

## Sustainable Development Goal Indicator 6.3.2

*Options for maximising the indicator's  
positive impact*





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Photo: Crossing of the Rokel River, Sierra Leone.  
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## Report Summary

Ensuring good ambient water quality in our rivers, lakes and groundwaters is an essential prerequisite for the SDGs to be realised. Healthy freshwater ecosystems require water of good quality. These ecosystems in turn provide the services necessary to support human health and wellbeing, sustainable agriculture and liveable cities. Monitoring trends in quality helps to understand the condition of water bodies and why they are changing, but unfortunately this information is not available to all, and it is those in low and middle-income countries where this information is most rare.

The SDG indicator 6.3.2 (SDG 632) methodology helps countries to report on ambient water quality in a consistent and straightforward manner and has undergone several iterations since conception in 2016

Gathering feedback from those tasked with reporting for their country ensures that the SDG indicators maintain their relevance and that the methods of implementation are optimised.

This report describes the feedback process and the key findings that will guide the implementation of this indicator on over the coming years to maximise the indicator's impact. This report delivers a list of actions that are ranked in terms of urgency, likely impact and feasibility.

It comes as no surprise that capacity development is central to these actions, but also, there are options that may help those with limited monitoring and assessment capacity to overtake countries with more advanced monitoring capacity by making use of the latest developments and innovations available.

Key to the implementation of the indicator is a new *SDG Water Quality Online Hub* that will be a central platform for many SDG 632-related activities. Furthermore, several specific case studies are listed that will help to showcase the great work that is already ongoing in different world regions such as those in citizen science and satellite-based Earth observation, as well as those that will be developed.

## Introduction

SDG 6 is designed specifically to ensure progress around water and sanitation, and although some progress has been made since 2015, this progress needs to be accelerated to ensure this goal is reached by 2030 (UNEP 2021<sup>1</sup>).

SDG 632 aims to measure progress towards target 6.3 by assessing the effectiveness of measures to reduce pollution of freshwaters. It provides a measure of the quality of water in rivers, lakes and groundwaters, and how they change over time.

The UN Environment Programme (UNEP) is the custodian agency of three SDG indicators: indicator 6.3.2 on ambient water quality; indicator 6.5.1 on the degree of Integrated Water Resource Management (IWRM); and, indicator 6.6.1 on the extent of freshwater ecosystems. UNEP's Global Environment Monitoring System for Freshwater (GEMS/Water) acts as the implementing programme for SDG 632.

<b>Goal 6</b>
<i>Ensure availability and sustainable management of water and sanitation for all</i>
<b>Target 6.3</b>
<i>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</i>
<b>Indicator 6.3.2</b>
<i>Proportion of bodies of water with good ambient water quality</i>

## Objective of Report

This report assesses the suitability of various options laid out in the most recent indicator progress report (UNEP 2021<sup>1</sup>) and outlines a roadmap for the future implementation of this indicator.

## Background and Context

Over a six-year period the methodology has been through a series of design, implementation, feedback, and review cycles. The most recent component of this cycle is the *2021 Feedback Process* which sought input from those tasked with reporting in their country (National Focal Points or NFPs) and experts from a broad range of expertise who are members of the World Water Quality Alliance (WWQA). This report brings together those findings and presents them in terms of options and outlines how these findings can be used to develop a roadmap for the indicator.

<sup>1</sup> United Nations Environment Programme. 2021. "Progress on Ambient Water Quality. Tracking SDG 6 Series: Global Indicator 6.3.2 Updates and Acceleration Needs". Nairobi.

### Summary of Methodology

Water quality can be monitored using various methods to address specific information needs. SDG 632 at Level 1 uses methods that focus on the physico-chemical characteristics of water that change in response to pressures that are globally relevant. These are nutrient enrichment, oxygen depletion, salinization, and acidification.

Countries can choose to go further and report at Level 2. This means that additional parameters or alternative approaches to monitoring can be included. These may involve biological or microbiological methods, satellite-based Earth observation techniques, or citizen science initiatives.

Establishing two levels of reporting ensures the global comparability of the indicator is maintained (Level 1), whilst simultaneously providing the flexibility for countries to include information that may be of national concern or relevance (Level 2). Further details on the indicator methodology can be found on the *SDG 632 Support Platform*<sup>2</sup>.



Photo: Laundry at low flow. Lesotho (Accreditation: GEMS/Water)

### Potential Options

Numerous actions were laid out in the Progress Report and were described in terms of the SDG 6 Global Acceleration Framework (UN-Water 2020)<sup>3</sup>. These actions are described below.

#### Streamline the indicator report submission process.

Incorporate a degree of automation into the submission process. The options range from allowing users to upload water quality data with the indicator score being returned, to a more basic process that allows users to upload a pre-calculated indicator score along with supporting metadata, and the quality checks currently performed by the GEMS/Water Data Centre being performed in real-time. The goal is to have a streamlined menu of reporting options which accommodate different levels of available country data and national data sharing policies.

**Deliver customised capacity development packages.** The 2020 data drive provided great insight into the capacity of countries to monitor and assess their freshwaters. This data drive went beyond scoping exercises performed previously because reporting on the indicator requires countries to demonstrate their capacity to monitor rather than simply to describe it. The in-depth engagement that was necessary with some countries further improved this understanding and made clear which countries would benefit most from delivery of a customised capacity development package.

**Develop common SDG6 sub-national reporting unit framework.** Sub-national reporting by river basin has always been central to SDG 632, but now the concept to develop a common SDG6 river-basin framework is included in the 2022 workplan of Integrated Monitoring Initiative for SDG6 (IMI-SDG6) team of UN Water. This team coordinates the 11 SDG indicator teams of SDG6. The goal is to define a common-river-basin-based framework for SDG 6 reporting that could be used to disaggregate information at the sub-national scale, and simultaneously aggregate information at the transboundary scale. The benefits of such an approach would align data across all SDG 6 indicators. For example, data on wastewater treatment levels and water quality would help to identify which river basins are making the most progress, and those where efforts to improve water quality are not having the intended impact.

**Further develop the Level 2 reporting workflow.** Level 2 reporting remains optional for countries that have completed Level 1 reporting. Countries were not formally asked to report at Level 2 during 2020 to avoid overburdening them.

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<https://communities.unep.org/display/sdg632/Documents+and+Materials>

<sup>3</sup> UN-Water. 2020. "The Sustainable Development Goal 6 Global Acceleration Framework". Geneva, Switzerland.

**Develop SDG 632 Citizen Science Toolbox.** One of the main findings from the most recent Progress Report for SDG 632 was that many countries, especially those of low-income, struggle to collect sufficient data to build a comprehensive national water quality picture. Numerous citizen scientist initiatives are actively collecting data in different world regions, but currently, none of these are contributing to official SDG 632 reporting. A new *SDG 632 CS Toolbox*, will describe the potential of these initiatives to contribute to indicator reporting by providing guidance to those tasked with reporting, on how to incorporate these data.

**Support countries seeking more guidance on target value setting.** Setting appropriate target values was again a major challenge for many countries in 2020. In response to engagement with SDG 632, some countries are undertaking a review of their own ambient water quality standards and developing new ones where needed. To support these ongoing efforts, and those which are planned, work is needed showcase the outputs and the benefits to water resource management.

**Develop minimum data requirement threshold for reliable reporting.** Defining how much data is enough to report reliably is difficult. The data threshold required varies depending on the hydrological environment and the natural variation in water quality: a relatively arid country that relies largely on groundwater will require far fewer data than a temperate country with defined seasonality and a larger number of water bodies that exhibit great fluctuations in water quantity and quality over the year. This concept feeds directly into the Confidence Rating metric described below.

**Further develop the Confidence Rating metric.** The Confidence Rating can be calculated using the metadata that are submitted along with the indicator score to provide a numeric value that represents the "reliability" of an indicator score based on a country's hydrological condition. This tool was applied to submissions received in 2020, but further engagement with users is needed to ensure the tool provides sufficient and reliable information and that it can be applied to different spatial scales. This calculated metric provides feedback to, and is for the benefit of, the country to help benchmark their monitoring and assessment capacity.

**Develop an SDG Water Quality Online Hub.** This is an online platform intended to help those tasked with reporting for their country. It will be *the* one central place that brings together many of the supports listed above.

## Feedback Process

A stakeholder analysis identified the relevance and potential influence of people, groups of people, and institutions for the future development of SDG 632. For this analysis, stakeholders were considered based on their potential to: contribute data or information to be used for reporting; use data and information outputs; influence data collection; and, influence data usage. The summary of this process is included in Annex 1.

This process identified which stakeholders could provide the most valuable feedback, and the most appropriate mechanism to engage them. The two primary stakeholder groups identified were the national focal points in each country who were tasked with reporting and the scientific and technical community. The former were subdivided based on their reporting status in 2020 (reported / started but did not complete submission / did not report). The scientific and technical stakeholders were contacted through the World Water Quality Alliance<sup>4</sup> (WWQA). Convened by UNEP, the WWQA is a global, voluntary and flexible multi-stakeholder network that advocates the central role of freshwater quality in achieving prosperity and sustainability. The WWQA brings together over 50 partner organisations to identify priority agendas and action around emerging issues related to water quality and to further develop the World Water Quality Assessment.

The NFP questionnaires included questions that were arranged into topics. The questionnaire sent to those that reported in 2020 included eight topics (Annex 2). These were:

- Ambient water quality in your country
- Your experience of the 2020 data drive
- How can we improve implementation and support?
- How can we improve our engagement strategy?
- National and international coordination
- Capacity development
- Financing
- Data assessments and outputs

The questionnaires sent to NFPs that were unable to report focussed on the challenges they face, and the capacity development support required to overcome these challenges.

The questionnaire sent to WWQA members (Annex 3) was broader and focussed on ten questions that targeted certain aspects of the indicator implementation. An opportunity to provide open responses with any additional

<sup>4</sup> <https://www.unep.org/explore-topics/water/what-we-do/improving-and-assessing-world-water-quality-partnership-effort>

insight was also included. Given that many WWQA members would not have direct experience of SDG 632, they were asked to bear in mind three guiding principles when answering. These were:

- the methodology and the indicator must balance both national and global reporting needs;
- national SDG indicator 632 reports must be submitted/validated by national representatives; and,
- reporting should not be aspirational, but instead achievable by all.

The consultation with WWQA members is ongoing and will feed into the implementation of the indicator over time.

The survey results received from NFPs were considered in terms of SDG Region, national GDP and gender of the respondent.

For the GDP analysis, countries were assigned to one of four categories. The GDP category boundaries were established by listing all 196 UN member states by GDP (US Dollars 2017) and assigning an equal number of countries to each category (quartile). These categories were the same as used in the 2021 Progress report:

Table 1: GDP categories used for analysis of survey responses

GDP Category	GDP per capita 2017 (USD)	
	Lower boundary	Upper Boundary
Q1	100	2,000
Q2	2,001	6,200
Q3	6,201	20,200
Q4	20,201	173,400

## Feedback Summary

A summary of the questionnaire responses is presented below.

### Feedback from NFPs that reported

Fifty-five survey responses were received from the NFPs that reported in 2020. These responses by SDG Region are shown in Figure 1. Most responses were received from *Sub-Saharan Africa* with *Europe and Northern America* and then *Latin America and the Caribbean* close behind. Countries from different Asian regions were under-represented.

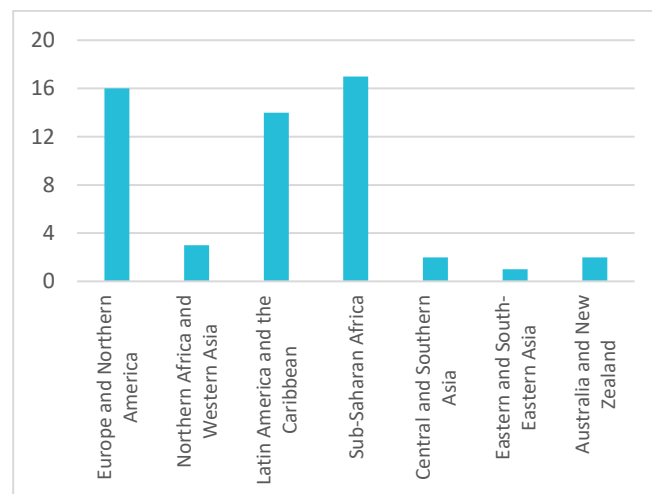


Figure 1: Count of survey responses by SDG region

An analysis of the gender of respondents showed that there was near-equal gender representation when considering all responses (Figure 2).

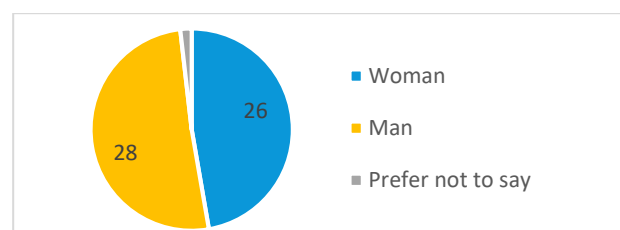


Figure 2: Proportion of survey responses by gender of respondent

However, a combined region/gender analysis showed that this gender balance is not reflected in all SDG regions with men predominantly reporting for sub-Saharan countries and woman for Europe/North America and also for Latin America (Figure 3).

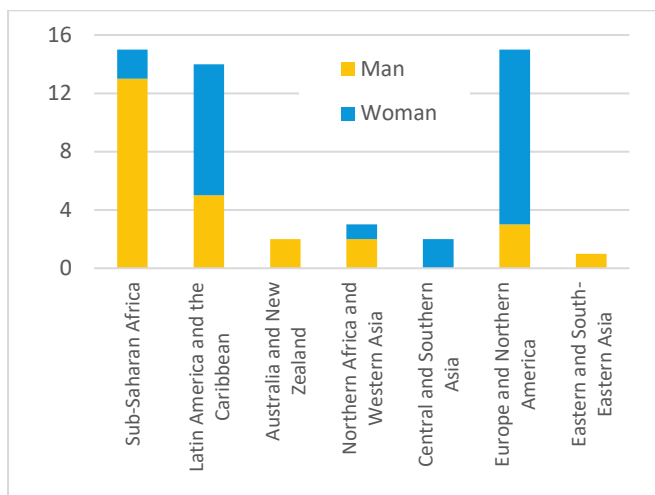


Figure 3: Count of survey responses by SDG region and gender

Of the four GDP categories, most responses were received from Q3 countries (Figure 4).

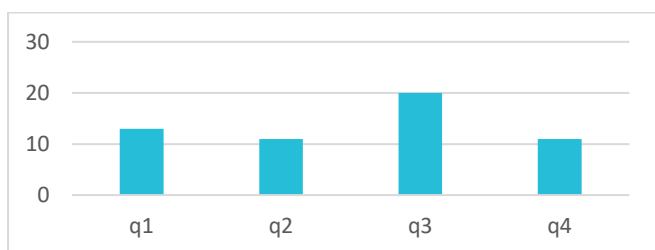


Figure 4: Count of survey response by GDP category

### Ambient Water Quality Perceptions

Seven questions were asked to help understand how ambient water quality is monitored and assessed.

Of the four GDP categories (Q1 – Q4), more respondents from Q4 countries reported that their ambient water quality monitoring systems were reliable compared with those from other GDP categories (Figure 5).

Of the three water body types, respondents said that groundwater monitoring systems were the least reliable compared with surface waters (Figure 5).

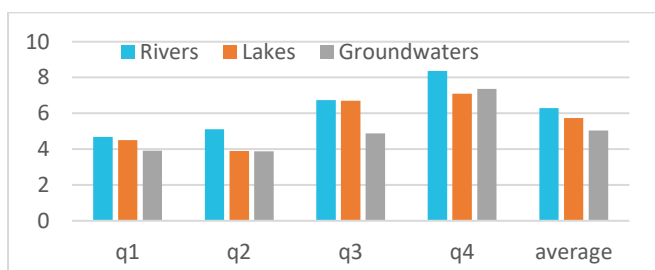


Figure 5: Average score of survey responses by GDP category to question: Are the ambient water quality monitoring systems sufficient to reliably support a national assessment of long-term water quality trends? (1 = not at all, 10 = completely)

Nearly 70 per cent of respondents said that their national indicator score accurately reflected ambient water quality in their country. This trend was more pronounced in high GDP countries (Figure 6) But given the limited nature of the

parameters used in the assessment, this conclusion needs to further investigation.

Data gaps and limitations of monitoring programmes were cited as reasons for low agreement between indicator score and actual ambient water quality.

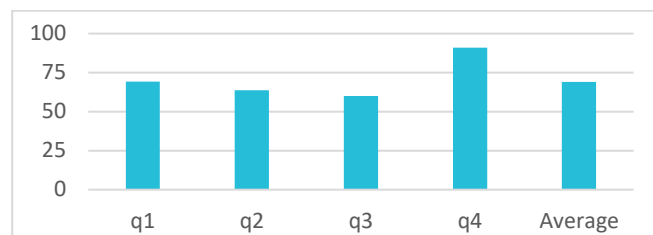


Figure 6: Percentage of respondents by GDP category answering “yes” to: Do you think the indicator score reported for your country accurately reflects the quality of ambient water at the national level?

More respondents from Q4 countries reported that it is likely that water quality will improve by 2030, although there was huge variation within each group as shown by range bars in Figure 7 below.

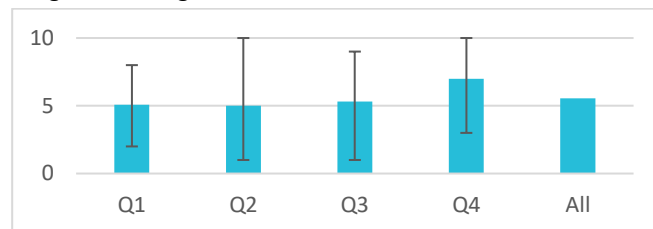


Figure 7: Average score reported to question: In your opinion, how likely is it that you will be able say that water quality has improved between 2015 and 2030 in your country? (1 = very unlikely, 10 = very likely)

Participants were asked to consider the action most urgently needed to improve water quality in their country. When looking at all responses - industrial pollution and mining scored lowest, with very little difference between other actions (Figure 8). Actions to address industrial pollution and wastewater treatment rates scored surprisingly low in Q1 countries considering wastewater treatment rates are reported as being very low in most low-income countries. Whereas enforcing existing legislation came top in Q1 countries followed closely by “Raise awareness...” and “Improving wastewater treatment technologies”.



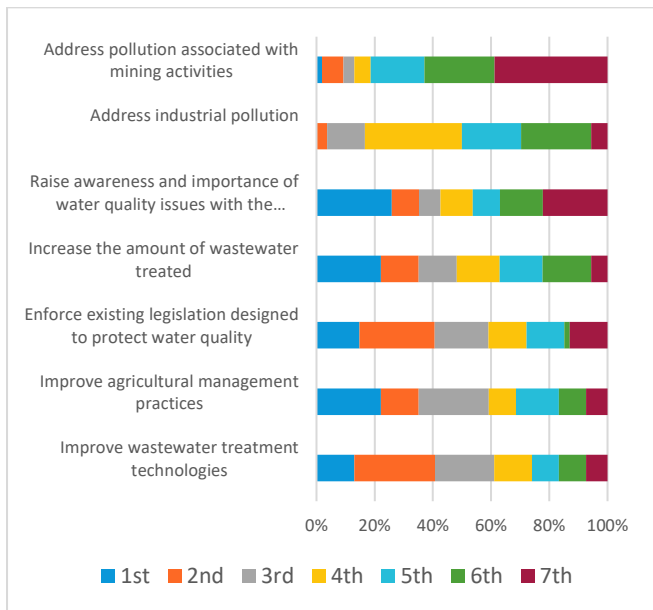


Figure 8: Proportion of responses to question: In your opinion, please rank (by dragging) the action most urgently needed to improve water quality in your country?

Improving agriculture management practices came top for Q4 countries. The results show an increasing relevance of agriculture along with GDP (Figure 9). This figure also shows that lack of enforcement of existing legislation is perceived to be a more significant issue in low GDP countries.

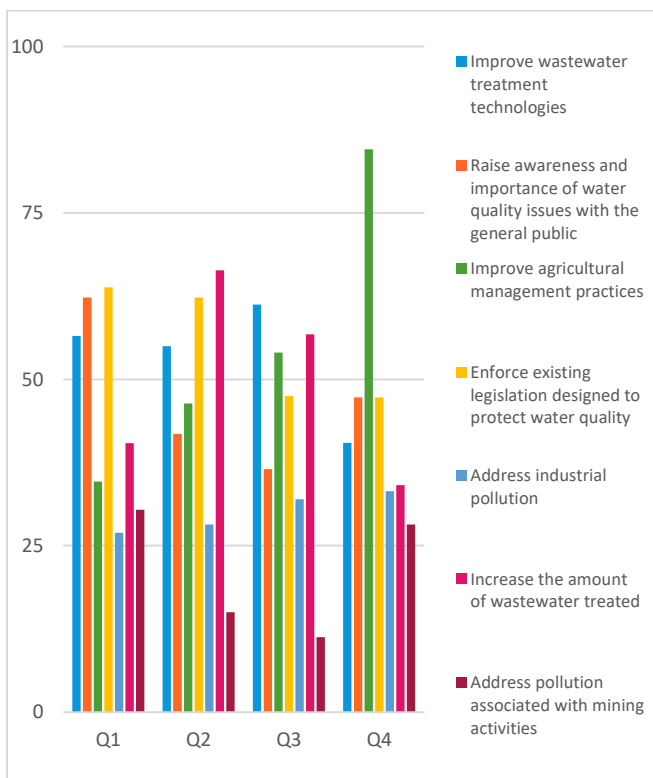


Figure 9: Responses weighted by priority to question: In your opinion, please rank the action most urgently needed to improve water quality in your country?

The majority of respondents reported that both men and women were affected equally by poor water quality (Figure

10). Fourteen participants said either “no” or “maybe”, and there was no GDP-related pattern observed.

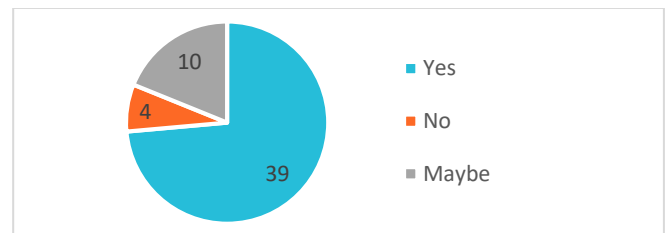


Figure 10: Proportion of responses to question: Does poor water quality affect both men and women equally in your country?

### 2020 Data Drive Experience

This section of the survey included nine questions to help provide insight into the experience of the national focal points during the 2020 data drive.

When asked about the additional workload needed to report, the responses were relatively equal across all GDP groups, but there was significant variation within each group as represented by whiskers in Figure 11 (1 = very difficult to manage, 10 = very easy to manage)

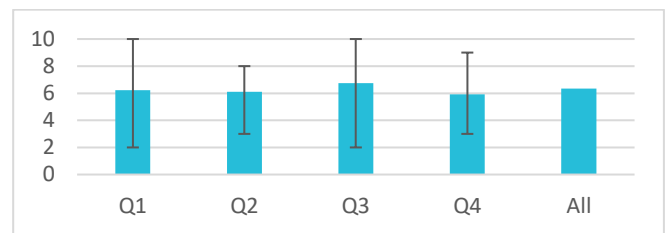


Figure 11: Average score reported to question: Was the additional workload needed to report for SDG indicator 6.3.2 in 2020 manageable? (1 = very difficult to manage, 10 = very easy to manage)

When asked about the effectiveness of communication methods used during the data drive, the responses were very positive, with the lowest scores from the Northern Africa and Western Asia region (Figure 12).

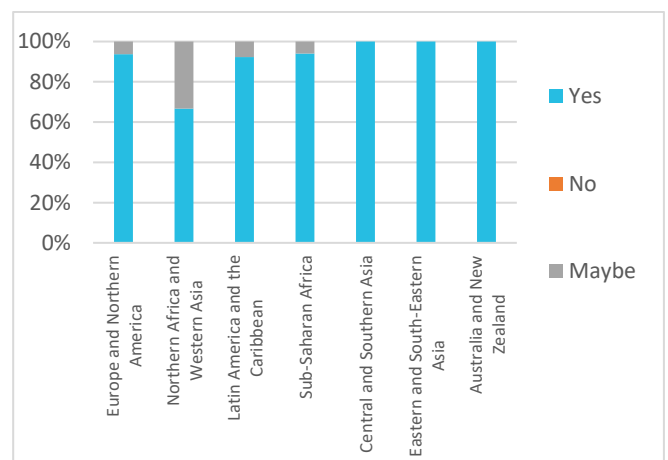


Figure 12: Proportion of respondents answering positively to question: Were the methods of communication between UNEP and you effective during the 2020 data drive?

There was generally a positive response on the availability of support information (Figure 13). But this was notably lower in Q2 countries and those from Northern Africa and Western Asia region.

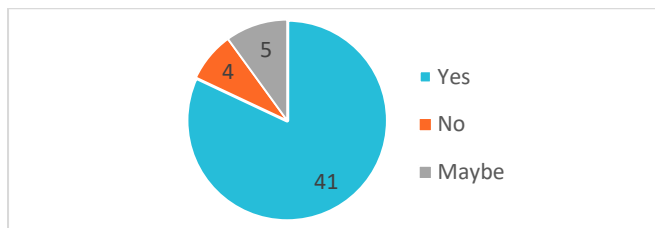


Figure 13: Proportion of responses to question: Were you able to easily find the support information that you needed during the 2020 data drive?

There were mixed responses when asked about the ease of data collation. It was reported to be more straightforward in Q4 countries, and there were similar responses across Q1, Q2 and Q3 GDP categories (Figure 14).

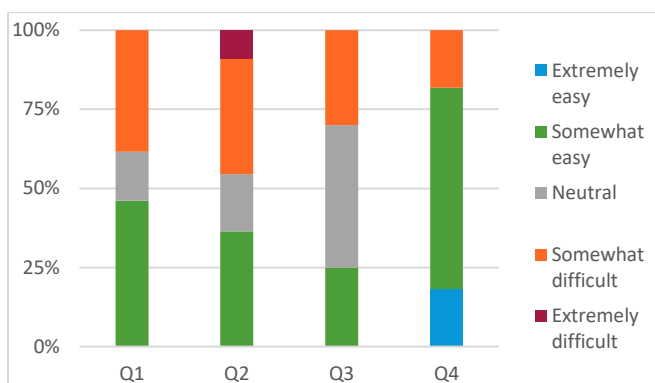


Figure 14: Proportion of responses by GDP category to question: How easy was it to collate the data that were used for reporting?

The majority of respondents said that there were other data that could have been used for reporting that were not, or, that they were uncertain whether there were other data that could have been used (Figure 15).

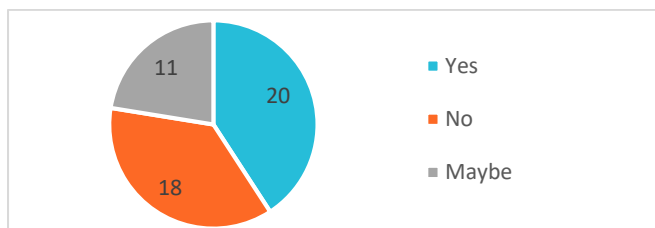


Figure 15: Proportion of responses to question: Were there any other data that could have been used that were not readily available in 2020? For example, collected by other ministries or organisations.

All four components of methodology implementation proved challenging for respondents, but Q4 countries reported the least difficulties. Of the four components listed, “setting or choosing target values” was reported to be the most difficult by a narrow margin (Figure 16).

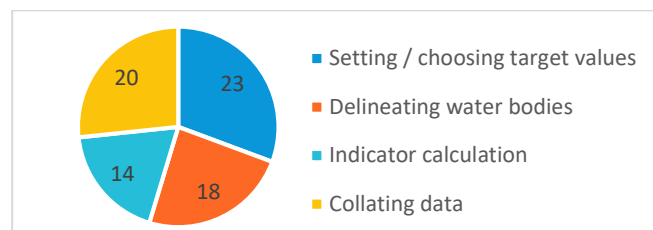


Figure 16: Proportion of responses to question: Which aspect of the methodology implementation did you find to be the most challenging in 2020?

A majority of respondents used the *SDG 632 Support Platform*. One hundred per cent of Q1 countries did so, but there were 15 countries across Q2-Q4 that did not (Figure 17).

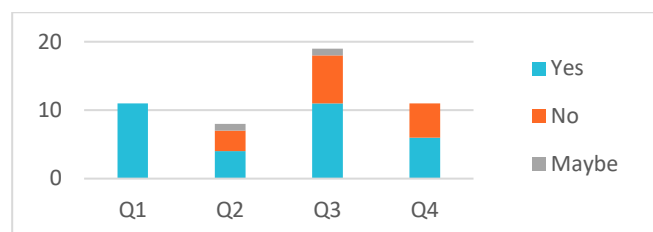


Figure 17: Count of responses by GDP category to question: Did you use the SDG 632 Support Platform in 2020?

A majority of countries reported that they found the methodology a suitable compromise between providing an accurate assessment of “national water quality” compared with the requirement to produce an overview of “global water quality” (Figure 18). Of those that said “no” or were unsure, many useful comments were received regarding the discrepancy between the calculated SDG indicator 632 score and the outputs of national assessments usually used.

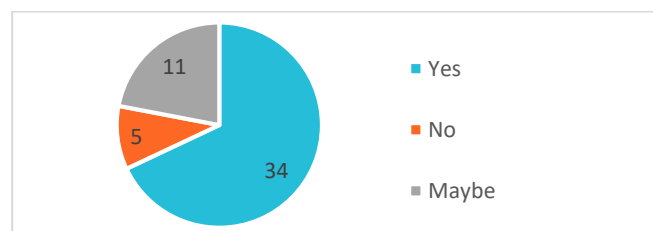


Figure 18: Proportion of responses to question: Do you think the SDG indicator 632 methodology is a suitable compromise between providing an accurate assessment of “national water quality” compared with the requirement to produce an overview of “global water quality”?

The rollout of Level 2 reporting was postponed ensuring the burden placed on NFPs was manageable in 2020. This was reflected in the responses to questions about Level 2 reporting. When asked about their intention to submit a Level 2 report, 15 respondents were unaware of what it was, 20 either said no or maybe, and only 18 indicated that they intend to report at this level (Figure 19).

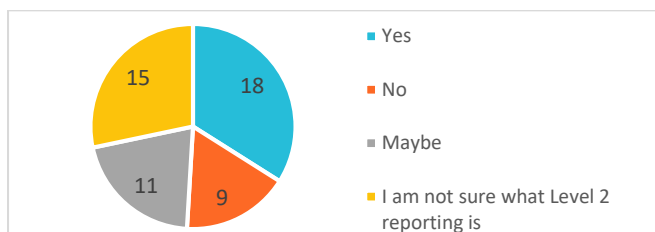


Figure 19: Proportion of responses to question: Do you intend to submit a Level 2 indicator 632 report?

### How can we improve implementation and support?

In this section, six questions were included to help us understand how the support provided and implementation methods used by UNEP could be improved.

When asked about the development of common sub-national reporting units for all SDG 6 indicators, the majority indicated this would be a positive development, although this majority was lower in high GDP countries (Figure 20).

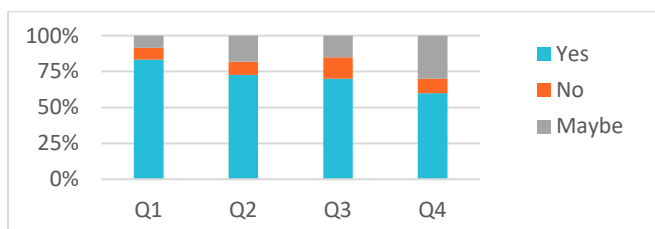


Figure 20: Proportion of responses by GDP category to question: Would you like to see common sub-national reporting units for all SDG 6 indicators on water and sanitation? For example, data for all SDG 6 indicators collected using the same hydrological spatial units.

Most respondents would like to see efforts to see the overlay of SDG indicator 632 information at regional, national and sub-national scales with other datasets such as information on access to clean water and sanitation services, population density or similar (Figure 21).

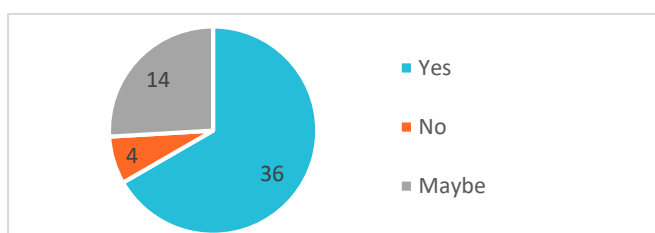


Figure 21: Proportion of responses to question: Would the overlay of SDG indicator 632 information at regional, national and sub-national scales with other datasets be of use nationally? For example, with information on access to clean water and sanitation services, population density or similar datasets

Most respondents were satisfied with the technical documents available on the SDG 632 Support Platform. Of the four GDP categories, Q1 would like to see additional resources or documents (Figure 22).

Suggestions for new technical documents included *biological monitoring* and a more thorough comparison of target values used in different countries.

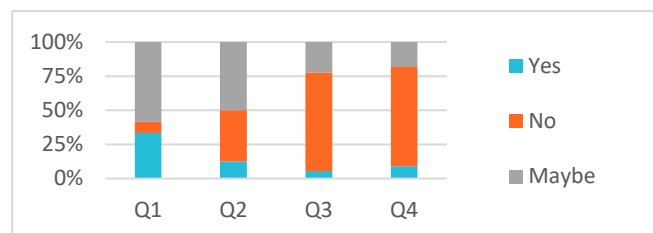


Figure 22: Proportion of responses by GDP category to question: Are there any technical resources or documents in addition to those available on the SDG 632 Support Platform that are not currently available that you like to be see made available?

Nearly half of respondents said they would like to learn more about the *indicator calculation service* provided by GEMS/Water in 2020. Low GDP countries were more interested (Figure 23).

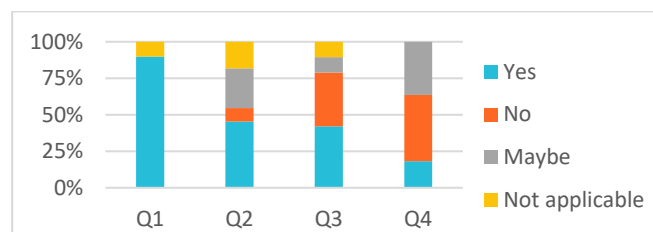


Figure 23: Proportion of responses by GDP category to question: Some countries used the Indicator Calculation Services provided by UNEP in 2020 - if you are not from one of these countries, would you be interested in learning more about this service?

Participants were asked about four additional products that are proposed to be developed. Each received a positive response (Figure 24). The indicator scorecard received the most positive response followed closely by an automatic indicator calculation function.

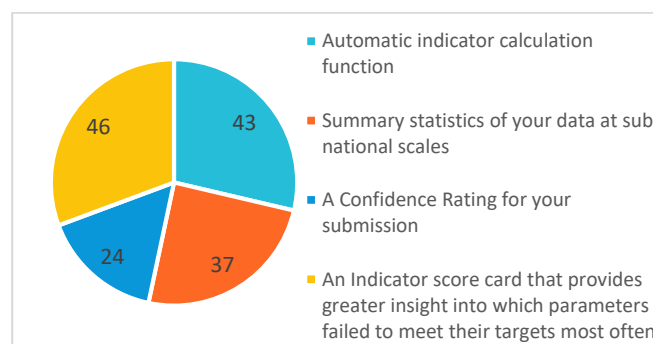


Figure 24: Proportion of responses to question: In readiness for the next data drive, UNEP plans to create an SDG 632 Data Portal. Which additional products would you like to see on this portal?

There was openness to use data products created by international organisations, with no clear pattern across GDP categories (Figure 25). Validation of outputs by national representatives was identified as an important aspect of any acceptance.

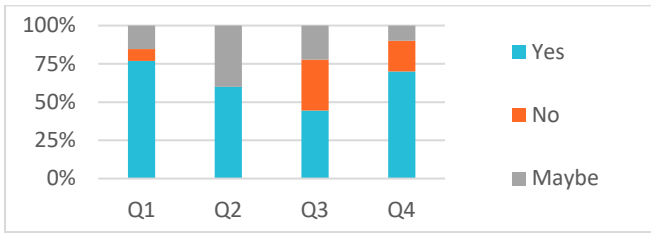


Figure 25: Proportion of responses by GDP category to question: 'Would you use a data product that was created by an international organisation for SDG indicator 632 reporting in your country? For example, information derived from a satellite-based Earth observation programme.'

**How can we improve our engagement strategy?**

This section included five questions about how NFPs would like GEMS/Water to engage them in the future.

Most respondents would like to be contacted on an annual basis, with low GDP countries suggesting they would like to be contacted more frequently (Figure 26).

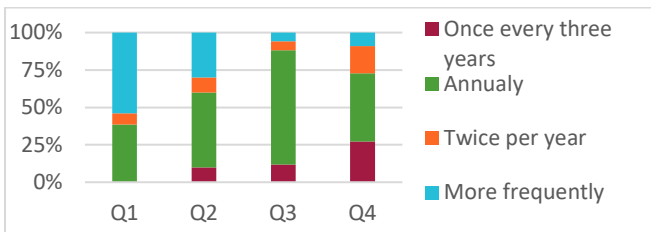


Figure 26: Proportion of responses by GDP category to question: 'How often would you like to be contacted about SDG indicator 6.3.2? This could include updates and information about ambient water quality monitoring and assessment?'

Most respondents would like to hear more about experiences in other countries, and again this trend was stronger in lower GDP countries (Figure 27).

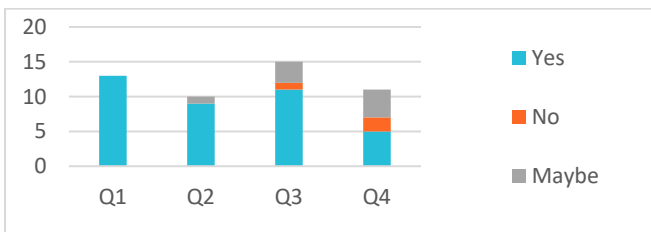


Figure 27: Count of responses by GDP category to question: 'Would you like to learn more about experiences in other countries with this indicator?'

A majority of respondents would like to join a regional network, but less enthusiasm was observed in higher-GDP countries (Figure 28).

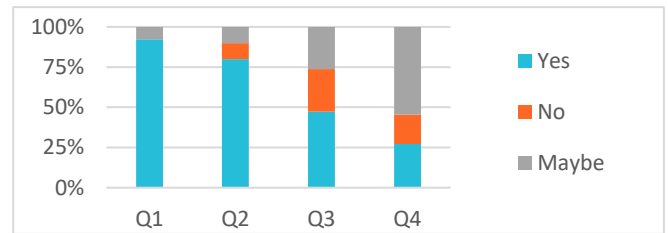


Figure 28: Proportion of responses by GDP category to question: 'Would you like to join a regional network of indicator focal points?'

The response to a suggestion of joining a dedicated social media group was neutral overall, but with more enthusiasm indicated by NFPs from lower GDP countries and very little interest indicated in Q4 (Figure 29).

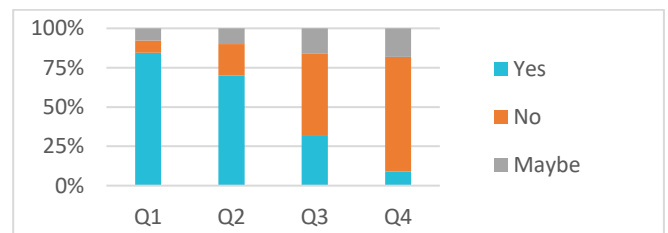


Figure 29: Proportion of responses by GDP category to question: 'Would a group on a social media platform (For example, on LinkedIn or Facebook) specifically for SDG indicator 632 focal points be useful to you?'

A slight overall majority reported that they would like to receive further updates and information on this indicator and the SDGs in general. This was most evident in Q1 category countries (Figure 30).

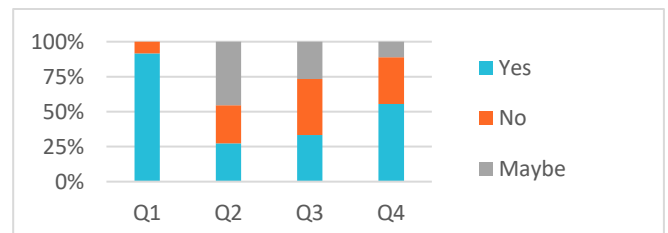


Figure 30: Proportion of responses by GDP category to question: 'Is there any information or updates about this indicator or the SDGs in general that would you like to receive from UNEP?'

**National and international coordination**

This section asked eight questions designed to help better understand the current level of coordination in countries.

A majority of respondents were aware of their country’s performance for other SDG 6 indicators (Figure 31).

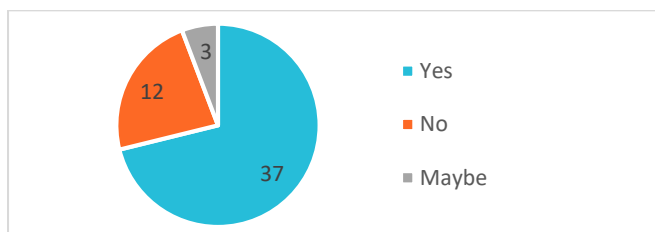


Figure 31: Proportion of responses to the question: Are you aware of the performance of your country for other SDG 6 indicators on water and sanitation?

When asked about the identity of those focal points for other SDG6 indicators, most were either unaware or unsure (Figure 32). This pattern was consistent across GDP categories.

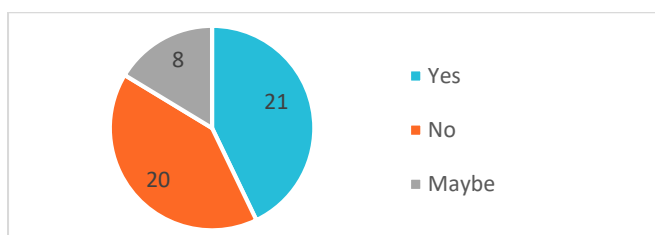


Figure 32: Proportion of responses to the question: Are you aware of the other SDG6 focal points in your country who are responsible for the other 10 SDG 6 indicators?

The awareness of the overall SDG 6 focal point in each country was much higher (Figure 33), although it was not universal.

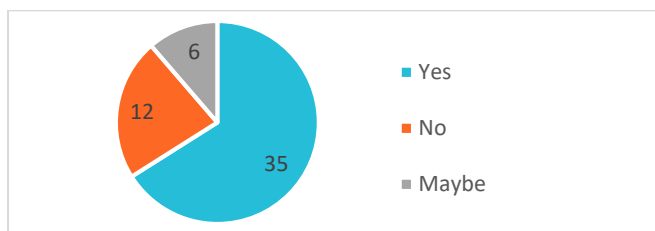


Figure 33: Proportion of responses to the question: Are you aware of the overall SDG 6 Focal Point in your country?

Involvement by the National Statistics Offices with the reporting process was confirmed in less than half of the responses (Figure 34). This was consistent across GDP categories.

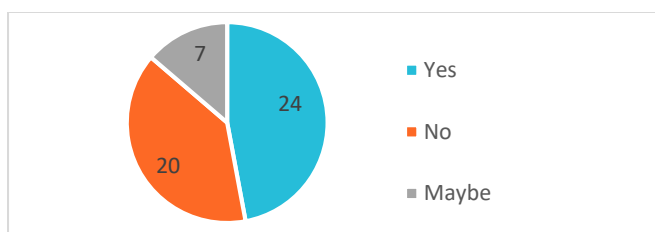


Figure 34: Proportion of responses to the question: Was the National Statistics Office of your country involved in the reporting process for this indicator?

A large majority of respondents did not cooperate nor communicate with international colleagues on any aspect of the indicator implementation (Figure 35). This pattern was consistent across all GDP categories.

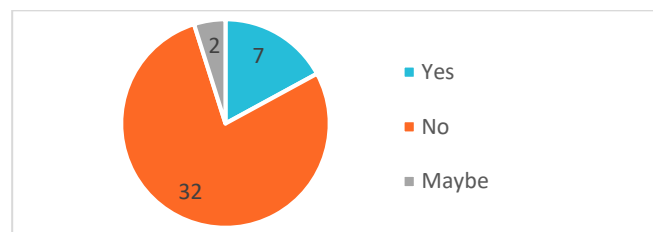


Figure 35: Proportion of responses to question: Were there efforts to engage, collaborate or connect with colleagues in other countries on any aspect of SDG indicator 632 for your country?

Slightly more than 50 per cent of countries (27 of 48) reported being involved in some form of regional reporting framework. These are either continental such as the European Union’s Water Framework Directive or Africa’s Water and Sanitation Sector Monitoring and Reporting System (WASSMO). Others include River Basin Organisations such as Cuenca del Plata.

On transboundary cooperation, the majority reported there had not been any efforts to harmonise reporting – for example to set common target values, and this trend was consistent across GDP categories (Figure 36). But there were good examples provided. These included: between Norway and Sweden; Lake Victoria riparian countries; Lake Titicaca between Peru and Bolivia; and, the Niger River Basin countries.

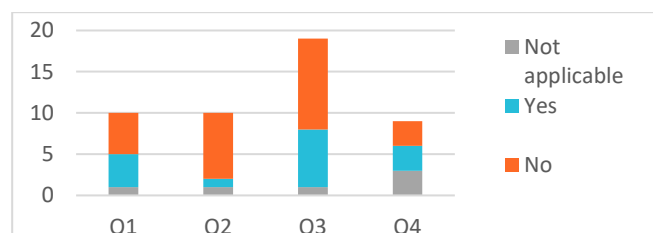


Figure 36: Count of responses by GDP category to question: If your country shares transboundary waters, did you in any way consider the ambient water quality monitoring programmes or the method of implementation of SDG indicator 632 in these neighbouring countries?

### Capacity Development

The survey included eight questions to identify capacity development requirements in countries.

The GEMS/Water Capacity Development Centre focuses training on six aspects of the monitoring and assessment cycle. The survey found that all six aspects were sought after, but training in data management was the most urgent, with quality assurance/quality control and groundwater monitoring following closely. Monitoring of surface waters was the course least sought after, and there were no clear trends across GDP categories (Figure 37).

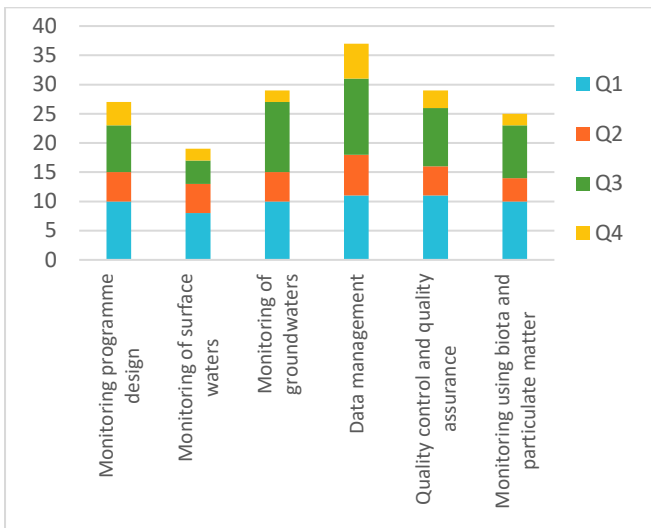


Figure 37: Count of responses by GDP category to question: To improve ambient water quality monitoring and assessment in your country, which area of training needs to be addressed most urgently?

Twenty respondents were unaware of the GEMS/Water Capacity Development Centre, but none of these were in the Q1 category (Figure 38).

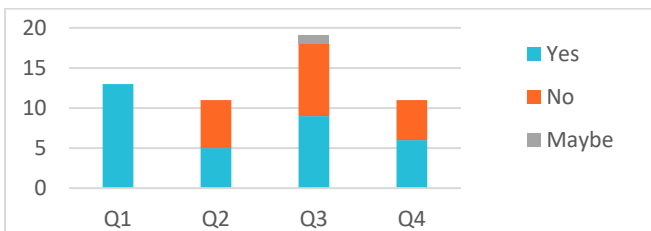


Figure 38: Count of responses by GDP category to question: Are you aware of UNEP's GEMS/Water Capacity Development Centre?

When asked, most respondents said they would like a customised capacity development package developed for their organisation. Of those that responded positively only one was from the Q4 category. There was notable uncertainty about what this may involve, because across the four GDP groups there were 13 respondents that were unsure (Figure 39).

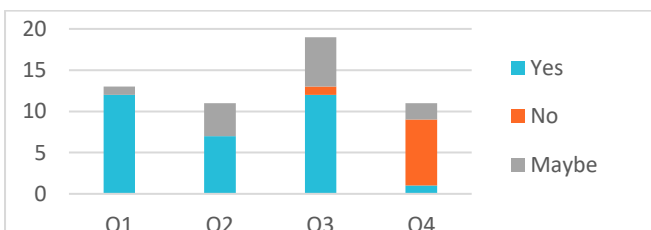


Figure 39: Count of responses by GDP category to question: Would you like a customised capacity development training package for your country or organisation?

There were 23 respondents that would consider *help to define ambient water quality standards* as useful, but none of these were in from the Q4 category (Figure 40)

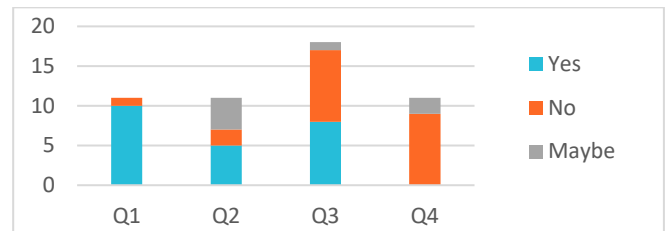


Figure 40: Count of responses by GDP category to question: Does your country need help to define ambient water quality standards that can be used as target values for 632 reporting?

Delineation of water body units is central to the indicator calculation. Support to define these spatial units was more pronounced in low GDP countries. Also, of the three water body types, support to define groundwater bodies was highlighted more than for surface waters (Figure 41).

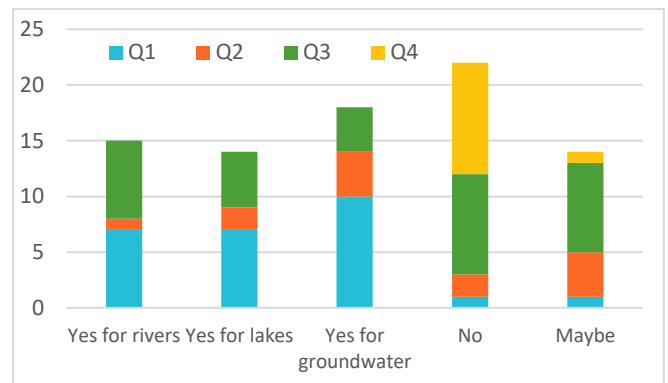


Figure 41: Count of responses by GDP category and water body type to question: Does your country need help defining water body units for either surface or groundwaters?

A majority answered that they did not need help with monitoring programme design. Of those that did, there is a relationship with GDP category with only one high GDP country seeking support, whereas nine from the lowest GDP did so (Figure 42).

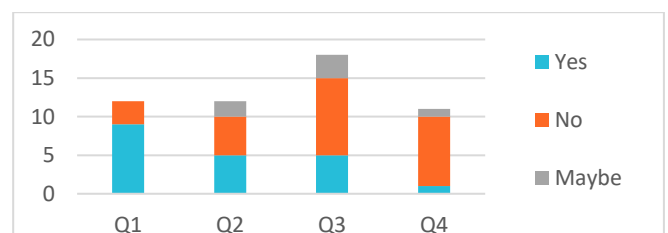


Figure 42: Count of responses by GDP to question: Does your country need help to design an ambient water quality monitoring programme?

A majority of countries answered that they did not need help calculating the indicator with data they already have available. The 19 that did were all from Q1 to Q3 GDP categories (Figure 43).

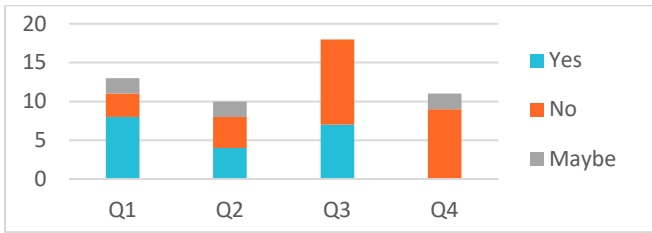


Figure 43: Count of responses by GDP to question: Does your country need help to use the data you already have available to calculate the indicator?

A majority responded to say that data are managed appropriately in their country (Figure 44), but there were many comments suggesting where improvements could be made. These focussed around creation or improvement of centrally managed databases and their access.

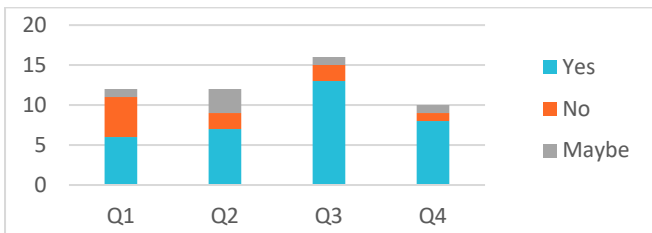


Figure 44: Count of responses by GDP category to question: Are water quality data managed appropriately in your country?

### Financing

Two questions were asked about how monitoring programmes are financially resourced.

There was a clear trend associated with GDP with the vast majority of low income countries reporting that monitoring programmes are underfunded (Figure 45).

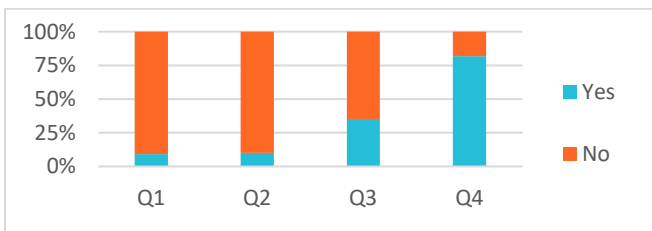


Figure 45: Proportion of responses by GDP to question: Are water quality monitoring and assessment programmes suitably funded in your country?

When asked about where support is most urgently needed to support SDG 632 reporting, resources for field monitoring activities came out top across respondents. This was followed closely by staff numbers, staff training, and then provision of laboratory equipment. Considering Q1 and Q2 countries – insufficient laboratory facilities was identified as the greatest need (Figure 46).

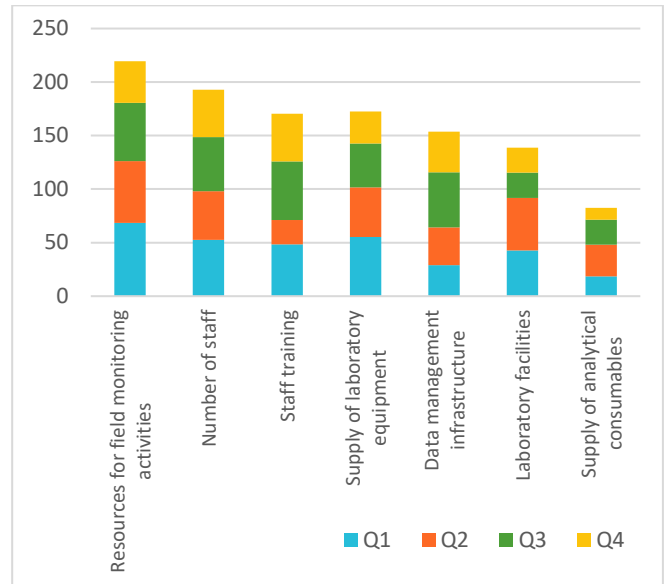


Figure 46: Priority weighted summary by GDP category to the question: Please rank the areas that need support most urgently to report for SDG indicator 632? (high rank = large weighting)

### Data assessments and data outputs

The last section looked at data assessment, use and sharing.

The outputs of assessments are more commonly shared than raw data, and there was a slight increase in data sharing with increasing GDP reported (Figure 47).

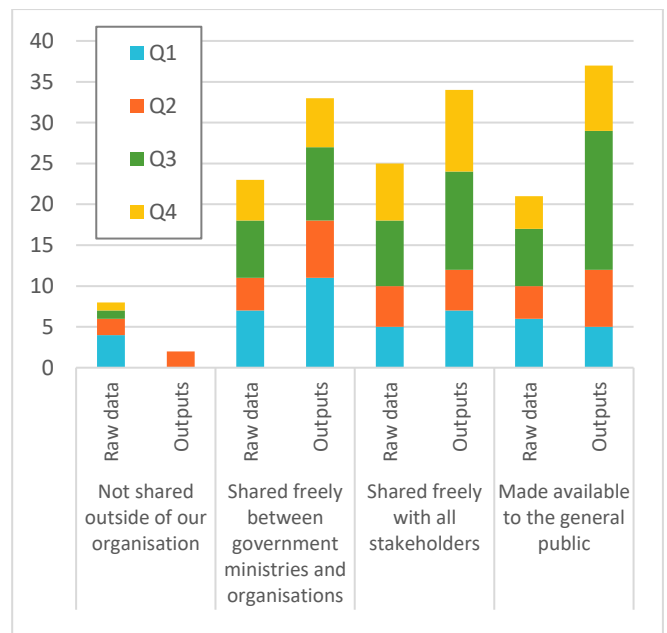


Figure 47: Count of responses by GDP category on sharing of water quality data and the outputs of assessments of data to different stakeholder groups

Approximately half of respondents were either unsure or said that outputs of water quality assessments were not effectively communicated to policy makers (Figure 48).

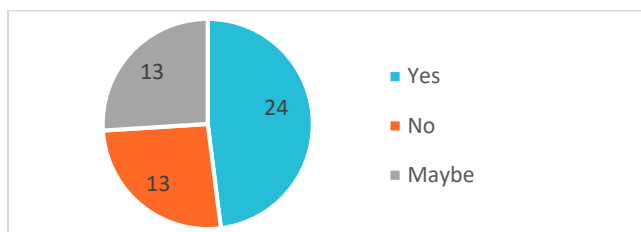


Figure 48: Proportion of responses to question: Do you believe that findings of water quality assessments are effectively communicated to policy makers in your country?

Defining the meaning of the word “value” is very subjective but slightly more than 50 per cent of respondents said that water quality data are either not valued or were unsure whether they were valued in their country (Figure 49).

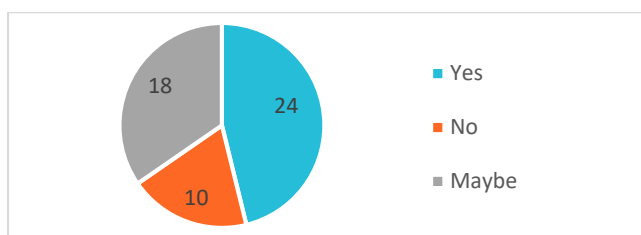


Figure 49: Proportion of responses to question: In your opinion, is the “value” of water quality data realised in your country? For example, could these data and the assessments they inform be used more effectively?

### Feedback summary from countries that were unable to report

Twelve responses were received to requests to complete these surveys. This was much less than the 55 received from countries that did submit an SDG 632 report in 2020.

A summary of the responses received are presented below in terms of gender representation of the respondents (Figure 50), as well as GDP category (Figure 51) and SDG Region of the respondent’s countries (Figure 52).

Seven men completed the survey compared with five women. More responses from poorer countries were received with none for the Q4 category. In terms of geographical spread, most responses were received from Sub-Saharan African countries.

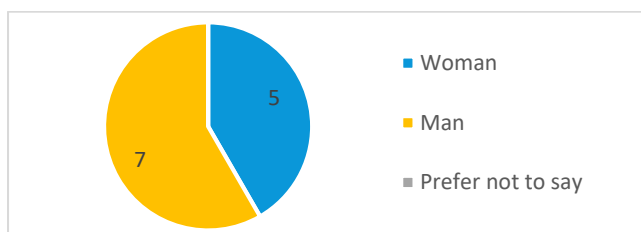


Figure 50: Gender representation of respondents to NFP feedback survey from countries that did not report

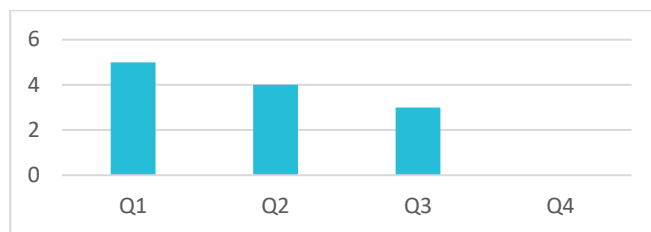


Figure 51: GDP category of respondent’s countries to the survey aimed at those that did not report for SDG 632 in 2020

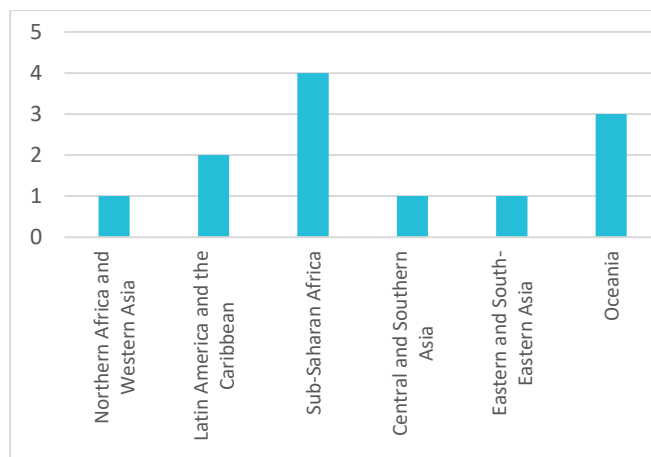


Figure 52: Count of countries that responded to survey targeted at those that did not report for SDG 632 by SDG Region

The main focus of this survey was to understand the constraints to report on the indicator. This is summarised in Figure 53.

The main constraint to report on this indicator is that ambient water quality is not routinely monitored in the respondent’s country.

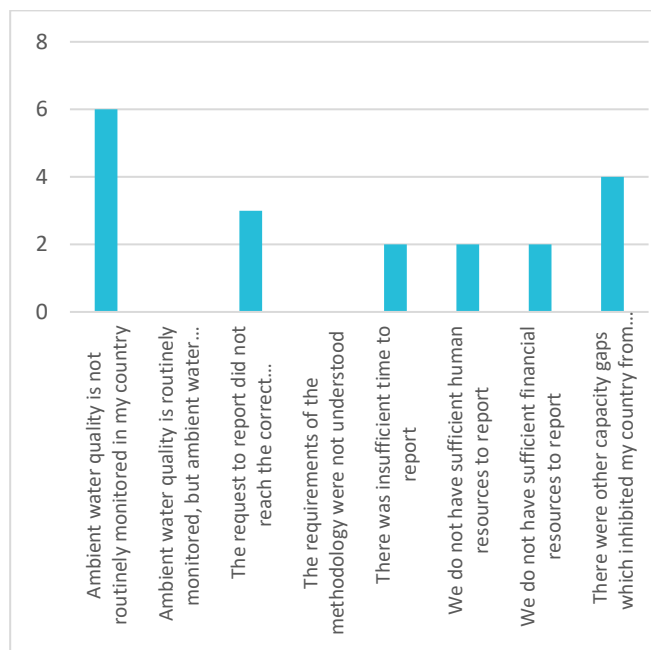


Figure 53: Count of responses to question: Can you identify the main reason or reasons that meant you were unable to finalise your report on SDG 6.3.2?



### Feedback from the scientific and technical community

Fourteen detailed responses were received from the survey request circulated through the World Water Quality Alliance. An analysis of these responses by gender of the respondents (Figure 54), and the SDG region of their country (Figure 55) shows that there were slightly more men than women responding, and that the region *Europe and Northern America* dominated the responses received.

Twelve questions that covered a broad range of topics were presented to this stakeholder group (Annex 3). The questions were broad by design allowing respondents to answer freely and provide insight against each. This approach meant that a structured analysis of responses was not possible, but the feedback provided has been collated and featured in the next section: *Planned Actions and Recommendations*.

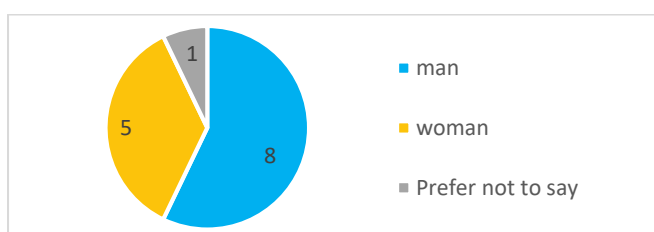


Figure 54: Gender representation of respondents to scientific and technical community survey

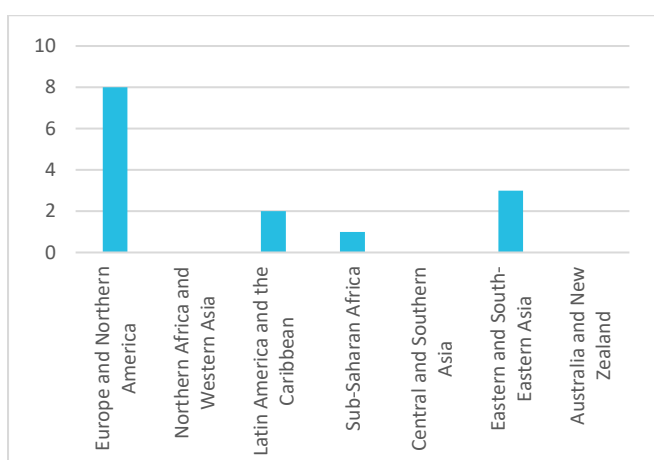


Figure 55: Count of responses by SDG Region of scientific and technical community survey

### Planned Actions and Recommendations

Listed below are actionable recommendations based on the feedback summaries. These have been divided into six themes, and ranked according to their urgency, likely impact if implemented, and feasibility given the current resource constraints. These ranks have been used to provide an overall score indicating which actions should be prioritised in 2022. The ranks are defined as:

**Urgency:** ① = low, ② = moderate, ③ = high

**Likely impact:** ① = low, ② = moderate, ③ = great

**Feasibility:** ① = hard, ② = moderate, ③ = easy

#### Awareness raising

These actions are either already part of GEMS/Water's day-to-day activities but need expanding or are new activities that need to be explored.

Table 2: Awareness raising actions ranked according to urgency, likely impact and feasibility

Action	Rank	Score
Showcase good examples of policy intervention through IWRM (SDG 651)	③ ③ ②	8
Highlight discrepancy between rich and poor countries in funds available to support monitoring	③ ① ②	6
Promote data sharing by showcasing good examples	② ② ②	6
Show case good national examples where water quality data and information feed into policy decision	② ② ②	6
Promote SDG 632 within academic circles and promote data sharing	① ② ③	6
Highlight that monitoring in poorer countries need reinforcing by continuing to promote the findings of the 2021 progress report	③ ① ②	6
Develop video/s that highlight links between human activities, water quality and the available solutions	① ② ②	5
Highlight that training can help make better use of available resources and maximise impact of information generated	① ① ②	4
Highlight cost of remediation, and highlight failures of the groundwater nitrate legislation in EU	① ① ①	3

### Capacity Development

Capacity development is central to ensure that countries are able to monitor and assess their freshwaters. These activities would benefit national and regional management far beyond the scope of this indicator. Training in data management was highlighted as being most urgent, with quality assurance/quality control and groundwater monitoring following closely.

Table 3: Capacity development actions ranked according to urgency, likely impact and feasibility

Action	Rank	Score
Create customised capacity development packages to strengthen national reporting	3 3 2	8
Expand the current <i>indicator calculation service</i> , and work through the steps with country focal points	3 3 2	8
Develop translated versions of existing GEMS/Water Capacity Development Centre's courses	3 3 1	7
Partner with development agencies to fill identified material and training capacity gaps	1 3 2	6
Develop new technical documents: <ul style="list-style-type: none"> <li>biological monitoring;</li> <li>establishing target values;</li> <li>a review of target values; and,</li> <li>emerging pollutants and microplastics</li> </ul>	1 2 2	5

### Networking and Outreach

These actions could help to improve communication between those already working with this indicator and expand its reach to those that could benefit from using it.

Table 4: Networking and outreach actions ranked according to urgency, likely impact and feasibility

Action	Rank	Score
Promote the indicator and ambient water quality more widely to citizens through connections to existing initiatives	3 3 2	8
Increase efforts to engage and communicate in Northern Africa and Western Asia region	3 3 1	7
Reach out to countries that found it difficult to access support material and ensure they are aware of translated content	2 1 3	6
Contact national focal points annually for requests, but more frequently with "no action required" updates	2 1 3	6
Develop Regional Support Networks	3 2 1	6
Highlight the low level of participation of national statistics offices in each country	1 1 3	5
Consider mapping focal points for all SDG indicators at national level	1 1 1	3

### Potential Case Studies

These potential case studies would highlight some SDG 632-specific work that is already ongoing, or alternatively, refocus existing activities through an SDG 632 lens.

Table 5: Potential case studies ranked according to urgency, likely impact and feasibility

Action	Rank	Score
Biological citizen science approaches such as miniSASS	3 3 2	8
Satellite-based Earth observation case study that emphasises the robustness of new techniques and their cost effectiveness	3 3 2	8
Demonstrate how Level 2 data can augment national submissions	3 3 2	8
Showcase good examples of data sharing	2 2 2	6
Promote the benefits of incorporating groundwater data into SDG 632 submissions	1 3 2	6
Highlight benefits of employing sub-national common reporting units across all SDG6 indicators	2 2 1	5
Develop an SDG 631/632 project that looks at wastewater treatment plants and water quality available through SDG 632 reporting	2 2 1	5
Engage with a country that reported difficulties in collating data and undertake a mapping exercise of potential data sources	2 2 1	5
Develop water body delineation tool using HydroBASINS and test integration of HydroATLAS to improve assessment	1 2 2	5
Develop a river basin-wide SDG 632 submission using data from riparian countries	1 2 1	4
Promote credit-based system for private sector to submit water quality data for SDG 632 use	1 2 1	4

## Implementation

These actions could improve the implementation of the indicator.

Table 6: Implementation ranked according to urgency, likely impact and feasibility

Action	Rank	Score
Develop a suite of indicators that help to refine the currently diverse options for Level 2 reporting	3 3 2	8
Roll-out Level 2 data drive for national reporting	3 3 2	8
Develop an SDG 632 global bioindicator	2 2 1	5
Expand the languages that countries can use to report	2 1 1	4
Offer an annual prize for the development of simple analytical tools to support SDG 632	1 1 1	3
Initiate a standalone project that “mines” scientific publications for water quality data	1 1 1	3

## SDG Water Quality Online Hub Functionality

The development of the *SDG Water Quality Online Hub* is currently at the development phase. Input from countries from all economic categories and SDG regions will be sought. This hub will provide a vehicle to deliver many of the items listed above and are they not all explicitly repeated here.

Table 7: SDG Water Quality Online Hub functions derived from feedback ranked according to urgency, likely impact and feasibility

Action	Rank	Score
Include assessment tools to help interpret data and present information	3 3 3	9
Automatic indicator calculation	3 3 3	9
A peer-to-peer engagement functionality	2 1 3	6
Develop a SDG 632 “data pairing facility” for academic, private sector or international organisations to share their data	2 2 2	6
Create a <i>regional networking facility</i>	1 2 2	5
Managed national fora for national focal points and coordinators	1 1 2	4



Photo: Lesotho rivers from above (Accreditation: GEMS/Water)

## Summary and way forward

Ultimately, this indicator is about improving water quality, and providing the information to those decision makers that can affect change by protecting and restoring the rivers, lakes and groundwaters needed for sustainable development.

SDG 632 provides the necessary focus to bring together disparate activities and mandates aimed at improving water quality and goes far beyond a reporting framework. For countries struggling to monitor and assess their freshwaters, the indicator and its implementation can provide a strong foundation upon which to build a better understanding, and for countries that have advanced monitoring programmes, it offers a straightforward and stable method to understand general trends in space and time yet includes scope to incorporate greater complexity as required.

The recommendations from the feedback process have provided insight from two very different viewpoints: those on the business end of reporting and water resource management, and those who have expertise and an observational view of the indicator.

These insights help guide the continuing development of the indicator and helps to steer its implementation. Central to the realisation of several of the actions is the development of the *SDG Water Quality Online Hub* planned for 2022 (Figure 56). This new platform will provide a resource for those tasked with reporting and help bring together many of the activities listed.

As the IMI-SDG6 moves into its third phase in 2023, the focus will be on using the information gathered from phases 1 and 2 and using this to implement the changes required to improve water quality in practice. For many countries the available information is inadequate to know whether water quality is improving or degrading, so these prerequisite steps of establishing monitoring are essential. Some countries starting from a low capacity, may be able to overtake those with established monitoring programmes by making efficient use of new and innovative methods of monitoring rather than adopting "established" methods that may not be best suited to their national situation.

The options listed here for the future implementation of the indicator are aimed at expanding the country reporting network, and making the best use of any available information, and sharing experiences from different countries with the goal of improving water quality. The headline actions that are simultaneously **urgent**, likely to have a significant **impact** and are relatively **easy** to achieve given the resources available.

Other actions and case studies may become a reality based on partnerships with other organisations, but those listed below scored eight or more in the scoring assessment applied and will be prioritised in the future workplan

- Create **customised capacity development packages** to strengthen national reporting
- Expand the current **indicator calculation service**, and work through the steps with country focal points
- Develop a **suite of indicators** that help to refine the currently diverse options for Level 2 reporting
- **Roll-out Level 2** data drive for national reporting
- Develop **case studies** including:
  - Biological citizen science approaches
  - Satellite-based Earth observation study
  - Demonstrate how Level 2 data can augment national submissions
- Work to showcase good examples of policy **intervention through IWRM** (SDG 651)
- **Promote the indicator** and ambient water quality more widely to **citizens** through connections to existing initiatives
- Develop the **SDG Water Quality Online Hub**
  - Include assessment tools to help interpret data and present information
  - Automatic indicator calculation

Ensuring the indicator remains both nationally relevant and globally comparable is a complex task, but one that can only be achieved by receiving and acting upon feedback and input from those using the indicator in their country. This valuable feedback will guide the development and implementation of this indicator into the future.



Figure 56: Schematic of the potential functions of the SDG Water Quality Online Hub.

## Annexes

### Annex 1: Stakeholder analysis summary influence/interest grid with stakeholder groups assigned to each category

Table 8: Classification of various stakeholders by potential Interest and Influence ratings (1 = high, 0 = low)

ID	Stakeholder Classification	Influence	Interest	Communication Method
1	NFPs of data rich countries (that did report)	1	1	Questionnaire
2	NFPs of data adequate countries (that did report)	1	1	Questionnaire
3	NFPs of data poor countries (that did report)	1	1	Questionnaire
4	NFPs of countries that did not report	1	1	Questionnaire
5	NFPs that failed to report but were "working on it"	1	1	Questionnaire
6	WWQA Partners and Members	0	1	Questionnaire
7	WESR Team	0	1	Open
8	UN-Water and other UN Agencies	1	1	Open
9	Other SDG 6 indicator teams	0	1	Open
10	Civic society	0	1	Open
11	Scientific community - Earth Observation	0	1	Questionnaire
12	Scientific community - Citizen Science	0	1	Questionnaire
13	Scientific community - Modelling Community	0	1	Questionnaire
14	Scientific community - Freshwater scientists	0	1	Questionnaire
15	Technical experts based in other (non-NFP) governmental organisations	0	0	Inform
16	River basin organisations	0	0	Inform
17	Global policy makers	1	0	Open
18	National policy makers	1	0	Open
19	Regional Reporting Framework Coordinators	1	1	Open
20	National Statistic Offices	0	0	Open
21	UNEP Regional Offices	0	0	Open

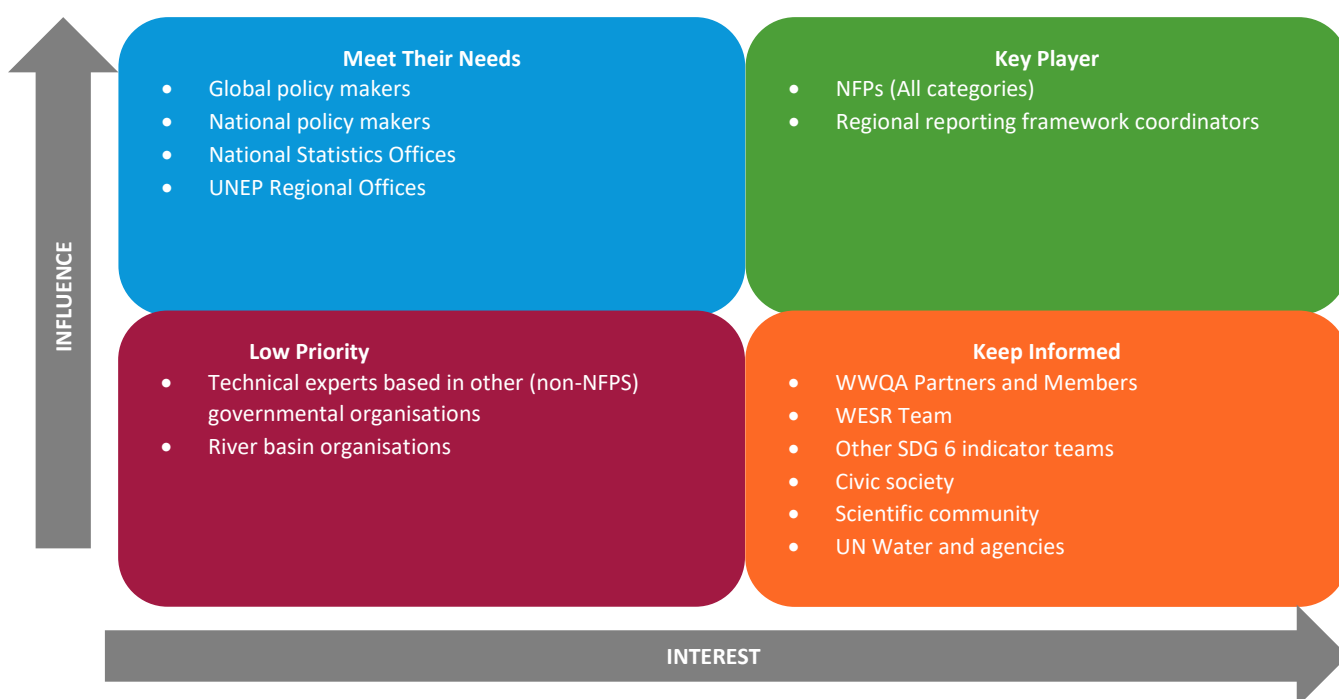


Figure 57: Stakeholder influence/interest grid with stakeholder groups assigned to each category

Annex 2: NFP Feedback questionnaire

25. Are there any technical resources or documents in addition to those available on the SDG 632 Support Platform that are not currently available that you like to be made available? (Please use "other" box to elaborate).

Yes

No

Maybe

Other

26. Some countries used the Indicator Calculation Services provided by UNEP in 2020 - if you are not from one of these countries, would you be interested in learning more about this service? (Please use "other" box to elaborate).

Yes

No

Maybe

Not applicable

Other

27. In readiness for the next data drive, UNEP plans to create an SDG 632 Data Portal. Which additional products would you like to see on this portal? (Please use "other" box to elaborate).

Automatic indicator calculation function

Summary statistics of your data at sub-national scales

A Confidence Rating for your submission

An Indicator score card that provides greater insight into which parameters failed to meet their targets most often

Other

28. Would you use a data product that was created by an international organisation for SDG indicator 632 reporting in your country? For example, information derived from a satellite-based Earth observation programme. (Please use "other" box to elaborate).

Yes

No

Maybe

Other

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How can we improve our engagement strategy?

Five questions to help us better understand how you would like to engage with us on this indicator.

29. How often would you like to be contacted about SDG indicator 6.3.2? This could include updates and information about ambient water quality monitoring and assessment?

Once every three years

Annually

Twice per year

More frequently

Other

30. Would you like to learn more about experiences in other countries with this indicator?

Yes

No

Maybe

Other

31. Would you like to join a regional network of indicator focal points?

Yes

No

Maybe

Other

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32. Would a group on a social media platform (For example, on LinkedIn or Facebook) specifically for SDG indicator 632 focal points be useful to you?

Yes

No

Maybe

Other

33. Is there any information or updates about this indicator or the SDGs in general that would you like to receive from UNEP? (If so, please elaborate in the "other" box below)

Yes

No

Maybe

Other

10/15/2021

### Annex 3: Scientific and Technical Community Feedback survey questions

**Q01**

SDG indicator 6.3.2 is relatively new but already there are many positive signs. The number of countries reporting is increasing, some countries are developing ambient water quality standards for the first time, whilst others are embarking on a new monitoring and assessment journey. These are all positive stories which we are showcasing, but have you any suggestions to help maintain and accelerate this progress?

**Q02**

How can countries be encouraged to use data products made available by international organisations or academic institutions for their own SDG 632 reporting? For example, information derived from a satellite-based Earth observation programme.

**Q03**

Efforts to encourage *in situ* data collection should be maintained. This has the potential to provide data to validate and ground truth outputs from innovative approaches to monitoring and assessment. The basic five core parameters of Level 1 are not the most useful for this purpose, but by encouraging countries to collect and report on these data ensures that a functional monitoring and assessment framework is in place that can be augmented to collect additional data. For which water quality parameters would you like to see data collected for in addition to five core parameters (N, P, DO, pH and EC)?

**Q04**

Currently, the reporting workflow asks for an output of a classification process performed by each country, along with certain metadata such as number of monitoring stations, monitoring values, river basin IDs, the target values rather than the actual water quality data. An alternative workflow that was adopted by a few countries in 2020 asked them to validate the indicator score that had been calculated by GEMS/Water using data already in GEMStat (GEMS/Water's global water quality database). This approach if expanded, has the advantage of ensuring better indicator standardisation and also improves spatial and temporal coverage of data available for global and regional assessments in GEMStat. But how could this be achieved? How can countries be encouraged to share their data?

**Q05**

To ensure outputs from this indicator are incorporated into, and linked with, policy action aimed at improving water quality, we need good examples from different world regions where this has been effective. Can you briefly describe any relevant examples?

**Q06**

Participation in data collection/provision by the private sector or academic institutions has not been demonstrated in any of the national submissions received so far. How can we encourage these important stakeholders to become more involved?

**Q07**

Level 1 reporting for SDG 632 focusses on five basic physico-chemical parameters. It asks countries to apply a simple binary approach to classification, and asks that no weighting or *proximity-to-target* method (or similar) is used as part of the calculation. This approach aims to ensure that reporting is relatively straightforward, and that indicator scores are as comparable as possible. There are many limitations, but through engagement with countries this approach has proved to be the best one identified so far – have you any comments or suggestions on this?

**Q08**

Have you any ideas for additional services that would benefit those tasked with reporting? There are technical documents, an indicator calculation service, and the SDG 632 Helpdesk that are currently available - is there anything else that could be provided?

**Q09**

Most SDG 6 indicators are reported at the national level only (i.e. for each indicator there is one number per country). The SDG 632 team has been promoting the concept amongst UN Water and other indicator teams, that a set of sub-national spatial reporting units would provide much more value to the information collected by each indicator team. For example, at the river basin scale or smaller. How could we make this happen?

**Q10**

For Level 2 reporting, a central portal that allows countries to pick and choose water quality information that could be integrated with their own data would be a useful platform for those tasked with reporting. But what are the barriers to this concept being realised, and how could these barriers be overcome? For example, which spatial units should the information be made available at? (Level 2 Technical document here: [link](#))

**Q11**

If you have any ideas on how synergisms between this indicator and the WWQA and / or your work as part of a specific workstream (if applicable) and could be facilitated, then please add them here.

**Q12**

Any last comments or insights?