6 CLEAN WATER AND SANITATION

SUSTAINABLE DEVELOPMENT GOALS

UN WATER

Integrated Monitoring Initiative for SDG 6

Indicator 6.3.2

Concepts and methodology for collecting water quality data to enable reporting of the ambient water quality indicator

Technical webinar June 2017

UN environment
United Nations Environment Programme
UN-HABITAT
Food and Agriculture Organization of the United Nations
unicef
UNECE
UNESCO
United Nations Educational, Scientific and Cultural Organization
World Health Organization
WMO

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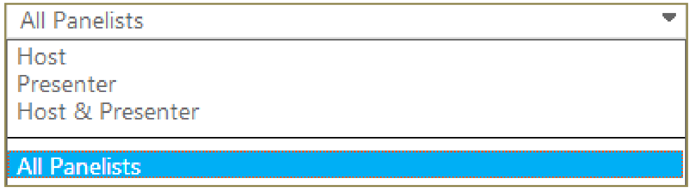
General house rules

- This webinar is being recorded and will be made available via www.sdg6monitoring.org

- Participants are encouraged to ask questions using the Q&A section — *see upper right hand corner of the WebEx panel*.

  (1) Type your question in the Q&A panel
  (2) Select the recipient
  (3) Click **Send.**



- If you experience any technical problems, please let us know via the chat function

Objectives and Structure of the Webinar

OBJECTIVE:

to introduce the concepts and methodology for collecting water quality data to enable reporting on indicator 6.3.2.

STRUCTURE:

Welcome remarks and significance of indicator 6.3.2

Part I: **Overview of Indicator 6.3.2.**
— *Questions & Answers on the first presentation*

Part II: **Step-by-step Methodology**
— *Questions & Answers on the second presentation*

Part III: **Details of Reporting Mechanism**
— *Questions & Answers on the third presentation*

Next Steps and Support
— *General Questions & Answers*

UN WATER

Integrated Monitoring Initiative for SDG 6

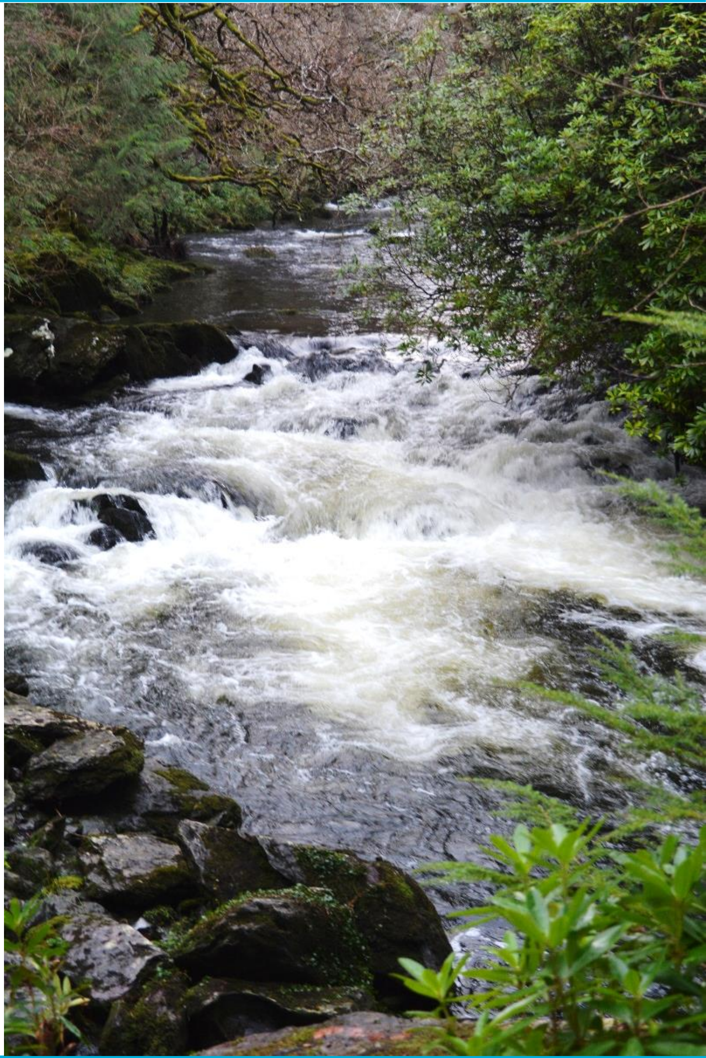
Overview of indicator 6.3.2

Presented by Deborah Chapman

UN Environment GEMS/Water Capacity Development Centre

SDG 6: Target 6.3 Indicator 6.3.2

By 2030, improve water quality by reducing pollution, eliminating dumping and minimizing release of hazardous chemicals and materials, halving the proportion of untreated wastewater and substantially increasing recycling and safe reuse globally



SDG 6: Target 6.3 Indicator 6.3.2

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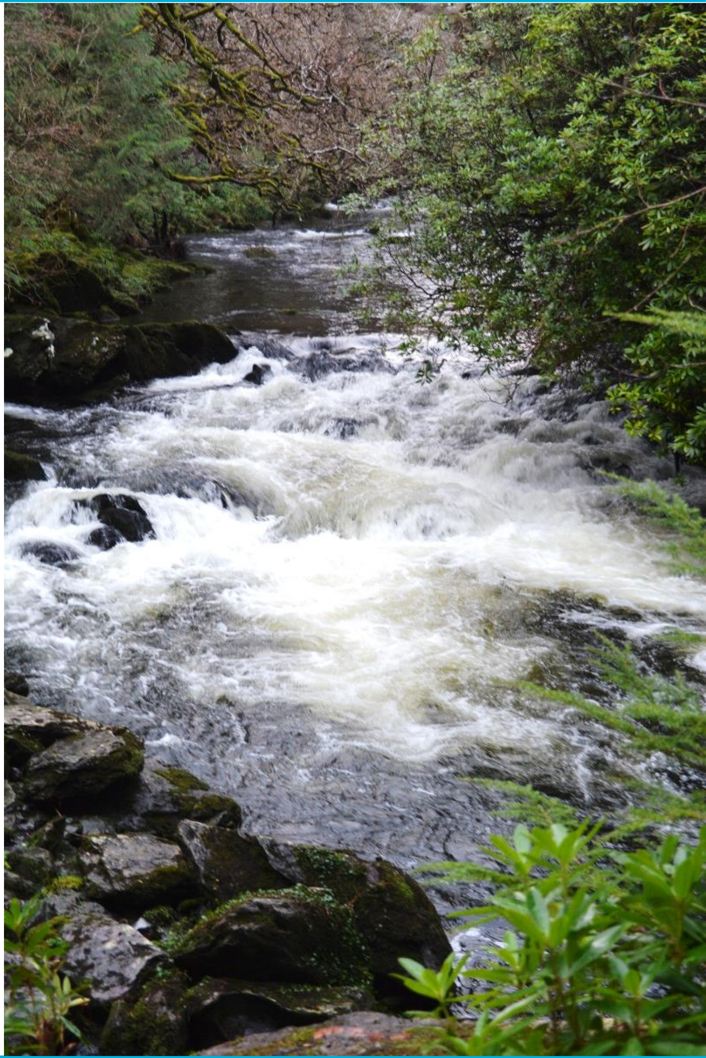
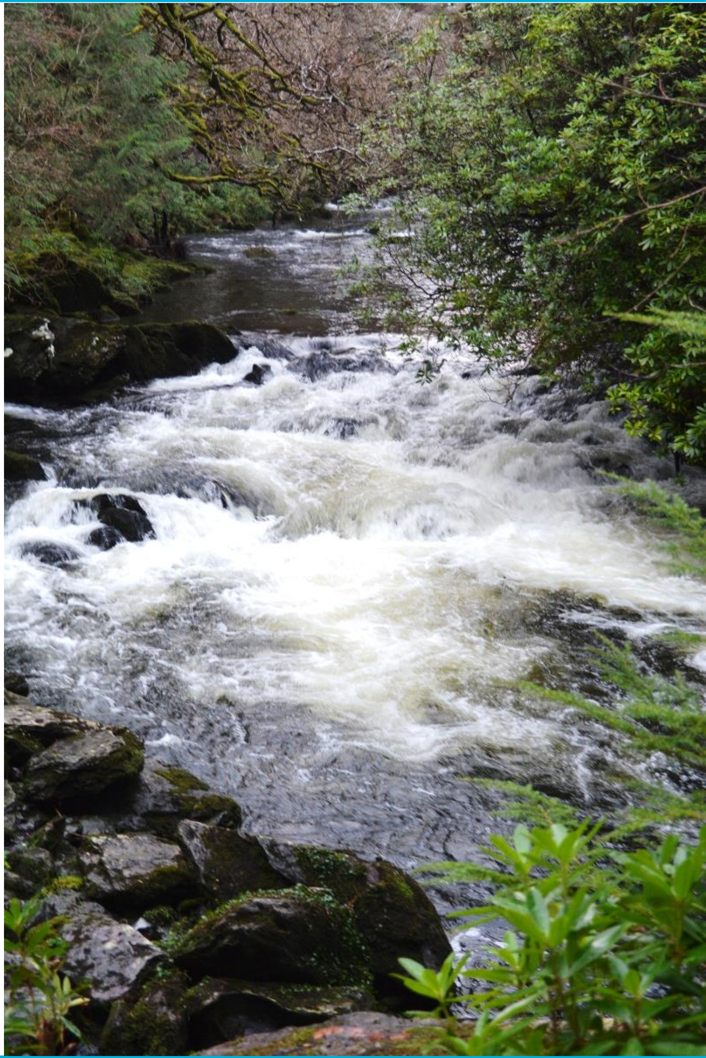
- Indicator 6.3.1 - Proportion of wastewater safely treated



SDG 6: Target 6.3 Indicator 6.3.2

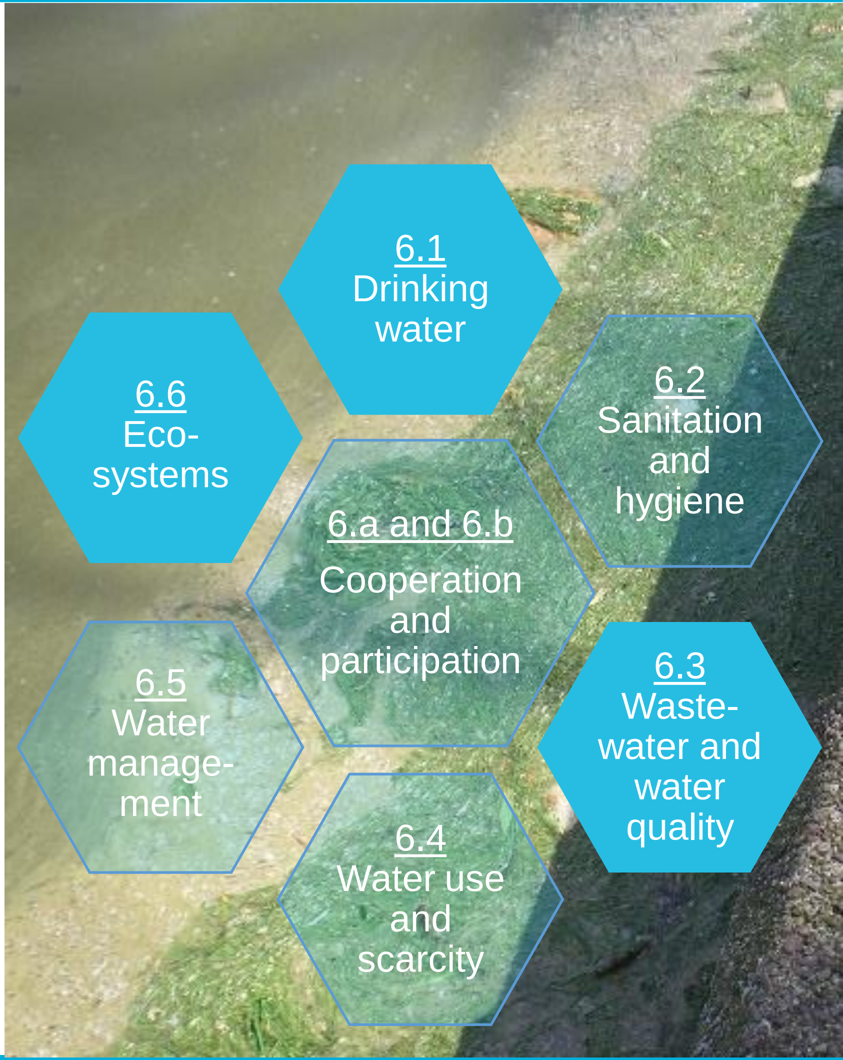
By 2030, improve water quality by reducing pollution, eliminating dumping and minimizing release of hazardous chemicals and materials, halving the proportion of untreated wastewater and substantially increasing recycling and safe reuse globally

- Indicator 6.3.1 - Proportion of wastewater safely treated
- Indicator 6.3.2 - Proportion of bodies of water with **good ambient water quality**



Indicator 6.3.2 supports water management at national level

No information, or inaccurate information, could lead to incorrect management actions, such as:



Indicator 6.3.2 supports water management at national level

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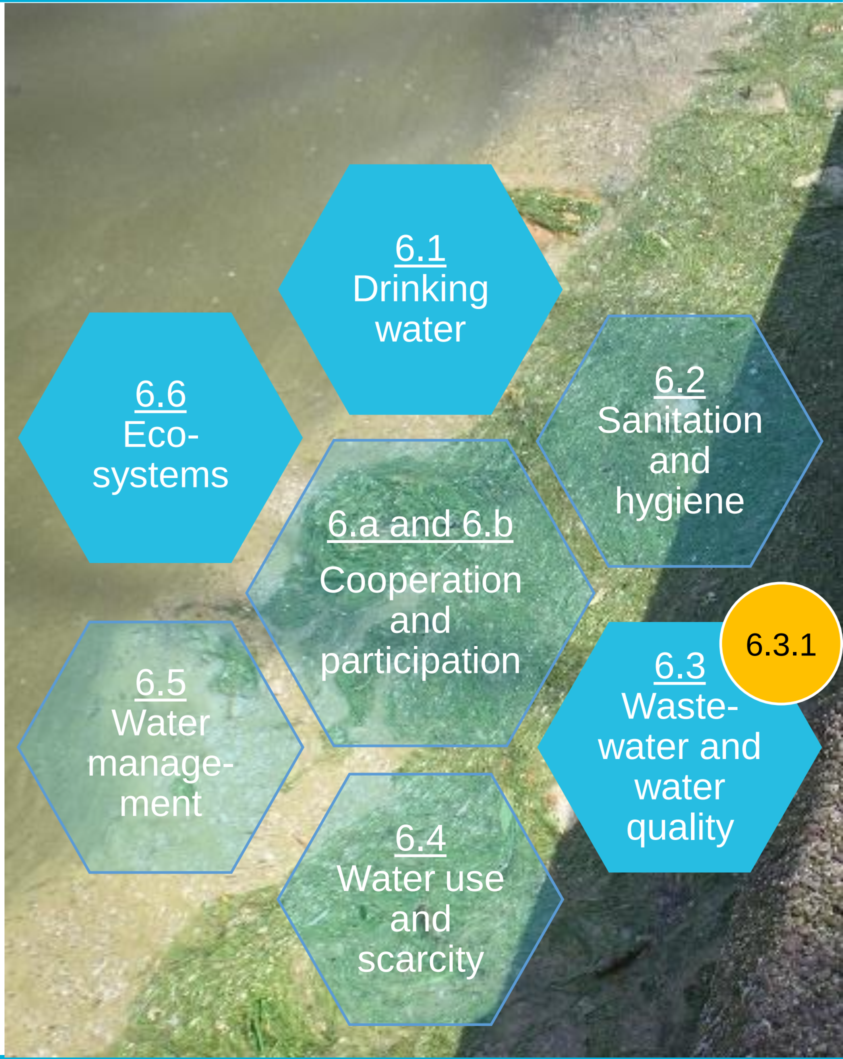
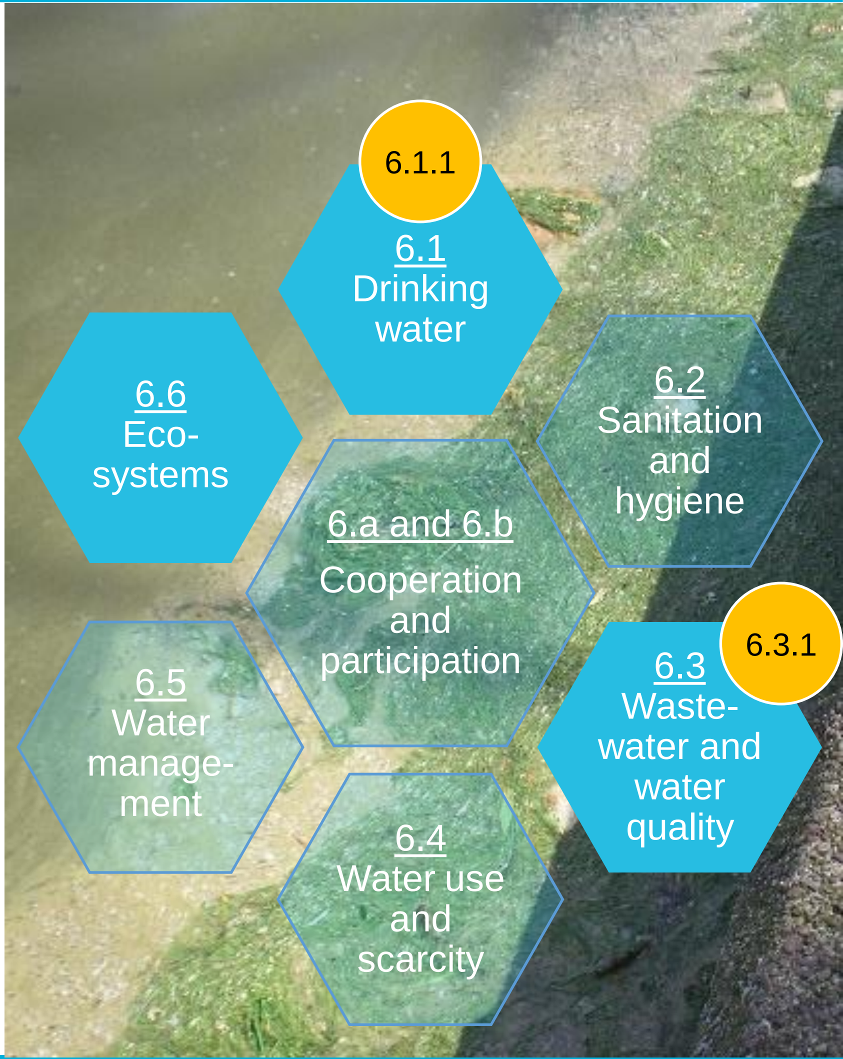
- Lack of appropriate controls on discharges to waterbodies



Indicator 6.3.2 supports water management at national level

No information, or inaccurate information, could lead to incorrect management actions, such as:

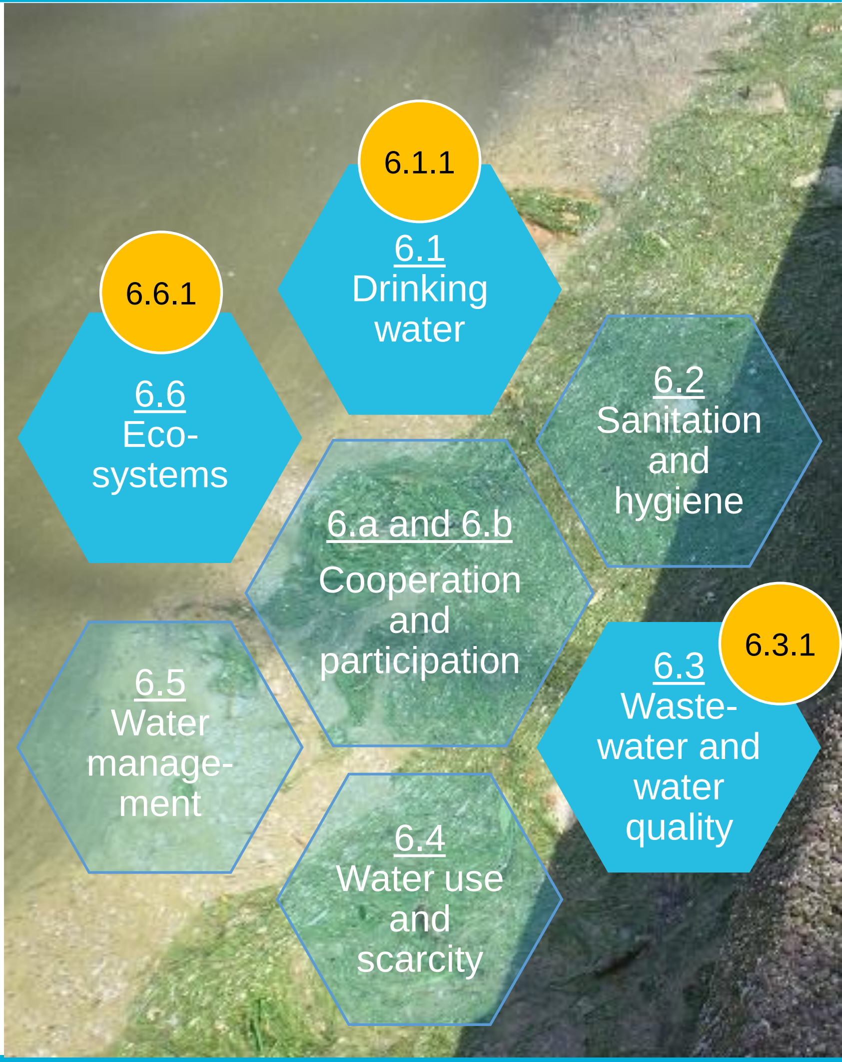
- Lack of appropriate controls on discharges to waterbodies
- Inadequate treatment to waters used for drinking water supplies



Indicator 6.3.2 supports water management at national level

No information, or inaccurate information, could lead to incorrect management actions, such as:

- Lack of appropriate controls on discharges to waterbodies
- Inadequate treatment to waters used for drinking water supplies
- Delayed or inadequate conservation or remediation of waterbodies and wetlands



Development of indicator 6.3.2

2014-15
- Water quality index developed by GEMS/Water in 2007 modified for global use

2016
- Index was tested in 2016 in five countries but only two (Uganda and Senegal) attempted to implement the methodology

2017
- Feedback and review from workshops and individual comments resulted in a simplified index for implementation and baseline data collection

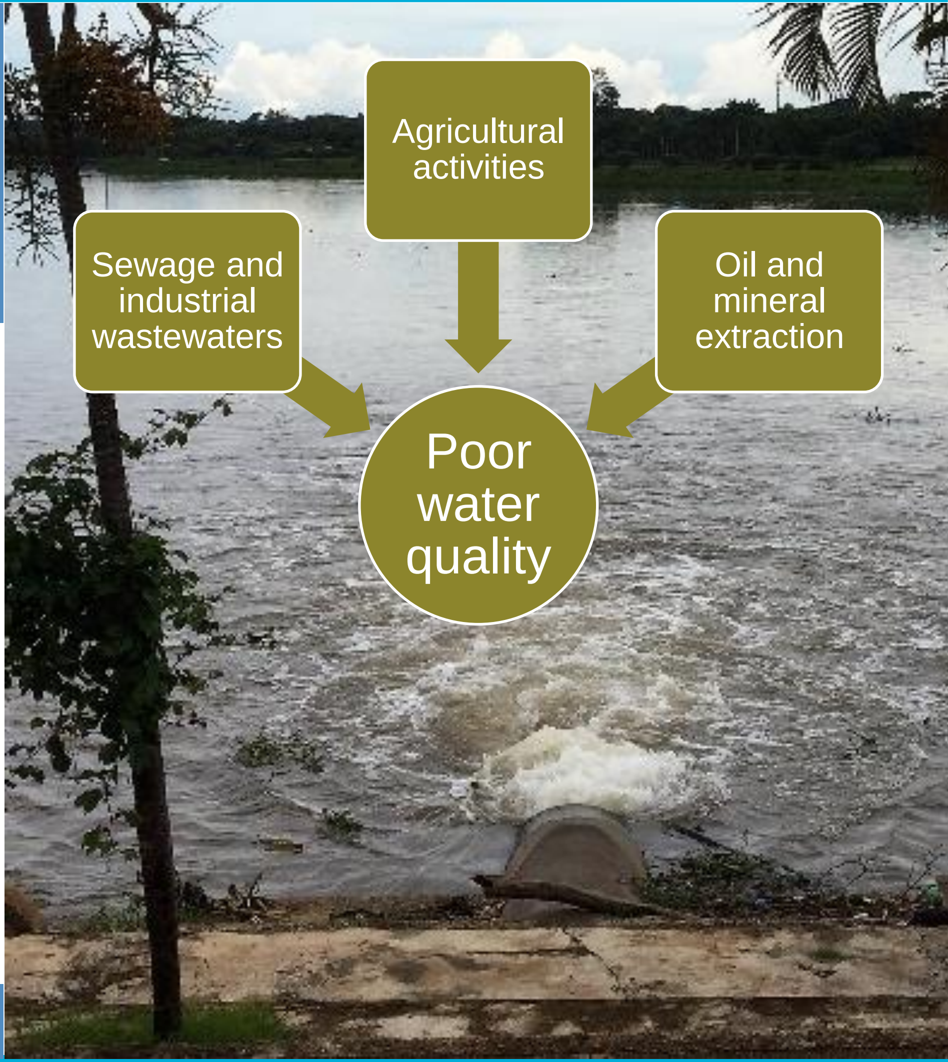
Rationale for the indicator

Good ambient water quality does not damage ecosystem function or present a risk to human health

Supports a balanced ecosystem including fisheries

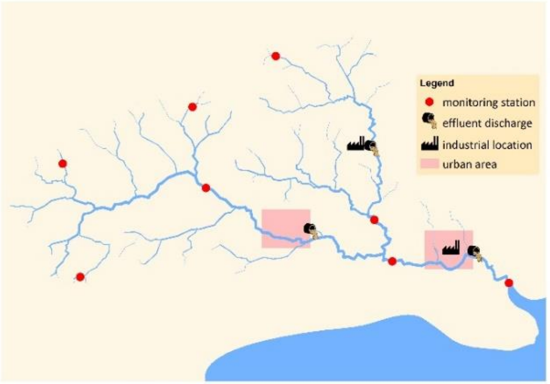
Requires minimum treatment before domestic, agricultural or industrial use

Safe for recreation, such as water contact activities



A monitoring programme is essential

Comprising:



Network of monitoring stations in designated waterbodies

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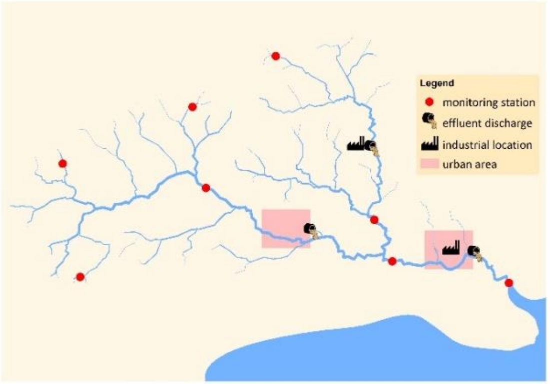

Network of monitoring stations in designated waterbodies

In situ measurements, and sample collection for laboratory analysis

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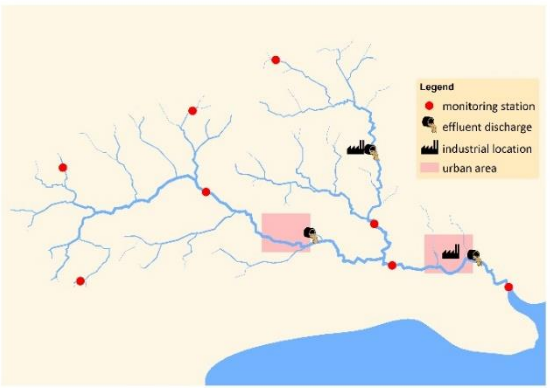


Network of monitoring stations in designated waterbodies

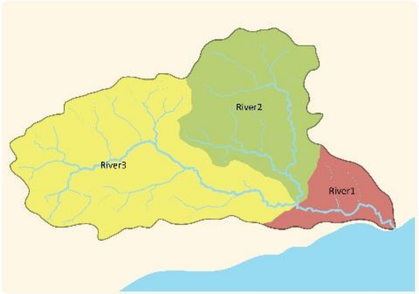
In situ measurements, and sample collection for laboratory analysis

	A	B	C	D	E	F
8	DATE:					
9	06-Jan-16	7.0	7.01	194.7	12	2.18
10	02-Feb-16	7.5	7.35	193.1	13	2.7
11	09-Mar-16	7	7.45	198.4	24	4.33
12	12-Apr-16	10.5	7.23	203	20	5.53
13	17-May-16	17.7	7.54	230	35	10.0
14	14-Jun-16	19.3	8.44	227	63	10.5
15	12-Jul-16	17.7	9.34	200	89	19.1
16	16-Aug-16	19.8	8.58	226	120	22
17	14-Sep-16	15.4	7.86	233	63	11
18	11-Oct-16	13.2	7.13	251	36	9.1
19						
20	Average:	13.5	7.8	215.6	47.5	9.6
21	Max:	19.8	9.3	251.0	120.0	22.0
22	Min:	7.0	7.0	193.1	12.0	2.2
23						

Data handling and interpretation facilities

Proportion of bodies of water with good ambient water quality

Waterbodies need to be defined within the country, i.e. rivers, lakes, reservoirs and groundwaters



Proportion of bodies of water with good ambient water quality

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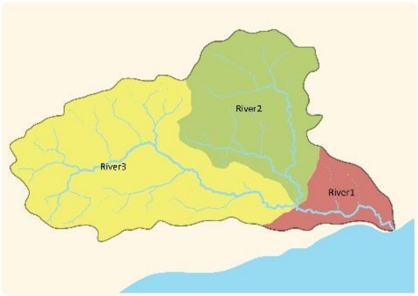
Good water quality is assessed by comparing measurements with target values for specific parameters (DO, EC, N, P, pH)



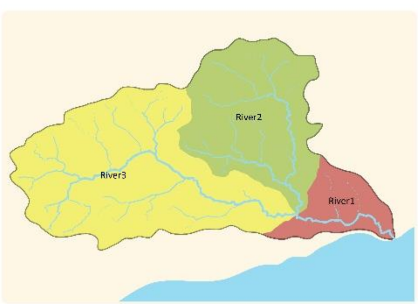
	Parameter	River	Lake	Groundwater
Core Parameter	Dissolved Oxygen	x	x	
	Electrical Conductivity	x	x	x
	Total Oxidised Nitrogen	x	x	
	Nitrate			x
	Orthophosphate	x	x	
	pH	x	x	x

Proportion of bodies of water with good ambient water quality

Waterbodies need to be defined within the country, i.e. rivers, lakes, reservoirs and groundwaters

Good water quality is assessed by comparing measurements with target values for specific parameters (DO, EC, N, P, pH)

Good water quality represents at least 80% compliance of measurements with target values



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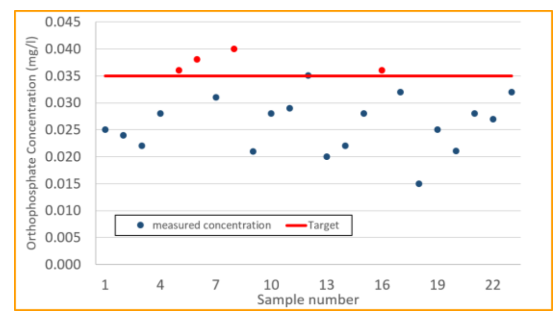
	pH	x	x	x



Target values for “good” water quality

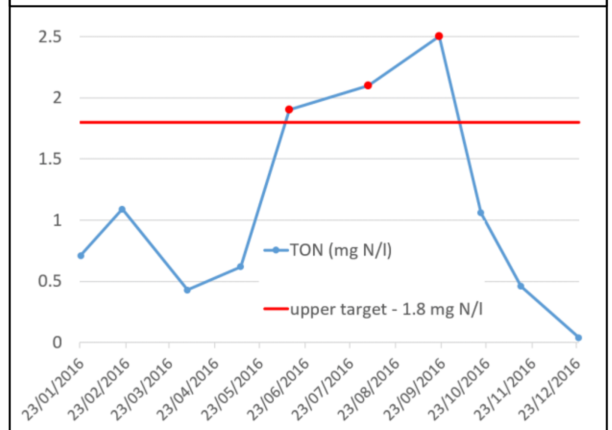
“Good quality” is assessed in relation to **target values** for ambient water quality parameters

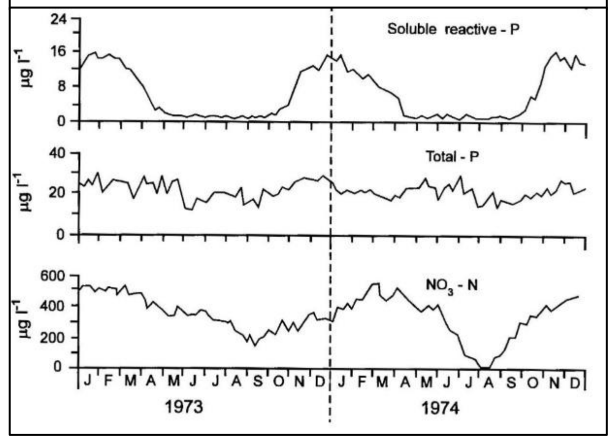
Countries **set their own targets values** for good ambient water quality

Different target values may be needed for different types of waterbody

Natural fluctuations in parameters, e.g. seasonally driven, need to be considered before setting the target values

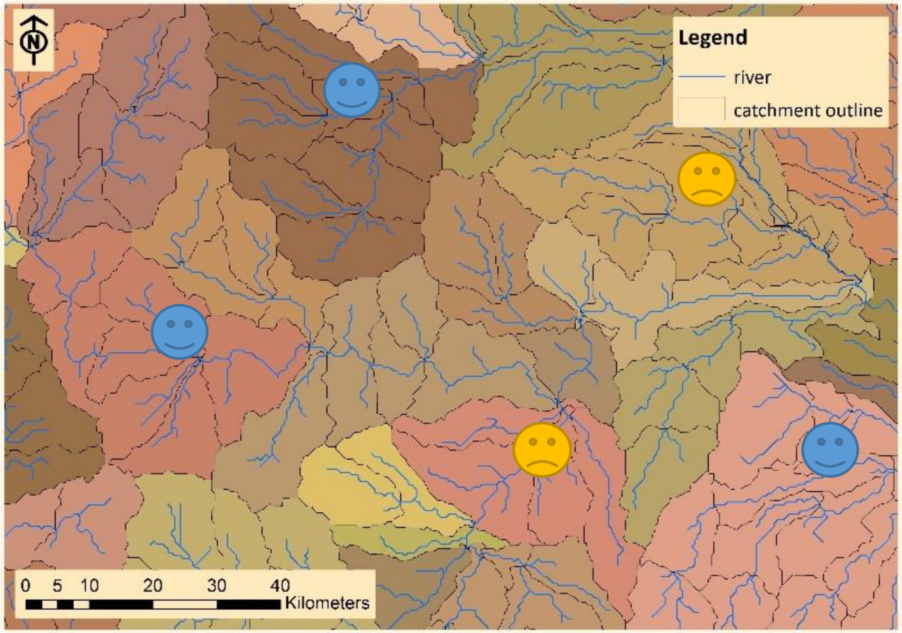
Parameter Name	Parameter Short name	Target Value	Unit	Target Type
Dissolved Oxygen	DO	6	mg/l	Lower
Electrical Conductivity	EC	300 - 500	µS/cm	Range
pH	pH	6 - 8	-	Range
Orthophosphate	OP	0.035	mg P/l	Upper
Total Oxidised Nitrogen (Nitrate + Nitrite)	TON	1.8	mg N/l	Upper





Reporting indicator 6.3.2

Percentage of the total number of waterbodies monitored and classified that meet the criteria for “good” quality



To facilitate global reporting and interpretation, supporting information also needs to be submitted in the Excel spreadsheet provided

Progressive steps for monitoring

All countries start with the baseline core parameters but some countries may wish to expand their existing monitoring networks and include additional monitoring parameters

Index based on five core parameters in existing network

Additional chemical parameters and/or extra stations monitoring network

Development and incorporation of biological monitoring methods and remote sensing data

Overview of 6.3.2 / 6.6.1 Process

- **Receipt of methodology and submission form** — April 2017
- **Technical Webinar** — June 2017
- **Coordinate with stakeholders** — National Focal Points
- **Compile data** — National Focal Points
- **Data Submission** — **31 July 2017**
- **Follow-up**

Integrated Monitoring Initiative for SDG 6

More detailed information will now follow

www.sdg6monitoring.org

6 CLEAN WATER AND SANITATION

SUSTAINABLE DEVELOPMENT GOALS

UN WATER

Integrated Monitoring Initiative for SDG 6

Indicator 6.3.2 Step-by-Step

Technical webinar May 2017

Presented by Stuart Warner

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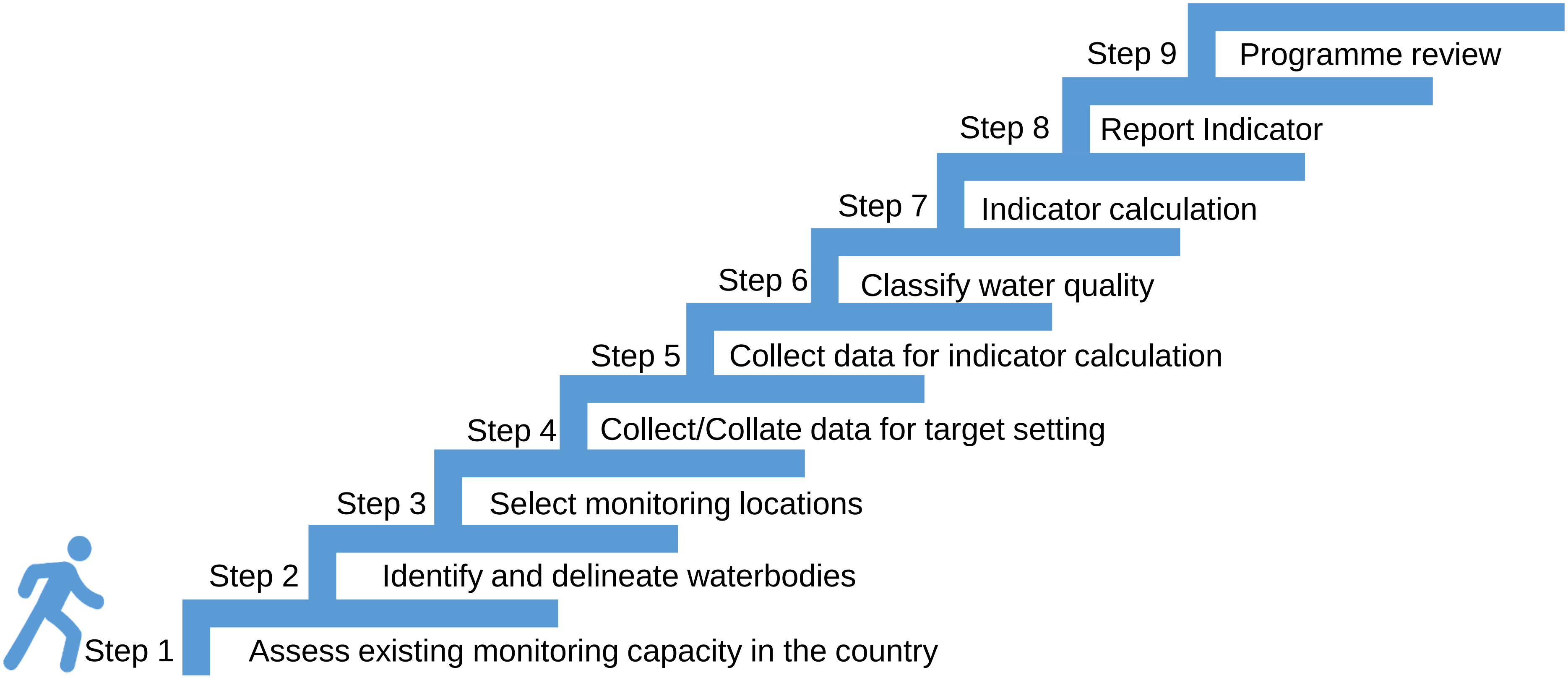
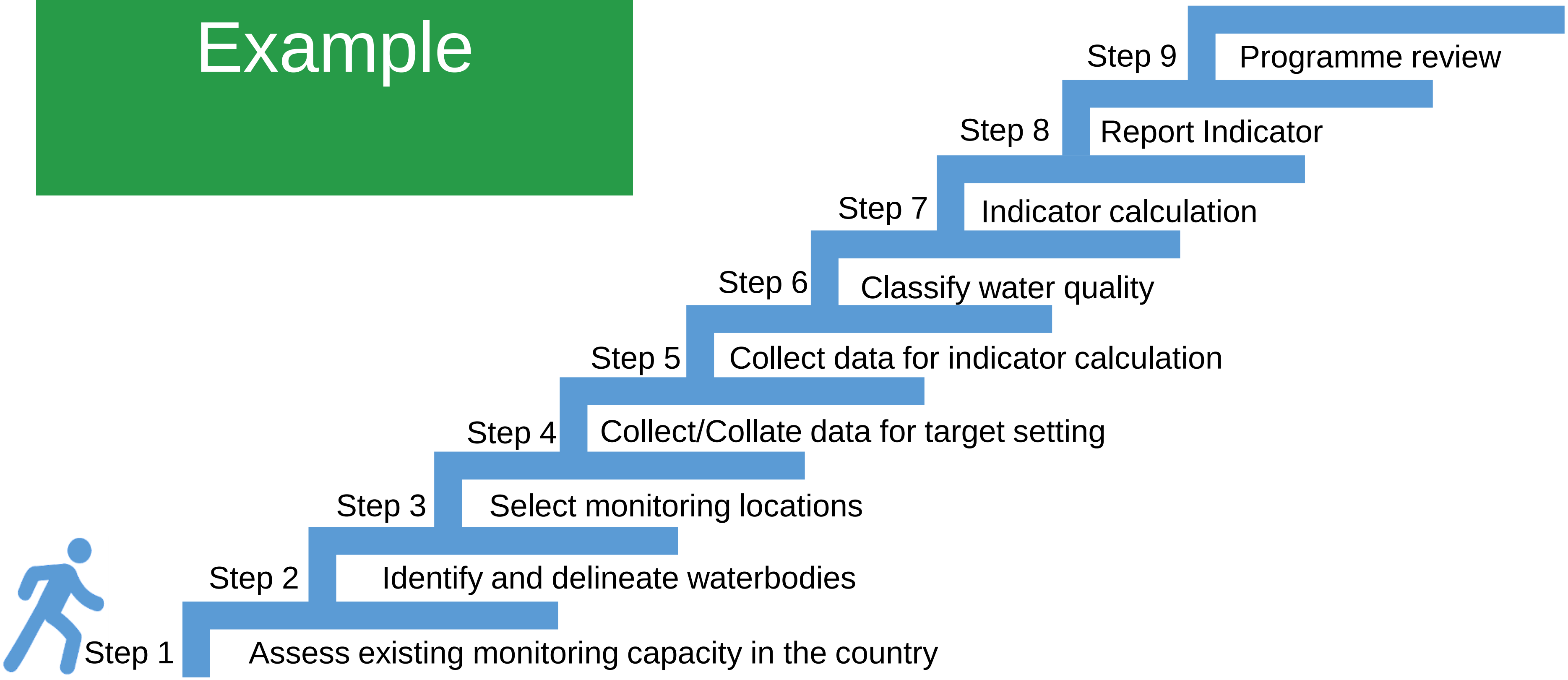
Indicator 6.3.2 Step by step approach



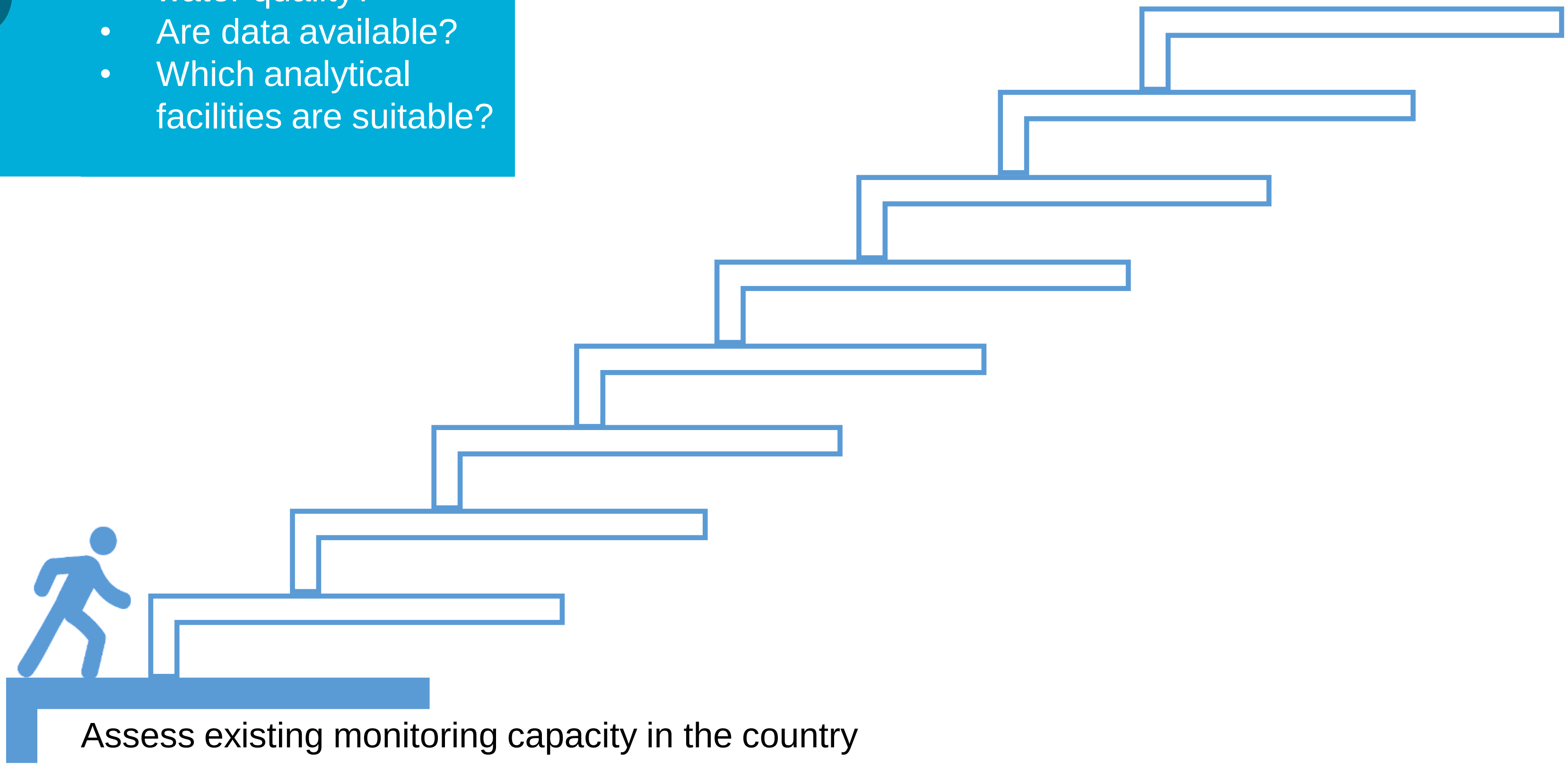
Indicator 6.3.2 Step by step approach

Example



Step 1 - Assess

- Who's monitoring water quality?
- Are data available?
- Which analytical facilities are suitable?



Step 1 Assess existing monitoring capacity in the country

Step 1 - Example

An assessment of the ambient water quality monitoring capacity in the Country X found:

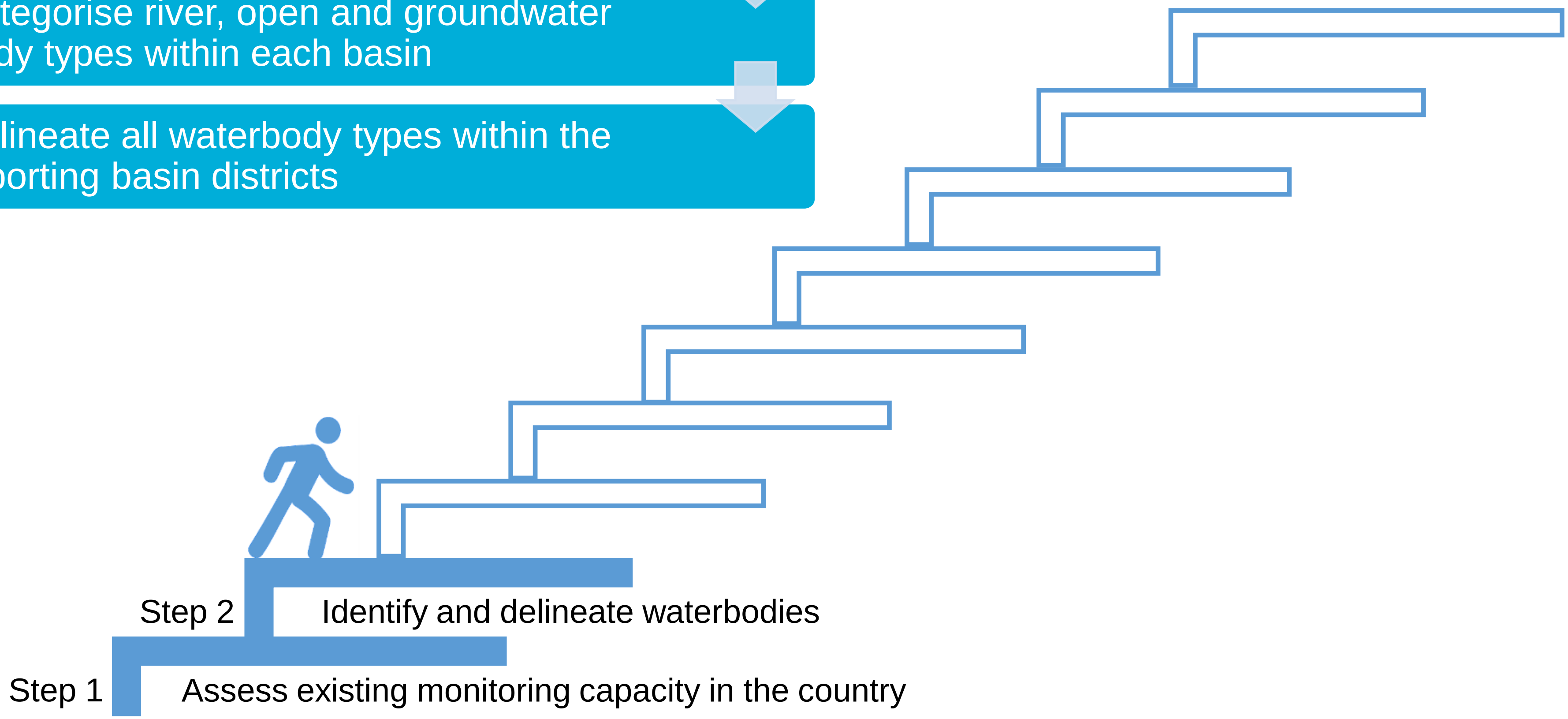
- there aren't any other organisations which are collecting or holding data
- a river water quality monitoring programme is operational
- the rivers programme currently monitors one of ten river basins in the country
- there are five monitoring stations within the basin being monitored
- data are available for the reporting period of one year for the core parameters
- there is one central laboratory which undertakes all analyses
- there are no lake or groundwater programmes currently running

There are plans to:

- expand the river monitoring network to two further river basins
- initiate preliminary lake and groundwater surveys in support of developing programmes in both waterbody types

Step 2 - Identify and delineate

- Identify and delineate reporting basin districts at national scale
- Categorise river, open and groundwater body types within each basin
- Delineate all waterbody types within the reporting basin districts



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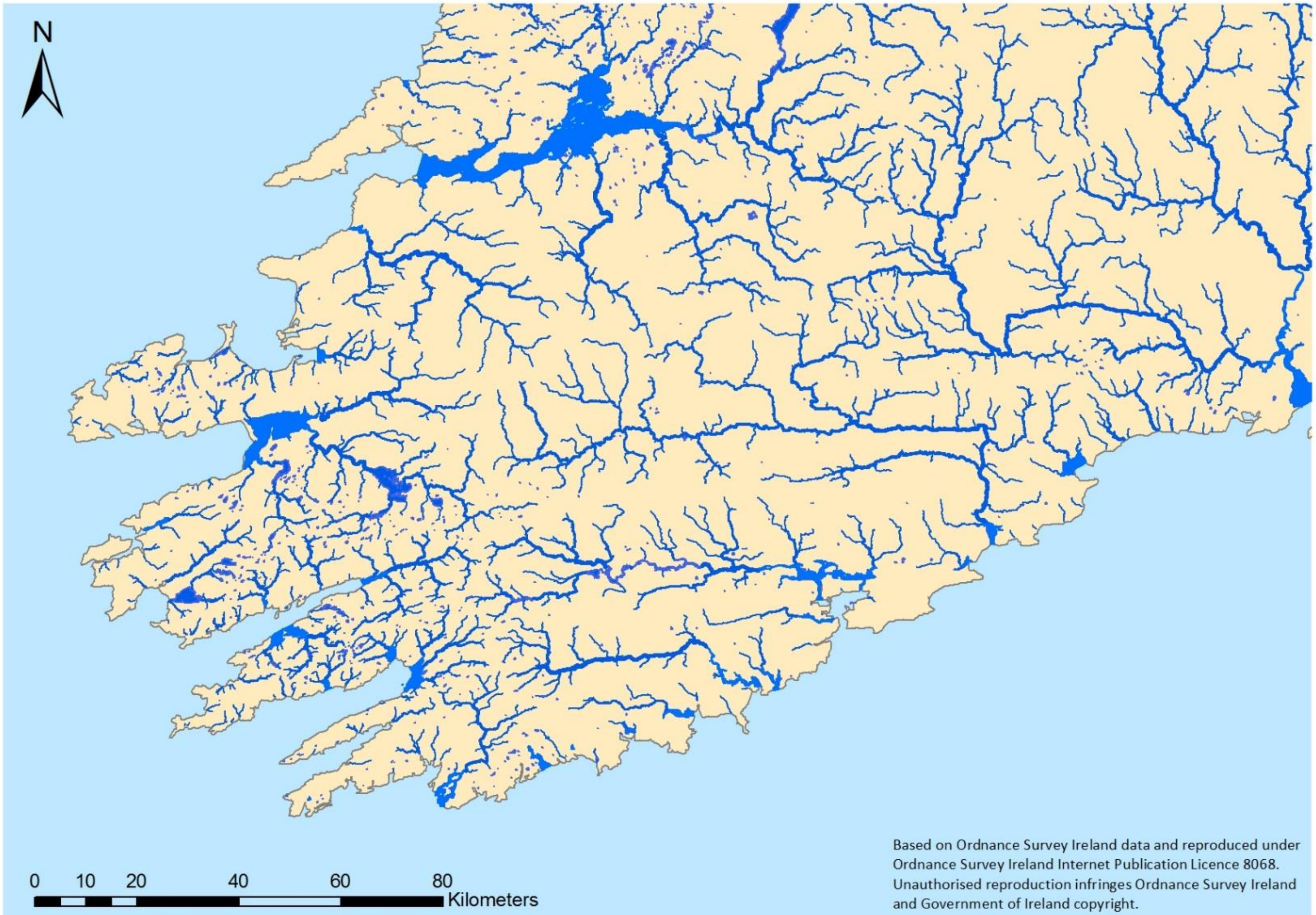

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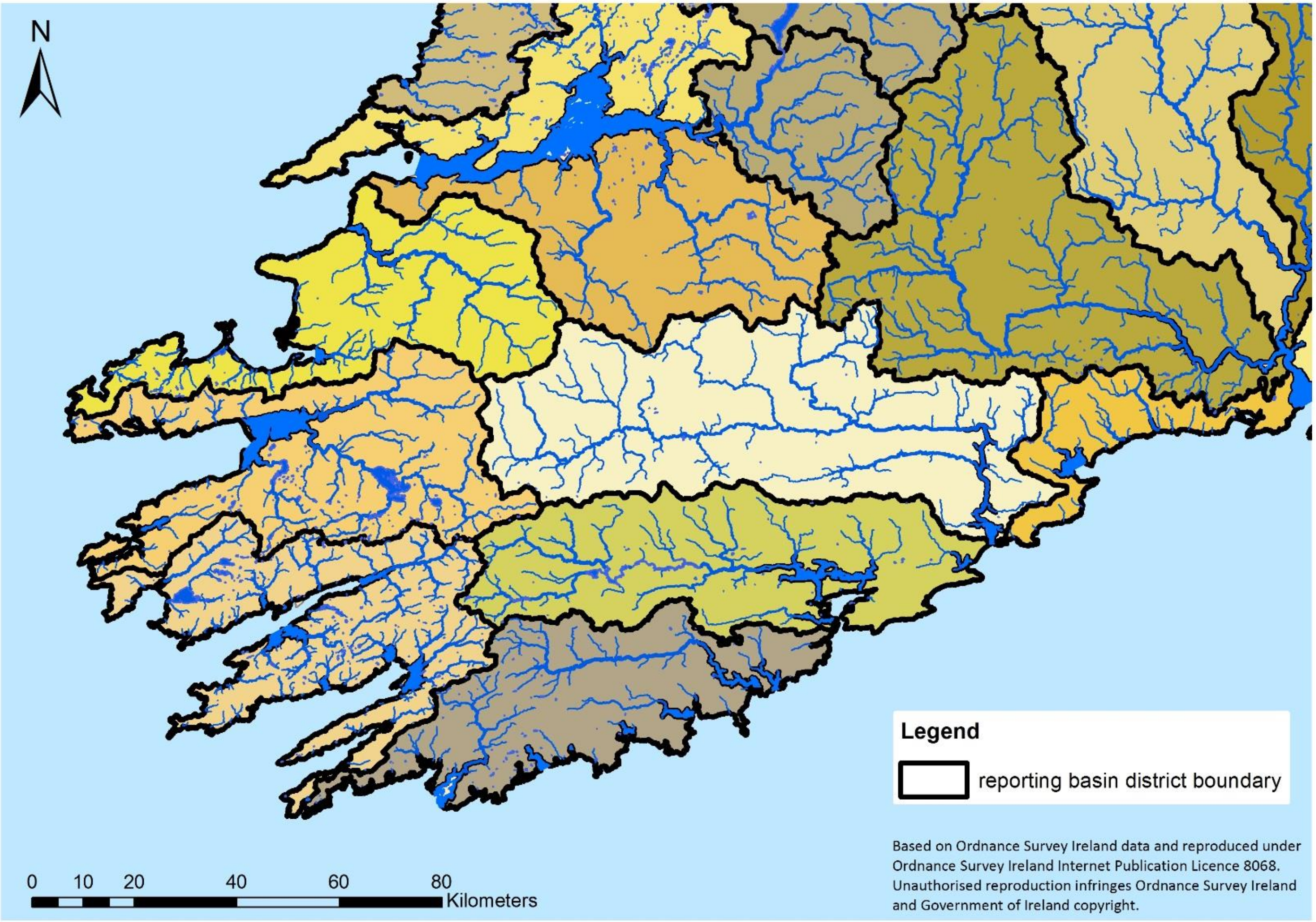

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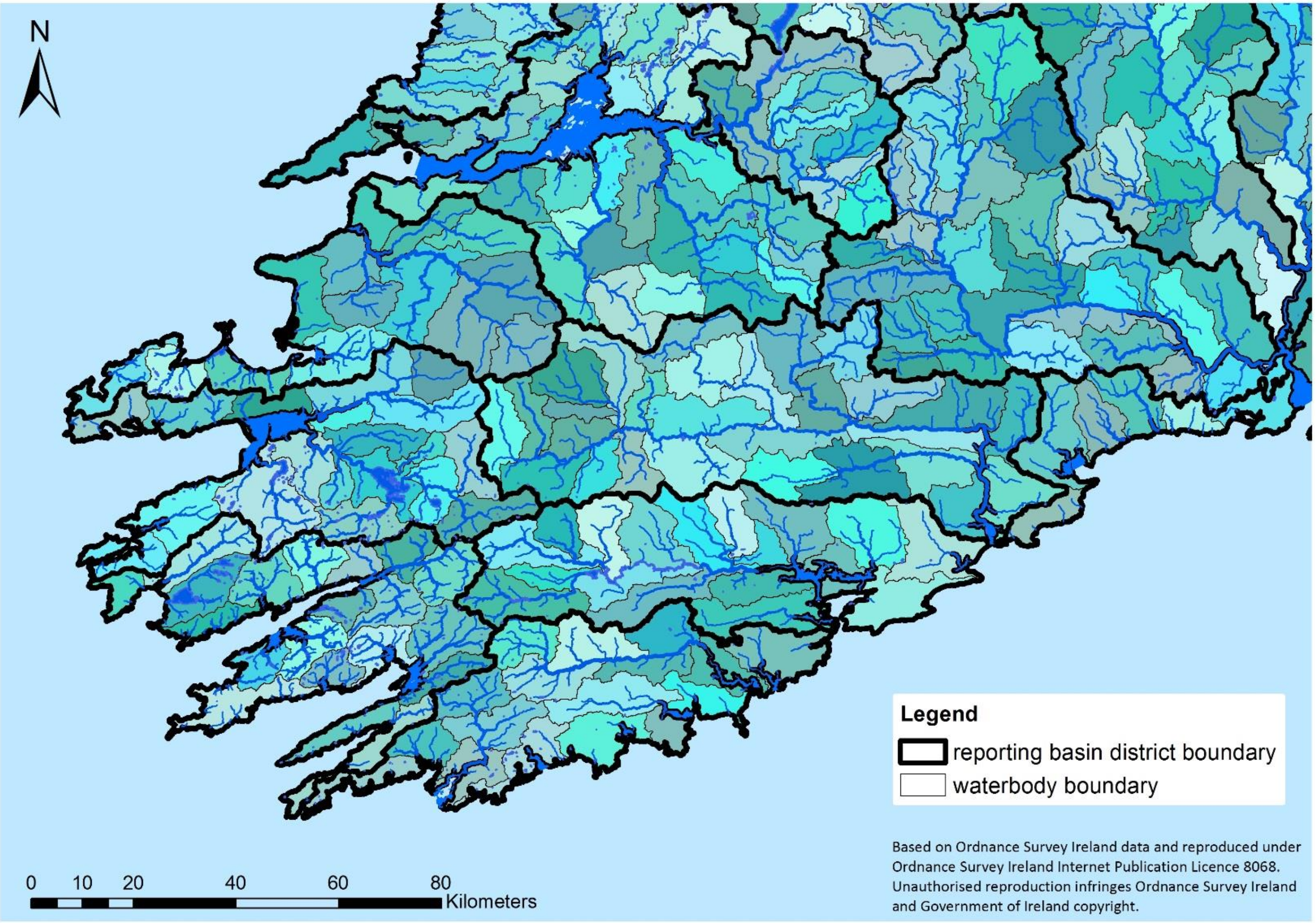

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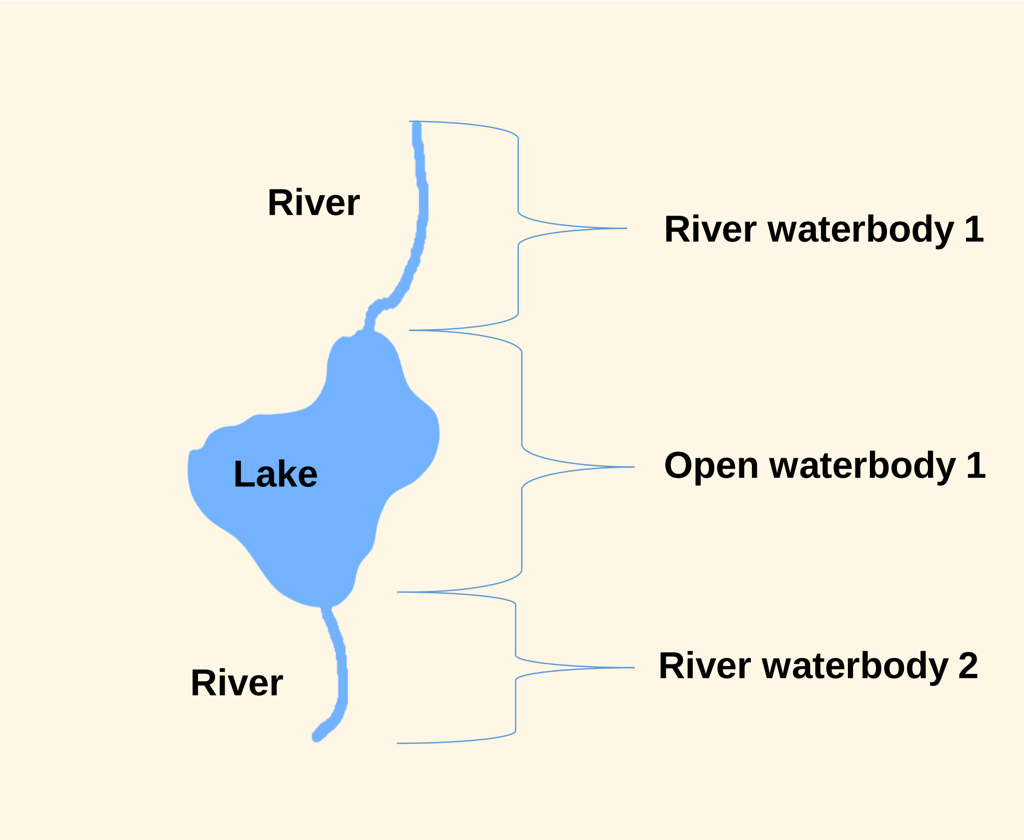

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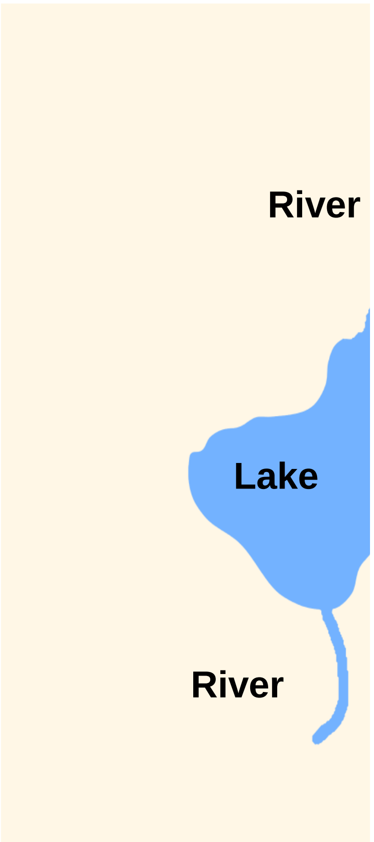

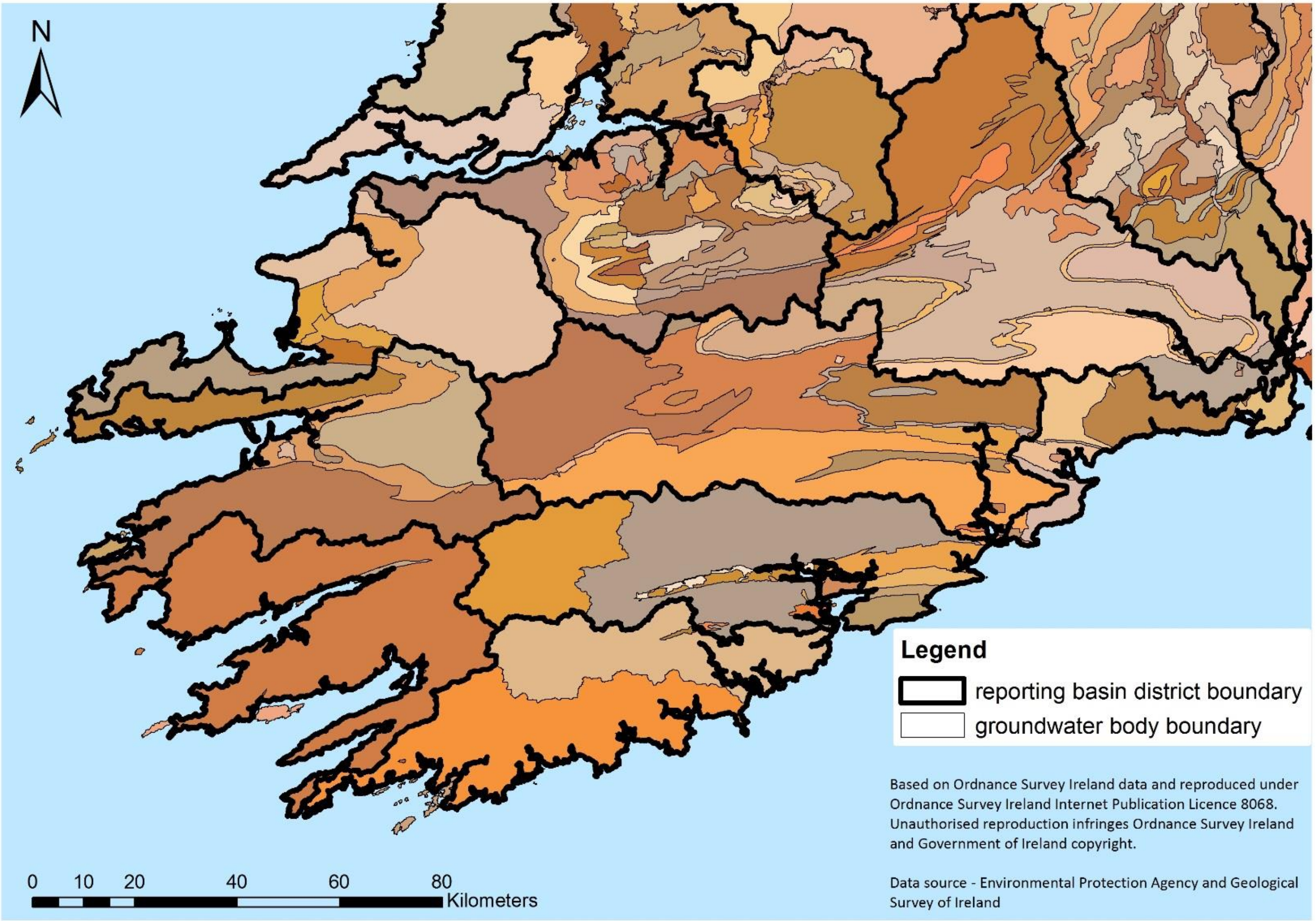

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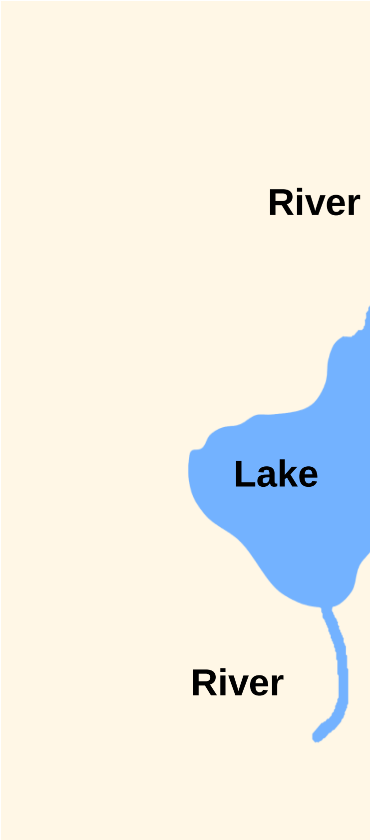
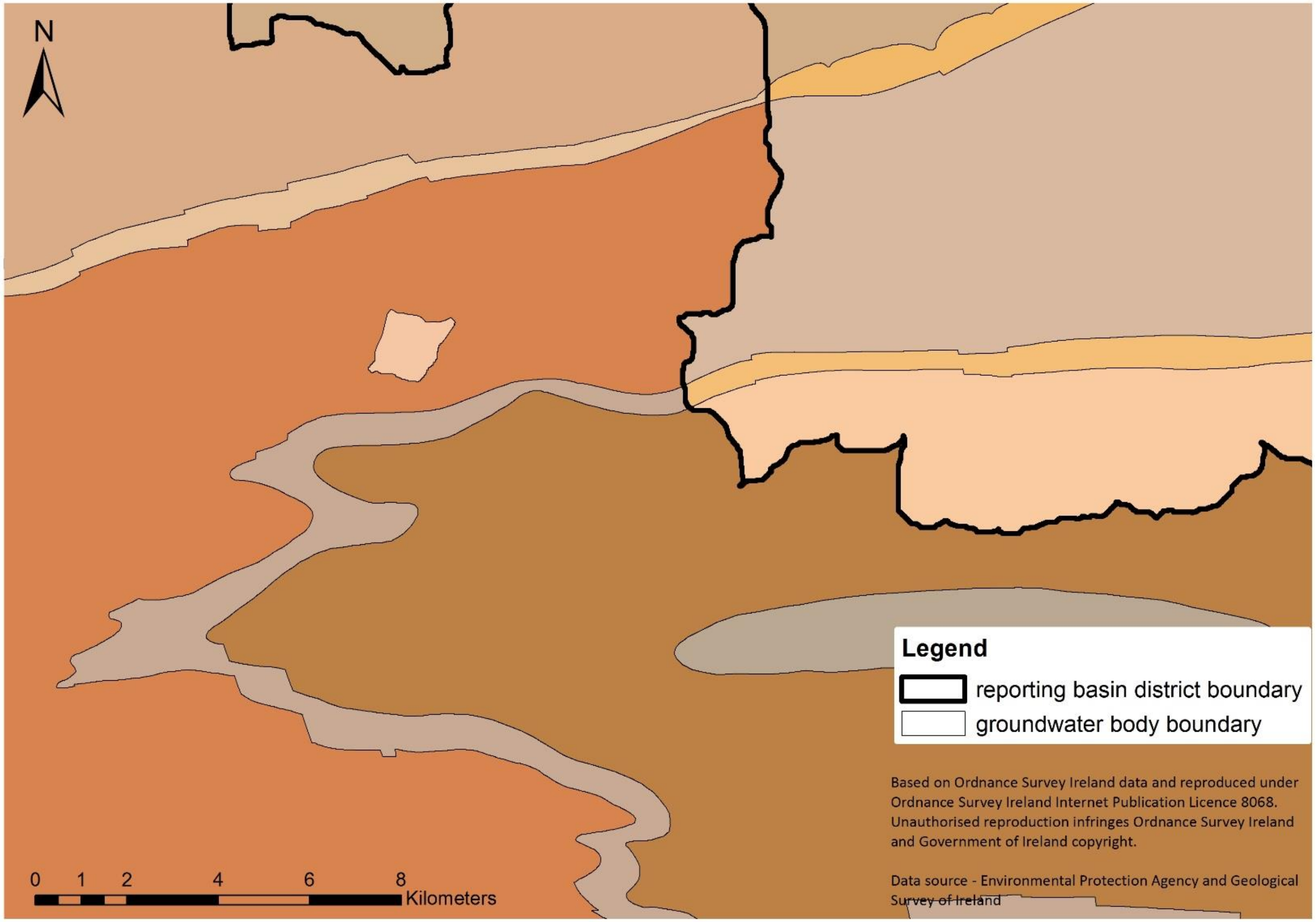
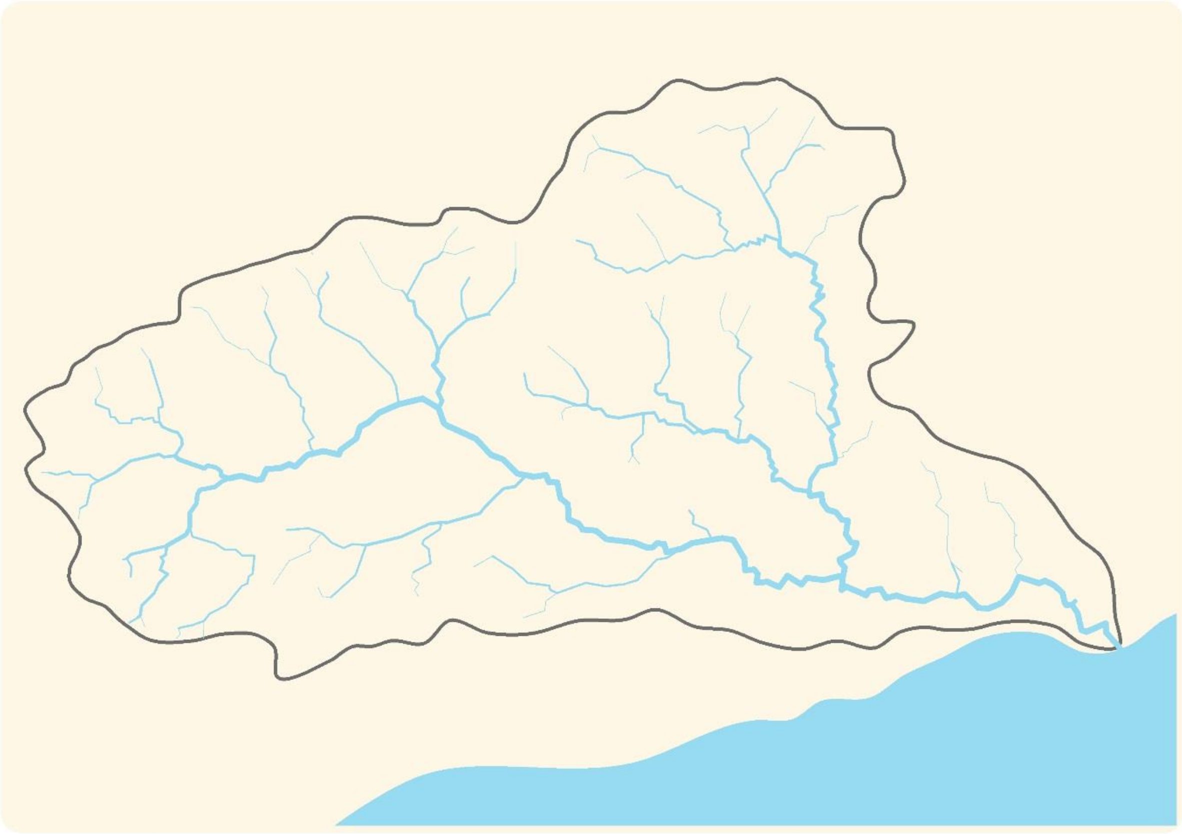




Step 2 - Example

The whole single river basin could be identified as one waterbody, but the confluence of the two main tributaries is considered as significant enough to sub-divide the river system into three distinct waterbodies at the point of confluence.



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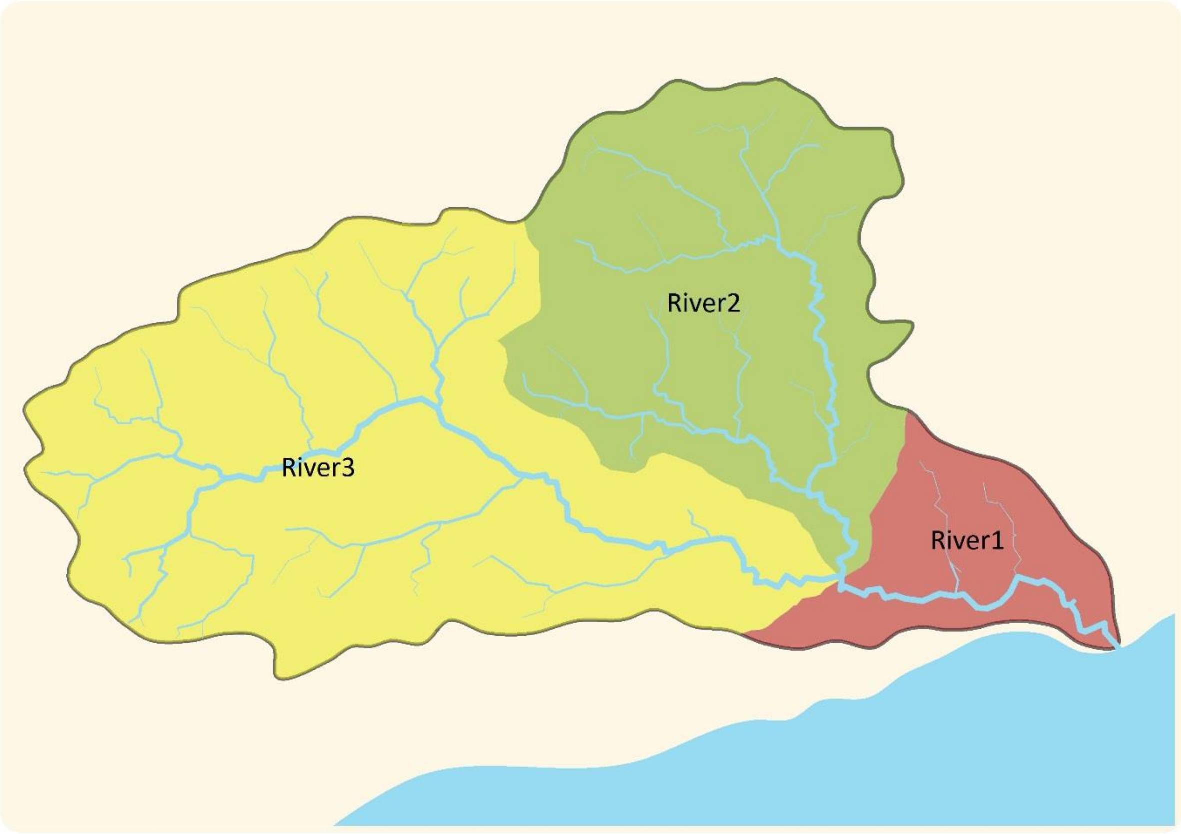
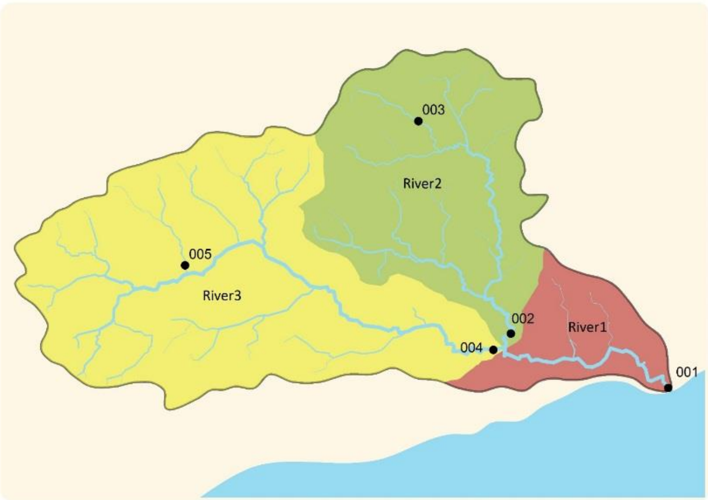
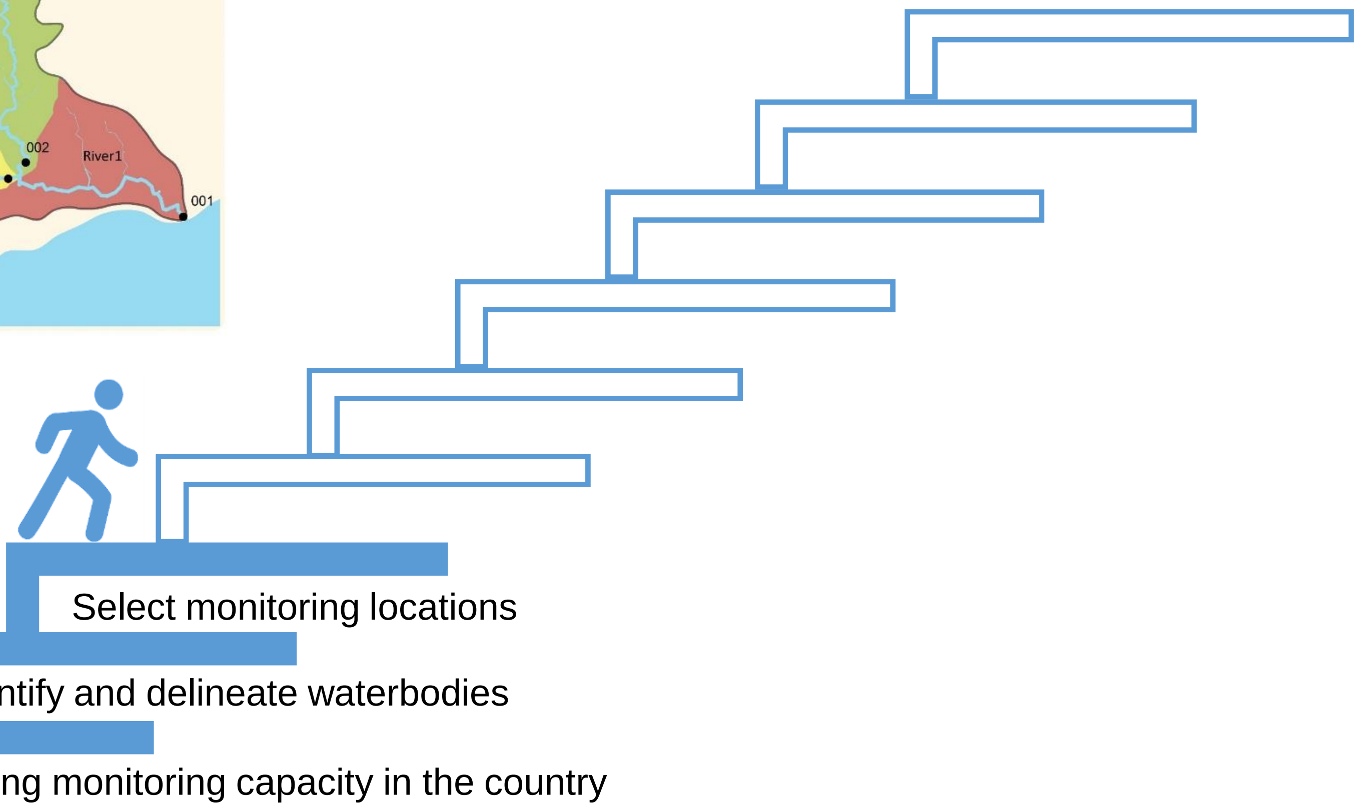


Step 3 – Monitoring Locations

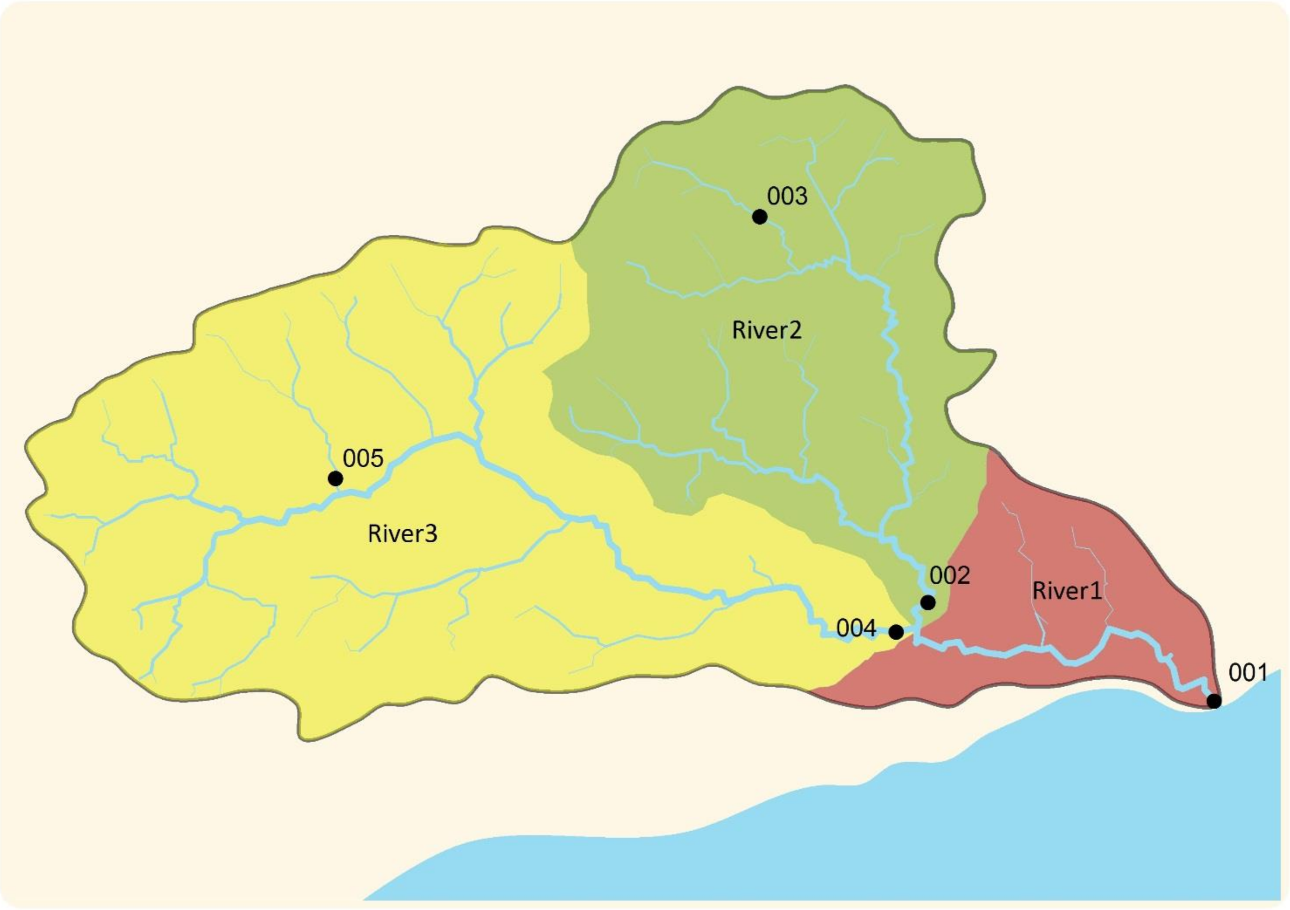




Step 3 - Example

There are five monitoring locations with data for the reporting period already in use for an operational monitoring programme.

- Two at unimpacted headwater sites (003 and 005)
- Two at mid-catchment sites each at the base of the two major tributaries (002 and 004)
- One at the point were the catchment drains into the ocean (001)



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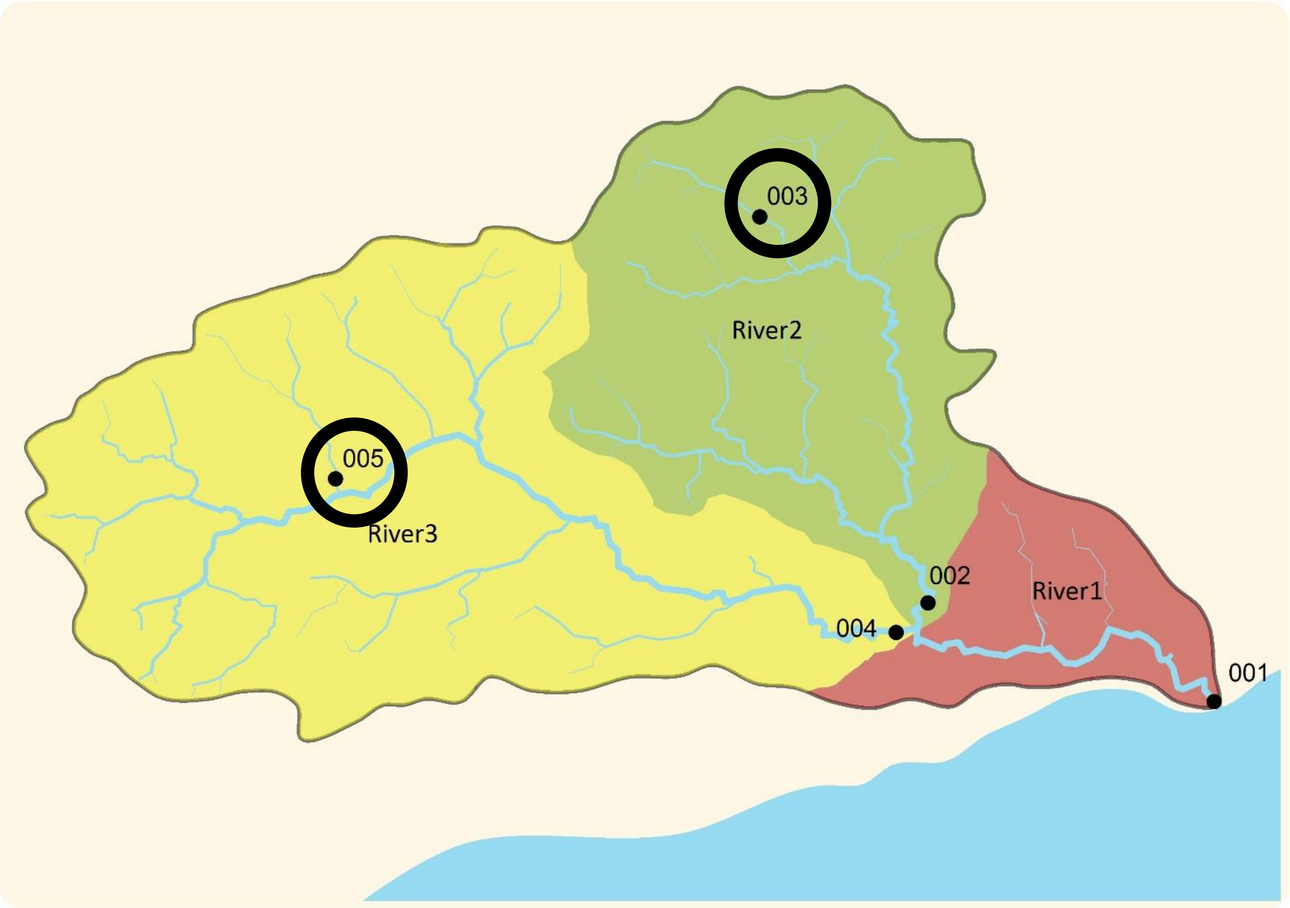

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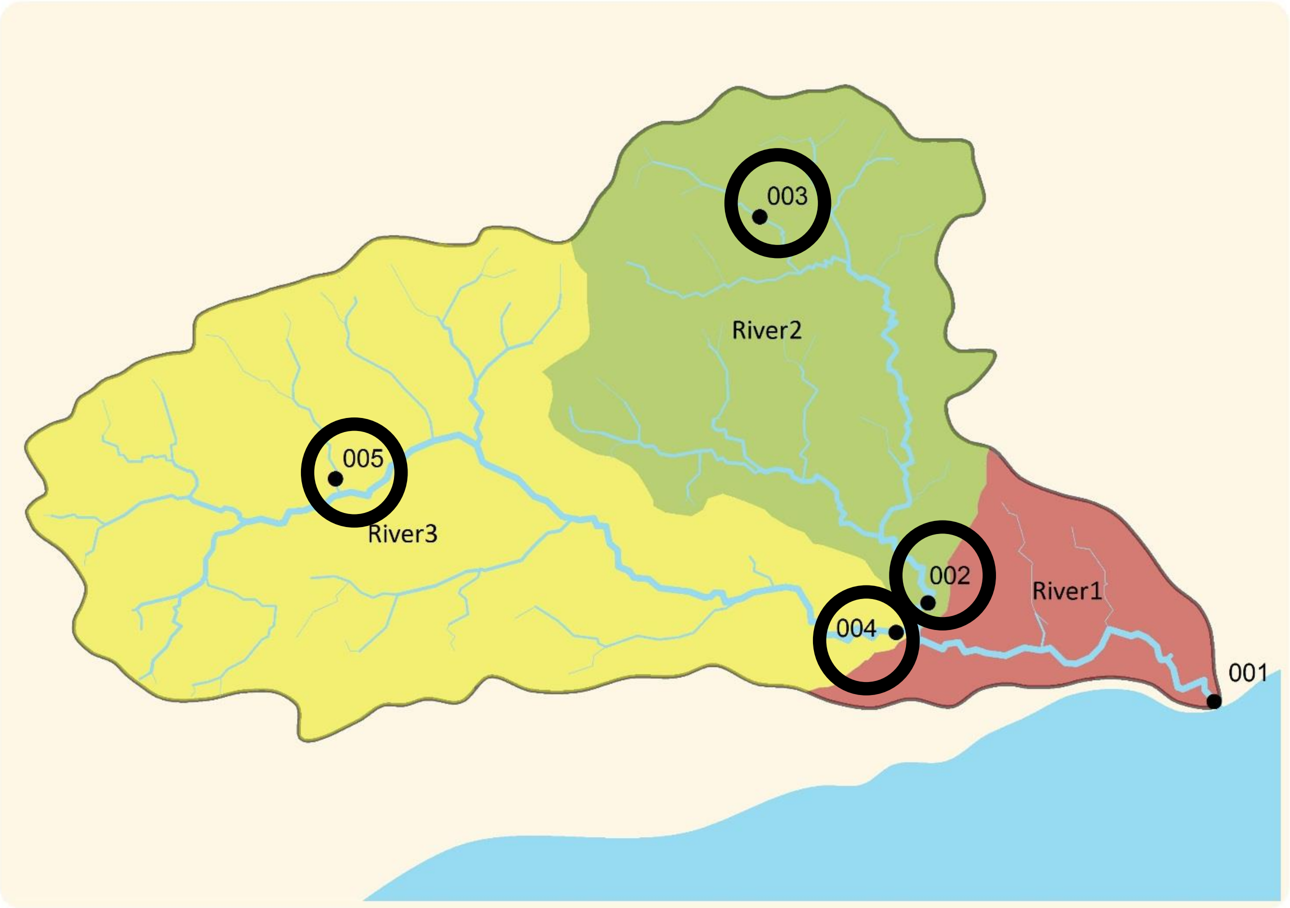

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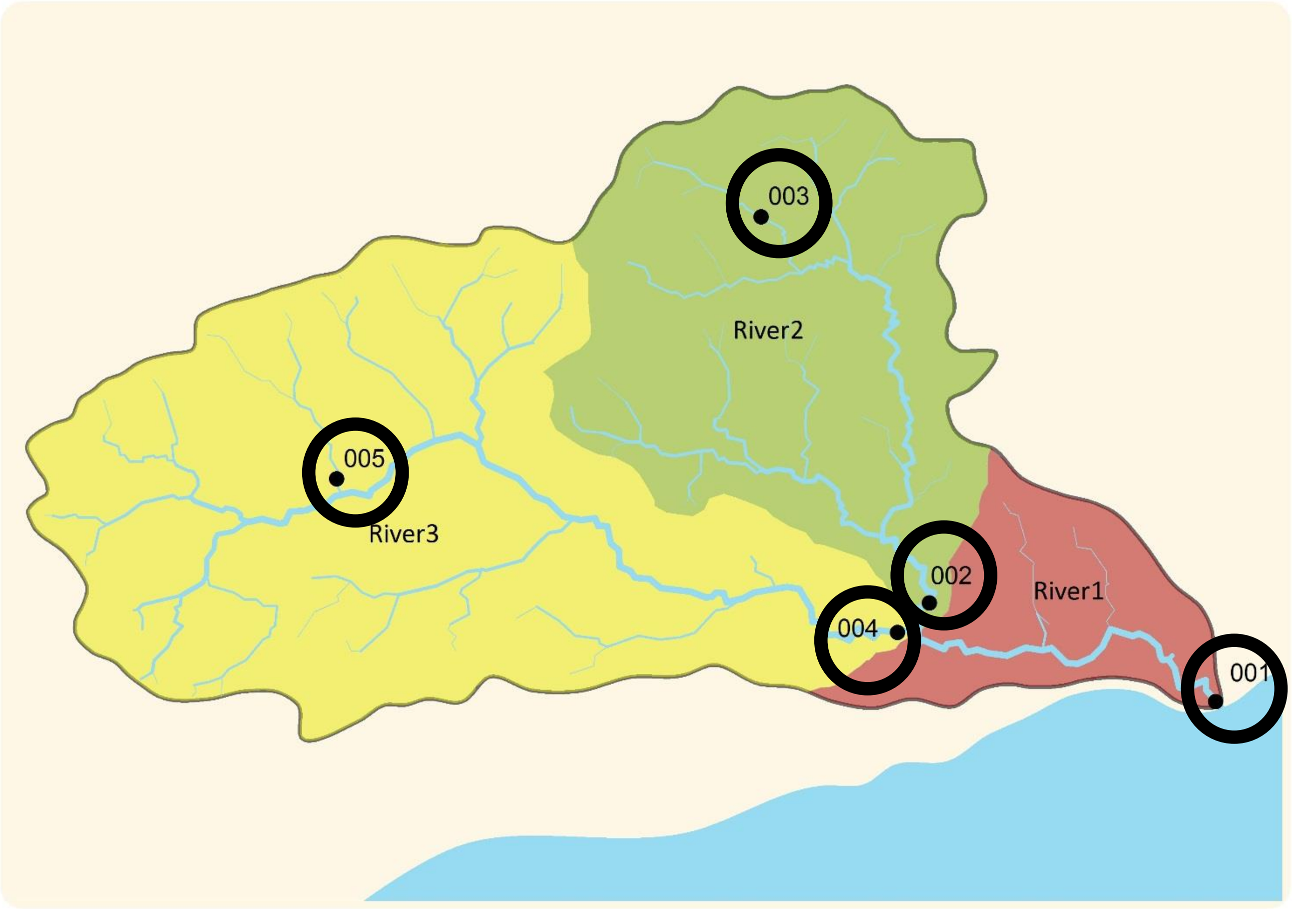
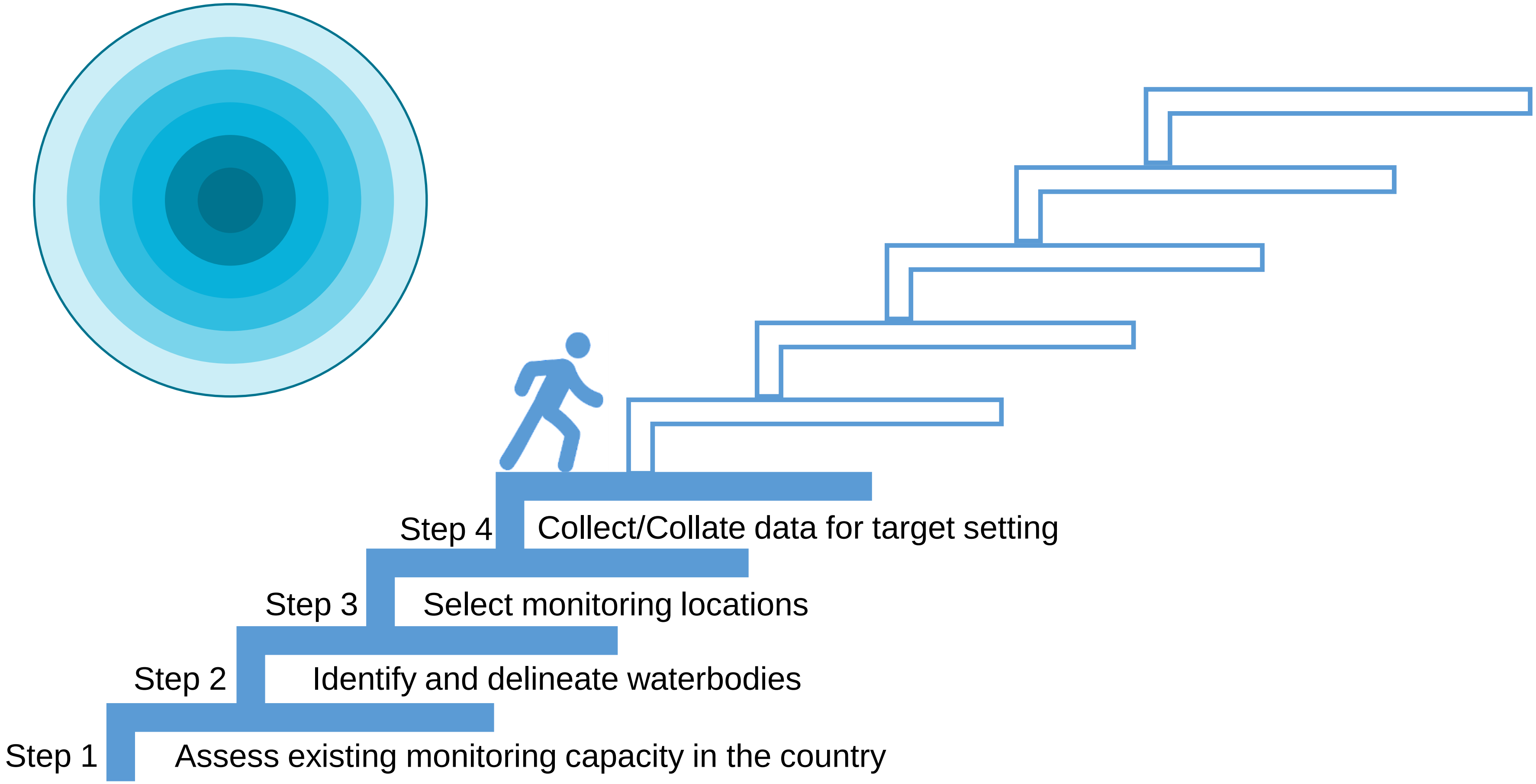


Step 4 – Data for Targets



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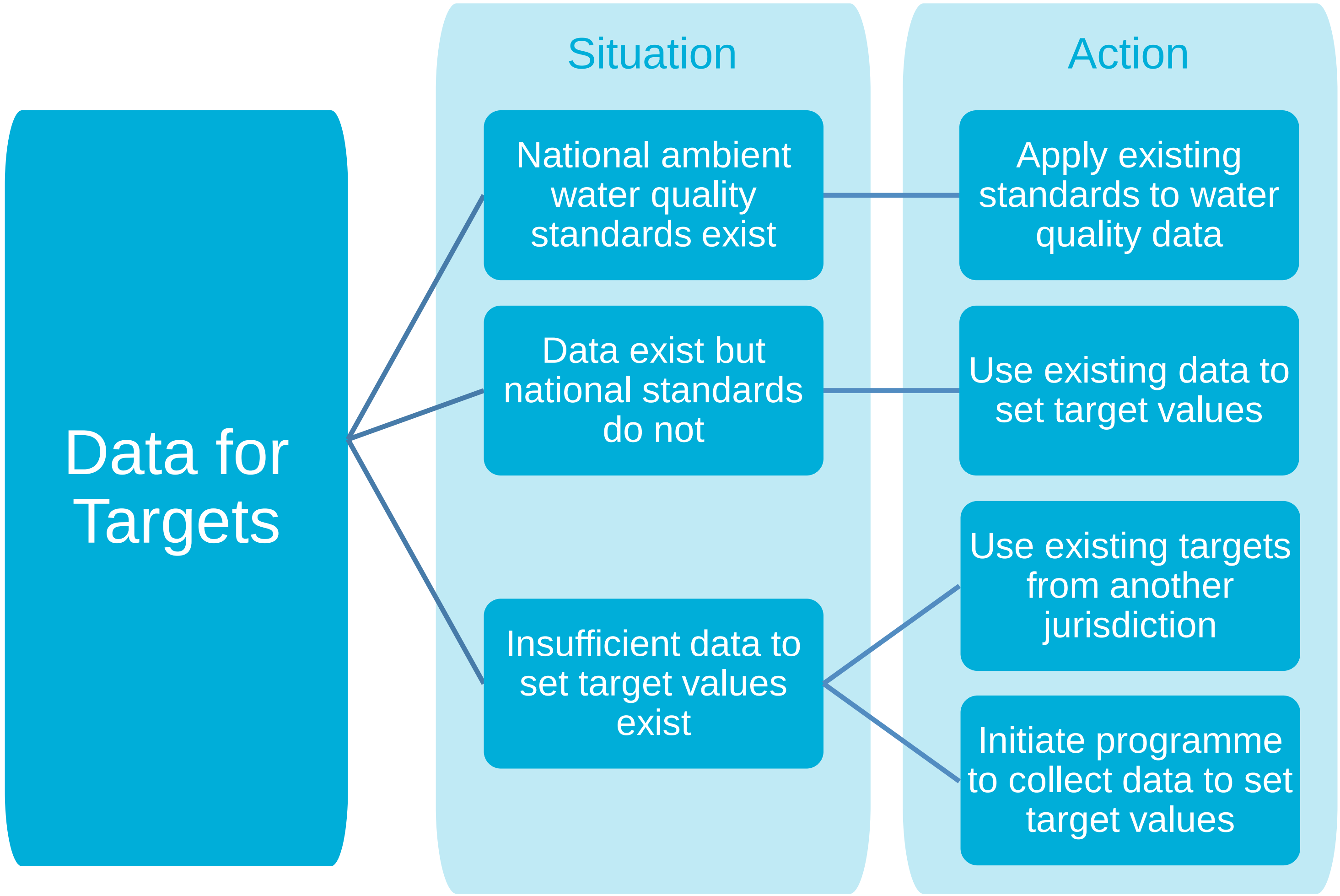

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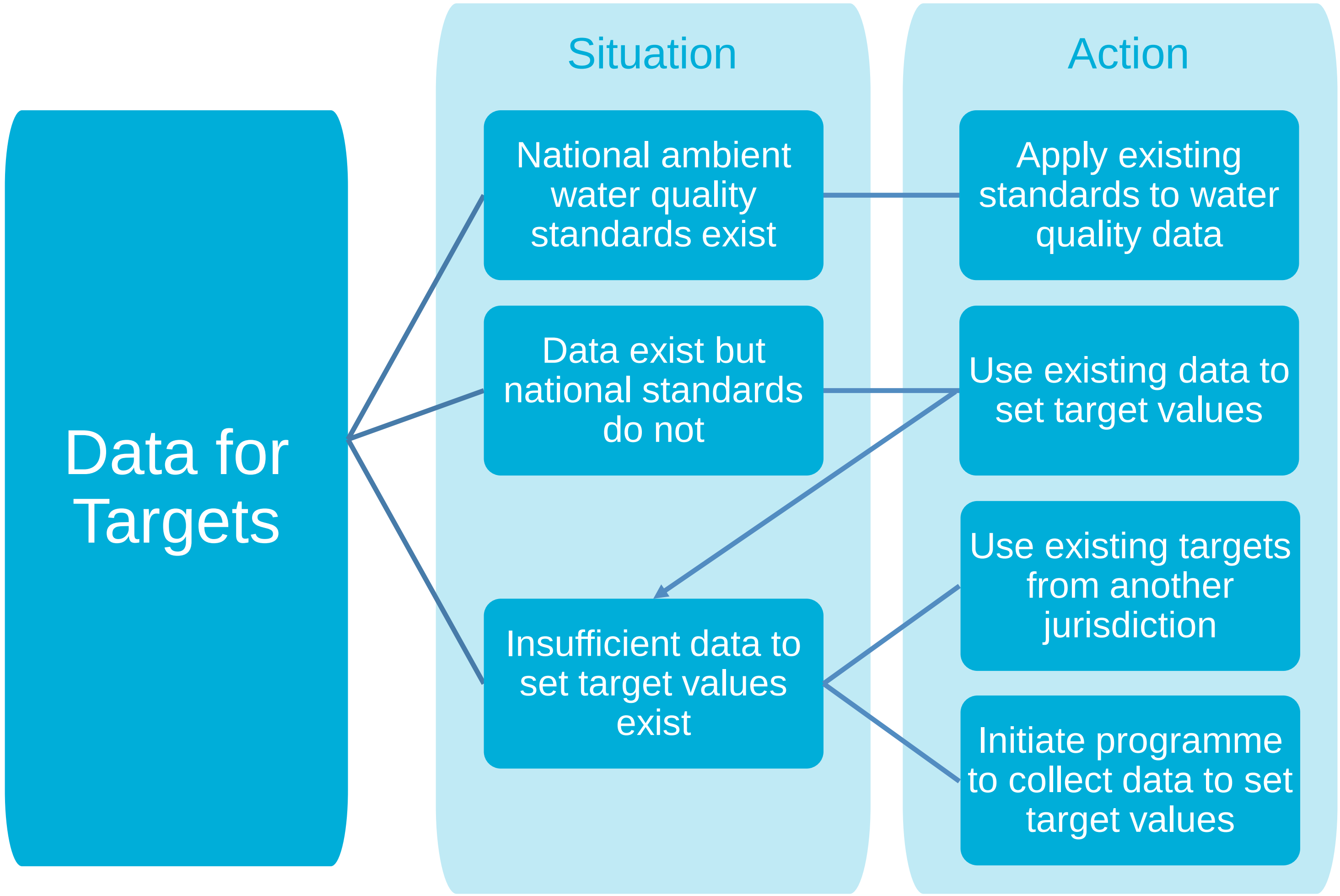
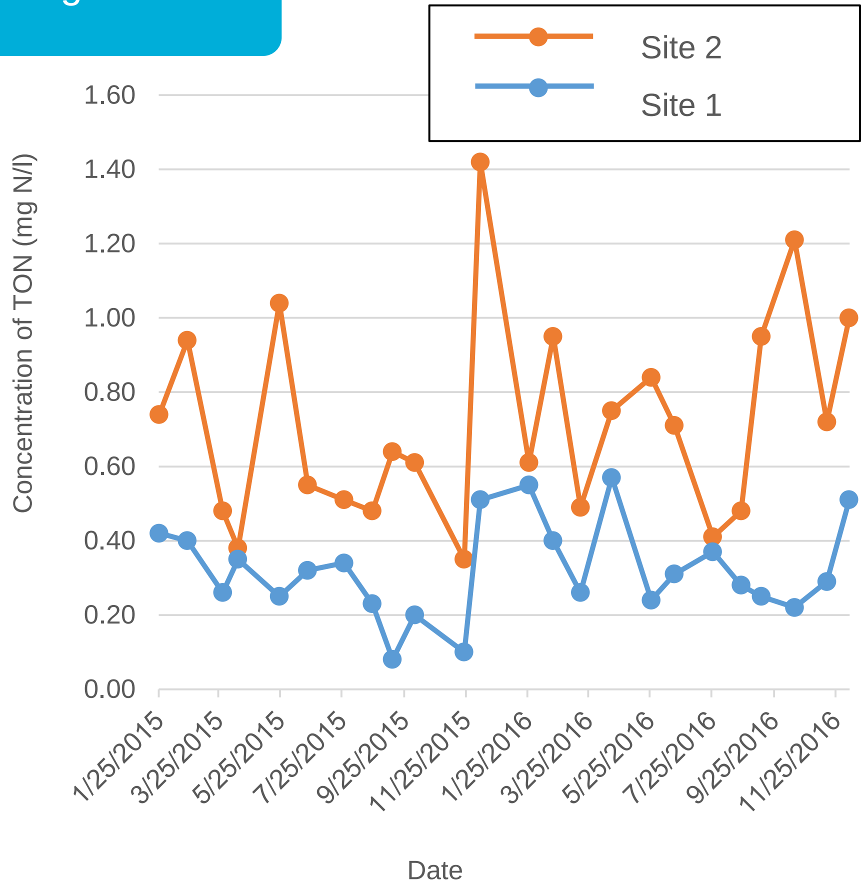


Step 4 – Data for Targets

Use existing data to set target values



	95th percentile
Site 1	**0.544**
Site 2	1.185

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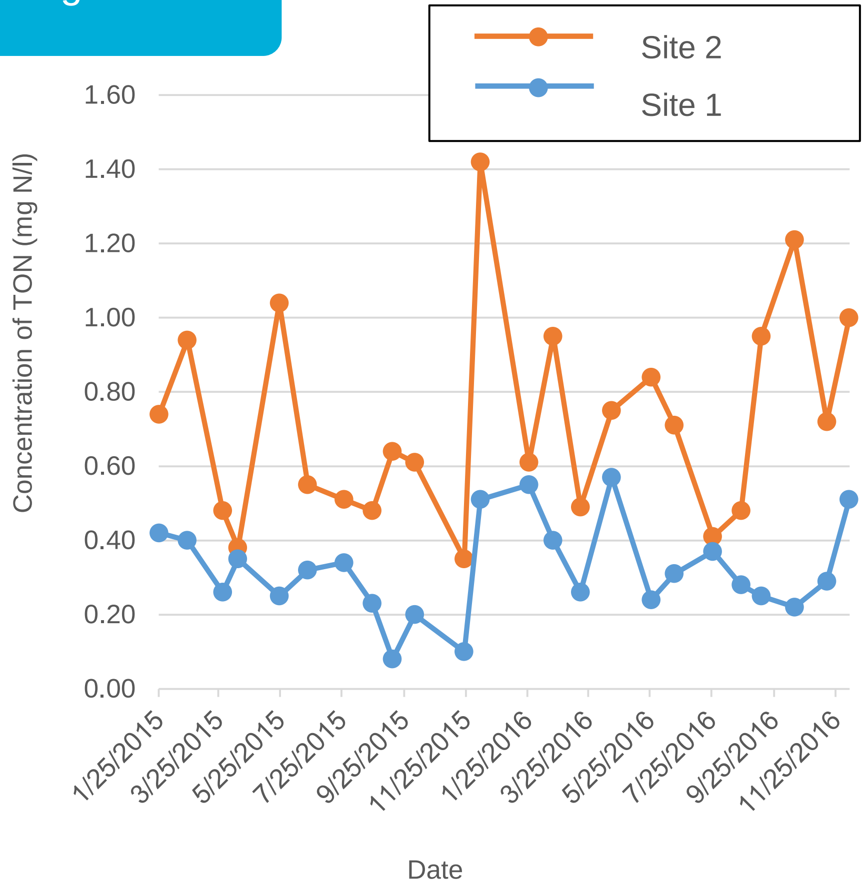
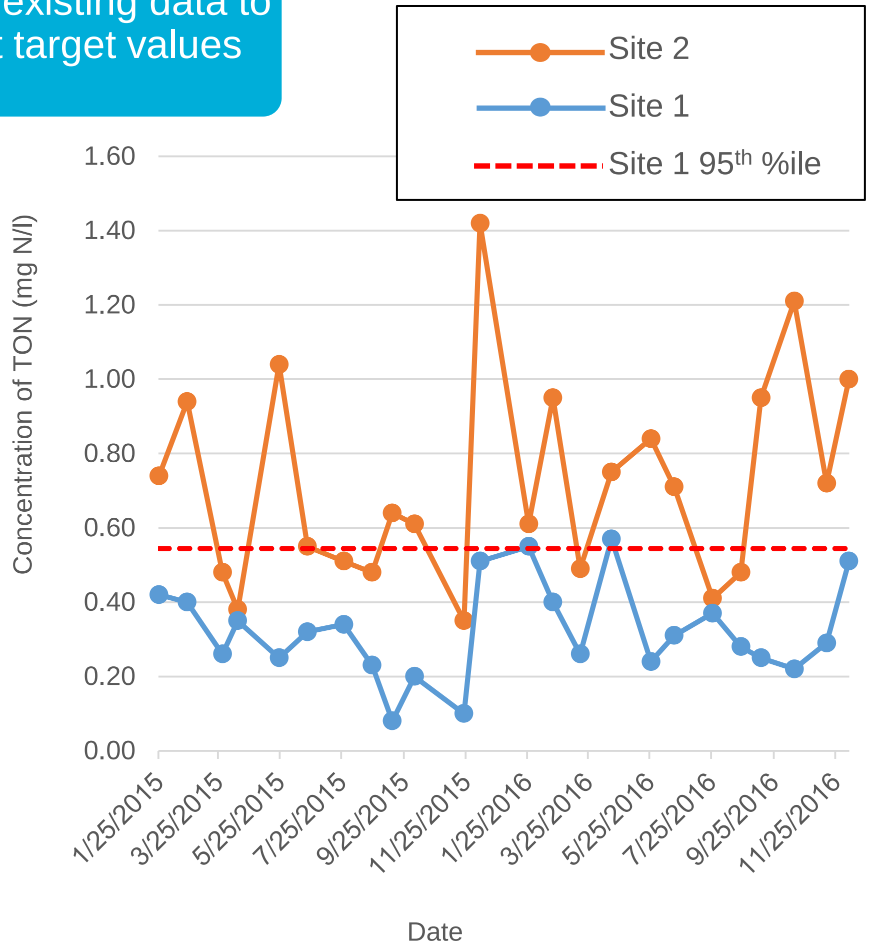


	95th percentile
Site 1	**0.544**
Site 2	1.185

The 95th percentile of **0.544 mg N/l** for Site 1 values can be used to the set the target value for Site 2.

Step 4 – Data for Targets

Use existing data to set target values

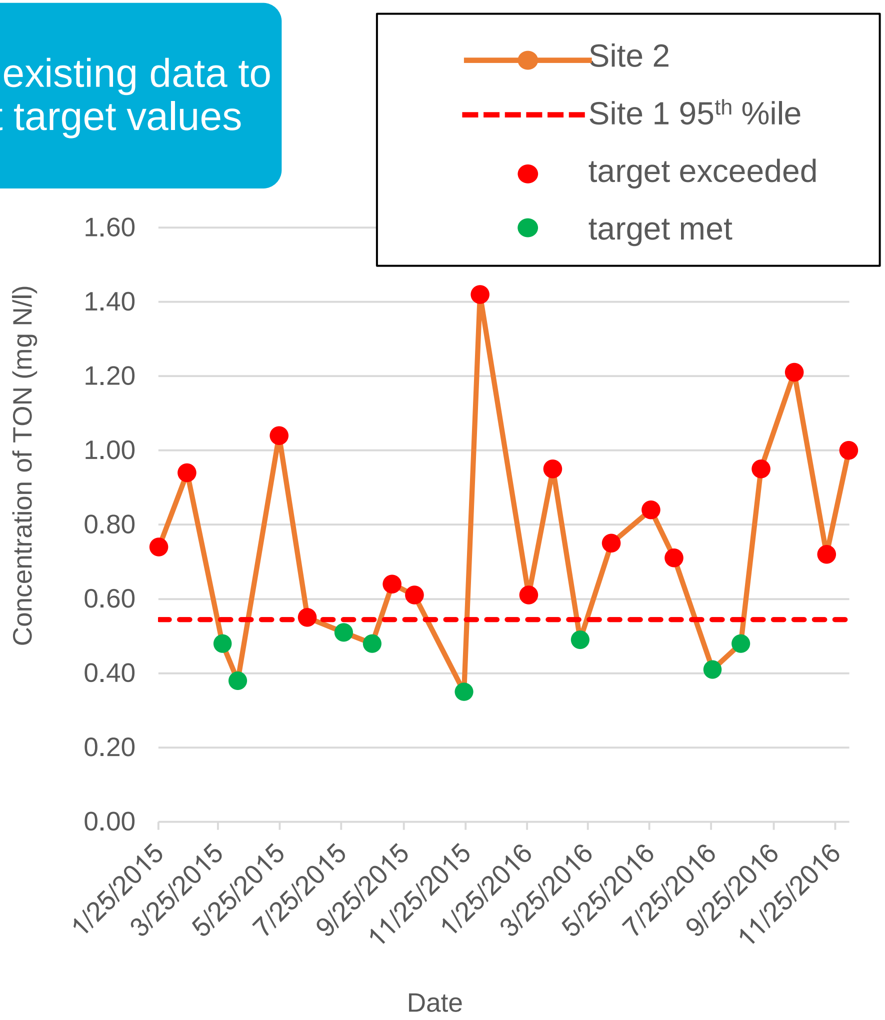


	95th percentile
Site 1	0.544
Site 2	1.185

The 95th percentile of **0.544 mg N/l** for Site 1 values can be used to the set the target value for Site 2.

Step 4 – Data for Targets

Use existing data to set target values



	95th percentile
Site 1	0.544
Site 2	1.185

The 95th percentile of **0.544 mg N/l** for Site 1 values can be used to the set the target value for Site 2.

In this example, 16 of the 24 Site 2 records would exceed the target value.

Step 4 – Data for Targets

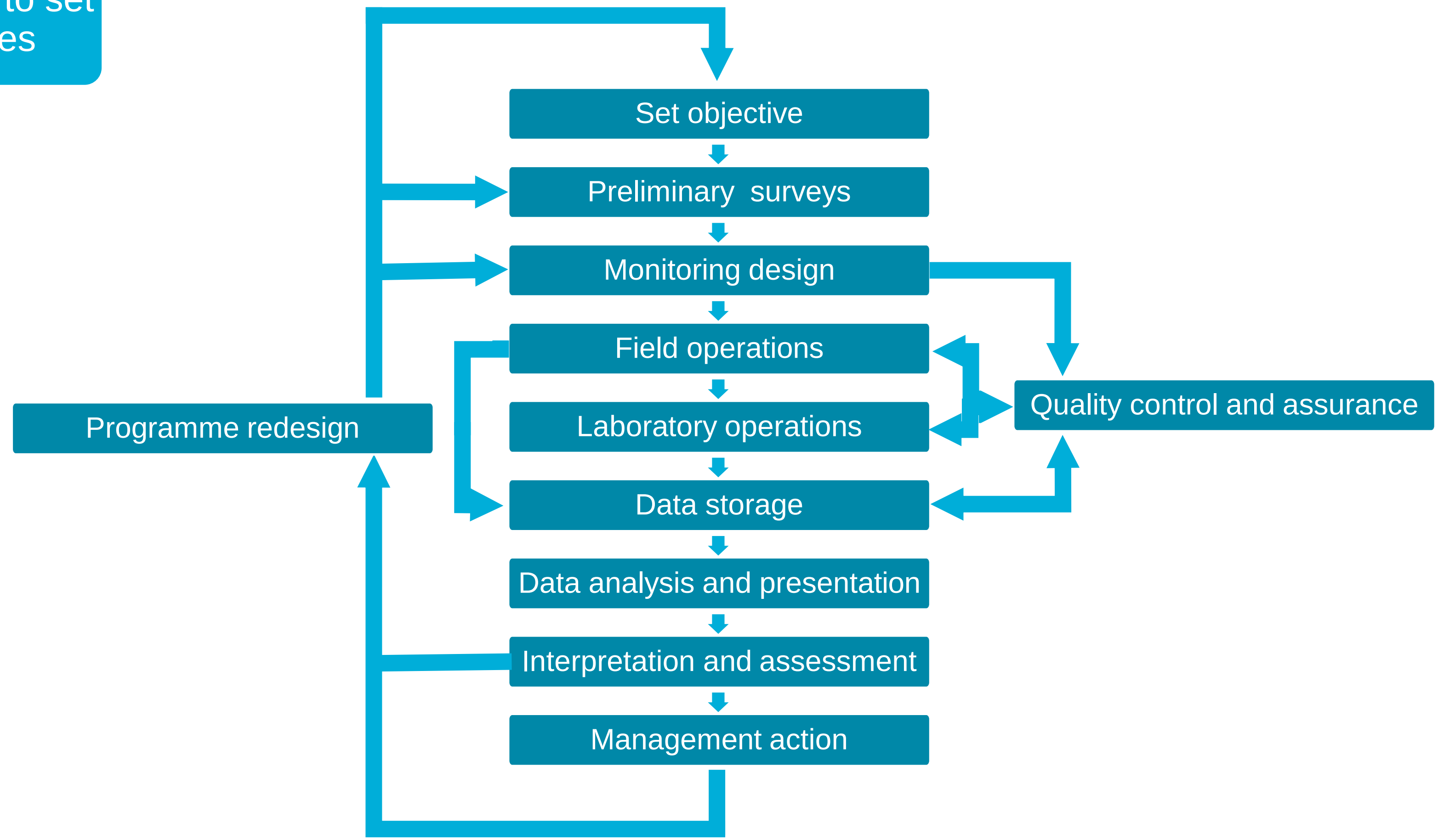
Use existing targets from another jurisdiction

Country/State	Alaska	Australia and New Zealand	Canada	Ireland [2]	South Africa
Purpose of regulations	Fish and aquatic life	Protection of aquatic ecosystems [1]	Protection of aquatic life	Good ecological status	Good quality aquatic ecosystems
pH	6.5 - 8.5	6.0-8.0	6.5-9.0	4.5 or 6.0 [3] – 9.0	Max 5% deviation from background
Dissolved oxygen (% saturation)	< 110	80-120		80-120	80-120
Dissolved oxygen (mg/)l	7 - 17				
Total ammonia-N (mg/l)				0.065	.007
Unionized ammonia NH_3 (µg/l)			19		
Ammonium NH_4^+ (µgN/l)		6 - 100			
Nitrate (NO_3^-) mg/l			13		
Total N (µg/l)					500-2500
upland rivers		100 - 480			
lowland river		200 - 1200			
lakes		350			
Phosphate (mg/l)		0.004 – 0.040		0.035 [4]	0.005 – 0.025
Total P (µg/l)					
upland rivers		10 – 30			
lowland river		10 – 100			
lakes		10 – 25			
Conductivity (µS/cm)					Max 15% deviation from unimpacted
rivers		20 – 2200			
lakes		90 – 1500			
Phytoplankton chlorophyll a (µg/l)					
rivers and streams		3 – 5			
lakes and reservoirs		3 – 5		<9.0 or <10.0 [5]	
Source reference	Department of Environmental Conservation (2016)	ANZECC and ARMCANZ (2000)	CCME (undated)	Minister for the Environment (2009)	Department of Water Affairs and Forestry (1996)

[1] Default trigger values. Different regions have specific ranges for different waterbodies within the overall range given here; [2] Based on the EU Water Framework Directive requirements for good status in rivers and lakes (EU 2000); [3] Depends on water hardness; [4] Applies to rivers only [5] Depending on lake type

Step 4 – Data for Targets

Initiate programme to collect data to set target values



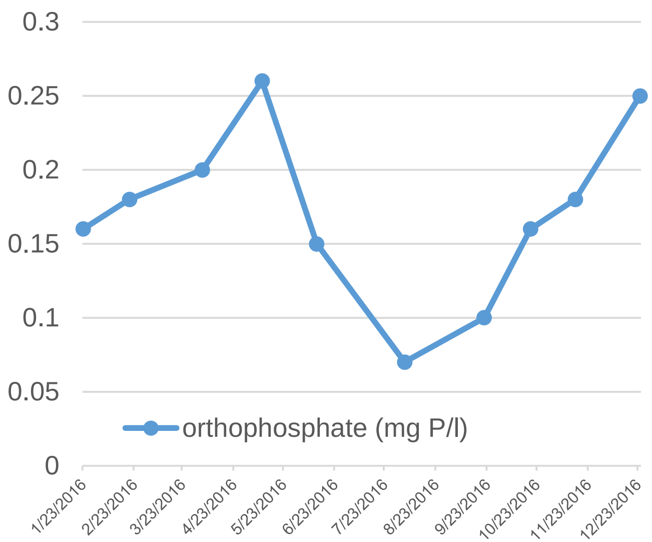
Step 4 – Example

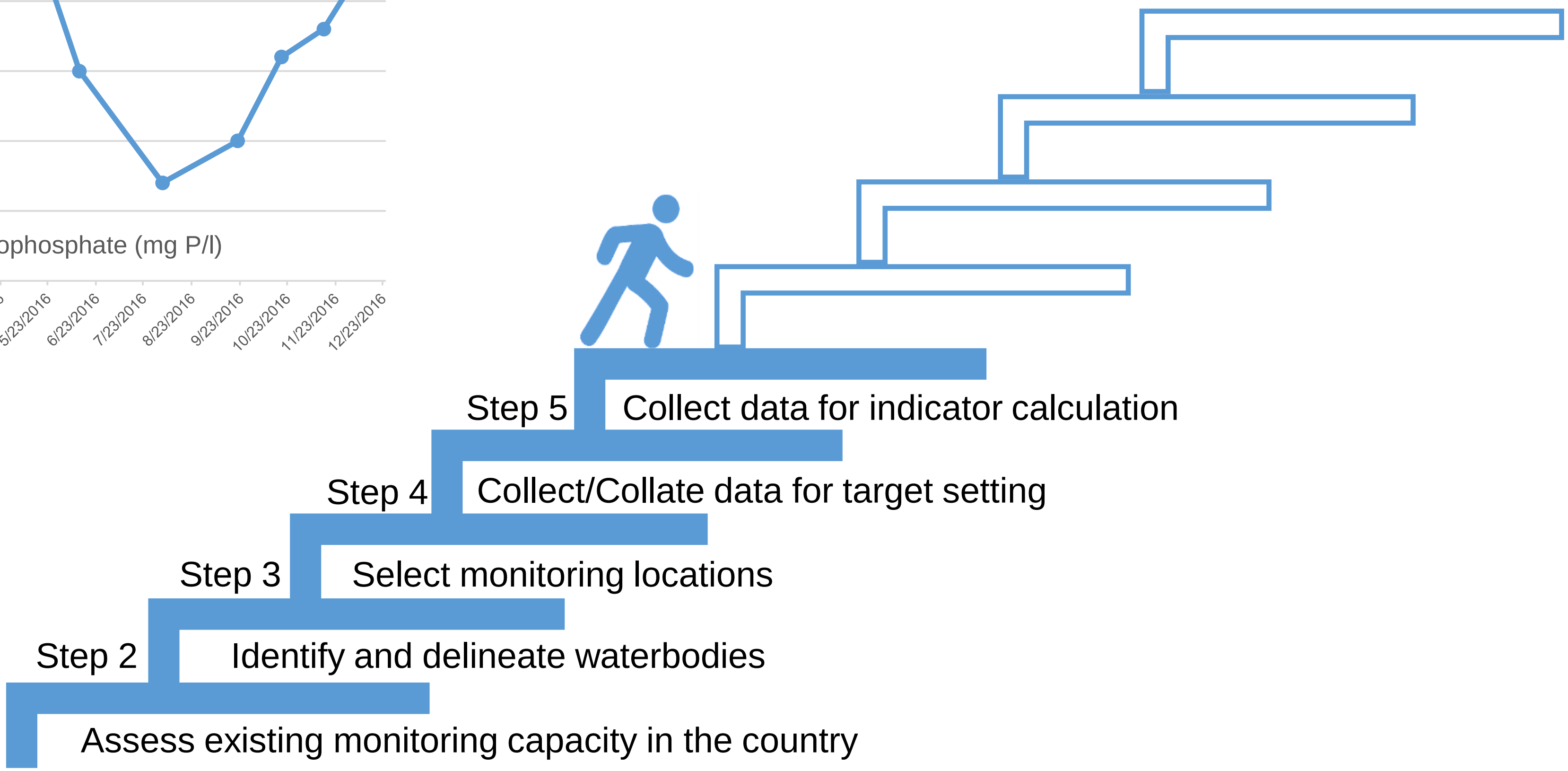
National ambient water quality standards already exist in Country X.

These are listed in the table below and can be used for all river waterbodies.

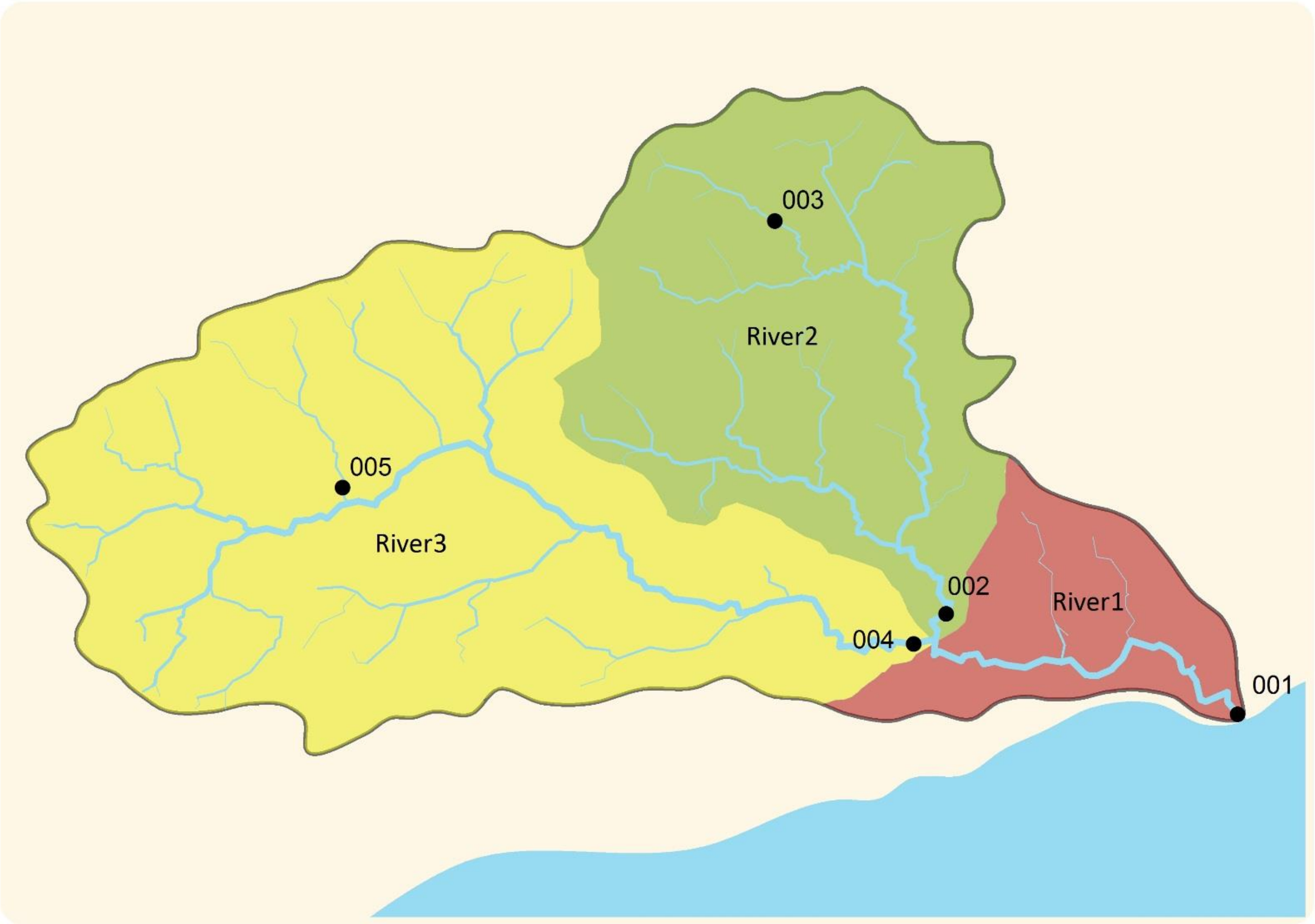
Parameter Name	Parameter Short name	Target Value	Unit	Target Type
Dissolved Oxygen	DO	6	mg/l	Lower
Electrical Conductivity	EC	500	µS/cm	Upper
pH	pH	6 - 8	-	Range
Orthophosphate	OP	0.035	mg P/l	Upper
Total Oxidised Nitrogen (Nitrate + Nitrite)	TON	1.8	mg N/l	Upper

Step 5 – Data for Indicator



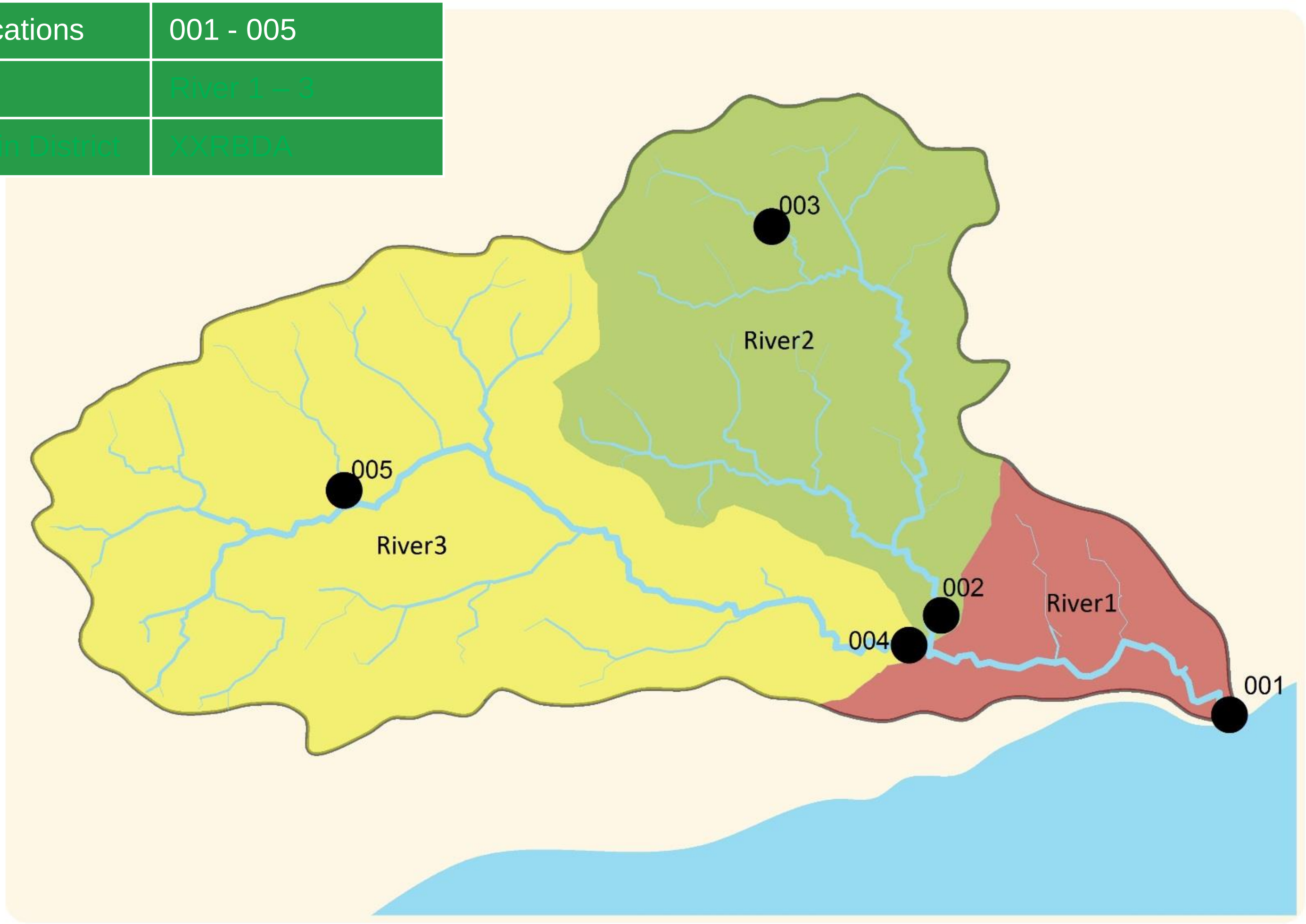


Step 5 – Example



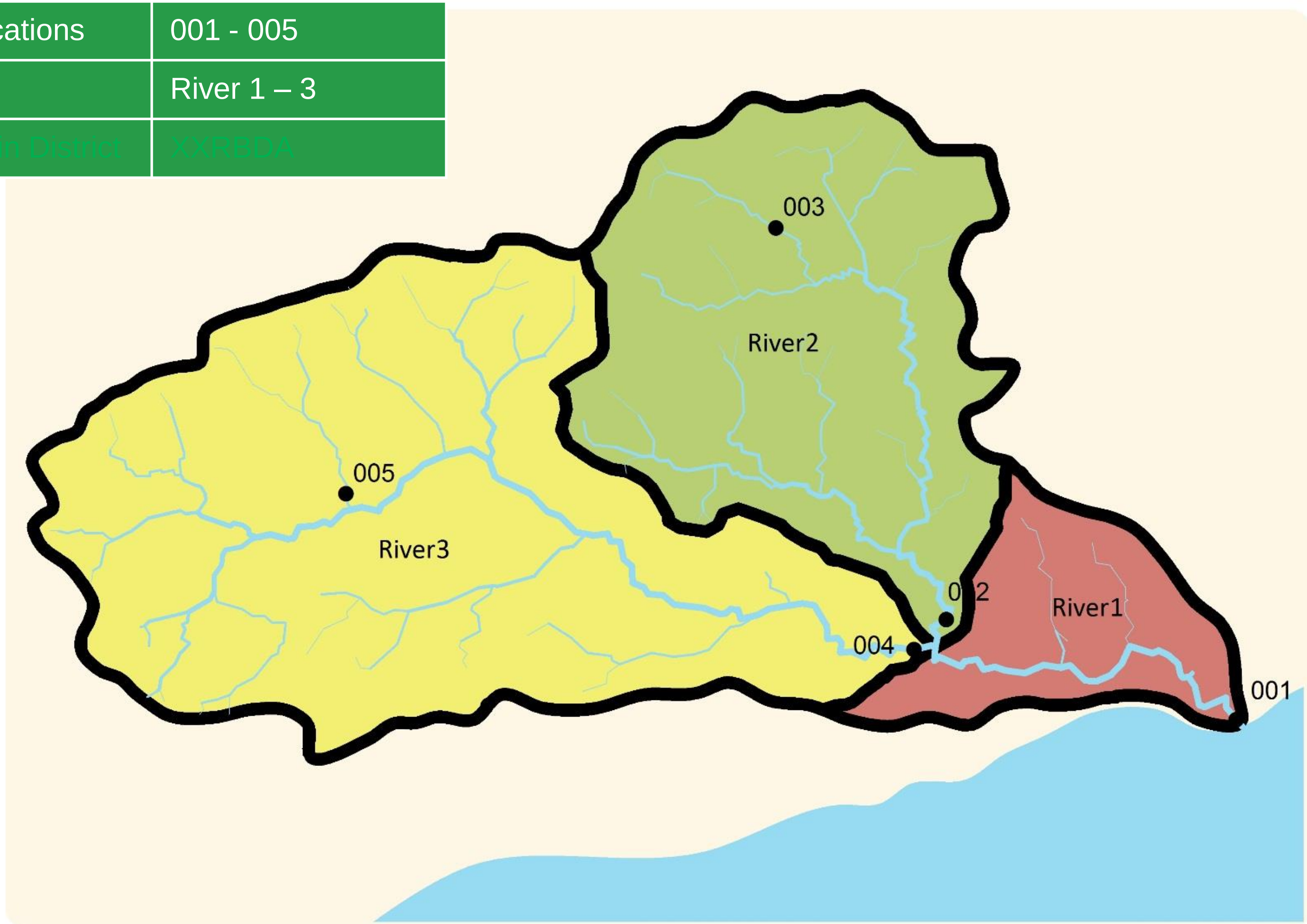
Step 5 – Example

Monitoring Locations	001 - 005
Waterbodies	River 1 – 3
Reporting Basin District	XXRBDA



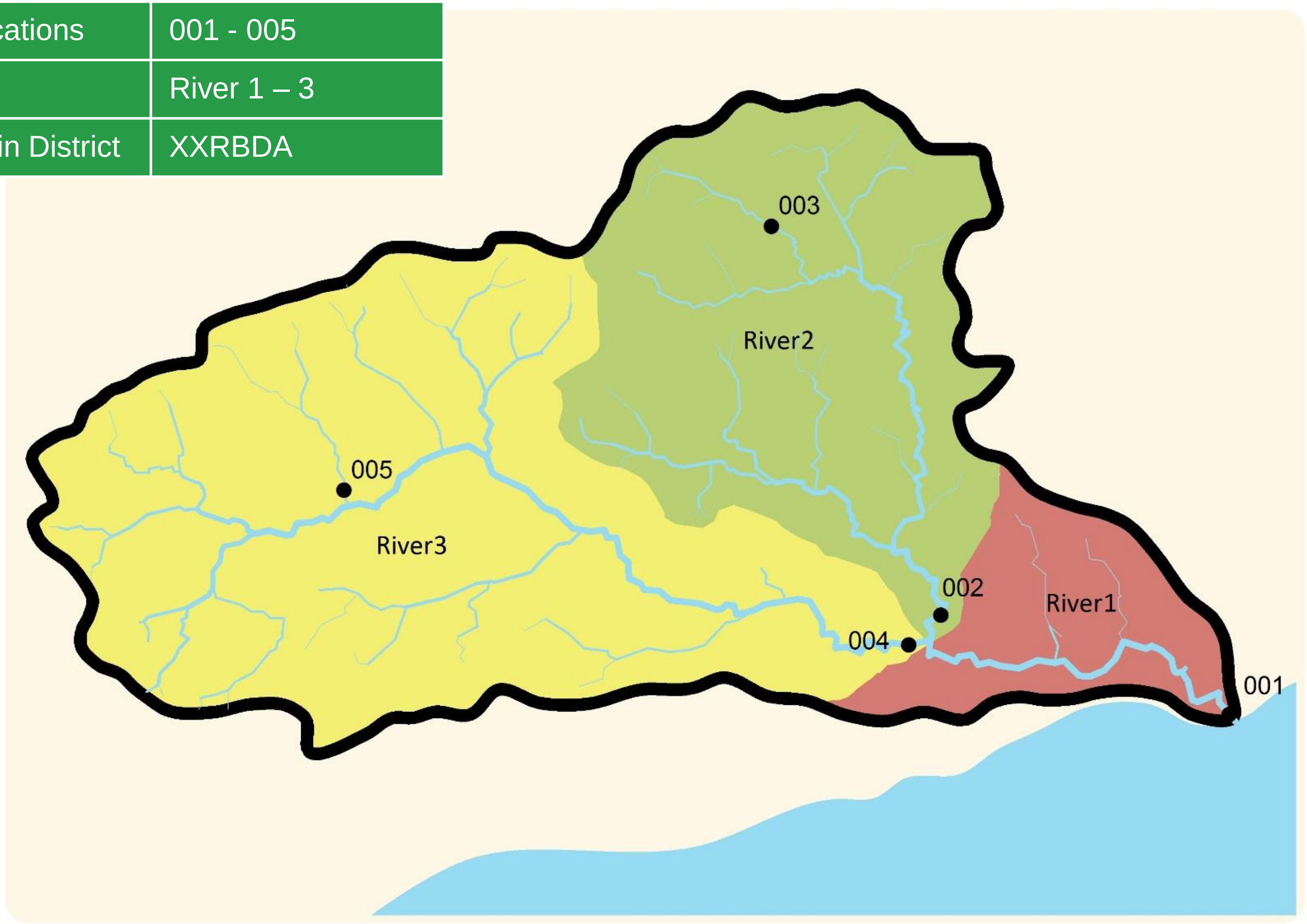
Step 5 – Example

Monitoring Locations	001 - 005
Waterbodies	River 1 – 3
Reporting Basin District	XXRBDA



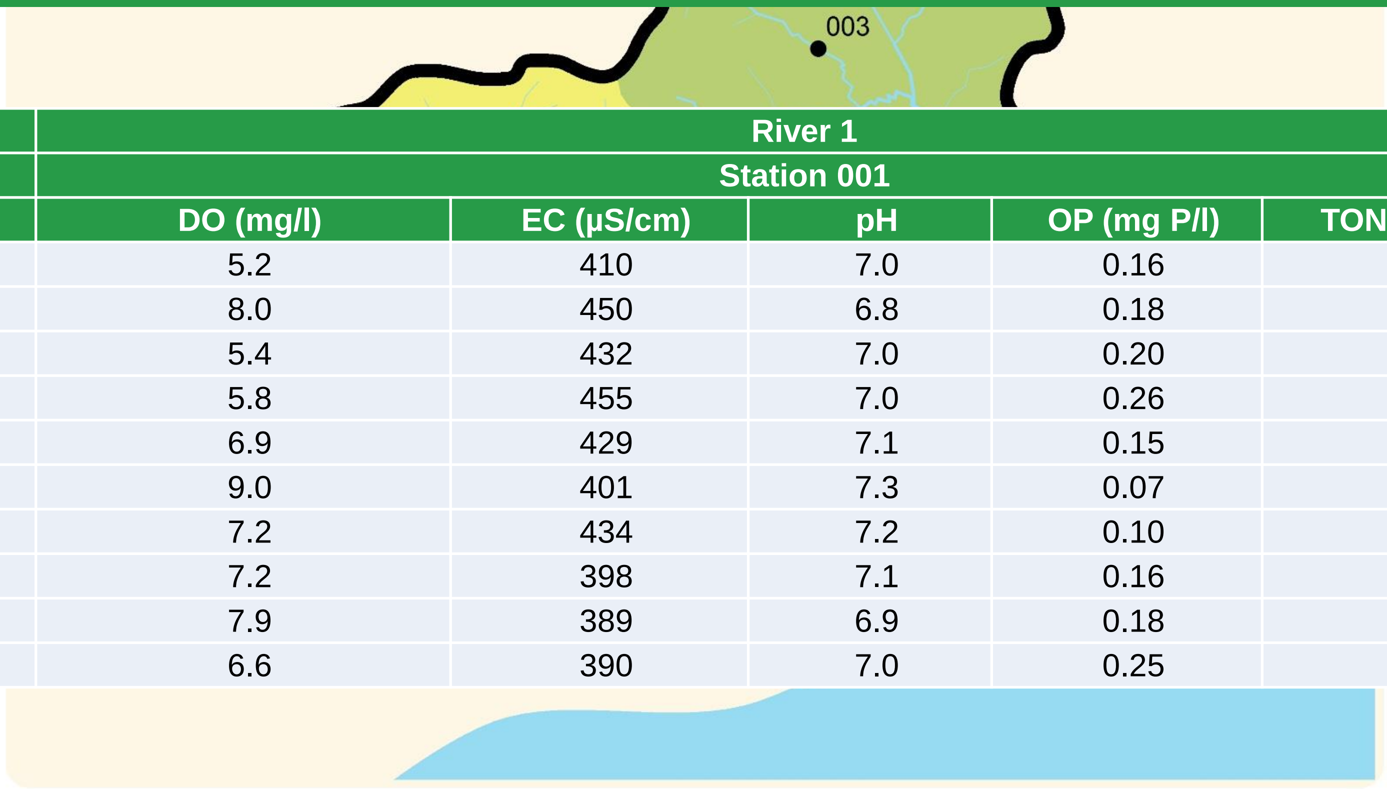
Step 5 – Example

Monitoring Locations	001 - 005
Waterbodies	River 1 – 3
Reporting Basin District	XXRBDA



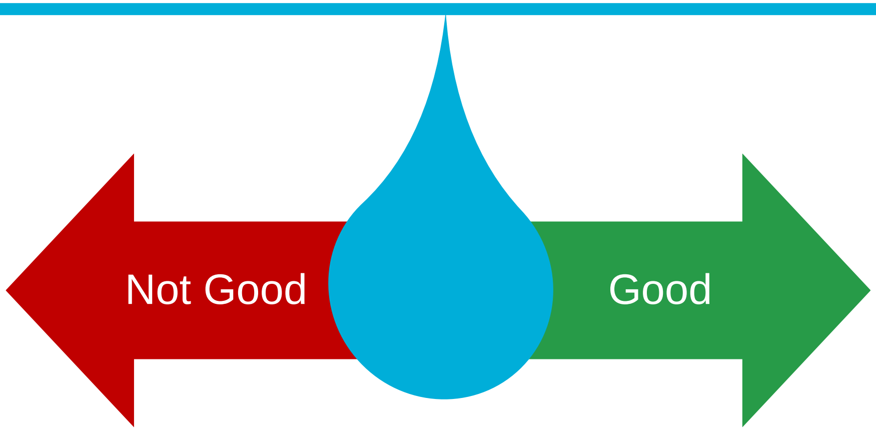
Step 5 – Example

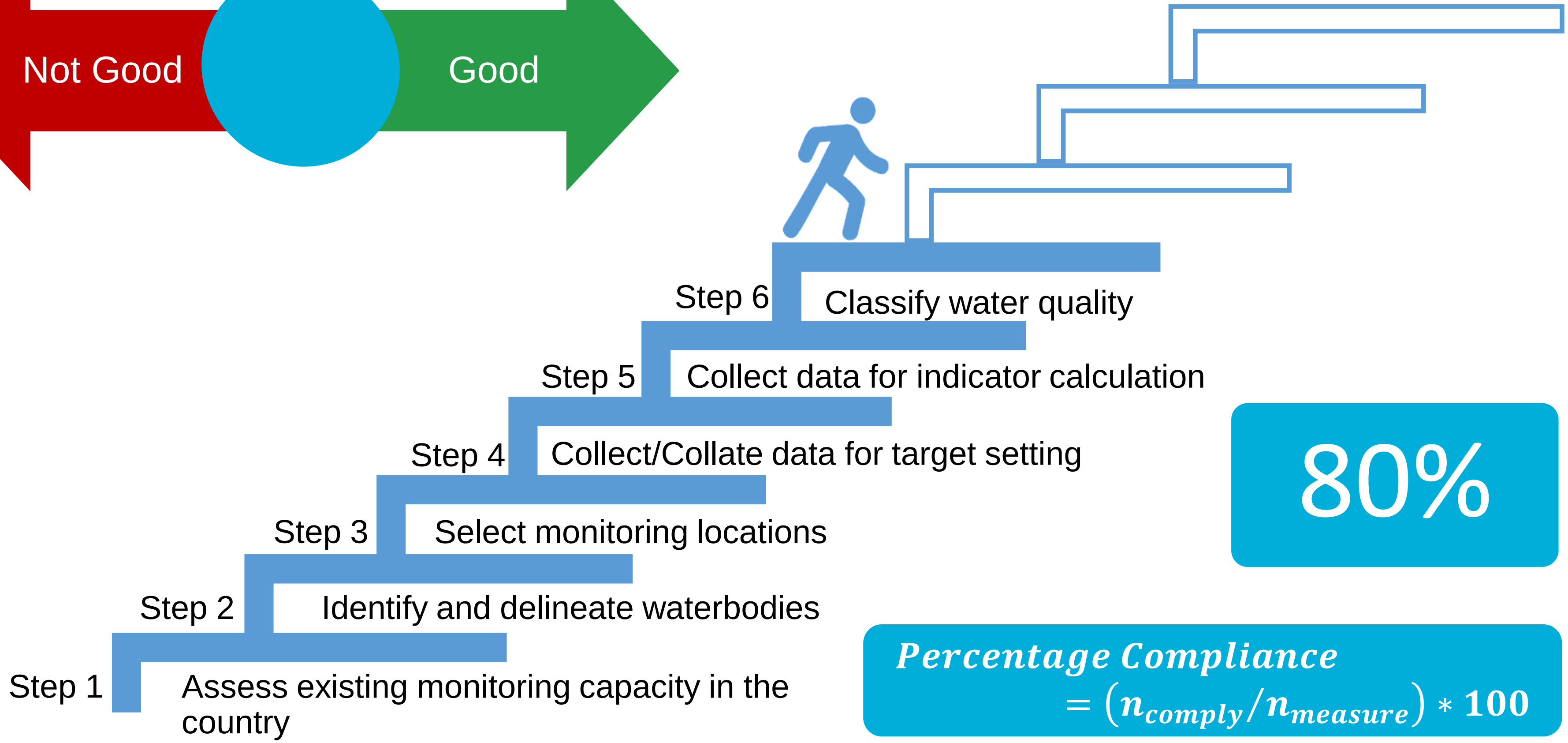
Data for the core parameters for the reporting period are available, and as an example the data in the table are from **Station 001 of River 1 only.**



	River 1				
	Station 001				
Date	DO (mg/l)	EC (µS/cm)	pH	OP (mg P/l)	TON (mg N/l)
2016-01-23	5.2	410	7.0	0.16	0.71
2016-02-20	8.0	450	6.8	0.18	1.09
2016-04-04	5.4	432	7.0	0.20	0.43
2016-05-10	5.8	455	7.0	0.26	0.62
2016-06-12	6.9	429	7.1	0.15	1.90
2016-08-04	9.0	401	7.3	0.07	2.10
2016-09-21	7.2	434	7.2	0.10	2.50
2016-10-19	7.2	398	7.1	0.16	1.06
2016-11-15	7.9	389	6.9	0.18	0.46
2016-12-24	6.6	390	7.0	0.25	0.04

Step 6 – Classify Water Quality





80%

$$Percentage\ Compliance = \left(n_{comply}/n_{measure}\right) * 100$$

Step 6 – Example

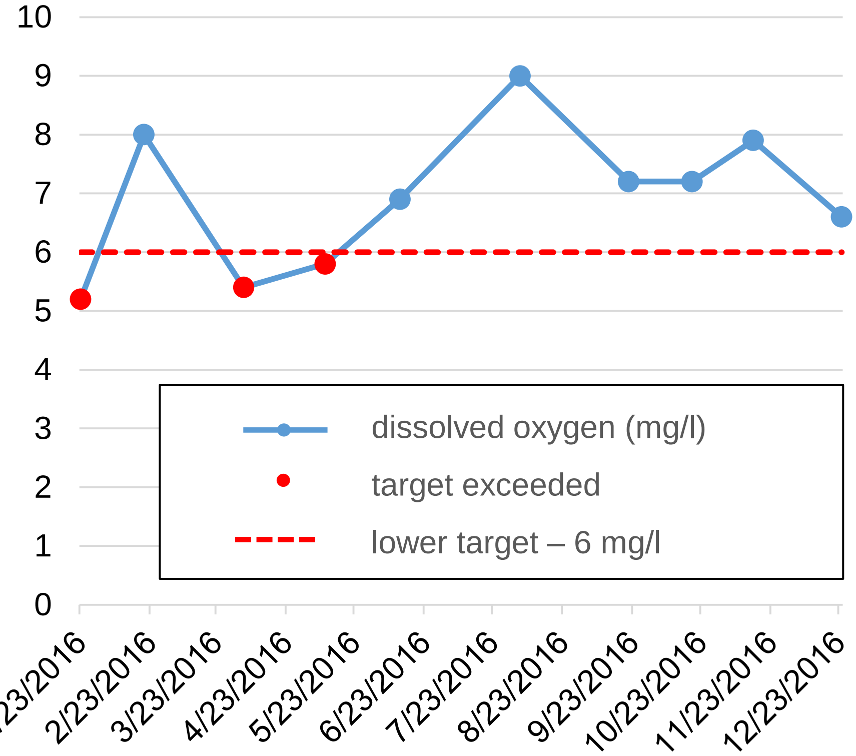
Each measured value is compared with the target values. Those values that do not meet the target are highlighted in red in the table.

	River 1				
	Station 001				
Date	DO (mg/l)	EC (µS/cm)	pH	OP (mg P/l)	TON (mg N/l)
2016-01-23	5.2	410	7.0	0.16	0.71
2016-02-20	8.0	450	6.8	0.18	1.09
2016-04-04	5.4	432	7.0	0.20	0.43
2016-05-10	5.8	455	7.0	0.26	0.62
2016-06-12	6.9	429	7.1	0.15	1.90
2016-08-04	9.0	401	7.3	0.07	2.10
2016-09-21	7.2	434	7.2	0.10	2.50
2016-10-19	7.2	398	7.1	0.16	1.06
2016-11-15	7.9	389	6.9	0.18	0.46
2016-12-24	6.6	390	7.0	0.25	0.04

Step 6 – Example

Each measured value is compared with the target values. Those values that do not meet the target are highlighted in red in the table.

Date	DO (mg/l)	EC (µS/cm)
2016-01-23	5.2	410
2016-02-20	8.0	450
2016-04-04	5.4	432
2016-05-10	5.8	455
2016-06-12	6.9	429
2016-08-04	9.0	401
2016-09-21	7.2	434
2016-10-19	7.2	398
2016-11-15	7.9	389
2016-12-24	6.6	390



Step 6 – Example

Each measured value is compared with the target values. Those values that do not meet the target are highlighted in red in the table.

Date	DO (mg/l)	EC (µS/cm)
2016-01-23	5.2	410
2016-02-20	8.0	450
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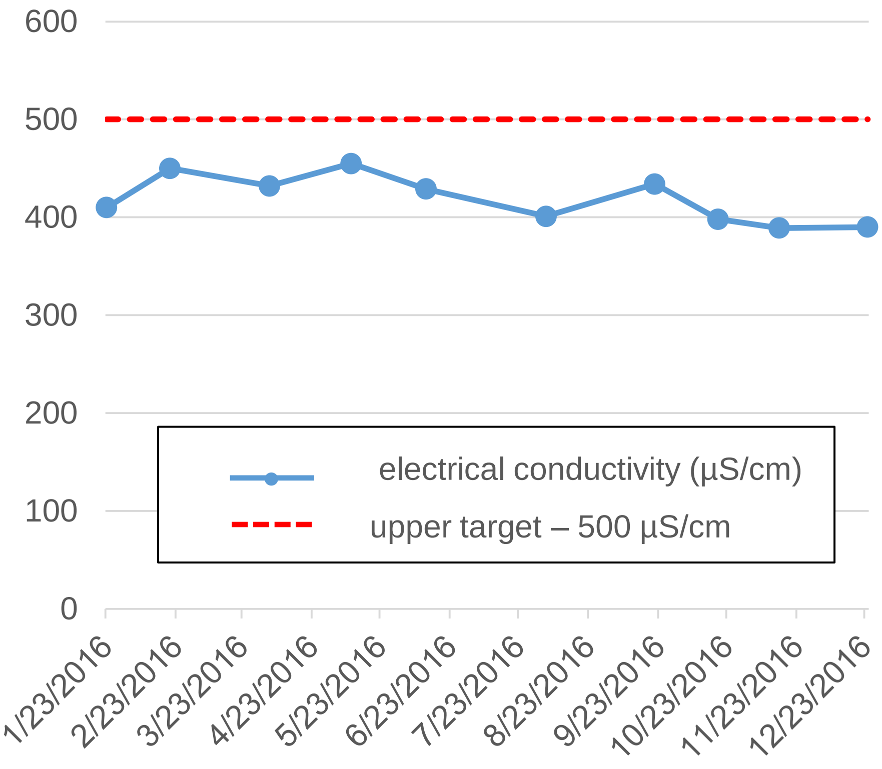
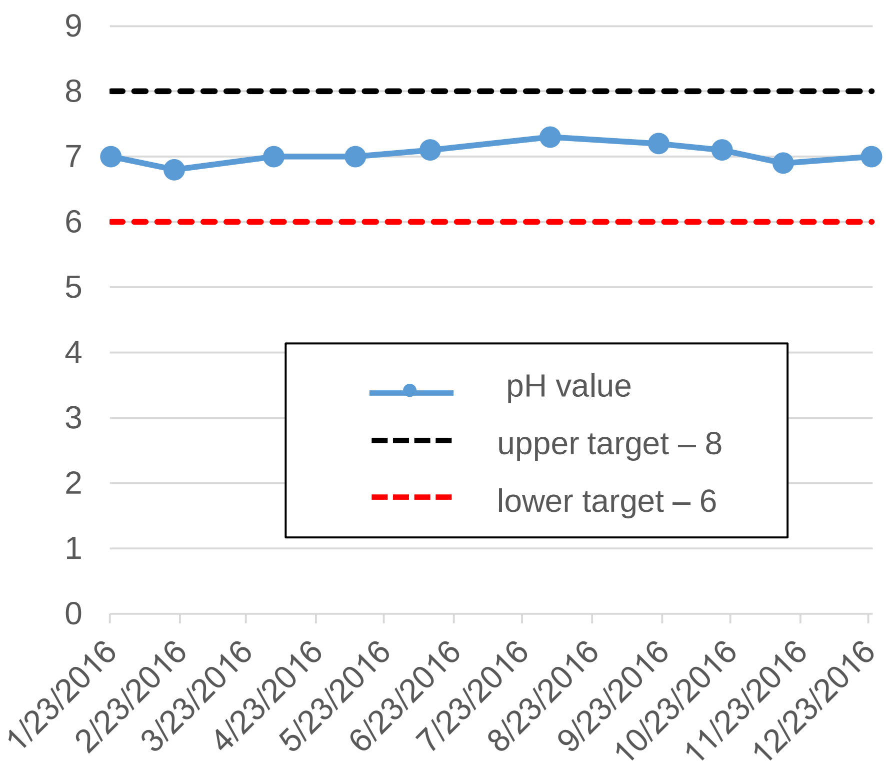
2016-05-10	5.8	455
2016-06-12	6.9	429
2016-08-04	9.0	401
2016-09-21	7.2	434
2016-10-19	7.2	398
2016-11-15	7.9	389
2016-12-24	6.6	390



Step 6 – Example

Each measured value is compared with the target values. Those values that do not meet the target are highlighted in red in the table.

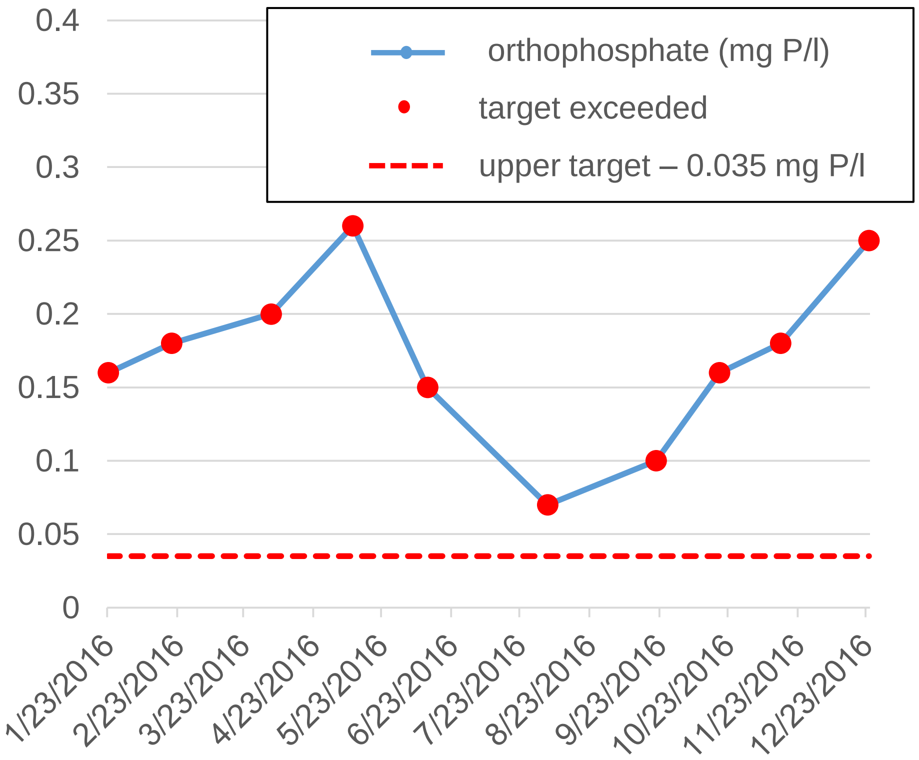
Date	DO (mg/l)	EC (µS/cm)
2016-01-23	5.2	410
2016-02-20	8.0	450
2016-04-04	5.4	432
2016-05-10	5.8	455
2016-06-12	6.9	429
2016-08-04	9.0	401
2016-09-21	7.2	434
2016-10-19	7.2	398
2016-11-15	7.9	389
2016-12-24	6.6	390



Step 6 – Example

Each measured value is compared with the target values. Those values that do not meet the target are highlighted in red in the table.

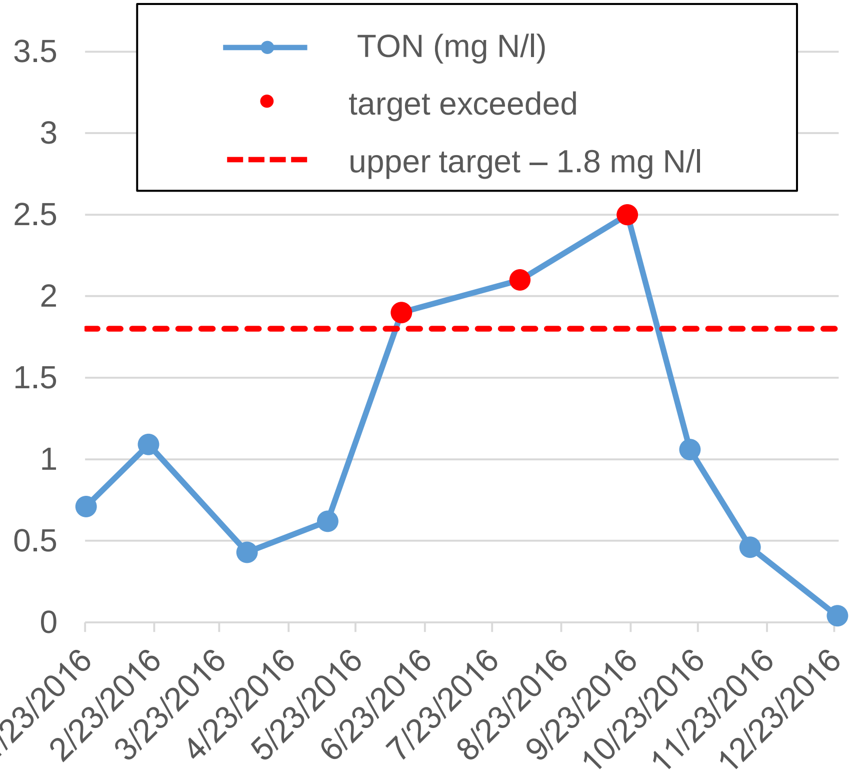
Date	DO (mg/l)	EC (µS/cm)
2016-01-23	5.2	410
2016-02-20	8.0	450
2016-04-04	5.4	432
2016-05-10	5.8	455
2016-06-12	6.9	429
2016-08-04	9.0	401
2016-09-21	7.2	434
2016-10-19	7.2	398
2016-11-15	7.9	389
2016-12-24	6.6	390



Step 6 – Example

Each measured value is compared with the target values. Those values that do not meet the target are highlighted in red in the table.

Date	DO (mg/l)	EC (µS/cm)
2016-01-23	5.2	410
2016-02-20	8.0	450
2016-04-04	5.4	432
2016-05-10	5.8	455
2016-06-12	6.9	429
2016-08-04	9.0	401
2016-09-21	7.2	434
2016-10-19	7.2	398
2016-11-15	7.9	389
2016-12-24	6.6	390



Step 6 – Example

Each measurement is assigned a “1” if the target was met or a “0” if it was not met

	River 1				
	Station 001				
Date	**DO**	**EC**	**pH**	**OP**	**TON**
2016-01-23	0	1	1	0	1
2016-02-20	1	1	1	0	1
2016-04-04	0	1	1	0	1
2016-05-10	0	1	1	0	1
2016-06-12	1	1	1	0	0
2016-08-04	1	1	1	0	0
2016-09-21	1	1	1	0	0
2016-10-19	1	1	1	0	1
2016-11-15	1	1	1	0	1
2016-12-24	1	1	1	0	1
Percentage Compliance	**70**	**100**	**100**	**0**	**70**

The percentage compliance for each parameter at each monitoring station over the reporting is then calculated

Step 6 – Example

Each measurement is assigned a “1” if the target was met or a “0” if it was not met

	River 1				
	Station 001				
Date	**DO**	**EC**	**pH**	**OP**	**TON**
2016-01-23	0	1	1	0	1
2016-02-20	1	1	1	0	1
2016-04-04	0	1	1	0	1
2016-05-10	0	1	1	0	1
2016-06-12	1	1	1	0	0
2016-08-04	1	1	1	0	0
2016-09-21	1	1	1	0	0
2016-10-19	1	1	1	0	1
2016-11-15	1	1	1	0	1
2016-12-24	1	1	1	0	1
Percentage Compliance	**70**	**100**	**100**	**0**	**70**

The percentage compliance for each parameter at each monitoring station over the reporting is then calculated

Step 6 – Example

Each measurement is assigned a “1” if the target was met or a “0” if it was not met

	River 1				
	Station 001				
Date	**DO**	**EC**	**pH**	**OP**	**TON**
2016-01-23	0	1	1	0	1
2016-02-20	1	1	1	0	1
2016-04-04	0	1	1	0	1
2016-05-10	0	1	1	0	1
2016-06-12	1	1	1	0	0
2016-08-04	1	1	1	0	0
2016-09-21	1	1	1	0	0
2016-10-19	1	1	1	0	1
2016-11-15	1	1	1	0	1
2016-12-24	1	1	1	0	1
Percentage Compliance	**70**	**100**	**100**	**0**	**70**

The percentage compliance for each parameter at each monitoring station over the reporting is then calculated

Step 6 – Example

Each measurement is assigned a “1” if the target was met or a “0” if it was not met

	River 1				
	Station 001				
Date	DO	EC	pH	OP	TON
2016-01-23	0	1	1	0	1
2016-02-20	1	1	1	0	1
2016-04-04	0	1	1	0	1
2016-05-10	0	1	1	0	1
2016-06-12	1	1	1	0	0
2016-08-04	1	1	1	0	0
2016-09-21	1	1	1	0	0
2016-10-19	1	1	1	0	1
2016-11-15	1	1	1	0	1
2016-12-24	1	1	1	0	1
Percentage Compliance	70	100	100	0	70

The percentage compliance for each parameter at each monitoring station over the reporting is then calculated

Step 6 – Example

If data from more than one monitoring station are available, they are aggregated to calculate the % Compliance per Waterbody

This aggregated value is compared with the 80% compliance threshold for "good" quality for each waterbody

Percentage Compliance per Core Parameter	River 1	River 2		River 3	
	Station 001	Station 002	Station 003	Station 004	Station 005
DO	70	90	90	70	90
EC	100	100	100	100	100
pH	100	90	90	100	80
OP	0	90	80	10	40
TON	70	100	100	100	100
% Compliance per Station					
% Compliance per Waterbody					
Waterbody Classification					

Step 6 – Example

If data from more than one monitoring station are available, they are aggregated to calculate the % Compliance per Waterbody

This aggregated value is compared with the 80% compliance threshold for "good" quality for each waterbody

Percentage Compliance per Core Parameter	River 1	River 2		River 3	
	Station 001	Station 002	Station 003	Station 004	Station 005
DO	70	90	90	70	90
EC	100	100	100	100	100
pH	100	90	90	100	80
OP	0	90	80	10	40
TON	70	100	100	100	100
% Compliance per Station	68				
% Compliance per Waterbody					
Waterbody Classification					

Step 6 – Example

If data from more than one monitoring station are available, they are aggregated to calculate the % Compliance per Waterbody

This aggregated value is compared with the 80% compliance threshold for "good" quality for each waterbody

Percentage Compliance per Core Parameter	River 1	River 2		River 3	
	Station 001	Station 002	Station 003	Station 004	Station 005
DO	70	90	90	70	90
EC	100	100	100	100	100
pH	100	90	90	100	80
OP	0	90	80	10	40
TON	70	100	100	100	100
% Compliance per Station	68				
% Compliance per Waterbody	68				
Waterbody Classification					

Step 6 – Example

If data from more than one monitoring station are available, they are aggregated to calculate the % Compliance per Waterbody

This aggregated value is compared with the 80% compliance threshold for "good" quality for each waterbody

Percentage Compliance per Core Parameter	River 1	River 2		River 3	
	Station 001	Station 002	Station 003	Station 004	Station 005
DO	70	90	90	70	90
EC	100	100	100	100	100
pH	100	90	90	100	80
OP	0	90	80	10	40
TON	70	100	100	100	100
% Compliance per Station	68	94	92	76	82
% Compliance per Waterbody	68				
Waterbody Classification					

Step 6 – Example

If data from more than one monitoring station are available, they are aggregated to calculate the % Compliance per Waterbody

This aggregated value is compared with the 80% compliance threshold for "good" quality for each waterbody

Percentage Compliance per Core Parameter	River 1	River 2		River 3	
	Station 001	Station 002	Station 003	Station 004	Station 005
DO	70	90	90	70	90
EC	100	100	100	100	100
pH	100	90	90	100	80
OP	0	90	80	10	40
TON	70	100	100	100	100
% Compliance per Station	68	94	92	76	82
% Compliance per Waterbody	68	93		79	
Waterbody Classification					

Step 6 – Example

If data from more than one monitoring station are available, they are aggregated to calculate the % Compliance per Waterbody

This aggregated value is compared with the 80% compliance threshold for "good" quality for each waterbody

Percentage Compliance per Core Parameter	**River 1**	**River 2**		**River 3**	
	Station 001	Station 002	Station 003	Station 004	Station 005
DO	70	90	90	70	90
EC	100	100	100	100	100
pH	100	90	90	100	80
OP	0	90	80	10	40
TON	70	100	100	100	100
% Compliance per Station	68	94	92	76	82
% Compliance per Waterbody	68	93		79	
Waterbody Classification	**NOT GOOD**			**NOT GOOD**	

Step 6 – Example

If data from more than one monitoring station are available, they are aggregated to calculate the % Compliance per Waterbody

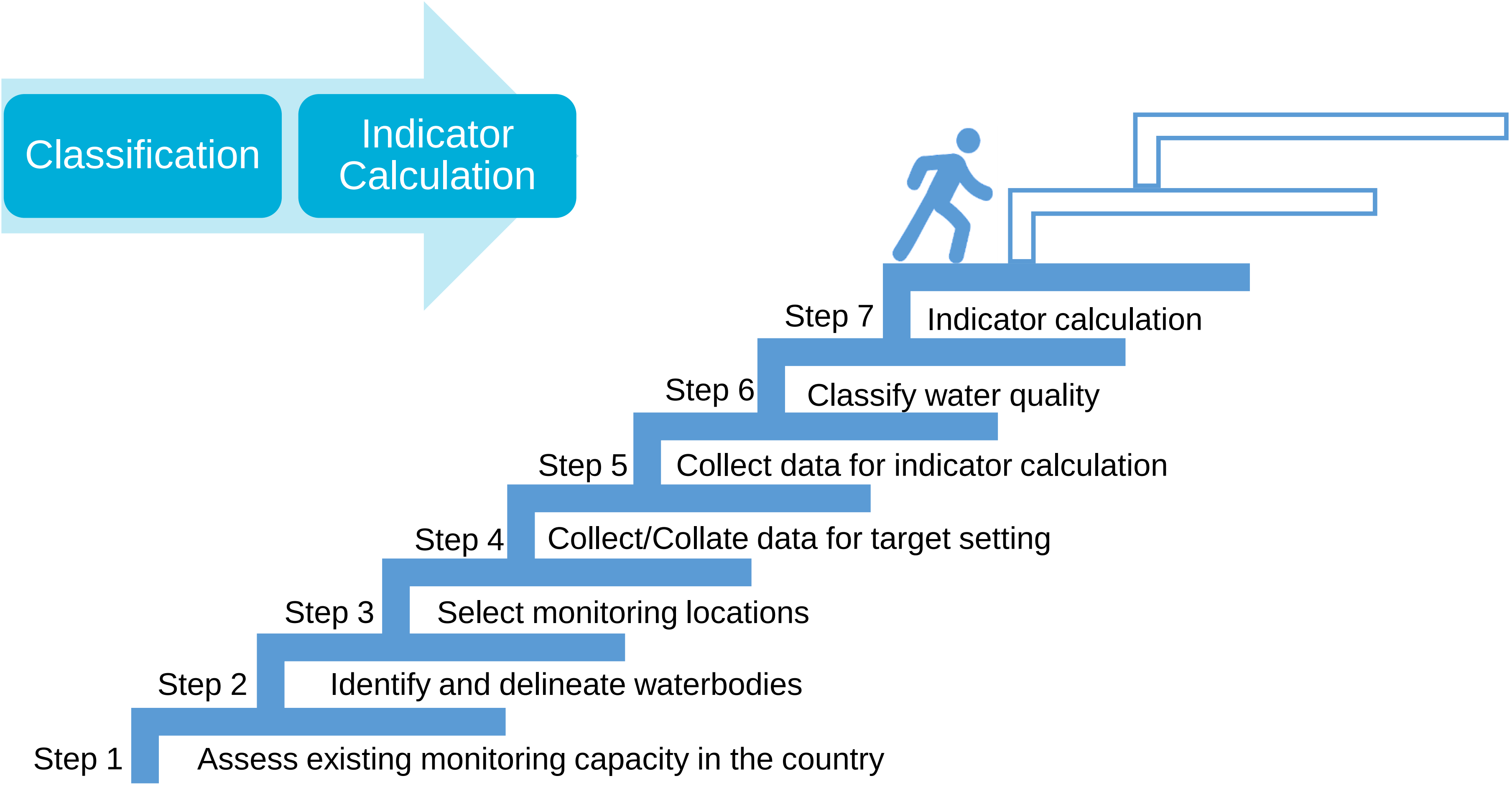
This aggregated value is compared with the 80% compliance threshold for "good" quality for each waterbody

Percentage Compliance per Core Parameter	River 1	River 2		River 3	
	Station 001	Station 002	Station 003	Station 004	Station 005
DO	70	90	90	70	90
EC	100	100	100	100	100
pH	100	90	90	100	80
OP	0	90	80	10	40
TON	70	100	100	100	100
% Compliance per Station	68	94	92	76	82
% Compliance per Waterbody	68	93		79	
Waterbody Classification	**NOT GOOD**	**GOOD**		**NOT GOOD**	

93 > 80 therefore the waterbody is classified as "Good"

68 and 79 < 80 therefore the classification is "Not Good"

Step 7 – Indicator Calculation



Step 7 – Example

Percentage Compliance per Core Parameter	River 1	River 2		River 3	
	Station 001	Station 002	Station 003	Station 004	Station 005
DO	70	90	90	70	90
EC	100	100	100	100	100
pH	100	90	90	100	80
OP	0	90	80	10	40
TON	70	100	100	100	100
% Compliance per Station	68	94	92	76	82
% Compliance per Waterbody	68	93		79	
Waterbody Classification	**NOT GOOD**	**GOOD**		**NOT GOOD**	

In the last step, the indicator is expressed as the percentage of waterbodies with "good" water quality:

$$Indicator\ 6.3.2 = \frac{n_g}{n_t} \times 100 = \frac{1}{3} \times 100 = 33.3\%$$

In this example, **33.3%** of waterbodies have "good" water quality

Step 7 – Example

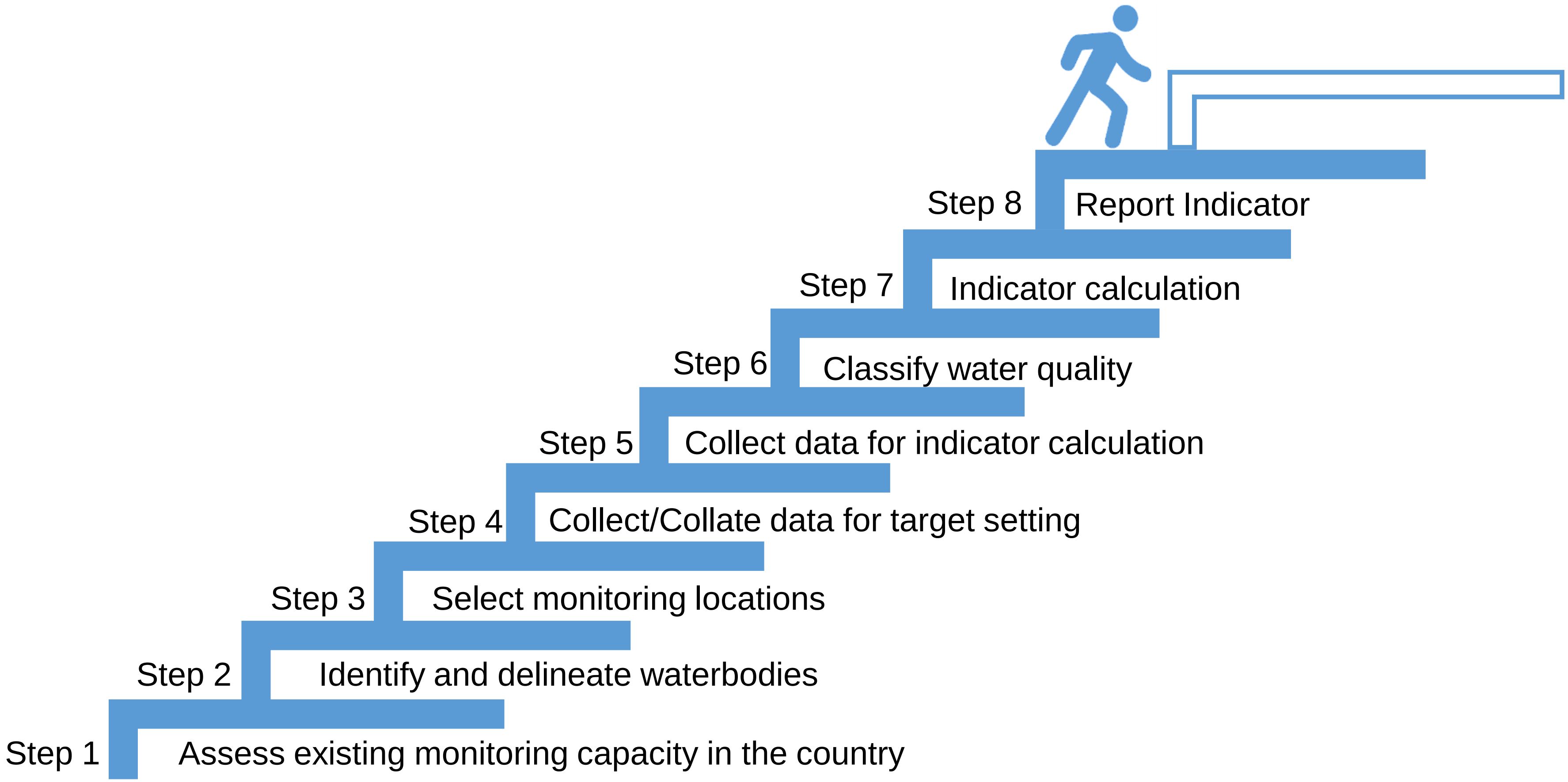
Percentage Compliance per Core Parameter	River 1	River 2		River 3	
	Station 001	Station 002	Station 003	Station 004	Station 005
DO	70	90	90	70	90
EC	100	100	100	100	100
pH	100	90	90	100	80
OP	0	90	80	10	40
TON	70	100	100	100	100
% Compliance per Station	68	94	92	76	82
% Compliance per Waterbody	68	93		79	
Waterbody Classification	**NOT GOOD**	**GOOD**		**NOT GOOD**	

In the last step, the indicator is expressed as the percentage of waterbodies with "good" water quality:

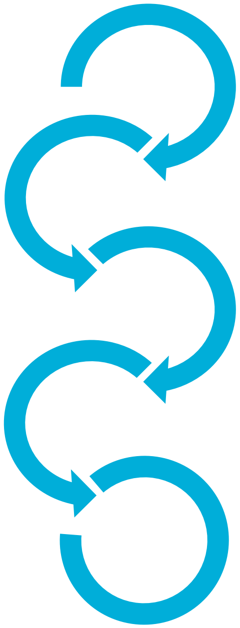
$$Indicator\ 6.3.2 = \frac{n_g}{n_t} \times 100 = \frac{1}{3} \times 100 = 33.3\%$$

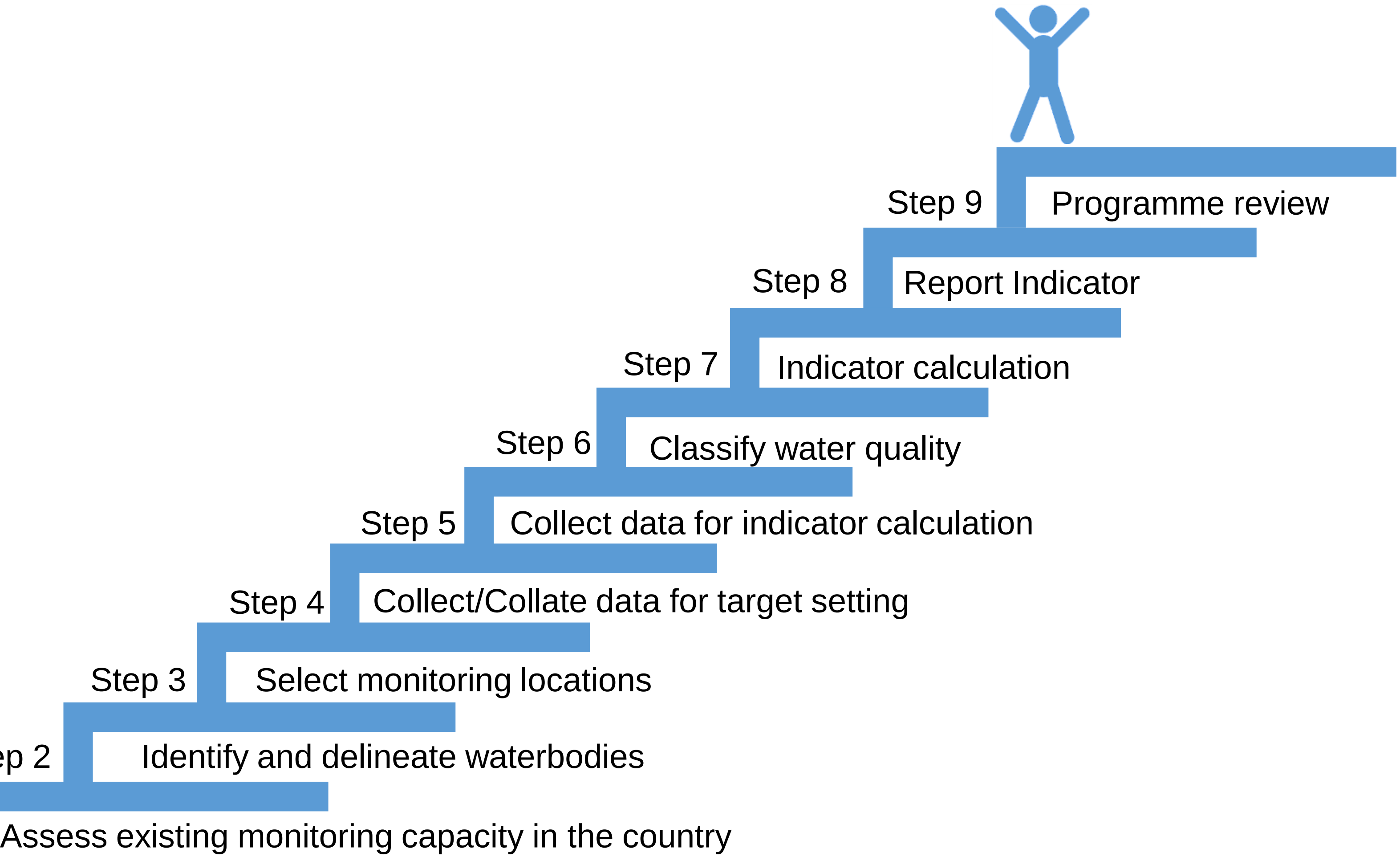
In this example, **33.3%** of waterbodies have "good" water quality

Step 8 – Report Indicator



Step 9 – Programme Review





6 CLEAN WATER AND SANITATION

SUSTAINABLE DEVELOPMENT GOALS

UN WATER

Integrated Monitoring Initiative for SDG 6

Thank you for your attention

www.sdg6monitoring.org

UN environment
United Nations Environment Programme

UN-HABITAT

Food and Agriculture Organization of the United Nations

unicef

UNECE

UNESCO
United Nations Educational, Scientific and Cultural Organization

World Health Organization

WMO

UN WATER

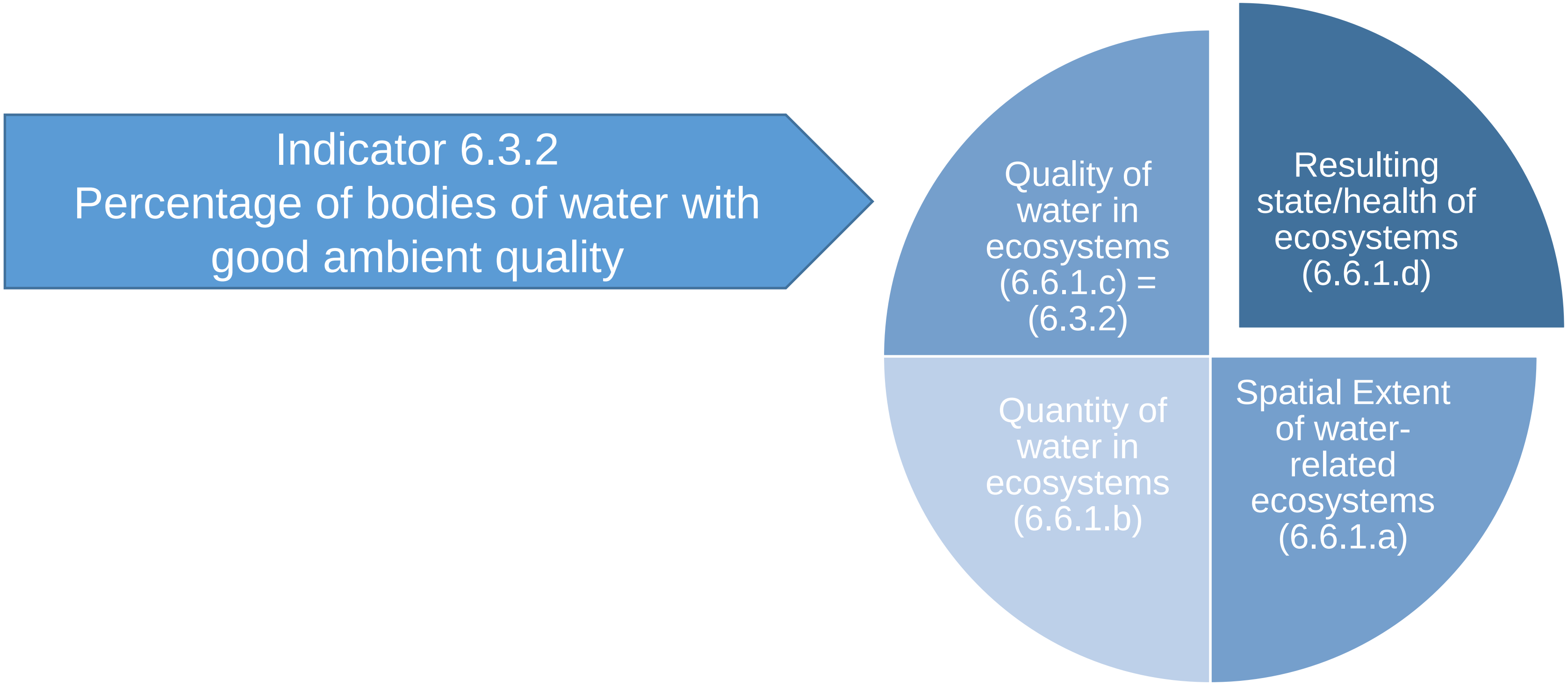
Integrated Monitoring Initiative for SDG 6

Indicator 6.3.2 Data and Reporting

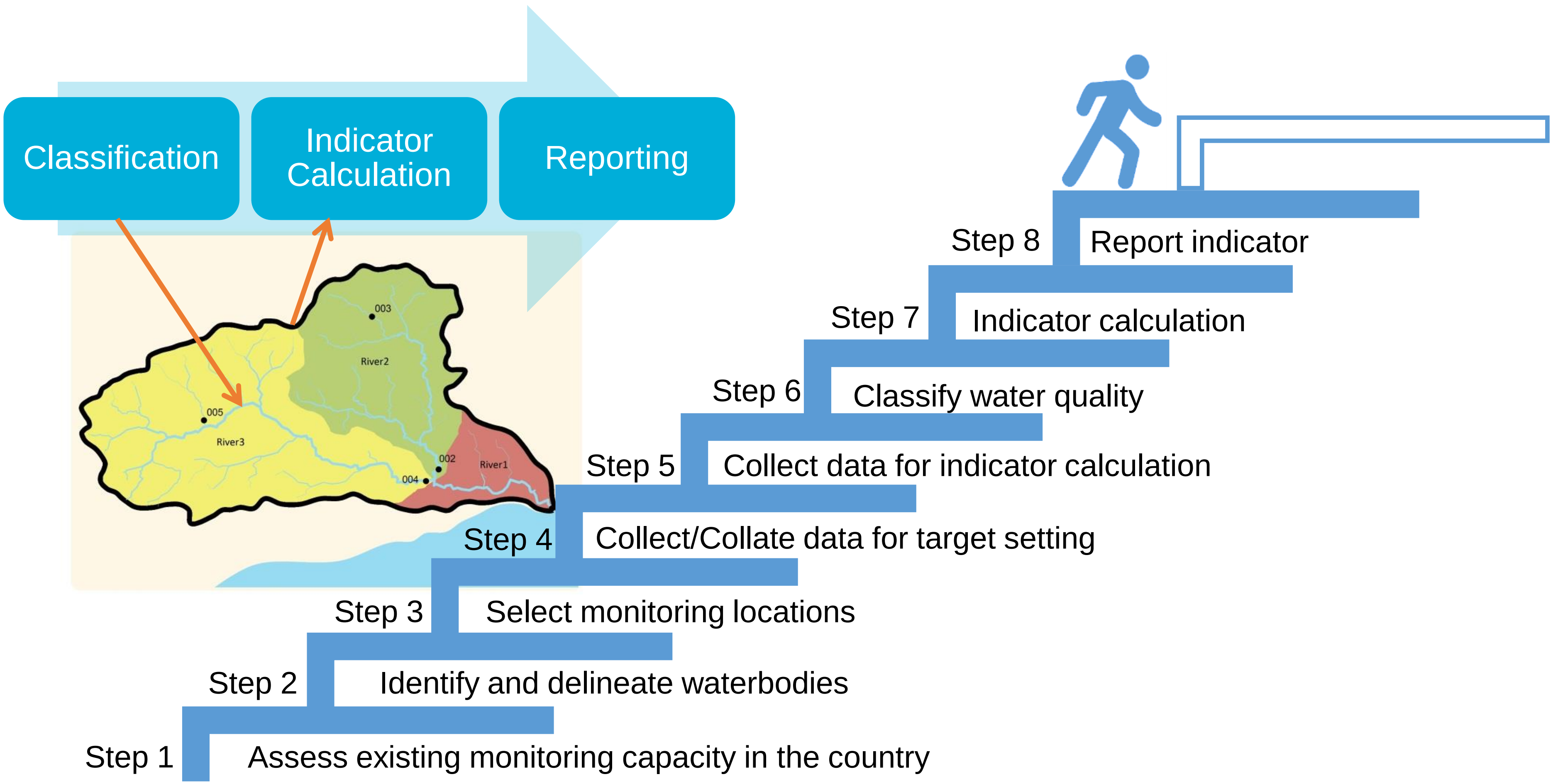
Presented by Philipp Saile

UN Environment GEMS/Water Capacity Development Centre

Joint reporting



Step 8 – Report Indicator



Reporting template content

General information

- Overview
- Definitions
- Data Description

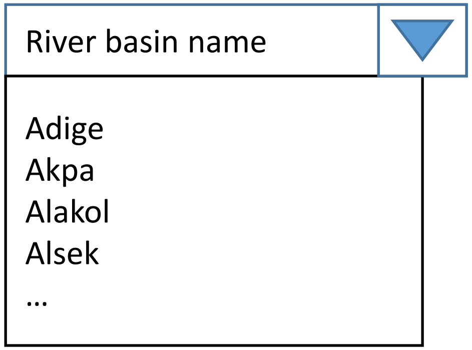
Data entry

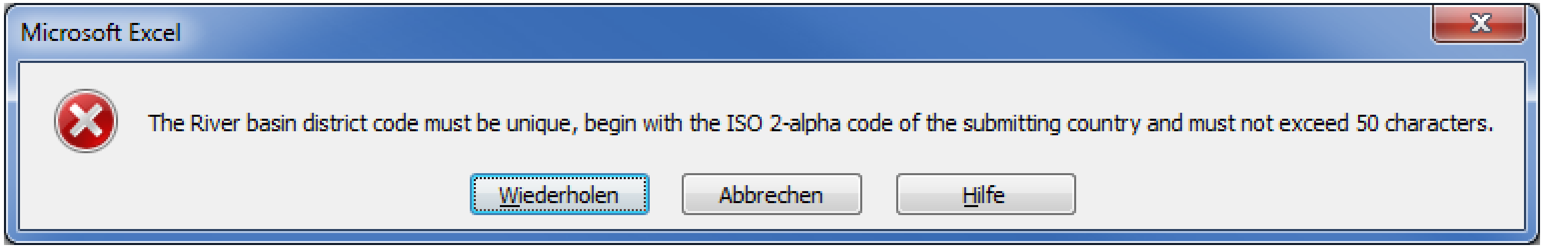
- Step 8.1 Submission Information
- Step 8.2 Identification of Districts
- Step 8.3 Water Quality
- Step 8.4 Water Quality Targets

National Water Quality	Aggregation of assessment results from the reporting basin district level to the national level
Code Lists	Reference code lists for countries, transboundary river basins, water body types, parameters and units of measurement

Data validation

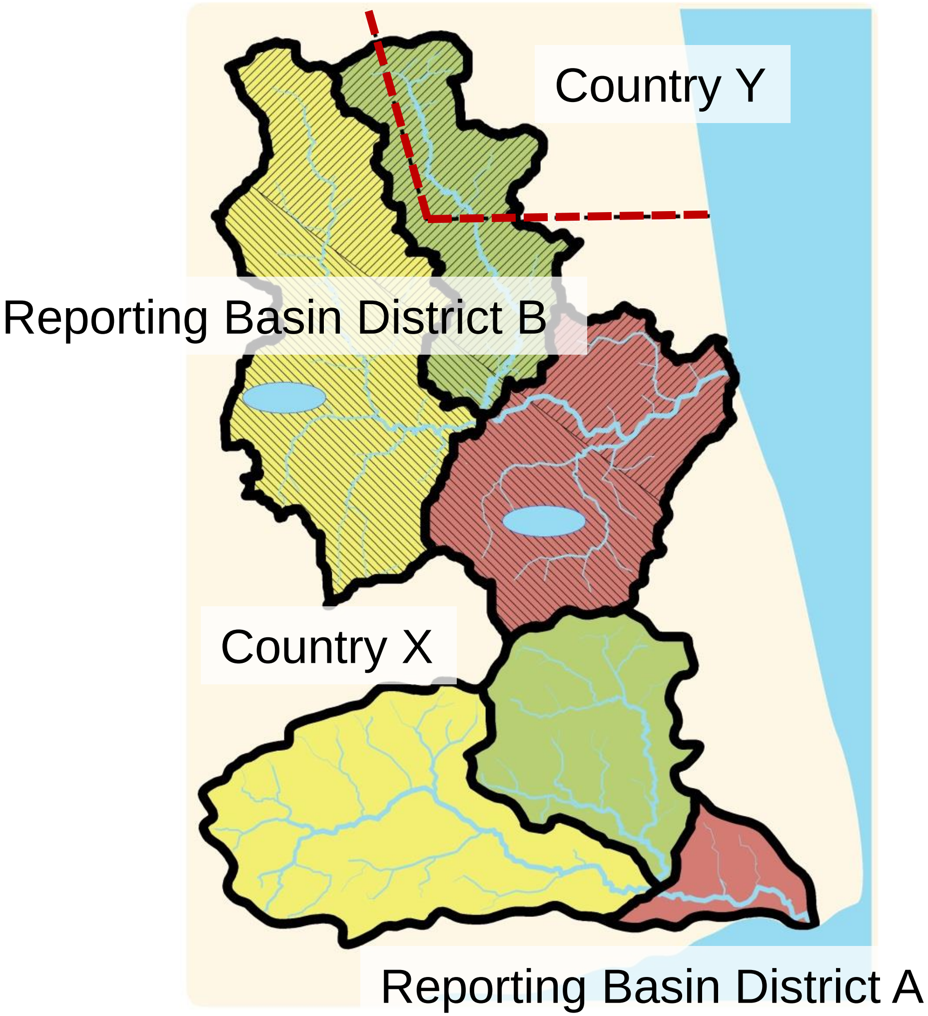
- Data format
- Referential integrity
- Code lists





Example – Country X

Country X bordering Country Y
2 Reporting basin districts

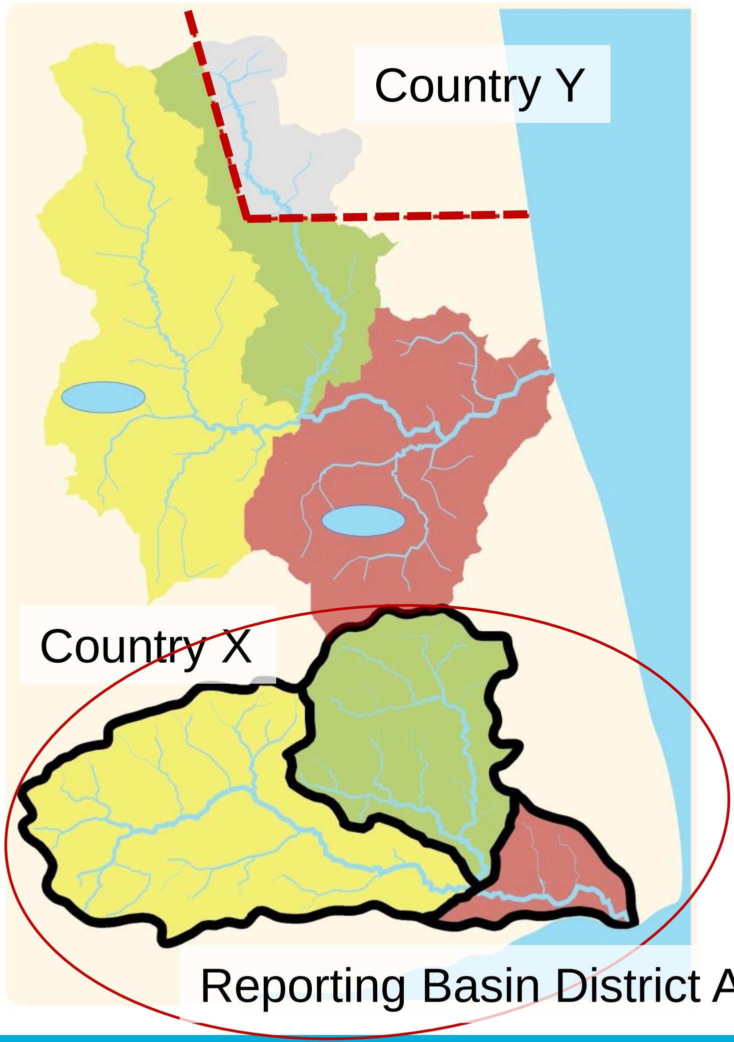


Example – Country X

Country X bordering Country Y

2 Reporting basin districts

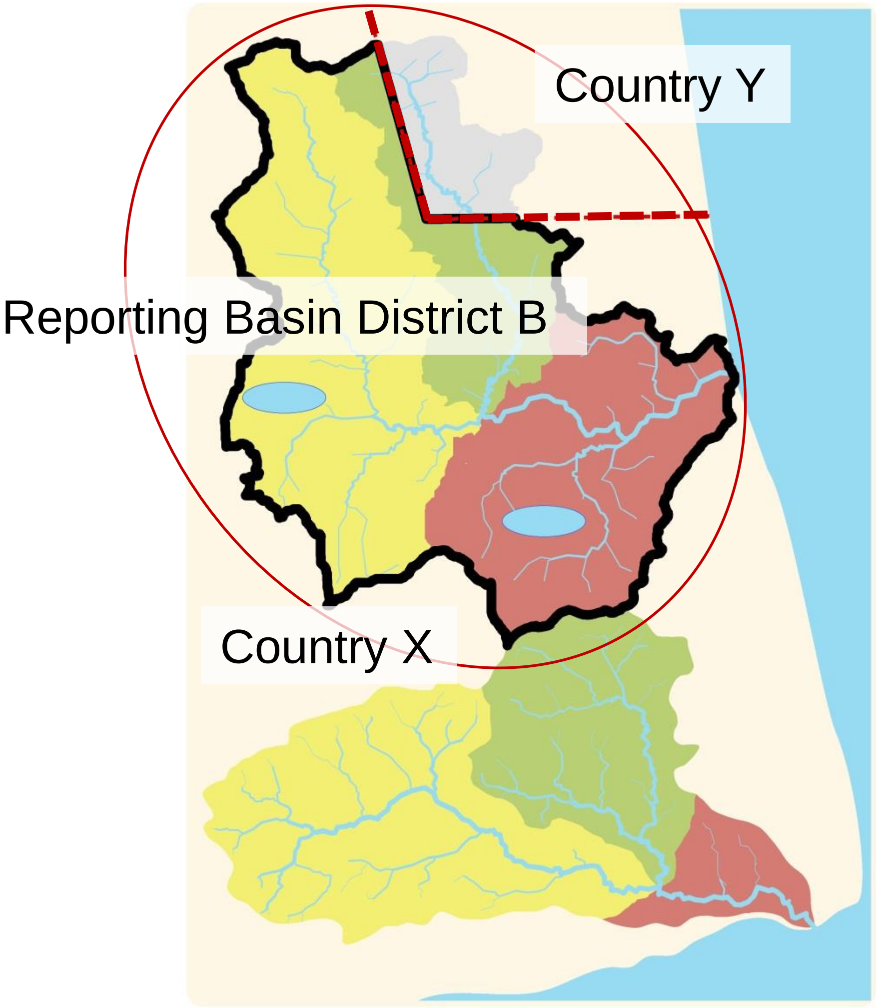
1. Reporting Basin District A
   - National river basin
   - 3 river water bodies



Example – Country X

Country X bordering Country Y
2 Reporting basin districts

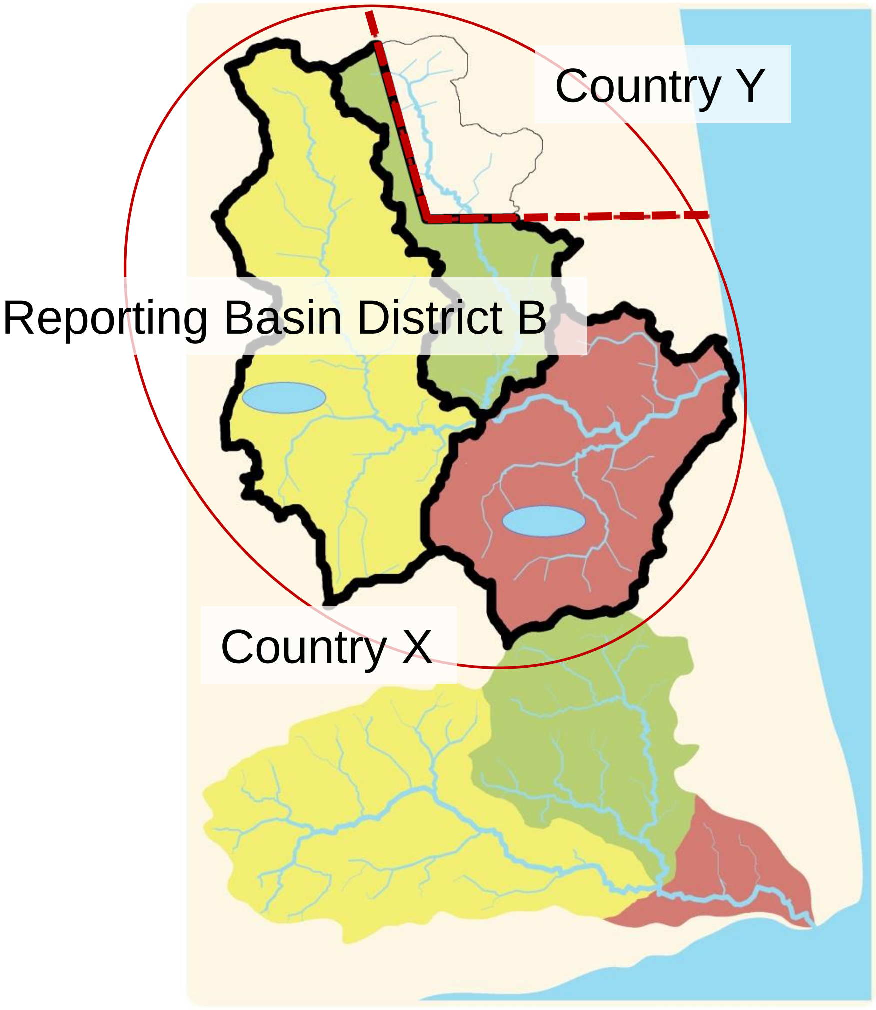
1. Reporting Basin District A
   - National river basin
   - 3 river water bodies
2. Reporting Basin District B
   - Transboundary river basin



Example – Country X

Country X bordering Country Y
2 Reporting basin districts

1. Reporting Basin District A
    - National river basin
    - 3 river water bodies
2. Reporting Basin District B
    - Transboundary river basin
    - 3 river water bodies

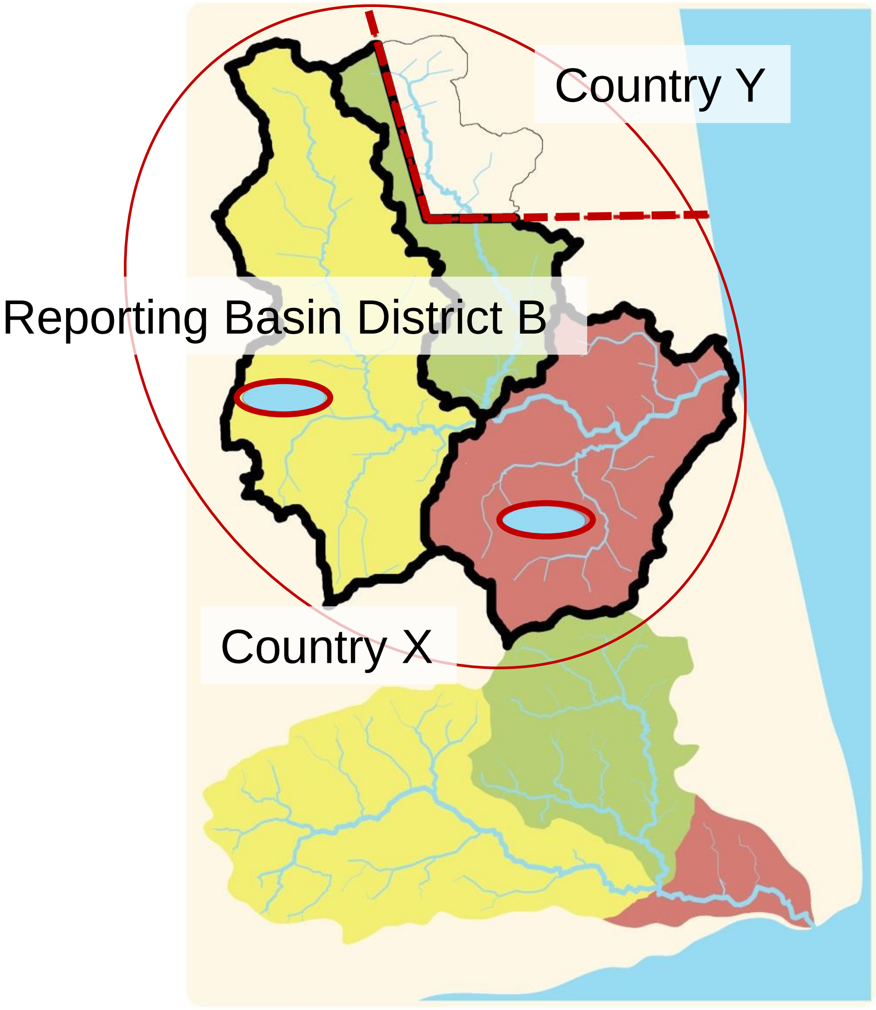


Example – Country X

Country X bordering Country Y

2 Reporting basin districts

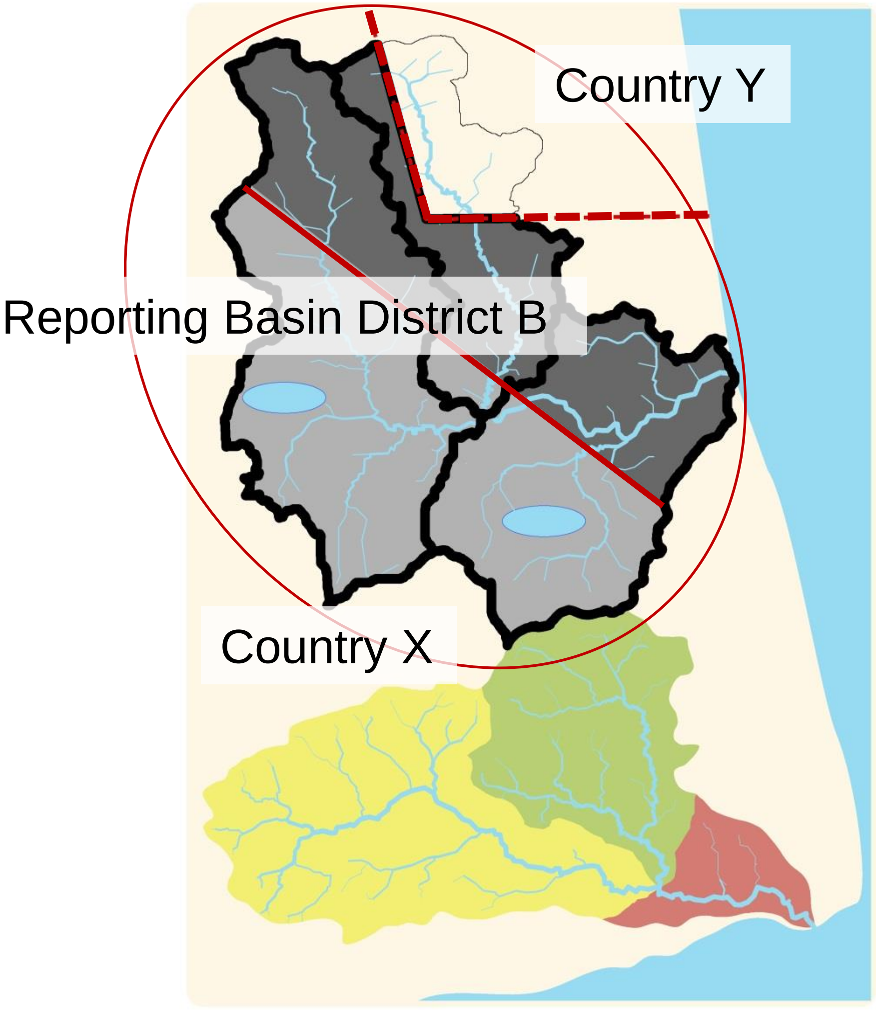
1. Reporting Basin District A
    - National river basin
    - 3 river water bodies
2. Reporting Basin District B
    - Transboundary river basin
    - 3 river water bodies
    - 2 open water bodies



Example – Country X

Country X bordering Country Y
2 Reporting basin districts

1. Reporting Basin District A
   - National river basin
   - 3 river water bodies
2. Reporting Basin District B
   - Transboundary river basin
   - 3 river water bodies
   - 2 open water bodies
   - 2 groundwater bodies



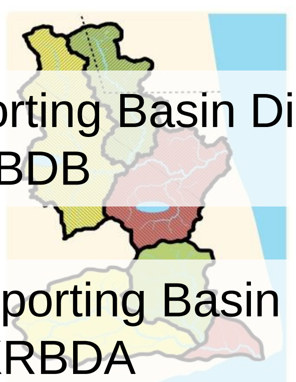
Step 8.1 - Submission Information

Please begin reporting with entering information on the country, organization and individual submitting the reporting data

Country	**Country X**
Organization	**Ministry of Water**
Name	**Jane Example**
Street	**Street X**
City	**City X**
ZIP Code	**555**
E-Mail	jane.example@country.xx

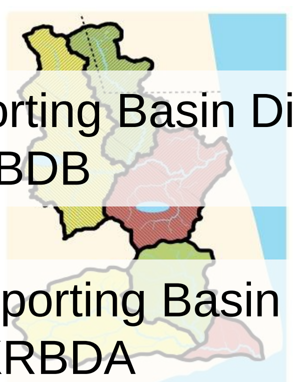
Step 8.2 - Identification of Districts

District code	District name	District area	Transboundary district	Transboundary river basin name
Member State’s 2-alpha character ISO country code followed by national, unique code	Readily understandable name of the reporting basin district in English that is meaningful outside of the country.	Area of the reporting basin district in km^2 excluding coastal waters.	Indicate whether the reporting basin district is part of an transboundary river basin.	Report the name of the transboundary river basin in English of which this basin district is a part as defined in the Code List Transboundary River Basins on table "Code Lists".
XXRBDA				
XXRBDB				



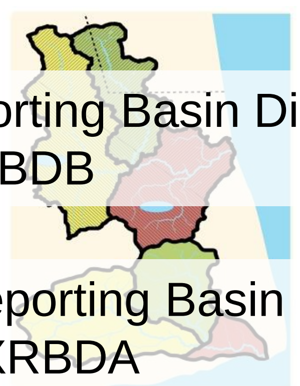
Step 8.2 - Identification of Districts

District code	District name	District area	Transboundary district	Transboundary river basin name
Member State's 2-alpha character ISO country code followed by national, unique code	Readily understandable name of the reporting basin district in English that is meaningful outside of the country.	Area of the reporting basin district in km² excluding coastal waters.	Indicate whether the reporting basin district is part of an transboundary river basin.	Report the name of the transboundary river basin in English of which this basin district is a part as defined in the Code List Transboundary River Basins on table "Code Lists".
XXRBDA	Reporting Basin District A			
XXRBDB	Reporting Basin District B			



Step 8.2 - Identification of Districts

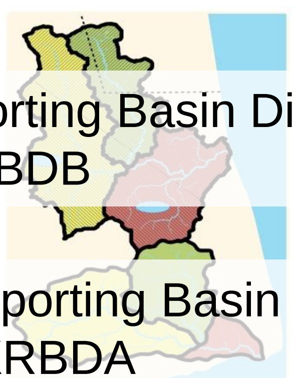
District code	District name	District area	Transboundary district	Transboundary river basin name
Member State's 2-alpha character ISO country code followed by national, unique code	Readily understandable name of the reporting basin district in English that is meaningful outside of the country.	Area of the reporting basin district in km² excluding coastal waters.	Indicate whether the reporting basin district is part of an transboundary river basin.	Report the name of the transboundary river basin in English of which this basin district is a part as defined in the Code List Transboundary River Basins on table "Code Lists".
XXRBDA	Reporting Basin District A	25000		
XXRBDB	Reporting Basin District B	30000		



Step 8.2 - Identification of Districts

District code	District name	District area	Transboundary district	Transboundary river basin name
Member State's 2-alpha character ISO country code followed by national, unique code	Readily understandable name of the reporting basin district in English that is meaningful outside of the country.	Area of the reporting basin district in km² excluding coastal waters.	Indicate whether the reporting basin district is part of an transboundary river basin.	Report the name of the transboundary river basin in English of which this basin district is a part as defined in the Code List Transboundary River Basins on table "Code Lists".
XXRBDA	Reporting Basin District A	25000	No	
XXRBDB	Reporting Basin District B	30000	Yes	

Yes
No



Step 8.2 - Identification of Districts

District code	District name	District area	Transboundary district	Transboundary river basin name
Member State's 2-alpha character ISO country code followed by national, unique code	Readily understandable name of the reporting basin district in English that is meaningful outside of the country.	Area of the reporting basin district in km² excluding coastal waters.	Indicate whether the reporting basin district is part of an transboundary river basin.	Report the name of the transboundary river basin in English of which this basin district is a part as defined in the Code List Transboundary River Basins on table "Code Lists".
XXRBDA	Reporting Basin District A	25000	No	
XXRBDB	Reporting Basin District B	30000	Yes	

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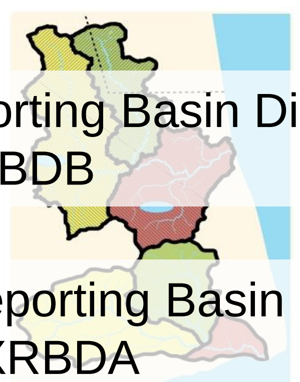

Step 8.3 - Water Quality

District code	Assessment period	Number of open water bodies	Number of river water bodies	Number of groundwater bodies	Number of open water bodies with good quality	Number of river water bodies with good quality	Number of groundwater bodies with good quality
All district codes entered on the table „Identification of Districts“ are copied automatically here.	Start year and end year of the data used to assess the quality of water bodies in the reporting basin district.	Number of open water bodies, river water bodies and groundwater bodies respectively that have been classified during the assessment.			Number of open water bodies, river water bodies and groundwater bodies classified as having good water quality according to the indicator methodology.		
XXRBDA							
XXRBDB							

Step 8.3 - Water Quality

District code	Assessment period	Number of open water bodies	Number of river water bodies	Number of groundwater bodies	Number of open water bodies with good quality	Number of river water bodies with good quality	Number of groundwater bodies with good quality
All district codes entered on the table „Identification of Districts“ are copied automatically here.	Start year and end year of the data used to assess the quality of water bodies in the reporting basin district.	Number of open water bodies, river water bodies and groundwater bodies respectively that have been classified during the assessment.			Number of open water bodies, river water bodies and groundwater bodies classified as having good water quality according to the indicator methodology.		
XXRBDA	2015-2016						
XXRBDB	2014-2016						

Step 8.3 - Water Quality

District code	Assessment period	Number of open water bodies	Number of river water bodies	Number of groundwater bodies	Number of open water bodies with good quality	Number of river water bodies with good quality	Number of groundwater bodies with good quality
All district codes entered on the table „Identification of Districts“ are copied automatically here.	Start year and end year of the data used to assess the quality of water bodies in the reporting basin district.	Number of open water bodies, river water bodies and groundwater bodies respectively that have been classified during the assessment.			Number of open water bodies, river water bodies and groundwater bodies classified as having good water quality according to the indicator methodology.		
XXRBDA	2015-2016	0	3	0			
XXRBDB	2014-2016	2	3	2			

Step 8.3 - Water Quality

District code	Assessment period	Number of open water bodies	Number of river water bodies	Number of groundwater bodies	Number of open water bodies with good quality	Number of river water bodies with good quality	Number of groundwater bodies with good quality
All district codes entered on the table „Identification of Districts“ are copied automatically here.	Start year and end year of the data used to assess the quality of water bodies in the reporting basin district.	Number of open water bodies, river water bodies and groundwater bodies respectively that have been classified during the assessment.			Number of open water bodies, river water bodies and groundwater bodies classified as having good water quality according to the indicator methodology.		
XXRBDA	2015-2016	0	3	0	0	1	0
XXRBDB	2014-2016	2	3	2	1	2	1

Step 8.3 - Water Quality

District code	Assessment period	Number of open water bodies	Number of river water bodies	Number of groundwater bodies	Number of open water bodies with good quality	Number of river water bodies with good quality	Number of groundwater bodies with good quality
XXRBDA	2015-2016	0	3	0	0	1	0
XXRBDB	2014-2016	2	3	2	1	2	1

District code	Percentage of open water bodies with good quality	Percentage of river water bodies with good quality	Percentage of groundwater bodies with good quality	Percentage of water bodies with good quality
XXRBDA	N/A	1/3*100 = 33.33	N/A	1/3*100 = 33.33
XXRBDB	1/2*100 = 50.00	2/3*100 = 66.66	1/2*100 = 50.00	4/7*100 = 57.14

Step 8.3 - Water Quality

District code	Assessment period	Number of open water bodies	Number of river water bodies	Number of groundwater bodies	Number of open water bodies with good quality	Number of river water bodies with good quality	Number of groundwater bodies with good quality
XXRBDA	2015-2016	0	3	0	0	1	0
XXRBDB	2014-2016	2	3	2	1	2	1

District code	Percentage of open water bodies with good quality	Percentage of river water bodies with good quality	Percentage of groundwater bodies with good quality	Percentage of water bodies with good quality
XXRBDA	N/A	1/3*100 = 33.33	N/A	1/3*100 = 33.33
XXRBDB	1/2*100 = 50.00	2/3*100 = 66.66	1/2*100 = 50.00	4/7*100 = 57.14

Step 8.3 - National Water Quality

District code	Assessment period	Number of open water bodies	Number of river water bodies	Number of groundwater bodies	Number of open water bodies with good quality	Number of river water bodies with good quality	Number of groundwater bodies with good quality
XXRBDA	2015-2016	0	3	0	0	1	0
XXRBDB	2014-2016	2	3	2	1	2	1
RBD Subtotal	2014-2016	2	6	2	1	3	1
National Total	2014-2016	10			5		

Country code	Percentage of open water bodies with good quality	Percentage of river water bodies with good quality	Percentage of groundwater bodies with good quality	Percentage of water bodies with good quality
XX	1/2*100 = 50.00	3/6*100 = 50.00	1/2*100 = 50.00	5/10*100 = 50.00

Step 8.3 - National Water Quality

District code	Assessment period	Number of open water bodies	Number of river water bodies	Number of groundwater bodies	Number of open water bodies with good quality	Number of river water bodies with good quality	Number of groundwater bodies with good quality
XXRBDA	2015-2016	0	3	0	0	1	0
XXRBDB	2014-2016	2	3	2	1	2	1
RBD Subtotal	2014-2016	2	6	2	1	3	1
National Total	2014-2016	10			5		

Country code	Percentage of open water bodies with good quality	Percentage of river water bodies with good quality	Percentage of groundwater bodies with good quality	Percentage of water bodies with good quality
XX	1/2*100 = 50.00	3/6*100 = 50.00	1/2*100 = 50.00	5/10*100 = 50.00

Step 8.4 - Water Quality Targets

District code	Water body type	Parameter code	Unit code	Lower Value	Upper Value
District code as entered on the table „Identification of Districts“	Type of the water body the target value is applied to as defined in Code List Water Body Types on Table Code Lists.	Parameter code of the target value as defined in Code List Parameters.	Unit code of the selected parameter as defined in Code List Units.	Minimum target value used for selected parameter and water body type in reporting basin district.	Maximum target value used for selected parameter and water body type in reporting basin district.
XXRBDA					
XXRBDA XXRBDB					

Step 8.4 - Water Quality Targets

District code	Water body type	Parameter code	Unit code	Lower Value	Upper Value
District code as entered on the table „Identification of Districts“	Type of the water body the target value is applied to as defined in Code List Water Body Types on Table Code Lists.	Parameter code of the target value as defined in Code List Parameters.	Unit code of the selected parameter as defined in Code List Units.	Minimum target value used for selected parameter and water body type in reporting basin district.	Maximum target value used for selected parameter and water body type in reporting basin district.
XXRBDA	River	EC	uS/cm		
XXRBDA XXRBDB	Open water River Groundwater	EC pH DO …	uS/cm - mg/l …		

Step 8.4 - Water Quality Targets

District code	Water body type	Parameter code	Unit code	Lower Value	Upper Value
District code as entered on the table „Identification of Districts“	Type of the water body the target value is applied to as defined in Code List Water Body Types on Table Code Lists.	Parameter code of the target value as defined in Code List Parameters.	Unit code of the selected parameter as defined in Code List Units.	Minimum target value used for selected parameter and water body type in reporting basin district.	Maximum target value used for selected parameter and water body type in reporting basin district.
XXRBDA	River	EC	uS/cm	300	500
XXRBDA	Open water	EC	uS/cm		
XXRBDB	River	pH	-		
	Groundwater	DO	mg/l		
		…	…		

6 CLEAN WATER AND SANITATION

SUSTAINABLE DEVELOPMENT GOALS

UN WATER

Integrated Monitoring Initiative for SDG 6

The next section will cover next steps and support

www.sdg6monitoring.org

UN environment United Nations Environment Programme | UN HABITAT | Food and Agriculture Organization of the United Nations | unicef | UNECE | UNESCO United Nations Educational, Scientific and Cultural Organization | World Health Organization | WMO

Next steps

Data Submission — **31 July 2017**

Follow Up — GEMS/Water Data Centre

Feedback to countries — August 2017

Preparation of Indicator Reports — UN Environment

High Level Political Forum is informed — 2018

Webinar Recording available at:
www.sdg6monitoring.org

6 CLEAN WATER AND SANITATION

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SDG6Waterquality.Ecosystems@unep.org

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HELPDESK:

SDG6Waterquality.Ecosystems@unep.org

Recording of this webinar and all other materials will be available:

www.sdg6monitoring.org

www.unep.org/gemswater

Thank you!

6 CLEAN WATER AND SANITATION

SUSTAINABLE DEVELOPMENT GOALS

UN WATER

Integrated Monitoring Initiative for SDG 6

Thank you!

www.sdg6monitoring.org

UN environment United Nations Environment Programme · UN HABITAT · Food and Agriculture Organization of the United Nations · unicef · UNECE · UNESCO United Nations Educational, Scientific and Cultural Organization · World Health Organization · WMO