

# River Basin Management Cycle Training Series

## 03 - Basin Characterisation



Implemented by

**giz** Deutsche Gesellschaft  
für Internationale  
Zusammenarbeit (GIZ) GmbH

**GNANAMI  
GANGE**



# Outline

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

# 3 Basin Characterisation



Implemented by



# The River Basin Planning and Management Cycle

„Inner cycle“  
Technical/  
operational level“



„Outer cycle“  
Planning and  
decision making  
level

# Basin Characterisation



## Detailed description/ characterisation of the basin

- Identification of significant water management issues
- Pressures and impact analysis of the human activities on the surface and groundwater bodies

## The DPSIR scheme

- The scheme was adopted by the European Environment Agency
- Identifying driving forces (**D**), pressures (**P**), states (**S**), impacts (**I**), responses (**R**)

# Characterisation of the River Basin (i.e. surface water bodies)

## Step 1: Categorisation of the water body within the river basin district

- Ex.: river/lake/transitional water/coastal water, artificial water body, heavily modified water body)

## Step 2: Typisation/Description of the water body according to its characteristics

- Ex.: ecoregion, altitude, size of the catchment, geology, flow, etc
- For artificial and heavily modified surface water bodies the differentiation shall be undertaken in accordance with the descriptors for whichever of the surface water categories most closely resembles the heavily modified or artificial water body concerned.

## Step 3: Produce a map with the water bodies of the river basin district

- For each surface water body type characterised, type-specific hydromorphological and physicochemical conditions shall be established representing the values of the hydromorphological and physicochemical quality elements.
- Type-specific conditions and type-specific biological references must be derived.

# Assessment of Pressures and Impacts

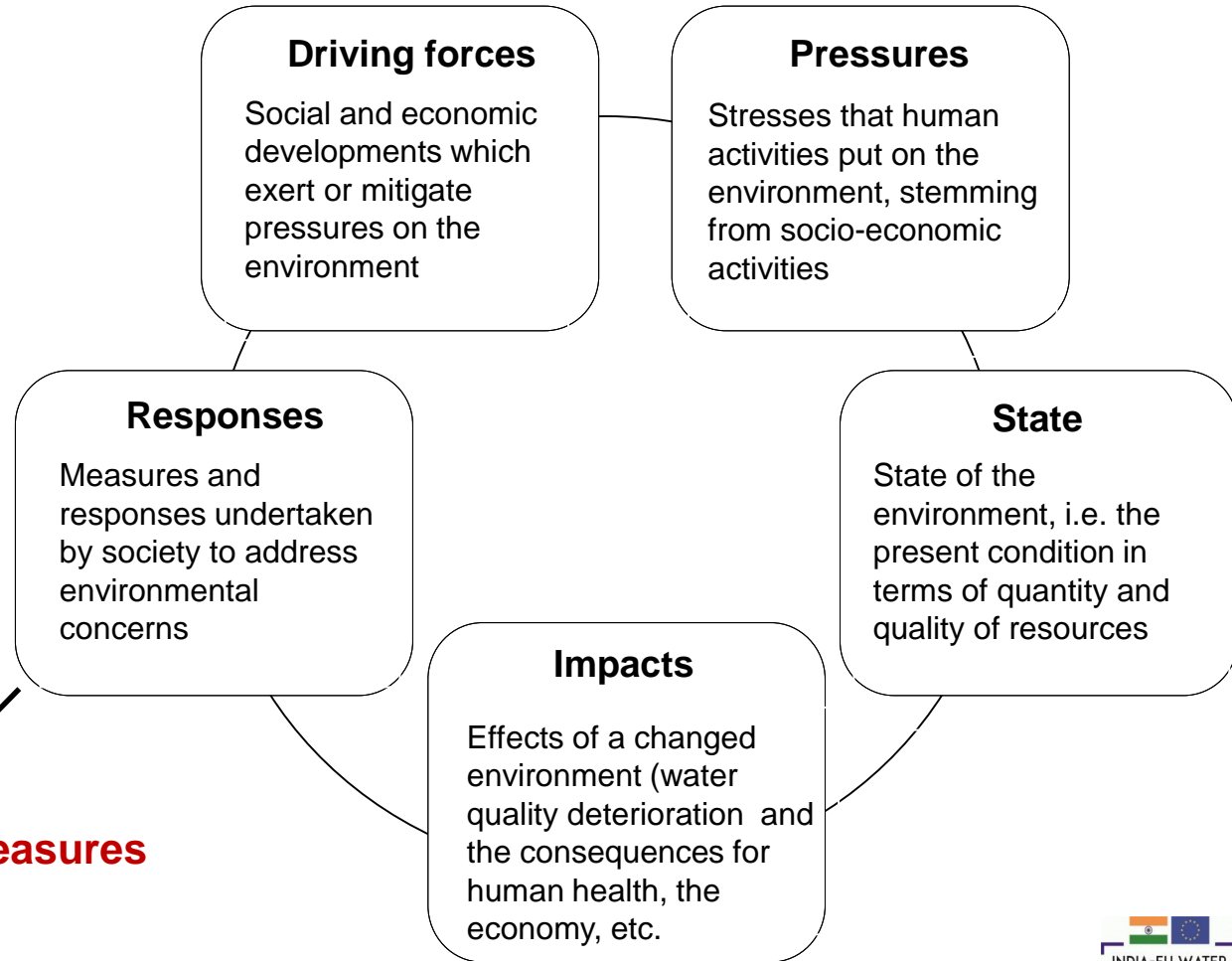
- Before assessing parameters of hydrology, morphology, chemistry and biology, the stakeholders involved should **identify** the **significant pressures** in a basin. Their **impacts** should be quantified.
- Data from **water resources assessment** can help to **understand** the nature of the pressures and the **dimension of the impacts**.
- In **Europe**, important pressures result from industry, agriculture and municipalities. They result in pollution of surface waters. Navigation and hydropower infrastructure has resulted in biodiversity losses and increased flood risks.

*“The EU Water Framework Directive requires the identification of significant pressures from point sources of pollution, diffuse sources of pollution, modifications of flow regimes through abstractions or regulation and morphological alterations, as well as any other pressures.”*

# The DPSIR Scheme

## The DPSIR scheme

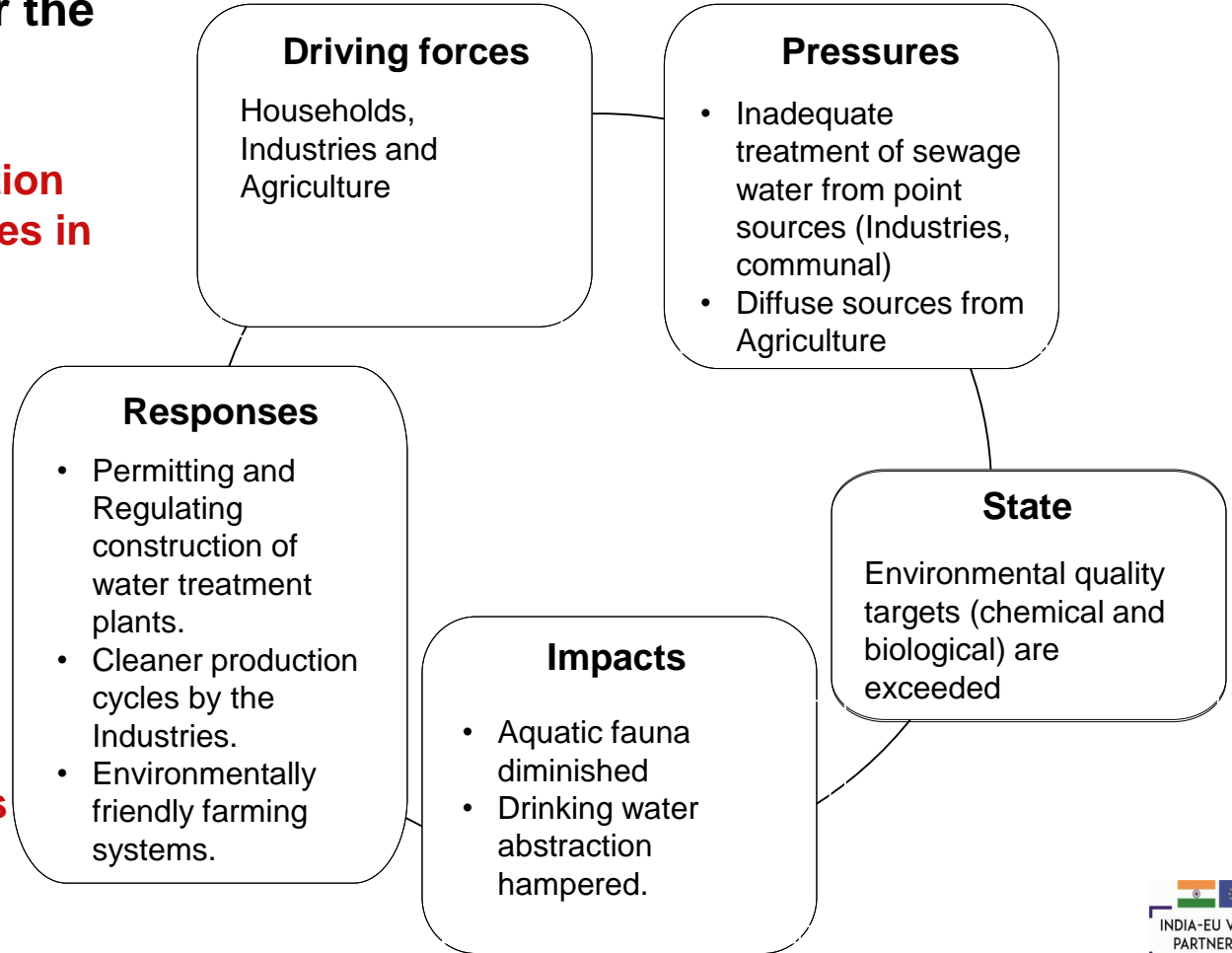
- The scheme was adopted by the European Environment Agency to assess Pressure and Impacts.
- Identifying driving forces (**D**), pressures (**P**), states (**S**), impacts (**I**), responses (**R**)





# Ex. DPSIR scheme for the river pollution

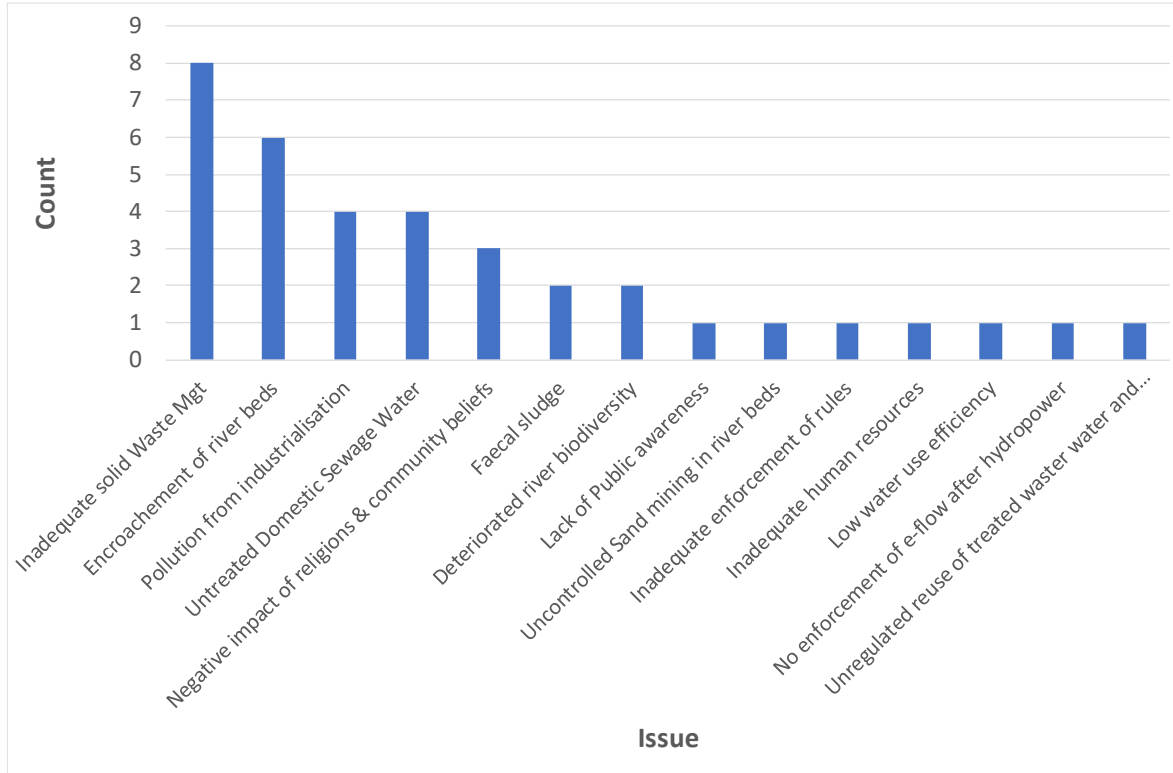
**Main issue: Concentration of hazardous substances in the river are too high**



**Programme of Measures**

# Problem analysis for the Upper Ganga (or a portion of it)

IT'S YOUR TURN



# Problem analysis for the Upper Ganga (or a portion of it)

IT'S YOUR TURN

Please try to set up a problem analysis for the Upper Ganga:

- Group work, with cards.
- Each group works on a specific problem.
- Fill-up the DPSIR scheme using the cards.
- Specific card for the **D**, the **P**, the **S**, the **I** and the **R**.  
The group should agree on the content of the cards.
- Try to be **specific**, not too general.
- Each group will display its DPSIR circle on the metaplan.

# Problem analysis for a sub-basin of the Upper Ganga

IT'S YOUR TURN

The problems to work on:

- Inadequate solid Waste Management.
- Encroachment of riverbeds.
- Untreated Industrial Wastewater.
- Untreated Domestic Wastewater.

# Problem analysis for a sub-basin of the Upper Ganga

The problem to work on could be for instance  
(taken from the document *Vision Ganga*, dated 2017):

- The natural flow of the river is negatively impacted by hydropower  
(*Ensuring environmental flows along with development of sustainable hydropower*).
- Untreated wastewater is rejected into the river  
(*Preparation of comprehensive Urban River Management Plans*).
- Peak tourist loads has a negative impact on the river  
(*Handle peak tourist loads without stressing the region's ecosystems*).
- Occurrence of landslides and constructions in exposed areas  
(*Afforestation and slope stabilisation along with regulation of road and building constructions in disturbed areas*).
- Unregulated mining of sand and gravels along riverbeds  
(*Regulation of sand and gravel mining from riverbeds*).
- Lack of knowledge sharing and stakeholders' involvement  
(*Widespread dissemination of knowledge, ground-level monitoring, and increased sensitisation and participation of stakeholders*).

# From Training Module 1: DPSIR Exercise

## Pressures analysed through group work

### Dehradun

1. Encroachment
2. Untreated domestic wastewater
3. Inadequate solid waste management
4. Untreated industrial wastewater

### Lucknow

1. Lack of public awareness
2. Disruption of river flow/ over-abstraction
3. Untreated domestic wastewater
4. Untreated industrial wastewater

Detailed results can be found on the e-learning platform

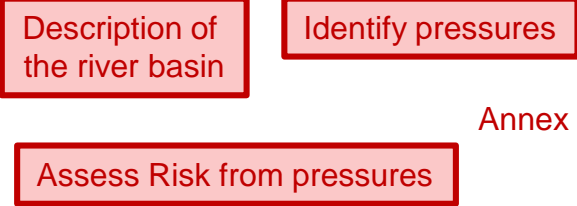


# Rationale for a Monitoring Programme

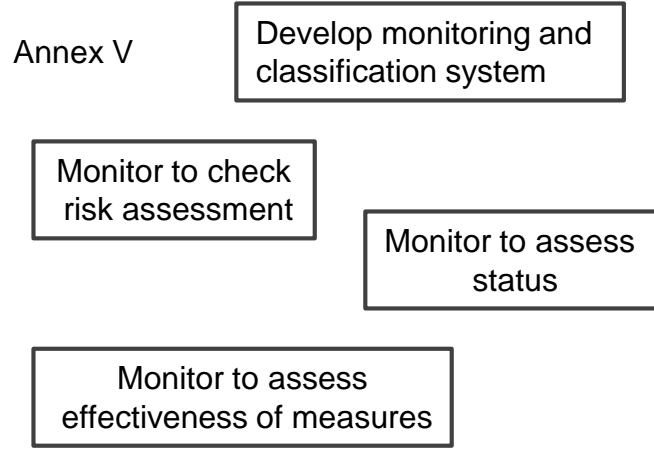


## Annex II and V of the EU WFD

Characterisation



Monitoring



## Continued engagement pre and post webinar

1. For queries and related engagements contact GIZ colleagues:

### Delhi Office:

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

### Uttarakhand (Dehradun) Office:

- Mr. Merajuddin Ahmad ([merajuddin.ahmad@giz.de](mailto: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](mailto:taha@aht-group.com)/ Rebecca - [roblick@aht-group.com](mailto: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](mailto: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:



Implemented by  
**giz** Deutsche Gesellschaft  
für Internationale  
Zusammenarbeit (GIZ) GmbH

