

River Basin Management Cycle Training Series

07 - Implementation of RBM



Implemented by

giz Deutsche Gesellschaft
für Internationale
Zusammenarbeit (GIZ) GmbH

**GNANAMI
GANGE**



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

7 Implementation of RBM

7.1 RBM Plan

7.2 Development of Programme of Measures (PoM)

7.3 Aspects for Implementing PoMs / RBM Plans

7.4 Review and Revise PoM



Implemented by

giz Deutsche Gesellschaft
für Internationale
Zusammenarbeit (GIZ) GmbH

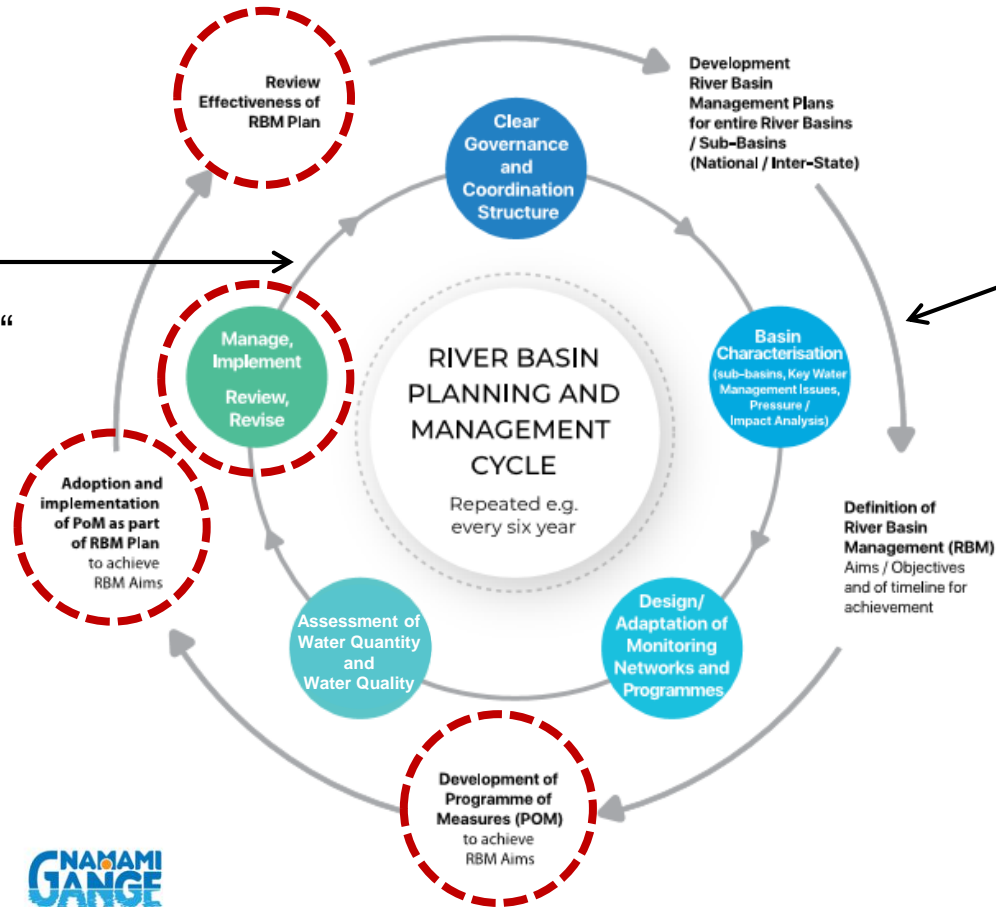
**GNAMAMI
GANGE**



The River Basin Planning and Management Cycle

„Inner cycle“
Technical/
operational level“

„Outer cycle“
Planning and
decision making
level



7 Implementation of RBM

7.1 RBM Plan

7.2 Development of Programme of Measures (PoM)

7.3 Aspects for Implementing PoMs / RBM Plans

7.4 Review and Revise PoM



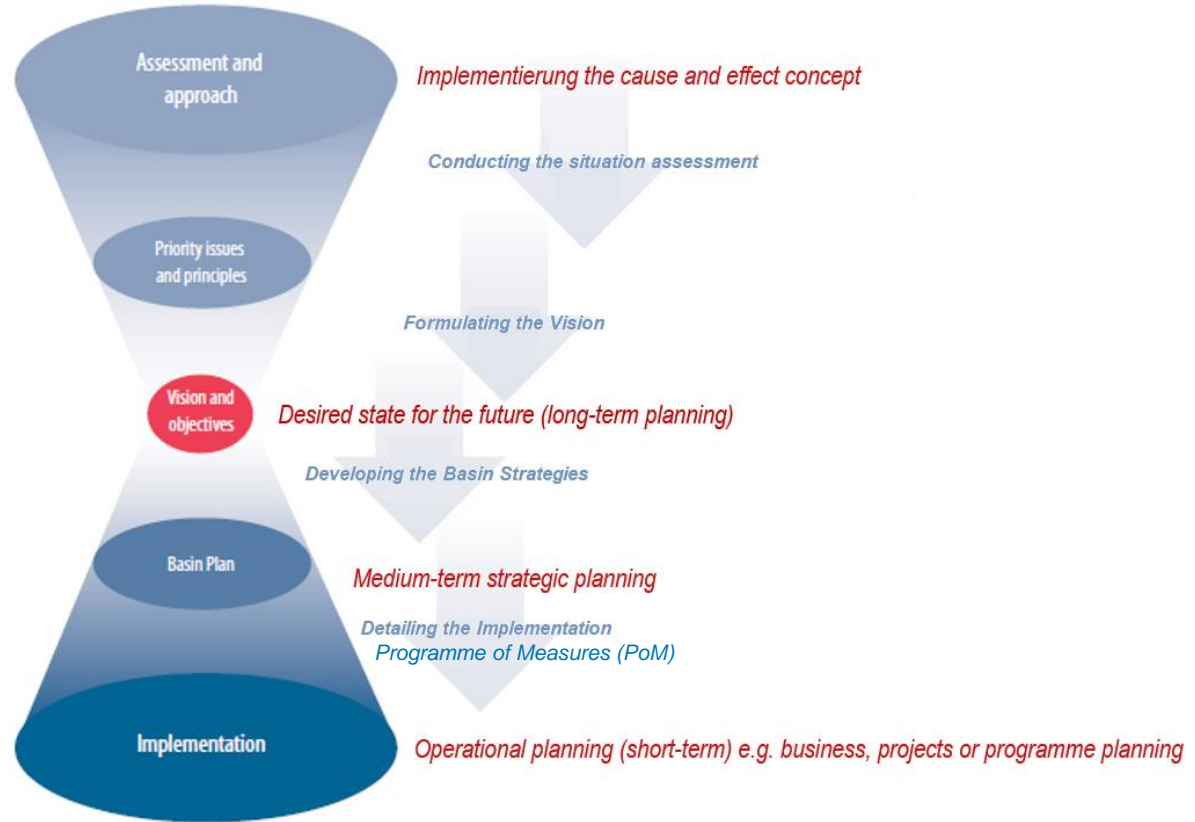
Implemented by

giz Deutsche Gesellschaft
für Internationale
Zusammenarbeit (GIZ) GmbH

**GNAMAMI
GANGE**



Moving from Vision and Objectives to a Comprehensive Plan



Adapted from Pegram et al., 2013, p. 83

Planning Basin Approaches

Steps	Rhine River	Ganga River
Problem analysis: Analysing pressures and impacts	Water quality, flood risk, lack of fauna/ fish	Water allocation/ abstraction, water pollution (wastewater and solid waste), dams ...
Definition of long-term objectives: vision	Re-introduction of salmon	Aviral Dhara, Nirmal Dhara, geologic entity, ecologic entity
Definition of short-term objectives and results: strategic planning	Water quality targets, connectivity, flood risk management	(GRBMP 2015)
Operational planning to achieve results	River Basin Plans: Wastewater treatment, connectivity, flood retention, awareness, organisation	(GRBMP 2015)

Overview of the Planning Process

- 1) Definition of **joint vision**
- 2) Identification of **objectives**
- 3) Comparison of **objectives** against **state** of the basin
- 4) Definition of **measures** in order to move towards objectives
- 5) **Specification of measures** for implementation
- 6) **Drafting of management plan**
 - Drafting of outline
 - Consultations
 - Drafting of plan and programme of measures
 - Consultations
 - **Finalisation of plan and programme of measures**
- 7) **Dissemination** of plan and programme of measures



Structure and Content of a Basin Plan

The structure and content of a plan needs to be adapted to the needs of the basin and those involved in the planning and implementation process → Typically, the structure of a plan includes:

- **Description of the basin**
 - Current status
 - Future trends
 - Key water management issues
- **Basin vision/ aims and objectives**
- **Implementation plan/ Programme of Measures (PoM)**
 - Definition of measures
 - Responsibilities and resources
 - Monitoring mechanisms

Source: ADB River Basin Planning Principles (<https://www.adb.org/publications/river-basin-planning-principles>)

Levels of Basin Plans

Internationally-coordinated
basin plans

- International river basin commissions

Nationally-coordinated
basin plans

- National river basin communities

Sub-basin plans

- Federal water or basin agencies

Examples of Structures of Basin Plans

Danube RBMP

Table of Contents	
1. Introduction and background	1
1.1. Introduction	1
1.2. The development of the DRBM Plan and the EU Water Framework Directive	2
1.3. The Danube Basin Analysis 2004 – analytic basis for the DRBM Plan	3
1.4. Role of the Significant Water Management Issues	6
1.5. Structure and logic of the DRBM Plan	7
2. Significant pressures identified in the Danube River Basin District	7
2.1. Surface waters: rivers	7
2.1.1. Organic pollution	7
2.1.1.1. Organic pollution from urban wastewater	8
2.1.1.2. Organic pollution from industry	9
2.1.1.3. Organic pollution from agriculture	10
2.1.2. Nutrient pollution	11
2.1.2.1. Nutrient point source pollution	12
2.1.2.2. Nutrient diffuse source pollution	14
2.1.3. Hazardous substances pollution	16
2.1.4. Hydromorphological alterations	18
2.1.4.1. River and habitat continuity interruption as a significant pressure	20
2.1.4.2. Disconnection of adjacent wetlands/floodplains	21
2.1.4.3. Hydrological alterations	22
2.1.4.4. Future infrastructure projects (FP)	25
2.1.5. Other issues	25
2.1.5.1. Quantity and quality aspects of sediments as pressure and impacts – addendum to the DBA 2004	25
2.1.5.2. Invasive species in the DRBD – a possible pressure	27
2.2. Surface waters: lakes, transitional waters and coastal waters	28
2.3. Groundwater	28
2.3.1. Groundwater quality	29
2.3.2. Groundwater quantity	29
3. Protected areas in the DRBD	31
4. Monitoring networks and ecological / chemical status	32
4.1. Surface waters	32
4.1.1. Surface water monitoring network under the TNM	33
4.1.2. Joint Danube Survey 2	33
4.1.3. Confidence in the status assessment	35
4.1.4. Final designation of heavily modified and artificial water bodies	36
4.1.4.1. Approach for the final designation of heavily modified water bodies	36
4.1.4.1.1. Rivers	36
4.1.4.1.2. Lakes, transitional waters and coastal waters	37
4.1.4.2. Results of the final designation of heavily modified and artificial water bodies	37
4.1.4.2.1. Rivers	37
4.1.4.2.2. Lakes and transitional waters	38
4.1.4.2.3. Coastal waters	38
4.1.5. Ecological and chemical status	39
4.1.5.1. Rivers	39
4.1.5.2. Lakes and transitional waters	41
4.1.5.3. Coastal waters	41
4.1.6. Gaps and uncertainties	41

Elbe RBMP

Inhaltsverzeichnis	
I. Einleitung	5
1. Grundätze	5
2. Vorgehensweise	6
3. Beschreibung der bisherigen internationalen Arbeiten und Aktivitäten zum Gewässerschutz im Einzugsgebiet der Elbe inklusive des Hochwasserschutzes	9
II. Bewirtschaftungsplan – Aktualisierung 2015	11
1. Allgemeine Beschreibung der Merkmale der internationalen Flussgebietsseinheit Elbe	11
1.1. Oberflächengewässer	13
1.1.1. Lage und Grenzen der Oberflächengewässerkörper	13
1.1.2. Ökologien und Oberflächengewässertypen im Einzugsgebiet	14
1.1.3. Künstliche und erheblich veränderte Gewässer	14
1.2. Grundwasser	16
2. Zusammenfassung der signifikanten Belastungen und anthropogenen Auswirkungen auf den Zustand von Oberflächengewässern und Grundwasser	18
2.1. Oberflächengewässer	18
2.2. Grundwasser	22
3. Ermittlung und Kartierung der Schutzgebiete	24
4. Überwachungsnetze und Ergebnisse der Zustandbewertung der Wasserkörper	27
4.1. Überwachungsprogramme der Oberflächengewässer	28
4.2. Zustandbewertung der Oberflächengewässer	33
4.3. Überwachungsprogramme des Grundwassers	43
4.4. Zustandbewertung des Grundwassers	47
4.5. Überwachung und Zustandbewertung der Schutzgebiete	53
4.5.1. Überwachung von Wasserkörpern für die Entnahme von Wasser für den menschlichen Gebrauch nach Artikel 7 WRRL	53
4.5.2. Zustand von Wasserkörpern für die Entnahme von Wasser für den menschlichen Gebrauch nach Artikel 7 WRRL	54
5. Liste der Umweltziele und Ausnahmen	55
5.1. Überregionale Strategien zur Erreichung der Umweltziele	56
5.1.1. Verbesserung der Gewässerstruktur und Durchgängigkeit	58
5.1.2. Reduzierung signifikanter stofflicher Belastungen mit Nährstoffen und Schadstoffen	64
5.1.3. Weitere regional wichtige Wasserbewirtschaftungsfragen	72
5.2. Umweltziele für Oberflächengewässer- und Grundwasserkörper	73

Can be found on the e-learning platform!

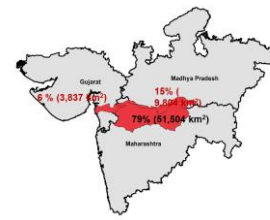
Ganga River Basin Management Plan

Contents		Page
		ix
Preface		i
Organizational Structure for Preparing GRBMP		iii
Composition of Thematic Group		v
Abbreviations and Acronyms		vii
List of Figures		xi
1 Introduction		1
1.1 River Ganga in Indian Consciousness		1
1.2 Deterioration of River Ganga		1
1.3 GRBMP's Goal		1
1.4 Functional Unity of the Ganga Basin		2
1.5 Importance of the Himalaya Mountains		2
1.6 Principle of Natural Resource Management in NRGB		2
1.7 Philosophy		3
1.8 Degradation Processes in NRGB and their Anthropogenic Causes		3
1.9 Impact on Humans		3
1.10 Scope for Interventions		4
2 Key Features of National River Ganga Basin		5
2.1 River Network		5
2.2 Basin Hydrology		5
2.3 Defining River Ganga		6
2.4 Geology		7
2.5 Wetlands		7
2.6 Fluvial Geomorphology		8
2.7 River Biodiversity		9
3 Vision, Mission, and Conceptual Framework		9
3.1 Vision of Ganga River		9
3.2 Objectives of GRBMP		10
3.3 Formulation of Missions		10
3.4 Conceptual Framework		11
3.5 Work Structure		12
4 Mission Summaries		13
4.1 Aviral Dhara		13
4.1.1 Importance of Aviral Dhara		13
		ix

		Page
4.1.2	Water Storage and Demand Control	13
4.1.3	Dams, Barrages and E-Flows	13
4.1.4	Hydrological Modeling of NRGB	15
4.1.5	Sediment Resources of National River Ganga	16
4.1.6	Recommended Actions	17
4.2	Nirmal Dhara	18
4.2.1	Importance of Nirmal Dhara	18
4.2.2	Type of Anthropogenic Wastes	18
4.2.3	Measures Needed to Achieve Nirmal Dhara	19
4.2.4	Recommended Actions	19
4.2.5	Implementation Scheme	20
4.3	Ecological Restoration	21
4.3.1	Need for Ecological Restoration	21
4.3.2	Threats to River Biodiversity	22
4.3.3	Recommended Actions	23
4.4	Sustainable Agriculture	23
4.4.1	Importance of Sustainable Agriculture	23
4.4.2	Recommended Actions	24
4.5	Geological Safeguarding	25
4.5.1	Importance of Geological Safeguarding	25
4.5.2	Recommended Actions	25
4.6	Basin Protection Against Disasters	25
4.6.1	Importance of Basin Protection Against Disasters	25
4.6.2	Recommended Actions	26
4.7	River Hazards Management	26
4.7.1	Importance of River Hazards Management	26
4.7.2	Recommended Actions	27
4.8	Environmental Knowledge-Building and Sensitization	28
4.8.1	Importance of Environmental Knowledge-Building and Sensitization	28
4.8.2	Recommended Actions	28
5 Recommendations for Implementation		29
5.1	Specific Actions	29
5.2	Envisaged Consequences	29
5.3	Implementation Mechanism	30
6 GRBMP Documentation		30
		x

Can be found on the e-learning platform!

Example: Tapi River Basin Management Plan



Five **Key Water Management** Issues agreed on 29 March 2019 between the three Tapi States:



Point Pollution from
Urban Settlements
& Industries



Area Source
Pollution from
Agriculture



Alterations of River
Hydrology/Water
Quantity



Alterations of
Groundwater
Quality and Quantity



Alteration of
Morphology / Sand
Mining

For each Key Issues:

- Visions and management objectives.
- Pressure/Impact Analysis and Risk Assessment including scenarios.
- Programme of Measures.
- Thematic maps are key to Tapi RBM Plan: easy overview on all issues on the basin –wide scale.

7 Implementation of RBM

7.1 RBM Plan

7.2 Development of Programme of Measures (PoM)

7.3 Aspects for Implementing PoMs / RBM Plans

7.4 Review and Revise PoM



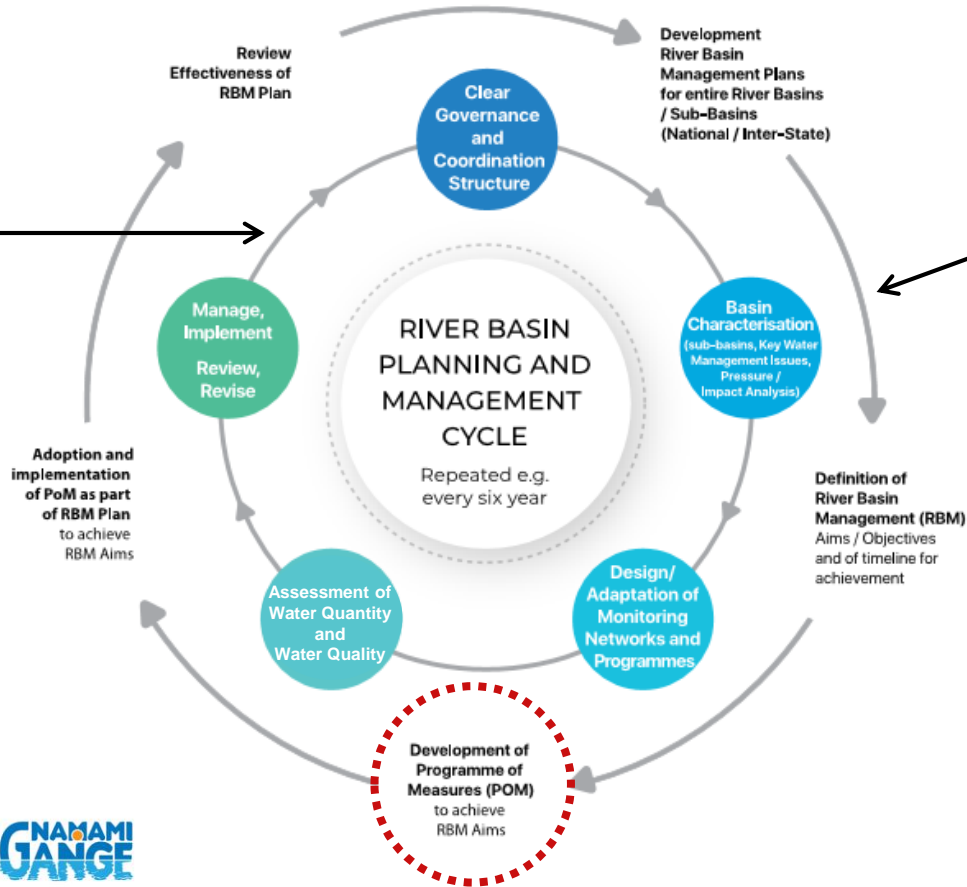
Implemented by



The River Basin Planning and Management Cycle

„Inner cycle“
Technical/
operational level“

„Outer cycle“
Planning and
decision making
level



Programme of Measures (PoM)

- Once a joint vision and specific objectives for basin management have been defined, a PoM is needed
- **A PoM**
 - **Summarises all measures** that need to be taken to reach the vision and the objectives
 - Provides a **list of those measures in a systematic manner**
 - Provides **details on their implementation**
 - Attaches **timelines** and implementation plans to the respective measures
 - **Indicates resources needed** for implementation (financial, technical, human)

Elements of the RBMP and its PoM: The EU WFD Conceptual Approach

- Environmental quality standards
- Best available technology
- No further deterioration but restoration
- Combined approach
- Best practicable environmental option
- Enforcement of permits

Emission Cadastres as Decision Support Tool for PoM

- Build up an emission cadastre of communal/urban and industrial point sources
- Identify point sources of pollution from urban and industrial sources using COD/BOD load
- Identify priority hazardous substances to be reduced by river monitoring programmes
- Reduction of industrial emissions → Hazardous substances from chemical, pharmaceutical, cellulose fabrication, paper and metallurgic industry

Sewage Treatment Prioritisation

How to identify measures of highest effectivity (pollution) and efficiency (finance):

a robust and pragmatic approach from the emergency immediate action programme of the Elbe River 1990.

▪ **Urban sewage point sources**

- The amount of sewage water load possible to reduce by treatment at source
- Discharge points directly on the river
- Discharge points on tributaries to the Elbe river ranked by distance to confluence with the river

▪ **Industrial point sources**

- Industrial point sources which contribute more than 5% of the total load of the river measured at a defined downstream monitoring transect
- Industrial discharge points sources discharging directly into the river
- Industrial discharge points on tributaries to the Elbe river ranked by distance to confluence with the river

Theoretical Example: Moving from Water Quality Vision to Specific Measures

Vision: A healthy river free of pollutants that threaten human and ecosystem health

Objectives: reduction of water pollution (by contaminant X) at Y %

Measures:

- Construction of x wastewater treatment plans in area y of the basin
 - Specific aim of measure: reduction of emission of pollutant z by xx%
 - Activities
 - Planning of wastewater treatment plan
 - Acquisition of financial means for wastewater treatment plant
 - Construction of wastewater treatment plan
- Regulation of agricultural pollution run-off
 - Specific aim of the measure: Reduction of agricultural pollution/non-point source pollution
 - Activities
 - New laws and regulation limiting agricultural emissions
 - Introduction of polluter-pays-based wastewater charges for agricultural producers
 - New monitoring network in region x to monitor agricultural run-off

Exercise: PoM for a Sub-basin of the Ganga River

IT'S YOUR TURN

Group work in (sub-) basin

- Choose one of the pressures of the DPSIR characterisation (TM1)
- Relate the pressure to **one of the objectives** of Ganga River Basin Management Plan
- Formulate a **set of measures** to achieve the objective in your sub-basin
- (Compare your ideas with the recommended actions in the GRBM Plan)

I. “Aviral Dhara” (Uninterrupted Flow)

II. “Nirmal Dhara” (Unpolluted Flow)

III. Geologic Entity

IV. Ecological Entity

RBM Role Game

Objective of the exercise:

The RBM Role Game is an interactive exercise that help to:

- Comprehend the different interests from stakeholders.
- Identify objectives for RBM.
- Prioritise measures to be implemented basin to achieve the objectives.

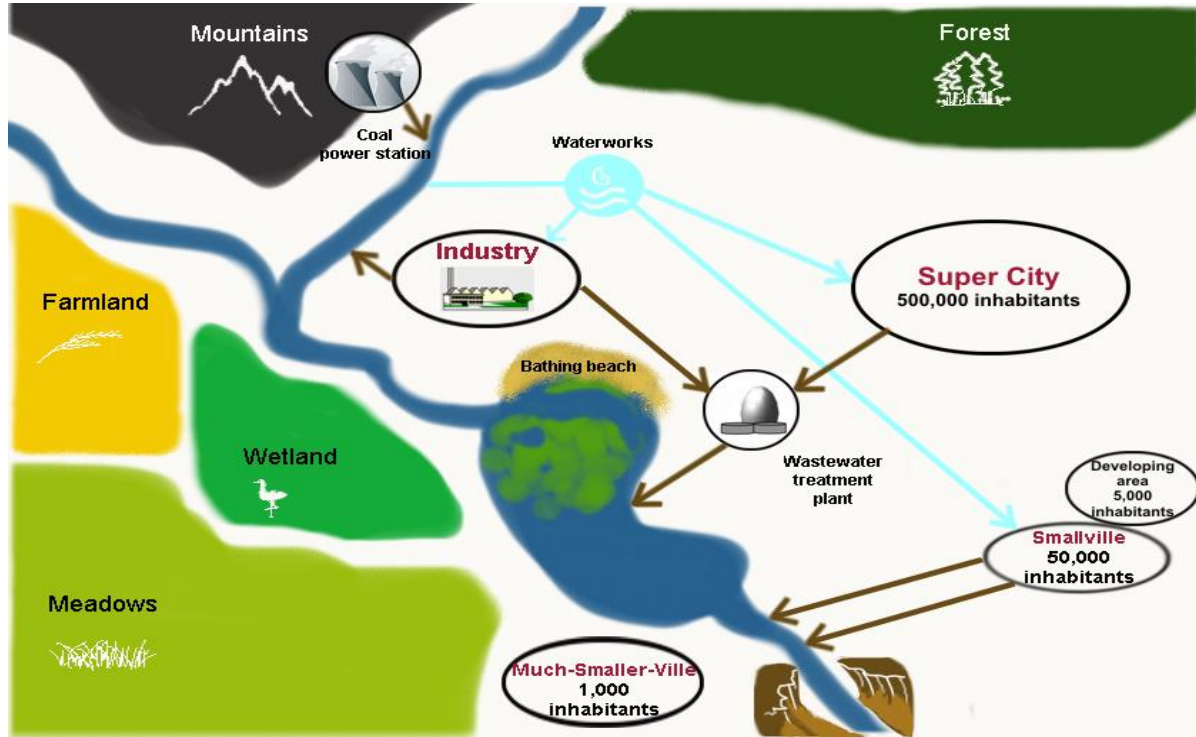
It is a role play for groups of at least 3 to 6 participants. Each group will have to:

- Read the information about the basin
- Each group-participant will have to take a role
- The group has to start discussion to develop the Basin Master Plan

IT'S YOUR TURN

RBM Role Game - DWA World University Challenge, 2014

IT'S YOUR TURN



RBM Role Game DWA World University Challenge, 2014

IT'S YOUR TURN

Some facts and figures (1)

- **Water quality and quantity** of Lake Super-City is getting worse from day to day. A lot of algae is growing, O₂ concentration is low, water is getting turbid and residents are complaining about the odor, and temperature is too warm due to the cooling water from the power plant. Unfortunately, Much-Smaller-Ville will not be able to grow any further as the meadows will become a groundwater-protection-area. During drought season water scarcity is becoming more of a problem, especially for agriculture.
- **Water** supply of the “Much Smaller Ville” comes from the lake. This has to be stopped immediately because of the water quality problems. You want a sustainable drinking water system for the green province with high quality water and a buffer capacity during drought season. Water is taken directly from the river at the moment. More water is needed every year, as the number of inhabitants is increasing and the industry growing. Non-revenue water is 45%. The meadows have a very large aquifer which until now has only been used for agricultural irrigation.
- **Wastewater treatment** in the whole region has to be improved. Super City’s wastewater treatment plant is old and only has a carbon-elimination (secondary treatment). Additionally, final clarifiers are hydraulically overloaded and flushing out suspended solids. There is no space for expansion. Smallville only has septic tanks. The outflow goes via public sewer system to the lake. Smallville is growing rapidly. Much-Smaller-Ville also uses septic tanks. There is no sewer system. Sludge of septic tanks is transported by trucks. The disposal of sewage sludge on farmland is not allowed any longer, because of high heavy metals concentrations.

RBM Role Game DWA World University Challenge, 2014

IT'S YOUR TURN

Some facts and figures (2)

- **Industry** wants to expand, but water removal permit doesn't allow further water extraction from river and effluent concentration limits have been increased. You want to attract more industry and commerce to improve the region's financial situation and create more jobs. The existing industry has a very intensive water usage (process water and cooling water). Furthermore, all wastewater treatment technologies are end of pipe solutions. The wastewater streams are characterised by high COD, Ammonia and Phosphorus loads. All water production streams are above 25°C.
- **Waste Management** is old and has to be improved. The old landfill is full. Industry and city are looking for new alternatives. Industry and cities do operate together in waste collection.
- **Electricity** blackouts in the province are occurring more and more. Green activists always talk about waste-to-energy and biomass-to-energy. Find answers to their slogans. You are wondering whether you should still invest in the old coal power plant. The old coal power plant doesn't meet emission guidelines anymore. Too much water from the coal power plant is being led to the river, warming it up. There is a lot of wind in the mountains. However, wind alone might not be enough for the region. The effluent of the lake flows into a canyon. The geological conditions would allow the construction of a dam.

RBM Role Game - DWA World University Challenge, 2014

IT'S YOUR TURN

Your team consists of the following:

- Government official(s) of the Green Province:
 - 1 representative from the towns majors: s/he wants to improve to solid waste problem.
 - 1 representative from the Ministry of Environment: concerned by the quality of the Lake.
 - 1 representative from the Ministry of Industry: s/he wants to develop further the industries in the region.
- 1 Representative of the water supply and wastewater utility: concerned by water supply and waste water treatment.
- 1 Representative of the energy supply utility: want to improve electricity generation.
- 1 Consultant whose role is to provide innovative ideas and facilitate the discussion.

Your common vision is:

Is to make the Green Province more attractive for new residents, new industries while also promoting ecofriendly tourism.

Your tasks:

1. Read the context (10 min).
2. Each participant chooses a role (5 min)
3. Identify up to 5 objectives to carry out the Vision (10 min).
4. Identify and place on the maps up to **10 measures** to achieve the objectives (40 min).

7 Implementation of RBM

7.1 RBM Plan

7.2 Development of Programme of Measures (PoM)

7.3 Aspects for Implementing PoMs / RBM Plans

7.4 Review and Revise PoM



Implemented by

giz Deutsche Gesellschaft
für Internationale
Zusammenarbeit (GIZ) GmbH

**GNAMAMI
GANGE**



Aspects for Implementing PoMs / RBM Plans

- Without the **provision of financial resources**, the Programme of Measures (PoM) cannot be implemented. The provision of financial resources requires a concrete financial plan coupled with the public budget.
- A **Review of the RBM Plan** needs to be done to learn about timelines, resources, construction capacities and further challenges to adapt the new plan accordingly.

Sources of Financing for Basin Management

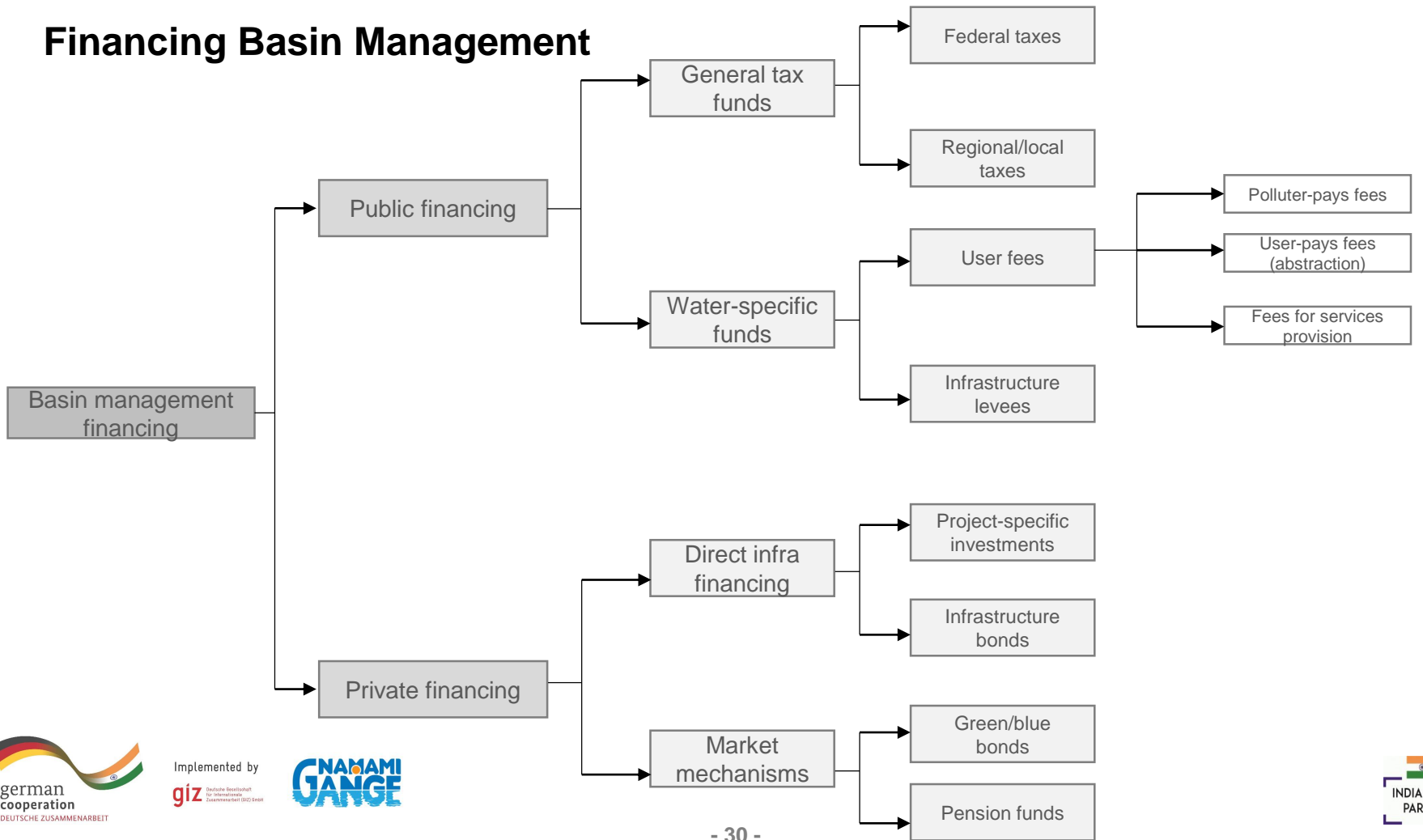
Financing can come from **different sources**, depending on:

- The political and economic situation of a country (including federal states where applicable)
- The fiscal and budgetary system of a country
- The distribution of responsibilities for water management itself and for financing it

They can **include**:

- Government budget (national – state – local)
 - Tax-funded
 - Fee-funded
 - Funded through dedicated government funds derived from e.g. wastewater and/or water abstraction charges
- Private funds/investments
- Public-private partnerships (PPP)
- International contributions e.g. Development cooperation/ Official Development Assistance (ODA) and/or dedicated funds

Financing Basin Management



Water Fees/ Charges as an Option for Financing Water Management Measures

- Charges, fees or market-based instruments such as permits provide an **incentive** for cost-effective investment in pollution clean-up
- Charges or fees will tend to be a lower cost method of achieving a given standard
- Public authorities levy fees and user-charges for services provided (e.g. effluent or refuse disposal), or where the revenue is used for a specific purpose (e.g. funding clean-up or abatement measures)
- They are collected from businesses as well as from private consumers

Similar to taxes, fees and charges are implemented with a **triple objective:**

- Setting a price to promote more efficient resource use and to limit the demand
- Finance government services or pay for the protection of the environmental good provided (“full cost recovery”) → Revenue collection by public authorities
- Promote accountability in the public sector → Price as important source information, awareness of the costs of the public services

Source of Financing for Basin Management at Federal State Level

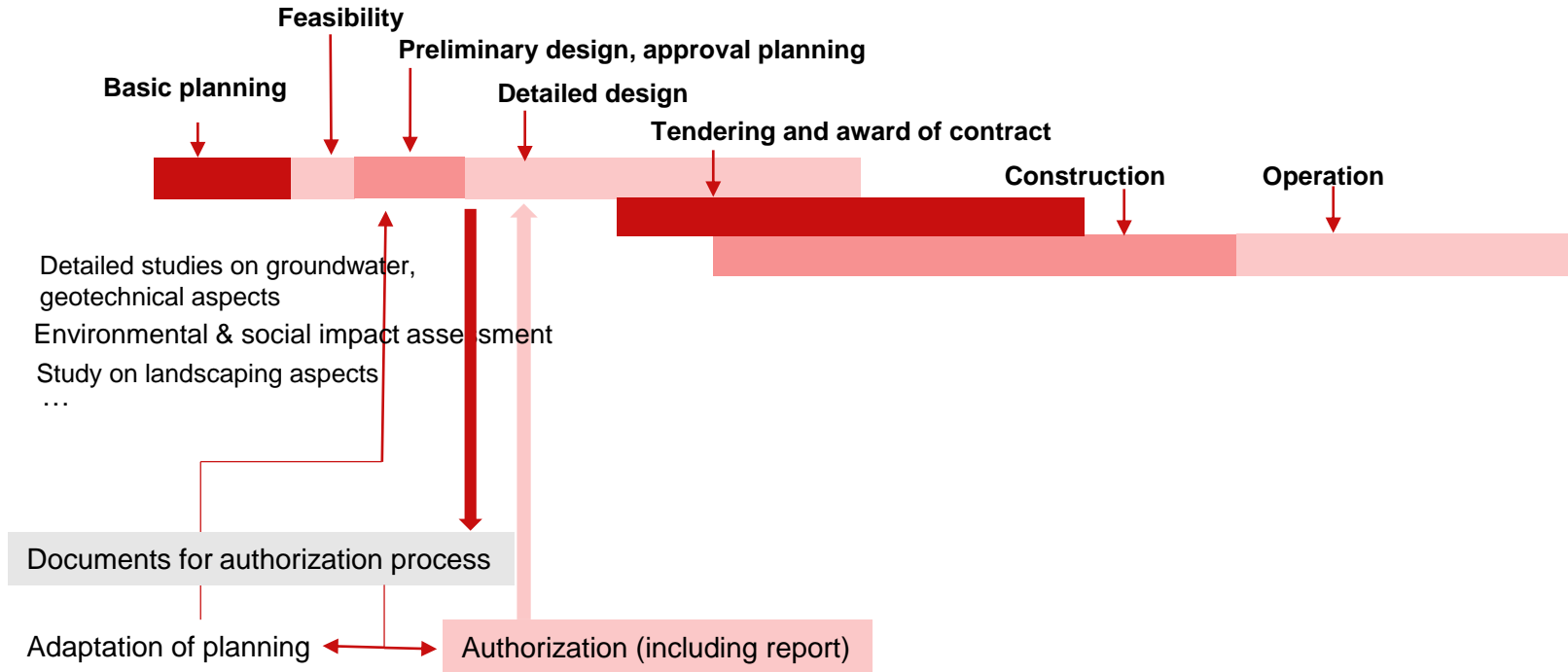
German Law for Wastewater Fees (“Abwasserabgaben-Gesetz” 1976, 2005, 2014)

- The wastewater fee is paid for pollution loads e.g. by wastewater treatment plants
- Per pollution unit the polluter has to pay 35.79 €
- Pollution units are 50 kg CSB, 25 kg Nitrogen, 3 kg Phosphorous, 2 kg Chlorine of AOX, heavy metals, and fish toxicity
- The fee/ charges received from polluters are reinvested in improving the quality of surface waters

Water abstraction charge (“Wasserentnahmenentgelt”)

- Charge for abstracting groundwater and surface water introduced in 13 out of 16 German federal states during the period 2008-2013
- About 4-12 cent/m³ for groundwater, partly surface water
- ≤ 1 cent/ m³ for cooling in power plants

Tasks for Planning and Constructing Public Infrastructure



Roles for Planning and Constructing Public Infrastructure

Public administration

- Steer authorisation, comment planning documents
- Prepare tendering documents
- Steer tendering and contracting
- Negotiate contracts
- Monitor costs and implementation

Engineering companies

- Bid for tender
- Basic planning
- Pre-feasibility
- Basic design, license planning
- Detailed design
- Construction control

Construction company

- Construct infrastructure
- Plan and steer construction project
- Steer sub-contractors
- Monitor costs, re-negotiate in case of changes

Environmental experts

- Prepare Environmental Impact Assessment
- Prepare studies on landscaping, biodiversity

Example: Planning Approval Documents for Flood Control Reservoir Bavaria

Flood Control Reservoir (HRB) Feldolling, Mangfall



- Explanatory report
- Plans, including property
- Inventory of construction elements
- Construction plan
- Photo documentation
- Watershed / basin plan
- Water depths, reservoir emptying, reserve water supply, inundation area
- Longitudinal cut, cross sections
- Inlet constructions
- Flood spillways
- Road adaptation
- Drainage plans
- Hydraulic verification
- Model experiment for inlet
- Performance curves
- Geotechnical report and engineering expertise report
- Hydrogeological model report
- Groundwater model report
- Accompanying landscape conservation plan
 - biotope description
 - protection of species
- Environmental impact assessment
 - Including nature protection, conflicts, groundwater
- Fauna - Flora- Habitat Guideline-Compatibility study

Exercise: Implementing PoMs

Discuss in your group and for your (sub-)basin what are the requirements for implementing the PoMs while considering the following:

- Planning/ scheduling of the implementation activities
- Financing
- The permitting/ authorisation process
- Construction phase
- Operational phase

What, in your opinion works well and where do you see bottlenecks for the implementation of river basin management measures?

IT'S YOUR TURN

7 Implementation of RBM

7.1 RBM Plan

7.2 Development of Programme of Measures (PoM)

7.3 Aspects for Implementing PoMs / RBM Plans

7.4 Review and Revise PoM



Implemented by

giz Deutsche Gesellschaft
für Internationale
Zusammenarbeit (GIZ) GmbH

**GNAMAMI
GANGE**



The River Basin Planning and Management Cycle

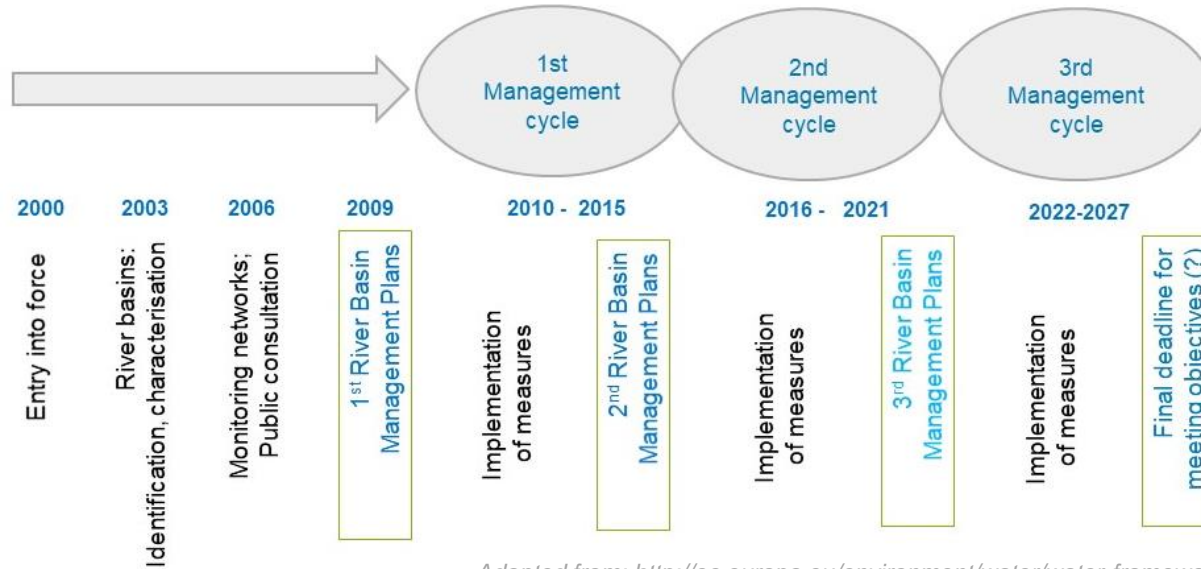
„Inner cycle“
Technical/
operational level“

„Outer cycle“
Planning and
decision making
level



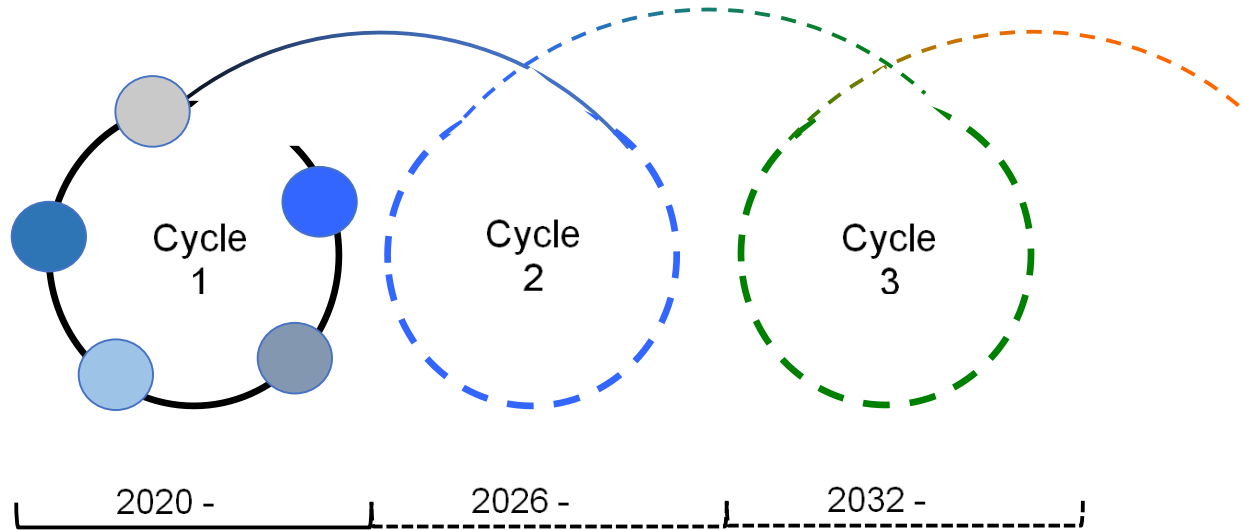
Manage, Implement, Revise, and Review the PoM

- Implementation of the first RBM Management Plan namely its PoM is followed by the revision and verification of the success of the PoM within the RBMP timeline
- In Europe: Years 2015, 2021, 2027 → Cycle length 6 years



Adapted from: http://ec.europa.eu/environment/water/water-framework/info/timetable_en.htm

The River Basin Planning and Management Cycle



- RBM process requires planning over several years and implementation cycles that are to be repeated in a certain frequency (e.g. 6 years).
- Each Cycle is a revision to adjust to new conditions in the basin and to addresses new challenges.



Thank you for giving us the opportunity
to share our experiences with you!

Continued engagement pre and post webinar

1. For queries and related engagements contact GIZ colleagues:

Delhi Office:

- Dr. Sumit Gautam (sumit.gautam@giz.de)
- Ms. Chhavi Sharda (chhavi.sharda@giz.de)

Uttarakhand (Dehradun) Office:

- Mr. Merajuddin Ahmad (merajuddin.ahmad@giz.de)

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

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

Contact: Rania - taha@aht-group.com/ Rebecca - roblick@aht-group.com

As a federally owned enterprise, GIZ supports the German Government in achieving its objectives in the field of international cooperation for sustainable development.

Published by:

Deutsche Gesellschaft für
Internationale Zusammenarbeit (GIZ) GmbH

Registered offices
Bonn and Eschborn

India office:

GIZ Office New Delhi
46 Paschimi Marg, Vasant Vihar
New Delhi 110057

Postal address:

Support to Ganga Rejuvenation
B-5/2, Safdarjung Enclave
New Delhi 110 029
India

E: [martina.burkard@giz.de/](mailto:martina.burkard@giz.de)
[chhavi.sharda@giz.de/](mailto:chhavi.sharda@giz.de)
sumit.gautam@giz.de

Author/Responsible/Editor, etc.:

AHT Group AG Management & Engineering

Design/layout, etc.: GIZ

Photo credits/sources: N.A.

URL links:

Responsibility for the content of external websites linked in this publication always lies with their respective publishers. GIZ expressly dissociates itself from such content.

On behalf of

German Federal Ministry for Economic Cooperation and Development (BMZ)
Support to Ganga Rejuvenation, Competence in Motion,
New Delhi, GIZ India

GIZ is responsible for the content of this publication.

In cooperation with:

