WMO Water Quality – a long term ambition

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WEATHER CLIMATE WATER

WORLD METEOROLOGICAL ORGANIZATION

WMO HydroHub

UN environment programme 50 1972-2022

UNESCO

World Health Organization

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Definition of Operational Hydrology

Operational Hydrology is the **real-time and regular measurement, collection, processing, archiving and distribution of hydrological, hydrometeorological and cryospheric data, and the generation of analyses, models, forecasts and warnings** which inform water resources management and support water-related decisions, across a spectrum of temporal and spatial scales.

WMO Long-term Ambitions

Eighteenth WMO Congress (2019) - Resolution 24:

a) No one is surprised by a flood

b) Everyone is prepared for drought

c) Hydro-climate and meteorological data support the food security agenda

d) High-quality data supports science

e) Science provides a sound basis for operational hydrology

f) We have a thorough knowledge of the water resources of our world

g) Sustainable development is supported by information covering the full hydrological cycle

h) Water quality is known

Vision

By 2030 a cooperative global community is successfully addressing the growing challenges related to hydrological extremes, water availability and quality, and food security, by advancing operational hydrology through enhanced science, infrastructure, capacity-building and related services, in the context of sustainable development and enhanced resilience.

Water quality is known

Surface and groundwater quality **should be permanently monitored** as a necessary step to ensure water quality in accordance with different requirements for society and ecosystems, and corrective actions should be applied when necessary.

A **new partnership** will be needed to support this ambition, including with UNEP, UNESCO-IHP, WHO and other

Needs and gaps

- Limited awareness of policy- and decision-makers
- Fragmented authorities
- Disconnect quantity vs quality in development projects
- Scarcity of water quality data and difficult access
- Need for more guidelines
- Opportunity offered by space based monitoring
- Need to develop stronger cooperation with UNEP, UNESCO-IHP, UNECE, WHO

Action needed

- Review existing WMO regulatory material taking into account partners' material on WQ monitoring
- Contribute to GEMS/Water and the World Water Quality Assessment Alliance
- Promote cooperation at the national level
- Facilitate knowledge transfer
- Promote water quality data sharing

Action Plan

Guiding principles

All aspects of the water cycle are interconnected: water quality and quantity issues must be addressed in an integrated, holistic way, following the principles of Integrated Water Resources Management (IWRM).

Outcome:

Increased cooperation at the national, regional and global level on water quality monitoring and water quality data exchange.

Success metrics:

Number of Members running water quality monitoring programmes, performing water quality assessments and sharing their data.

Outputs

I.1: Partnership at the United Nations level exists and promotes the provision of water quality data from NHSs to existing information systems (such as WHOS, UNEP, GEMS/Water, UNESCO-IHP, IIWQ and ISI).

I.2: Increased NHS involvement in the co-production of water quality related data and products thanks to promotion of IWRM principles.

I.3: Increased joint water quantity and water quality assessment (monitoring and modelling) for operational management and for planning

I.4: Water quality aspects are included in country support activities/projects in the spirit of IWRM and in cooperation with other organizations

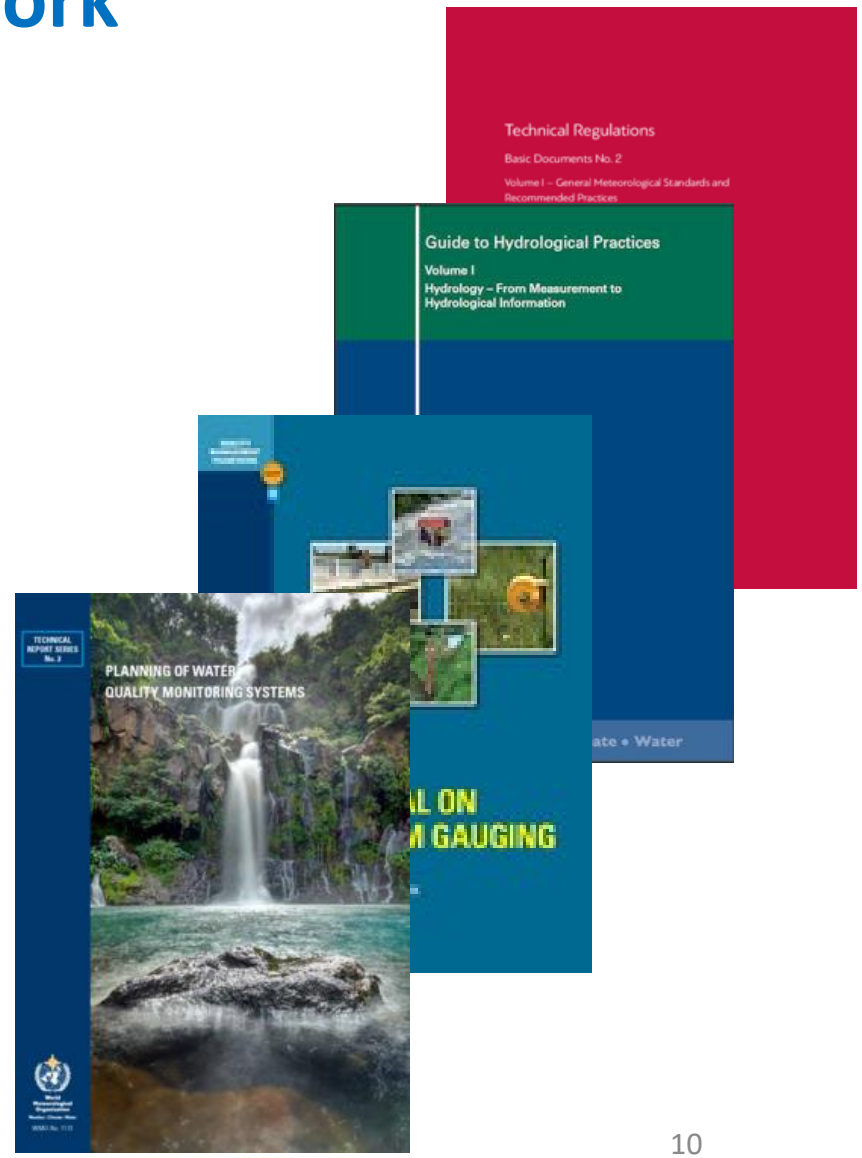
I.5: Partnership at the United Nations level delivers co-produced guidelines related to water quality

WMO regulatory framework

WMO provisions can be divided into two main categories:

- Regulatory provisions, comprising
  - Standard practices and procedures (SPP);
  - Recommended practices and procedures (RPP);
- Non-regulatory provisions – practices, procedures and specifications

- Technical Regulation
- Manual
- Guides
  - Planning of water quality monitoring system (WMO- No. 1113)



WMO regulatory procedures

Table 2. Characteristics of standard practices and procedures versus recommended practices and procedures

Standard practices and procedures	*Recommended practices and procedures*
Necessary for Members to follow or implement	***Desirable*** for Members to follow or implement
Distinguished by the use of the term ***shall***	Distinguished by the use of the term ***should***
Status of ***requirements***	Status of ***recommendations***
Defined in a technical resolution	–
Members shall ***do their utmost to implement***	Members urged to comply with
Article 9(b) of the Convention is ***applicable***	Article 9(b) of the Convention is not applicable
Members ***shall inform*** the Secretary/General of inability or impracticability of implementation	No requirement
General Regulation 128 is ***applicable***	General Regulation 128 is ***not applicable***

Technical Regulations provisions

CHAPTER 1 FUNCTIONS AND RESPONSIBILITIES OF HYDROLOGICAL SERVICES

1.3 Functions

In general, Members should ensure that the routine functions of National Hydrological Services include:

…….

(p) Collaborating with agencies which acquire water-related or other relevant information, such as water quantity and quality, sediment, hydrogeological, water use, topographic and land use, or meteorological information

CHAPTER 3 HYDROLOGICAL FORECASTS AND WARNINGS

3.4 Forecasting and warning programme

3.4.1.2 The basic hydrological elements for which forecasts should be issued are as follows

….

(g) Any problematical or important water quality parameters (such as groundwater salinity);

3.4.1.3 In order that hydrological forecast and warnings are understood and expected as widely as possible in a community, hydrological information should be provided on a routine basis as follows:

(a) Information regarding the current hydrological situation (including, as and if appropriate, water stages, discharges and water quality parameters for rivers, estuaries, coastal zones, lakes and reservoirs; ice conditions; groundwater levels; soil moisture; precipitation; water equivalent of snow cover and snow cover extent);

CHAPTER 4 WATER QUALITY MONITORING

Water Quality Monitoring

Members should establish water quality monitoring programme(s) as specified in the Manual on Water Quality Monitoring (under development).

Planning of Water-Quality Monitoring Systems

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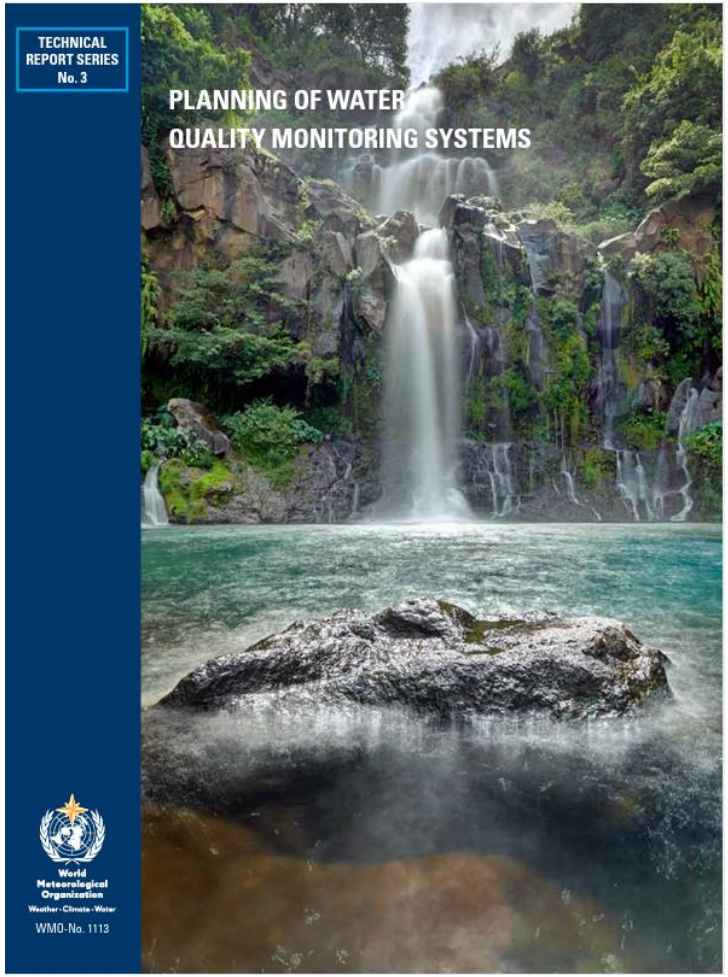
1. Processes affecting water quality and their effects
2. The importance of water-quality monitoring
3. Key elements of a water-quality monitoring programme
4. Strategies for meeting information needs of water-quality assessment
5. Design of a monitoring programme
6. Selection of water-quality variables
7. Selection of water quality monitoring methods and techniques
8. Resources for a monitoring programme
9. Quality-assurance procedures
10. Data management and product development
11. International water-quality directives and guidance material
12. Summary and future needs in water-quality monitoring



Key elements of a water-quality monitoring programme

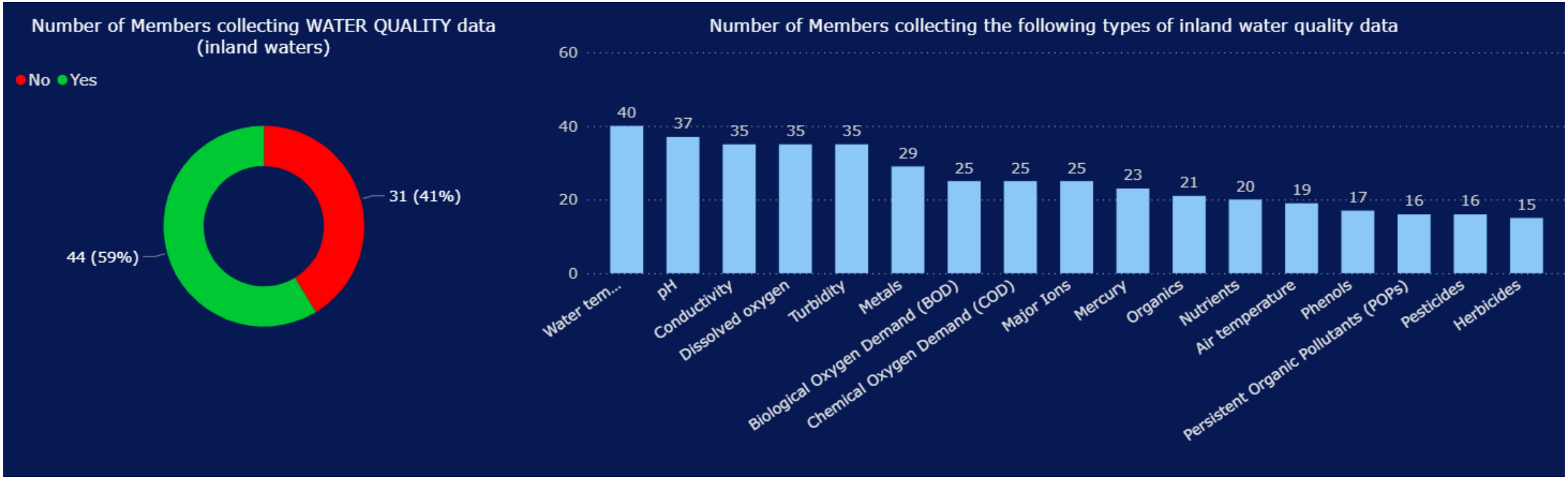
The structure of a WQM programme includes the following main elements:

- Objectives
- Preliminary surveys
- Monitoring design
- Field monitoring operations
- Hydrological monitoring (surface water and groundwater)
- Laboratory activities
- Quality-assurance procedures
- Data management and product development.

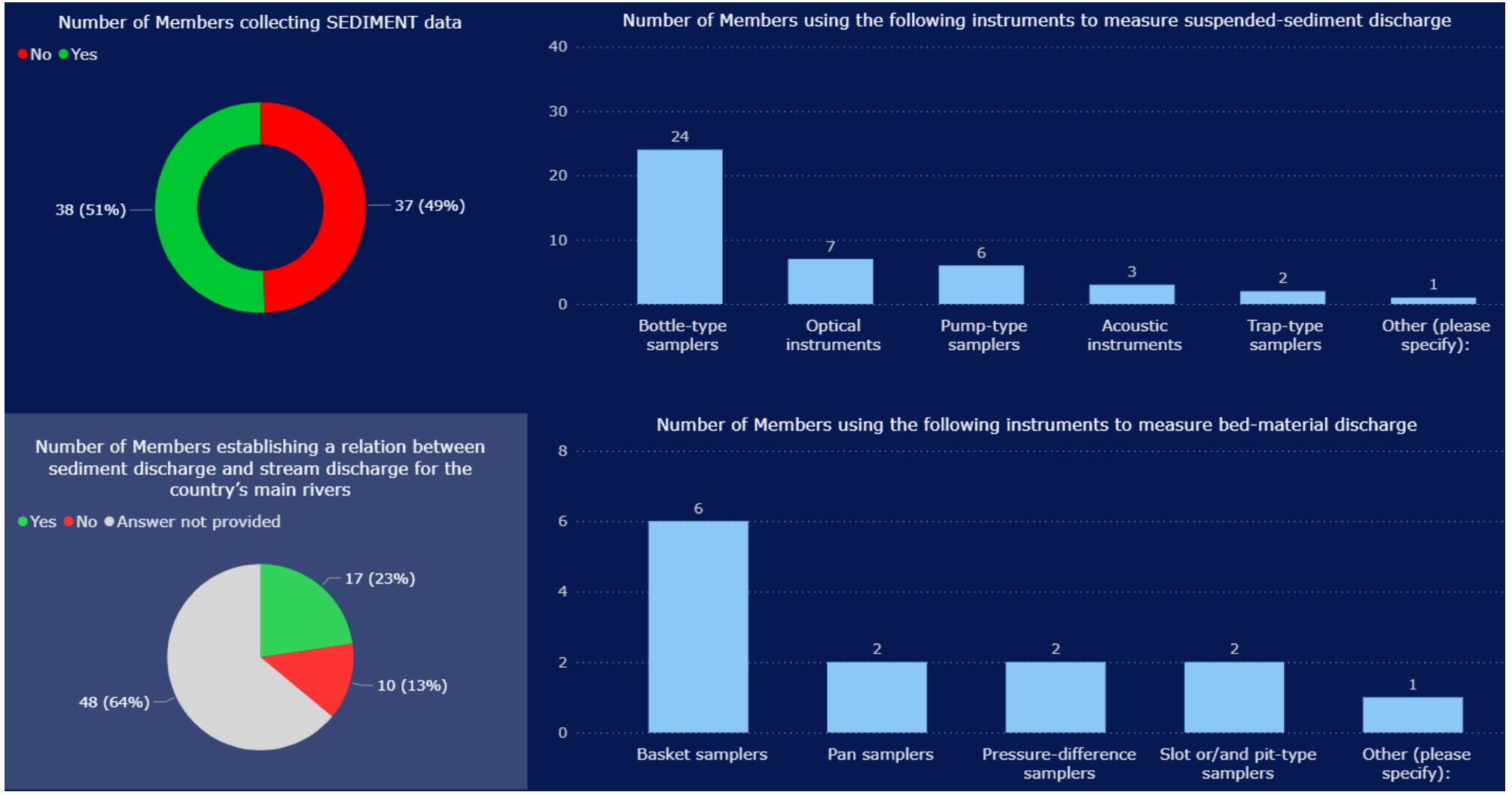
WMO national focal points regarding Water Quality

Each Member shall appoint, in consultation with the Permanent Representative, a **Hydrological Adviser** who preferably should be the Director of the respective National Hydrological Service or other national hydrological agency. (...). The Hydrological Adviser should be consulted by and advise the Permanent Representative with respect to operational hydrology and its application to water management.

Water quality of inland waters



Sediment data



WWQA
World Water Quality Alliance

Thank you!

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