

River Basin Management Cycle Training Series



04 - Determining Basin Vision and Objectives



Implemented by

giz Deutsche Gesellschaft
für Internationale
Zusammenarbeit (GIZ) GmbH

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Outline

Unit	Topic
1	Introduction to River Basin Management
2	Clear Governance and Coordination Structure
	<i>Governance (legal aspects and framework)</i>
	<i>Basin Coordination Structures (basin institutions and stakeholder engagement)</i>
3	Basin Characterisation
	<i>DPSIR Assessment</i>
4	Determining Basin Vision and Objectives
5	Design/ Adaptation of Monitoring Networks and Programmes
6	Assessment of Water Quality and Quantity
7	Implementation of RBM
	<i>River Basin Plans and Programme of Measures (PoM), Financing and Review of PoM</i>
8	Solutions through Exchange, Information Flow and Cooperation

4 Basin Vision and Aims/ Objectives



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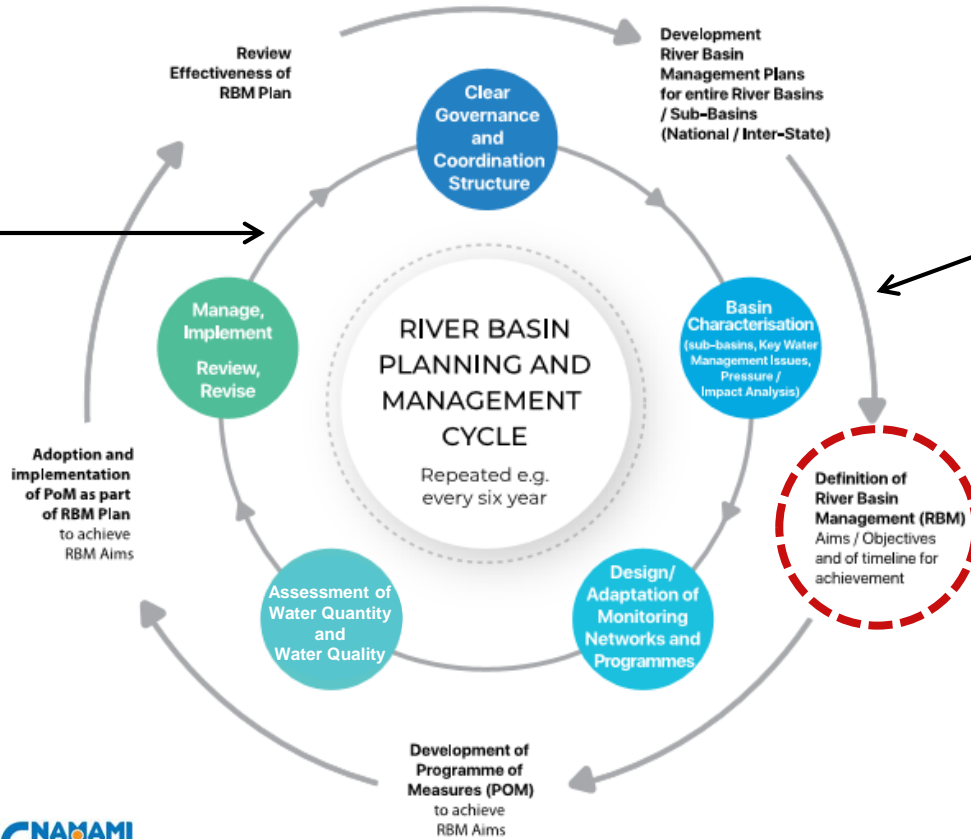
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The River Basin Planning and Management Cycle

„Inner cycle“
Technical/
operational level“

„Outer cycle“
Planning and
decision making
level



What is a Joint Vision?

A **joint vision** in basin planning is:

- A high-level statement of goals and priorities that basin planning aims to support
- Describes a desired state of the basin to be achieved
- Reflects and addresses main concerns and aspirations in a basin
- Gives a broad indication of the priorities in the basin



Why a Joint Vision?

Basins and their management are characterised by very different interests

- Agricultural use/irrigation
- Energy generation/hydropower
- Drinking water supply
- Environmental protection
- Ecological restoration

The sustainable management and development of a basin and its resources requires a joint and agreed upon idea of how the basin should develop.

A joint vision can bring different interests together and align them along one joint idea for the basin's future.

This can also help mobilise different actors to engage them in basin planning and management activities.

Key Characteristics of a Joint Vision

A joint vision:

- Defines the desired state of the basin towards which all involved actors aim to move to
- Builds on the key water management issues in the basin and addresses them
- Has a political dimension or message
- Is aspirational and unifying to bring actors together
- Provides general strategic guidance for all policy and managerial decisions concerning the basin
- Defines the overall aims at a certain point in time
- Includes broader environmental, economic and social concerns
- Considers potential trade-offs.

Vision Ganga 2017

 **NATIONAL MISSION FOR CLEAN GANGA**
Ministry of Water Resources, River Development and Ganga Rejuvenation
GOVERNMENT OF INDIA

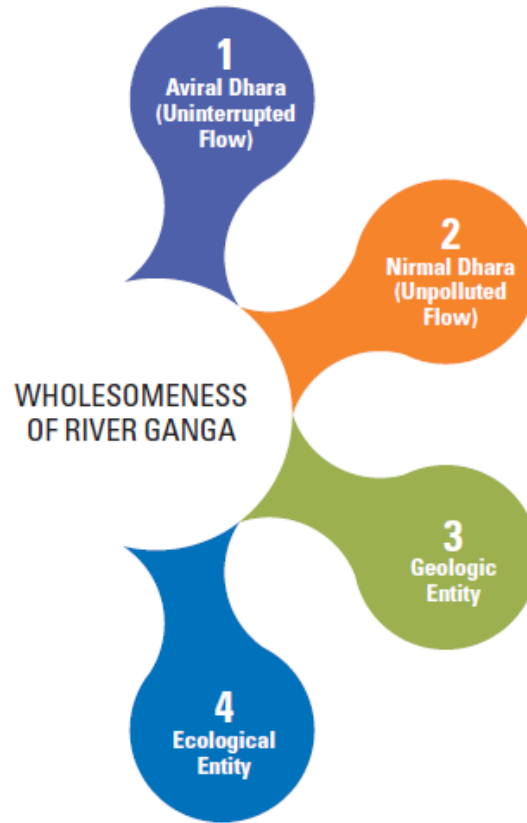


VISION GANGA

DECEMBER 2017



Centre for Ganga River Basin Management and Studies
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Source: NMCG (2017) Vision Ganga. Page 14.

Vision Ganga 2017

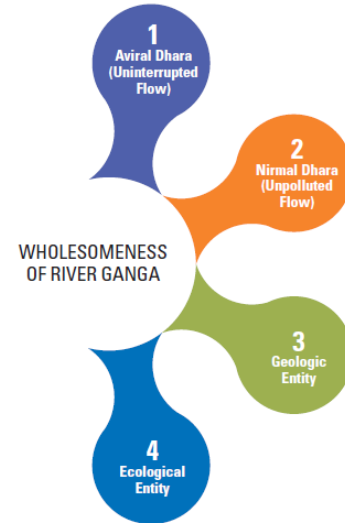
[...] the “**wholesomeness of national river Ganga**”, viewed from a dynamic perspective, was determined in GRMPB to be the **sanctity of the river system** imbibed in the following four points:

I. “Aviral Dhara” (Uninterrupted Flow)

“The flow of water, sediments and other natural constituents of river Ganga are continuous and adequate over the entire length of the river throughout the year. Hence in-stream barriers, water diversions and barriers to surface runoff must be regulated.”

II. “Nirmal Dhara” (Unpolluted Flow)

“The flow in the Ganga river network is bereft of manmade pollution. hence the river waters in present times should also not be sullied by polluting human activities.”



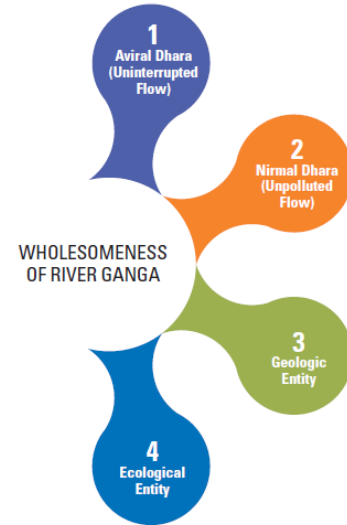
Vision Ganga 2017

III. Geologic Entity

“The Ganga river system is the earth’s creations of ancient times, which may not be reparable if damaged. The geological integrity of the entire basin must therefore be protected.”

IV. Ecological Entity

“The Ganga river system is a delicately structured balance between various living species and the physical environment, achieved by nature over thousands of years and vulnerable to irreversible changes. Overexploitation and unhealthy interferences with the biophysical resources of the river system must therefore be abandoned outright.”



Examples of Basin Visions Worldwide

- **Mekong:** “An economically prosperous, socially just and environmentally sound Mekong River Basin”
- **Nile:** “To achieve sustainable socio-economic development through equitable utilisation of, and benefit from, the common Nile Basin Water resources”
- **Okavango:** “Economically prosperous, socially just and environmentally healthy development of the Cubango-Okavango River Basin”
- **Orange:** “A well-managed water secure basin with prosperous inhabitants living in harmony with a healthy environment”
- **Malaysia:** “Conserve and manage its water resources to ensure adequate and safe water for all, while taking care of preserving the environment”
- **Vietnam:** “Integrated and sustainable use of water resources and the effective prevention and mitigation of harm caused by water for a better future on water and for a better life and environment”



River Visions: Return of Flagship Species



Rhine salmon
Salmo salmar

(Ref: IKSR (2004) RheinLachs 2020).



Danube Sturgeon

(Ref: ICDPR (2016) Sturgeon 2020).



Ganga dolphin?
Platanista gangetica

(Ref: Blogspot Balams heart. Susu Gangesdelfin, 2015).

Exercise: Examining Vision Ganga

IT'S YOUR TURN

Discuss in a small group if Vision Ganga reflects the key characteristics of a basin planning vision.



The Process of Defining a Joint Vision

A joint vision is typically developed in a process that:

- Brings together different users of the basin's resources
- Allows users and managers to think about a desired future in an aspirational manner
- Helps identifying joint values and interests (and thus overcoming differences)

The Vision process typically:

- Is *coordinated* by a designated management unit/actor (e.g. basin organisation secretariat)
- Consists of *consultations with stakeholders* at different levels (local, regional, national, transboundary)
- Develops a *series of subsequent drafts* of a vision for discussion
- Eventually *leads to agreement* of a joint vision by all those involved



A Vision Changes Over Time: Example of the Rhine River Basin

- A vision changes over time as challenges and priorities in the basin change with the state of the basin itself
 - This ensures that the vision continuously reflects the key water management issues in the basin and addresses them

1987: First Rhine River Basin Plan

- “To improve the state of the river to such an extent that fish return to the river”
- “Guarantee the production of drinking water for the future”
- “Reduce the pollution of river sediments”

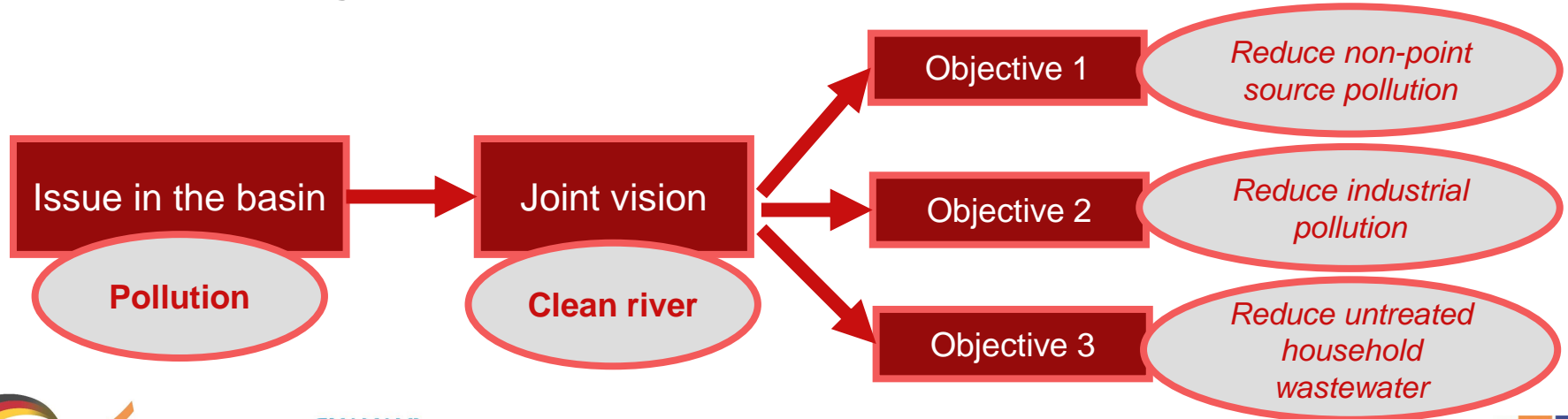


2001: Rhine Visioning Process

- “Former networks of habitats and ecological patency of the Rhine are restored”
- “Fish in the Rhine, mussels and crustaceans are suitable for human consumption”
- “The risk of flood damage is reduced by 25%”
- “Drinking water production will be possible using simple, nature-near treatment procedures”

From a Vision to Specific Objectives

- A joint vision describes the desired state of a basin in very broad and strategic terms → This is insufficient to define and implement specific steps to reach this desired state
- **Specific objectives that operationalise the vision need to be defined to:**
 - Translate the vision into something more **operational**
 - Break the overall vision down into **actionable** pieces
 - Provide clear **guidance on what needs to be done** to achieve the vision



Types of Objectives

ECONOMIC objectives

- Water resources development for growth
- Provision of hydropower for industrial development

ENVIRONMENTAL objectives

- Improvement of water quality
- Ecosystem restoration

SOCIAL objectives

- Improvement of water-based livelihoods
- Flood protection for communities

POLITICAL objectives

- Strengthening of cooperation
- Prevention of competition or conflicts

COMBINED objectives

- Improved water allocation for conflict prevention (environmental – political)
- Improved water quality for public health (environmental – social)

SMART Objectives

In order for objectives to be useful in the basin management plan and its implementation, they need to be SMART:

S – specific

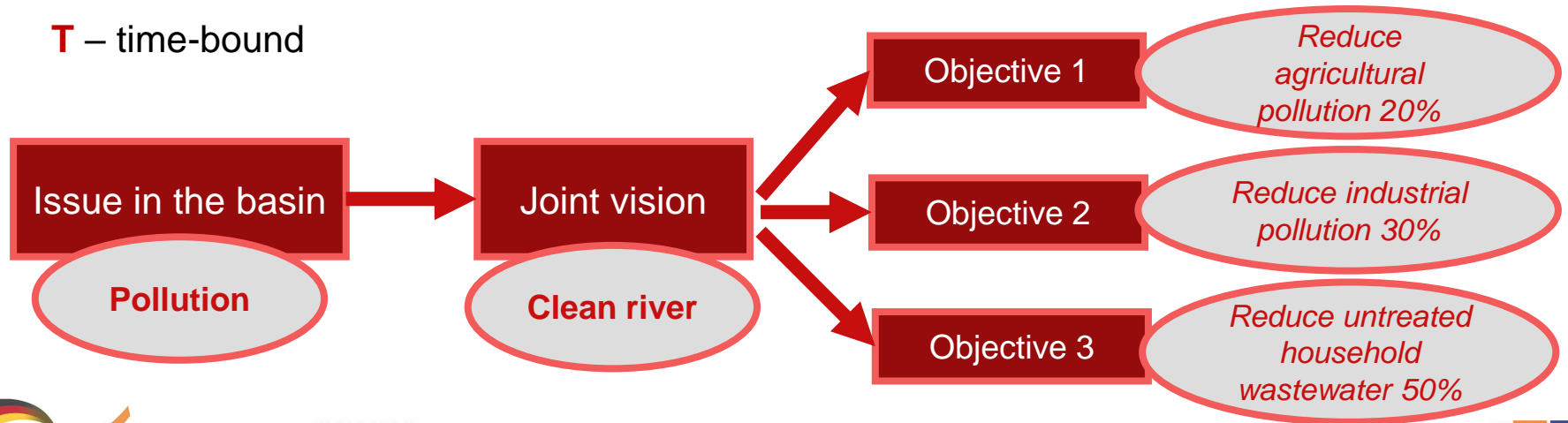
M – measurable

A – achievable

R – relevant

T – time-bound

This often requires a further refinement of objectives with specific targets



Example: Environmental Objectives in the EU WFD

Art 4 of the EU WFD (2000) defines the environmental objectives to be achieved in all of the EU's water bodies as:

- Good *chemical* surface water status
- Good *ecological* water status surface waters
- Good *ecological* potential for *artificial and heavily modifies* water bodies
- Good *chemical* and quantitative water status of *groundwater bodies*
- *Specific aims* for protected areas



Example: Vision and Objectives in the Danube River Basin



Vision:

Sustainable and equitable water management and flood risk management in the Danube River Basin

Goals of ICPDR:

- Safeguarding the Danube's Water resources for future generation
- Naturally balanced waters free from excess nutrients
- No more risk from toxic chemicals
- Healthy and sustainable river systems
- Damage-free floods



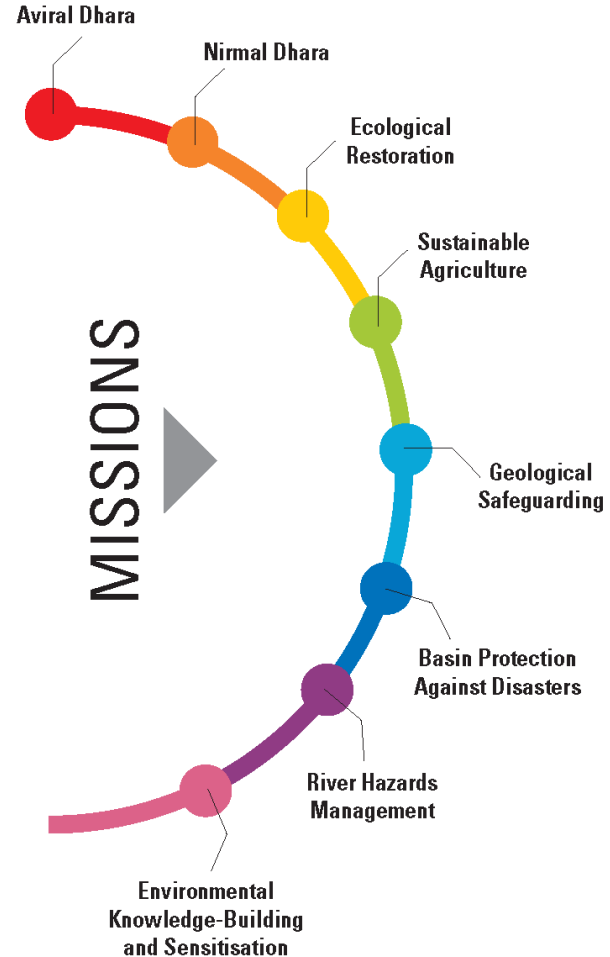
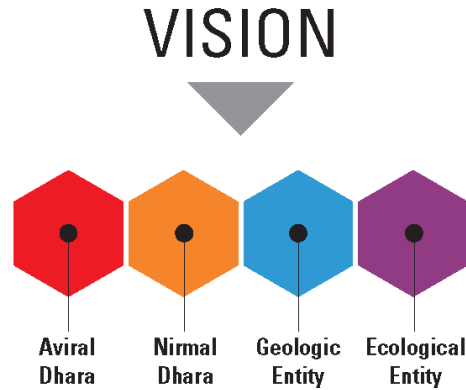
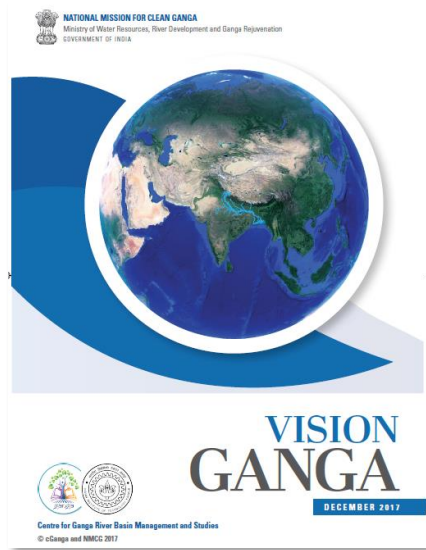
Source: ICDPR (2016) Danube Declaration. ICDPR Website „About us“ Goals of ICPDR.
<http://www.icpdr.org/main/icpdr/about-us> (02/2020)

ICPDR Danube River Basin Management Plan (2015)

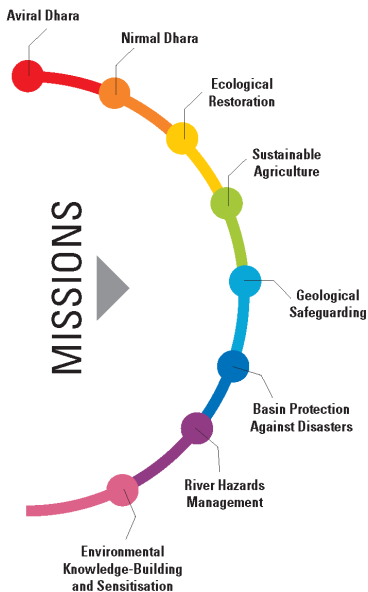
Pressures	Objectives	Programme of Measures 2015-2021
Pollution by organic substances	Reducing pollution by organic substances	<ul style="list-style-type: none"> - Access to sewer systems, at least biological treatment - Constructing sewers and treatment plants
Pollution by nutrients	Reducing pollution by nutrients	<ul style="list-style-type: none"> - Nutrient removal technology for 28 million people equivalents - Phosphate-free detergents - Reduction of nutrient input and losses related to farmland
Pollution by hazardous substances	Reducing pollution by hazardous substances	<ul style="list-style-type: none"> - Apply best available technologies and treatment in industry - Prevent accidents (Seveso III Directive)
Hydromorphological alterations	Improving the hydromorphological conditions	<ul style="list-style-type: none"> - Construct 146 fish migration aids until 2021 - Restoration measures for rivers - Reconnect floodplains / wetlands
	Improving groundwater	

Source: ICDPR (2015) Danube River Basin Management Plan Update 2015

Example: the Ganga basin – from Vision to 8 Missions (Objectives)



Example: the Ganga basin – from Vision to 8 Missions (Objectives)



MISSION 1

Aviral Dhara

- i. Accurate determination of NRGB's hydrological status.
- ii. Water resources planning with emphasis on wetlands, forests and distributed groundwater and surface water storages.
- iii. Increase in water use efficiency through: (a) realistic pricing of fresh water; (b) incentives, technical assistance, and allocation of water rights and entitlements to consumers; and (c) reuse and recycling of water.
- iv. Policy shift with emphasis on water resource preservation, stakeholder control, expert guidance and regulation.
- v. Ensuring longitudinal river connectivity and E-Flows at dams, barrages, etc., and new criteria for approving such projects.
- vi. Regulating water withdrawals in water depleting regions.
- vi. Assessment and monitoring of sediment resources of the network including their quantity, quality and nutrient value.

MISSION 2

Nirmal Dhara

- i. Management of solid and liquid wastes generated from Domestic/ Commercial Sources.
- ii. Riverfront development, floodplain management and rejuvenation of water bodies.
- iii. Management of Industry-generated solid and liquid wastes.
- iv. Management of Polluted Agricultural Run-off.

MISSION 3

Ecological Restoration

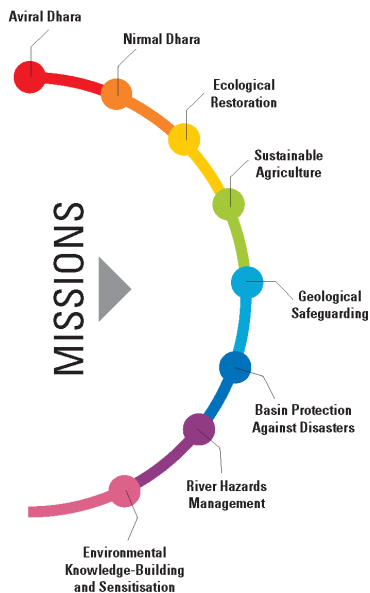
- i. Restoration of longitudinal connectivity along with E-flows at dams, barrages and other obstructions.
- ii. Maintenance of lateral connectivity across floodplains.
- iii. Restoration of unpolluted rivers.
- iv. Regulation of river bed farming and sand-mining from river beds.
- v. Regulation of plying of noisy ships, dredging, and river modifications.
- vi. Control of alien species invasions, overfishing and fishing during spawning seasons.
- vii. River nutrient assessment and release of sediments trapped behind dams/barrages into downstream river reaches.
- viii. Long-term bio-monitoring of the Ganga river network.
- ix. Synergising actions with the Dolphin Conservation Action Plan—2010.
- x. Comprehensive research on ecological dynamics of the River System.

MISSION 4

Sustainable Agriculture

- i. Adoption of Conservation Agriculture (no tillage, crop diversification, and mulching), especially in degrading lands, to enhance soil fertility and agricultural output with resource conservation.
- ii. Promotion of Organic Farming where needed or economically feasible.
- iii. Beneficial water and nutrient application techniques in rice cultivation, such as SRI (System of Rice Intensification) and Urea Deep Placement.
- iv. Promoting other established resource conservation technologies.
- v. Promoting regional (landscape-scale) resource conservation steps to counter monotonous agro-ecosystem impacts.
- vi. Experimentation, adaptability and flexibility in agriculture to synthesise traditional knowledge with ongoing and future scientific discoveries.
- vii. Suitable policy measures and strengthening of institutional framework.

Example: the Ganga basin – from Vision to 8 Missions (Objectives)



MISSION 5

Geological Safeguarding

- i. Control/regulation of geologically hazardous activities including deep groundwater withdrawals, underground excavations, explosions, tunnelling, mining, hydraulic rock fracturing, and operation of large reservoirs.
- ii. Restrictions on geomorphologically harmful land-use practices such as deforestation and construction activities on hill slopes and floodplains, excessive tillage, river bed mining, and river bank modifications.
- iii. Improved drainage of low-lying areas and disturbed areas stabilisation.
- iv. Mapping river migration zones and geological monitoring of basin.

MISSION 6

Basin Protection Against Disasters

- i. Routine hydro-meteorological and biological events should not be countered.
- ii. Ecosystems should be strengthened against catastrophic disasters by preserving wetlands, promoting mixed vegetation and indigenous forests, and curbing human land-use disturbances and encroachments.
- iii. Floodplain regulations and vegetative measures to combat extreme river floods are preferable to embankments/levees.
- iv. The ecology of Forest Fires and Epidemics & Biological Invasions need to be studied extensively. Until then, active interventions to counter such events should be limited.
- v. Deforestation, road and building constructions, and unsafe debris disposal need to be strictly checked in the Upper Ganga Basin and other hilly regions to minimise land-slides and landslips.
- vi. Early rejuvenation of disaster-struck ecosystems should be aided by re-introducing indigenous species resistant to the specific disaster types and re-creating an enabling physical environment.

MISSION 7

River Hazards Management

- i. Basin scale flood-risk maps should be prepared and linked to an online data base and flood warning system.
- ii. Drainage improvement and land reclamation in low-lying areas should be taken up systematically and urgently.
- iii. Assessment of soil salinity and its mitigation strategy to be taken up with use of salinity resistant crops and soil improvement practices.
- iv. Alternatives to embankments for flood management with emphasis on 'living with the floods' concept must be emphasised; this may include floodplain zoning and other nonstructural approaches.
- v. Research needed on sediment dynamics and its application in river management projects for sustainable river management strategies.
- vi. Some pilot projects may be undertaken in partnership with state governments, e.g.: (a) Reactivation of paleochannels in the Kosi basin and design of flood spillway; (b) Improving drainage congestion caused by unplanned rail/road network; (c) Designing canals to drain water.

MISSION 8

Environmental Knowledge Building and Sensitisation

- i. Establishment of a comprehensive Data Bank by continuous collection, processing and storage of information on the basin's natural resources, anthropogenic activities, and environmental monitoring of basin.
- ii. Preparation of secondary results (representative parameters, charts, tables, etc.) based on primary data.
- iii. Preparation of documents and materials for easy understanding by non-specialised people.
- iv. Keeping the above information in open domain for easy access by interested individuals and institutions.
- v. Conducting educational workshops and campaigns with stakeholders and interested citizens to enable their sensitisation and comprehensive understanding of basin processes.
- vi. Conducting ground-level monitoring and field researches of the Ganga River Basin's environment with stakeholder participation.

Discussion: Are the Missions (Objectives) of Vision Ganga SMART?

IT'S YOUR TURN



- S** – specific
- M** – measurable
- A** – achievable
- R** – relevant
- T** – time-bound

Continued engagement pre and post webinar

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2. E-Learning platform - <http://78.46.247.119/>

(Temporarily hosted on AHT servers and will be transferred to the servers of training institutes.)

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