

**Strategy Paper on
Improving Urban Water and Sanitation
Services in Kathmandu Valley**

**Sub-Regional Workshop on Urban Water and Sanitation
Services in South and South-West Asia**

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Content

- Introduction – 2030 Agenda and objectives
- State of urban water and sanitation facilities in Kathmandu Valley – state & effect and existing programmes
- Policies, laws and institutional arrangement – relevant policies, strategies, plans, laws, guidelines, key institutions, challenges and opportunities
- The Strategy – goals and objectives, guiding principles, key strategies, strategies for 2030 Agenda, and priority actions
- Strategy implementation arrangement – institutional strengthening, partnership, means of implementation, monitoring and implementation approaches

Introducing the Need for Strategy

Introduction

- In Nepal, nearly 84% and 81% have access to structures for drinking water and sanitation
- In Kathmandu Valley, 98% have access to sanitation, 99% toilets and drinking water shortage exists in urban areas
- 30% of total urban population is linked to sewer lines and 48% with septic tanks
- Inadequate waste collection facilities, and draining of untreated liquid wastes into rivers accelerated problem
- Continued emphasis exist on sanitation, ODF and conservation of drinking water sources to achieve SDG6
- 3 Global efforts in 2015 – Sendai Framework on DRR, SDGs and Paris Agreement, and in 2016 – Habitat III conference

2030 Agenda for SD

- Nepal participated in deciding SDGs – 17 goals & 169 targets
- *Goal 6: Ensure availability and sustainable management of water and sanitation for all* – 6 targets related to access, quality, efficiency, process/IWRM, conservation + 2 Mol (capacity building, and participation of local communities)
 - By 2030, achieve universal and equitable access to safe and affordable drinking water for all
- *Goal 11: Make cities and human settlements inclusive, safe, resilient and sustainable* - 7 targets related to access (to housing and basic services), inclusiveness, safeguarding, and reduction (environmental impacts of cities)+ 3 Mol (supporting SD pillars, + DRR, and LDCs)
 - By 2030, ensure access for all to adequate, safe and affordable housing and basic services and upgrade slums

Sustainable Urban Development (SUD)

Quito Implementation Plan for New Urban Agenda

- “We commit to **promote conservation and sustainable use of water** by rehabilitating water resources within the urban, peri-urban, and rural areas, reducing and **treating waste water**, minimizing water losses, promoting water reuse, and increasing water storage, retention, and recharge”
- NUA reaffirms commitment for SUD which includes the interlinked principles of **urban resilience, disaster risk reduction, and climate change mitigation/adaption**.
- NUA commits to promoting, *inter alia*, equitable and affordable access to **safe drinking water and sanitation** ...
- NUA calls for working to 'equip public water and sanitation utilities with the capacity to implement sustainable water management systems' ... and supporting **decentralized decision-making on sustainable waste management systems**.

Challenges

- Constitution of Nepal (2015) categorised the country into – Federation, 7 States and Local Levels
- In March 2017, Local Levels were categorised into 744 with 4 Metropolitan Cities, 13 Sub-Metropolitan Cities, 246 municipalities and 481 Village Municipalities & 6680 wards
- In Nepal, municipalities are *de facto* urban areas that meet minimum criteria on population, infrastructure & revenue
- Kathmandu Valley has over 2.4 million population
- Valley has **2 Metropolitan Cities and 16 municipalities**
- Valley is facing 'capital-centric' unplanned investments, in-migration, pollution load, inadequate water and sanitation facilities and increased 'inaction over realised challenges'
- **Need to address water and sanitation challenges**

Objective of the Study

- **Assess** the state of water supply and sanitation facilities in Kathmandu Valley;
- **Identify key challenges, and explore opportunities** in managing scarce water, its resources and improving sanitation facilities by addressing relevant SDGs, and NUA;
- Document successful interventions, gaps and needs; and
- **Propose strategic actions** with provisions for capacity building, use of appropriate technologies, and possible funding sources

Outputs

- Knowledge generation and updates on water and sanitation facilities in urban areas of Kathmandu Valley;
- Enhance understanding on SDGs (11 and 6) and relevant elements of the NUA; and
- **A strategy document** on water and sanitation facilities.

Methodology – review and consultations

Urban Water and Sanitation Facilities in Kathmandu Valley

Water and Sanitation Facilities

- 72% of households have access to piped drinking water
- Water demand is met from tanker service, stone spouts, public wells, taps and jars
- Stone taps and shallow tube well are drying-up rapidly and groundwater extraction exceeds recharge
- Exist high level of water contamination/pollution
- Over 400 tankers are engaged in supplying water
- An average family consumes about 12,000 liters in dry season and 16,000 liters per month in wet season
- Melamchi water supply project is under construction to supply 170 MLD
- As per WHO, water requirement is 112 to 150 lpcd but average water supply and consumption is 35 lpcd in Kathmandu Valley, i.e., people obtain less than $\frac{1}{4}$ of water required

Urban Water and Sanitation Facilities (2)

Storm water

- Valley has good natural drainage but man-made poor surface drains and sewerage facilities
- About 400 surface drains linked with sewerage & directly connected to river system, flooding during rainy season
- By 2015, 1190 km of sewers constructed, 79 km blocked, 52,171 manholes with 28 % unopened, of opened manholes (72%), 7% **blocked and non-functional**

Wastewater

- Domestic and industrial wastewater are discharged to river system **without any treatment**
- 5 wastewater treatment plants and **1 functional** at present
- About 35 DEWATS constructed in Valley and only 18 used

Urban Water and Sanitation Facilities (3)

Faecal sludge

- No practice to empty pits at regular intervals
- Once toilets start overflowing, faecal sludge is collected and disposed without treatment

Solid waste

- 1/3 (450 tons) is collected for recycling
- Over 60% of solid wastes are dumped along road/riverside
- Increasing problem of industrial, electronic and medical wastes experienced
- People are willing to **pay extra money for better service**
- Handling of construction wastes and earthquake wastes has been the additional problem

Major Projects and Practices in Kathmandu Valley

- Water Supply Improvement Project
- Wastewater Management Project
- Melamchi Water Supply Project
- Bagmati Improvement Project
- Bagmati River Basin Improvement Project

Practices

- How to **generate resources** at local level – Introducing integrated property tax to generate domestic resources (taxing land and building together based on total net valuation of property)
- **Eco-efficient infrastructure** – Sathya Sai Shiksha Sadan School
- **Generating electricity from municipal wastes** – 14kW from 3 tonnes of solid wastes (2500 CO₂-eq emission annually)

National Initiatives on 2030 Agenda

- All goals except Goal 14 (related to ocean) are important to Nepal's socio-economic development
- For SDG 6, **Nepal's targets for 2030** are:
 - 95 percent households with access to piped water supply;
 - 99 percent household with access to basic water supply coverage;
 - 90 percent population using safe drinking water;
 - 95 percent households using unshared improved sanitation facilities;
 - 98 percent population using latrines; and
 - All urban households that have toilets are connected to a sewerage system.

National Initiatives on 2030 Agenda (2)

- For SDG 11, **Nepal's targets for 2030** are:
 - Reduce multi-dimensional poverty to 11 percent in 2030 from 44 percent (in 2014);
 - Substantially reduce air pollution such as halve the concentration of TSP (averaging period 24 hours);
 - Prevent deaths and injuries from disasters;
 - Repair and rebuild by 2020 cultural heritage destroyed by earthquakes;
 - Limit the growth of urban populations to less than 2.5% by 2030 as compared to 3.4 percent in 2014;
 - All municipalities with sewerage services; and
 - All private hospitals to segregate wastes.
- Nepal's 2017 Review on SDGs don't cover SDGs 6 & 11
- Habitat III report focus on ODF, public toilets, treatments etc

Policies, Laws and Institutional Arrangement

Key Policies, Plans and Strategies

- National Urban Development Strategy, 2017
- Kathmandu Valley Strategic Development Master Plan (draft), 2016
- National Urban Water Supply and Sanitation Policy, 2014
- Groundwater Resource Management Policy, 2012
- Sanitation and Hygiene Master Plan, 2011
- Urban Water Supply and Sanitation Policy, 2009
- Nepal Water Plan, 2005
- Sustainable Development Agenda for Nepal, 2003
- Water Supply Sector Policy, 1998
- National Solid Waste Management Policy, 1996
- **Over 20 years of experience in formulating policies**

Major Policies

- Periodic policies – 14th Plan (2016/17 – 2018/19) for 3 years
 - implement 'one house one toilet policy' and construct public toilets;
 - promote rainwater collection and use, regulate groundwater extraction, and promote DEWATS and conservation of rivers;
 - continue sewerage management project in Kathmandu Valley, and construct & operate sanitary wastewater and treatment system to make the Bagmati River sewer free
- National Urban Development Strategy, 2017 emphasises on water security, safety and provisioning, sanitation, solid waste collection, sanitary landfill site, 3R (reduce, reuse and recycle) and establishment of solid waste management unit

Major Policies (2)

- Kathmandu Valley Strategic Development Master Plan (draft) (2015-2035)
 - improve wastewater management capacity;
 - maximise efficiency & effectiveness of existing sewer systems;
 - strengthen sewerage infrastructure and services;
 - prevent drinking water pollution; and
 - improve river water quality.
- Water Supply, Sanitation and Hygiene Sector Development Plan (2016-2030)
 - need for converging WASH activities **under a single ministry** by engaging multi-stakeholders
 - **post-disaster priority** of drinking water, sanitation and housing
 - Need for considering '**water as a commodity**'

SDP's 11 Themes

SDP Vision: 'improving public health and living standard of people through safe, sufficient, accessible, acceptable and affordable water, sanitation and hygiene services – any time, everyone and everywhere'

Themes

- a. access and utilisation
- b. functionality and sustainability
- c. innovation and technology adaptation
- d. ecosystem and water production
- e. WaSH governance, institutional set-up and capacity building
- f. WaSH diplomacy
- g. monitoring and evaluation
- h. continuous quality and service improvement
- i. diversity and inclusion
- j. WaSH in special situation
- k. sector financing

Key Guidelines and Framework

- Total Sanitation Guidelines, 2017
- Institutional and Regulatory Framework on Faecal Sludge Management, 2017
- Groundwater Extraction and Utilisation permit Guidelines, 2014
- Water Supply and Sanitation Cost-sharing Guidelines, 2013
- Drinking Water Service Operation Guidelines, 2012
- Urban Environment Management Guidelines, 2012
- Water Supply Service Operation Guidelines, 2012
- Water Supply and Sanitation Co-investment Project Implementation Guidelines, 2011

Constitutional Provisions

- Fundamental rights in the Constitution of Nepal (2015)
 - live in a clean and healthy environment
 - obtain compensation ... for any injury caused from environmental pollution
 - health and **access to clean drinking water and sanitation**
 - Powers related to conservation and multiple uses of water resources, human settlement and environmental adaptation rest with the Federal government
 - Powers on **basic health and sanitation, water supply, watershed protections, and disaster management** rest with Local Level
- Right to water and sanitation includes provision for **sufficient water; clean and safe water; accessible and affordable water and sanitation services and facilities**

Key Legislations and Standard

- Constitution of Nepal, 2015
- Nepal Water Supply Corporation Act, 2007
- Water Supply Management Board Act, 2006
- Local Self-Governance Act, 1999
- Town Development Fund Act, 1997
- Kathmandu Valley Development Authority Act, 1988
- Town Development Act, 1988
- Water Tax Act, 1966
- National Drinking Water Quality Standards, 2005
- **Parliamentary Committees** have necessary rights and responsibilities to instruct and issue directives & Parliamentary Committee on Environment Protection looks after water and sanitation issues

Key Institutions

Business Allocation Rules of Nepal (2015) – each ministry has specific roles and responsibilities

- Ministry of Water Supply and Sanitation established on 24 December 2015 formulates, implements, monitors, regulates and evaluates policy, plan and programme related to drinking water, sanitation and sewerage
- Ministry of Urban Development
- Ministry of Federal Affairs and Local Development
- Ministry of Health
- Ministry of Population and Environment
- Department of Water Supply and Sewerage
- Department of Urban Development & Building Construction
- Department of Health Services
- Department of Environment

Organisations in the Valley

- Kathmandu Valley Development Authority
- Kathmandu Valley Water Supply Management Board
- Kathmandu Upatyaka Khanepani Limited (KUKL)
- High Powered Committee for Integrated Development of Bagmati Civilisation
- Project Implementation Directorate
- Melamchi Drinking Water Development Committee,
- Local Levels – 2 Metropolitan Cities and 16 Municipalities

- Water User Associations and Sanitation Committees
- Municipality Association of Nepal
- Federation of Drinking Water and Sanitation Users Nepal
- Private sector – provides water from tankers & collects waste
- Development partners supporting field level activities
- Coordination mechanism – Municipality Level Committee

Challenges and Opportunities

- Implementation challenges
- Non-compliance of policies and programmes due to low budget
- Realisation after construction of infrastructures – repeated '**cycle of construction-demolition-construction**'
- 'Shifting the responsibility'
- Non-functioning of facilities
- Increased number of poor peoples
- Access, functionality and sustainability of services/project-driven modalities
- Coordination – perennial challenge or 'supremacy syndrome'
- Opportunities – high level of realisation, elected bodies in place



The Strategy for Urban Water and Sanitation

Vision, Goal and Objectives

- **Vision:** provide everyone safe water and sanitation in Kathmandu Valley by 2030
- **Mission:** improve access to safe water, sanitation, hygiene and affordable housing

Goals

- provide equal access to safe water and improved sanitation facilities;
- also provide affordable and resilient housing with wastewater and faecal sludge management facilities;
- conserve traditional and groundwater sources; and
- strengthen resource mobilisation with non-polluting technologies and enhanced institutional & individual capacity
- **Objectives:** avail adequate and safe drinking water, improve water use efficiency, adopt 3R practices by ensuring wastewater and faecal sludge management, and conserve traditional & groundwater resources

Specific Objectives

- Effectively **implement existing policies, plans, standards, guidelines and frameworks** on management of water and sanitation for all, and provide safe and affordable housing;
- **Integrate** safe water supply and sanitation facilities in new policies, programmes and activities to reduce health implications from water-borne and sanitation and hygiene related diseases;
- **Ensure compliance** with national standards on water quality and basic sanitation and housing norms;
- **Explore and access** domestic and international **financial resources** and **build institutional and individual capacity** to manage solid wastes, wastewater and faecal sludge, and conserve water sources; and
- **Align** development of water supply and sanitation facilities with **SDGs 6 and 11 and New Urban Agenda**.

Guiding Principles for the Strategy

- Encourage municipalities to **prepare and implement local sustainable development agenda** to address city concerns;
- **Explore opportunities to integrate** safe water supply and sanitation facilities in new policies for urban areas;
- **Encourage municipalities to integrate** provisions for safe water, wastewater and faecal sludge management and conservation of surface and groundwater in permit (license) of multi-storey commercial, industrial and residential buildings;
- Promote multi-stakeholder participation in selection, design, implementation and monitoring and **help government to take overall leadership** and report to KVWSB;
- **Explore, access and mobilise** domestic and international resources for 'hardware' interventions; and
- **Develop standard operational procedures** and orient/train local level technical staff in using such procedures.

1. Implementing existing instrument (policies, strategies, plans and programmes)

2. Integrating SDGs into local plans and programmes

3. **Localising SDGs**
Local Sustainable Urban Development Agenda (LSUDA)

Key Strategies

4. Creating Incentives

8. **Means of Implementation**

7. Strengthening infrastructures

6. Promoting data generation and monitoring

5. Pricing water and sanitation services

A. Implementing existing instruments

- Including 'budgeted' activities into annual programme of municipalities and implementing with active participation of water users and sanitation committees, and relevant multi-stakeholders where appropriate;
- Facilitating implementation and monitoring of target specific programmes and projects;
- Promoting operation of all wastewater treatment plants and establishing new ones;
- Promoting, scaling up, and/or replicating bio-methanisation (production of methane gas from solid wastes); and
- Regulating groundwater extraction and conserving surface water sources.

B. Integrating SDGs into local plans and programmes

- **Integrating** safe water and sanitation facilities into plans and programmes, including in annual programme of municipalities;
- **Integrating sanitation safety plan** into municipality plan and programme;
- **Integrating** rainwater harvesting, water purification, DEWATS, faecal sludge management and groundwater recharge options into plans and programmes of municipalities and implement them; and
- **Integrating** RWH, DEWATS, and groundwater recharge provisions into construction approval of **multi-storey multi-purpose buildings** (3 in one such as recreation, apartment & commercial mall), housing complex & corporate building.

C. Localising SDGs

- Preparing and implementing local sustainable urban development agenda (**LSUDA, Kathmandu Agenda**) on water supply and sanitation in line with SDGs 6 & 11 and New Urban Agenda to promote '**waste to energy**', faecal sludge management, wastewater treatment, rainwater and solid waste management, and conservation and recharge of water bodies, including groundwater;
- Allocating x percentage of **grant money** from central government for implementation of Kathmandu Agenda;
- Encouraging Metropolitan Cities and Municipalities to allocate x percentage of **domestic resources** for implementation of Kathmandu Agenda; and
- Preparing and publishing annual report on state of implementation of Kathmandu Agenda.

D. Creating incentives

LSUDA to consider to:

- Developing and implementing **economic instruments** to promote participation of private sector and CSOs in WSSS;
- **Incentivising municipalities** in conserving water sources, and in implementing DEWATS, wastewater treatment plants and faecal sludge management facilities;
- **Incentivising municipalities** for provision of water and sanitation facilities to poor & marginalized communities;
- **Recognising and awarding** private sector, NGOs and CSOs and individuals promoting WSS facilities, conserving water, and reutilising domestic wastewater; and
- Providing **concessional financial resources** to and enhancing capacity of multi-stakeholders engaged in water supply, sanitation and hygiene facilities.

E. Pricing water and sanitation services

- Adopting a policy to promote 'zero waste' of water and enacting or amending legislation to ensure 'water and sanitation services' as 'commodity';
- Introducing scientific approach of tariff setting for sanitation facilities;
- Fixing 'reasonable price' with better provisions for piped water (for any use) and sanitation and hygiene services;
- Promoting eco-efficient infrastructure construction and providing subsidies for safe water and sanitation facilities, in particular RWH, wastewater treatment plants, faecal sludge management, and conservation of traditional water sources and groundwater; and
- Ensuring operation and maintenance for regular supply of safe water and sanitation services.

F. Promoting data generation and monitoring

- **Mapping traditional water sources** (important wells, spouts, and ponds), groundwater sources, groundwater recharge zone(s), wastewater collection and treatment plants, solid waste management sites and/or faecal sludge storage or discharge site(s);
- Developing **GIS supported data base** and status map on water supply and sewers with clear locations on joints and manholes; and
- **Assessing periodic change** in water demand, wastewater quantity, including faecal sludge and hydrology data.

G. Strengthening infrastructures

- Installing shallow and deep tube wells and building water harvesting tanks and reservoirs (**water storage facilities**);
- **Using technologies** to clean wastewater (combine/hybrid) and women/gender-friendly eco-san (ecological sanitation) public toilets; and
- **Promoting technologies for energy generation** (biogas) from wastes, DEWATS, and RWH (roof top water harvesting) at public and commercial multi-storey buildings and at individual household.

H. Means of implementation

- Expanding mandate for **collaborative and cost-sharing efforts** for WSS infrastructures and their operations;
- **Increasing investment** in drinking water, sewers and drainage infrastructures;
- Developing a system for **tracking, monitoring and reporting** implementation of agreed activities;
- Increasing capacity of responsible agency for WSS to provide **technical support to municipalities** in constructing and operating sanitation-related interventions;
- Promoting use of affordable **RE operated eco-efficient technologies** such as RWH, DEWATs and groundwater recharging;
- **Promoting partnership arrangement** for timely delivery of safe and quality WSS facilities with CB sharing approaches; and
- Collecting and **sharing good practices** on knowledge, technologies and operational procedures through MIS.

Relevant strategies for 2030 Agenda

- Expanding coverage of safe, and adequate and appropriate piped drinking water and **women and children-sensitive WSS facilities**;
- Using RWH and groundwater recharge for adequate water supply;
- **Promoting 3R technologies** and discharging only treated wastewater into river system;
- Supporting and strengthening effective **participation of local communities** in improving WSS and using resources efficiently;
- Promoting access to safe and affordable housing and basic services and enhancing sustainable human settlement planning;
- Assisting local communities in **building adaptive capacity and resilience to disasters**, and in managing municipal & other wastes;
- Strengthening **domestic resources and mobilising additional financial resources** for safe WSS facilities and human settlements;
- Enhancing capacity to prepare & implement SDGs and NUA; and
- Encouraging and promoting effective **public-private and civil society partnerships**, building on experience and resource sharing

Priority actions for strategy implementation

- **Identify existing theme-based actions** as included in relevant policies and programmes and include in annual programmes of municipalities along with budget and human resources;
- **Integrate and implement** RWH, water purification, 3R, DEWATs, faecal sludge mgmt and groundwater recharge into municipality programmes;
- Ensure that construction **permit of multi-storey public and commercial buildings** has provisions for RWH, groundwater recharge and DEWATS;
- **Prepare and implement LSUDA** with full participation of all municipalities and relevant multi-stakeholders;
- Conduct a study 'water and sanitation services' as 'commodity' to develop a mechanism for pricing;
- Generate and share knowledge and lessons learned, and build/enhance capacity of the service providers;
- Include water and sanitation services in **municipality's performance review criteria for annual grant scheme**; and
- Support municipalities to **access funding** from different sources to implement LSUDA.

'Supportive' activities

- Conserve surface and underground water sources, mainly watersheds through collaborative efforts for **inter State and inter-municipality inter-basin**;
- Promote **public-private-civil society-academe partnership for financing and technical support** on WSS infrastructures;
- Locate, conserve and revive traditional sources of water;
- Promote municipalities to construct and maintain **public toilets** at appropriate places (with RE), and generate biogas;
- Ensure implementation of DEWATs, ecosan toilets and reuse treated water for recharging rivers;
- Replicate 'waste to energy' initiatives;
- Implement **waste segregation** at source and impose tax for non-compliance, & adopt 3R approach, including composting;
- Classify slum dwellers and squatter settlements for WSSS.

Barriers and opportunities

- Implementing existing instruments through 3 tiers – Federal, State and Local Level;
- Constitutional rights of Federation, State and Local Levels;
- Differing priorities of municipalities on river flow and pollutants;
- Funding and capacity for quality water and sanitation infrastructures e.g. drinking water and wastewater; and
- Pricing water & sanitation services, and cost- and benefit-sharing

Opportunities

- Issues and challenges better realised;
- High level of political commitment (election manifesto – one poor family: one free tap water, make rivers pollution free, discharging treated wastewaters etc.) – possible 'better partnership' and multi-stakeholders' participation;
- Dedicated institutions such as KVDA, KVWSMB, KUKL & HPCIDBC
- LSUDA an opportunity to advance political commitment

Strategy implementation arrangement

Institutional strengthening

- of Valley focused institutions
- Functional coordination
- Reviving coordination committees
- Enhancing capacity of municipalities
- Reporting to PCs

Monitoring and Evaluation

- Change the gear
- Change the direction

Partnership arrangement

- Translating election manifesto into action
- Within and between municipalities and multi-stakeholders
- Triangular partnership – public, private and civil society

Implementation Arrangement

Means of implementation

- Fund generation & mobilisation (tax, service fee, cost sharing, use and pay etc)
- Technology use (affordable and efficient technologies, from Technology Bank)
- Capacity building/enhancing – develop and use knowledge-based 'cadre'
- Systemic issues – revitalising coordination, in-built mechanism, ICT/e-governance etc

Implementation approach

- Encourage each municipality to select municipality-specific target-oriented activities and include in annual plan with budget and responsibility;
- Organise orientation to inform decision-makers, and build and/or enhance capacity at working level;
- Promote regular interaction and consultation to support for local planning process, address inter-State/municipality concerns, and build/enhance capacity;
- Establish and/or strengthen a section in each municipality to look after water and sanitation aspect; and
- Encourage MoUD to jointly prepare LSUDA for Kathmandu Valley in collaboration with Valley focussed institutions and municipalities to address SDGs and NUA.

