GOVERNMENT OF UTTAR PRADESH

DRAFT Version 19 June 2019

VISION DOCUMENT FOR TRIBUTARY MANAGEMENT-HINDON 2019

Content

Hindon River Basin – A Snapshot

Parameter	Hindon Basin
Area	7,000 km
Length of Hindon	300 km
Industries	
Large Scale Medium Scale Small Scale	80 230 ~40,000
Population	>10 million
Average Population Density in Basin	1,480/sq.km
Supply	Rain fed

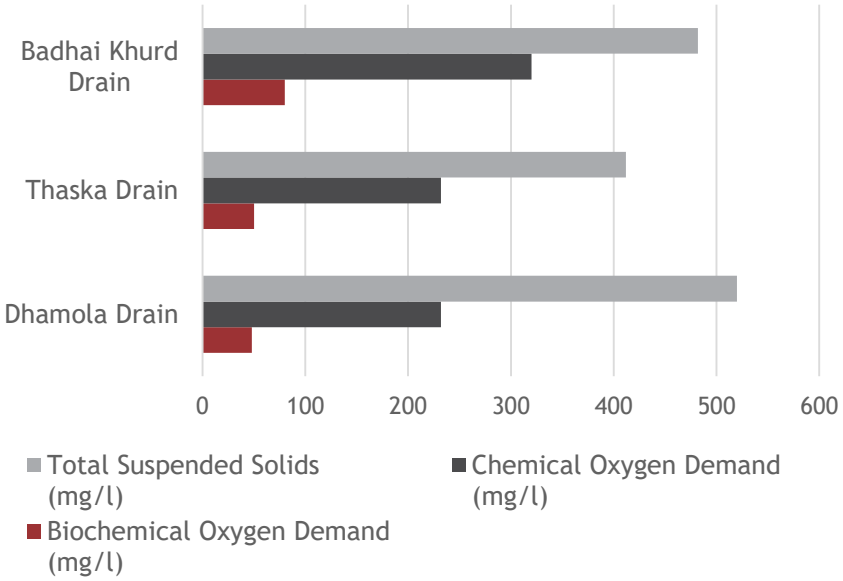
Source: Polluted River Stretches in India: Criteria & Status, CPCB

Courtesy map: India-EU Water partnership / GIZ (2019)

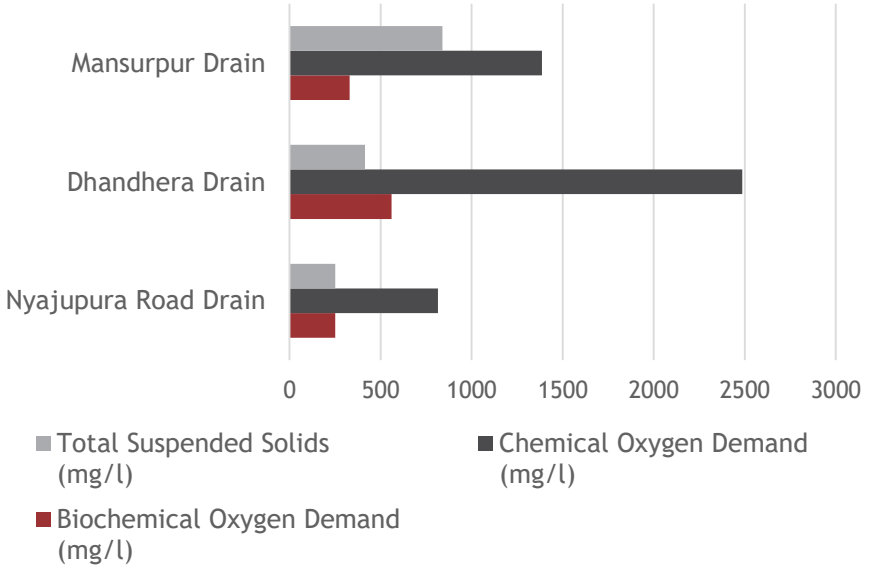
Water Quality at Hindon is unsafe for drinking or bathing

The quality of water degrades downstream, as 34 drains along the path of Hindon discharge effluents into the river, making Hindon one of the most polluted rivers in the country .

River water quality in Saharanpur



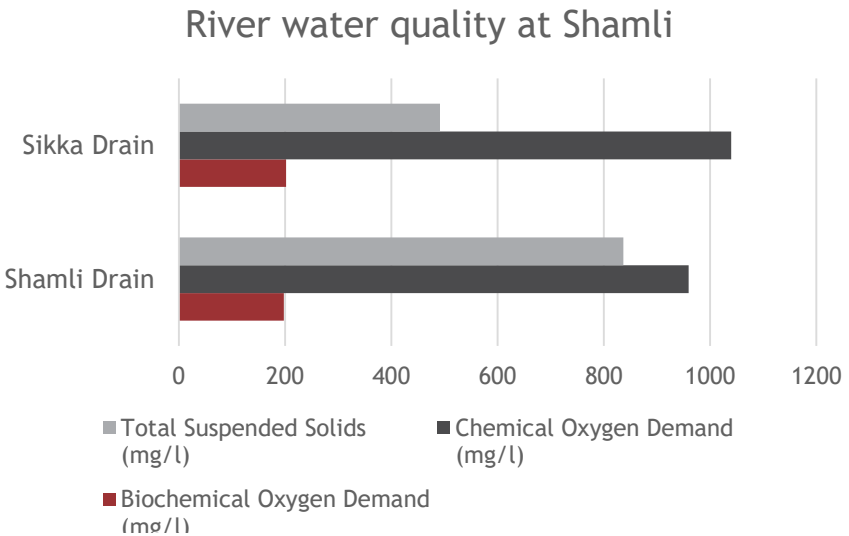
River water quality in Muzaffarnagar

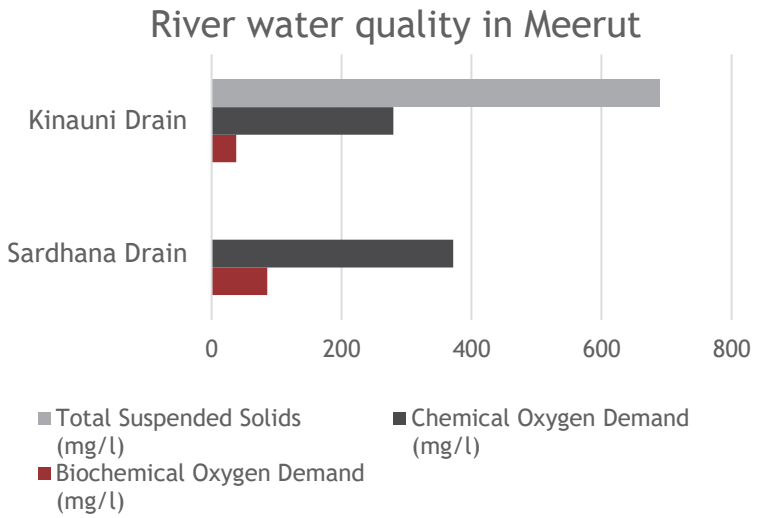


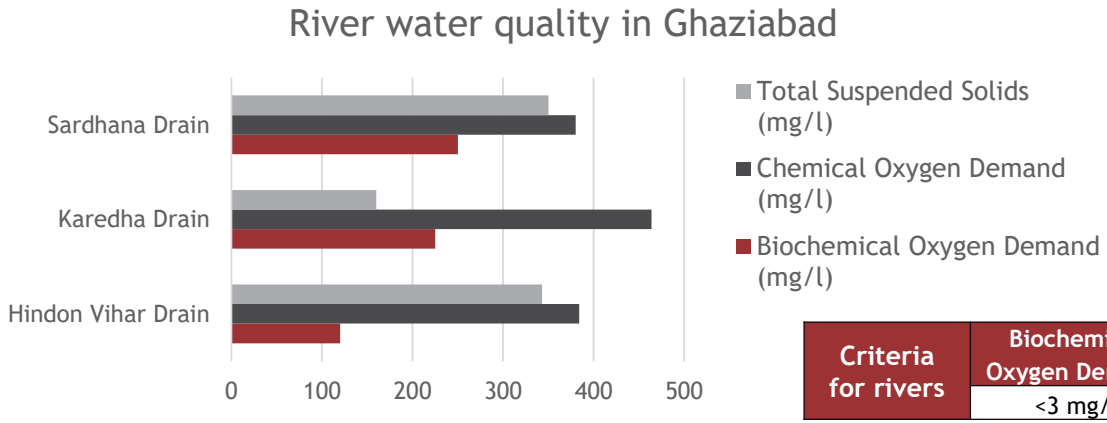
Criteria for rivers	Biochemical Oxygen Demand	Chemical Oxygen Demand	Total Suspended Solids
	<3 mg/l	<10 mg/l	<10 mg/l

Source: Action plan for restoration of polluted stretch of river Hindon from district Saharanpur to district Ghaziabad, UPPCB, 2019

Water Quality at Hindon drops Downstream





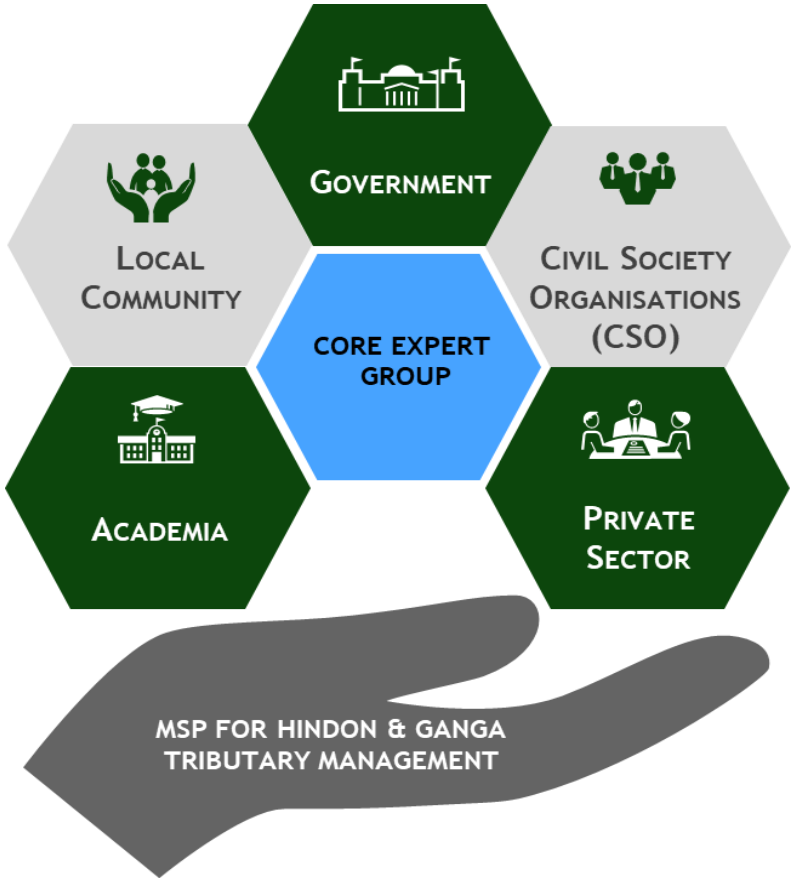


Criteria for rivers	Biochemical Oxygen Demand	Chemical Oxygen Demand	Total Suspended Solids
	<3 mg/l	<10 mg/l	<10 mg/l

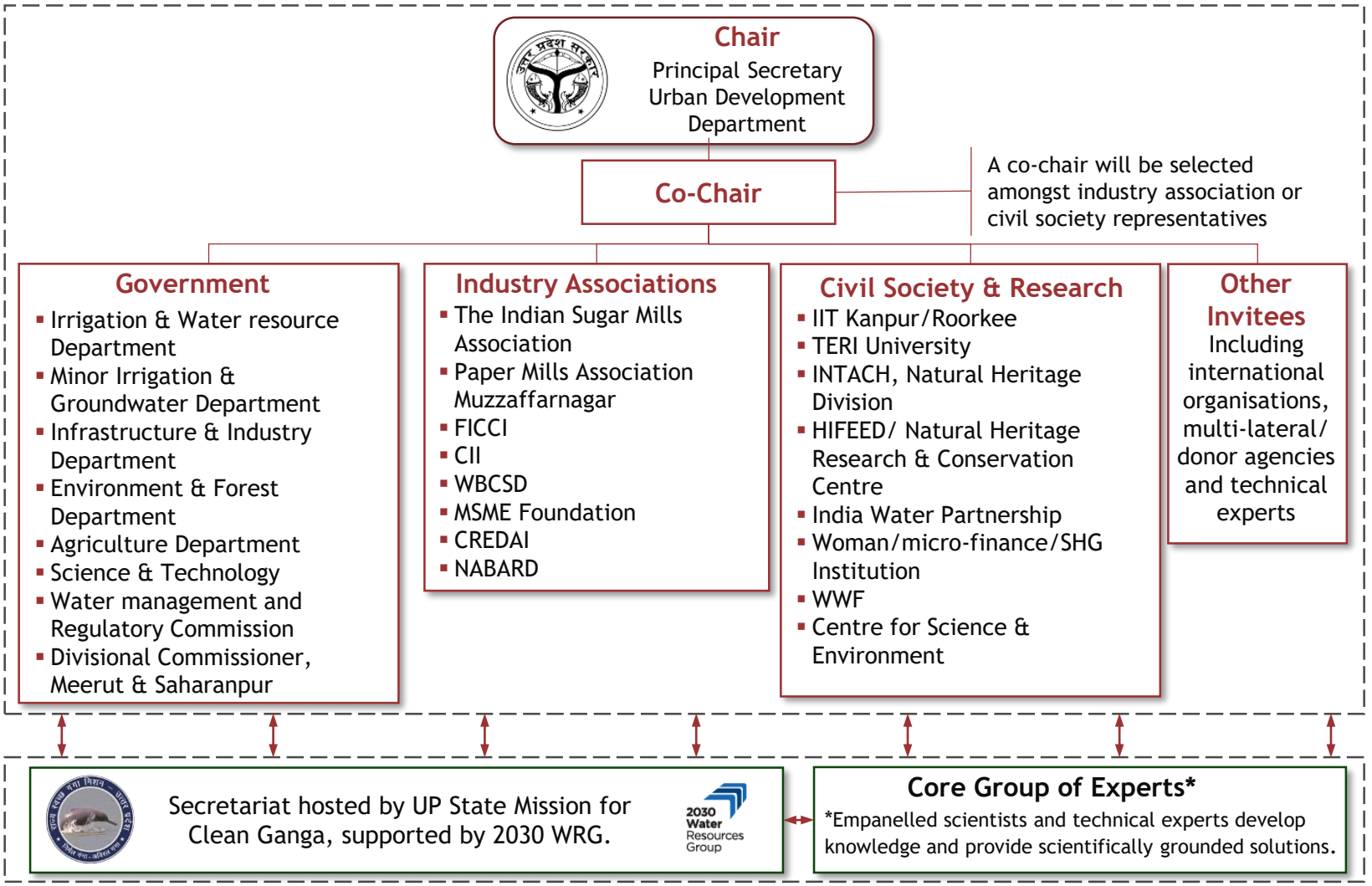
Source: Action plan for restoration of polluted stretch of river Hindon from district Saharanpur to district Ghaziabad, UPPCB, 2019

Multi-stakeholder Platform for Hindon & Ganga Tributary Management

The objective is to have a platform that facilitates structured engagement across multiple stakeholder groups to develop leading practice solutions and replicable partnership models for river basin management



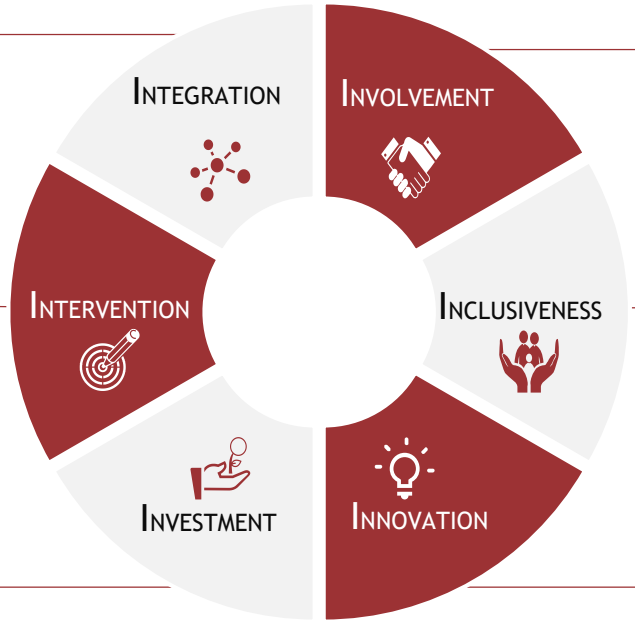
Governance structure of the MSP



Guiding principles of MSP for Hindon & Ganga Tributary Management

Integration of diverse stakeholders active in the Hindon river basin to strategies, synergise and facilitate actions.

Involvement and partnerships with the community to ensure actions are owned and accepted by the local community.



Intervention through implementation of the prioritized and measurable initiatives and activities.

Inclusiveness in approach for ensuring equitable participation of communities, private sector and government

Investments to be leveraged for ensuring effective implementation of the identified activities.

Innovation to develop practical and workable solutions (in-situ or local/global technology transfer) to the water resources problems.

River Basin Management Plan as an approach for rejuvenation

The hydrological boundaries of a river basin don't coinciding with political and administrative borders, challenging river rejuvenation activities. Therefore, an integrated river basin management approach (IRBM) with a robust coordination mechanism at the hydrological unit of a sub-basin is proposed to be used as a strategy for rejuvenation of Ganga and its tributaries

The River Basin Management Cycle (RBM Cycle) is a practical planning tool, which outlines the steps towards the development and implementation of RBM Plans

Source: India-EU Water Partnership (2019) and Support to Ganga Rejuvenation Project (2018/19)

Vision for Hindon & Ganga Tributary Management

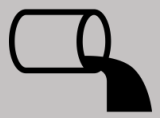
"a balanced and healthy water system and ecosystems depending on it, to support life for flora, fauna, and people in the region, through integrated and participatory river basin management."

In the case of the Hindon river basin a balanced & healthy eco-system means:

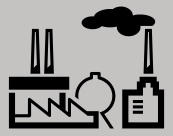
- Quality (*Nirmal Dhara*)
  - Surface water suitable or bathing (Class B)
  - Groundwater suitable for drinking after treatment (Class C)
- Quantity (*Aviral Dhara*)
  - Minimum e-flows maintained throughout the year
  - Sustainable groundwater levels (stable trend)

Key water management issues (KWMI)

The following KWMIs for the Hindon basin have been identified through an interactive process involving core experts, government officials and other key stakeholders.



POLLUTION FROM DOMESTIC SOURCES

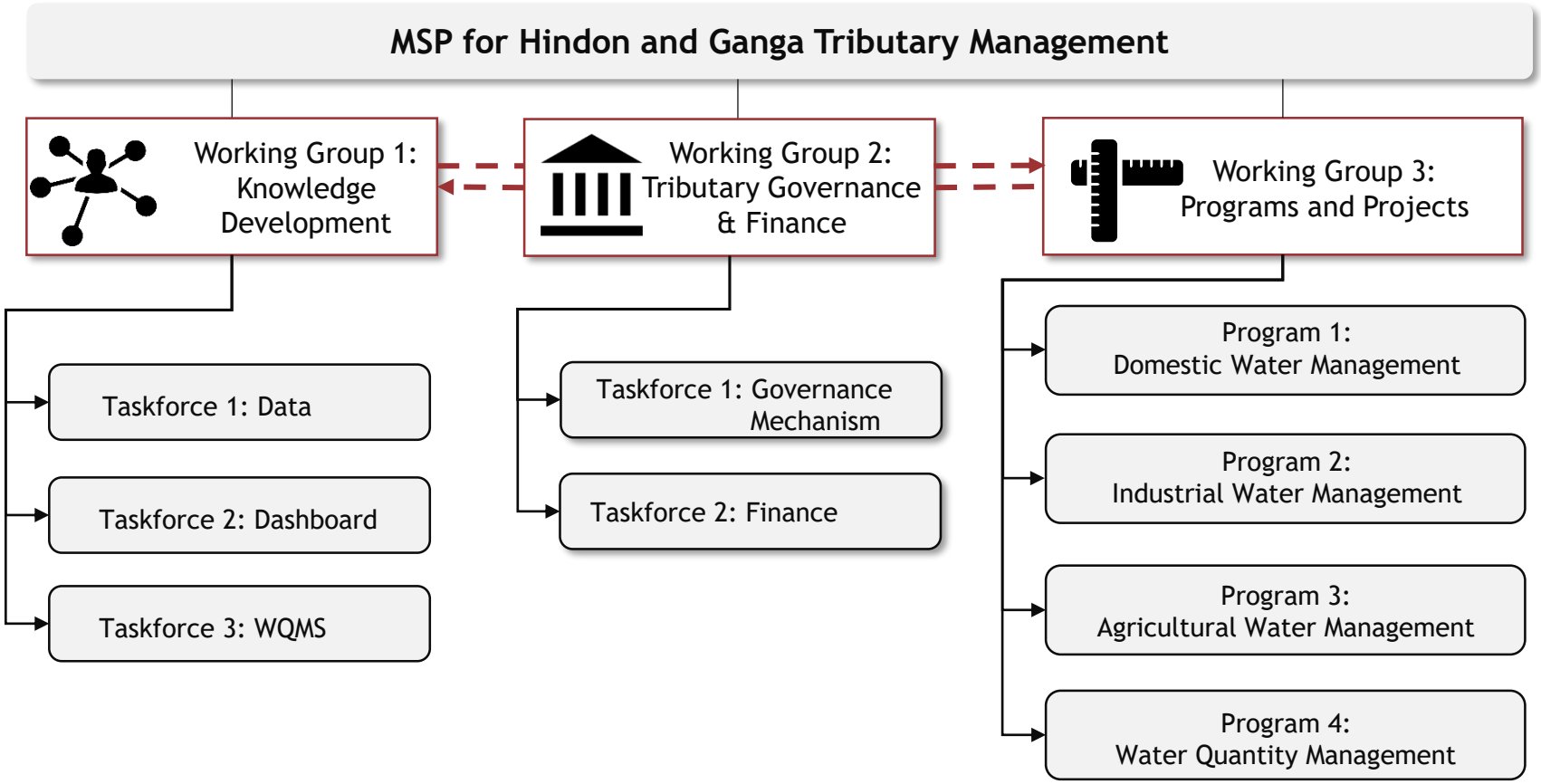


POLLUTION FROM INDUSTRIES

POLLUTION FROM AGRICULTURE

ALTERATIONS OF SURFACE WATER HYDROLOGY & GROUNDWATER QUANTITY

Thematic Working Groups for tributary management



It has been proposed to form Taskforces under Working Group 1 and 2. These Taskforces will be formed for a specified time-period and responsible for the implementation of a particular initiatives (set of activities). At the same time, it is envisaged that Key Water Management Programs will be developed under Working Group 3. Purpose of these Groups is to design programs of measures to achieve the management objectives for each KWMI. Multiple Taskforces or Project Teams may be setup under each Program.

Working Group 1: Knowledge development and management

Proposed Chair: State Mission for Clean Ganga
Proposed Co-Chair: UChicago Trust - Tata Centre for Development
Proposed Members: To be decided by the Steering Board

Taskforce 1: Data Proposed activities

- Primary and secondary data collection to estimate pollution load (Baseline study conducted by IITR)
- Hydrological Study of the basin
- Data can be used for developing water balance map, minimum e-flows, etc.

Taskforce 2: Dashboard Proposed Activities

- Dashboard for Hindon for the visualisation of the water quality parameters
- A centralised system to capture and share knowledge, a Knowledge platform would be developed

Taskforce 3: Water Quality Monitoring System Proposed Activities

- Design, installation & implementation of monitoring systems to capture water quality
- The system will be used to capture live data on (i) physical characteristics; (ii) chemical characteristics; and (iii) biological characteristics

Working Group 2: Tributary governance and finance

Proposed Chair: State Mission for Clean Ganga
Proposed Co-Chair: 2030 WRG
Proposed Members: To be decided by the Steering Board

Taskforce 1: Governance Mechanism

Development of robust governance mechanism for Hindon and Ganga tributary management

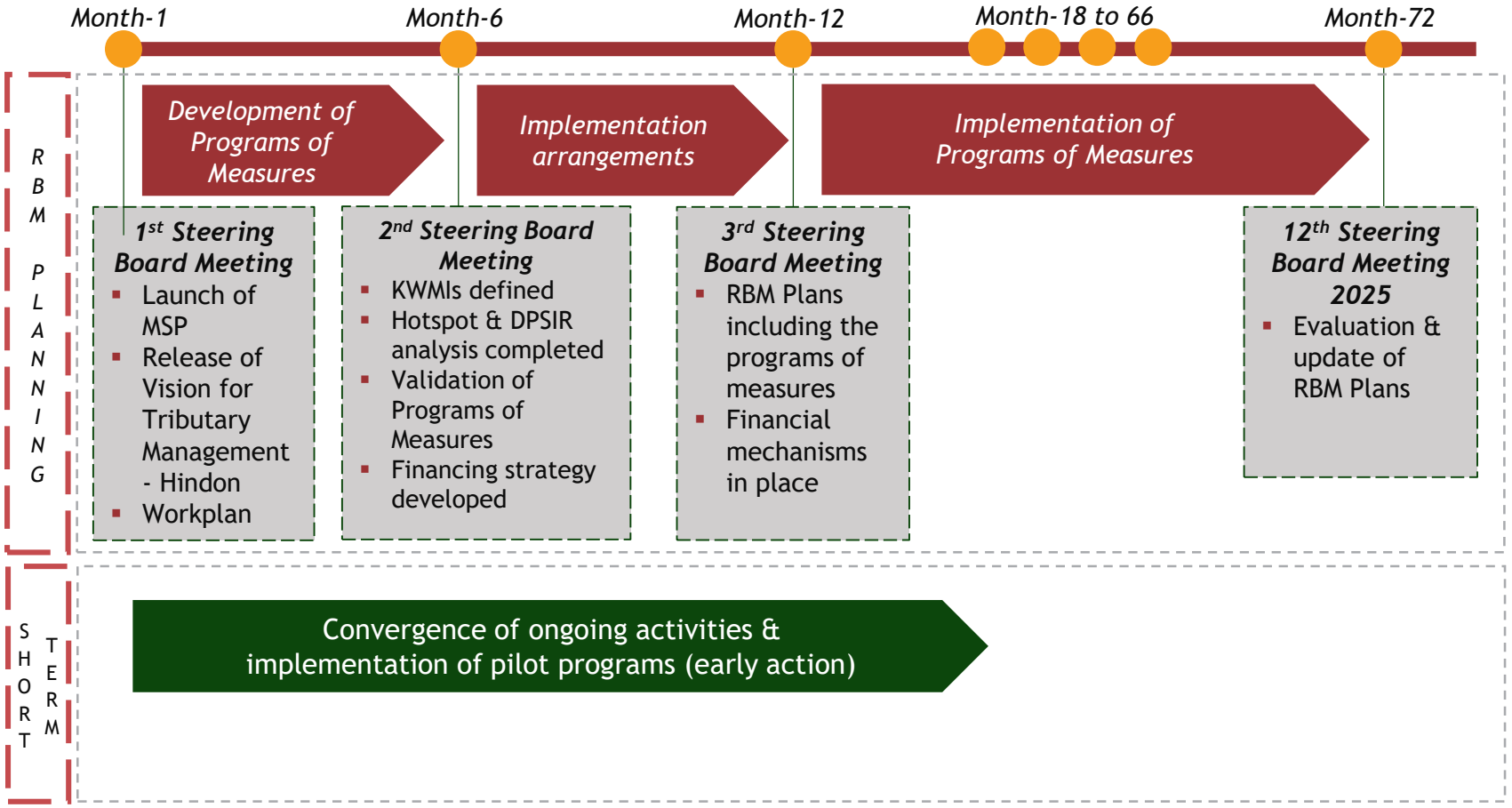
- Research on river basin organisations & their operations
- Workshop on Hindon and Ganga Tributary Management to share knowledge & experiences, resulting in policy recommendations
- Establishment of a robust basin level coordination mechanism reporting to SMCG

Taskforce 2: Finance

- Design in conjunction with Key Water Management Programs, a finance & investment prioritization strategy
- Implement a pilot program to promote entrepreneurship and innovative business models based on a proposed Competition and Fund under the Millennium Alliance

Working Group 3: Programs and projects

The Working Group would consist of Key Water Management Programs that would conduct an exercise for basin characterisation, in line with the RBM methodology. They would further refine the (quantifiable) targets and Management Objectives, conduct a detailed DPSIR analysis, and identify pollution hotspots. This would be followed by the development of proposed programs of measures



Program 1: Domestic water management

"Discharge of untreated domestic waste water is zero and the treated domestic waste water is 100% reused"

Proposed Chair: Department of Urban Development
Proposed Co-Chair: India EU-Water Partnership & CSE
Other stakeholders: To be decided by the Steering Board

Early actions/initiatives

Pilot program for decentralised waste water treatment solutions:

- Define scoping opportunities, criteria and locations suitable for cost-effective decentralised waste water treatment solutions;
- Facilitate design and execution of infrastructural measures in pilot areas;
- Monitor impact based on pre-defined M&E indicators (e.g. m3 addl. waste water treated);
- Promote community engagement for maintenance and upkeep of (nature based) infrastructure;
- Capacity building of local stakeholders for replication of pilots through mainstream govt schemes and/or CSR funding.

Potential programs of measures

- Estimation of total sewage generation from city/ towns with limited sewage treatment facility;
- Laying of sewerage network and connection of households to the sewer line to installed STPs;
- Reuse of treated water;
- Treatment of wastewater in rural areas flowing into the river by bio-remediation/ phyto-remediation, etc.
- Initiatives to promote segregation, reuse and recycling of solid waste;
- Establishment of solid waste, construction & demolition waste disposal facilities;
- Evaluation of livelihood opportunities that can be created through reuse and recycling of treated wastewater and management of solid waste;

Program 2: Industrial water management

"Discharge of untreated industrial waste water is zero and treatment level is sufficient to eliminate all hazardous substances from the water systems"

Proposed Chair - Department of Infrastructure and Industry Development
Proposed Co-Chair - UNIDO
Other stakeholders - To be decided by the Steering Board

Early actions/initiatives

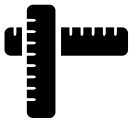
Pilot program for enabling environmental sustainability of MSMEs:

- Define scoping opportunities, criteria and locations suitable for cluster development for water stewardship;
- Capacity building of MSMEs for water efficient operations;
- Facilitate design and execution of measures for pollution abatement at selected MSMEs by adoption of clean technologies and best practices;
- Implementation & handholding support (identifying financing if required) for selected pilot demonstration projects;
- Monitor impact based on pre-defined M&E indicators (e.g. m^3 addl. effluent treated, m^3 water intake reduced in factory plants).

Potential programs of measures

- Re-inventorisation of water polluting industries in the catchment area of the drains and their status;
- Development and upgradation of ETP for larger factories and corporates;
- Industrial zoning of polluting industries across the basin;
- Improved water monitoring through development and enactment of water supply and pricing mechanism for industrial clusters;
- Adoption of cleaner technologies by water polluting industrial sectors;
- Reducing abstraction of groundwater and promoting reuse/ recycle of treated effluent;
- Implementation and monitoring effectiveness of the masterplan to work towards attaining the vision for industrial pollution abatement.

Program 3: Agriculture water management



"Optimising agro-chemical dependency, minimising non-point source pollution through run-off and groundwater contamination as well as increasing agro-water productivity along with farmers' income"

Proposed Chair - Department of Agriculture
Proposed Co-Chair – INTACH, Natural Heritage
Other stakeholders - To be decided by the Steering Board

Early actions/initiatives

Pilot program for promoting sustainable and water efficient agriculture:

- Define scoping opportunities, criteria and locations suitable for improving irrigation water use efficiency (e.g., drip irrigation);
- Facilitate design and execution of measures for improving agricultural practices in pilot areas;
- Monitor impact based on pre-defined M&E indicators (e.g., livelihood improvements, volume of water saved per hectare, reduction of chemical inputs);
- Facilitation of institutional arrangements for improving farm productivity & livelihood security by promotion of sustainable agricultural practices and appropriate market linkages (e.g., organic farming).

Potential programs of measures

- Promotion of reuse of enhanced treated water with nutrients in agriculture for reducing the dependency on chemicals;
- Facilitating institutional arrangements for improving farm productivity and livelihood security by promotion of sustainable agricultural practices and appropriate market linkages (e.g., organic farming);
- Increase the crop variety in the region by promoting a transition towards higher market value horticulture crops and less water-intensive crops;
- Knowledge enhancement and skill development of farmers to increase up-take of improved agricultural practices.

Program 4: Water quantity management

"The water balance of the Hindon river basin results in sustainable levels of groundwater aquifers and a continuous base flow in the river throughout the year"

Proposed Chair - Forest and Wildlife Department
Proposed Co-chair - World Wide Fund for Nature (WWF-India)
Other stakeholders - To be decided by the Steering Board

Early actions/initiatives

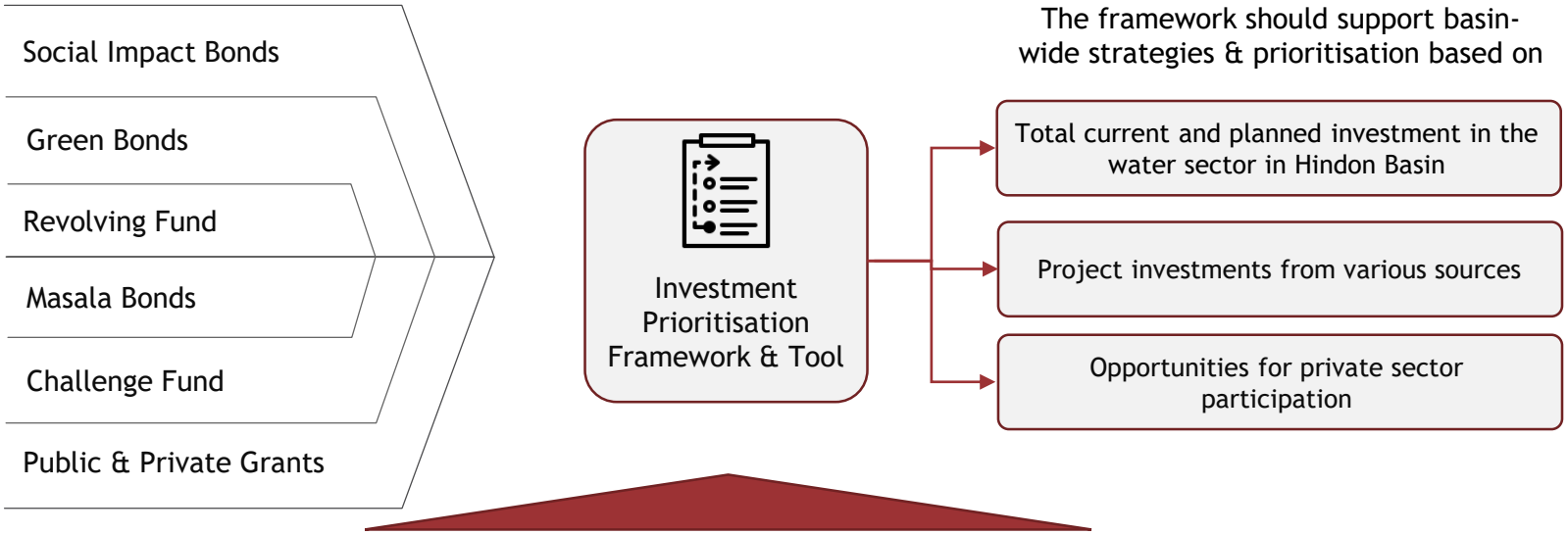
Pilot program for afforestation and biodiversity:

- Define scoping opportunities, criteria and locations suitable for afforestation & forest densification;
- Facilitate design and execution of measures to promote forest cover, greenery, e-flows and biodiversity improvements;
- Monitor impact based on pre-defined M&E indicators (e.g. number of trees/saplings planted, number of villages with forest/nature reserve areas, acres of forest/green area recovered and/or developed (densified), number of forests/local nature reserves for which an O&M contract / arrangement is in place);
- Facilitation of institutional arrangements for improving forest cover, greenery, e-flows and biodiversity at a structural basis.

Potential programs of measures

- Mapping of current and traditional watershed structures and restoration practices;
- Implementation of watershed management practices and structures in the upstream and downstream of the watershed areas and ponds;
- Develop and disseminate a Leading Management Practice watershed restoration guide for communities building on traditional (existing) structures and success stories;
- Promotion of forest cover, greenery and biodiversity in the upstream part of the Hindon river basin catchment area;
- Development of biodiversity parks and rivernine forests;
- Ecological restoration of the wetlands including plantation in the catchment area;
- Removal of encroachment from wetlands, ponds and their restoration.

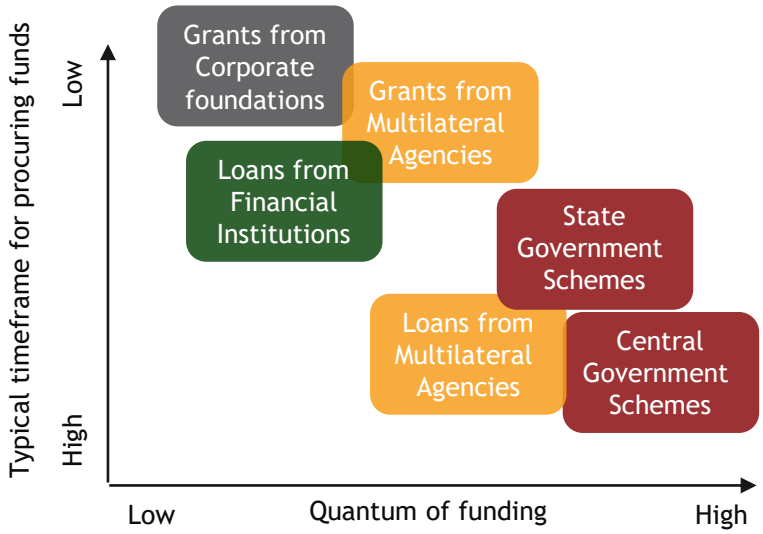
Programs and Projects in the basin area require strategic investments



The framework should be developed & adopted with the criteria of

- International good practices
- Facilitate Public Private Partnership
- Support Programs & Projects

Mapping of funding for Hindon addition of funds



Government Schemes

- National Mission for Clean Ganga
- Accelerated Irrigation Benefit Program Component of PMKSY
- Atal Bhujal Yojana
- Har Khet Ko Pani component of PMKSY
- Supplementary Water Management Activities under PMKSY
- Watershed Component of PMKSY
- Per Drop More Crop Component of PMKSY
- Rural Infrastructure Development Fund
- Centrally Sponsored Scheme for CEPTs
- Yamuna Action Plan (State Scheme)
- Nirmal Hindon Kosh (State Scheme)

Multilateral/Bilateral funds

- World Bank Group (National Ganga River Basin Project)
- Asian Development Bank (ADB)
- International Fund for Agriculture Development (IFAD)
- United States Agency for International Development (USAID)
- International Development Research Centre (IDRC)
- Department for International Development (DFID)
- The Deutsche Gesellschaft für Internationale Zusammenarbeit (GIZ)
- Japan International Cooperation Agency
- United Nations Development Programme (UNDP)
- Green Climate Fund (GCF)

Private Financial Institutions

- State Bank of India
- NABARD
- IndusInd Bank
- Yes Bank

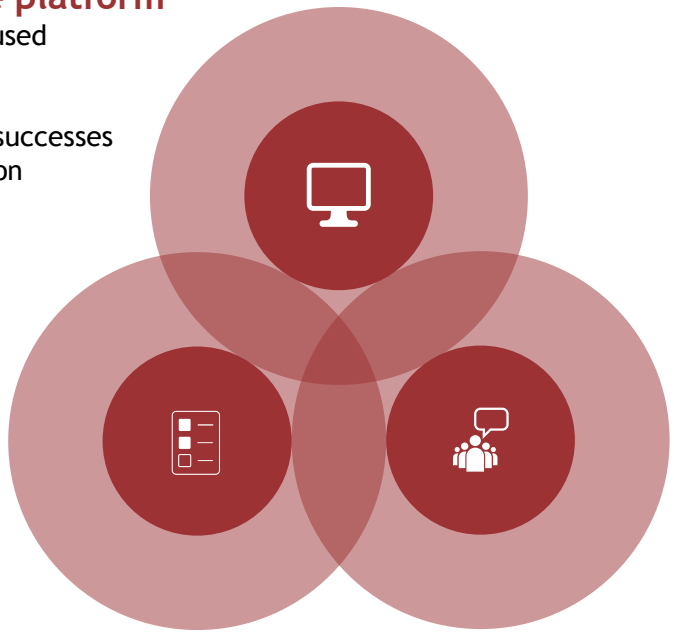
Corporate Foundation

- Coca-Cola Foundation
- HCL Foundation
- Bajaj Electricals
- Hindustan Unilever Ltd.
- Simbhauli Sugars
- Modi Rubber Ltd.
- Hindustan Petroleum Corporation Ltd.
- Tata Trusts

Monitoring & evaluation framework for MSP

Web-based knowledge platform

The platform which can be housed under the SMCG, can act as a knowledge repository to share innovations, good practices & successes achieved in the region of Hindon



M&E template framework

Development of an M&E template framework that clearly maps strategic outcomes and associated actions/initiatives under each work-stream with corresponding performance indicators. Overall oversight responsibility will be with the Steering Board

Regular stakeholder meetings

a. It is proposed that the Steering Board of the MSP shall meet once in six months to keep a check on the progress of on-going activities

b. Working groups under respective work-streams are proposed to convene once every quarter to share implementation reports and review progress

c. These working groups need to establish a monitoring cycle as per the timelines of the initiated project being undertaken

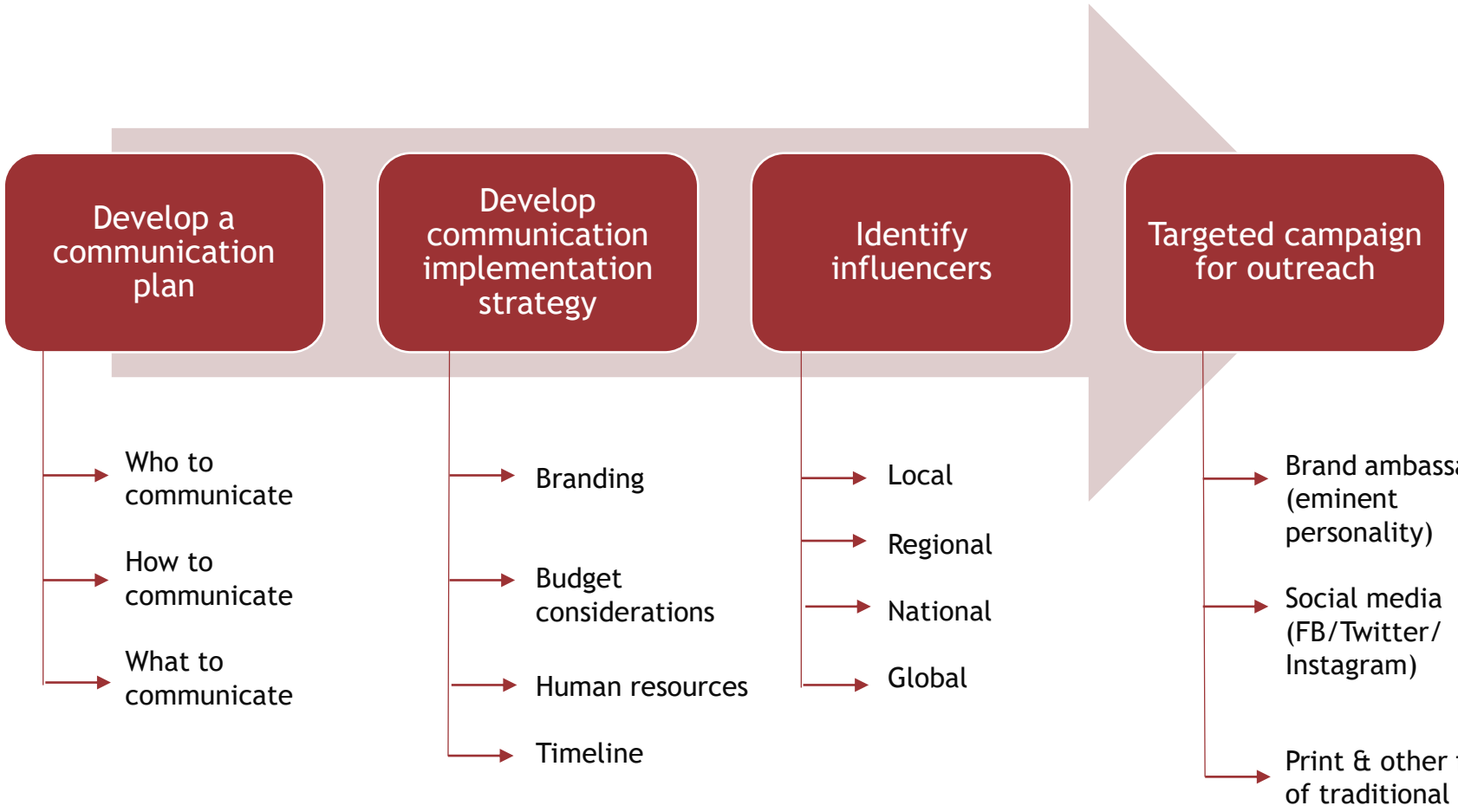
Monitoring & evaluation (proposed indicators)

Thematic Areas	Performance indicators	
	Management indicators	Impact indicators
Knowledge development	▪ Baseline data collected and analysed for Hindon dashboard ▪ Hindon dashboard developed and operationalised ▪ # knowledge products/ policy papers/ publications developed ▪ # technical DPRs prepared for implementation	▪ # sensitisation workshops conducted in the basin ▪ # of request for information from knowledge service by target audience over time
Governance and finance	▪ Hindon cell established at the State Mission for Clean Ganga ▪ District and village committees established across the basin	▪ % of the funds utilised ▪ # of stakeholder consultations/meeting held in the basin
Industrial pollution abatement and cleaner production	▪ # watershed stewardship trainings conducted ▪ # MSMEs adopting cleaner production technologies	▪ Water quality at the discharge points (BOD, COD, etc.) ▪ % of waste water treated
Domestic solid and liquid waste management	▪ # technical DPRs prepared for implementation ▪ # sewage treatment plants installed ▪ # operational sewage treatment plants ▪ # installed and operational solid waste facilities	▪ Water quality at the discharge points (BOD, COD, etc.) ▪ % of the population connected with sewage system ▪ % of the waste being reused, recycled ▪ Ranking of the district in 'Swachh Survekshan'

Monitoring & evaluation (proposed indicators)

Thematic Areas	Performance indicators	
	Management indicators	Impact indicators
Agricultural water-use efficiency and chemical reduction	▪ # technical DPRs prepared for implementation ▪ # farmers growing organic crops ▪ # farmers practising innovative techniques like integrated nutrient management, integrated weed and pest management, zero budget farming, etc. ▪ # of drip and sprinkler irrigation systems installed ▪ Quantity of fertilisers and pesticides consumed per year	▪ % increase/decrease in the ground water extraction ▪ % increase/decrease in annual yield in the basin ▪ % increase/decrease in the sale of fertilisers and pesticides in the basin ▪ Change in the landholding of the farmers
Watershed development and biodiversity conservation	▪ # watershed structures and practices mapped ▪ # check dams created ▪ # Sub-surface dykes created ▪ Increase in soil organic carbon for each watershed area ▪ # trees planted	▪ Increase in the ground water level ▪ Decrease in catchment water demand-supply gap ▪ % change in the cultivated area in the basin ▪ Forest cover in the basin.

Communication strategy



Knowledge partner:

2030 Water Resources Group (2030WRG)
Hindustan Times House
18-20 Kasturba Gandhi Marg
New Delhi 110001, India
www.2030wrg.org

Documentation support:

Thinkthrough Consulting Private Limited (TTC)
Building No. 30, Second & Third Floor
Basant Lok Community Centre
New Delhi 110057, India
www.ttcglocal.com