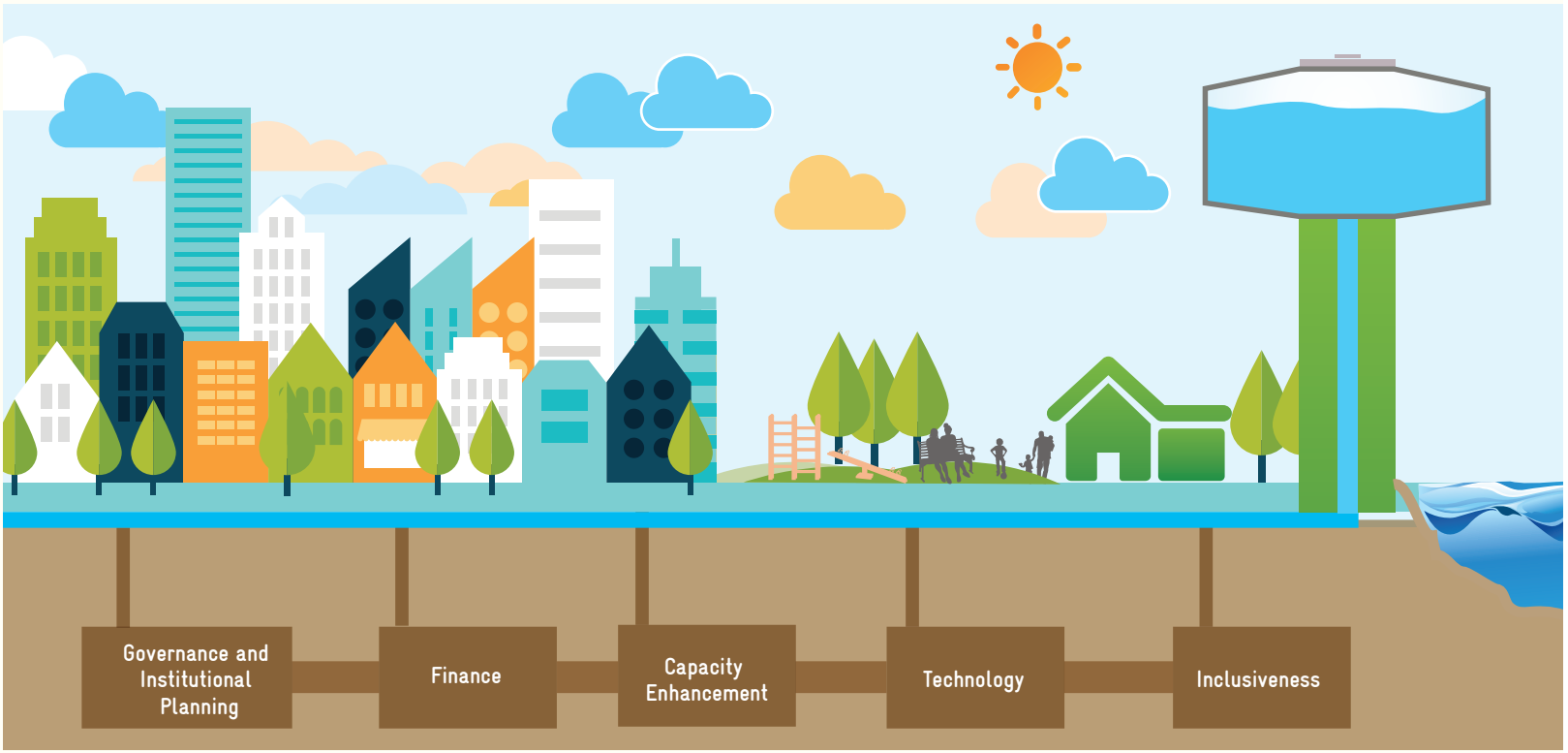
Support to the National Urban Sanitation Policy (SNUSP)



Improving Lives

The road to 100% city sanitation

german cooperation
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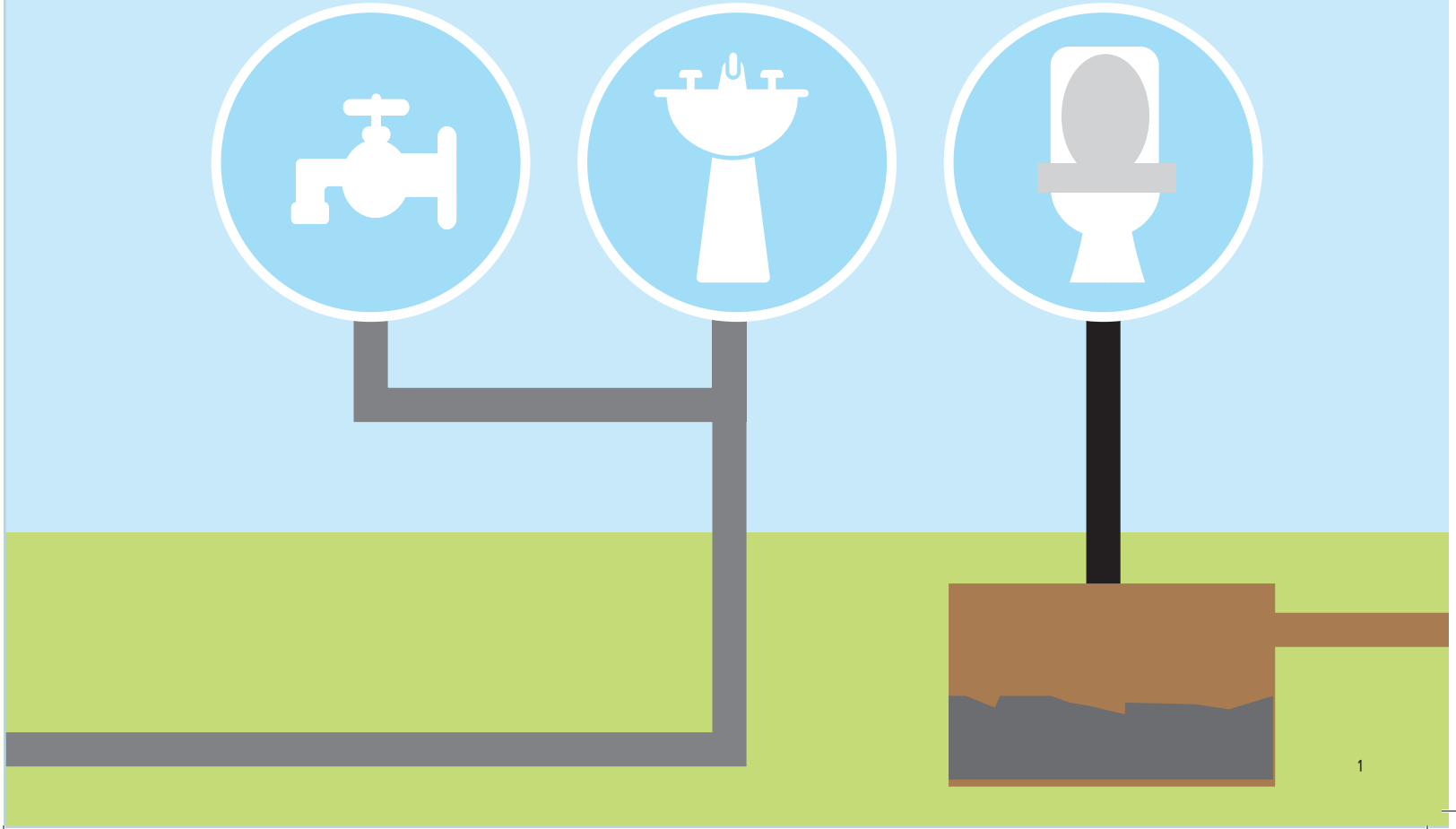
- Environment (sustainable urban and industrial development, natural resource management, climate change adaptation, biodiversity)
- Sustainable economic development (rural finance, social security systems, small and medium enterprises, skill development)

IMPROVING LIVES
THE ROAD TO
100%
CITY SANITATION

How we make a difference:
Cleaner, healthier and wealthier cities



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Support to the National Urban Sanitation Policy (SNUSP)
Sustainable Urban Habitat

B-5/2, Safdarjung Enclave
New Delhi - 110029, India

T +91-11-4949 5353
E regina.dube@giz.de | dirk.walther@giz.de
W www.urbansanitation.org

Responsible Dr. Regina Dube

Contributed by Dr. Regina Dube, Mr. Dirk Walther, Mr. K Nagasreenivas, Mr. Jitendra M Yadav, Ms. Monika Bahl, Mr. Rahul Sharma, Ms. Purva Sharma, Ms. Alokananda Nath, Mr. V.Venugopal, Mr. Vibhor Sood, Mr. S. Esakki Raj and Mr. Kasinath Anbu

Compiled and edited by Ms. Sarah Habersack | Ms. Soma Biswas

Photograph contributed by SNUSP Team

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New Delhi, December 2014

Foreword

Sanitation is the key issue for making the fast and unprecedented urbanisation in India sustainable and an engine for economic growth. The lack of sanitation services in Indian cities not only impacts the overall socio-economic development but it affects the environment, health and livelihood opportunities of its citizens significantly.

The Government of India recognized the importance of sanitation planning and service delivery in urban areas and the Ministry of Urban Development launched the National Urban Sanitation Policy in 2008.

For supporting the implementation of this policy aiming at 100% open defecation-free, healthy and sanitized cities, GIZ and MoUD joined hands in 2009 and started the project 'Support to the National Urban Sanitation Policy (SNUSP)'. Right from the launch of the policy it was clear that the Government of India can only achieve this objective by supporting its states and cities in providing infrastructure with appropriate technical solutions, putting proper operation and maintenance in place and building capacities of officials and workforce on the ground. Therefore GIZ chose a three-tier approach for the support to the implementation of the National Urban Sanitation Policy while working at national, state and city level and establishing a valuable system of knowledge exchange between these scales of governance.

This impact brochure introduces the reader to the main objectives and interventions of the project and highlights hands-on experiences from the ground. The main focus of this brochure lies on showing the impact of the project SNUSP on people living in cities, institutional processes such as sanitation planning and policy making at national, state and city level.

Finally it provides insights on the next steps MoUD and GIZ are jointly taking for building on achievements of the project and taking the sanitation agenda for Indian cities ahead. Sanitation has now gained a new political momentum becoming one of the main priorities of the new Indian Government supported by the recently launched 'Swachh Bharat Abhiyan'(Clean India Mission). We are excited about these recent developments and will support the Government of India in implementing the National Urban Sanitation Policy and in contributing to achieving healthy and liveable cities for the benefit of all urban citizens.

Dr. Regina Dube
Programme Director
Support to the National Urban Sanitation Policy (SNUSP)
GIZ-India

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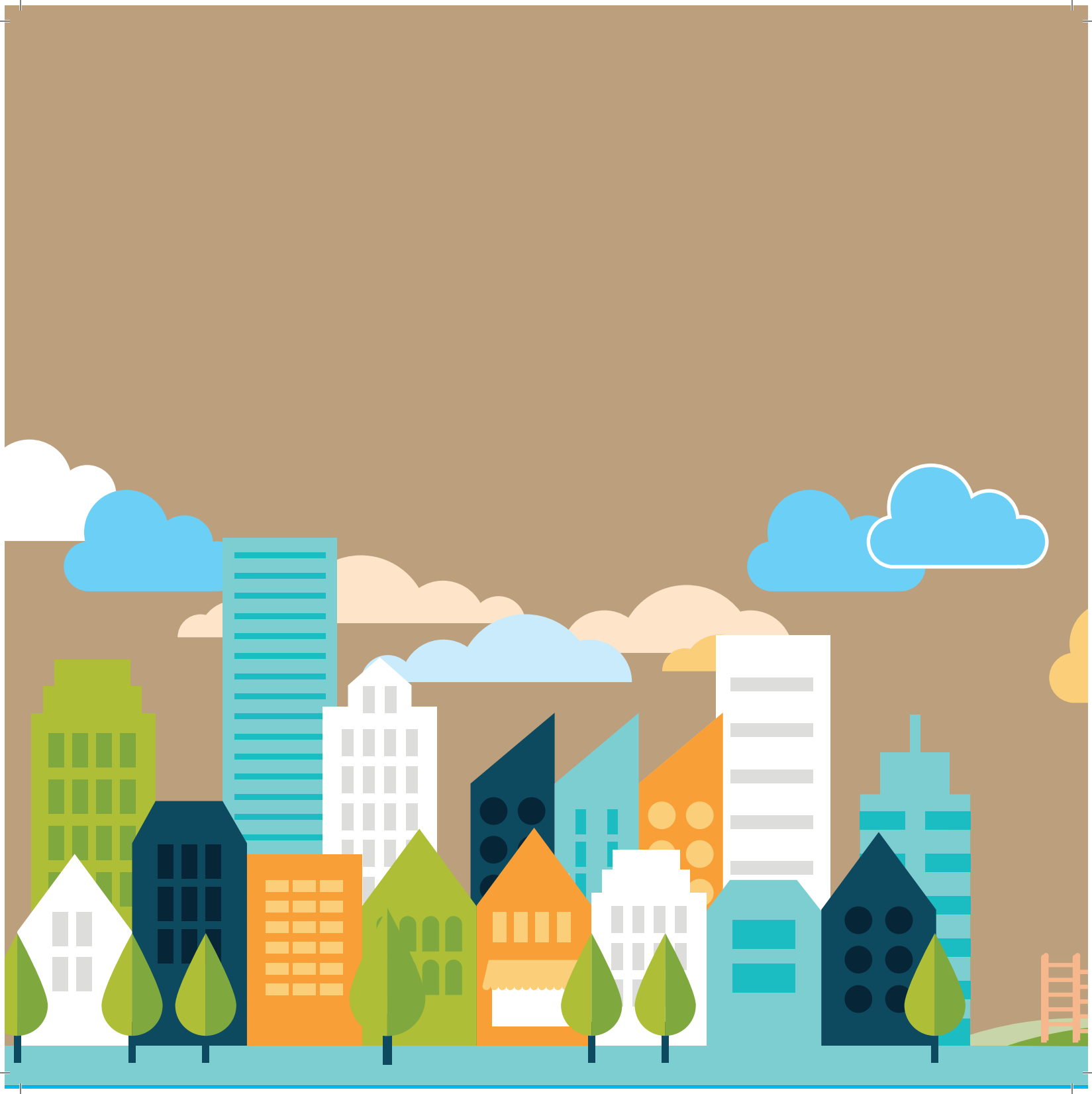


1. BACKGROUND

Urbanisation, Sanitation & Policies

1.1. Urbanisation

Changes, challenges & opportunities

Strong economic growth, driven by the service sector and better livelihood options, has led to an increase of the urban population across India. The growth in population is not only due to rural to urban migration but also due to in-situ urbanisation. Extensive growth of urban areas along with a severe lack of affordable housing and supply of basic services have led to the formation of slums, resulting in a high degree of fragmented growth - spatially as well as economically. Hence, with the many opportunities also came challenges. While trying to accommodate the increasing urban population, cities struggle to balance the economic growth with environmental impacts and societal changes. The tremendous pressure on civic infrastructure systems and the deteriorating quality of the urban environment is strikingly evident. For instance, the inadequate provisioning of basic sanitation infrastructure leaves many Indian cities struggling with services like clean drinking water, sewerage and storm water drainage. Pollution and water born diseases are only some of the related daily realities urban citizens face. The highly fragmented spatial and economic growth together with environmental deterioration threatens the long-term growth trajectory of Indian cities. Acknowledging the importance of urban centres, currently contributing more than 60% to the national GDP, the Government of India has rolled out various initiatives aimed to support urban centres in becoming more sustainable, inclusive and equitable.

A CHANGING SCENARIO: FACTS & FIGURES

Urbanisation has been a recent but strikingly fast phenomenon across the world. With half of the world's population living in cities, the 21st century has been labelled the urban century.

India is the second largest urban system after China

- **Urban population:** For the first time since independence, the number of people living in urban centres increased more than those living in rural areas. Between 2001 and 2011, the urban population increased by 91 million people versus 90 million people for the rural population. By 2030, half of India's population is expected to live in cities.
- **Urban centres:** The rise in the urban population has been accompanied by a 54% increase in the number of urban centres, adding 2,774 new towns to India's urban landscape over a span of 10 years. Out of the 7,935 towns in 2011, 4,041 are Statutory Towns and 3,894 Census Towns.
- **Economic impact:** Since the early 90s, the urban sector has begun to significantly impact the country's economy. The 2011 Census has highlighted that urban centres contribute more than 60% to India's GDP.
- **Sub-optimal funding:** To support cities in dealing with the growing demand on services, a total investment of INR 72 trillion or EUR 900 billion over the next 20 years is required. This equals INR 8,057 or EUR 101 per capita expenditure per year, eight times more than what is being spent today.

Reasons include

- **Weak urban government institutions** due to i.e. the slow decentralization process, limited financial strength, inability to generate own resources and weak institutional capacities.
- **Lack of devolution and recognition:** Urban Local Bodies (ULBs) in statutory cities continue to depended on Central and State Government funding. On the other hand, census towns are not recognised as an ULB, thus, remaining under the rural administration.
- **Institutional capacities and financial inadequacies** related to the multiple agencies with no clear accountability as well as the inadequate enforcement of bye laws especially in peri urban areas.

The unprecedented urban growth has not been adequately backed by the provision of basic sanitation services and infrastructure (water supply, sewerage and drainage, solid waste management, parks and open space provision, transport, etc.).

Total Slum Population

13.7 million households

17% of total urban population

The resulting socio-economic and environmental deterioration threatens the long-term growth trajectory of India's urban centres with especially women and poorer sections of the society bearing the brunt.

1.2 Urban Sanitation in India
A situation overview

Sanitation is defined as safe management of human excreta, including safe confinement, treatment, disposal and associated hygiene-related practices.

The urban sanitation sector of India faces critical issues related to technology, finances, management systems and human capacities. Weak communication systems and awareness amongst all stakeholders are one of the reasons behind the non-convergence of policies and government programmes touching upon sanitation. The existing approach for improvement of sanitation and hygiene in urban spaces lacks inclusiveness.

India's changing demographics amplify these problems. Having been an agrarian society, sanitation was by and large governed through rural sanitation policies that focused on the water sector with sanitation being only part of it. However, urbanisation came with a new set of challenges, opportunities and priorities, calling for a new, more focused approach. This led to the formulation of the National Urban Sanitation Policy (NUSP) 2008, which calls for citywide sanitation solutions that are aligned with the overall City Development Plans (CDPs). Yet, building capacities of the city level officials cannot be done overnight. Urban Local Bodies (ULBs), having always approached sanitation through the public health lens, are hardly equipped with the technological or managerial capacities required to run public utility services. This explains why cities continue to face substantial deficits in i.e. sewer coverage and wastewater treatment.

Urban households have to pay for the institutional inadequacies. About 12% of the urban population continues to defecate in the open. The 6% that have access to public latrines are often faced with problems related to maintenance, operation and safety. Those as well as many of the 81% that can avail of sanitation facilities in their premises face considerable health and environmental risks due to faulty construction of septic tanks, inadequate cleaning and treatment as well as unsafe disposal of septage and effluent. In fact, regardless of their treatment capacities, more than half of India's Class I Cities have unsatisfactory arrangements for the safe collection of human excreta (whether on-site or sewerage) and regularly dispose their untreated septage and sewage into water bodies, drains and open areas. The resultant organic and bacterial contamination of ground and surface water poses considerable health and environmental risks for urban citizens, disproportionately felt by women and the urban poor.

Cities' increasing congestion and density puts more and more pressure on sanitation systems. Urban local government institutions need to strengthen their capacities, systems and resources to adequately respond to the worsening sanitation scenario. Septage and wastewater management are areas that need urgent attention.

The Underutilisation of wastewater treatment

Class I Cities and Class II Towns generate

38,254,000 m^3

of waste water

Existing designed treatment capacity for wastewater is

31%

but actual wastewater treatment is much lower

75%

of surface water across India is polluted

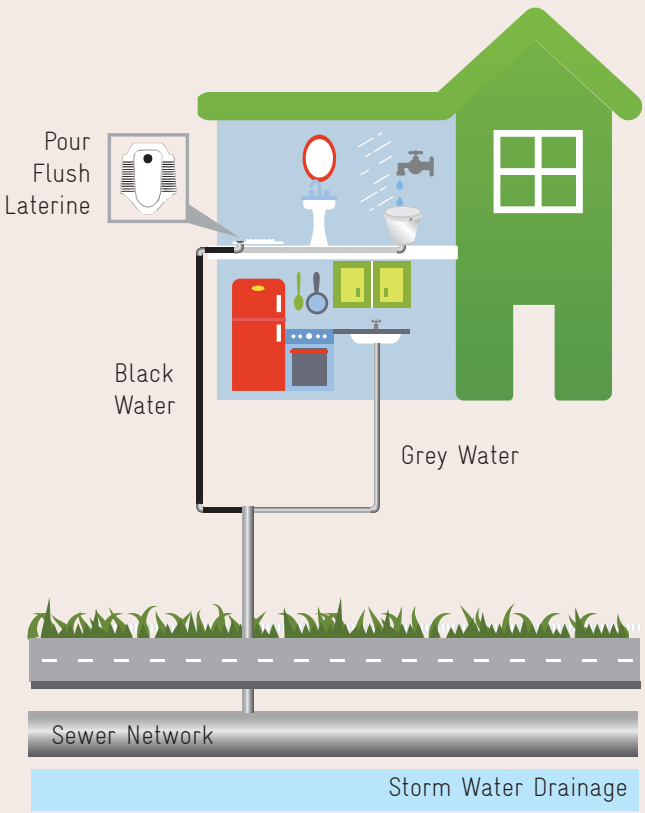
Reasons for underutilisation of the existing wastewater treatment facilities:

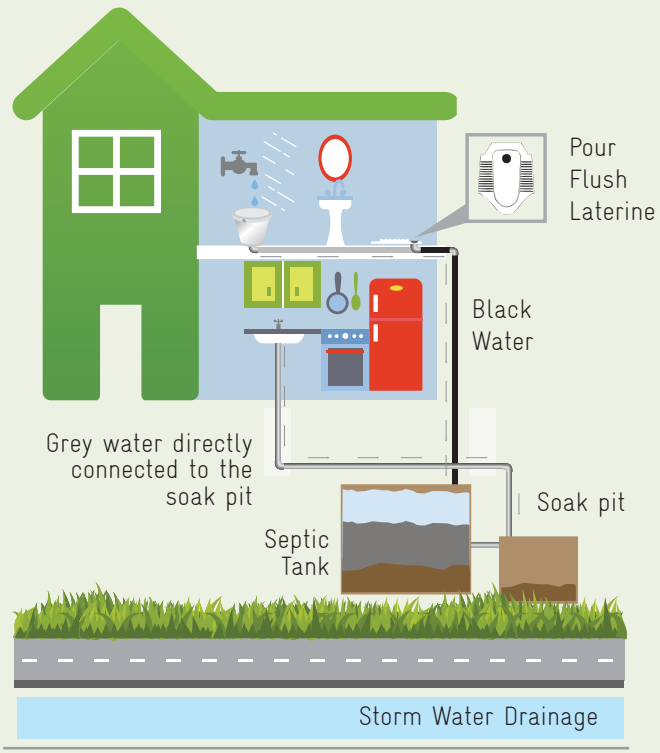
- **low household connectivity or wrongly connected household - septic tank, are leading to insufficient sewage collection systems**
- **non-functional or inadequate sewage treatment plants (STPs)**
- **interrupted electricity supply.**

Quick Glace: Challenges of Septage Management

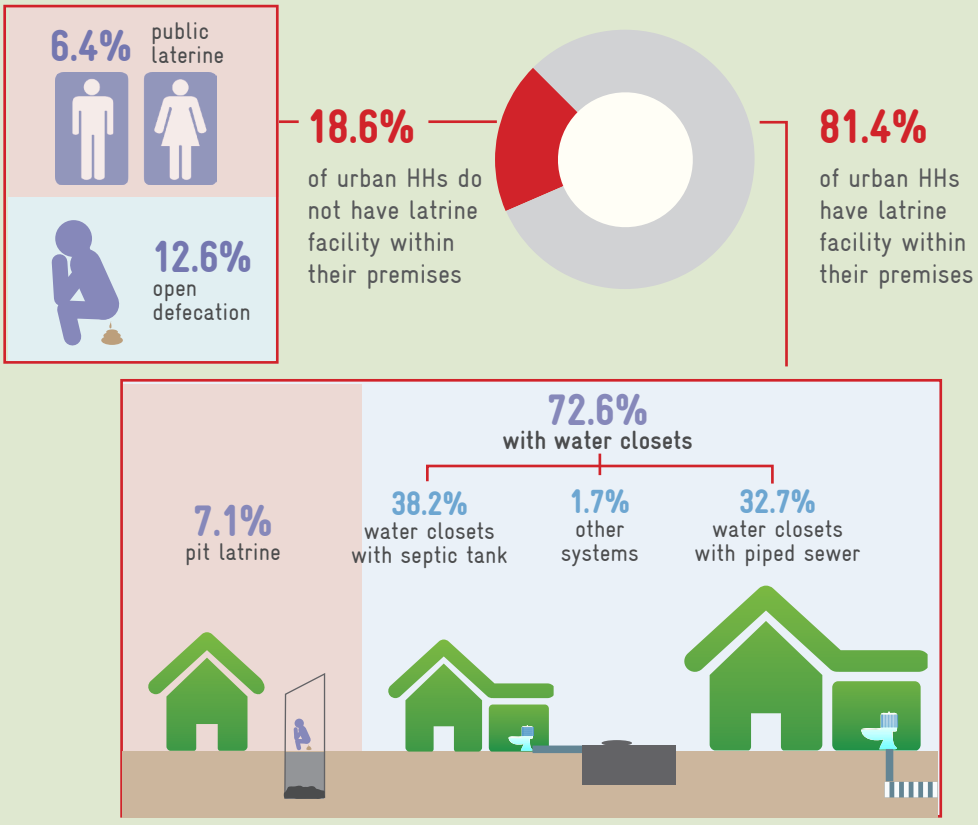
- Focus on centralized (conventional) sewerage systems for sanitation, regardless of not always being the most suitable solutions
- Manual scavenging still widespread, although prohibited by the "Prohibition of Employment as Manual Scavengers & their Rehabilitation Act, 2013"
- Desludging service is mostly deregulated and informal
- Storm water used for transporting highly pathogenic contaminated septic tank overflow (effluent)
- Non existing physical infrastructure to treat septage
- Wrong design of septic tanks and soak pits
- Presently, wastewater management is insufficiently addressed to handle the projected 100,000 mld by 2050 (i.e. septage management neglected – no state level policies, no robust data)
- Inadequate knowledge and capacities among government agencies

Two different kinds of typical sanitation systems in Indian households





Access to toilets in urban India



Health and economic impacts

› 1,000 deaths per day

of children under five each day from diarrhoeal diseases due to lack of sanitation, hygiene and safe water.

Lack of access to sanitation and inadequate sanitation services reduces the overall productivity of the cities, the powerhouses of India.

Prevalent key features of the urban sanitation situation in Indian urban centres

- Lack of access to toilets
- Open defecation, poor maintenance, operation and safety.
- Health and environmental risks due to i.e. faulty construction of septic tanks, inadequate cleaning and treatment as well as unsafe disposal of septage and effluent.
- Under-utilisation of treatment plants
- Highly diluted or low concentrated wastewater in the incoming stream of sewage treatment plant (STPs)
- Unsafe collection of human excreta (whether on-site or sewage)
- Disposal of untreated septage and sewage into water bodies, drains and open areas
- The resultant organic and bacterial contamination of ground and surface water poses considerable health and environmental risks for urban citizens, especially for women and the poor.

1.3 Policy Environment

Schemes and policies relevant to urban sanitation

It has been recognised that policies supporting water and sanitation access are extremely cost-effective as they contribute to improved economic, environmental and social performance. For instance, reducing water pollution positively affects health and reduces mortality, which in turn increases the cities' productivity. Subsequently, the Government of India (GoI) has put in place various policies to capitalise on the opportunities related to urbanisation and to adequately deal with the challenges.

Bringing governance closer to people

1992

The Constitution (74th Amendment) Act

What: Devolution of financial & administrative power to the municipal level

Who: Ministry of Urban Development (MoUD)

How: Formation of Urban Local Bodies (ULB) with elected representatives in all statutory towns; bringing governance closer to people

Urban local bodies can avail funds

2002

Urban Reform Incentive Fund (URIF)

What: Provides states with reform linked assistance to incentivise and accelerate the process of urban reforms supported by the GoI

Who: Ministry of Housing and Urban Poverty Alleviation (MoHUPA)

How: Dedicated funds for urban local bodies.

The GoI allocated INR 660 million or EUR 8.25 billion for urban renewal between 2005 – 2012.

2005

Jawaharlal Nehru National Urban Renewal Mission (JnNURM)

What: Creates economically productive, efficient, equitable & responsive cities by

- supporting urban transformation through reforms, processes, regulation & systems
- putting in place mechanisms that incentivise investments in urban infrastructure & services
- empowering ULBs to safeguard interests of the urban poor

Who: MoUD & MoHUPA

How: City Development Plans (CDPs) to define necessary projects related to water supply, sewerage, solid waste management (SWM), conservation of water bodies, drainage, roads, urban transport and heritage conservation and dedicated funds

Sanitation gained importance at national, state as well as city level: 156 cities & 11 states have developed their first CSPs and SSS in 2014

2008

National Urban Sanitation Policy (NUSP)

What: Improves urban sanitation by strengthening Urban Local Bodies (ULBs) and states to

- generate awareness & behavioural change
- achieve open defecation free cities
- integrate city-wide sanitation

Who: MoUD

How: State Sanitation Strategies (SSS) & City Sanitation Plans (CSP)

GoI allocated INR 350 billion or EUR 4,375 million for slum upgrading under the 12th Five Year Plan

2009

Service Level Benchmarking (SLB)

What: Improves service delivery provision and satis-faction by developing standardised SLB for basic sanitation services in urban areas

Who: MoUD

How: Performance parameters for basic services to put emphasis on management and improvement of the actual service delivery rather than infrastructure provision (performance management framework)

GoI allocated INR 350 billion or EUR 4,375 million for slum alleviation under the 12th Plan

2009

Rajiv Awas Yojana (RAY)

What: Tackle the problems of slums by

- formalizing slums & provide basic amenities
- redressing failures of formal systems that lie behind the creation of slums
- planning affordable housing and initiating respective policy changes

Who: MoHUPA

How: Slum Free City Plan of Action & Detailed Project Reports and dedicated funds

Standards and advisory services available to make cities more sustainable

2010

National Mission on Sustainable Habitat (NMSH) – One out of 8 missions under the National Action Plan for Climate Change launched in 2008

What: Make cities sustainable through improved

- energy efficiency in buildings
- management of solid and liquid waste
- urban planning
- management of urban storm water
- management of drinking water supply in urban areas, &
- a modal shift to urban transport

Who: MoUD

How: National Sustainable Habitat Standards for SWM, Storm Water Management, Water Supply and Sewerage, Urban Planning and Energy Efficiency; NMSH Parameters for Urban Transport & NMSH Advisory on Adaptation and Mitigation Measures

Swachh Bharat Mission

2014

Swachh Bharat Mission

What : Provide sanitation and household toilet facilities for all 4041 statutory towns in the country. These towns are home to 31% of the country's population.

Who: A joint Mission of the Ministry of Urban Development and the Ministry of Drinking Water and Sanitation

How: State Sanitation Strategy (SSS) and City Sanitation Plan (CSP)

The funding pattern between the Central Government and the State Government/ULB is 75%:25%. Total cost estimate for the Mission is Rs 62,009 crore.

NATIONAL URBAN SANITATION POLICY (NUSP)

On road to green, healthy, inclusive and fully sanitized cities

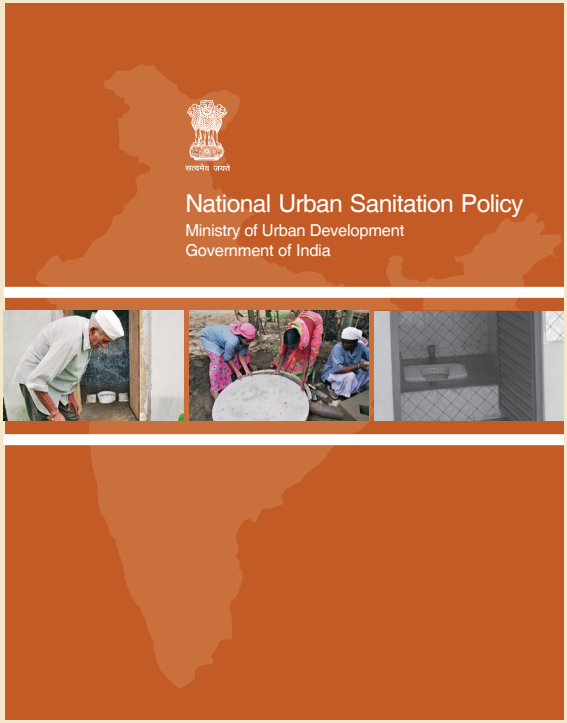
The National Urban Sanitation Policy, adopted by the Ministry of Urban Development (MoUD) in 2008, was the crucial political step to ensure improvements in India's urban sanitation sector.

The overall goal of this policy is to transform Urban India into community-driven, totally sanitized, healthy and liveable cities and towns. Special focus is on the provision on hygienic and affordable sanitation facilities for women and the urban poor.

Urban Local Bodies (ULBs) have been recognized under the 74th CAA as self-governing bodies responsible for the delivery of sanitation services at the city level. City Sanitation Plan (CSP) places ULBs at the centre of the strategic sanitation planning while ensuring the participation of elected representatives and relevant stakeholders. This ensures ownership and coordination.

NUSP Planning Instruments

NUSP provides states and cities with a comprehensive set of planning tools that will help in achieving the specific goals of NUSP. The two main instruments are the State Sanitation Strategies (SSS) and City Sanitation Plans (CSP), both vision documents to drive economic, social and environmental development:



The **vision** of this policy is that *"All Indian cities and towns become totally sanitized, healthy, livable; ensuring sustainable good public health and environmental outcomes for all their citizens with a special focus on hygienic and affordable sanitation facilities for the urban poor and women."*

By strengthening Urban Local Bodies (ULBs) the policy aims to

a) generate awareness and behavioural change

b) achieve open defecation free cities and

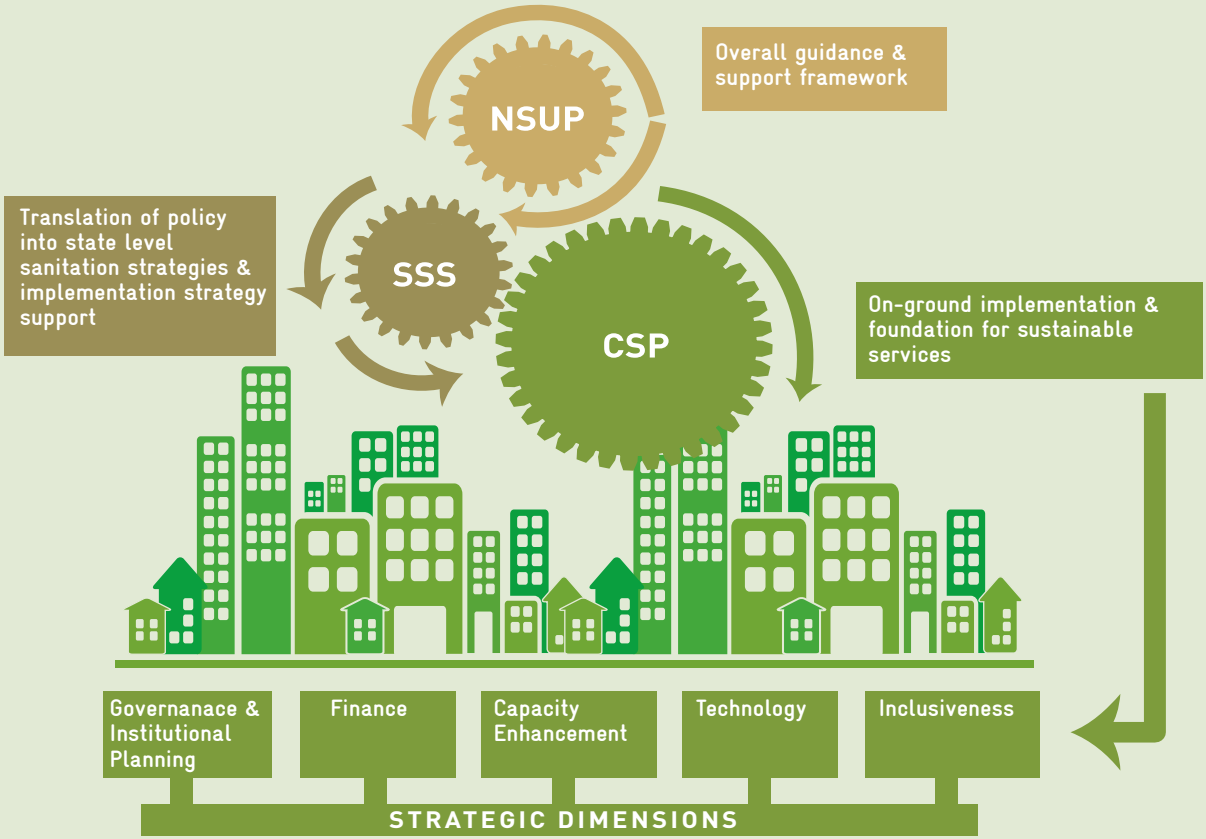
c) integrate citywide sanitation.

- **State Sanitation Strategies (SSSs):** Sanitation is a state subject. Hence, NUSP requires states to develop state sanitation strategies that define clear objectives and approaches to improve sanitation across the state.

- **City Sanitation Plans (CSPs):** City Sanitation Plans are sector-planning instruments developed in synchronisation with the SSS. CSPs guide Urban Local Bodies in achieving citywide sanitation through coordinated development, prioritisation and optimisation of investments in sanitation infrastructure, services and management. CSPs detail short- medium- and long-term action plans for technical solution and strategies for improved governance, financial sustainability, capacity building, advanced technology and inclusiveness (CSP's 5 strategic dimensions explained in the diagram below).

Under the policy, all states are requested to act at par with the NUSP to develop respective SSSs and prepare CSPs.

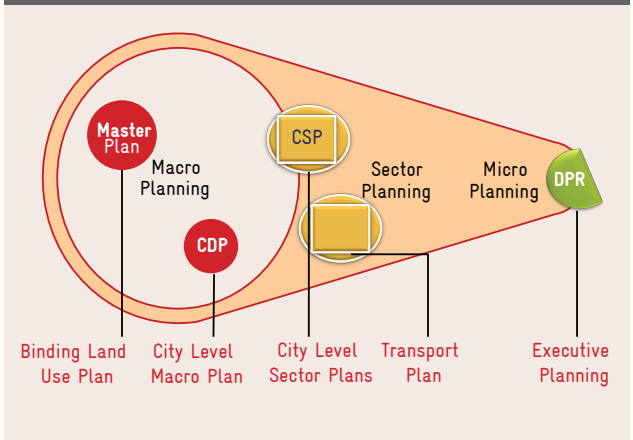
5 Strategic Dimensions *for sustainable citywide sanitation*



Sanitation as part of a city-wide planning system

Sanitation is one of the most crucial sectors for sustainable urban development. It is linked to other issues such as urban slums, transport planning, land zoning and economic development, all also addressed through various other city-level planning tools. Overarching City Development Plans (CDPs), Master Plans and other sector planning tools such as the Slum-free City Plan of Actions (SFC PoA) or the City Transportation Plan need to be taken into consideration while planning sanitation solutions and vice versa.

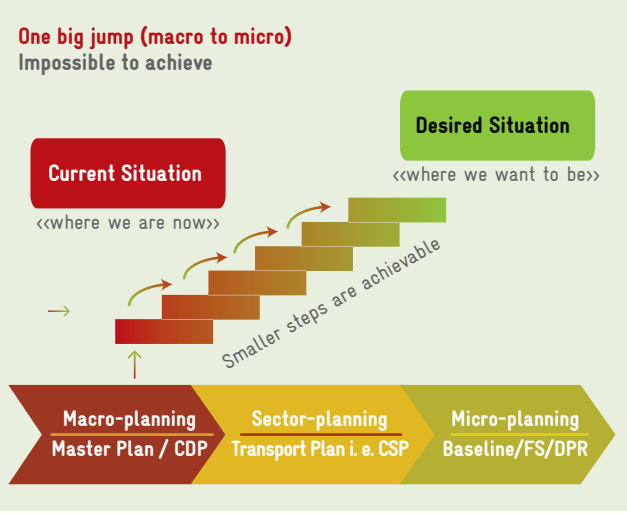
Urban planning tools in India



* Note: Sometimes it is important to first prepare a Feasibility Study (FS) or even a pre-feasibility study before detailing out a project through a Detailed Project Report (DPR).

Synchronising the various planning tools allows breaking down the overall priorities of a CDP and the sector-specific action of a CSP into feasible micro plans. To assist the preparation of executive plans, JnNURM introduced a tool called Detailed Project Report (DPR) that is widely used by Indian cities. The incremental planning process reduces obstacles like environmental clearances, land issues, lack of awareness, etc. which otherwise often result in unnecessary delays in project implementation and under-use of the allocated funds. While preparing a CSP, it is important to recognise that not everything desirable can be achieved in the first step. Therefore, it is useful to adopt incremental planning in order to achieve the set goals. Stepwise planning and implementation paves the road for 100% city sanitation.

Sanitation needs incremental planning



2. GIZ URBAN SANITATION PROGRAMME (SNUSP)

Approach, Interventions & Synergies

The ambitious National Urban Sanitation Policy (NUSP) finds itself in a complex system: The road to fully sanitised, green, healthy and inclusive cities is long and steep. To find adequate and sustainable sanitation solutions, the centre, states and cities are required to work together, incorporating views of different departments.

The ground reality shows there are issues related to incomplete decentralisation, lack of capacities of administrative and technical staff and lack of resources. The inclusion of the urban poor, developing gender-sensitive approaches and applying innovative but cost-efficient technologies adds on to the challenges.

GIZ "SUPPORT TO THE NATIONAL URBAN SANITATION POLICY" (SNUSP) PROGRAMME

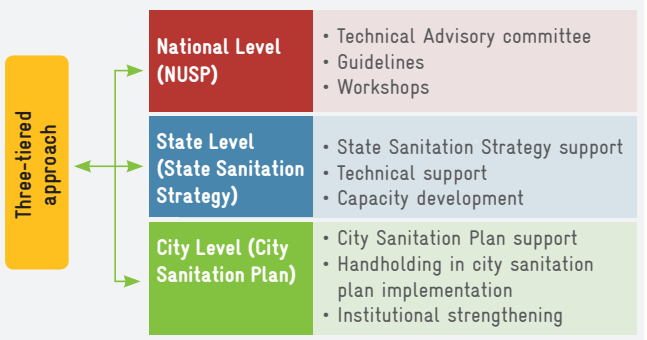
Programme approach

Against the backdrop of bilateral cooperation between the Government of India and Germany, the Ministry of Urban Development (MoUD) requested GIZ to support the centre, states and cities with the implementation of NUSP.

Under the Programme "**Support to the National Urban Sanitation Policy**" (SNUSP) GIZ provides technical support at national, state and city level to improve the implementation of NUSP, ensure its sustainability and help build the capacities of the ULBs.

The unique and successful approach of GIZ's SNUSP, called the three-tier approach, allows the Programme to support the steering and management of the sanitation sector at national, state and city levels. This provides a wide range of ground-level experience including proven models, tools, strategies, approaches and robust evidence required for upscaling and policy support at national and state level. It furthermore facilitates continuous and consistent interaction between and coherent knowledge sharing among the three tiers. This elevator effect fosters the mutual understanding and capacity development of all involved actors.

The Programme's Three-Level-Approach



SYNERGIES WITH NATIONAL SCHEMES

Building on and contributing to existing efforts

A multitude of ongoing schemes of Government of India is facilitating infrastructure investments and service level enhancements in Indian cities. To use the possible synergies in a resource-efficient and supportive manner the SNUSP Programme streamlines its activities with existing initiatives and schemes like Rajiv Awas Yojana (RAY), the National School Sanitation Initiative (NSSI) and the Service Level Benchmark (SLB) Initiative. The SNUSP Programme works in close cooperation with ongoing Government of India schemes to ensure the cities' holistic development.

Within GIZ India synergies and knowledge exchange with other programmes are strategically used. While there are specific synergies with the Indo German Environment Partnership Programme (IGEP) in the field of Solid Waste Management and environmental conditions in underserved areas (slums), the Waste to Energy Project attempts to set up an innovative pilot plant for co-fermentation of liquid and solid waste under the International Climate Initiative (IKI) - Initiative of the Federal Ministry for the Environment, Nature Conservation, Building and Nuclear Safety (BMUB - Bundesministerium für Umwelt, Naturschutz, Bau und Reaktorsicherheit)

3. COOPERATION AND IMPACTS

at the national, state and city level (Achievements between 04/2011 – 03/2014)

Step-wise approach to realise the vision of NUSP

This chapter highlights the intervention and impacts achieved under the GIZ "Support to the National Urban Sanitation Policy" Programme over the first three years (SNUSP), from April 2011 till March 2014.

Rehabilitation of sewer systems in Nashik and Raipur	Locally adapted wastewater solutions that build on the traditional system of black and grey water segregation in Kochi	Capacity enhancement of plumbers for citywide sanitation systems	Raising the next generations' awareness through improved school sanitation in 5 cities	Planning, operating and managing citywide public toilet facilities in Tirupati	Examples of local, small-scale and decentralized wastewater treatment systems

3.1. National Level Policy Support

On road to 100% city sanitation

GIZ supports the MoUD in its challenging task to formulate national guidelines and provide adequate resources for sanitation in a country as diverse as India. The ultimate objective of both partners is the effective implementation of the National Urban Sanitation Policy (NUSP).

Feeding experience from SSS & CSP interventions in the national policy dialogue

Relevant experiences, learnings and insights from the state, city and pilot level interventions as well as from the over 50 years of international development cooperation are fed into the policy dialogue (three tier approach).

The preparation of CSPs as well as its endorsement and implementation process provided GIZ and its partners valuable lessons learnt on how to design and steer such processes. These insights were compiled in a **manager's handbook (CSP Primer) and a Self-Review Checklist** to assess basic data and information requirements. The CSPs of five partner cities developed under this programme have been uploaded on the MoUD website (www.moud.gov.in/cityplan) as Model CSPs to guide other cities.

Himachal Pradesh and Andhra Pradesh, supported by GIZ, prepared their first draft SSS, which serve as basis for upscaling of this important instrument to other states across India.

Identifying areas needing urgent attention

The SNUSP Programme interventions at the city, state and national level highlighted two sanitation challenges that need further attention at national level, namely (1) septage management and (2) the need for functional institutions in the sector.

(1) SEPTAGE MANAGEMENT: THE NEGLECTED SANITARY RISK

Indian cities face serious health and environmental risks because of septage regularly entering the cities' ground and surface water through overflowing wastewater from septic tanks, improper discharge of septage collected and the lack of septage treatment plants.

The widespread use of on-site sanitation facilities like septic tanks and pit latrines in Indian cities underlines the significance of septage management. In fact, inadequate onsite sanitation has much worse insanitary effects than open-defecation due to the mixing of faeces with grey water.

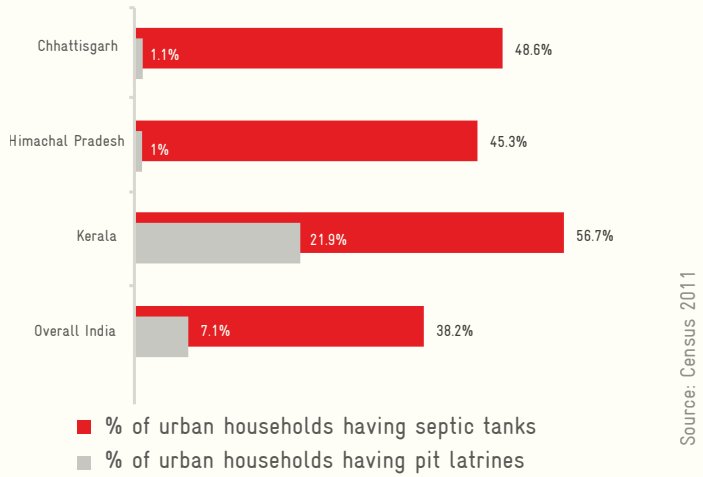
Septage refers to fecal sludge removed from septic tanks. If not managed properly, this highly infectious substance is one of the most common causes for environmental pollution and serious health threats.

Need for septage management

"We face major problems because all septage collected from tanks is being dumped into the canals. It is a hit and run situation. People are willing to pay. ... with 95% of septic tanks, we need to urgently ensure and improve our septage treatment."

Mr. K.J. Sohan,
Standing Committee Chairman Town Planning,
Corporation of Cochin

Percentage of septic tanks in various states



Source: Census 2011

PROGRAMME SUPPORT & IMPACT

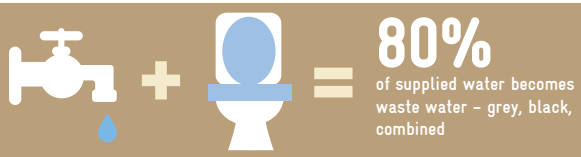
The framework for improved septage management

Recognising the importance of proper septage management based on evidence, the programme developed a framework for improved septage management. It is meant to strengthen the existing advisory on septage management and can be used for effective septage management implementation at state and city level.

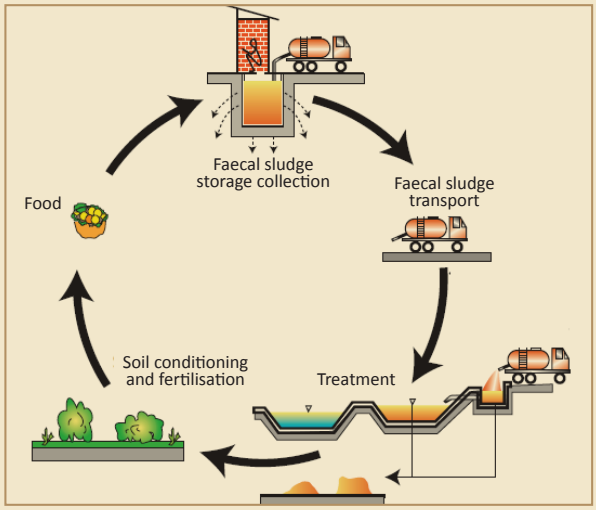
The framework recommends concrete short, medium and long term actions at national, state and city level on various strategic aspects (planning, technical, finance, data management, regulation and monitoring). The roadmap shall support the implementation of efficient and sustainable septage management service delivery along the whole Sustainable Sanitation Cycle.

Pilot project: Using septage for energy production

A pilot project using septage for energy production through co-fermentation with organic waste is currently being implemented through a Waste-to-Energy Project funded under the International Climate Initiative (IKI) - initiative of the Federal Ministry for the Environment, Nature Conservation, Building and Nuclear Safety (BMUB - Bundesministerium für Umwelt, Naturschutz, Bau und Reaktorsicherheit). The synergies between both projects are used extensively.



Sustainable sanitation cycle



Septage management needs to be:

1. an integral part of the urban public sanitation system. Septage management can become a cost efficient and sustainable wastewater management solution.
2. a closed loop system which requires covering all septage management steps to maximize outputs and minimize inputs (i.e. capital cost, operational and maintenance).
3. Suitable technology backed by a sound financial, social, legal and institutional system – Technology "plus".

(2) NEED FOR INSTITUTIONS: INDIAN WATER AND SANITATION UTILITY

Technological innovations and the creation of upgraded infrastructure in the sanitation sector need support by institutions that are able to ensure efficient management and service delivery. The low performance rate and poor quality of water and sanitation services in Indian cities indicates a **lack of functional institutions with sufficient autonomy and resources.**

PROGRAMME SUPPORT & IMPACT

Advisory note on Indian Water and Sanitation Utilities

To better **understand the structural and managerial requirements for effective service delivery institutions,** GIZ with its partners developed an advisory note for MoUD on Indian Water and Sanitation Utility that provides examples and implementation steps for different institutional models. As such it touches the core of governance of the urban sanitation sector, which makes it a crucial tool. The recommendations are based on evidence from field studies in three cities and national and international sanitation examples.

The advisory note does not give preference over one institutional model but highlights different aspects that need to be considered in the concrete case of choosing the most suitable model. The utilities differ mainly according to the service provider. This can be the Urban Local Body, a state department, a separate parastatal unit or a private company. For any utility being successful it is paramount that all water and sanitation services are housed in one organization with full:

- Functional autonomy (tariff setting, staff management)
- Accountability to internal & external stakeholders
- Transparency of services
- Sound financial management with a separate budget and accounting for water and sanitation

Establishing Indian Water and Sanitation Utilities would improve the service delivery significantly and give urban citizens the possibility to claim their right to service in a better way. This would increase the cities' and states cost recovery and allow the implementation of sanitation solutions to be planned in a more efficient way.

Indian water and sanitation utility & their different institutional models

AUTONOMY / EMPOWERMENT

Utilities are empowered to levy a legitimate tariff and recruit required staff as and when necessary

FINANCING

Transitory plan to put in place till utilities become and are incentivised to be financially sustainable

ACCOUNTABILITY

Utilities accounts to be ring-fenced with pre-determined transfers from other accounts/sources and its performance is reviewed and incentivised

INTERNAL CAPACITY

Utilities have the requisite staff to provide services either on its own or under a delegated contract

TAC

The **Technical Advisory Committee (TAC)**, consisting of three Indian and three international senior experts, was being steered by GIZ. TAC is a multi-disciplinary and intercultural committee that reviews the approach and findings of the Septage Management and Indian Water Sanitation Utility reports commissioned by the programme. This ensures that the inputs provided to MoUD are of high quality, feasible, sound, internationally comparable and applicable to Indian cities.

The advisory note supports MoUD, states and cities

The note supports MoUD in strengthening the management of the sanitation sector as a whole and wastewater services in particular. In Kerala a pilot project to establish a Wastewater Utility is currently taken under consideration (see the case study on innovation in sanitation).

Three steps towards developing national level advisories

1) Evidence based studies
2) Deliberations of TAC on draft advisories
3) Final version of advisories

3.2. State Level Support

On road to 100% city sanitation

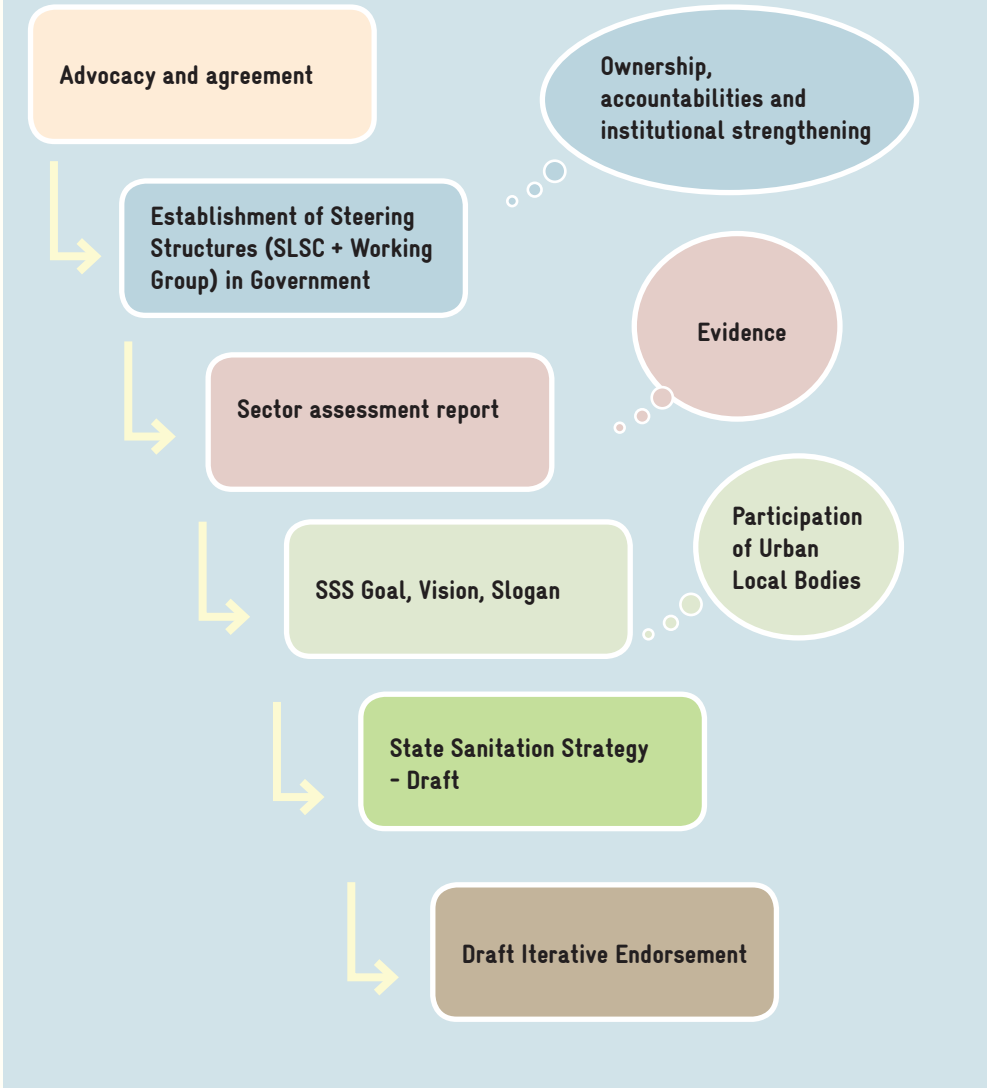
In India sanitation is a state subject. Though implementation and the direct benefits are at the city, core functions like the development of guidelines, distribution of financial resources and partial responsibility for the implementation rests with state level agencies. A State Sanitation Strategy (SSS) is an excellent and crucial policy tool for setting the framework and guiding cities in planning, developing and implementing their City Sanitation Plans (CSP).

Ensure a systematic and stepwise approach to ensure comprehensive and demand oriented SSS

GIZ is supporting three states (Andhra Pradesh,[1] Himachal Pradesh, Kerala) in preparing their SSS as required under the NUSP. GIZ and state-level partners have developed and followed a unique consultative approach for the development of State Sanitation Strategies that is systematic, stepwise, participatory and owned and driven by partner states.

1 Andhra Pradesh-Referred to erst while combined Andra Pradesh

Roadmap for formulation of State Sanitation Strategies



PROGRAMME SUPPORT & IMPACT

Andhra Pradesh and Himachal Pradesh, for the first time ever, have a **holistic, evidence-based state-level planning and vision document on sanitation.** The formal endorsement process at state level has started. The SSSs will facilitate roll out at state level along with concrete implementation at the city level. It shall also ensure special attention to gender-sensitive and inclusive sanitation.

Hard Facts: Impact on people and the environment

The implementation of the two **SSS will benefit up to 6 million households** living in 180 cities across the two states.

Elimination of open defecation is an explicit part of the vision and sanitation strategy of both states. There are **concrete interventions planned that target up to 820,000 urban households** practising open defection.

Improving wastewater management: Over **3.08 million urban households** across both states still rely on septic tanks. They will therefore benefit from the **increased coverage of centralized and decentralized sewerage systems** and **improved septage management** (to ensure hygienically safe handling of the most contaminated waste water). Putting an end to overflow and leakages, combined with adequate sewage treatment, will reduce ground and surface water contamination and related health risks.

Improved living conditions: The total urban population of both states – **30 million people** across the 180 cities – will indirectly benefit from **improved living and environmental conditions.**

Soft Facts: Impact on processes

Guidance & replication: State Departments have an improved **understanding of urban sanitation issues,** opportunities and realistic and feasible solutions for quality sanitation planning and service delivery. Preparing SSSs, **states assumed their responsibility to facilitate ULBs to plan and implement sanitation measures.** As a result, **15 cities** across Andhra Pradesh and Himachal Pradesh could prepare **well-informed and viable City Sanitation Plans.**

Inter-departmental cooperation and participation was introduced in each of the pilot states through the preparation of SSS that required the contributions of state departments and the active participation of the city officials. They were sensitized on sanitary challenges, gained evidence-based insights on the current sanitary situation of their state and devised concrete actions. Their active participation in the formulation of the sanitation strategies significantly increased their capacities.

Evidence-based planning and priority setting: The collection of valuable, accurate and time-bound data for the sector assessment report helped understanding sanitation realities and allowed the formulation of a **feasible vision, objectives and realistic interventions.**

Visibility of sanitation as a significant policy field has been the most fundamental impact. Government officials are now **aware** of the importance and urgency of sanitation planning. This awareness has created and will create action.

Replication of CSP

"GIZ sensitized, motivated and supported us to prepare a CSP. Seeing the benefits of a CSP in Tirupati motivated eleven other towns to prepare their own."

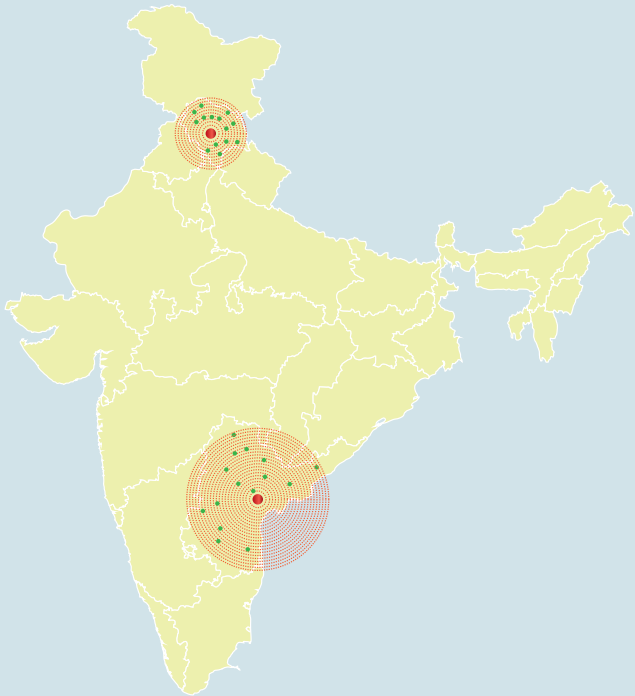
Dr. N. Satyanarayana,
Regional Director C&DMA,
Andhra Pradesh

Coordinated & participatory approach

"Several departments involved in State Level Sanitation Committee (SLSC) and Working Groups not only drafted the SSS but also solved other issues with state departments and ULBs."

Mr. B.S. Thakur,
Project Officer DUD,
Himachal Pradesh

Replication:
SSS guides states in developing their CSP



3.3. City Level Support

On road to 100% city sanitation

Sanitation revelation through CSP

NUSP introduced the City Sanitation Plan (CSP) as policy implementation tool in order to tackle the urban sanitation sector's shortfalls where they are felt the most. The CSP is a sector-based planning instrument for urban sanitation services for a period of 30 years. Its objective is to **achieve 100% city sanitation and open defecation free cities.** This is to be seen by covering **multiple sub-sectors** including waste-water management, access to toilets, solid waste management, water supply and storm water management.

Ensure ULBs can use CSPs as a holistic and effective tool to improve city sanitation

The SNUSP Programme supported 6 cities in the preparation of their CSPs (Kochi, Nashik, Raipur, Shimla, Tirupati and Varanasi). In order for the CSPs to be an effective and holistic document, aspects like data collection and management, identification of suitable fiscal, institutional and technical solutions had to be an integral part of the CSP preparation process. Thus, each CSP focuses on 5 strategic dimensions - Governance & Institutional Planning; Finance; Capacity enhancement; Technology and Inclusiveness. Following the CSPs' approval, the SNUSP Programme handheld 5 cities in the implementation of selected CSP activities (pilots). The objective was to capacitate ULBs in implementing CSPs to improve citywide sanitation and to provide lessons learnt, which feed into the preparation of the State Sanitation Strategies for upscaling and roll out into other cities.

CSP, a holistic sanitation approach

"City sanitation planning has moved our attention beyond solid waste to include all the sanitation sub-sectors like liquid waste/sewerage." K.J. Sohan, Standing Committee Chairman, Town Planning of Corporation of Cochin

CSP constitutes the holistic city-level planning tool to determine clear priorities, processes and measurable targets for intervention areas that are identified against stress areas. It provides decision makers and implementation agencies with a systematic, stepwise and participatory approach to improve citywide sanitation.

The five strategic dimensions for successful sanitation interventions

Successful sanitation services do not only depend on smart technological choices. Technical infrastructure needs to be built, operated, maintained, financed and made accessible for all sections of the society. Therefore, the CSP identified 5 strategic dimensions that need to be covered for developing successful sanitation solutions. All actions of the CSPs were aligned with these 5 strategic dimensions.

Participation ensuring demand oriented and feasible solutions

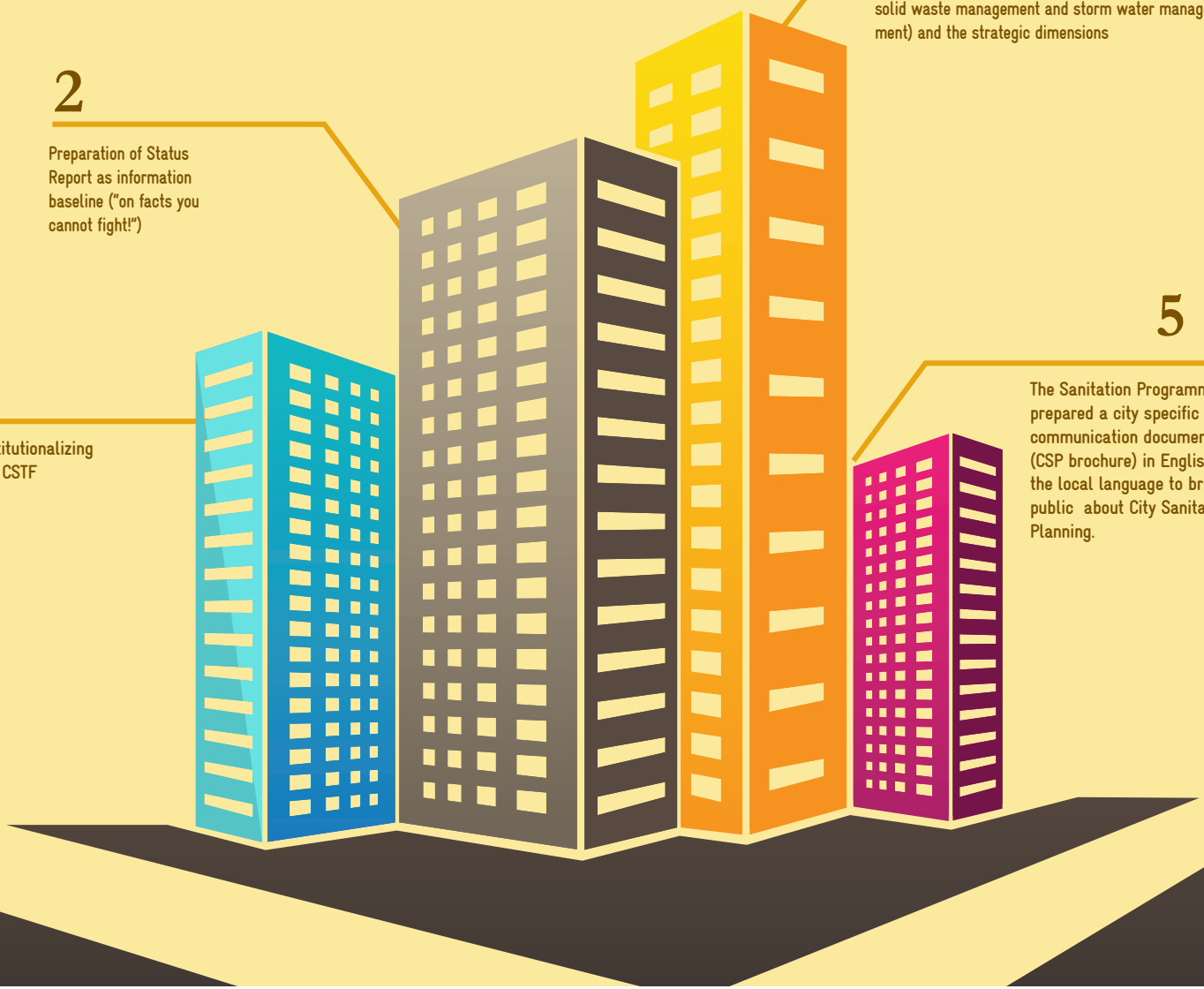
ULBs, supported by GIZ and advised by the City Sanitation Task Force (CSTF), followed the **systematic stepwise approach.**

The City Sanitation Task Force (CSTF)

Is a multi-stakeholder advisory body that was formed at the inception of CSP preparation to support the Municipal Corporation (implementing agency). The Task Force includes representatives of state and city level departments, NGOs, private sector and the interested public. The active participation of women is encouraged. Tasks include the review of processes, findings and recommendations throughout the CSP preparation process. The **participatory process** facilitates the speedy endorsement process in the city parliaments and is highly appreciated by all cities.

Five steps to prepare a CSP

CSP constitutes the holistic city-level planning tool to determine clear priorities, processes and measurable targets for intervention areas that are identified against stress areas. It provides decision makers and implementation agencies with a systematic, stepwise and participatory approach to improve citywide sanitation.



1

Institutionalizing the CSTF

2

Preparation of Status Report as information baseline ("on facts you cannot fight!")

3

Developing sector strategies, through analysis and interpretation of facts

4

Formulating an Action Plan with short-term, mid-term and long-term measures covering the 5 technical sectors (waste water, water supply, access to toilets, solid waste management and storm water management) and the strategic dimensions

5

The Sanitation Programme prepared a city specific communication document (CSP brochure) in English and the local language to brief the public about City Sanitation Planning.

3.4. CSP Implementation

Identifying workable models suitable to regional conditions

India is one of the most diverse countries in the world. This calls for locally adapted sanitation strategies, suitable for the different geographical and climatically conditions. The GIZ Programme works with selected state governments and cities to provide suitable models that are adapted to the varying context.

Kochi	Cleaning the backwaters through better septic tanks & wastewater discharge practices
	Challenges: High ground water level, sandy soil & limited land availability make conventional, deep sewer system unsuitable.
	City specific intervention • Feasibility study on non-conventional waste water management system • DPR on decentralized waste water management system as part of a slum upgrading project under RAY • Household level survey on septic tanks & wastewater discharge practices
Nashik	Cleaning the river by improving the sewage system
	Challenges: Existing sewer system needs improvement to protect the river. Lack of innovative technology.
	City specific intervention • Hydraulic Assessment of existing sewer system along River Godavari. • Waste-to-Energy project
Tirupati	Provision of clean & well-maintained toilets for pilgrims / environmental services in slum
	Challenges: Floating population, population growth and city boundary extension put high pressure on sanitation systems.
	City specific intervention • Citywide planning for Public Toilets management
Raipur	Decentralised wastewater management to save lakes & upgrade slums
	Challenges: Non-functional sewer system & polluted lakes pose health risks. Trying to save lakes through storm water & water management.
	City specific intervention • 2 DPR on decentralized wastewater treatment systems for lake protection & slum upgrading • Feasibility study on integration of lakes into urban storm water management • Status assessment for rehabilitation of existing sewer system
Shimla	Reuse and recycling of wastewater on the Hills
	Challenges: The hilly area, though sufficient in gradient, makes it difficult to cover the whole city with a centralized sewer system inflicting high water pumping cost.
	City specific intervention • Construction of decentralized wastewater treatment plant to showcase reuse & recycling of wastewater • Improvement of public toilet management and operation system • Solid waste management (IGEP & SNUSP)

From plans to implementation

Six cities prepared CSPs and 5 have started the implementation with the support of GIZ.

Hard facts: Impact on people and environment

Service delivery: The six cities have developed comprehensive **CSPs** that were approved by the respective state governments. The CSPs fulfil the requirements of the NUSP and include technical options as well as concrete measures for institution building, strategies to incorporate under-served areas, gender-sensitive solutions and financial models. Five cities have **initiated or already implemented at least 50% of their short-term measures** planned for the first three years. Shimla, Nashik and Tirupati even implemented one third of their **medium-term actions**, planned for a time-span of 5 years. The first **improvements in service delivery** are displayed in the graphic.

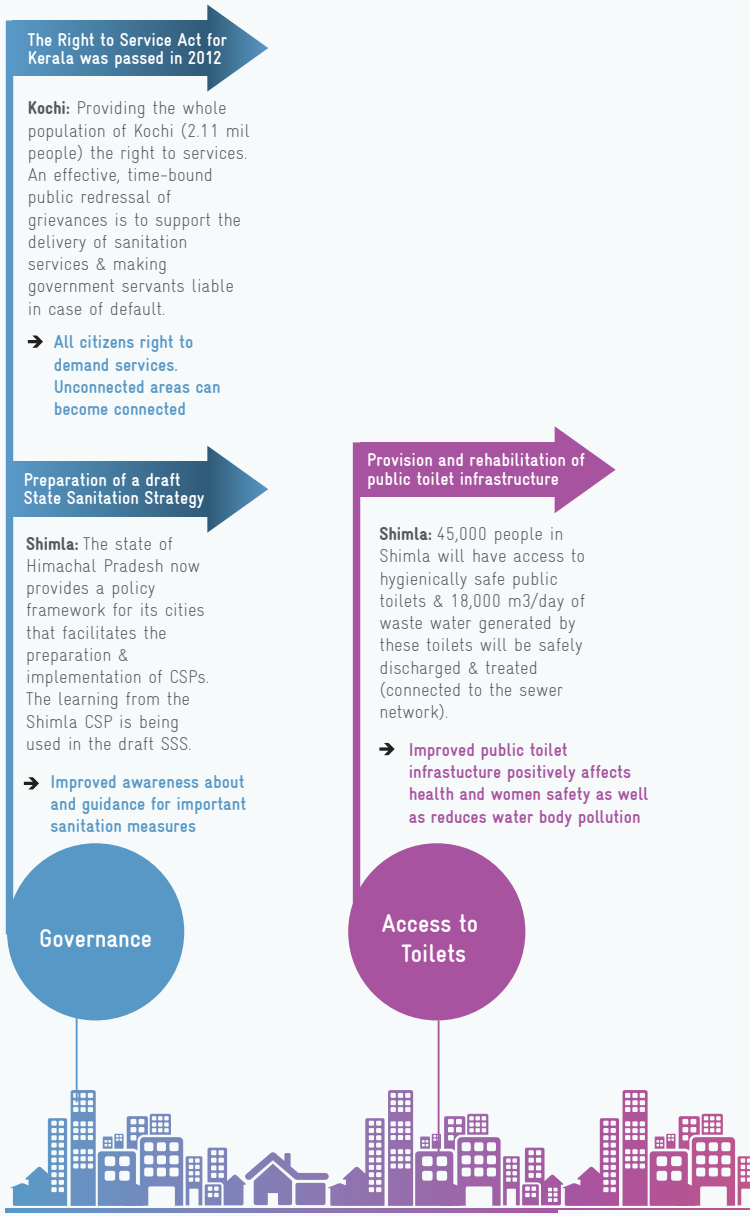
Managerial capacities: Over **200 people** in five cities have been involved in the City Sanitation Task Forces, actively contributing to the formulation of the sanitation vision, prioritisation of projects and verification of data. Their **understanding and capacities to manage key sanitation issues increased considerably.**

Soft facts: Impact on processes

Awareness among city officials and elected representatives has increased significantly. Sanitation issues, specifically wastewater management have moved from not being prominent prior to the CSP process to being recognised as areas needing urgent attention. Sanitation gained momentum.

Analysis of the current status of sanitation services was a central part of the CSP preparation. The assessment provided Urban Local Bodies with concrete and realistic sanitation data, helping them to understand the cities' sanitation sector challenges and shortcomings. This enabled them to prepare feasible plans, solutions and clear implementation steps.

Measurable impacts of CSP implementation in five



cities: Steps to 100% sanitized, green & clean cities

Soild Waste Management / Governance

Appointed a private operator for integrated SWM

Raipur: Expects a rise from 6% coverage of door-to-door collection in all wards

→ Reduced clogging of storm water drains & littering of garbage in city.

Implementation of door-to-door collection system*

Tirupati: 79% of the households have their solid waste collected at their doorstep (vs. 4% of all households prior to the CSP)

→ Reduced clogging of storm water drains & littering of garbage in city.

Water Supply

Augmentation of water transmission & treatment capacity

Kochi: An additional 252,000 people in Kochi have access to treated water, reducing the use of ground water by 52 mil litres/day

→ Positive health impacts & socio-economic impact (reduced water collection time, hardship on women)

Wastewater Management

Increase in household coverage with sewerage connections

Nashik: Connected another 41,634 houses to the sewerage system, resulting in 300.000 houses (nearly 100%) being connected to the sewerage system.

→ Pollution load on water bodies (lakes, rivers & groundwater significantly reduces

Increase in the capacity for waste water treatment

Nashik: 1,60,000 m3 more wastewater/day collected & treated.

→ Pollution load on water bodies (lakes, rivers & groundwater significantly reduces

Implementation of waste water management systems in underserved areas

Tirupati: Number of households connected to the sewerage system increased by 17%.

→ Pollution load on water bodies (lakes, rivers & groundwater significantly reduces

Acknowledging liquid waste

"Liquid waste (sewage) was completely neglected, even after the NUSP. The CSP made us realise this, sensitized us and made us integrate waste water management as one of our priority interventions." K.J. Sohan, Standing Committee Chairman Town Planning, CoC

Moreover, baseline data analysis and **exposure to best and worst practices** in other cities and countries **enhanced the partners analytical and solution finding skills.**

Evidence based project planning has become one of the guiding principles for the sectors planning and project management. **Sound data collection and analysis** is considered to be integral part of project management and monitoring.

The CSP has become a guiding document for the Urban Local Bodies (ULBs) to plan their interventions in the sanitation sector and enabled them to **take the sanitation agenda** beyond projects supported by GIZ.

The remaining challenge

Until now, the ULBs of GIZ's five partner cities focused on the improvement of infrastructure and asset creation. **Interventions on capacity enhancement, financial sustainability, inclusion and governance have been limited.** Without adequate **byelaws, cost recovery, skilled staff and strong institutions,** the lifespan of the infrastructure will be short.

GIZ follow-up programme "Support to the National Urban Sanitation Policy II" (SNUSP II) will focus on this.

Realistic monitoring of sanitation service delivery:

Service Level Benchmarks (SLB) & reliable data collection and management

The MoUD's Service Level Benchmarks initiative started in 2008 to assess and monitor the performance of cities through measurable indicators. **More than 1,000 cities are reporting against the SLBs. However, the data is often patchy and its reliability is questionable.**

GIZ worked with three cities (Shimla, Raipur and Tirupati) to improve the SLB data quality. **For the first time, these cities collected and reported reliable data, which provides a realistic information base for sector planning and monitoring.**

Another aspect of the same data challenge was that **the CSP preparation revealed serious data and information availability and accessibility deficits** across all cities. Lack of detailed baseline information such as topographic maps, water and sanitation plans, registers and records pose a serious deficit for any planning of infrastructure development. It puts successful project implementation at risk. One of the identified reasons for the poor data quality and management is that project steering agencies (cities) tend to load data generation on implementing agencies (cunsultants), which do not have the mandate nor the resources to do so. Data also needs to be managed. They need to be filed properly, updated regularly and interpreted in a way to make data a tool for project management. GIZ worked with its partners to take the first steps in **professional data management**.

"...earlier we didn't have any data. Now the data, allows us to see what is the status of service delivery and how we can improve it. This is the main objective of the CSP." Mr. Malve, Executive Engineer, Raipur Municipal Corporation

Equally, **raising awareness on the paramount importance of sound and reliable data** was of high priority.

4. CASE STUDIES

Translating Policies into Concrete Actions

Zooming in: Case Studies

Translating plans into action

In each of the five partner cities GIZ has handheld the planning and implementation of concrete projects prioritized in the CSPs. This provided urban sanitation planners and implementers with a good understanding of the challenges related to the implementation and allowed the review of the suitability of the CSPs as a sector planning document.

Each project provided immense learnings. Experiences are being fed in the state and national level sanitation policy dialogue. This ensures that proven best practice examples and processes are being upscaled and replicated all across India, while it avoids the repetition of mistakes.

This section illustrates selected projects supported by SNUSP to showcase multiple sanitation solutions suitable for different geographic and demographic challenges. The case studies illustrate technical interventions as well as activities on capacity development and awareness rising.

4.1 Unlocking Existing Assets

Rehabilitation of sewer systems in Nashik and Raipur

What was the problem?

The centralized sewerage systems that were built in Nashik and Raipur over the last three decades were not working efficiently. The deficient sewer in Nashik resulted in overflows, polluting the River Godavari. Raipur's sewer system stopped functioning due to neglect of operation and maintenance. Many households in its catchment area, especially in slum settlements, had never been connected in the first instance.

What was done?

After jointly assessing the situation and evaluating options, Raipur and Nashik decided to retrofit rather than build new infrastructure.

Close cooperation and sharing of expertise

"All processes were done working in close cooperation. Regular interaction eliminated any communication gaps. [...] GIZ provided valuable support and suitable options on how to deal with the various issues faced, following which we jointly decided the approach to take. This was a great learning process."

R.K. Pawar and U.B. Pawar, Superintendent, Nashik Municipal Corporation

The Ministry of Urban Development through NUSP and JnNURM supports projects that unlock existing potential (rehabilitation and upgradation) rather than investment intensive asset creation.

Challenges faced

Both projects showed that city departments had **no adequate plans of the existing sewerage system.** Therefore, an in-depth assessment of infrastructure was necessary in order to rehabilitate and optimize the sewer system.

To manage rehabilitate or upgrade infrastructure an **asset management system** is required.

What change envisaged?

For the city of Nashik the target was to optimise the flow of its sewer system prior to the Kumbh Mela Festival in 2015. The objective is to reduce the overflow of untreated wastewater into the river by 7,000 m3/day. This means that not only over 5 million pilgrims can take a safer dip in the river but also surrounding residential areas will benefit from cleaner and safer water and the improved river's eco-system (safer drinking water, income, health).

In Raipur the task was even bigger as the complete sewer system required rehabilitation. Yet, it is more cost-efficient compared to building a new system and it permits the connection of an additional 40,000 households (approximately), which have not been connected after the construction of the sewer, enhancing safe wastewater discharge considerably. Moreover, the rehabilitated system will also connect another 2,800 households located in slum settlements, making the citywide project highly inclusive.

Lessons learnt

Involving Nashik city officials at each stage of the project built their **capacities** in an integrated and sustainable way.

In Raipur, the institutional capacities were much weaker, compared to Nashik, which made the implementation more difficult. Increasing **institutionalization and participation** facilitate better project planning and implementation and leads to sustainable structures.

How Nashik and Raipur unlocked their existing potential through rehabilitation and upgradation

RAIPUR

Rehabilitation: German sewer rehabilitation experts provided supported with latest CCTV technology

- cost savings: cost of rehabilitation is less than cost of rebuilding
- connection of an add. 40,000 HHs
- connection of 2,800 slum HHs = inclusiveness



NASHIK

Optimization: German experts trained a local company in conducting hydraulic modelling and to prepare asset registry for trunk sewers along Godavari river

- overflow of untreated waste water into river (by 7,000m3/day)
- river pollution
- 5 mil pilgrim and citizens health
- ecosystem of river (more fish, more income)
- residence (drinking water, health)



4.2 Locally Adapted Solutions

Locally adapted wastewater solutions that build on the traditional system of black and grey water segregation in Kochi

What was the problem?

The situation of wastewater management in Kochi is serious and risky for its citizens and the environment. Only 5% of households are connected to the 60 years old sewerage system. The rest has to rely on septic tanks and soak pits. With the latter being non-functional or not constructed properly, the overflowing effluent has severely contaminated the backwaters. The situation worsened with the demise of Kochi's only septage treatment facility long back, forcing vacuum truck operators to illegally discharge the collected septage. The city's high ground water tables and flat terrain make a centralized and conventional sewerage system nonviable.

What was done?

GIZ and the Municipal Corporation of Cochin (CoC) took on the challenge to find a suitable solution.

Keeping in mind Kochi's flat terrain with high ground water level, its water saturated sandy soils and narrow roads with numerous heritage buildings across the city the only viable choice remains is for a non-conventional approach. Separating wastewater from rainwater run-off drainages is a common practice in India. Beyond that disposal of black water in septic tanks and separate grey water discharge into surface drains is a traditionally established system in Kerala. The use of the existing septic tanks and solid free sewers seemed to be the most viable option to provide an extensive city-wide system under these geomorphologic conditions. Organising septage collection and treatment for septeic tanks is a necessary precondition.

To ensure latest know-how in technical concepts, the project was designed in cooperation with Hamburg Water and Sewerage utility of Germany, Hamburg Wasser, an water and wastewater utility that manages the complete waste water cycle under one roof (management of wastewater, collection and management of sludge, recover and reuse). Piloting the institutional and technical approach will capacitate the city to upscale their sanitation system to an integrated citywide system making use of existing assets (e.g. septic tanks) and sustainable technologies.

Challenges faced

The high ground water table in Kochi makes laying of conventional sewer systems non-viable. **Kochi had to take a stringent decision to implement innovative solutions suitable to their condition.**

Since 2013 the Hamburg Water Cycle pilot is implemented at Jenfeld Au by Hamburg Wasser (the Water and Sewerage Utility of Hamburg), which is the largest decentralised waste water system of its kind in Europe.

What change envisaged?

Due to a feasibility study which carved out the best solution for the given condition, Kochi and the state of Kerala are now well equipped to implement an innovative pilot, which after implementation will be path breaking in the long run, not only for Kochi and Kerala but also for other areas with similar geographical conditions. GIZ will support the implementation in the second phase of the programme. The salient features of the project are:

1. Benefiting upto 27,000 people by ensuring the safe disposal and treatment of black and grey water as well as septage in the long run.
2. Septage management will be integrated in an overall wastewater management model for the first time.
3. Expected to be less costly than a conventional approach as it builds on the already existing septic tank infrastructure and cost recovery is an integral part of the institutional model.

4. Achieving a significant reduction in surface water pollution without major construction.
5. Providing locality-based option enhances ownership among the local population

The Corporation of Cochin and the Kerala Water Authority, for the first time, provide a viable and realistic solution for Kochi's wastewater management problems, which has the potential to be an alternative to conventional sewerage systems across India. Upscaling the pilot to the city-level will introduce efficient and safe wastewater management for 177,000 households. Motivated by the long-term benefits, cities with similar geographical conditions are expected to replicate the model (technical and institutional).

Lessons learnt

For the management of sanitation systems the institutional setting in Kerala lacks clarity in functionaries and functions. As per the current situation the institutional responsibility for septage and wastewater comes under two different state departments. Furthermore there is no clear division of roles between the city and the state, which further complicates the implementation process. Establishing a **city operated Wastewater Utility that converges operational responsibility with accountability** has the potential to create a functional system.

Advantages of the non-conventional approach

- no extensive excavation work required, thus no public distress
- significant drop in sewer maintenance cost (only liquid transported & segregation of solid and liquid matter minimizes risk of clogging)
- waste to energy option may result in an economically feasible approach.

4.3 Setting the Stage

Capacity enhancement of plumber's for citywide sanitation systems

What was the problem?

The preparation of the CSPs showed that households lacking connectivity to existing sewers is a common issue in all cities. Furthermore houses are not discharging their wastewater safely because connections to onsite treatment (e.g. septic tanks) are absent or are often deficient. The reason is the shortage of qualified professionals that have the skills to undertake this crucial groundwork. Existing training curricula for plumbers are only focusing on household plumbing but not on network plumbing that connects a house to a sewer or any onsite system.

Challenges faced

Chhattisgarh state does not have any formal plumbers training as the training institution went to Madhya Pradesh after the state's separation. Other states have training institutes but conventional plumber trainings have taken a back seat in favour of communication or IT based trainings. Moreover, institutes are not sufficiently equipped. **Introducing an advanced plumber training into the formal curriculum of the states, and avoiding it to be a "one-time" thing is a challenge.**

What was done?

GIZ has supported cities and states in introducing a module on household connectivity in existing plumber's courses.

The training was developed in a participatory process with three state training institutes, four cities and practicing plumbers, who are officially listed with the Municipal Corporations. The training was designed as a 3 days module, which can be used as a stand-alone upgradation or be integrated into the existing curricula. The content is evidence-based and cities were selected against different geographical conditions (hilly, flat land and coastal) to better understand what is actually required on the ground. The training material and pocket book has been provided in English and three local languages.

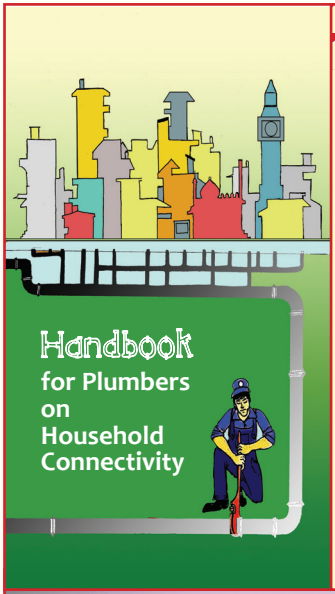
What change envisaged?

A total of 160 plumbers across 4 cities are now able to connect households to existing sewerage systems. This will not only lead to an increase in household connections but also increase the safe discharge of wastewater. To build a trained workforce on the ground across all of Maharashtra, Himachal Pradesh and Kerala, the project trained 35 trainers of the states' training institutes to conduct the plumbers training themselves. These institutes are now planning to integrate the module into their curriculum.

One of the unique features of this project was the focus on the work force engaged at the ground level that is responsible for the last mile connectivity in the city. Plumbers are now more and more seen as an integral part of the urban sanitation system of cities.

Lessons learnt

To engage target groups like plumbers, the communication material needs to be in the local language and demand oriented. The participatory process with plumbers showed that they don't need Power Point Slides or a proper manual. They wanted a handy, easy to read and to understand booklet with graphical depictions of how to connect households step by step in their language that can easily be taken along for their work. GIZ provided them with a water resistant pocket book that contains tips and tricks for the day-to-day work.



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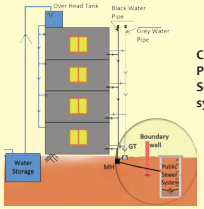
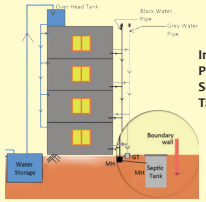
About Sanitation Systems



Common Public Sewage system

OR

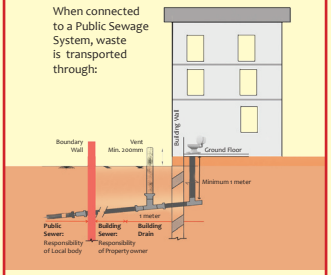


Individual Property Septic Tank

4

Sewerage Systems for Sanitation

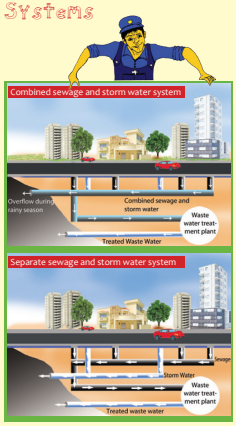
When connected to a Public Sewage System, waste is transported through:



Depending on the local law, owner may be responsible for connecting the building sewer with the public sewerage system, at his own expenses.

Types of Sewer Systems

5



Combined Sewer system can cause serious water pollution if it overflows during rainy season.

Handbook available in English, Hindi, Malyalam amd Marathi

4.4 Children in the Driver's Seat

Raising the next generations' awareness through improved school sanitation in 5 cities

What was the problem?

Schools should be the institution that set benchmarks and guides children amongst others towards good sanitation practices. School sanitation focuses on the responsibility to provide children with a child friendly and healthy learning environment, emphasizing the provision of sanitation facilities and proper water supply that children need while in school. Furthermore, it works towards supporting children in developing skills, attitudes and knowledge on effective hygiene. Indeed, schools and students should be considered as 'agents of change'. They not only change the situation in the school itself but they spread the word among their family, relatives and friends.

Reality is often quite different: school sanitation facilities are insufficient, with inadequate number of toilet seats for girls and boys, interrupted water and power supply, poor cleaning and maintenance and lacking of drinking water. Especially girls suffer, which in many cases leads to not attending school, by the time they reach puberty.

Challenges faced

Difficulty to **find skilled plumbers** who were able and willing to work in schools in under-served areas.

When it comes to providing sanitation facilities as per the official standards, many school authorities **lack responsibility and ownership**.

What was done?

The National School Sanitation Initiative (NSSI) was launched in April 2011 by MoUD, Ministry of Human Resource Development (MoHRD), Central Board of Secondary Examination (CBSE) and GIZ to effectuate a quantifiable achievement in the provisions and practices of school sanitation in the country. Under NSSI all schools are requested to focus on different aspects of sanitation. Additionally the schools have to register on http://www.schoolsanitation.com and answer questions related to the current school sanitation situation. As a result, schools receive a rating in five different colour categories (from "red" – "Grim – needs immediate action" to "green"= "Excellent! Keep it up!") and learn how to improve according to the NSSI standards. The online-rating is available for all.

Considering that especially schools in underserved urban areas often do not have sufficient funds and the space to improve sanitation facilities according to NSSI standards on short notice, GIZ and its cooperation partners ESF and SACH started a special school sanitation project. The objective of these activities was to enable the schools to significantly improve upon their sanitation conditions, even with small funds, leading to hygienically safe operated toilets.

The sanitation situations was assessed by means of a benchmark indicator developed for measuring "hygienically safe operated toilets" in 47 selected schools across 5 cities (Delhi, Raipur, Shimla, Tirupati and Vasai Virar). Jointly with each

Lessons learnt

States and cities should provide a formalized training on school sanitation for plumbers. Certified plumbers should be registered with the respective Municipality and schools, especially for schools in under-served areas that struggle to find plumbers.

Regular monitoring, supervision, evaluation and incentives for change are required to ensure schools taking accountability for their sanitation situation.

school, “School Action Plans” were developed, detailing the necessary refurbishments of the sanitation facilities and the adequate trainings for teachers and students. The efforts to improve school sanitation in Raipur, Shimla and Tirupati were linked to the CSP implementation.

What change envisaged?

The project succeeded in improving the sanitation situation for 21,000 students from across 47 participating schools, all located in underserved areas. The students and about 150 teachers have been sensitized through i.e. daily interactions, improved facilities as well as events and workshops with representatives from Urban Local Bodies. It was demonstrated that “hygienically safe operated toilets” could be achieved through improved Operation and Management, small funds and behavioural change. Cities like Tirupati are currently trying to upscale this initiative as well as the “School Action Plans” to schools across the whole city.

4.5 A Clean Toilet in a Day, Keeps the Doctor Away

Planning, operating and managing citywide public toilet facilities in Tirupati

What was the problem?

Pilgrim cities like Tirupati have to provide its residents and large visiting population access to clean public toilets. Yet, many public facilities are poorly maintained or even non-accessible. With a household toilet coverage of more than 90% in the corporation area (when CSP was prepared), Tirupati still continues to have pockets where open defecation persists. This is due to the lack of adequate public toilet facilities in the city for its residents as well as floating population. Especially slum areas have comparably low community toilets coverage. Yet, they could benefit most from public toilet access.

Challenges faced

Weak contracting modalities and documentation.

Service provision not directed to meeting needs of women, children and differently abled persons

Absence of service standards for design, construction and maintenance as well as non-availability of suitable documentation

What was done?

Through the project, GIZ supported Tirupati Municipal Corporation to develop a citywide management for public toilets incorporating asset management systems, financial sustainability and strong service delivery performance.

The pilot focused not only on asset creation but on developing a comprehensive management system in cooperation with private partners, adequate financial operating plans, demand-orientation and useful applications for monitoring and evaluation. It also puts focus on accessibility of toilets especially for women, children and physically challenged population.

Five pilot facilities in different parts of the city have been established to test and demonstrate the suitability of the management model(s), before upscaling them across the city.

What change envisaged?

The project is on course for setting-up an effective financial and operational management systems for public toilets and clear institutional responsibilities. A financial operating model for each public toilet facility improves the service providers/operators understanding on toilet operations, options for cost recovery through toilet clustering and appropriate contractual modes. The asset management system with a mobile application has already simplified the reporting and monitoring, which is being done by city officials, operators and users. The citywide management plan outlines all aspects from planning to management, outreach for various types of users as well as a roadmap to increase the public toilet infrastructure over the next 3 years.

With a clear management and financing structure in place, the construction of 5 public facilities will directly benefit 2,300 people who can access the service. Having access to public toilets will significantly decrease open urination and defecation and indirectly reduce ground water pollution through the safe disposal of wastewater. In the long run, the process set forth is expected to meet the basic needs of the people of Tirupati Municipal Corporation (about 375,000 residents and a floating population of atleast 65,000 people on peak days) regarding safe and clean public toilets.

Lessons learnt

Gender perspectives needs to be an integral part in every step of the project (from sensitization and planning to implementation and monitoring). Introducing it half way is insufficient.

A **citywide management model** is a big and time-consuming endeavor that **should be broken down into short and medium term targets.**

Existing public toilet facilities in Tirupati

4.6 Bigger is Not Always Better

Examples of local, small-scale and decentralized wastewater treatment systems

What was the problem?

Many Indian cities have chosen to build a city wide centralised conventional sewer system under JnNURM. Under certain conditions, i.e. high population density, low ground water levels, etc. centralised sewerage systems can provide considerable advantages in taking care of urban wastewater. Yet, such systems are not suitable to all situations and at all times for all areas of cities. Non-conventional approaches, which start with a smaller catchment area, are useful alternatives that are more than a simple bridge-over solution until a centralized system is put into place.

Challenges faced

The operation of decentralized, small-scale treatment systems is more difficult than their construction. The pilots have shown that cities are able to manage one or two plants but would require a **full-fledged management and operational model** with i.e. private sector engagement when upscaling decentralized solutions.

What was done?

GIZ supported its partner cities in identifying different areas and situations where decentralized, non-conventional approaches are the most suitable. Concepts have been developed and implementation of one the project completed.

Hilly terrain: Shimla's hilly terrain makes it partly impossible to connect certain areas to the central sewer by mere gravity. The Decentralized Waste Water Treatment System (DEWATS), promoted by the German NGO BORDA, has been designed to provide unconnected households from police colony the opportunity to safely discharge their wastewater. Moreover the treated wastewater can also be reused for non-contact applications in the downstream, thus, reducing the pumping requirement of freshwater.

Lake areas: In Raipur a DEWATS system was planned in the catchment area of Bandhwa Lake. The decentralized system will be integrated into the eco-system of the lake. Besides, treating the wastewater of 171 households, thus, reducing the pollution of the surface water, it will use the natural cleansing capacity of the lake and maintains its water level during the dry season.

High-density slum settlement: Raipur is also attempting to use a decentralized option for wastewater treatment in a high-density slum settlement that cannot be connected to the centralized sewer system in any time soon. This project is still in its fledgling stage. This is due to the fact that the development of innovative sanitation solutions in areas where property rights and right of access to services are not completely clear, require more time and effort.

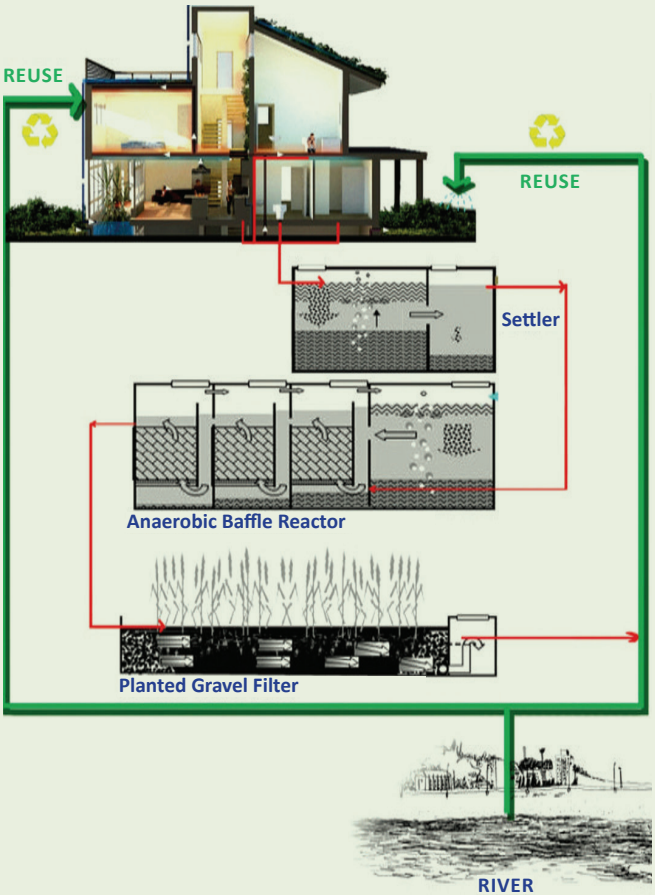
What change envisaged?

The pilots demonstrate effective alternatives to central sewerage systems, suitable for areas where the wastewater of households cannot be treated due to various reasons. It provides cities with small and fast decentralised solutions rather than having to wait for large-scale sanitation projects.

Involved decision-makers at the city level have significantly changed their perception. They moved away from unfeasible large-scale projects merely motivated by wanting to attract investment and prestige to accepting suitable small scale alternatives encouraged under NUSP. This is important, since it is a first step to putting an end to resources being wasted in unfeasible and unsuitable projects and providing inclusive locality-apt solutions.

Schematic of standard decentralised wastewater treatment system

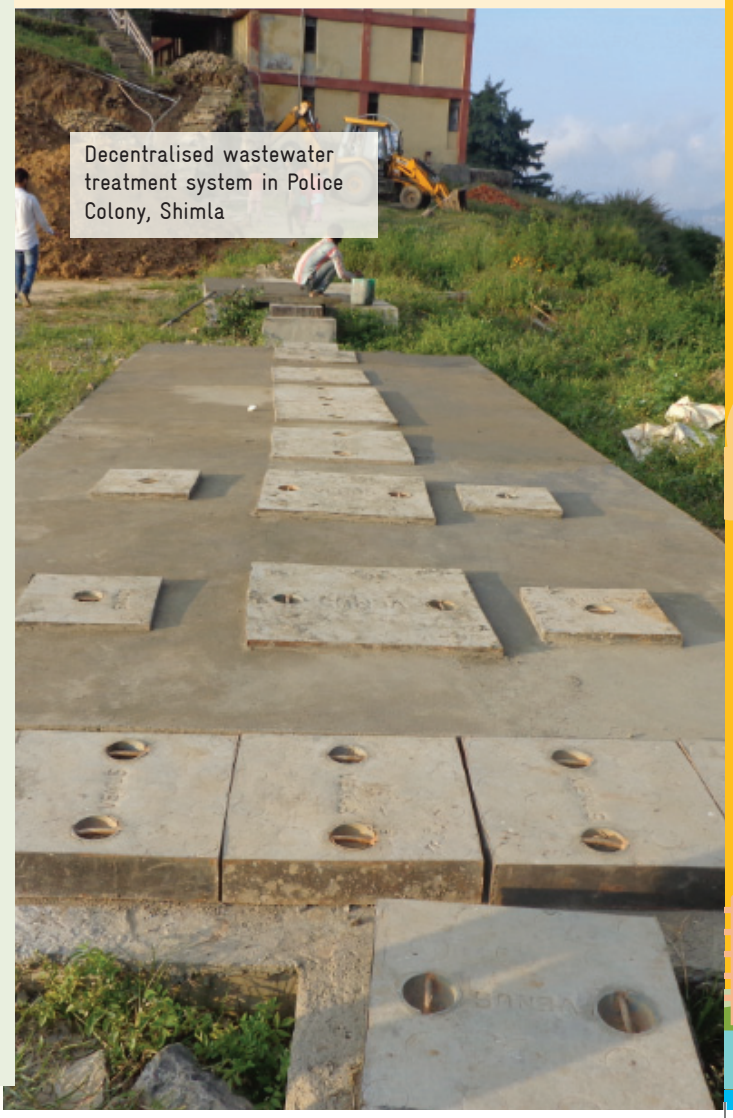
(Source of the diagram: CDD Society)



Lessons learnt

Successful pilots are a good way to convince decision makers on the suitability of non-conventional decentralized wastewater treatment systems.

In a country like India, small-scale solutions are only convincing when they can be **upscaled and replicated** in multiple contexts.



Decentralised wastewater treatment system in Police Colony, Shimla

5. WAY FORWARD

Follow-up Project (SNUSP II)

Next Steps and Strategy – Upscale SNUSP

The follow-on project – SNUSP II (2014-2017)

The activities of SNUSP I came to an end in March 2014 but the engagement of GIZ as implementing agency of the German Federal Ministry for Economic Cooperation and Development in the urban sanitation sector is strong as ever.

Based on the knowledge, experience and insights of SNUSP I, a follow-up GIZ project "Support to the National Urban Sanitation Policy II (SNUSP II) was conceptualized focusing on up-scaling sanitation planning processes and concrete solutions.

It is a priority of the Ministry of Urban Development (MoUD) of India to make workable solutions available to many more cities and states in India, in order to achieve 100% sanitized, healthy and liveable cities in a country as big and diverse as India. Government of India and MoUD have made sanitation a national political priority and initiated additionally to the National Urban Sanitation Policy, the mission of "Swachh Bharat Abhiyan" (Clean India Mission).

The main objectives of this mission, amongst others, are:

a) Eliminate open defecation.

(b) Conversion of insanitary toilets to pour flush toilets

(c) Eradication of manual scavenging.

(d) 100% collection and scientific processing/disposal/ reuse/recycle of Municipal Solid Waste.

The new project of GIZ understands this political momentum as a great opportunity and will pro-actively connect to these additional priorities for sanitation planning and implementation in India.

SNUSP II for example chose the development of city-wide and gender-sensitive systems and management models for public toilets as one of its priorities. For this the ground-level experience collected in SNUSP I in Tirupati (see Case study: A toilet a day, keeps the doctor away) will be used for up-scaling to state and national level. Training programmes for capacitating city and state level officials will be organised.

Two more insights from SNUSP I shaped the design of the follow-up project:

- **The state plays a crucial role**

  For reaching a maximum number of cities, especially small and medium towns, with regard to knowledge and capacity building on sanitation planning and implementation, the state has to play an active role. The State Sanitation Strategy is the crucial planning tool to do so. Therefore SNUSP II will keep on fostering the development of SSS. States need to support cities through different mechanisms (help desks, financial models, handholding, etc.) to develop and implement their own City Sanitation Plans. Under SNUSP II GIZ will support selected states in taking up these tasks and strengthening their role in facilitating the urban sanitation sector.

- **High-quality CSPs and DPRs for everyone**

  The approach for developing and stepwise implementing CSPs under SNUSP I proved to be valuable for establishing a professional sanitation

management system in cities. Many more cities beyond the five partner cities under SNUSP I need to be aware and capacitated for using CSPs for planning their sanitation services and for the preparation of Detailed Project Reports as main implementing tool for such plans using innovative and context-adequate technologies.

The learnings and tools developed during this process will further support MoUD in facilitating up-scaling of meaningful SSSs and CSPs pan-India.

With SNUSP II MoUD and GIZ seize the current window of opportunity, the high public interest in sanitation and the Mission of Swacch Bharat Abhiyan to promote sustainable planning and ground-proven solutions to the sanitation challenges in Indian Cities.

ABBREVIATIONS

AP	Andhra Pradesh
BMUB	Bundesministeriums für Umwelt, Naturschutz, Bau und Reaktorsicherheit (Federal Ministry for the Environment, Nature Conservation, Building and Nuclear Safety)
C&DMA	Commissioner and Director Municipal Corporation
CBO	Community based Organisation
CBSE	Central Board of Secondary Education
CDP	City Development Plans
CLUES	Community-led Urban Environmental Sanitation
CoC	Corporation of Cochin
CSP	City Sanitation Plan
CSTF/CTF	City Sanitation Task Force
cu.m	Cubic meters
DEWATS	Decentralized Waste Water Treatment System
DPR	Detailed Project Report
DUD	Department of Urban Development
ESF	Ecosanservices Foundation
GIZ	Deutsche Gesellschaft für Internationale Zusammenarbeit GmbH (German International Development Cooperation)
GoI	Government of India
HH	Household
HP	Himachal Pradesh
IGEP	Indo-German Environment Partnership Programme
JnNURM	Jawaharlal Nehru National Urban Renewal Mission
MoHRD	Ministry of Human Resource Development
MoHUPA	Ministry of Housing and Urban Poverty Alleviation

MoUD	Ministry of Urban Development
NAPCC	National Action Plan on Climate Change
NGO	Non-Government Organisation
NMC	Nashik Municipal Corporation
NMSH	National Mission on Sustainable Habitat
NSSI	National School Sanitation Initiative
NUSP	National Urban Sanitation Policy
O&M	Operation & Maintenance
PoA	Plan of Action
RAY	Rajiv Awas Yojana
RMC	Raipur Municipal Corporation
SACH	Society for Action in Community Health
SFCPoA	Slum Free City and Plan of Action
SLB	Service Level Benchmarking
SLSC	State level Sanitation Committee
SNUSP	Support to the National Urban Sanitation Policy
SSS	State Sanitation Strategies
STP	Sewage Treatment Plants
SWM	Solid Waste Management
TAC	Technical Advisory Committee
ULB	Urban Local Bodies
UNICEF	United Nations Children's Fund
URIF	Urban Reform Incentive Fund
WHO	World Health Organization

DEFINITIONS

Urban Poor	Population below poverty line in India is defined as anyone with a daily consumption and expenditure less than Rs.32 per day in urban areas.
Pour flush toilet	A *pour flush toilet* is like a regular *cistern flush toilet* except that the water is poured in by the user, instead of coming from the cistern above. When the water supply is not continuous, any *cistern flush toilet* can become a *pour flush toilet*.
Slums	Under Section-3 of the Slum Area Improvement and Clearance Act, 1956, slums have been defined as mainly those residential areas where dwellings are in any respect unfit for human habitation by reasons of dilapidation, overcrowding, faulty arrangements and designs of such buildings, narrowness or faulty arrangement of streets, lack of ventilation, light, sanitation facilities or any combination of these factors which are detrimental to safety, health and morals. Three types of slums have been defined in Census 2011, namely - Notified, Recognized and Identified.
Statutory Town	All places with a municipality, corporation, cantonment board or notified town area committee are known as Statutory Towns. These towns are notified under law by the concerned State/UT Government and have governing local bodies.
Census Town	All other places which satisfy the following criteria: i) A minimum population of 5,000; ii) At least 75 per cent of the male main working population engaged in non-agricultural pursuits; and iii) A density of population of at least 400 persons per sq. km. Census town are administered via rural administrartion.
Class I cities & Class II towns	Class I cities have a population of 100,000 and above. Class II towns have a population of 50,000 to 99,999. The Census 2011 counts 468 class 1 cities.
MLD	Equals one Million Litre per Day. This is equal to 1000 cubic meter. Million litre is used in India context whereas cubic meter is used in Germany.

Wards	An administrative division of a city or borough that typically elects and is represented by a councillor or councillors.
Sanitation	Safe management of human excreta, including its safe confinement, treatment, disposal and associated hygiene-related practices.
Urban Local Bodies (ULBs)	ULBs have been recognized under the 74th CAA as self-governing bodies responsible for the delivery of sanitation services among others at the city level. CSP places ULBs at the centre of the strategic sanitation planning while ensuring the participation of elected representatives and relevant stakeholders. This ensures ownership and coordination.
Water utility	Institution that provides services, mechanisms and processes like water supply facilities, management and services. Depending on the institutional model, the service provider can be the Urban Local Body, a state department, a separate parastatal unit or a private company, all having a contract with the city/state.

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