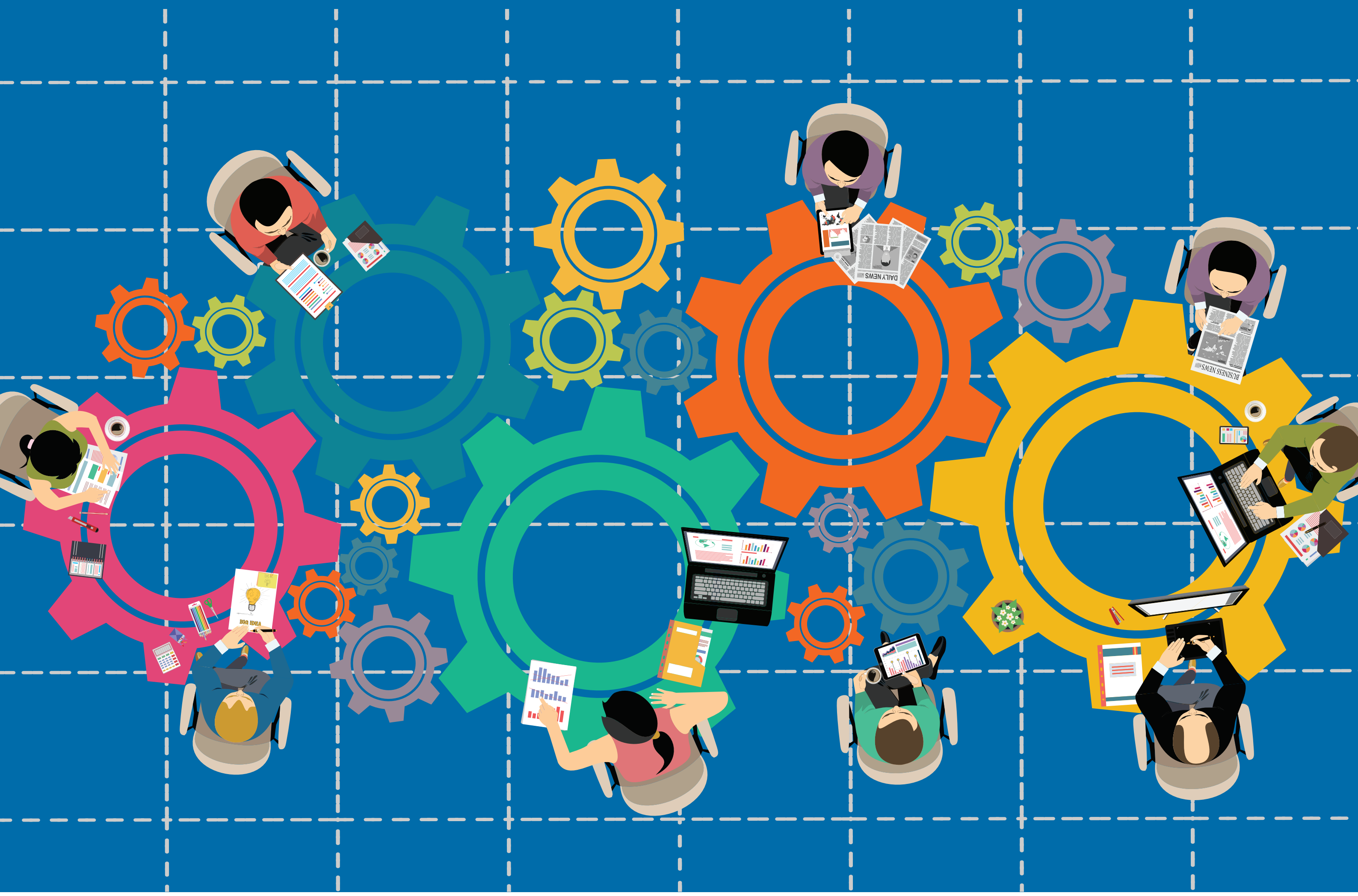
Integrated Urban Water Management Planning and Implementation in Rajasthan

TRAINING MODULE



Global Water Partnership South Asia

India Water Partnership

ICLEI Local Governments for Sustainability

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Introduction

Water forms the basis for all life; it is a resource that requires a regulatory and strategic outlay for its management, distribution and utilisation as it flows across boundaries and is a basic necessity for all. Traditional mechanisms of planning and management of water, wastewater and storm water as separate sectors without any coordination has led to institutional silos and a fragmented approach towards management of water. These business as usual approaches do not provide or strengthen the resilience required, especially at times when climate change threats are staring at our cities. The availability of water for cities in the catchment is shrinking due to land-use changes, demands for irrigation and energy, environmental degradation, climate change, and development of new urban settlements upstream. Often there is not enough water to satisfy all users.

This training manual on integrated urban water management (IUWM) planning and implementation is an initiative of IWP and ICLEI South Asia aims to strengthen integration of various sources of water and its uses to ensure a sustainable management of the available resources in the cities of Rajasthan. The objective of the project is to build the capacity of urban local bodies to undertake water sector reforms for closing the urban water loop by understanding the IUWM principles and approaches.

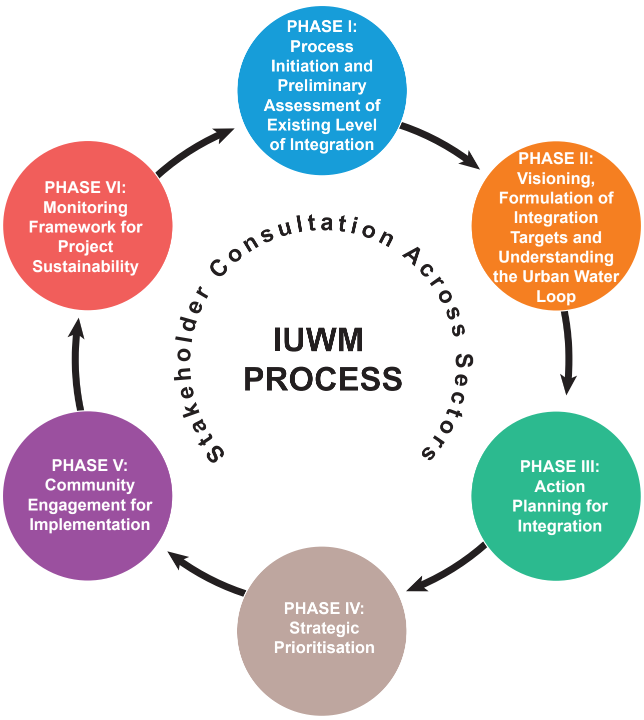
Objective

The training module aims to strengthen the skills of municipal officials to implement IUWM approaches for improved water security. It will help the officials understand the benefit of collaborative approaches, engage with the community to improve their awareness and participation in water management, and understand cross-cutting issues related to water resource management such as gender and social inclusion. The ultimate goal is to ensure sustainable planning and management of water resources at the local scale.

The IUWM Toolkit

The training modules are based on the Integrated Urban Water Management (IUWM) Toolkit for Indian Cities, designed by ICLEI South Asia in association with Flemish Cities and Municipalities (VVSG) and ICLEI European Secretariat. The modules are part of the European Union-funded project on Adopting Integrated Urban Water Management in Indian cities (AdoptIUWM). The IUWM toolkit is a step-by-step guidebook to plan and design integrated management strategies of urban water sectors (water supply, wastewater and storm water).

The IUWM Toolkit has 6 phases



Phase 1: Process Initiation and Preliminary Assessment of Existing Level of Integration

This phase helps cities to understand the existing level of integration among water, waste water and storm water sectors within the cities.

Phase 2: Visioning, Formulation of Integration Targets and Understanding the Urban Water Loop

The second phase helps the cities to formulate an IUWM-based Vision and to set Integration Targets to achieve this Vision. Urban Water Loop mapping exercise enables stakeholders to understand the flow of water to, within and from the city.

Phase 3: Action Planning for Integration

The third phase provides critical and potential areas for each Integration and identifies a long list of projects for implementation in the city.

Phase 4: Strategic Prioritization

The fourth phase helps to scrutinise the long list of projects for criticality, technical and financial feasibility, and for any inherent risk to select some of them for implementation as the IUWM Action Plan.

Phase 5: Project Detailing and Community Involvement

This phase helps to create an institutional framework for implementation of the IUWM Action Plan.

Phase 6: Community Ownership

This phase includes a tool that helps to define the roles and responsibilities of stakeholders and the O&M framework for the IUWM Action Plan.

Training Modules

Module 1: Conceptualising Integrated Urban Water Management

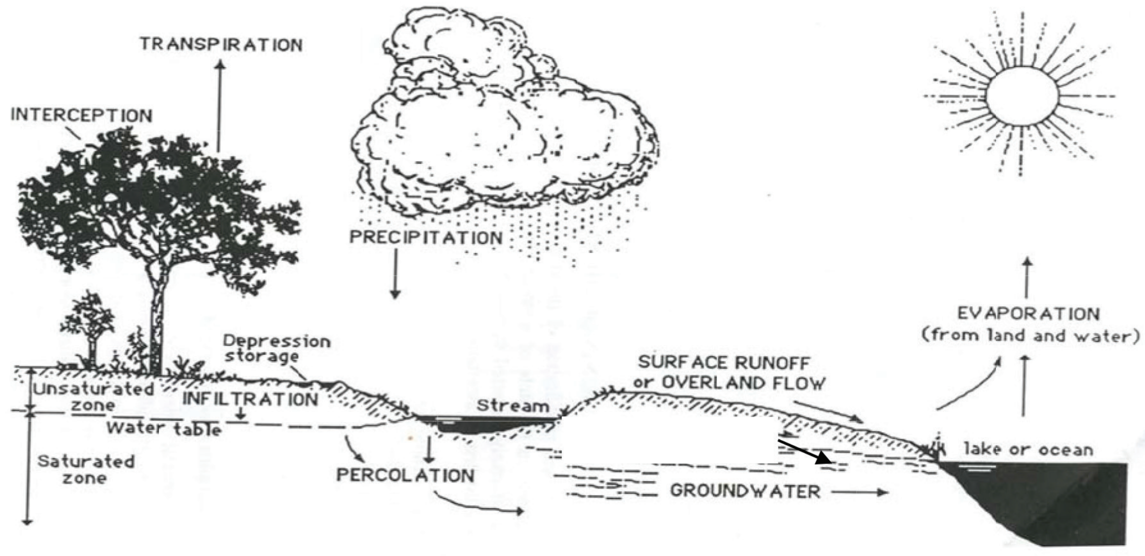
General Objective	Assessing the level of integration among water, waste water, storm water and other related sectors using the first integration assessment matrix tool.
Training Contents	Water as a resource and infrastructure, The Hydrological Cycle and Principles of IUWM
Exercise	City First Assessment Matrix
Methodology	Short Presentation, Group work, Q&A session
Intended Learning Outcomes	Well-developed understanding of the IUWM indicators, approaches and concept

Introduction

Water supply, wastewater and storm water can broadly be termed as the most significant components of the urban water cycle in cities across the world; and interlinkages exist within and across these sectors. The conventional centralised approach to management and planning does not address these interlinkages adequately and often deals with these sectors separately. The IUWM approach to management of water resources takes into account the interlinkages and uses them in a sustainable manner.

Hydrological Cycle

Water on the surface of the earth moves in a cycle from one form to another. Water is temporarily stored in streams, lakes, soil and groundwater, and is taken up for use by humans, plants, animals, etc. Heat from the sun evaporates water from the oceans and this water is carried by winds over continents in the form of clouds, leading to precipitation (rainfall/ snowfall) when conditions are favorable. Precipitation is intercepted by the vegetation cover (interception) or falls directly over land. As rain/snow falls on land, a part of it percolates into the ground to form ground water (infiltration) and some of it is retained in the soil by capillary forces. Once the infiltration capacity of the soil is exceeded or the soil store is full, water flows over the surface in the form of runoff and is stored in water bodies. Some moisture from these water bodies evaporates and re-enters the atmosphere as water vapour, while some amount of the water percolates to recharge the ground water. Stored water (in water bodies or in groundwater aquifers) moves towards the ocean, from where evaporation carries this moisture back into the atmosphere. Evaporation from the surface of land, plants, water bodies and oceans leads to the return of water vapour to the atmosphere and thus the hydrological cycle is completed.



Source: Gordon et. al, 1992

Hydrological processes operating in a catchment

When the soil moisture increases sufficiently, it replaces old soil water, which then either moves horizontally through the topsoil or percolates vertically into the groundwater zone. In both cases, this replaced water contributes to the base flow in water bodies during summers.

Impacts of Urbanisation on Local Hydrological Cycle

The run-off generation pattern of a catchment changes with urbanisation as surfaces under impervious cover increase and surfaces available for percolation decrease. Precipitation falling on impervious surfaces, leads to faster and higher run-off generation (upto three times more than in a non-urbanised catchment). Run-off travels faster over hard surfaces and causes frequent flooding and water-logging due to the inability of urban drainage systems to respond to sudden peaks generated by precipitation (Butler et al., 2000).

Some of the key adverse impacts of changes in the hydrological regime of a catchment due to urbanization are:

- Sudden runoff generation translates into sudden hydrograph peaks which can contribute to flash floods downstream
- The amount of run-off generated is higher and, hence, lower groundwater infiltration
- Low recharge leads to depletion of the water table and can reduce base flow in water bodies during summers
- Pollutants like oil, grease and solid waste are carried by run-off to water bodies
- Development on floodplains limit nutrient exchange with the water body, and this can lead to reduced soil fertility in the catchment area

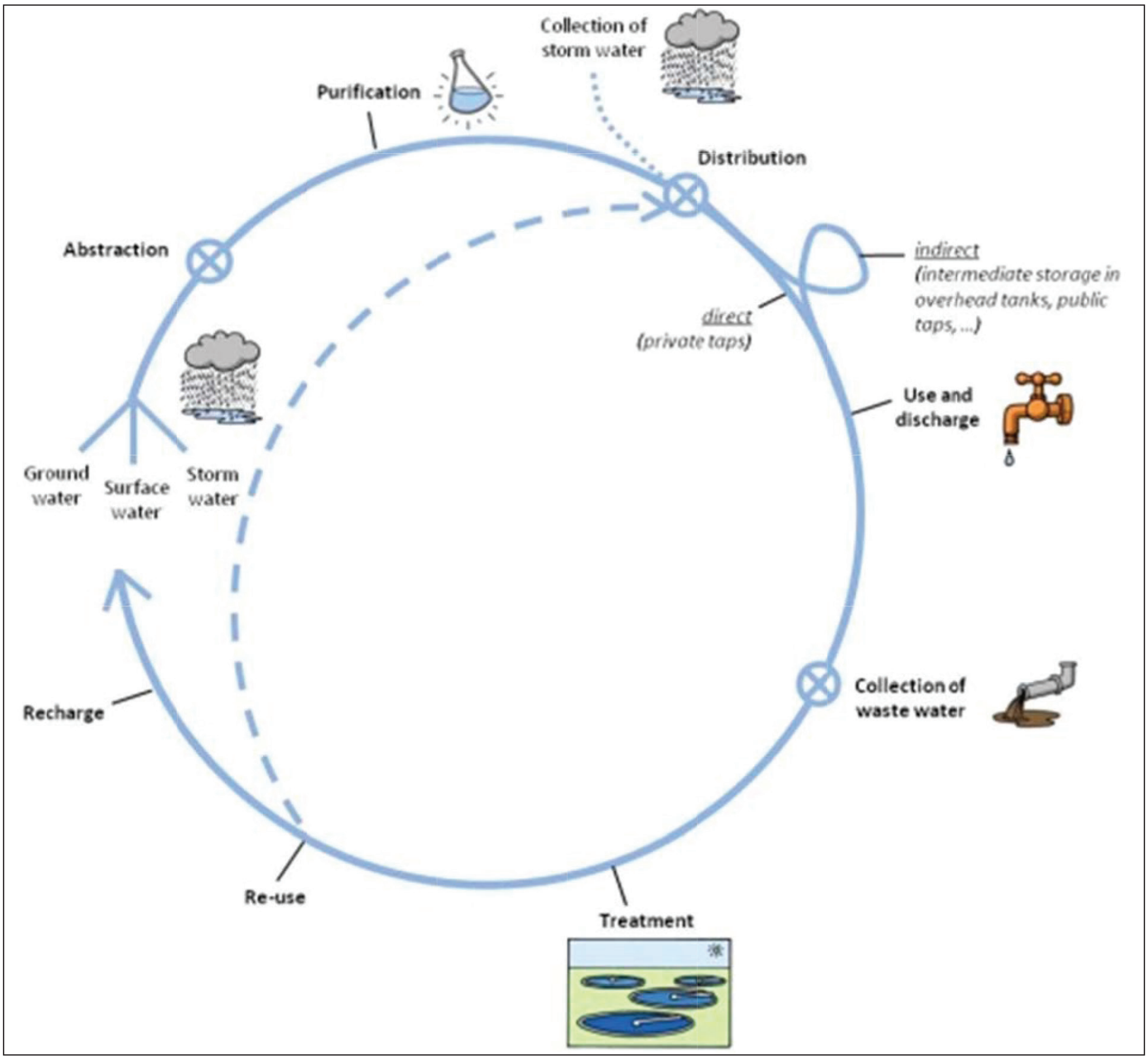
Principles of IUWM

1. Considers all parts of the water cycle, natural and manmade, surface and subsurface as an integrated system
2. Addresses all water requirements: anthropogenic as well as ecological; and all urban and non-urban users that are dependent on the same water source
3. Recognises the significance of the local context and addresses it from environmental, social, cultural and economic perspectives
4. Includes all stakeholders in planning and decision making
5. Enables use of different qualities of water (surface, recycled, reclaimed) for different purposes (drinking, irrigation, etc)
6. Recognises water storage, distribution, treatment, recycling and disposal as part of the same resource management cycle
7. Seeks to protect, conserve and exploit water resources at source
8. Encompasses alternative water sources
9. Recognises linkages between water, land use and energy
10. Aligns formal institutions (organisations, legislation, and policies) and informal practices (norms and conventions) that govern water in and for cities
11. Aims at sustainability, efficiency and equity; while balancing environmental, social and economic needs (and sustainability) for short, medium and long-term
12. Acknowledges decentralisation and balance between demand and supply management as potential solutions
13. Recognises impacts of climate change and helps in building resilience
14. Gives utmost importance to human well-being
15. Recognises need to empower and engage stakeholders

Close the Water Cycle Loop

Closing the loop of the urban water cycle emphasises the need to reduce the amount of water entering the system as well as that leaving the system by using water in varied forms, from varied sources and for varied purposes. In addition efficiency can be increased through the implementation of alternative solutions, along with traditional infrastructure such as:

1. Innovative technologies planned around new urban clusters
2. Decentralised infrastructure, and
3. Diversification of water sources



EXERCISE 1: First Integration Assessment Tool

First Integration Assessment Matrix is a self-assessment tool that contains questions, based on principles of IUWM, to assess the existing status of integration of water, waste water and storm water sectors in the city. Each question has been provided with possible responses that can reflect the situation in the city with a score from '15' (indicating best scenario) to '0' (indicating worst scenario). Negative scores have also been given for some responses (-5 to -15) to highlight the negative impacts of the indicator.

How to do the exercise:

1. In your team, discuss and tick the most appropriate answer and put in the score for that answer against each question.
2. At the end, add up all the scores.
3. All indicators with a score of '15' are the Strengths of the city.
4. Indicators with a score of '10' and '5' are the Quick Improvement Areas, where with minimal intervention, the city can make improvements in the level of integration. These Quick Improvement Areas would be further discussed in the Toolkit.
5. Indicators with a score of '0' or negative marking would correspond to Weaknesses of the city. These are critical areas that the city should focus on.

S. No.	Indicators	Criteria Scoring		
		Criteria	Scale	Score
1	**Water Abstraction**			
		Water abstraction from source(s) within Municipal boundary	15	
		Water abstraction from source(s) located less than 20 km from the city	10	
		Water abstraction from source(s) located less than 50 km from the city	5	
		Water abstraction from source(s) located more than 50 km from the city	0	
		Abstraction from distant sources leading to marginalisation of other uses/users	-5	
		Abstraction from distant sources leading to conflicts at local level	-10	
		Abstraction from distant sources is leading to conflicts at regional level	-15	
2	**Participatory Process**			
		Multi stakeholder platforms created and institutionalised to bring stakeholders together for planning and decision making from the beginning of water-related projects	15	
		Multi stakeholder platforms are created on need basis for consultations on most projects	10	
		Stakeholder consultations only for large-scale projects/ comments invited after preparation of final plan	5	
		No involvement of stakeholders, plans and projects are prepared by government departments without consultations	0	
3	**Grading of Uses**			
		Varied quality of water is used/reused for varied purposes as part of city-level supply systems like dual water supply lines, SUDS	15	
		Varied quality of water supplied/reused at local level through decentralised loops like housing cluster level loops	10	
		Single grade supply at present, but initiatives being taken to match differential quality of treatment with use	5	
		All water treated and supplied to potable quality standards and no willingness or awareness to adopt differential use of water	0	
		Centralised single-grade supply leading to neglect of local-level water resources	0	
4	**Water Portfolio for Supply to the City**			
	Source(s) of water			
		Multiple sources of water for supply to the city (more than 2)	15	
		More than one major source of water for supply	10	
		Dependent on single source of water (surface water)	5	
		Dependent on single source of water (ground water)	0	
	Transmission and Distribution Losses			
		Less than 15%	15	
		15 to 25%	10	
		25 to 35%	5	
		More than 35%	0	

S. No.	Indicators	Criteria Scoring		
		Criteria	Scale	Score
	Existing Water Portfolio			
	Surface water / groundwater use for supply (annually)	Conjunctive water use (mix of groundwater and surface water) is undertaken in a sustainable manner	15	
		Predominantly based on surface water	10	
		Predominantly based on groundwater abstraction without focus on sustainable recharge	5	
		Solely based on groundwater abstraction without focus on recharge	0	
	Reuse (annually)	More than 30%	15	
		20 to 30%	10	
		10 to 20%	5	
		Less than 10%	5	
		No reuse	0	
	Summer Water Deficit Status			
		Water deficit is managed through existing municipal infrastructure	15	
		Water deficit is managed in partnership with external service providers	10	
		Private tankers are hired by users directly during summers to solve scarcity issue	5	
		Frequent droughts impact life	0	
		Extreme adverse social and environmental impacts (like negative impacts on livelihood, livestock, vegetation)	-5	
		Seasonal migration due to water scarcity	-10	
		Area(s) abandoned due to water scarcity	-15	
	Future Water Security (for next 10 to 20 years)			
	Planned source(s) of water	Multiple sources of water for supply to the city (more than 2)	15	
		More than one major source of water for supply	10	
		Dependence on single source of water (surface water)	5	
		Dependence on single source of water (ground water)	0	
	Planned reuse (as % of projected water demand)	More than 40%	15	
		20 to 40%	10	
		Upto 20%	5	
		No reuse planned	0	
	Planned surface water, groundwater mix	Conjunctive water use (mix of groundwater and surface water) is undertaken in a sustainable manner	15	
		Predominantly based on surface water	10	
		Predominantly based on groundwater abstraction without focus on sustainable recharge	5	
		Solely based on groundwater abstraction without focus on recharge	0	
		Not planned	0	
	Future Planning for Demand and Supply Balance			
		Measures for demand reduction are taken before securing supply for future	15	
		Demand and supply balance and sustainable abstraction considered while planning for future	10	

S. No.	Indicators	Criteria Scoring		
		Criteria	Scale	Score
		Water demand calculations are used as sole basis for future water abstraction	5	
		Ad-hoc projects are undertaken for supply provision	0	
5	**Municipal Wastewater Discharge**			
		Municipal wastewater is recycled and reused after treatment as per standards	15	
		Municipal wastewater as per standards is treated and discharged into freshwater sources/ open areas	10	
		Inadequately treated wastewater is used for irrigation	5	
		Inadequately treated wastewater is being discharged into water bodies	0	
		Wastewater is being discharged without any treatment	-5	
		Untreated wastewater discharge is leading to localised pollution of water/soil	-10	
		Untreated wastewater is polluting water resources, leading to spread of diseases	-15	
6	**Water Pollution**			
	Conservation of natural drainage channels and catchment area of water bodies			
		Planning and urban development are undertaken while conserving natural drainage channels and catchment area	15	
		Considered in planning but not adequately conserved due to lack of enforcement	10	
		Not adequately considered in planning or enforcement	5	
		No consideration; drainage channels and catchment area are prone to encroachment	0	
		Why does municipality have to look at the catchment? That is not in our scope of work	0	
	Link Between Water and Energy			
	Energy	Link between energy and water is realised and measures towards this are taken (like use of renewable energy or RE, energy-efficient pumps & motors)	15	
		Link between energy and water are realised and measures are planned	10	
		Link is realised, but no measures being planned	5	
		Link not recognised, measures not taken	0	
	Sludge	Sludge is utilised for energy generation or farming through municipality	15	
		Municipality is disposing off the sludge and this sludge is taken up by individuals for reuse	10	
		Sludge is not reused, but is disposed of safely	5	
		Improper management of sludge is leading to pollution of water resources	0	
	Institutional Mechanism			
		Institutionalised integration of departments working in water and allied sectors (Existing institutional framework ensures that all water and allied departments collectively undertake planning and management of water and allied sectors)	15	
		Separate organisations dealing with water and allied sectors, but interact before finalising all projects/programmes related to water	10	

S. No.	Indicators	Criteria Scoring		
		Criteria	Scale	Score
		Separate organisations with interactions only for finalisation of project/programme	5	
		No interaction before project planning or implementation	0	
	Role of informal institutions and practices			
		Informal institutions are recognised and integrated with formal institutions	15	
		Informal, not yet integrated with formal but plans are being developed for integration	10	
		Informal, not integrates, but role of informal sector is recognised	5	
		Role of informal sector not recognised	0	
	Decline in groundwater level in recent past (last 10 years)			
		Less than 1m decline	15	
		Less than 5m decline	10	
		5 to 10m decline	5	
		More than 10m decline	0	
	Climate change and Water Resources			
		Impacts of climate change on water resources are recognised and adaptation measures are taken (like Climate Adaptation Plan) at local level	15	
		Regional-level impacts are known and measures are being taken at regional level	10	
		No measures are being taken to reduce adverse impacts of CC on water resources, but need for same is recognised	5	
		Impacts of climate change are leading to negative impacts on water related sectors, but need for measures is not recognised	0	
	Instances of Water or Vector-Borne Diseases (Malaria, Typhoid, Jaundice, Hepatitis)			
		Not common	15	
		Occasional occurrence in some areas	10	
		Occurs every year in some areas (like slum areas)	5	
		No information	0	
		Outbreak of epidemic in recent past, but is not common	-5	
		Outbreak of epidemic is common (occurs annually/seasonally)	-10	
		Water-borne diseases leading to fatalities	-15	
	Capacity (skills, resources, awareness, willingness) of Municipal Staff			
		Institutionalised capacity building cell in place. Also provides training towards integration to all new and existing staff	15	
		No permanent cell, but all new staff are oriented on aspects including integration at the time of joining (at all levels)	10	
		Staff trained at work on integration aspects, but not much capacity in the existing system to undertake inter-sectoral integration	5	
		No knowledge on aspects of integration	0	

Outcomes

- Once you have the scoring for the city, **the Strengths, Weaknesses and Quick Improvement Areas can be identified** from column 'C' of Tool.
- In the following table, list out the key strengths (aspects with '15' points) and weaknesses (aspects with '0' or negative marking) across water and allied sectors.

Strengths of the city (15 points)	Weaknesses ('0' or negative points)

- Based on the total score of the city, the following table will give the ranking/status of integration in the city.

Score	Status	Implications
Above 600	Excellent	Good level of integration in place at most levels, city needs to continue existing measures
450 to 600	Good	Good level of integration, but certain sectors might require attention
		Additional measures towards integration can improve situation
300 to 450	Average	Some level of integration across sectors
		Measures towards integration should be taken to resolve the water-related issues being faced
150 to 300	Poor	Hardly any integration
		Need for immediate measures towards integration across sectors
Below 150	Critical	No integration across sectors
		Immediate measures towards integration
		City needs to rethink the planning and management concepts for redesigning the urban water cycle

Module 2: Water Balance and Formulating the Vision

General Objective	Water demand and supply gap and formulating a vision for the city.
Training Contents	Water balancing, Vision development
Exercise	Urban Water Balance Tool
Methodology	Short Presentation, Group work
Intended Learning Outcomes	Improved understanding of the existing demand-supply gap in the water sector and setting of specific objectives as per a vision of the IUWM

Introduction

Water balance modeling gives us a better understanding of the components of the hydrological cycle, so as to develop appropriate management options for addressing its changes. Understanding the water balance of the city/catchment/region helps to understand whether or not the city/region/catchment has the water resources to meet the required demand.

City Water Balance

The balance between inputs and outputs is known as the water balance or water budget. The water balance can be shown using the formula:

Precipitation (P) = stream flow (Q) + evapotranspiration (E) +/- changes in storage (S)

$P=Q+E \pm S$.

The water balance affects the amount of water is stored in a system. At the city level, it can be measured based on the water availability from the source to the sink or the house-hold level, thereby calculating the city water supply and demand gaps.

EXERCISE 2.1: Urban Water Balance Tool

It is important to know whether the resources required to meet the existing and future demand are also available at the regional level. This can be undertaken using the following matrix.

S. No.	Scale	Parameters	Numbers	Estimated Utilizable Capacity (MLD)	Total (MLD)
1	City level	Surface water sources			
2		Water supply to the city (Present)			
3		Water demand (Present population * 135 lpcd)			
4		Water demand (Projected population * 135 lpcd)			
5		Amount of water reused in the city (Present)			
6		Amount of water reused in the city (Future – as per plans)			
	Water balance (Present) at city level = (1 + 2 + 5) - 3				
	Water Balance (Future) = (1 + 2 + 6) - 4				

Outcomes

At the end of the exercise, the city will understand the gap in demand and supply that may arise in a business-as-usual scenario in future.

Creating a Vision

A vision is a concise description of a desired future state, containing the broad goals that give the overall direction for strategic planning purposes. Without agreement on a common goal, different stakeholders will continue to work according to their individual, and sometimes conflicting, agendas. Under such circumstances, integration – and thus more sustainable water management – is almost impossible to achieve.

Before a new vision is developed, it is necessary to take stock of potentially already existing visions for other urban sectors, local development as a whole or even others developed in certain areas at the national level. Making sure that the vision for water ties in with other similar processes is an early opportunity to increase integration across sectors and potentially also different levels of government.

Setting Objectives

Objectives are a more detailed and concrete breakdown of a vision into sub-goals. The vision is deliberately written in a clear and concise style without going into the details of the change that is required. This detail is in the objectives. Reaching each aspect of the vision – such as having universal access to sanitation or healthy rivers and lakes – will potentially require the achievement of several objectives. The objectives specify what changes in state need to be achieved for the vision to become reality.

Indicators and Targets

Indicators are tools to measure and/or visualise progress towards objectives (and thus the vision). Targets are aspired indicators and have to be associated with a time frame.

In order to measure this achievement, indicators have to be defined that reflect progress towards the objective. Indicators are associated with a target, which is the result to be achieved in order to meet the objective. For example, if the objective is to use biogas generated from wastewater sludge digestion for cooking gas, the indicator could be the number of households using biogas stoves. The target could be a minimum of 5,000 households using biogas stoves by 2020. The indicators and targets therefore aim to measure the results of programmes and actions that are implemented to achieve the objectives, and ultimately the vision.

Objectives typically relate to the condition of the urban water system (its state). Indicators, on the other hand, can measure:

- The change to the system itself (its state);
- The change to the factors that influence the system (the pressures);
- The implementation of actions aimed at improving the system or mitigating the pressures (the response).

Indicators are selected based on different criteria. This is mostly a combination of the level of information they provide and the ease with which they can be measured. Key questions to consider are:

- Is the indicator relevant for the objective?
- Can the indicator be compared with baseline data?
- Can the indicator be easily collected at an affordable cost?
- Can the indicator be easily interpreted at an affordable cost?

Example

Objective	Example indicators	Associated targets
To restore natural groundwater levels	• Volume of groundwater abstracted • Percentage of impermeable surfaces that prevent infiltration of rainfall run-off • Domestic per capita consumption of potable water	• Average groundwater abstraction to not exceed X Ml/d over a period of five years starting at year X • Average per capita consumption reduced to X litres per person per day by year X • Area of permeable surface increased to X% by year X

EXERCISE 2.2: Developing the vision and setting objectives

The vision can be developed through the following steps:

- Identify the main water issues that the city is facing
- Prioritise of the identified issues
- Reflecting on the priority issues and turning them into a desired state
- Break up the vision into sub-goals to identify at least 2-3 objectives
- For each objective, identify concrete measureable, actionable indicators that can reflect the change over time
- For each indicator, identify a target with a specific timeframe

At the end of the exercise, the teams will have a vision for the city

City Name	Vision	Objectives	Example indicators	Associated targets

Module 3: Action Planning for Integration at City and Community Level

General Objective	Formulating an IUWM action plan and a monitoring framework
Training Contents	A list of strategies, project prioritisation based on cities' interest, an action plan
Exercise	Project prioritization tool, action plan
Methodology	Short presentation, group work, Q&A session
Intended Learning Outcomes	

Introduction

In this module, an IUWM action plan will be developed, which will includes strategies to achieve the vision of the city. These strategies should be developed giving due consideration to the existing vulnerabilities in the city, particularly with regard to water and sanitation in specific areas or the challenges faced by specific vulnerable populations. These strategies will be linked to ongoing programmes and government initiatives to ensure the sustainability of the action plan. The plan will have a time frame to implement the strategy and identify available financial and other resources.

In order to rule out any strategies/ projects that do not demonstrate integration, an exercise is to be undertaken with the stakeholders to identify projects that have positive impacts on at least two of the three sectors (water, wastewater and storm water). Projects that have a positive impact on only one of the sectors, should be filtered out as they do not demonstrate integration.

EXERCISE: Formulating an Action Plan

The following steps need to be taken to develop the action plan:

- For each objective, identify strategies that will meet these objectives, covering at least two sectors, and giving special considerations to vulnerable areas and populations
- For each strategy, identify a realistic time frame within which it can be implemented
- For each strategy, identify any available budget
- For each strategy, identify any ongoing programme of the government to which it can be linked

Vision for the city	Objectives to attain the vision	Associated targets	Prioritised strategy to attain objective	Time frame Next 5 years (short term), next 10 years (medium term) and next 20 years(long term)	Availability of the budget	Linkages with the on-going programs
Vision	Objective 1	1	Strategy 1			
		2	Strategy 2			
		3	Strategy 3			
	Objective 2	1	Strategy 1			
		2	Strategy 2			
		3	Strategy 3			
	Objective 3	1	Strategy 1			
		2	Strategy 2			
		3	Strategy 3			

Outcome

At the end of the exercise, the city will have a fully developed action plan, with a list of possible interventions that support IUWM.

Project Prioritisation

There are four key parameters that are the prime determinants of the sustainability of a project. These parameters are:

- Social benefits/feasibility
- Economic benefits/feasibility
- Environmental benefits/feasibility
- Participatory approach

Stakeholders will give scores on a scale of 1 to 4 to each project for social, environmental, and economic feasibility/benefits. The total score would be an average of the scores for these four sectors.

EXERCISE: Project Prioritisation

Interventions	Integration across sectors (A= W+WW+SW+SWM)				Does the project involve incremental / holistic approach towards integration of urban water cycle (B) (yes = 1, no = 0)	Grading by stakeholders				Average Score (C= {S + EC + EV + P}/4	Rank D = A+B+C
	Mandatory (min 2)			Other							
	W (yes = 1, no = 0)	WW(yes = 1, no = 0)	SW(yes = 1, no = 0)	SWM (yes = 1, no = 0)		Social benefits/ feasibility (on a scale of 1 to 4) (S)	Economic feasibility/ benefits (on a scale of 1 to 4) (EC)	Environmental benefits/ feasibility (on a scale of 1 to 4) (EV)	Participatory approach (on a scale of 1 to 4) (P)		
Project 1											
Project 2											

Outcomes

At the end of the exercise, the city will have a list of projects that are ranked as per their IUWM potential.

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