



Transboundary cooperation in Arab States: second regional report on SDG indicator 6.5.2



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Economic and Social Commission for Western Asia

Transboundary cooperation in Arab States: second regional report on SDG indicator 6.5.2



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Key messages

- *It is essential for riparian States to set cooperative arrangements at the basin level to ensure sustainable transboundary water management.*

- *There is a significant need in the Arab region to address the lack of relevant data and information and their exchange by improving the knowledge base relating to transboundary contexts, while leveraging innovative technologies.*

- *Financing and funding cooperation, the most challenging dimension, is critical to accelerating transboundary water arrangements and increasing the knowledge base.*

- *It is important that the custodian agencies, together with global and regional partners, continue to support countries in improving the knowledge base and enhancing the quality of the submissions of national reports and in providing information on the status and coverage of current arrangements.*

Executive summary

Globally, there are 286 surface transboundary basins that cross 153 states and cover almost 60 per cent of the Earth's surface, in addition to 592 transboundary aquifers. Over 40 per cent of the world's population is dependent on international rivers and about two-thirds of these people live in developing countries. This report presents the second progress reporting exercise on Sustainable Development Goal (SDG) indicator 6.5.2 in the Arab region. Of the 22 Arab countries, 19 fall under the freshwater scarcity threshold of 1000 m³/capita/day. Following the creation of modern nation states in the first half of the twentieth century, the major rivers of the Arab region cross political borders and are thus shared between neighbouring countries. Shared water resources are very important in the Arab region, representing two thirds of the region's freshwater resources. Most Arab States depend on shared rivers and/or aquifers for their water supply. There are 27 shared surface water basins in the region and 43 shared aquifers; 15 of the 22 Arab States are riparian States with shared surface water basins and all Arab States, except Comoros, are riparian with shared aquifers.

The United Nations resolution adopted by the General Assembly on 25 September 2015 "Transforming our world: the 2030 Agenda for Sustainable Development" is a plan of action constituting 17 interlinked global goals and 169 targets to eradicate poverty in all its forms and dimensions. SDG 6 is dedicated to water issues and calls upon the international community to, "ensure availability and sustainable

management of water and sanitation for all". SDG indicator 6.5.2 tracks the percentage of transboundary basin area within a country that is covered by operational arrangements for water cooperation.

In the Arab region, the second reporting exercise on transboundary water cooperation, which took place in 2020, highlighted the importance of cooperation and started to address data gaps previously identified. For the second reporting exercise, 15 countries submitted responses, compared to 10 countries during the first reporting exercise in 2017, resulting in a significant amount of new data. Complete SDG indicator 6.5.2 values for the surface water – river and lake basin – and aquifer components are only available for 9 of the 21 Arab countries that were asked to submit reports. Libya reported the highest overall value of SDG indicator 6.5.2 at 98 per cent. Six countries (Egypt, Kuwait, Lebanon, Oman, the State of Palestine and Saudi Arabia) need to provide additional information for the indicator value to be available.

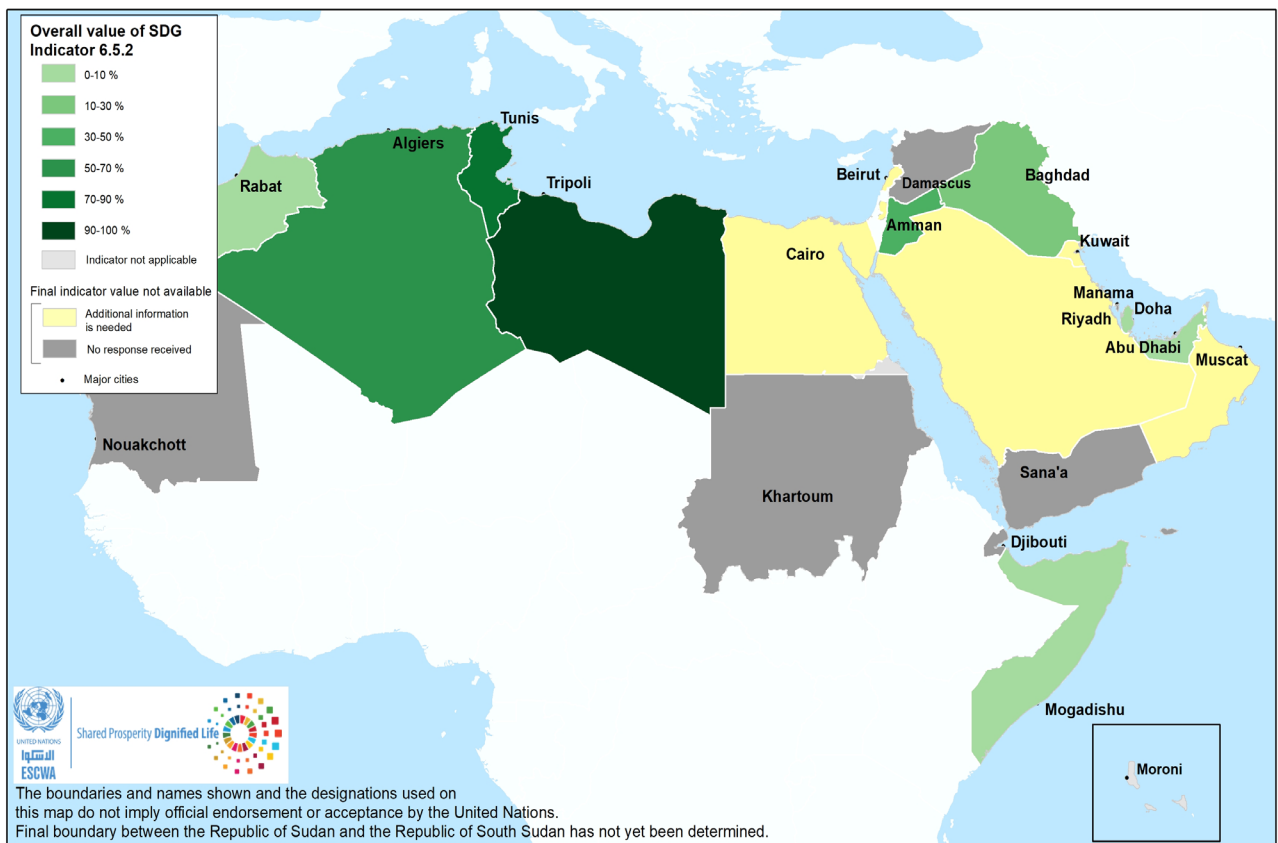
More Arab countries sharing transboundary basins submitted responses during the second monitoring exercise in 2020 than during the first reporting exercise, thanks to the role of the co-custodian agencies, regional partners and countries. This is very encouraging, especially in the context of the COVID-19 pandemic that delayed the submission of several reports and limited coordination efforts at the national and international levels. As a result, there are now nine countries that have a full value for the

indicator for both river and lake basins and transboundary aquifers, compared to only six countries in 2017.

Information collated regarding SDG indicator 6.5.2 enables the monitoring of operational arrangements for transboundary water cooperation. The indicator allows for critical evidence-based assessment of the need to accelerate progress towards the goal of integrated water resources management at all levels by 2030. Capitalizing on this momentum for future monitoring exercises is important so as to accelerate progress towards transboundary cooperation. Where

arrangements for transboundary water cooperation are lacking, countries and supporting regional or international organizations need innovative solutions for fostering cooperation that extend beyond the rigid traditional legal water-share distribution agreements. To achieve all transboundary basins being covered by operational arrangements by 2030 will require major efforts, especially from the Arab countries. Not only was the regional response rate for the reporting exercises lower than the world average, but the responses lacked the narrative descriptions needed for in-depth analysis.

Map 1. 2020 Overall value of SDG indicator 6.5.2 at country level in the Arab region



Source: Authors.

This report highlights good practices in accelerating progress on transboundary water cooperation towards achieving SDG target 6.5. It identifies key factors that can lead to actions that will reduce data gaps and advance the adoption of operational arrangements. It also showcases initiatives and frameworks that support the acceleration of progress on transboundary water cooperation:

1. Improving knowledge in transboundary contexts while leveraging innovative technologies: Improving data gathering is a significant first step towards enabling cooperation and triggering immediate action to address data gaps. The countries' responses to the section of the report on the challenges of cooperating on transboundary waters made evident the need to address the lack of relevant data and information and the need for knowledge exchange by improving the knowledge base in transboundary contexts while leveraging innovative technologies. Advances in technologies both in-situ and remotely have improved data collection, analysis and dissemination with the ultimate purpose of better groundwater resource management and monitoring. The use of technologies such as remote sensing offers the possibility of reaching large and inaccessible areas within a limited timeframe and providing valuable data on transboundary water resources. This, combined with digital data platforms, can improve access to this data and facilitate cooperation between countries. This could be further supported by collaboration between States on specific activities at bilateral or basin levels that can lead to more formal cooperation, including joint data monitoring and sharing, common studies for improved knowledge on shared water resources, knowledge exchange missions and study tours.
2. Financing transboundary water cooperation: Financing is an often disregarded but precarious factor in advancing transboundary water cooperation, and more specifically in supporting the negotiation and implementation of operational arrangements, including improving monitoring activities and the availability and accessibility of data. The countries' responses to the section of the report on the main difficulties and challenges they face with agreements or arrangements and their implementation showed that there is a significant need to improve the financing of transboundary water cooperation so as to accelerate progress towards regional agreements. Multiple joint basin management mechanisms have been established with reliance on grant funding from development partners for activities such as seed financing, multi-donor trust funded programmes such as the Nile Basin Trust Fund, or recipient-executed grants. Arab countries are encouraged to increase national dedicated funding for transboundary cooperation and to also utilize non-traditional funding such as climate adaptation funds for transboundary settings, improving the articulation and recognition of the benefits of investing in the negotiation of arrangements for transboundary water cooperation as well as in the establishment and sustainable operation of joint bodies.
3. Capacity development for negotiating transboundary water cooperation: In addition to increasing the knowledge base and securing financing, often countries need capacity development in negotiating transboundary water cooperation.

Capacity-building is an important precursor to the negotiation and implementation of operational arrangements for transboundary water cooperation. This capacity development should be matched with awareness-raising targeting not only the public sector but all stakeholders. There is a wide range of technical methods for making information accessible to water managers, decision makers and other users, including hydrological bulletins, meteorological reports and awareness raising materials such as press kits, leaflets, maps, posters and various multimedia to promote public awareness of basin threats, development challenges, outcomes and opportunities for participation and collaboration.

4. Global, regional and national tools for improving transboundary governance: With Arab countries' heavy reliance on shared water, States can draw on global frameworks or regional processes for cooperation. There are many global tools that can be utilized for improving transboundary governance such as the Watercourses Convention, the Water Convention, and the draft articles on the Law of Transboundary Aquifers. These conventions include important provisions on the monitoring and assessment of transboundary waters, the effectiveness of measures taken to prevent, control and reduce the impacts occurring from sharing transboundary waters and the exchange of information on water and effluent monitoring. At the regional level, many institutions and partners can also be approached. A draft Framework Convention on Shared Water Resources in the Arab Region was prepared and reviewed by the League of Arab States (LAS) under the

auspices of the Arab Ministerial Water Council (AMWC). It supports shared water resource cooperation between States. Later, the AMWC called for the legal instrument to be reformulated into a set of common guidance principles for shared water cooperation and improved regional capacity for shared water resource management. Arab States can draw on these regional tools and other regional success stories for guidance on improving transboundary cooperation.

In conclusion, the Arab region is one of the most water scarce regions in the world. Arab States are heavily dependent on external water resources and this increases the need for better cooperation between riparian States, as the management of a shared water resource in one country may have significant effects on the ability of other countries sharing the same resource to benefit from it. Building on the improvements seen in the reports submitted by the Arab countries for SDG indicator 6.5.1, there are many ways to encourage increased and improved responses. Countries that have not yet submitted reports should be supported by the co-custodian agencies and other regional partners in the required regional scaling and the bridging of the global to regional to national processes. SDG indicator 6.5.2 can play a role in fostering dialogue on water cooperation by informing national and transboundary stakeholders and helping them to identify challenges and priorities for transboundary water cooperation and by making available space for dialogue and exchange. Cooperation should go beyond water and should be based on trust building between riparian countries that should work together within regional frameworks to reach sustainable results.

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Abbreviations

ACSAD	Arab Center for the Studies of Arid Zones and Dry Lands
AGIR	Arab Geographical Information Room
AMWC	Arab Ministerial Water Council
ASWS	Arab Strategy for Water Security
AWC	Arab Water Council
BGR	German Federal Institute for Geosciences and Natural Resources
Cap-Net	Capacity Building Network for Integrated Water Resources Management
CEDARE	Center for Environment and Development for the Arab Region and Europe
CWSAWS	Council of Water Studies and Arab Water Security
COP	Conference of the Parties
COVID	Coronavirus Disease
ECE	Economic Commission for Europe
EMWIS	Euro Mediterranean Information System on Know-how in the Water Sector
ESCWA	Economic and Social Commission for Western Asia
FAO	Food and Agriculture Organization of the United Nations
FAO-RNE	Food and Agriculture Organization Regional Office for the Near East and North Africa
GCC	Gulf Cooperation Council
GEF	Global Environment Facility
GIS	Geographical Information Systems
GW	Groundwater
GWN	Good Water Neighbors
GWP	Global Water Partnership
IAEG-SDGs	Inter-Agency and Expert Group on SDG Indicators
ICJ	International Court of Justice

ICSSI	Iraqi Civil Society Solidarity Initiative
IFAD	International Fund for Agricultural Development
IGRAC	International Groundwater Resources Assessment Centre
IHP	International Hydrological Program
INBO	International Network of Basin Organizations
IWMI	International Water Management Institute
IWRM	Integrated Water Resources Management
LAS	League of Arab States
N	Not relevant
NBI	Nile Basin Initiative
NSAS	Nubian Sandstone Aquifer System
NWSAS	North Western Sahara Aquifer System
OMVS	Senegal River Basin Development Organization
OSS	Sahara and Sahel Observatory
OSU	Oregon State University
PSD	Peace and Security Department
RICCAR	Regional Initiative for the Assessment of Climate Change Impacts on Water Resources and Socio-Economic Vulnerability in the Arab Region.
RKH	Regional Knowledge Hub
SDGs	Sustainable Development Goals
SMAB	Senegalo-Mauritanian Aquifer Basin
SRAS	Saq-Ram Aquifer System
SW	Surface Water
UNESCO	United Nations Educational, Scientific and Cultural Organization
UNEP	United Nations Environment Programme
WASH	Water, Sanitation and Hygiene
WWC	World Water Council

1. The setting

The flow of water does not obey geopolitical borders. Transboundary water resources are aquifers and lake and river basins shared by two or more countries crossing an international boundary. Worldwide, there are 286 surface transboundary basins that cross 153 states and that cover almost 60 per cent of the Earth's surface, in addition to 592 transboundary aquifers.¹ Conflict over water is not strategically reasonable, hydrographically effective nor economically feasible. Common interests over shared water resources seem to consistently outweigh the potential for conflict.² When cooperative water regimes are reached through treaty or agreement, they are notably resilient over time, even between the hostile riparian countries and even if conflict is waged over other issues.³

On 25 September 2015, the General Assembly of the United Nations adopted resolution, "Transforming our world: the 2030 Agenda for Sustainable Development". This resolution includes a collection of 17 interlinked global goals and 169 targets. The Sustainable Development Goals (SDGs) are designed to be a "blueprint to achieve a better and more sustainable future for all".⁴ Building on the United Nations Millennium Declaration and its 8 Millennium Development Goals 2000-2015,

the 2030 Agenda and its 17 SDGs expand upon the earlier focus on reducing poverty to now tackle all aspects of sustainable development in all countries to ensure that no one is left behind. SDG 6 is dedicated to water issues: "Ensure availability and sustainable management of water and sanitation for all".⁵ The goal has 8 targets to be achieved by 2030, measured by 11 indicators.⁶ This report presents the second global progress reporting exercise on SDG indicator 6.5.2 in the Arab region. It offers a summary of the results provided by the countries that reported, with an overview of regional challenges and recommendations for improving reporting on SDG indicator 6.5.2 and ultimately achieving regional cooperation on shared water resources in the Arab region.

The Economic and Social Commission for Western Asia (ESCWA) collaborated with the Economic Commission for Europe (ECE) and United Nations Educational, Scientific and Cultural Organization (UNESCO) as co-custodian agencies for the preparation of the first Arab regional report on SDG 6.5.2 in 2018. This collaboration supported greater awareness and knowledge and the fostering of dialogue and progress on transboundary cooperation from a regional perspective. This support continued during the second reporting exercise in 2020;

1 ECE and UNESCO, 2021.

2 Ibid.

3 Ibid.

4 United Nations Sustainable Development Goals (n.d.).

5 United Nations Water, n.d. Available at <https://www.sdg6monitoring.org/indicator-652/>.

6 Ibid.

the co-custodian agencies assisted countries in improving the quality of their submissions from the previous report or in reporting for the first time. Ministers responsible for transboundary water are officially invited by the co-custodian agencies to report and information is collected every three years (e.g. 2017/2018, 2020/2021 and 2023/2024).

The first report reviewed the status of transboundary cooperation in the Arab region, highlighting regional priorities and challenges, providing an overview of the initial monitoring exercise and establishing a baseline for assessing the extent to which transboundary basins are covered by operational arrangements. At the global level, 107 of 153 countries with shared waters participated in the first reporting exercise on SDG indicator 6.5.2 related to transboundary cooperation.⁷ However, in the Arab region, which has a heavy reliance on shared waters, the rate of response was very low, with only 10 out of 21 countries participating (48 per cent responsiveness vs 70 per cent for the global report). The Comoros does not share any transboundary waters and as such was excluded from reporting. The answers submitted included limited information and often presented inconsistencies regarding a shared basin, river, lake or aquifer. The information provided was often incomplete, especially for groundwater resources. With the low number of countries submitting reports, the collected data on transboundary water resources was inevitably limited. The low rate of response reflects some specificities of the Arab region regarding shared waters:⁸

- Occupation and armed conflict – while the reporting template provides opportunities to elaborate on the challenges faced in progressing transboundary cooperation, conflict situations may have meant that some countries were reticent to report.
- Water scarcity in most Arab States and the perceived relationship between water scarcity and water security in the region further inhibits willingness to share information on shared water resources.
- Lack of studies on shared groundwater resources.
- Lack of financial resources dedicated to transboundary water resources in terms of monitoring, reporting and management.

Reporting on transboundary water cooperation has helped to highlight the importance of cooperation and has led to previously identified data gaps starting to be addressed. This second report provides an update on the status of transboundary cooperation in the region with a focus on possible avenues for accelerating cooperation. The report will also contribute to the regional midterm review of the Water Action Decade. It will provide insight on regional progress towards the achievement of SDG indicator 6.5.2 relating to transboundary cooperation since the first round of reporting in 2017. The report draws upon datasets collected during the second round of global reporting on SDG indicator 6.5.2 that are available through ECE and UNESCO. The analysis is predominantly based on the responses of the 15 Arab countries to the global SDG indicator 6.5.2 questionnaire sent to them by the co-custodian agencies.

7 ECE and UNESCO, 2021.

8 ESCWA, 2018a.

A. Transboundary water resources in the 2030 Agenda

The 2030 Agenda states that the SDGs are universal, indivisible, integrated and people-centred. Cooperation over transboundary rivers, lakes and aquifers is critical to ensuring that water resources are managed in an equitable and sustainable manner and to the achievement of SDG 6.⁹ Transboundary water cooperation is an important requirement and catalyst for achieving other SDGs related to food security, poverty, health and wellbeing, climate action, sustainable energy, ecosystem protection and peace. Transboundary water resources and cooperation over transboundary rivers, lakes and aquifers have been explicitly recognized within SDG target 6.5, which aims at implementing integrated water resources management (IWRM) at all levels by 2030, including through transboundary cooperation,

as appropriate. The goals and targets are followed up on and reviewed using a set of global, regional and national indicators. Two indicators were adopted for this target:¹⁰

- SDG indicator 6.5.1: Degree of IWRM implementation.
- SDG indicator 6.5.2: Percentage of transboundary basin area covered by an operational arrangement for water cooperation.
- SDG indicator 6.5.1 tracks the degree of IWRM implementation at all levels (national and transboundary) by assessing the four key components of IWRM: institutions and participation; enabling environment; management instruments; and financing. SDG indicator 6.5.2 tracks the percentage of transboundary basin area within a country that is covered by an operational arrangement for water cooperation (box 1).¹¹

Box 1. What does SDG indicator 6.5.2 measure?

SDG indicator 6.5.2 measures the percentage of a transboundary basin area (river, lake or aquifer) within a country that is covered by an arrangement for water cooperation. An arrangement for water cooperation is a bilateral or multilateral treaty, convention, agreement or other formal arrangement between riparian countries that provides a framework for cooperation.

Four criteria must be satisfied for an arrangement to be considered operational:

- A joint body or other institutional mechanism must be in place.
- There must be at least one annual (political or technical) meeting between riparian countries.
- There must be at least one annual exchange of data and information.
- Riparian countries must have adopted joint or coordinated management plans or joint objectives.

Source: UN-Water, n.d. Available at <https://www.sdg6monitoring.org/indicator-652/>.

⁹ United Nations Water, n.d. Available at <https://www.sdg6monitoring.org/indicator-652/>.

¹⁰ ESCWA, 2018a.

¹¹ Ibid.

In view of collecting the most complete information from countries, the co-custodian agencies for SDG indicator 6.5.2, UNESCO and ECE, prepared a template for reporting in the form of a questionnaire for simplifying and standardizing reporting. The questionnaire is divided into four sections:

- Section I: Calculation of SDG indicator 6.5.2.
- Section II: Information on each transboundary basin or group of basins.
- Section III: General information on transboundary water management at the national level.
- Section IV: Main challenges and achievements.

After the 2017 reporting exercise, the step-by-step methodology for calculating the value of SDG indicator 6.5.2 was revised, taking into account lessons learned. Version 2020 includes definitions of key terminology, addresses data sources and collection methods, and provides five key steps for calculating SDG indicator 6.5.2 at the national level:

- Step 1: Identify transboundary surface water and groundwater resources.
- Step 2: Calculate the surface area of each transboundary basin and the sum total.
- Step 3: Review existing agreements for transboundary water cooperation.
- Step 4: Check which agreements for transboundary water cooperation are operational.
- Step 5: Calculate the indicator value.

The reporting guide is an additional resource that countries can draw upon. It provides further information on the step-by-step methodology of calculation and reporting and is also available in Arabic.¹²

B. Transboundary water resources in the Arab region

The Arab region consists of 22 states that cover a combined area of 13 million km², most of which falls within the driest region of the world.¹³ With almost 80 per cent of the region consisting of desert, the Arab region is subject to severe climate change effects. The region is also highly dependent on external waters (the Nile, Euphrates, Tigris, etc.) and non-renewable fossil aquifers (Saq-Ram, the North Western Sahara Aquifer System (NWSAS), Nubian Sandstone, etc.). Most Arab States depend on shared rivers and/or aquifers for their water supply.¹⁴ High population growth rates, coupled with increased urbanization and accessibility constraints (war, conflict, migration, etc.), have led to the unsustainable use of water resources, particularly groundwater, and a general decline in water quality.

Water scarcity has always been a key aspect of life in the Arab region. Historically, communities living in arid and semi-arid regions always shared the water of rivers, springs and wadis. Since the creation of modern nations in the first half of the twentieth century, the major rivers of the region have crossed political borders.

12 ECE, 2020b. Available at <https://unece.org/environment-policy/publications/guide-reporting-under-water-convention-and-contribution-sdg>.

13 Arab States consist of Algeria, Bahrain, Comoros, Djibouti, Egypt, Iraq, Jordan, Kuwait, Lebanon, Libya, Mauritania, Morocco, Oman, State of Palestine, Qatar, Saudi Arabia, Somalia, Sudan, Syrian Arab Republic, Tunisia, United Arab Emirates and Yemen.

14 ESCWA, 2018b.

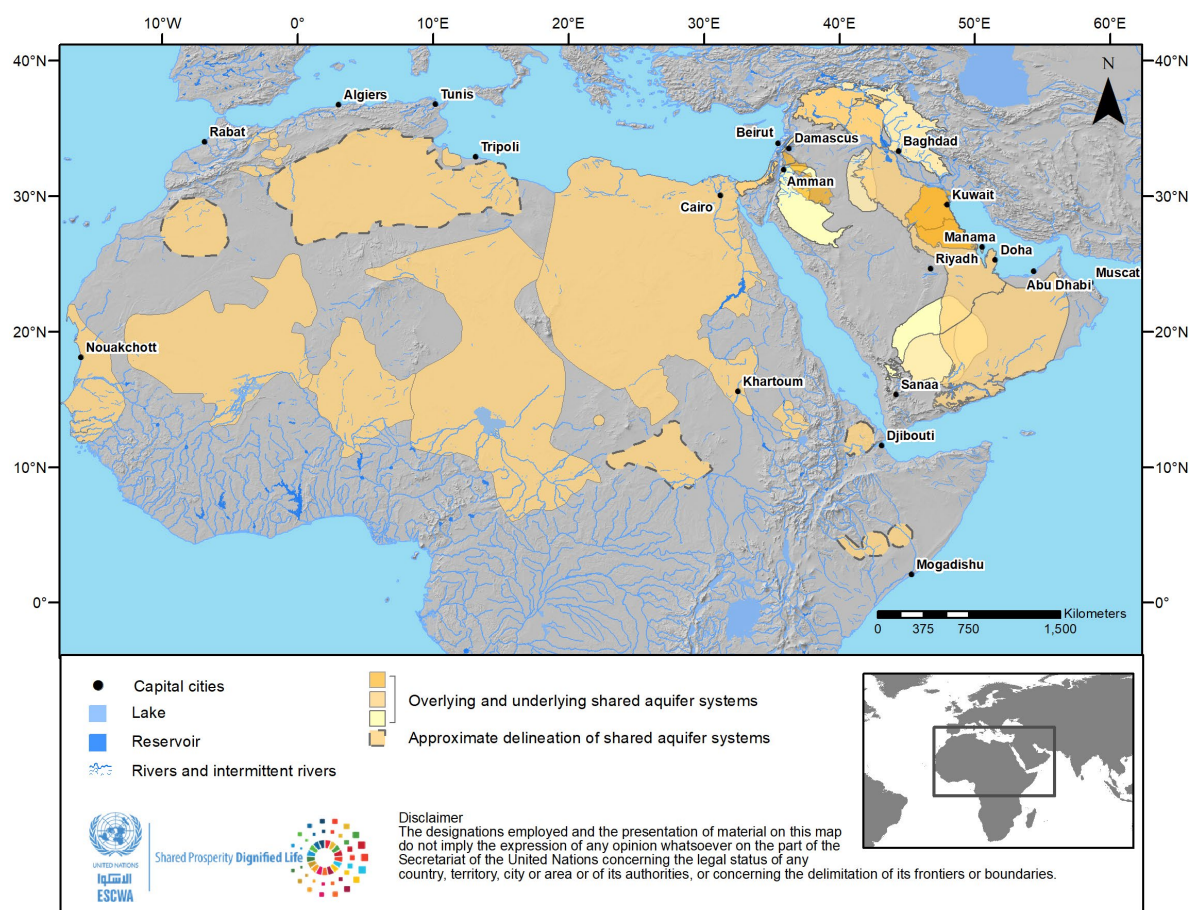
Shared water resources are very important in the Arab region; they represent two thirds of freshwater resources in the region. There are 26 shared surface water basins in the region and 43 shared aquifers (annex 1).

Of the 22 Arab States, 15 are riparian States sharing surface water basin. All Arab States, except Comoros, are riparian sharing an aquifer.¹⁵ The importance of groundwater as a

strategic resource for a region characterized by an arid climate has made this resource a prime object for cooperation, where transboundary groundwater basins cover almost 58 per cent of the Arab region in terms of surface area.

The most notable are the NWSAS, the Nubian Sandstone Aquifer System (NSAS) and the Saq-Ram Aquifer System (SRAS), which have witnessed cooperation modalities (map 2).

Map 2. Transboundary aquifers in the Arab region



Source: IGRAC, 2021, compiled by ESCWA.

In Western Asia, there are five transboundary surface water resources (Jordan, Orontes, Euphrates-Tigris, Kebir and Qweik rivers) that lack basin-wide agreements – only bilateral agreements exist. In Northern Africa, there are 16 transboundary surface water resources shared by Arab countries. The Nile, the Niger, the Senegal and the Congo rivers, in addition to Lake Chad, are the most notable surface water systems over which several agreements and the creation of basin organizations (Lake Chad Basin Commission, Niger Basin Authority, Nile Basin Organization, etc.) have taken place.

As the management of transboundary water resources in one country may significantly affect water resources in another country, it is essential for riparian States to cooperate at the basin and bilateral levels as well to ensure sustainable transboundary water management. Water availability in the Arab region is a critical issue and the situation is expected to worsen over time due to global factors such as climate change, population growth, migration, pollution, food and water security and conflicts. Also, over half of the transboundary water resources originate from outside the Arab region.

The high reliance on transboundary water in the Arab region hinders the attainment of the SDGs articulated in the 2030 Agenda and complicates efforts to achieve water security. The situation is even more complex with water basins that are shared between Arab and non-Arab States; with transboundary rivers whose headwaters are located outside the Arab region and are subject to armed conflict; and with transboundary water basins that are partially under occupation. However, during the last 70 years, most Arab

countries were signatories to at least one treaty relating to water, mostly related to surface water (table 1). Finally, 10 Arab States¹⁶ have signed the 1997 United Nations Convention on the Law of the Non-Navigational Uses of International Watercourses and 8¹⁷ States have indicated interest in acceding to the 1992 Convention on the Protection and Use of Transboundary Watercourses and International Lakes, including Iraq, which has taken all the steps at the national level to approve accession.

In 2012, the Arab Ministerial Water Council (AMWC) of the League of Arab States (LAS) adopted the Arab Strategy for Water Security (ASWS) 2010-2030.¹⁸ It encapsulates a joint Arab approach to achieving water security and constitutes a long-term programme and practical mechanism for overcoming foreseeable future challenges in water resource development and management in the Arab region.

The ASWS recommended follow-ups on legal agreements and arrangements that support the management of shared water resources among Arab countries. To address this, the AMWC called on the Center of Water Studies of the LAS and ESCWA to support the drafting of a legal framework for shared water resources in the Arab region. The two first worked on drafting a legal framework for shared water resource cooperation, which was later transformed into a draft set of guidelines. The initial public structure of the legal framework that was agreed upon by all participants in the discussion consists of a preamble and four sections (terms and scope, general principles, institutional arrangements and general provisions). The Draft Guidelines for Cooperation on Shared

16 Iraq, Jordan, Lebanon, Libya, Morocco, the State of Palestine, Qatar, the Syrian Arab Republic, Tunisia and Yemen.

17 Algeria, Egypt, Iraq, Lebanon, Morocco, Sudan, the State of Palestine and Tunisia.

18 ESCWA, 2020.

Water Resources between Arab States in the Arab Region continues to be reviewed under the AMWC of the LAS. It could provide guidelines for sustaining cooperation on regional shared water resources.

In support of transboundary water resource cooperation and to inform regional dialogue, ESCWA collaborated with the German Federal Institute for Geosciences and Natural Resources (BGR) to publish in 2013 an inventory of shared water resources in Western Asia. The 10 key findings (box 2) highlight important general and region-specific observations related to the status and assessment of shared water resources. These key findings summarize and consolidate some of the major issues related to the identification, status, use and management of shared water resources.¹⁹

The importance of transboundary water cooperation in the Arab region, where millions of people depend on shared resources, is growing as several stresses, including population growth, the agriculture sector and climate change, increasingly affect water

availability. Thus, the equitable use of shared waters requires cooperation, negotiation and agreement. Transboundary basins provide drinking and domestic water to about two billion people worldwide. However, they are also important for other sectors: they sustain irrigation for agriculture, enable industries to function, generate electricity and support ecosystems.²⁰ Nonetheless, many obstacles are preventing countries from strengthening or embracing the joint management of transboundary waters in an effective way, or are delaying this process.²¹ The challenge is to transform water from a potential source of crisis into a potential instrument of cooperation. Cooperation on shared waters leads to many positive results such as the protection of water quality, the control of floods, the institution of joint monitoring and early warning systems, and agreements on wastewater emissions.²² Cooperative arrangements over transboundary basins allow for more effective adaptation to changing conditions such as climate change. In the Arab region, more systematic cooperation is needed. River basins, including the Nile, the Jordan, the Tigris and the Euphrates, urgently need enhanced cooperation.

19 ESCWA and BGR, 2013.

20 ECE, n.d. Available at https://unece.org/DAM/env/water/publications/WAT_NONE_11_benefits/ECE.MP.WAT.NONE.11_ENG_1826722_E_web.pdf.

21 Ibid.

22 Black, 2009.

Box 2. Key findings from the inventory of shared water resources in Western Asia

1. There are more shared water resources in Western Asia than generally assumed.
2. Water quantity and allocation dominate the discourse on shared water resources in this
3. Water-scarce region.
4. Water quality is rapidly deteriorating, a fact that is largely neglected.
5. The lack of accurate data hampers joint water resource management.
6. Cooperation over shared water exists but is never basin-wide.
7. There is not a single agreement on shared groundwater resources in the region.^a
8. The region's groundwater is largely non-renewable and aquifers are rapidly being depleted.
9. Groundwater plays an important role in surface water basins, a link which is often overlooked.
10. New thinking is required to deal with large regional aquifer systems from a shared perspective.
11. It is already too late to save some shared waters.

Source: ESCWA and BGR, 2013.

^a An agreement on the SRAS between Jordan and Saudi Arabia has been reached since the publishing of the inventory in 2013.

2. Overall status and progress of transboundary water resource cooperation

In the second reporting exercise on SDG indicator 6.5.2, 129 countries responded to the survey but the indicator value is available for 101 countries only.²³ The first SDG indicator 6.5.2 progress report, published in 2018, provided an overview of the initial monitoring exercise. It established a global baseline for assessing the extent to which transboundary basins are covered by operational arrangements. It was the first time that all countries sharing water resources were invited by the custodian agencies to report directly on transboundary water resource cooperation at the global level. Of these countries, 107 submitted responses (70 per cent). Some countries were unable to provide full information on all the points required to calculate their final indicator value, but in general, the response rate for the first reporting exercise was encouraging. The second exercise improved the geographical coverage of the reporting. It offered countries the opportunity to provide additional information or further detail after their first report. An additional 30 countries submitted reports. However, despite the potential of transboundary water cooperation to support both SDG 6 and several other SDGs related to poverty, food, health, land and marine ecosystems, climate action, and peace and security, SDG indicator 6.5.2 data suggests that only 24 out of 153 countries reported that all of their water resources are covered by operational

arrangements. Major efforts are therefore needed to accelerate progress.

In general, beneficial exchanges between countries and custodian agencies have taken place during the process of report verification. Europe, North America and Sub-Saharan Africa show the greatest progress. In Latin America and Asia, progress is greatly needed for water cooperation. There are at least 128 basins reported on that lack agreements and there is insufficient knowledge on groundwater systems, despite the monitoring exercise offering an unprecedented opportunity for countries to assess and report on their transboundary aquifers.

A. Regional status and progress

In the Arab region, 21 out of 22 countries share either transboundary rivers, lakes or aquifers. In 2017, 10 countries submitted national reports and an SDG indicator 6.5.2 value for river and lake basins was available for 6 of them.²⁴ For the second reporting exercise, 15 countries submitted responses, resulting in a significant amount of new data. This 55 per cent increase in the number of countries reporting is very encouraging, especially in the context of the COVID-19 pandemic that delayed the submission of several reports and limited coordination efforts at national

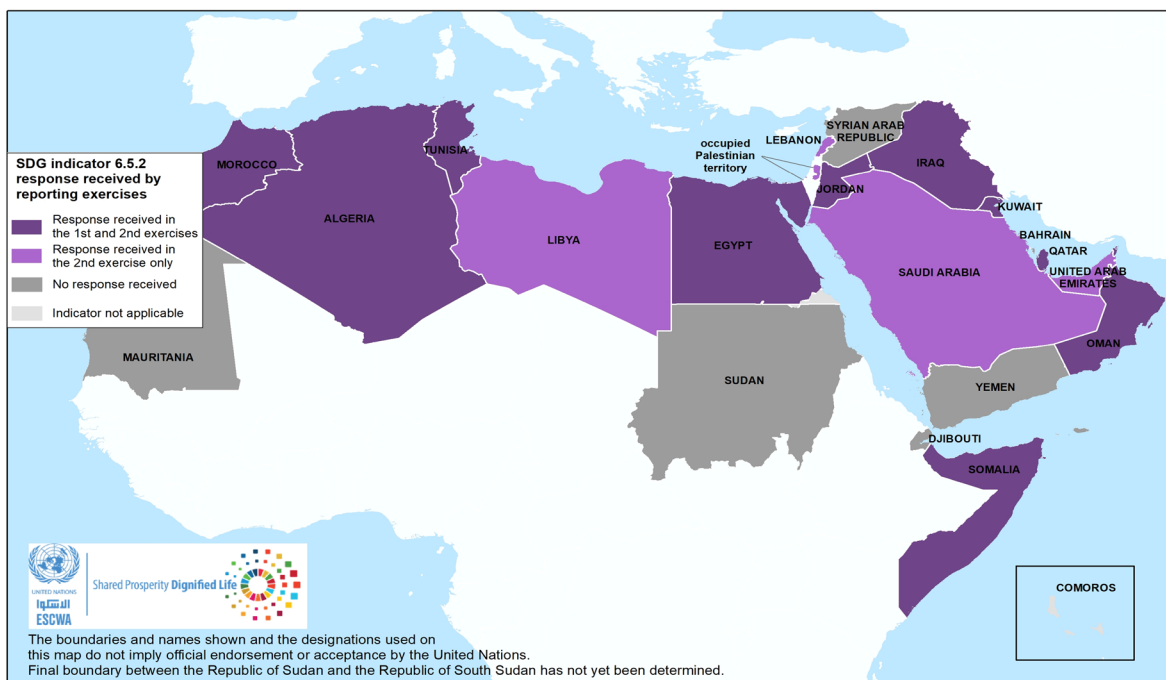
²³ ECE and UNESCO, 2021.

²⁴ Ibid.

and international levels (map 3). As a result, there are now nine countries that have a full value for the indicator (both surface water – river and lake basins – and transboundary aquifer components), compared with six countries in 2017. Data from 2020 show that only one country (Egypt) has all its transboundary river and lake basin areas covered by operational arrangements, followed by Lebanon (with 76 per cent of basin areas covered) and Jordan (with 62 per cent of basin areas covered).²⁵ Of the 21 countries sharing transboundary aquifers, 3 of them have operational arrangements covering 50 per cent or more of their transboundary aquifer areas (Algeria, Libya and Tunisia).²⁶

In 2020, nine Arab countries provided an indicator value for transboundary surface water cooperation, compared with six in 2017, and nine countries provided an indicator value for transboundary aquifers, compared with six in 2017. While this constitutes a significant increase of 50 per cent, it represents a shortfall of 6 out of 15 countries sharing transboundary river and lake basins and 12 out of 21 countries sharing transboundary aquifers. See figure 1 for the breakdown of the SDG indicator 6.5.2 values for the 21 Arab countries with transboundary water resources.

Map 3. Overview of the responses submitted by Arab countries in the first (2017) and second (2020) reporting exercises for SDG indicator 6.5.2

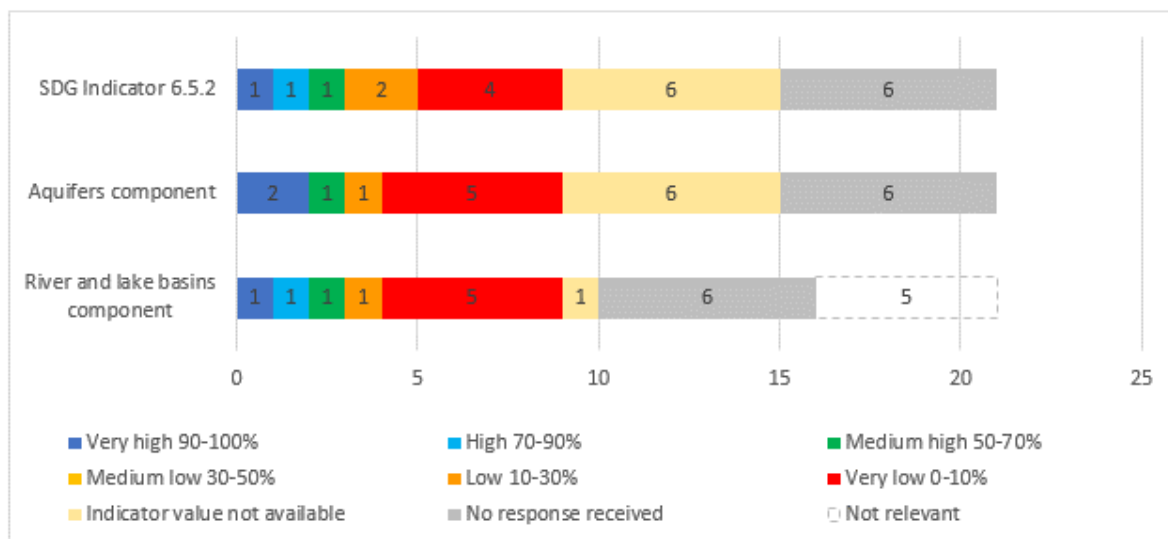


Source: Authors.

²⁵ Ibid.

²⁶ Ibid.

Figure 1. Arab region second reporting exercise (2020) – Number of countries sharing transboundary rivers, lakes and aquifers and breakdown of SDG indicator 6.5.2 values



Source: Authors.

Table 1. Differences in reporting between the 2017 baseline and 2020 progress reports on SDG indicator 6.5.2

		2017 – baseline	2020 – 2nd report
Rate of response (out of 21 Arab countries asked to report because they share rivers, lakes or aquifers)	Arab countries that reported	10	15
Transboundary river and lake basin component (out of 15 Arab countries that share surface water resources)	Countries that reported	7	10
	Countries that reported with available values	6	9
	Countries that reported that require additional information	1	1
Transboundary aquifer component (out of 21 Arab countries that share aquifers)	Countries that reported	10	15
	Countries that reported with available values	6	9
	Countries that reported that require additional information	4	6
Overall SDG indicator 6.5.2 value (out of 21 Arab countries that share river, lakes or aquifers)	Countries with available values	6	9
	Countries that reported that require additional information	4	6

Source: Authors.

Table 1 shows the differences in reporting between the 2017 baseline and 2020 progress reports on SDG indicator 6.5.2. Concerning the surface water – river and lake basin – component, additional information was requested from 11 countries, with 9 countries providing the requested information needed to calculate the river and lake basin component of the indicator. Concerning the aquifer component, additional information was requested from 13 countries, with 7 countries providing the requested information needed to calculate the aquifer component of the indicator. Data relevant to the aquifer component were not provided by Egypt or Lebanon.

B. Overview of SDG indicator 6.5.2 values

For the Arab region, SDG indicator 6.5.2 values for surface water and aquifers are only available for 9 of the 21 countries (map 4). Of these nine countries, Libya reported the highest overall value of SDG indicator 6.5.2, scoring 98 per cent; Tunisia scored 80 per cent; Algeria scored 58 per cent; Iraq and Jordan scored between 10-30 per cent; and four countries (Morocco, Qatar, Somalia and the United Arab Emirates) scored 0. Concurrently, six countries (Egypt, Kuwait, Lebanon, Oman, the State of Palestine and Saudi Arabia) need to provide additional information for either the

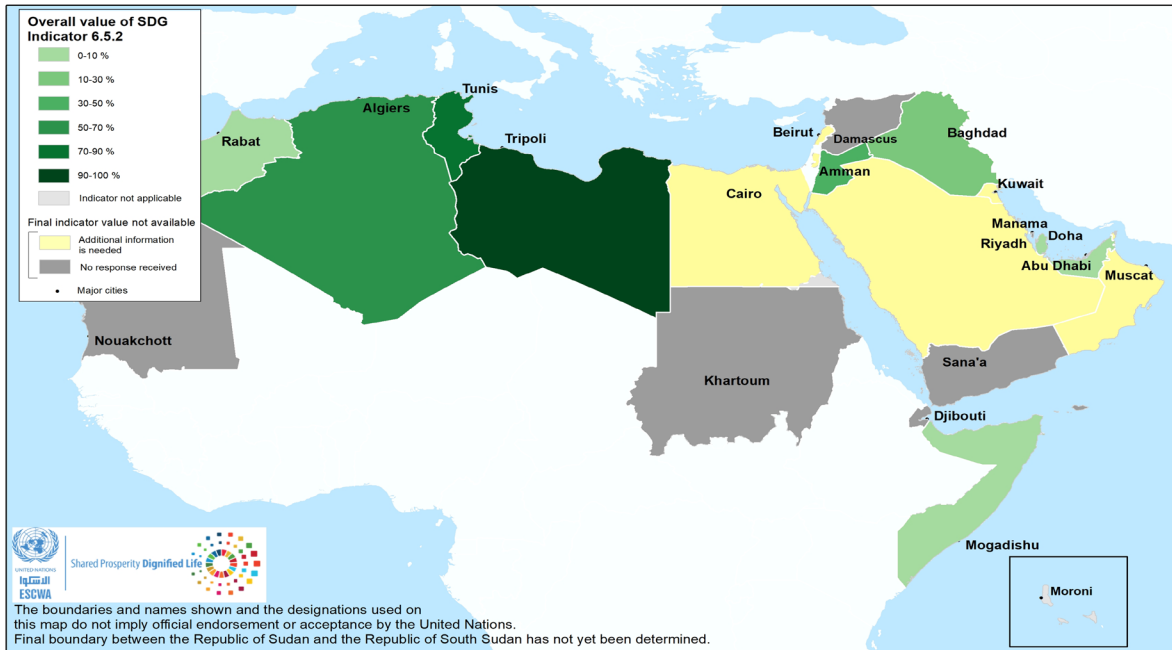
river and lake basin or the aquifer component. The average indicator value for the aquifer component is higher than that of the river and lake basin component.

C. SDG indicator 6.5.2 for transboundary river and lake basins

Despite the heavy reliance of Arab States on shared water resources, the regional results of the first and second reporting exercises for SDG indicator 6.5.2 showed a response rate of 43 per cent in 2017 and 71 per cent in 2020, significantly lower than the global reporting rate of 70 per cent in 2017 and 84 per cent in 2020. Regarding the river and lake basin component, during the second reporting exercise it was possible to provide an indicator value for nine countries, which represents 60 per cent of all Arab countries sharing transboundary surface waters (map 5). The indicator value for river and lake basins is lower than the overall indicator value at 29 per cent. Of these nine countries, Egypt reported the highest river and lake basin component value at 100 per cent; Lebanon scored 76 per cent; Jordan scored 62 per cent; Iraq scored 15 per cent; and five countries (Algeria, Morocco,²⁷ Somalia, Tunisia and United Arab Emirates) scored 0. Concurrently, only one country, the State of Palestine, needs to provide additional information in order for the indicator value to be available.

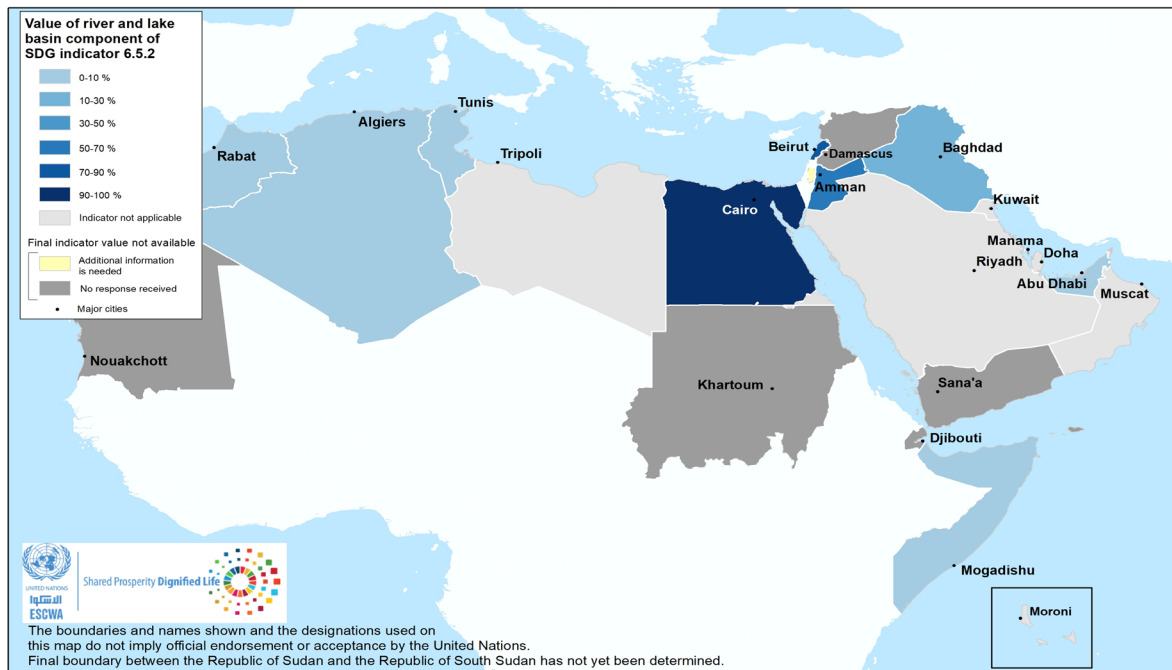
27 It should be noted that Morocco reported that its transboundary water resources are not significant and no cooperation arrangements exist.

Map 4. 2020 overall value of SDG indicator 6.5.2 at the country level in the Arab region



Source: Authors.

Map 5. 2020 value of river and lake basin component of SDG indicator 6.5.2 at the country level in the Arab region

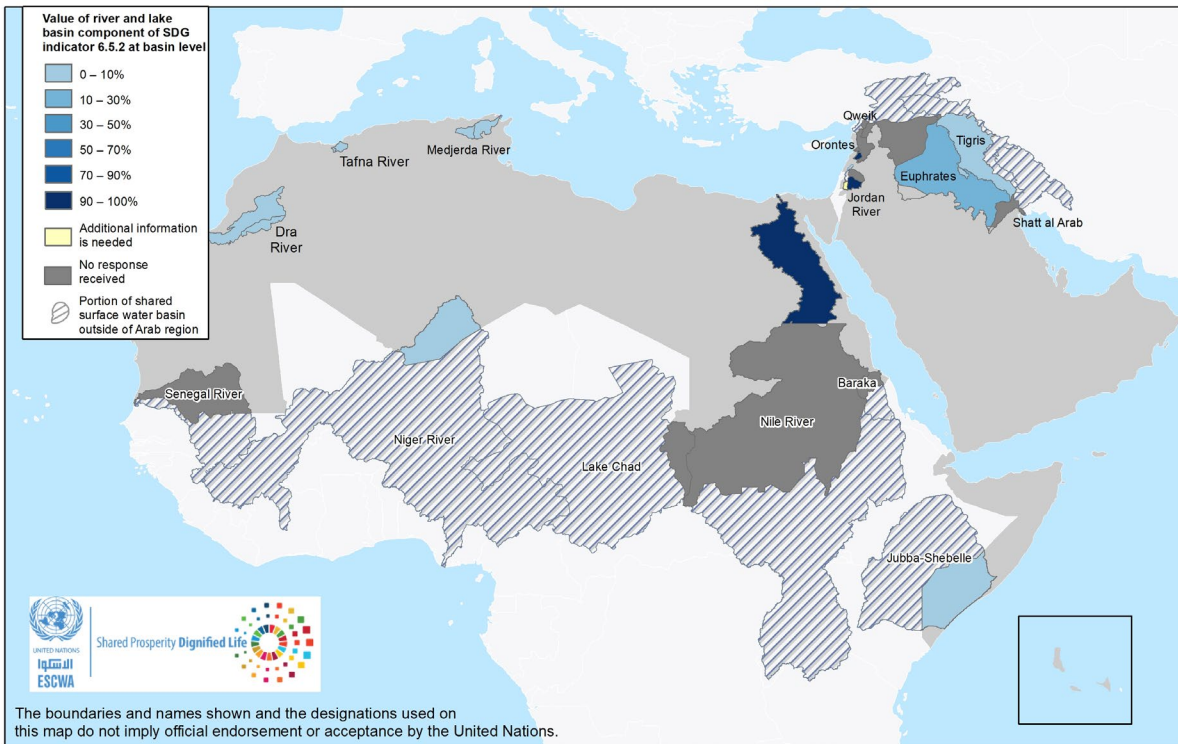


Source: Authors.

The river and lake basin component of SDG indicator 6.5.2 that was reported by the Arab countries shows differences in scores at the basin level because countries sharing the same basin did not coordinate on their reports on the basin and thus its value differs across boundaries (map 6). While no differences are evident on the basins shared by Algeria, Morocco and Tunisia, since the countries all reported similarly, major differences are observed on the Euphrates, Jordan, Nile, Orontes and Tigris rivers. Three different scores were reported for the Euphrates and Tigris river basins: 0-10 per cent for the Tigris

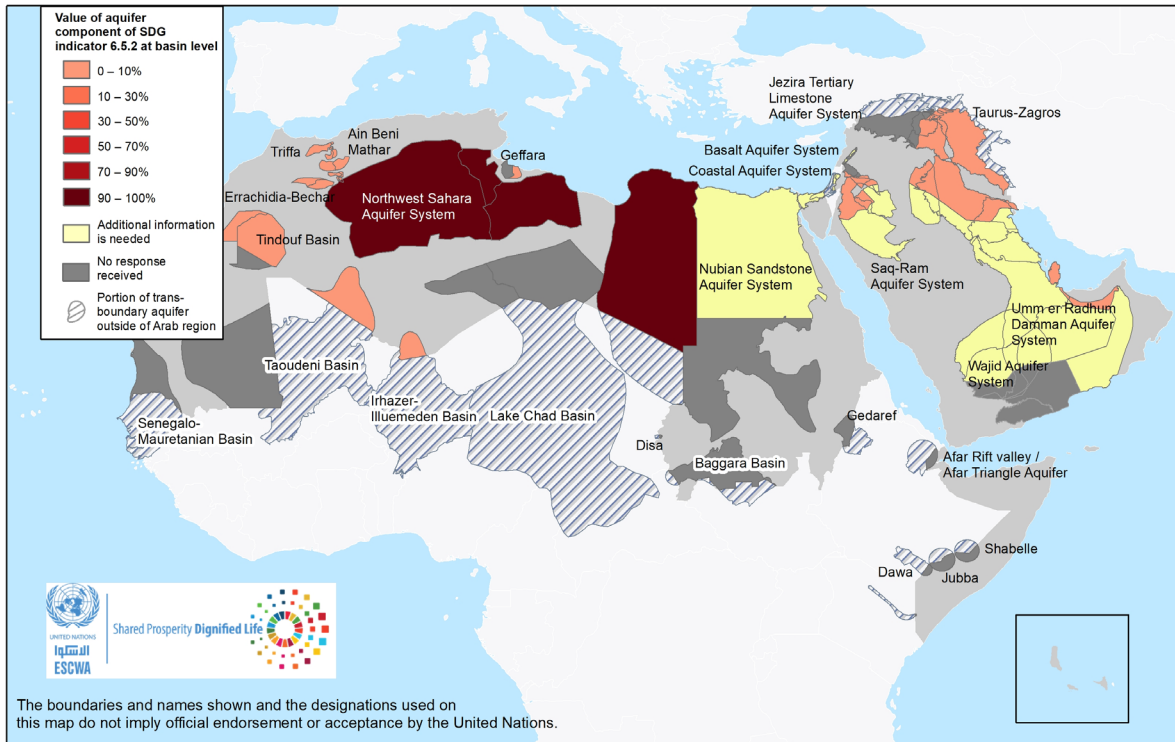
was reported by Iraq, 10-30 per cent for the Euphrates was reported by Iraq and no response was submitted by the Syrian Arab Republic. The Jordan River had four different scores: 0 per cent from Lebanon, 50-70 per cent from Jordan, no response from the Syrian Arab Republic and additional information is needed from the State of Palestine. The Nile and Orontes rivers have three different scores within their basins, ranging from high percentage values to no response received, with a portion of the transboundary surface water basin located outside of the Arab region.

Map 6. 2020 value of river and lake basin component of SDG indicator 6.5.2 at basin level for the Arab region



Source: Indicator value: Authors; Basin delineation: UNEP GEF TWAP data portal.

Map 8. 2020 value of aquifer component of SDG indicator 6.5.2 at the basin level in the Arab region



Source: Indicator values: Authors; Basin delineation: IGRAC, 2021.

E. Findings from the second reporting exercise on SDG indicator 6.5.2 for the Arab region

There are 27 shared surface water basins in the Arab region and 43 shared aquifers. Of the 22 Arab States, 15 are riparian States sharing a surface water basin and all Arab States, except Comoros, are riparian sharing an aquifer. With the Nile, Euphrates and Tigris rivers being the only extensive river networks in the Arab region, countries mainly rely on groundwater supplies to secure sufficient water at both the national and transboundary levels. This is particularly evident when we compare map 6 and map 8: neither the Saharan region nor the Arabian Peninsula hold major rivers, but both

have extensive transboundary aquifers. Also, although Mauritania did not submit a response for the 2020 SDG indicator 6.5.2 reporting exercise, a memorandum of understanding exists on the Senegalo-Mauritanian Aquifer Basin (SMAB). There is great diversity across these transboundary water resources and the countries that share them. Iraq, Jordan, the State of Palestine, the Sudan and the Syrian Arab Republic have most of their territory within shared river basins whereas Algeria, Morocco, Somalia and Tunisia have very small portions of their territory within transboundary river basins. Concerning aquifers, most of the Arab countries that share groundwater resources have large portions of their territory falling within transboundary aquifer basins. The number of

countries sharing basins also differ greatly. The Nile River Basin has 11 riparian countries (2 Arab countries), and the Jordan River Basin has 5 riparian countries (4 Arab countries), whereas 16 out of the 27 regional transboundary basins are shared by only two countries. A summary of the responses received from the Arab region is presented in table 2 and table 3.

In terms of changes between 2017 and 2020, the increase in the number of countries reporting has led to increases across all levels of the indicator value. SDG indicator 6.5.2 is therefore available

after the second reporting for nine countries with an average value of 30 per cent of all transboundary basin areas covered by operational arrangements (figure 2). The average value for the aquifer component is higher than the river and lake basin component, with average national percentages of 30 per cent and 29 per cent, respectively. This is mainly due to the fact that Tunisia (aquifer component: 100 per cent), Libya (aquifer component: 98 per cent) and Algeria (aquifer component 58 per cent) are partners in the consultation mechanism on the NWSAS.

Table 2. Differences in scores calculated between 2017 baseline and 2020 progress reports on SDG indicator 6.5.2

	2017 – baseline	2020 – 2nd report
Number of countries that submitted responses (out of 21 Arab countries that share rivers and aquifers)	10	15
Average score for SDG indicator 6.5.2	19 per cent	30 per cent
Average score for the river and lake basin component	13 per cent	29 per cent
Average score for the aquifer component	19 per cent	30 per cent

Source: Authors.

Table 3. Scores calculated in the 2020 progress reports on SDG indicator 6.5.2

Country	River and lake basin component (percentage)	Aquifer component (percentage)	SDG indicator 6.5.2 (percentage)
Algeria	0	58.32	57.54
Bahrain			
Comoros	N	N	N
Djibouti			
Egypt	100	-	-

Country	River and lake basin component (percentage)	Aquifer component (percentage)	SDG indicator 6.5.2 (percentage)
Iraq	15.04	0	10.61
Jordan	61.69	14.92	23.23
Kuwait	N	-	-
Lebanon	76.42	-	-
Libya	N	97.96	97.96
Mauritania			
Morocco	0	0	0
Oman	N	-	-
State of Palestine	-	-	-
Qatar	N	0	0
S. Arabia	N	-	-
Somalia	0	0	0
Sudan			
Syrian Arab Republic			
Tunisia	0	100	80.47
United Arab Emirates	0	0	0
Yemen			

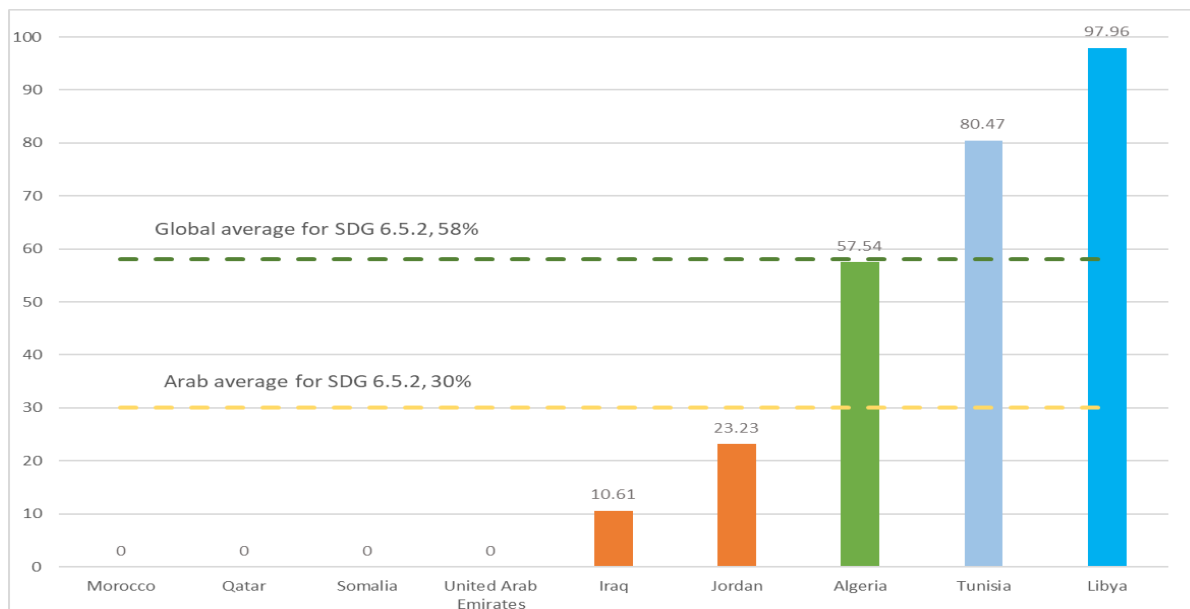
Source: Authors.

Note: N: Not relevant: indicates that the figure is not available because the indicator as defined for global monitoring does not apply to the circumstances of the specific country and therefore is not reported.

Dashes: Indicate that the figure is not available because the country needs to provide additional information.

Grey case: Indicate that the figure is not available because the country has not submitted a report on SDG indicator 6.5.2.

Figure 2. Arab overall SDG indicator 6.5.2 value benchmarked against the world average for countries with a value available for the indicator



Source: Authors.

Of the 15 Arab countries that share transboundary surface waters, only Egypt has reported that operational arrangements cover 100 per cent of its transboundary river and lake basin areas, a value reported by 56 countries worldwide. Only 4 countries (Algeria, Jordan, Libya and Tunisia) of the 21 Arab countries that share transboundary aquifers have reported values greater than zero for their aquifer components, despite the importance of groundwater within the arid and semi-arid climate found in large parts of the region, with 50 countries worldwide reporting a value greater than zero.

The co-custodian agencies requested additional information regarding the river and lake basin component from the State of Palestine and on the aquifer component from Egypt, Kuwait, Lebanon, Morocco, Oman, the

State of Palestine and Saudi Arabia. Therefore, their overall SDG indicator 6.5.2 values are not available. Several countries in the Arab region did not submit responses on their transboundary water resources because they either consider them to be non-existent (Kuwait), not significant (for example, Morocco and Qatar) or they do not have sufficient information about them (table 4). Further discrepancies occur when one of the riparian countries sharing a body of water provided information but information was not submitted by the other riparian country.

Of the Arab States which did not respond to the reporting request for SDG indicator 6.5.2, all share water with neighbouring States (table 5). Given the shared resources, it is important for these countries to report during the next exercise in 2023.

Table 4. Shared basins that were omitted by countries that submitted responses to the 2020 progress report on SDG indicator 6.5.2

Country	Transboundary body of water and riparian countries
Algeria ^a	<p>Surface:</p> <ul style="list-style-type: none"> • Niger River: Benin, Burkina Faso, Guinea, Ivory Coast, Mauritania, Mali, Niger, Nigeria • Lake Chad: Chad, Central African Republic, Cameroon, Libya, Niger, Nigeria, Sudan <p>Aquifer:</p> <ul style="list-style-type: none"> • Lake Chad Basin: Chad, Central African Republic, Cameroon, Libya, Niger, Nigeria, Sudan
Egypt ^b	<p>Aquifer:</p> <ul style="list-style-type: none"> • Coastal Aquifer Basin: Israel, the State of Palestine • Western Aquifer Basin: Israel, the State of Palestine • Nubian Sandstone Aquifer System: Chad, Libya, Sudan
Iraq ^b	<p>Aquifer:</p> <ul style="list-style-type: none"> • Sakaka-Rutba: Saudi Arabia • Ga'ara System: Jordan, Saudi Arabia, the Syrian Arab Republic • Taurus-Zagros: Iran, Türkiye
Kuwait ^b	<p>Aquifer:</p> <ul style="list-style-type: none"> • Widyan-Salman: Iraq, Saudi Arabia • Dibdibba Delta: Iraq, Saudi Arabia
Lebanon ^b	<p>Aquifer:</p> <ul style="list-style-type: none"> • Anti-Lebanon: The Syrian Arab Republic • Western Galilee: Israel
Libya ^a	<p>Surface:</p> <ul style="list-style-type: none"> • Lake Chad: Algeria, Chad, Central African Republic, Cameroon, Niger, Nigeria, Sudan <p>Aquifer:</p> <ul style="list-style-type: none"> • Lake Chad basin: Algeria, Chad, Central African Republic, Cameroon, Niger, Nigeria, Sudan
Morocco ^a	<p>Surface:</p> <ul style="list-style-type: none"> • Atui River: Mauritania • Dra River: Algeria • Daoura River: Algeria • Oued Bon Naima River: Algeria • Tafna River: Algeria <p>Aquifer:[*]</p> <ul style="list-style-type: none"> • Tindouf: Algeria, Mauritania • Errachidia: Algeria • Angad: Algeria • Ain beni Mathar: Algeria • Chott Tigri-Lahouita: Algeria • Figuig: Algeria

Country	Transboundary body of water and riparian countries
	<ul style="list-style-type: none"> • Jbel el Hamra: Algeria • Triffa: Algeria
Oman ^b	Aquifer: <ul style="list-style-type: none"> • Rub' al Khali: Saudi Arabia, United Arab Emirates, Yemen
Qatar ^b	Aquifer: <ul style="list-style-type: none"> • Umm er Radhuma-Dammam Aquifer System (Centre) – Gulf: Bahrain, Saudi Arabia
Saudi Arabia ^b	Aquifer: <ul style="list-style-type: none"> • Wadi Serhan: Jordan • Ga'ara System: Iraq, Jordan, the Syrian Arab Republic
Tunisia ^a	Aquifer: <ul style="list-style-type: none"> • Geffara: Libya

Sources: ^a UNEP, GEF TWAP data portal. Available at <http://geftwap.org/data-portal>.

^b ESCWA and BGR, 2013.

* Morocco reported that their transboundary water resources are not significant and no cooperation arrangements exist.

Table 5. Shared basins located in countries that did not submit responses to the 2020 progress report on SDG indicator 6.5.2

Country	Shared body of water
Bahrain ^a	Aquifer: <ul style="list-style-type: none"> • Umm er Radhuma-Dammam Aquifer System (Centre) – Gulf: Qatar, Saudi Arabia
Djibouti ^b	Surface: <ul style="list-style-type: none"> • Awash River: Somalia Aquifer: <ul style="list-style-type: none"> • Afar Rift Valley/Afar Triangle Aquifer: Ethiopia, Eritrea
Mauritania ^b	Surface: <ul style="list-style-type: none"> • Senegal River: Mali, Senegal, Guinea • Atui River: Morocco • Niger River: Algeria, Benin, Burkina Faso, Guinea, Ivory Coast, Mali, Niger, Nigeria Aquifer: <ul style="list-style-type: none"> • Taoudeni: Algeria, Mali • Tindouf: Algeria, Morocco • Senegalo-Mauritanian Aquifer Basin: Senegal
Sudan ^b	Surface: <ul style="list-style-type: none"> • Nile River: Burundi, Democratic Republic of Congo, Egypt, Ethiopia, Eritrea, Kenya, Rwanda, South Sudan, Tanzania, Uganda • Baraka River: Ethiopia • Congo/Zaire River: Angola, Burundi, Congo-Brazzaville, Central African Republic, Cameroon, DR Congo, Gabon, Rwanda, Tanzania, Zambia

Country	Shared body of water
	<ul style="list-style-type: none"> • Lake Chad: Algeria, Chad, Central African Republic, Cameroon, Libya, Niger, Nigeria • Gash River: Ethiopia, Eritrea Aquifer: <ul style="list-style-type: none"> • Nubian Sandstone System: Chad, Egypt, Libya • Disa: Chad • Baggara: South Sudan, Central African Republic • Gedaref: Ethiopia
Syrian Arab Republic ^a	Surface: <ul style="list-style-type: none"> • Kabir River: Lebanon • Orontes River: Lebanon, Türkiye • Euphrates River: Iraq, Jordan, Saudi Arabia, Türkiye • Jordan River: Lebanon, the Syrian Arab Republic, the State of Palestine, Israel • Tigris River: Iraq, Türkiye • Qweik River: Türkiye Aquifer: <ul style="list-style-type: none"> • Ga'ara System: Iraq, Jordan, Saudi Arabia • Anti-Lebanon: Lebanon • Central Hammad basin: Jordan • Basalt System: Jordan • Jezira tertiary limestone system: Türkiye • Jezira basin: Iraq
Yemen ^a	Aquifer: <ul style="list-style-type: none"> • Cretaceous Sands: Saudi Arabia • Wajid System: Saudi Arabia • Rub' al Khali: Oman, Saudi Arabia, United Arab Emirates

Sources: ^a ESCWA and BGR, 2013.

^b UNEP, GEF TWAP data portal. Available at <http://geftwap.org/data-portal>.

F. Analysis

In 2017, during the baseline reporting exercise, only 10 of the 21 Arab States sharing surface water and/or groundwater resources with another country reported information regarding SDG indicator 6.5.2: Algeria, Egypt, Iraq, Jordan, Kuwait, Morocco, Oman, Qatar, Somalia and Tunisia. During the second reporting exercise in 2020,

the number of countries that reported increased to 15. This rate of response is low given the importance of shared water resources in the Arab region, and is also lower than the world average of 84 per cent. The 22nd Arab country, Comoros, does not share any transboundary waters and as such was excluded from reporting. The six Arab countries that did not report during the second exercise in 2020 are Bahrain, Djibouti,

Mauritania, the Sudan, the Syrian Arab Republic and Yemen. Despite the efforts of the custodian agencies, the decision to respond is ultimately down to each country.

A particular challenge Arab countries face in advancing progress on SDG indicator 6.5.2 is that any progress is contingent on there being cooperation between neighbouring countries. Where political willingness to cooperate with a neighbouring country is lacking, a country cannot proceed in isolation. There are many instances of military occupation and armed conflict in the region, where water resources fall under foreign control and are affected by instability. These contexts also affect the delivery of reports such as in the cases of Yemen, the Sudan and the Syrian Arab Republic. However, the submission of a report by the State of Palestine, despite the need for it to provide additional information, is a positive indicator. Relatively simple steps – such as data exchange or establishing technical meetings – may constitute a useful precursor to the development of operational arrangements. The following is a detailed analysis by country of the findings from the second reporting exercise on SDG indicator 6.5.2 for the Arab region:

- Algeria provided the most complete and detailed answers during the first and second reporting exercises for SDG indicator 6.5.2 in the Arab region. Although the aquifer component was not validated in 2017 because of a discrepancy in the figures provided for transboundary aquifers, it was clarified and accepted in 2020. Algeria reported the existence of 8 surface basins and 11 aquifers, enumerating even the smallest transboundary waters (a 35 km² area of a surface basin shared with Tunisia and a 100 km² area of an aquifer shared with Morocco). Some of these transboundary waters were not reported by the counterpart riparian countries. Despite the large number of shared water resources cited by Algeria, it omitted four aquifers and one surface water basin, including the important Niger River and Lake Chad Basin. Algeria, Libya and Tunisia are part of the consultation mechanism of the NWSAS. Algeria has stated financial problems and a lack of resources as the main challenges regarding the agreement over this aquifer system and its implementation. It also considered that its main achievements in implementing this agreement and the keys to achieving such success were the establishment of a common database and the development of a mathematical model for its management. Finally, Algeria stated that its national legislation, policies, action plans and strategies refer to measures to prevent, control and reduce the potential impacts of transboundary water resources.
- Bahrain did not submit a national report for either the first or the second reporting exercises on SDG indicator 6.5.2, despite sharing the Umm er Radhuma-Dammam Aquifer System with Qatar and Saudi Arabia.
- The Comoros does not share any surface or groundwater resources with other countries and therefore no reports were requested.
- Djibouti did not submit a national report for either the first or the second reporting exercises on SDG indicator 6.5.2, despite sharing a surface water basin with Somalia (Awash River) and a groundwater basin with Ethiopia and Eritrea (Afar Rift Valley/Afar Triangle Aquifer).
- Egypt submitted a first report in 2017 but additional information on the Nile River was required. For the 2020 report, only the river and lake basin indicator value was available (100 per cent). The river and lake basin

component was accepted as Egypt reported on 24 agreements, arrangements and memorandums of understanding with other riparian countries, including the Nile Basin Initiative (NBI), that were signed during the last century. However, additional information was still needed for the aquifer component, since Egypt shares the NSAS with Chad, Libya and the Sudan, and two aquifers with Israel and the State of Palestine (Western and Coastal). Therefore, the overall SDG indicator value cannot be calculated. Concerning the main difficulties and challenges regarding the agreements in place and their implementation, Egypt stated that the NBI is not functional from the Egyptian side of the Nile because the country withdrew from the initiative in 2010 after problems occurred with upstream riparian countries. It thus did not state any achievements or keys to success. Finally, Egypt stated that its national legislation, policies, action plans and strategies refer to measures to prevent, control and reduce the potential impacts of transboundary water resources.

- Iraq submitted reports in both 2017 and 2020 and has seen its river and lake basin component indicator value reduce from 17 to 15 per cent and its national SDG indicator 6.5.2 value fall from 13.5 to 11 per cent after careful recalculations were made regarding the Iraqi sides of the transboundary surface waters. Iraq reported two agreements over its surface water basins: the 1975 Agreement between Iraq and Iran on the frontier watercourses and the 1980 joint committee between Iraq and Türkiye on the Euphrates and Tigris rivers. The suspension of technical committee meetings between 1992 and 2007 due to the lack of cooperation from other riparian countries regarding reaching overarching agreements was stated as the

main difficulty and challenge hindering the agreements and their implementation. For the aquifer component, Iraq has not listed any transboundary aquifer cooperation arrangements and has therefore indicated a score of zero, even though Iraq shares several groundwater basins. Finally, Iraq stated that its national legislation, policies, action plans and strategies do not refer to measures to prevent, control and reduce the potential impacts of transboundary water resources.

- Jordan submitted very complete and detailed answers during both reporting exercise for SDG indicator 6.5.2. Jordan also listed three agreements over its shared water resources which do not face difficulties and challenges. It provided information on several achievements and keys to success: securing mutual agreements and arrangements on water released, water purchased, water pricing and flood prevention, in addition to guaranteeing full cooperation on as well as full exchange of information. Jordan is the only Arab country that scored above zero for both the river and lake basin and aquifer components of SDG indicator 6.5.2. Jordan is also one of the only four Arab countries, along with the State of Palestine, the United Arab Emirates and Somalia, that did not omit any of its transboundary water resources in its report. Finally, Jordan stated that its national legislation, policies, action plans and strategies refer to measures to prevent, control and reduce the potential impacts of transboundary water resources.
- Kuwait returned the questionnaire with the response “not appropriate” regarding transboundary water resources as it does not constitute a significant resource. The indicator value for the river and lake basin component is “N”, meaning that it is not

- relevant, i.e., Kuwait does not share surface water resources with other countries. However, information on groundwater still needs to be validated as two aquifers are shared between Kuwait, Iraq and Saudi Arabia, but the aquifer indicator value was not provided. The overall indicator value was thus not available.
- Lebanon submitted its first report on SDG indicator 6.5.2 in 2020. Only the river and lake basin indicator value is available (76 per cent), which had the second highest score among Arab countries, after Egypt. The high score resulted from Lebanon's two agreements on two of its three transboundary rivers (Orontes and Kabir). After ratifying the 1997 United Nations Convention on the Law of the Non-navigational Uses of International Watercourses, Lebanon established successful mutually beneficial collaborations on the two transboundary basins it shares with the Syrian Arab Republic. Lebanon mentioned several difficulties and challenges regarding the agreements and their implementation such as the lack of financial resources, insufficient human capacity, insufficient technical capacity, and the non-participation of certain riparian countries in the agreement (i.e., Türkiye in the case of the Orontes River). Despite having reported some information on transboundary aquifers, this information was insufficient to enable Lebanon to calculate the aquifer component. Lebanon shares two important aquifers with the Syrian Arab Republic (Anti-Lebanon) and Israel (Western Galilee). Finally, Lebanon stated that its national legislation, policies, action plans and strategies refer to measures to prevent, control and reduce the potential impacts of transboundary water resources.
 - Libya submitted its first report on SDG indicator 6.5.2 in 2020. The indicator value for its river and lake basin component is "N", meaning that it is not relevant. The aquifer indicator value for Libya is the second highest among the Arab countries (98 per cent) whereas the overall SDG 6.5.2 indicator value is the highest at 98 per cent. Libya shares two major aquifers with neighbouring countries, the NSAS and NWSAS, in addition to a very small aquifer shared with Tunisia. It reported two agreements on both major aquifers. Libya, Algeria and Tunisia are part of the consultation mechanism of the NWSAS. Libya mentioned a lack of financial resources, insufficient human capacity and insufficient technical capacity as its main difficulties and challenges regarding the two agreements in place and their implementation. Libya mentioned that its surface water is not relevant since the indicator does not apply to the circumstances of the specific country (not sharing a transboundary river). However, the Lake Chad boundaries enter Libyan territory. Libya omitted to report that the Lake Chad Aquifer Basin also enters Libyan territory. Finally, Libya stated that its national legislation, policies, action plans and strategies refer to measures to prevent, control and reduce the potential impacts of transboundary water resources.
 - Mauritania did not submit a national report for either the first or the second reporting exercises on SDG indicator 6.5.2, despite sharing two major African surface water basins (Senegal and Niger rivers), a smaller river with Morocco (Atui River), and three important groundwater basins with Algeria, Mali, Morocco and Senegal.
 - Morocco reported on SDG indicator 6.5.2 in 2017 and in 2020 with minimal information

on its transboundary waters. In both exercises, it reported that its transboundary waters are very limited, localized and not abundant, and that no arrangements exist for these waters. Conversely, Algeria declared transboundary surface and groundwater resources shared with Morocco. Morocco shares six river basins (five with Algeria alone) and eight aquifers (all with Algeria), but omitted to report on all except for the Guir River basin. However, Morocco reported on seven river basins shared with Algeria using different names from the five recognized in the UNEP, GEF TWAP data portal. These basins are considered by Morocco to be insignificant and they lack cooperation agreements. Finally, Morocco stated that its national legislation, policies, action plans and strategies refer to measures to prevent, control and reduce the potential impacts of transboundary water resources.

- The indicator value for river and lake basins in Oman is “N”, meaning that it is not relevant (i.e., Oman does not share surface water resources with other countries), although the United Arab Emirates reported on nine transboundary surface water basins shared with Oman. Oman reported that it does not share groundwater resources either, but Saudi Arabia reported on a transboundary aquifer shared with Oman. Oman shares the Rub’ al Khali aquifer with Yemen, Saudi Arabia and the United Arab Emirates. Thus, additional information from Oman is needed on the aquifer component. For this reason, the aquifer component of the indicator and consequently, the overall indicator value, are not available.
- The State of Palestine reported on SDG indicator 6.5.2 for the first time in 2020. It reported on the Jordan River as its river and lake basin component and on four aquifers

shared with Israel and Egypt (Western, Eastern, Northeastern and Coastal).

However, additional information is needed on both surface water and groundwater from the country, hence none of the indicator values are currently available.

Finally, the State of Palestine stated that its national legislation, policies, action plans and strategies refer to measures to prevent, control and reduce the potential impacts of transboundary water resources.

- Qatar reported on SDG indicator 6.5.2 in 2017 and 2020. The 2020 report was not signed, while the 2017 response and an unsigned word template were sent in 2020. Therefore, none of the indicator values are currently available. In principle, the indicator value for surface water resources is not relevant (N) and additional information is needed on its aquifer component. Qatar mentioned that it is fully dependent on the desalination of seawater as a source of water and that the transboundary aquifer shared with Saudi Arabia and Bahrain (Umm er Radhuma – Dammam) is not usable as it is highly saline.
- Saudi Arabia reported on SDG indicator 6.5.2 for the first time in 2020. It did not mention any transboundary surface water basins and therefore the co-custodian agencies have accepted that the indicator value is not relevant (N) for the river and lake basin component. Saudi Arabia reported on six transboundary aquifers shared with neighbouring countries, scoring nearly 90 per cent on the aquifer component. Saudi Arabia reported a bilateral agreement on groundwater management and the development of the Saq-Ram aquifer between Saudi Arabia and Jordan. However, the report was not signed and additional information is needed for the aquifer component. Saudi Arabia mentioned

that most of the aquifers are deep and have high salinity so the Gulf Cooperation Council (GCC) countries rely on the desalination of sea water and are working on the Gulf water link project a unified network of desalinated water. Saudi Arabia added that geological studies show that the hydraulic connection in the Al Wajid geological layer with Yemen is very small and can be neglected and that shared groundwater with Iraq is minimal since most of the Neogene geological formation inside Iraq is hydraulically separated from the Neogene in Saudi Arabia. However, Saudi Arabia shares part of the Euphrates River Basin (2.97 per cent), a small wadi with Yemen, and two aquifers with Jordan, the Syrian Arab Republic and Iraq.²⁸ Finally, Saudi Arabia stated that its national legislation, policies, action plans and strategies refer to measures to prevent, control and reduce the potential impacts of transboundary water resources.

- Somalia reported on SDG indicator 6.5.2 in 2017 and 2020 and is one of the only four Arab countries, along with the State of Palestine, the United Arab Emirates and Jordan, that did not omit any of its transboundary water resources from its report. Somalia did not mention any arrangements in place and therefore scored zero on each of the three components of SDG indicator 6.5.2. Somalia stated that there are barriers to forming transboundary agreements due to asymmetrical access to resources, influence and the capacity to negotiate. Finally, Somalia stated that its national legislation, policies, action plans and strategies do not refer to measures to prevent, control and reduce the potential impacts of transboundary water resources,

and that a water resource strategy is currently under development.

- The Sudan has not submitted a national report for either the first or second reporting exercises on SDG indicator 6.5.2 despite sharing three major African surface water basins (Nile and Congo rivers and Lake Chad), smaller rivers with Ethiopia and Eritrea, and four important groundwater basins with Chad, Egypt, Libya, South Sudan, the Central African Republic and Ethiopia.
- The Syrian Arab Republic has not submitted a national report for either the first or second reporting exercises on SDG indicator 6.5.2 despite sharing three major surface water basins (Tigris, Euphrates and Jordan rivers), smaller rivers with Lebanon and Türkiye, and six important groundwater basins with Iraq, Jordan, Saudi Arabia, Lebanon and Türkiye. The Syrian Arab Republic not submitting a report is most likely due to the conflict situation in the country, although it did respond to the SDG indicator 6.5.1 survey.
- Tunisia reported on SDG indicator 6.5.2 similarly in 2017 and 2020, providing information on five transboundary surface water basins shared with Algeria and one major transboundary groundwater basin, the NWSAS. Tunisia reported the highest value for the aquifer component and second highest value for the overall SDG 6.5.2 indicator. However, it did not report on the Geffara aquifer system that was reported by Libya. Tunisia, Libya and Algeria are part of the consultation mechanism for the NWSAS. Tunisia has stated that financial problems and insufficient human resources are the main difficulties and challenges regarding the agreement over the aquifer

28 Jordan (0.03 per cent) and Saudi Arabia (2.97 per cent) are considered basin riparian States, but their territories contribute surface water only under very rare and extreme climatic conditions (ESCWA and BGR, 2013).

system and its implementation. Tunisia reported that its main achievements regarding implementing this agreement and the keys to achieving such success were the establishment of a common database accessible for the three countries; the establishment of a permanent steering committee comprising representatives from the three countries; the establishment of a hydrodynamic model and a socio-economic model; and a technical forecast study for the management of the NWSAS. Finally, Tunisia stated that its national legislation, policies, action plans and strategies refer to measures to prevent, control and reduce the potential impacts of transboundary water resources, referencing three articles from the New Tunisian Constitution of 2014.

- The United Arab Emirates reported on SDG indicator 6.5.2 for the first time in 2020, and is one of the only four Arab countries, along with the State of Palestine, Somalia and Jordan, that did not omit any of its transboundary water resources in its report. The United Arab Emirates reported on nine transboundary surface water basins shared with Oman and two aquifers shared with neighbouring countries, but stated that no agreements are in place over any of these transboundary waters, therefore its score is zero for all three components of SDG indicator 6.5.2. Finally, the United Arab Emirates stated that its national legislation, policies, action

plans and strategies refer to measures to prevent, control and reduce the potential impacts of transboundary water resources.

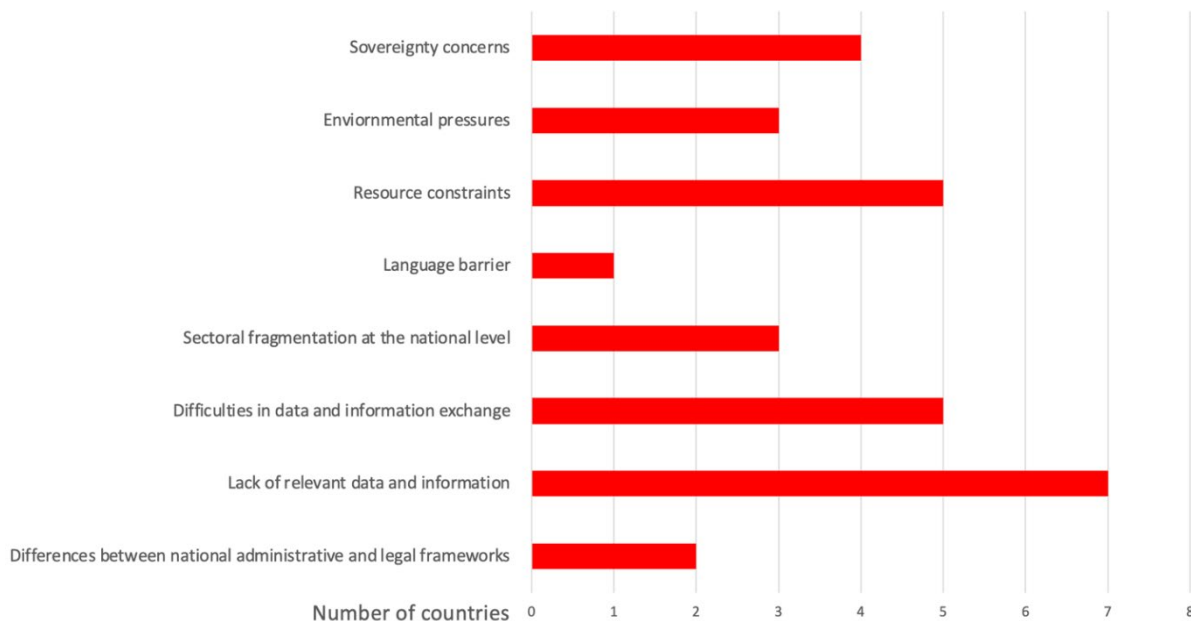
- Yemen did not submit a national report for either the first or second reporting exercises on SDG indicator 6.5.2 despite sharing three groundwater basins with Oman, the United Arab Emirates and Saudi Arabia. The conflict context is most likely the primary reason for not reporting.

G. Regional and national challenges and achievements

SDG indicator 6.5.2 is key in enabling monitoring of operational arrangements for transboundary water cooperation. Despite the international impacts of the COVID-19 pandemic beginning in 2019, more Arab countries sharing transboundary water resources submitted responses during the second monitoring exercise in 2020 than in 2017, thanks to the efforts of the co-custodian agencies, regional partners and Governments. Capitalizing on this momentum for future monitoring exercises is important so as to improve transboundary cooperation at an accelerated rate.²⁹ The monitoring process of SDG indicator 6.5.2 has provided an opportunity to highlight both key challenges (figure 3) and achievements (figure 4) regarding progress towards improved transboundary water cooperation.

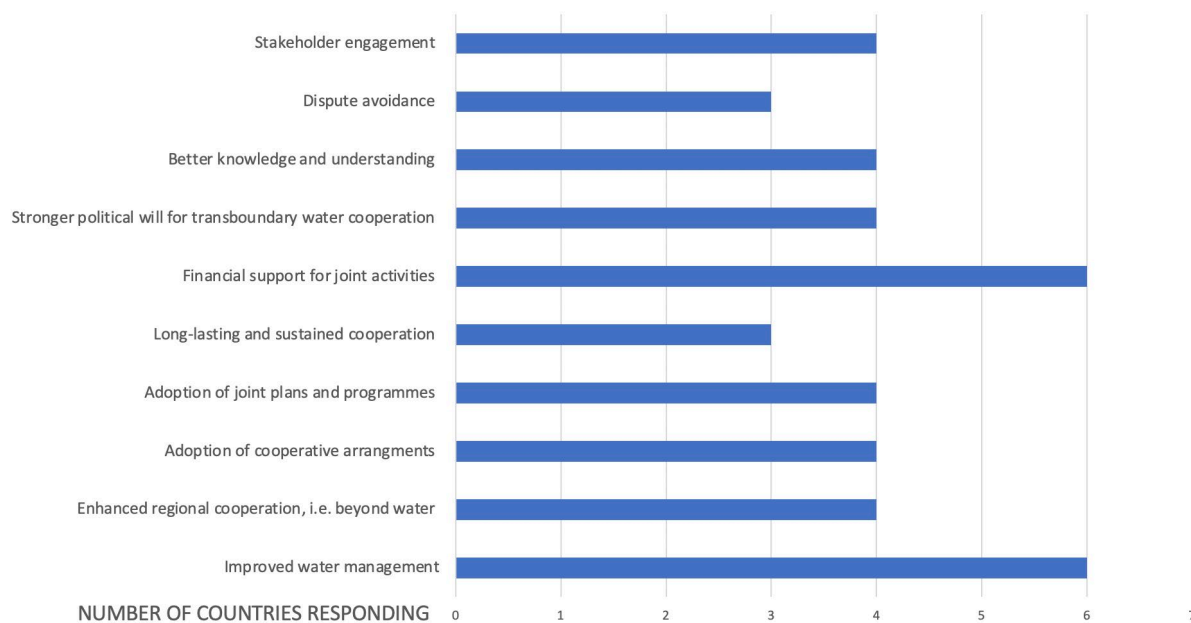
29 ECE and UNESCO, 2021.

Figure 3. Challenges identified by Arab countries regarding cooperating on transboundary waters during SDG indicator 6.5.2 reporting



Source: Authors.

Figure 4. Main achievements identified by Arab countries regarding cooperating on transboundary waters during SDG indicator 6.5.2 reporting



Source: Authors.

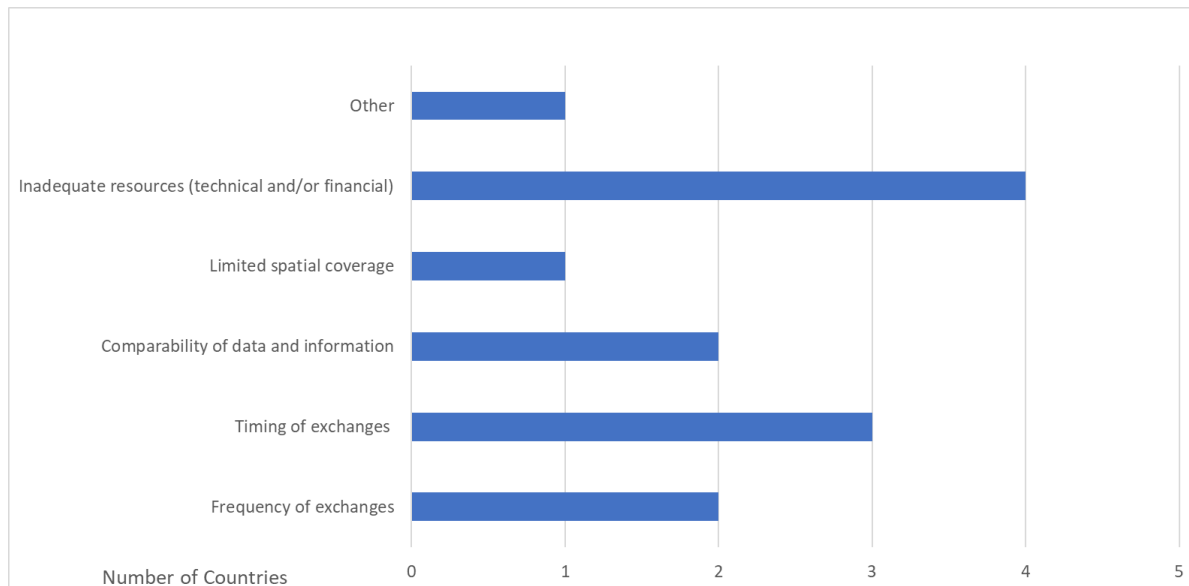
Lack of relevant data and information was the most frequently reported challenge. Awareness of this should lead to Arab States conducting further studies in order to gather and generate more data and address data gaps. Also, if data is available but not easily accessible, a knowledge platform that can be populated with data and shared between all riparian countries could provide a solution. The next most frequently reported challenges identified by the countries that answered this question were resource constraints and difficulties in data and information exchange. Iraq, for instance, reported several challenges, including the absence of an overarching agreement to determine the distribution of water used for various purposes among the riparian countries; the need to restore the Mesopotamian marshlands and maintain their water quality; security issues and political tensions in the region making water a secondary concern for the riparian countries; and the absence of unanimous mechanisms, rules or means between the riparian countries for exchanging information and data that have created an environment of mistrust between these countries and have led to a lack of cooperation among them. Jordan reported the challenge of securing the required amount of water for the country's needs. Morocco reported that as transboundary waters do not constitute a priority issue, it cannot justify working urgently to establish measures.

Improved water management and financial support for joint activities were the most frequently reported achievements regarding cooperating on transboundary waters. Algeria, for instance, reported the concerted

management of the aquifer system of the NWSAS; the existence of operational bilateral technical cooperation committees with Tunisia and Libya in the field of water resources; and the signing of cooperation agreements with Mauritania, Mali and Niger in the water domain as concrete examples and key elements of success. Iraq reported that it had concluded many technical and ministerial meetings addressing drought and flood issues, helping to build confidence and develop good relations among riparian countries. Jordan reported that its main achievement was the proper management of transboundary water, a key element of success being cooperation through a joint technical committee, which helped to guarantee that Jordan received an appropriate share of water.

Most countries reported inadequate resources – technical and/or financial – as being the main challenge to data exchange (figure 5). Iraq reported that the lack of transparency and trust is another main challenge; it stated that as Iraq is a downstream country, it needs access to data regarding the quantity and quality of water coming from upstream Türkiye in order to make its operational plans. Lebanon reported monitoring and control of agreements as the main challenge, while Libya mentioned the preparation of common piezometric maps and assessment of aquifers' conditions as key issues. Tunisia reported difficulties regarding forecasts and simulations of underground resource management scenarios; the assessment of the impact of operations in neighbouring countries on transboundary water resources; and the need for measures and recommendations for truly sustainable management.

Figure 5. Main difficulties and challenges to data exchange identified by Arab countries regarding cooperating on transboundary waters during SDG indicator 6.5.2 reporting



Source: Authors.

It is important that the co-custodian agencies, together with global and regional partners, continue to support countries in improving the knowledge base and enhancing the quality of the submissions of national reports and in providing information on the status and coverage of current arrangements. Where arrangements for transboundary water cooperation are lacking, countries should benefit from successful examples of transboundary cooperation mechanism regarding addressing any bottlenecks they face

and accelerating progress towards making arrangements operational. Third parties, such as United Nations agencies, non-governmental organizations, academics, and scientific and civil society groups, can offer concrete solutions for supporting countries. Notable river-specific cooperative arrangements include the Senegal and Orontes rivers (box 6). Notable aquifer-specific cooperative arrangements include those established for the NWSAS (box 4), the SMAB (box 5) and the SRAS (box 3).

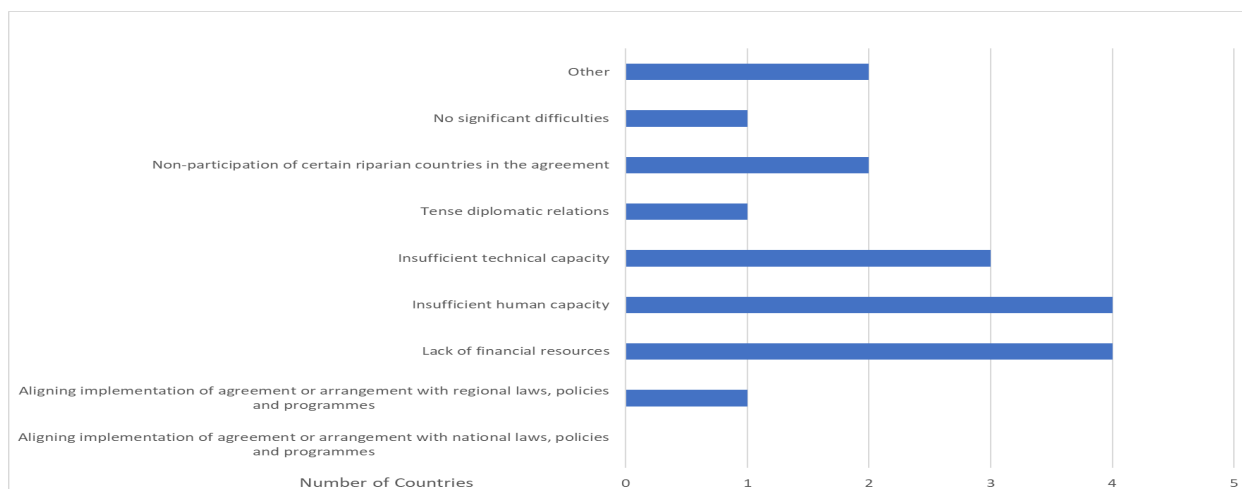
3. Accelerating progress towards cooperation arrangements

In 2020, United Nations Water launched the SDG 6 Global Acceleration Framework in response to the Decade of Action. This framework aims to “deliver fast results at an increased scale”, based on financing, data and information, capacity development, innovation and governance.³⁰ The framework considers five main accelerators, namely:³¹

- Financing
- Data
- Capacity
- Innovation
- Governance.

Countries and supporting regional and international organizations need to be innovative in fostering cooperation beyond classical, rigid legal water-share distribution agreements. Where arrangements are not operational, there are certain factors of operability, such as the holding of regular meetings or exchanging data, that can result in ‘quick wins’ that will accelerate the achievement of the SDG target 6.5. Most countries have stated that insufficient technical, human and financial capacities are the main challenges they face regarding agreements or arrangements in place, and their implementation (figure 6).

Figure 6. Main difficulties and challenges with agreements or arrangements and their implementation regarding cooperating on transboundary waters identified by Arab countries during SDG indicator 6.5.2 reporting



Source: Authors.

³⁰ United Nations Water, 2020.

³¹ Ibid.

Achieving the aim of having all transboundary basins covered by operational arrangements by 2030 will require major efforts, particularly from the Arab countries. Not only is the response rate during the reporting exercises lower than the world average, but the responses submitted lack a lot of the data and verification required for in-depth analysis. For the surface water – river and lake basin – component, five countries indicated that they are not engaged in any agreements on their surface water basins and one country needs to provide additional information. For the aquifer component, four countries have indicated that they have not entered into any agreements on their aquifers and seven countries need to provide additional information. One encouraging sign is that countries that have signed agreements are continuing to negotiate, adopt and develop arrangements for transboundary water cooperation. Another encouraging sign is that existing non-operational arrangements are being made operational, accelerating progress in the coverage of transboundary aquifers.

A. Improving the knowledge base in transboundary contexts while leveraging innovative technologies

Knowledge is critical to accelerating transboundary water cooperation. While the responses to SDG indicator 6.5.2 monitoring increased between 2017 and 2020, the need to focus attention on data is apparent, particularly in relation to transboundary aquifers and the many Arab countries where the SDG indicator value is not available. The SDG 6 Global Acceleration Framework acknowledges the importance of

data availability, generation, validation, standardization and information exchange as the means by which to build trust among decision makers.³² Knowledge and information are also key to day-to-day cooperation between countries and for identifying emerging areas that may call for further cooperation.³³ A range of useful innovative tools is available to help improve the management of transboundary water resources, including dynamic information systems on water availability and demand that can help increase the accuracy of models for determining the impacts of potential changes in the management and use of transboundary watersheds and aquifers. Including regular data and information sharing in the operationality criteria for SDG indicator 6.5.2 is justified by the importance of knowledge and information for transboundary water cooperation.

For most Arab countries, the information provided in the responses submitted was incomplete or sometimes absent. From the countries' reports on challenges regarding cooperation on transboundary waters (figure 3), there is an evident need to address the lack of relevant data and information and its exchange by improving the knowledge base in transboundary contexts while leveraging innovative technologies. The lack of studies on transboundary groundwater resources and the lack of dedicated financing for transboundary water resources in terms of monitoring, reporting and management, are considerable obstacles to reporting on SDG indicator 6.5.2 and to cooperation. Several innovative tools are available and should be leveraged to improve the knowledge base such as decision support systems, which are computerized systems for assisting in day-to-day operational and long-

³² Ibid.

³³ ECE and UNESCO, 2021.

term strategic decision-making and were used in the NBI. Hydro-economic modelling is both a computational method and a tool for analysing water resource management problems and optimizing water allocation for different uses across time and space, taking into consideration various physical, economical, environmental and institutional constraints. It has been applied by the Food and Agriculture Organization of the United Nations (FAO) on the Senegal River Basin shared between Mali, Mauritania and Senegal.

A specific question was asked in the SDG indicator 6.5.2 survey on the main difficulties and challenges regarding data exchange, and many countries reported inadequate technical and financial resources. Independent institutions can help to enable regional cooperation in various economic and social areas, strengthen capacity, and offer technical support to member countries. Improving data gathering is a significant first step towards enabling cooperation and triggering immediate action to address gaps. Collaboration between States could involve specific activities at the bilateral or basin level that will lead to more formal cooperation including capacity-building, data monitoring and sharing, common studies for improved knowledge on transboundary water resources, knowledge exchange missions and study tours between riparian countries. The SDG 6 Global Acceleration Framework

emphasizes the need to leverage and scale up innovative practices and technologies.³⁴ Regular and timely exchange of data and complete and accurate information on all water issues is necessary, making use of innovative technologies (Geographical Information Systems (GIS), updated maps, satellite imaging, models, etc.) in data collection. For instance, the Global Groundwater Information System is an interactive, web-based portal for groundwater-related information which enables the collection and analysis of information on groundwater resources and its sharing among water experts, decision makers and the public. There is some leeway when calculating the indicator to allow for challenges related to uncertainty, a benefit of the flexibility of the 6.5.2 monitoring process. The option to use a broad estimate for the basin area, or to only consider the area of an aquifer that is possibly shared, is available.³⁵ This latter approach formed the basis for the SRAS agreement between Jordan and Saudi Arabia (box 3).

Arab countries, custodian agencies and regional partners must work together to improve both the quality and coverage of data. This will enable a more comprehensive third monitoring exercise in 2023. Custodian agencies and partners must coordinate efforts to address data gaps and respond promptly to country requests for support with improving transboundary water cooperation.³⁶

34 Ibid.

35 Ibid.

36 Ibid.

Box 3. Saq-Ram Aquifer System

Data sheet

- Shared countries: Jordan, Saudi Arabia.
- Watershed: 308,000 km² (10 per cent in Jordan, 90 per cent in Saudi Arabia).
- Rainfall (mm): 20.
- Basin population: 750,000 inhabitants.

Cooperation

The Jordanian Ministry of Water and Irrigation and the Saudi Arabian Ministry of Electricity and Water signed a memorandum of understanding at the technical level in 2007. This was considered as the first step towards building cooperative dialogue between two riparian countries and provides an example for other Arab countries that are engaging in bilateral discussions over transboundary water resources. Based on the 2007 bilateral memorandum of understanding, Jordan and Saudi Arabia decided to enhance cooperation through monitoring and data sharing. Better assessment of the Saq-Ram Aquifer occurred when a modernized groundwater monitoring network was installed in 2011. The use of technological tools and devices has enhanced and strengthened the database available for both countries. In 2015, Jordan and Saudi Arabia signed an agreement for the *Management and Utilization of the Ground Waters in the Al-Saq/Al-Disi Layer*. The agreement over the Al-Saq/Al-Disi Aquifer is concise, with four main articles, including an article that discusses the creation and responsibilities of a Joint Saudi/Jordanian Technical Committee. This is notable as few agreements over transboundary aquifers so far have created such mechanisms. The establishment of a joint monitoring network across both sides of the border helped to verify and assess water level drawdown across the border and foster information exchange.

Coordination frameworks, such as joint basin management institutions, provide platforms that enable countries to interact and identify new opportunities to deepen coordinated development in specific sectors or to expand cooperation to other sectors and beyond the basin. With the improvement of their knowledge base around the aquifer using innovative technological tools, Jordan and Saudi Arabia were able to create a “Protected Area” of approximately 400 km² within each country along the border where all groundwater activities must be discontinued. This created a zone where well drilling was prohibited between the well fields of the two nations. Of the over 600 transboundary aquifers and groundwater systems that have been identified globally, only a small number of these critical water resources are managed by cooperative arrangements. Accordingly, the agreement over the Saq-Ram Aquifer is a significant milestone that can lead the way for other States to start recognizing the importance of their transboundary aquifers and the need to cooperate with their neighbours.

Source: <http://www.internationalwaterlaw.com>, ESCWA and BGR, 2013.

B. Financing transboundary water cooperation

Financing and funding cooperation is as critical to accelerating transboundary water agreements as increasing the knowledge base. Financing is often disregarded but is a critical factor in advancing

transboundary water cooperation, and more specifically in supporting the negotiation and implementation of operational arrangements.³⁷

From the responses submitted by countries regarding the main difficulties and challenges they face with agreements or arrangements and their implementation (figure 6), there is an evident need

37 Ibid.

to improve financing for transboundary water cooperation in order to accelerate progress towards regional agreements. Multiple joint basin management mechanisms have been established through full or partial grant funding from development partners for activities such as seed financing, multi-donor trust funded programmes (such as the Nile Basin Trust Fund), and recipient-executed grants. Joint efforts are needed to ensure the necessary financial resources are secured from national and international sources for the implementation of projects to improve transboundary water cooperation. Examples

include the 2002 Global Environment Facility (GEF) funding of the NWSAS project (box 4) through a trust fund. Also, in 2014, the International Groundwater Resources Assessment Centre (IGRAC) carried out a project on the Managed Aquifer Recharge in the transboundary Merti Aquifer shared between Kenya and Somalia. The project was funded by a European Union programme aimed at strengthening national and regional capacities in the field of water resource management and the development of regional dialogue and cooperation for sustainable water resource management in the Horn of Africa.

Box 4. North Western Sahara Aquifer System

Data sheet

- Shared countries: Algeria, Libya, Tunisia.
- Watershed: 1,030,000 km².
- Rainfall (mm): 59.
- Basin population: 6,900,000 inhabitants.

Cooperation

The NWSAS is administered by the Sahara and Sahel Observatory (OSS), an independent organization based in Tunis that focuses on combating desertification and mitigating drought in Africa. The NWSAS plan was adopted in Tunis 1997. The United Nations Environment Programme (UNEP) requested US\$ 600,000 of funds from the GEF for the protection of the NWSAS and related humid zones and ecosystems. In May 1999, the Member States and funding partners (UNEP, GEF, FAO, UNESCO and the International Fund for Agricultural Development) met in Rome and named the OSS as the executive agency in charge of the NWSAS project. The project partners undertook a significant role in financing and implementing the project. In addition to funding received from the main partner organizations, the NWSAS project also received funding from national development agencies (such as the Fonds Français pour l'Environnement Mondial and Direction du développement et de la coopération Suisse). Arab countries should be encouraged to secure climate adaptation funds for transboundary settings, as seen with the example of the NWSAS project.

The OSS acts as the main executive body of the NWSAS that manages the project's funds and presides over a steering committee responsible for the execution of project. The steering committee is responsible for all activities, including expenditure plans. The management of programme funds is also subject to an external financial audit. The three Member States, Algeria, Libya and Tunisia, reached an agreement in 2002 to establish a consultation mechanism for the NWSAS, despite the fact that no formal treaty had been signed between them. The objective of the consultation mechanism is to "coordinate, promote and facilitate the rational management of the NWSAS water resources". Securing joint investments is also a main driver of the consultation mechanism, as joint investments may cover the costs of construction, operation and maintenance of infrastructure, using innovative tools such as equal cost sharing, repayable loans or direct payments. The management structure of the NWSAS was agreed by the three Member States using an evolutionary approach. Starting with a simple structure, the approach allowed for the management to move to a more complex and autonomous structure with responsibility for specific functions at a later stage.

Source: International Waters Governance, n.d. Available at <http://www.internationalwatersgovernance.com>.

Where arrangements and joint bodies for transboundary water cooperation are operational, it is critical that countries can sustain both the core costs of any joint body as well as any programme or project costs, such as the costs of meetings, staff costs, buildings, monitoring, strategic planning, and the development and implementation of joint infrastructure projects.³⁸ Financial organizations should consider lessons learned from the various examples of agreements that have been signed on transboundary surface and groundwater resources in the Arab region and the gaps identified in their investment decisions.

Tackling existing bottlenecks in financing transboundary water cooperation is also necessary. The financing of transboundary water cooperation has traditionally fallen short of needs due to challenges in securing financing from traditional sources, a lack of capacity and political will, and structural barriers to financing.³⁹ The next steps will require the continued development of innovative financing mechanisms and the improved articulation and recognition of the benefits of investing in the negotiation of arrangements for transboundary water cooperation, as well as in the establishment and sustainable operation of joint bodies.⁴⁰

C. Capacity development for negotiating transboundary water cooperation

In addition to increasing the knowledge base and securing financing, often countries need capacity development for negotiating transboundary water cooperation. They need assistance in the development of mechanisms for facilitating the implementation of

conventions and their related requirements. There is a wide range of technical methods for making information accessible to water managers, decision makers and other users, including hydrological bulletins, meteorological reports and awareness-raising materials such as press kits, leaflets, maps, postcards, posters and various multimedia to promote public awareness of basin threats, development challenges, outcomes and opportunities for participation. Several non-governmental organizations are engaged in promoting coordination in water governance and in enhancing capacity-building for negotiating cooperation. Capacity-building is an important precursor to the negotiation and implementation of operational arrangements for transboundary water cooperation. Continuous efforts in joint project implementation for the conservation and monitoring of water resources will facilitate the establishment of cross-border regional monitoring working groups, as in the case of the SMAB (box 5). The holding of regular technical meetings can accelerate progress significantly, in addition to the fundamental obligation to exchange available data on a regular basis. Moreover, the critical role of women in water resource management and protection should be recognized and emphasized to enhance the collective capacity of women throughout transboundary basins and to support the engagement of these women water leaders in decision-making and peace building processes such as in the case of the Nile Basin with the 'Women and Water Diplomacy in the Nile' platform. Following steps will require custodian agencies and partners to continue to facilitate and upscale shared learning and the exchange of

38 Ibid.

39 Ibid.

40 Ibid.

experience between countries, strengthen the ability to identify and produce new

information, mobilize resources and, where needed, establish technical projects.⁴¹

Box 5. Senegalo-Mauritanian Aquifer Basin

Data sheet

- Shared countries: Gambia, Guinea Bissau, Mauritania, Senegal.
- Watershed: 340,000 km².
- Rainfall (mm): 500.
- Basin population: 15,000,000 inhabitants.

Cooperation

The Secretariat of the Convention on the Protection and Use of Transboundary Watercourses and International Lakes (Water Convention) organized in 2019 a roundtable on transboundary collaboration for the SMAB, which brought together the four aquifer States and the main transboundary basin organizations of the region: the Senegal River Basin Development Organization (OMVS) and the Gambia River Development Organization. Exchanges between the four States and basin organizations took place at the roundtable with active contributions from experts and technical and financial partners. It facilitated an update on current knowledge on the aquifer system, an exchange on transboundary aquifer management issues and the identification of possible options for cooperation to promote the sustainable management and use of the aquifer. Riparian States identified a wide range of benefits that enhanced cooperation on the Senegalo-Mauritanian Basin could generate, both in terms of economic, social and environmental benefits and benefits from regional economic integration and peace and security.

Two regional working group meetings were held during late 2020 to discuss international cooperation over the SMAB. Riparian States of the Senegalo-Mauritanian Aquifer, Gambia, Guinea Bissau, Mauritania and Senegal, have engaged in dialogue aimed at establishing transboundary cooperation over this shared water resource. The session of the regional working group led to an agreement being reached on the main operational tools for implementing this vision of transboundary cooperation based on the integrated development of groundwater and surface water resources, capitalizing on more than half a century of experience in the concerted management of the sub-region's major rivers. Improved management and consultation between the various stakeholders have contributed substantially to preventing conflict over use between the countries and sectors that depend on this resource. Considering climate change when using an integrated management scheme for surface water and groundwater is far more strategic than when using the traditional approach of managing each resource alone.

Coordination can directly or indirectly contribute to international trade, economic development, food security, political security, poverty alleviation and regional integration in several ways. The four riparian countries pledged on 29 September 2021 to exploit their joint water resources sustainably. Regarding the SMAB, ministers in charge of water, meeting in Geneva, pledged to promote resilience, sustainable development and stability in the region. They agreed to set up a "legal and institutional framework for transboundary cooperation for the sustainable management" of the SMAB and the region's surface waters.

Source: ECE, 2020a.

41 Ibid.

D. Global, regional and national tools for improving transboundary water governance

Given Arab countries' heavy reliance on transboundary water resources, States should draw on global frameworks or regional processes to improve cooperation. There are many global tools that can be utilized for improving transboundary water governance such as declarations, memorandums of understanding and treaties, including the Watercourses Convention, the Water Convention and the draft articles on the Law of Transboundary Aquifers. These conventions include important provisions on the monitoring and assessment of transboundary waters, the effectiveness of measures taken to prevent, control and reduce transboundary impact, and the exchange of information on water and effluent monitoring. The legal principles governing transboundary water management are established in the latter series of United Nations conventions, bi-lateral and multi-lateral agreements between States, and at the International Court of Justice. Additionally, the United Nations Water Task Force on Transboundary Waters provides a platform for promoting coherence and coordination of activities and acts as an intermediary between United Nations initiatives and practices at regional and local levels. The International Shared Aquifer Resources Management initiative aims to improve the understanding of scientific, socio-economic, legal, institutional and environmental issues related to the management of transboundary aquifers. For instance, a comprehensive report on shared resources in Africa has been published due to a fruitful cooperation between the General Water Authority of Libya and the UNESCO Intergovernmental Hydrological Programme.

At the regional level, many institutions and partners can also be approached for assistance. A draft Framework Convention on Shared Water Resources in the Arab Region was prepared and reviewed by the LAS under the auspices of the AMWC. It supports shared water resource cooperation between Arab States. The AMWC then called for the legal instrument to be reformulated into a set of common guidance principles for shared water cooperation and improved regional capacity for shared water resource management. Finally, at the national level, most Arab countries declared that their national legislation, policies, action plans and strategies refer to measures to prevent, control and reduce transboundary impacts. Existing global, regional and national legal frameworks can be built upon and further strengthened as a source of practical support and an important basis upon which to negotiate new arrangements or revise existing ones where operational arrangements are lacking.

Mainstreaming transboundary cooperation into national water legislation, strategies and plans is a necessary foundation for bilateral and multilateral negotiations and for strengthening the implementation of existing arrangements. Moreover, there is a need to upscale and coordinate the activities of United Nations organizations and other international organizations so as to provide targeted support to countries regarding the negotiation, adoption and implementation of arrangements for transboundary water cooperation. Arab countries are concerting considerable efforts towards acceding to international conventions. Most recently, Iraq completed the national processes for acceding to the Convention on the Protection and Use of Transboundary Watercourses and International Lakes – Helsinki 1992 “the Water Convention”, via Law 17/2020 published in

May 2021. The ensuing steps will require countries to take advantage of these frameworks, including the Water Convention or the Watercourses Convention (box 6), so as to advance their cooperation based on the fundamental principles of international law

and existing good practices. In addition, the draft articles on the law of transboundary aquifers, which the United Nations General Assembly will reconsider in 2022, can support much-needed progress regarding the aquifer component of SDG indicator 6.5.2.

Box 6. Orontes River

Data sheet

- Shared countries: Lebanon, the Syrian Arab Republic, Türkiye.
- Length: 404 km.
- Watershed: 26,530 km².
- Average annual flow: 1.2 billion m³.
- Basin population: 5,860,000 inhabitants.

Cooperation

There are two bilateral agreements in place covering the Orontes River (Lebanon-the Syrian Arab Republic and the Syrian Arab Republic-Türkiye), though none include all three riparian countries. The first negotiations over the Orontes between Lebanon and the Syrian Arab Republic date back to the 1940s. Formal cooperation started in 1972 when the two riparian countries signed a bilateral agreement (never enforced) concerning water use in the river basin. The Fraternity, Cooperation, and Coordination Treaty was signed between Lebanon and the Syrian Arab Republic in 1991. It set out the basis for cooperation between the two countries in different sectors. Many agreements followed, including those designed for transboundary water resources shared between the two countries. The Lebanese Syrian Joint Committee for Shared Water was established under this treaty, with representatives from the Lebanese Ministry of Energy and Water and the Syrian Ministry of Irrigation. In September 1994, the two countries signed a second agreement specific to the Orontes, building on the 1972 agreement. It acknowledged that the waters of the river are shared and stated that the parties agree to divide the resource: 80 million m³ for Lebanon and 323 million m³ for the Syrian Arab Republic annually. However, the Lebanese authorities deemed the terms of the agreement to be unfavourable to Lebanon.

The 1994 agreement was deficient concerning the management of the river waters, consideration of potential future development on the Lebanese side of the basin, and compliance with international legal regimes. There was no mentioning of storage nor watershed limits and it was not based on any international framework and had no implementation mechanisms. In 1997, the adoption of the United Nations Convention on the Law of the Non-Navigational Uses of International Watercourses (Watercourses Convention) by most States, including Lebanon in 1999 and Syrian Arab Republic, in 1998 triggered renegotiations in 1999, leading to a new agreement signed in 2001. Accession to this treaty helped the riparian countries to engage in renegotiation over the Orontes basin. Arab countries can benefit from this experience to accelerate transboundary water cooperation.

The 2001 Orontes Agreement is regarded as unique in the Levant as it embraces international legal principles, and it can open the door for similar agreements in the region. In the case of the Orontes, hydro-diplomacy played a leading role in successfully reaching a win-win situation, where both riparian States “co-benefit” from the river. Lebanon and the Syrian Arab Republic made use of global, regional and national tools for assistance in improving transboundary governance and amending existing arrangements over the Orontes River between the 1994 and the 2001 agreements. Today, cooperative ties between Lebanon and the Syrian Arab Republic over the Orontes are strong, despite the current armed conflicts in the region. A special joint committee for the Orontes River was created under the Lebanese Syrian Joint Committee for Shared Water, which is the central entity through which both countries cooperate over issues related to transboundary water resources.

Source: ESCWA and BGR, 2013.

4. Conclusions and recommendations

In conclusion, the Arab region is one of the most water scarce regions in the world. Arab States are dependent on external water resources and this increases the need for better cooperation between riparian States since the management of a shared water resource in one country may have significant impacts on the ability of other countries sharing the same resource to benefit from it.⁴² Water is political and the challenge of effective and beneficial management lies in convincing politicians of solutions for cooperating over water issues.⁴³ However, a long history of mistrust perpetuates competition between States and hampers cooperation on water governance, whether sharing the Euphrates basin or the Nile, using a common qanat tunnel, or sharing a water supply system such as the Northeastern and Eastern aquifers between the State of Palestine and Israel.⁴⁴

The traditional approaches for cooperation are outdated and have not proven to be effective. Innovative initiatives can yield productive results. With increasing climatic change, peace and cooperation on water management at all levels is the only option for the region to avoid a natural catastrophe. Case studies developed locally have demonstrated that when actors and stakeholders invest in constructive dialogue, people are more motivated to work together

and create common visions.⁴⁵ The United Nations Water Transboundary Waters Thematic Priority Area has organized a compilation of good practices regarding transboundary water cooperation and created an online database that enables the continuous recording and sharing of good practices. There are two examples of good practice involving transboundary basins shared by one or more Arab countries: the Nile River Basin and the Senegal River Basin. Good practice is often achieved through the existence of factors which, upon identification, can be used to create opportunities for cooperation. An analysis of these factors enabling good practice revealed eight emerging commonalities:⁴⁶

1. Multi-level involvement of stakeholders.
2. Data and information sharing and dialogue.
3. A basin level organization.
4. The human right to water.
5. Trust.
6. Common challenges.
7. Full stakeholder inclusion.
8. Capacity-building.

A. Summary of findings

With the responses countries submitted for the second reporting exercise on SDG indicator 6.5.2 in 2020, the information provided was

42 ESCWA, 2015.

43 Wessels, 2009.

44 Ibid.

45 Ibid.

46 ECE, 2015.

often incomplete or absent. Despite a general increase in the number of countries that responded, the results obtained do not allow for comprehensive analysis of the full reality of SDG indicator 6.5.2 and of progress in the Arab region. The main challenges that characterize the responses from the Arab region are as follows:

- Low rate of response compared to the world average.
- Lower responses on the aquifer component than on the surface water – river and lake basin – component.
- Several responses require the provision of additional information given discrepancies and contradictions.
- Several countries have a score of 0 or N despite sharing several transboundary water resources.
- Several countries have omitted mention of some transboundary water resources.
- Limited regional information is available.

However, many positive points also characterize the responses from the Arab region, and can be noted as follows:

- Politically unstable countries were able to submit.
- Countries that submitted during the first reporting exercise were able to improve their responses for the second exercise.
- Some countries were encouraged to engage in national dialogue over shared water issues, creating a national committee, organizing national workshops, and designating experts responsible for the coordination of the process such as in Algeria, Iraq and Jordan.
- Many countries took the opportunity to strengthen national coordination,

cooperation and data-sharing between national institutions.

- The Arab region is home to four important and unique aquifer cooperation mechanisms. Globally, agreements over transboundary aquifers are very rare, in contrast to the thousands of treaties relating to the use of transboundary surface water resources.

Improved results should be seen in the next round of reporting, especially given the importance of transboundary water resources for the Arab countries. The required steps in preparation for the next data drive in 2023 include:

- Preparing reports at the national level using a consultative approach, which helps to raise awareness of and support for the topic, in coordination with SDG indicator 6.5.1 focal points to harmonize responses across indicators concerning transboundary issues.
- Discussing the coordination of reports among neighbouring countries to help develop a common understanding of challenges and opportunities, which can become the basis for discussing the next steps with riparian countries or basin organizations.
- Reducing the data gaps, especially regarding aquifers, using the technological tools available.
- Global and regional webinars or workshops and targeted support provided by co-custodian agencies.

B. Accelerating progress on transboundary water cooperation

Surface water basins and groundwater aquifers that cross international borders present

significant challenges to effective water management. Transboundary cooperation is at the heart of the 2030 Agenda and the SDGs. Cooperation around transboundary water resources has the potential to promote trust between countries and to be an instrument for increased cooperation. There is growing global and regional momentum in support of transboundary water cooperation and cause for some optimism regarding the issue, notably in relation to the global record of resolving water-related disputes along international waterways.

Cooperation is highly important for the Arab region, where water scarcity and conflict are affecting the livelihoods of the population. Regional cooperation needs to be developed and improved and transboundary water cooperation can be an instrument for deepening regional integration, promoting peace and security and enhancing resilience. A paradigm shift is needed regarding existing practices and processes; behavioural change is fundamental to progress regarding cooperation over transboundary water resources. Most of the water use in the transboundary basins and aquifers of the Arab region exceeds the amount of renewable water available, especially with the fossil aquifers. Arab countries should start considering innovative solutions and develop interventions that are designed to secure the availability of supplies and create resilience to ensure that growing water demands can be met both within and between countries sharing transboundary basins. Good practices and lessons learnt from successful cooperation over the management of transboundary water resources in the Arab region should be highlighted and showcased such as the examples of the Orontes, the NWSAS, the SRAS and the newly-signed shared commitment declaration over the SMAB.

Building on the positive signs seen in the reports submitted by Arab countries, there are many ways to encourage better responses. The countries that reported but still need to provide additional information are clearly willing to report but were either lacking data or were not able to meet all the reporting requirements. Solutions to such challenges include facilitating data exchange and transparency between riparian countries or between different stakeholders at the national level. Regional and international organizations can provide support for improving the availability and accessibility of information and can facilitate basin level dialogues for improved cooperation and reporting. As for countries that have not reported, these include countries under conflict such as the Syrian Arab Republic, Yemen and the Sudan, which will need early support prior to the next reporting round in order to address needs and any potential knowledge gaps. Other countries that did not report include Bahrain, Djibouti and Mauritania, which might require engagement and early notification of the next round of reporting in order to further assess their needs. It should be noted that Mauritania has recently signed a declaration on the SMAB, which should encourage it to engage in the reporting process. Ultimately, all countries can benefit from improved cooperation and coordination regarding SDG indicator 6.5.1 and SDG indicator 6.5.2 focal points at the national and basin level.

Several Arab countries have engaged in the process for accession to the Water Convention. The Water Convention offers many resources and tools that are made available to signatory countries. Other tools and approaches that can also be utilized by Arab countries to improve transboundary water cooperation include the Water-Energy-Food Nexus approach, which

offers multiple benefits through the inter-sectoral approach it adopts. The potential of a nexus approach towards managing interlinked resources to enhance the closely interlinked aspects of water, energy and food security has been recognized. Countries that have not yet submitted reports should seek assistance from the co-custodian agencies and other regional partners at an early stage rather than waiting until the reporting call is issued. Also, countries that have submitted incomplete reports should make use of scientific tools, including the many hydrological and geographical tools available globally and regionally, as sources of data to establish shared platforms for data exchange, at the national level first, then at the basin level. These include the Inventory of Shared Water Resources in Western Asia, the World-wide Hydrogeological Mapping and Assessment Programme, GIS tools and modelling tools (river, hydrologic and hydrogeologic). The use of remote sensing data and publicly available data on existing data portals can be used by countries as a catalyst for cooperation at the transboundary level.

Given that most water resources in the region are transboundary, it is vital that countries cooperate at the regional and local levels and aim at increasing water security. Reliance on traditional cooperation approaches can no longer continue. These outdated mechanisms focused only on water shares, approached problems from a technical perspective, and

have failed to build trust and partnerships. Arab countries should engage in the process of identifying appropriate tools for achieving sustainable and mutually beneficial water resource management for transboundary river basins. Innovative initiatives that integrate technical as well as social, political and economic aspects should be adopted; new initiatives are needed to improve cooperation that build on iterative successes and expand beyond the current limits of the water sector. Countries and supporting regional or international organizations need innovative initiatives so as to foster cooperation beyond classical and rigid legal water-share distribution agreements. In this regard, SDG indicator 6.5.2 can play a major role in fostering dialogue on water cooperation as it can help to link water sharing challenges to other issues such as food, energy, hygiene and agriculture. Cooperation should go beyond water and should be based on trust building between riparian countries, which should work together within regional frameworks to reach sustainable results.

Finally, implementing international water law principles can contribute towards achieving peace and stability for the transboundary basins of the region. A focus on international water conventions, bilateral and basin agreements and other related legal frameworks will benefit the improved and sustainable management of transboundary water resources.

Annex. Transboundary surface water basins shared by one or more Arab country and their associated cooperation arrangements

Basin	Riparian countries	Cooperation arrangements	Signatories	Arab countries that reported on the arrangement
Jordan	Israel, Jordan, Lebanon, State of Palestine, Syrian Arab Republic	Franco-British convention on certain points connected with the mandates for the Syrian Arab Republic and Lebanon, the State of Palestine and Mesopotamia (1920) ^a	France, United Kingdom	-
		Exchange of notes constituting an agreement between the British and French Governments respecting the boundary line between the Syrian Arab Republic and the State of Palestine from the Mediterranean to El Hamme (1923) ^a		
		Agreement of good neighbourly relations concluded between the British and French Governments on behalf of the territories of the State of Palestine, on the one part, and on behalf of the Syrian Arab Republic and Great Lebanon, on the other part (1926) ^a		
		Agreement between the Syrian Arab Republic and the Hashemite Kingdom of Jordan concerning the utilization of the Yarmuk waters (1953) ^a	Jordan, Syrian Arab Republic	-
		Agreement concerning the utilization of the Yarmuk waters (with Annex) (1987) ^a	Jordan, Syrian Arab Republic	Jordan
		Treaty of peace between the State of Israel and the Hashemite Kingdom of Jordan (1994) ^a	Israel, Jordan	Jordan

Basin	Riparian countries	Cooperation arrangements	Signatories	Arab countries that reported on the arrangement
		Israeli-Palestinian interim agreement on the West Bank and the Gaza Strip also known as Oslo II (with Annexes) (1995) ^b	Israel, State of Palestine Liberation Organization	-
		Resolution No. 31 of 2001 establishing a joint committee from Jordan and the Syrian Arab Republic to define any violation of the agreement signed between both countries (2001) ^c	Jordan, Syrian Arab Republic	-
Orontes	Lebanon, Syrian Arab Republic, Türkiye	Final protocol to determine the Syria-Hatay border delimitation (1939) ^b	Syrian Arab Republic, Türkiye	-
		Agreement on water use (1972) ^b	Lebanon, Syrian Arab Republic	-
		Fraternity, cooperation and coordination treaty (1991) ^b	Lebanon, Syrian Arab Republic	-
		Agreement between Lebanon and the Syrian Arab Republic on the distribution of the water of Al-Asi River rising in Lebanon (1994) ^a	Lebanon, Syrian Arab Republic	Lebanon
		Annex to the agreement on the distribution of Orontes River water originating in Lebanese territory (1997) ^b	Lebanon, Syrian Arab Republic	-
		Joint Communiqué between Republic of Türkiye Prime Ministry Southeastern Anatolia Project Regional Development Administration and the Syrian Arab Republic Ministry of Irrigation General Organization for Land Development (2001) ^a	Syrian Arab Republic, Türkiye	-
		Agreement annex between Lebanon and the Syrian Arab Republic concerning the distribution of the water of the Al-Asi River rising in Lebanon. (2002) ^a	Lebanon, Syrian Arab Republic	Lebanon
		Syrian-Turkish strategic cooperation council agreement (2009) ^b		-

Basin	Riparian countries	Cooperation arrangements	Signatories	Arab countries that reported on the arrangement
		Memorandum of understanding between the Government of the Republic of Türkiye and the Government of the Syrian Arab Republic in the field of efficient utilization of water resources and combating of drought (2009) ^d	Syrian Arab Republic, Türkiye	
		Memorandum of understanding between the Government of the Republic of Türkiye and the Government of the Syrian Arab Republic for the construction of a joint dam on the Orontes River under the name "Friendship Dam" (2010) ^e		
		Memorandum of understanding in the field of remediation of water quality between the Government of the Republic of Türkiye and the Government of the Syrian Arab Republic (2011) ^c		
Euphrates	Iraq, Jordan, Saudi Arabia, Syrian Arab Republic, Türkiye	Franco-British convention on certain points connected with the mandates for the Syrian Arab Republic and Lebanon, the State of Palestine and Mesopotamia (1920) ^a	France, United Kingdom	-
		Agreement between France and Türkiye with a view to promoting peace, with protocol relating thereto, protocol concerning its coming to force, and exchange of notes (1921) (<i>also known as Treaty of Ankara or Franklin-Bouillon agreement</i>) ^b	France, Türkiye	-
		Lausanne treaty (1923) ^b	Allied Powers, Türkiye	-
		Convention of friendship and good-neighbourly relations between France and Türkiye (1926) ^b	France and Türkiye	-
		Treaty of friendship and neighbourly relations, and six annexed protocols (1946) ^a	Iraq and Türkiye	-
		Protocol for technical and economic cooperation (1980) ^b	Iraq, Türkiye, Syrian Arab Republic (signed in 1983)	Iraq

Basin	Riparian countries	Cooperation arrangements	Signatories	Arab countries that reported on the arrangement
		Protocol on matters pertaining to economic cooperation (1987) ^a	Syrian Arab Republic, Türkiye	-
		Law No. 14 of 1990, ratifying the Joint Minutes concerning the provisional division of the waters of the Euphrates River (1990) ^a	Iraq, Syrian Arab Republic	-
		Joint Communiqué between Republic of Türkiye Prime Ministry Southeastern Anatolia Project Regional Development Administration (GAP) and the Syrian Arab Republic Ministry of Irrigation General Organization for Land Development (GOLD) (2001) ^a	Syrian Arab Republic, Türkiye	-
		Declaration on the establishment of the high-level strategic cooperation council ^b	Iraq, Türkiye	-
		Syrian-Turkish strategic cooperation council agreement ^b	Syrian Arab Republic, Türkiye	-
		Protocol on water ^b	Iraq, Syrian Arab Republic	-
		Memorandum of understanding between the Government of the Republic of Türkiye and the Government of the Syrian Arab Republic in the field of efficient utilization of water resources and combating of drought (2009) ^d	Syrian Arab Republic, Türkiye	-
		Memorandum of understanding in the field of remediation of water quality between the Government of the Republic of Türkiye and the Government of the Syrian Arab Republic (2011) ^c	Syrian Arab Republic, Türkiye	-
		Memorandum of understanding in the field of water between the Ministry of Forestry and Water Affairs of the Republic of Türkiye and the Ministry of Water Resources of the Republic of Iraq (2014) ^f	Iraq, Türkiye	-

Basin	Riparian countries	Cooperation arrangements	Signatories	Arab countries that reported on the arrangement
		Meeting between Iraq and Türkiye to discuss the water file and ways of joint cooperation between the two countries to face the water scarcity crisis in the region, in addition to discussing the memorandum of understanding in the field of water after its entry into force (2021) ^g		
Tigris	Iran, Iraq, Syrian Arab Republic, Türkiye	Franco-British convention on certain points connected with the mandates for the Syrian Arab Republic and Lebanon, the State of Palestine and Mesopotamia (1920) ^a	France, United Kingdom	-
		Lausanne treaty (1923) ^b	Allied Powers, Türkiye	-
		Turko-French protocol (on commission of delimitation) (1930) ^b	France Syrian Arab Republic, Türkiye	-
		Treaty of friendship and neighbourly relations and six annexed protocols (1946) ^a	Iraq, Türkiye	-
		Treaty between Türkiye and Iran on the Sarisu and Karasu River (1955) ^a	Iran, Türkiye	-
		Agreement between Iran and Iraq concerning frontier commissioners (1975) ^a		
		Agreement between Iran and Iraq concerning the use of frontier watercourses, and protocol (1975) ^a	Iran, Iraq	-
		Protocol for technical and economic cooperation (1980) ^b	Iraq, Türkiye, Syrian Arab Republic (signed in 1983)	Iraq
		Protocol on matters pertaining to economic cooperation (1987) ^a	Syrian Arab Republic, Türkiye	-
		Joint Communiqué between Republic of Türkiye Prime Ministry Southeastern Anatolia		

Basin	Riparian countries	Cooperation arrangements	Signatories	Arab countries that reported on the arrangement
		Project Regional Development Administration and the Syrian Arab Republic Ministry of Irrigation General Organization for Land Development (2001) ^a		
		Bilateral agreement between the Syrian Arab Republic and Iraq concerning the installation of a Syrian pump station on the Tigris river for irrigation purposes (2002) ^a	Iraq, Syrian Arab Republic	-
		Syrian-Turkish strategic cooperation council agreement (2009) ^b	Syrian Arab Republic, Türkiye	-
		Memorandum of understanding between the Government of the Republic of Türkiye and the Government of the Syrian Arab Republic in the field of efficient utilization of water resources and combating of drought (2009) ^d		
		Memorandum of understanding in the field of remediation of water quality between the Government of the Republic of Türkiye and the Government of the Syrian Arab Republic (2011) ^c		
		Memorandum of understanding between the Government of the Republic of Türkiye and the Government of the Syrian Arab Republic on the establishment of a pumping station for withdrawal of water from Tigris River (2011) ^c		
		Memorandum of understanding in the field of water between the Ministry of Forestry and Water Affairs of the Republic of Türkiye and the Ministry of Water Resources of the Republic of Iraq (2014) ^f	Iraq, Türkiye	-
		Meeting between Iraq and Türkiye to discuss the water file and ways of joint cooperation between the two countries to face the water scarcity crisis in the region, in addition to discussing the memorandum of understanding in the field of water after its entry into force (2021) ^g		

Basin	Riparian countries	Cooperation arrangements	Signatories	Arab countries that reported on the arrangement
Shatt el-Arab	Iran, Iraq	Treaty concerning the state frontier and neighbourly relations between Iran and Iraq and protocol (1975) ^a	Iran, Iraq	Iraq
Qweik	Syrian Arab Republic, Türkiye	Agreement between France and Türkiye with a view to promoting peace, with protocol relating thereto, protocol concerning its coming to force, and exchange of notes (1921) (<i>also known as Treaty of Ankara or Franklin-Bouillon agreement</i>) ^b	France, Türkiye	-
		Convention of friendship and good-neighbourly relations between France and Türkiye (1926) ^b	France, Türkiye	-
Wadi Araba	Israel, Jordan	Treaty of peace between the State of Israel and the Hashemite Kingdom of Jordan (1994) ^a	Israel, Jordan	Jordan
Kebir	Lebanon, Syrian Arab Republic	Fraternity, cooperation and coordination treaty (1991) ^b	Lebanon, Syrian Arab Republic	
		An agreement between the Syrian Arab Republic and the Lebanese Republic for the sharing of the Great Southern River basin water and building of joint dam on the maincourse of the river (2002) ^a	Lebanon, Syrian Arab Republic	Lebanon
Atui	Morocco, Mauritania	-	-	-
Awash	Djibouti, Eritrea, Ethiopia, Somalia	-	-	-
Baraka	Eritrea, Sudan	-	-	-
Congo/Zaire	Angola, Burundi, Cameroon, Central African Republic, Congo, Democratic	Conference of Berlin (1885) ^a	United Kingdom, Austria-Hungary, Belgium, Denmark, France, Germany,	-

Basin	Riparian countries	Cooperation arrangements	Signatories	Arab countries that reported on the arrangement
	Republic of Congo, Gabon, Malawi, Rwanda, South Sudan, Sudan, Tanzania, Uganda, Zambia		Italy, Netherlands, Portugal, Russia, Spain, Sweden Norway, Türkiye, United States	
		Exchange of notes accepting the protocol relative to the Tanganyika-Ruanda-Urundi Frontier (1926) ^a	Belgium, United Kingdom	-
		Convention between Belgium and Portugal regarding various questions of economic interest of the colonies Belgian Congo and Angola (1927) ^a	Belgium, Portugal	-
		Agreement between the United Kingdom and Belgium regarding water rights on the boundary between Tanganyika and Ruanda-Urundi (1934) ^a	Belgium, United Kingdom	-
		Convention on the sustainable management of Lake Tanganyika (2003) ^a	Burundi, Congo, Democratic Republic of Congo, Tanzania, Zambia	-
Daoura	Algeria, Morocco	-	-	-
Dra	Algeria, Morocco	-	-	-
Gash	Eritrea, Ethiopia, Sudan	Exchange of notes between the United Kingdom and Italy respecting the regulation of the utilisation of the waters of the River Gash (1925) ^a	Italy, United Kingdom	-

Basin	Riparian countries	Cooperation arrangements	Signatories	Arab countries that reported on the arrangement
		Letters between the irrigation adviser and director of irrigation, the Sudan Government and the controller of agriculture (1951) ^a	Eritrea, Sudan	-
Guir	Algeria, Morocco	-	-	-
Juba-Shibeli	Ethiopia, Kenya, Somalia	Agreement between Great Britain and Ethiopia relative to the Frontiers between British East Africa, Uganda and Ethiopia (1907) ^a	Ethiopia, United Kingdom	-
		Exchange of notes setting out an agreement between His Majesty's government in the United Kingdom and the Italian government regarding the boundary between Kenya and Italian Somaliland, together with the agreement adopted by the boundary commission and appendices (1933) ^a	Italy, United Kingdom	-
		Exchange of notes constituting an agreement between the Government of the United Kingdom and Northern Ireland and the Government of Ethiopia amending the description of the Kenya-Ethiopia boundary (1947) ^a	Ethiopia, United Kingdom	-
Laag Dheera	Kenya, Somalia	-	-	-
Lake Chad	Algeria, Cameroon, Central African Republic, Chad, Libya, Niger, Nigeria, Sudan	Convention and statutes relating to the development of the Chad Basin (1964) ^a	Cameroon, Chad, Niger, Nigeria	-
		Agreement establishing the Lake Chad Basin Commission development fund (1972) ^c	Cameroon, Chad, Niger, Nigeria	Libya*
		Water charter of the Lake Chad Basin (Version of 2011) ^c	Cameroon, Chad, Central African Republic, Libya, Niger, Nigeria	-

Basin	Riparian countries	Cooperation arrangements	Signatories	Arab countries that reported on the arrangement
Medjerda	Algeria, Tunisia	-	-	-
Niger	Algeria, Benin, Burkina Faso, Cameroon, Chad, Guinea, Ivory Coast, Mali, Mauritania, Niger, Nigeria, Sierra Leone	Conference of Berlin (1885) ^a	United Kingdom, Austria-Hungary, Belgium, Denmark, France, Germany, Italy, Netherlands, Portugal, Russia, Spain, Sweden Norway, Türkiye, United States	-
		Agreement between France and Great Britain relative to the frontier between French and British possessions from the Gulf of Guinea to the Niger (1906) ^a	France, United Kingdom	-
		Act regarding navigation and economic co-operation between the states of the Niger Basin (1963) ^a		
		Agreement concerning the Niger River Commission and the navigation and transport on the River Niger (1964) ^a	Benin, Burkina Faso, Cameroon, Chad, Guinea, Ivory Coast, Mali, Niger, Nigeria	-
		Amendment to article 2 of the agreement concerning the Niger River commission and navigation and transport on the Niger River (1969) ^a		
		Agreement concerning the Niger River commission and navigation and transport on the Niger River (revised on 2 February 1968 and 15 June 1973) ^a		

Basin	Riparian countries	Cooperation arrangements	Signatories	Arab countries that reported on the arrangement
		Convention creating the Niger Basin Authority (1980) ^a		
		Revised financial procedures of the Niger Basin Authority (1987) ^a	Algeria, Benin, Burkina Faso, Cameroon, Chad, Guinea, Ivory Coast, Mali, Niger, Nigeria	-
		Revised convention pertaining to the creation of the Niger Basin Authority (1987) ^a	Benin, Burkina Faso, Cameroon, Chad, Guinea, Ivory Coast, Mali, Niger, Nigeria	-
		Protocol of the agreement between the Republic of Niger and the Republic of Mali relative to cooperation on the utilization of resources in water of the Niger River (1988) ^a	Mali, Niger	-
		Agreement between the Federal Republic of Nigeria and the Republic of Niger concerning equitable sharing in the development, conservation and use of their common water resources (1990) ^a	Niger, Nigeria	-
		Agreement between the Republic of Niger and the Republic of Benin relative to the realization of the hydroelectric management of the Dyondyonga site on the Mékrou River (1999) ^a	Benin, Niger	-

Basin	Riparian countries	Cooperation arrangements	Signatories	Arab countries that reported on the arrangement
		Memorandum of Understanding between the Republic of Niger and the Republic of Mali relating to the construction of the Taoussa dams in Mali and Kandadji dams in Niger (2004) ^a	Mali, Niger	-
Nile	Burundi, Central African Republic, Congo, Egypt, Eritrea, Ethiopia, Kenya, Rwanda, South Sudan, Sudan, Tanzania, Uganda	Treaties between Great Britain and Ethiopia, relative to the frontiers between Anglo-Egyptian Sudan, Ethiopia and Eritrea (1902) ^a	Ethiopia, United Kingdom	Egypt
		Exchange of notes between His Majesty's Government in the United Kingdom and the Egyptian Government in regard to the use of the waters of the River Nile for irrigation purposes (1929) ^c	Egypt, United Kingdom	Egypt
		Jebel Awilya compensation agreement (1932) ^a	Egypt, Sudan	Egypt
		Exchange of notes constituting an agreement between the United Kingdom of Great Britain and Northern Ireland and Egypt regarding the utilization of profits from the 1940 British Government cotton buying commission and the 1941 joint Anglo-Egyptian cotton (1946) ^a	Egypt, United Kingdom	-
		Exchanges of notes constituting an agreement between the Government of the United Kingdom of Great Britain and Northern Ireland and the Government of Egypt regarding the construction of the Owen Falls Dam, Uganda (1949-1953) ^a	Egypt, United Kingdom	Egypt
		Exchange of notes constituting an agreement between the Government of the United Kingdom of Great Britain and Northern Ireland on behalf of the Government of Uganda and the Government of Egypt regarding cooperation in meteorological and hydrological surveys in certain parts of the Nile basin (1950) ^a	Egypt, United Kingdom	-

Basin	Riparian countries	Cooperation arrangements	Signatories	Arab countries that reported on the arrangement
		Agreement between the government of the United Arab Republic and the Government of Sudan for full utilization of the Nile waters (1959) ^a	Egypt, Sudan	Egypt
		Protocol (to the 8 November 1959 agreement) concerning the establishment of the permanent joint technical committee (1960) ^a		
		Agreement for the hydrometeorological survey of lakes Victoria, Kyogo and Albert (Mobutu Sese Seko) (1967) ^a	Egypt, Kenya, Sudan, Tanzania, Uganda	-
		Framework for general co-operation between the Arab Republic of Egypt and Ethiopia (1993) ^a	Egypt, Ethiopia	Egypt
		Nile Basin Initiative (1999) ^b	Burundi, Congo, Egypt, Ethiopia, Kenya, Rwanda, South Sudan, Sudan, Tanzania, Uganda	Egypt**
		Agreement on declaration of principles between the Arab Republic of Egypt, the Federal Democratic Republic of Ethiopia and the Republic of the Sudan on the Grand Ethiopian Renaissance Dam Project (2015) ^c	Egypt, Ethiopia, Sudan	Egypt
Oued Bon Naima	Algeria, Morocco	-	-	-
Senegal	Guinea, Mali, Mauritania, Senegal	Convention of Bamako (1963) ^a	Guinea, Mali, Mauritania, Senegal	-
		Convention relating to the statute of the Senegal River (1964) ^a		
		Statute of the organization of Senegal River states (1968) ^a		

Basin	Riparian countries	Cooperation arrangements	Signatories	Arab countries that reported on the arrangement
		Convention of Dakar (1970) ^a		
		Convention pertaining to the creation of the organization for the management of the Senegal River (1972) ^a	Mali, Mauritania, Senegal	-
		Convention relating to the statute of the Senegal River (1972) ^a		
		Convention concluded between Mali, Mauritania and Senegal relative to the legal statute of common works (1978) ^a		
		Agreement establishing a permanent joint technical committee (1979) ^a		
		Amendments to the convention concerning the status of the Senegal River and convention establishing the Senegal River Development Organization (1979) ⁱ		
		Senegal River water charter (2002) ^c		
		Treaty between the Republic of Mali, the Islamic Republic of Mauritania, the Republic of Senegal and the Republic of Guinea relating to the accession of the Republic of Guinea to the Senegal River Basin Development Organization (2006) ^c	Guinea, Mali, Mauritania, Senegal	-
Tafna (<i>Oued Mouilah</i>)	Algeria, Morocco	-	-	-
Algeria East Coast basins	Algeria, Tunisia	-	-	-

Source: ^a OSU database, n.d. available at <http://gis.nacse.org/tfdd/treaties.php>.

^b ESCWA and BGR, 2013.

^c FAO, FAOLEX database, n.d. available at <https://www.fao.org/faolex>.

^d CAWater-Info, n.d. Available at http://www.cawater-info.net/bk/water_law/pdf/syria-turkey-1-2009.pdf.

^e EMWIS, 2011.

^f ICSSI, n.d. Available at https://www.iraqicivilsociety.org/wp-content/uploads/2019/04/TR-Iraq_Water-Memorandum-copy.pdf.

^g Iraqi news Agency, 2021.

^h Nile Basin Initiative, n.d. Available at <https://www.nilebasin.org/>.

ⁱ FAO, 1997.

* Libya became a member of the Lake Chad Basin Commission in 2008.

** In 2010, Egypt suspended its participation in NBI technical activities in response to the non-consensual decision taken by some upstream States to open for signature the unfinished draft of the "Cooperative Framework Agreement (CFA)". The NBI is therefore currently not operational within the Egyptian part of the basin, as reported by Egypt.

References

- Black, Maggie (2009). *The Atlas of Water, Mapping the World's most critical resource*.
- CAWater-Info (n.d.). Portal of Knowledge for Water and Environmental Issues in Central Asia. Available at http://www.cawater-info.net/bk/water_law/pdf/syria-turkey-1-2009.pdf. Accessed on 31 January 2022.
- Economic Commission for Europe (n.d.). Identifying, assessing, and communicating the benefits of transboundary water cooperation, Lessons learned and recommendations. Available at https://unece.org/DAM/env/water/publications/WAT_NONE_11_benefits/ECE.MP.WAT.NONE.11_ENG_1826722_E_web.pdf.
- _____ (2015). Good practices in transboundary water cooperation. Available at https://unece.org/fileadmin/DAM/env/water/publications/WAT_Good_practices/2015_PCCP_Flyer_Good_Practices__LIGHT_.pdf.
- _____ (2020a). Towards a concerted management of groundwater in the Senegal-Mauritanian aquifer basin to promote peace and resilience among states. Available at <https://unece.org/info/media/news/environment/2020/towards-a-concerted-management-of-groundwater-in-the-senegal-mauritanian-aquifer-basin-to-promote-peace-and-resilience-among-states/doc>.
- _____ (2020b). Guide to reporting under the Water Convention and as a contribution to SDG indicator 6.5.2. Available at <https://unece.org/environment-policy/publications/guide-reporting-under-water-convention-and-contribution-sdg>.
- Economic Commission for Europe and the United Nations Educational, Scientific and Cultural Organization (2021). Progress on Transboundary Water Cooperation Global status of SDG indicator 6.5.2 and acceleration needs 2021. Available at <https://unece.org/sites/default/files/2021-08/SDG%206.5.2%20Indicator%20Report%20UNECE%20230821%20Web.pdf>.
- Economic and Social Commission for Western Asia (2015). Water Development Report 6, The water, energy and food security nexus in the Arab region. Available at https://www.unescwa.org/sites/default/files/pubs/pdf/e_escwa_sdpd_15_2_e_0.pdf.
- _____ (2018a). Progress on Shared Water Resources Management in the Arab Region: Regional baseline for SDG Indicator 6.5.2 (E/ESCWA/SDPD/2018/WP.1) Available at <https://www.unescwa.org/publications/progress-shared-water-resources-management-arab-region-regional-baseline-sdg-indicator>.
- _____ (2018b). Overview of Shared Water Resources Management in the Arab Region for Informing Progress on SDG 6.5. Available at https://archive.unescwa.org/sites/www.unescwa.org/files/page_attachments/technical_paper.13-_shared_water.pdf.
- _____ (2020). 2019 Status report on the implementation of integrated water resources management in the Arab region Progress on SDG indicator 6.5.1. (E/ESCWA/SDPD/2019/TP.4). Available at <https://www.unescwa.org/sites/default/files/pubs/pdf/implementation-integrated-water-resources-management-arab-countries-english.pdf>.
- Economic and Social Commission for Western Asia and Federal Institute for Geosciences and Natural, and Resources (2013). *Inventory of Shared Water Resources in Western Asia*. Beirut. Sales No. E.13.II.L.4.
- Euro Mediterranean Information System on Know-how in the Water Sector (2011). Turkey, Syria Lay Foundation Stone of 'Friendship Dam'. Available at <http://www.emwis.net/thematicdirs/news/2011/02/turkeysyria-lay-foundation-stone-friendship-dam>. Accessed on February 1, 2022.
- Food and Agriculture Organization of the United Nations, FAOLEX database (n.d.). Available at <https://www.fao.org/faolex>. Accessed on 28 January 2022.
- FAO, 1997 Treaties concerning the non-navigational uses of international watercourses: Africa. Chapter 6. Available at <https://www.fao.org/3/W7414B/w7414b08.htm>.

International Groundwater Resources Assessment Center (2021). "Transboundary Aquifers of the World [Map]. Edition 2021. Scale 1: 50 000 000. Delft, Netherlands: IGRAC, 2021" Available at <https://www.un-igrac.org/resource/transboundary-aquifers-world-map-2021>.

International Waters Governance (n.d.). Available at <http://www.internationalwatersgovernance.com>.

Iraqi Civil Society Solidarity Initiative (n.d.). Memorandum of understanding in the field of water between the ministry of forestry and water affairs of the Republic of Turkey and the ministry of water resources of the Republic of Iraq, 2014. Available at https://www.iraqicivilsociety.org/wp-content/uploads/2019/04/TR-Iraq_Water-Memorandum-copy.pdf.

Iraqi News Agency (2021). Iraq and Türkiye discuss the memorandum of understanding related to the water quota, 8/12/2021. Available at <https://ina.iq/eng/15996-iraq-and-turkey-discusses-the-memorandum-of-understanding-related-to-the-water-quota.html>.

Nile Basin Initiative (n.d.). Available at <https://www.nilebasin.org/>.

Oregon State University Database (n.d.). International Freshwater treaties (by River Basin). Available at <http://gis.nacse.org/tfdd/treaties.php>.

United Nations Economic Commission for Europe and the United Nations Educational, Scientific and Cultural Organization (2021). Progress on Transboundary Water Cooperation Global status of SDG indicator 6.5.2 and acceleration needs 2021. Available at <https://unece.org/sites/default/files/2021-08/SDG%206.5.2%20Indicator%20Report%20UNECE%20230821%20Web.pdf>.

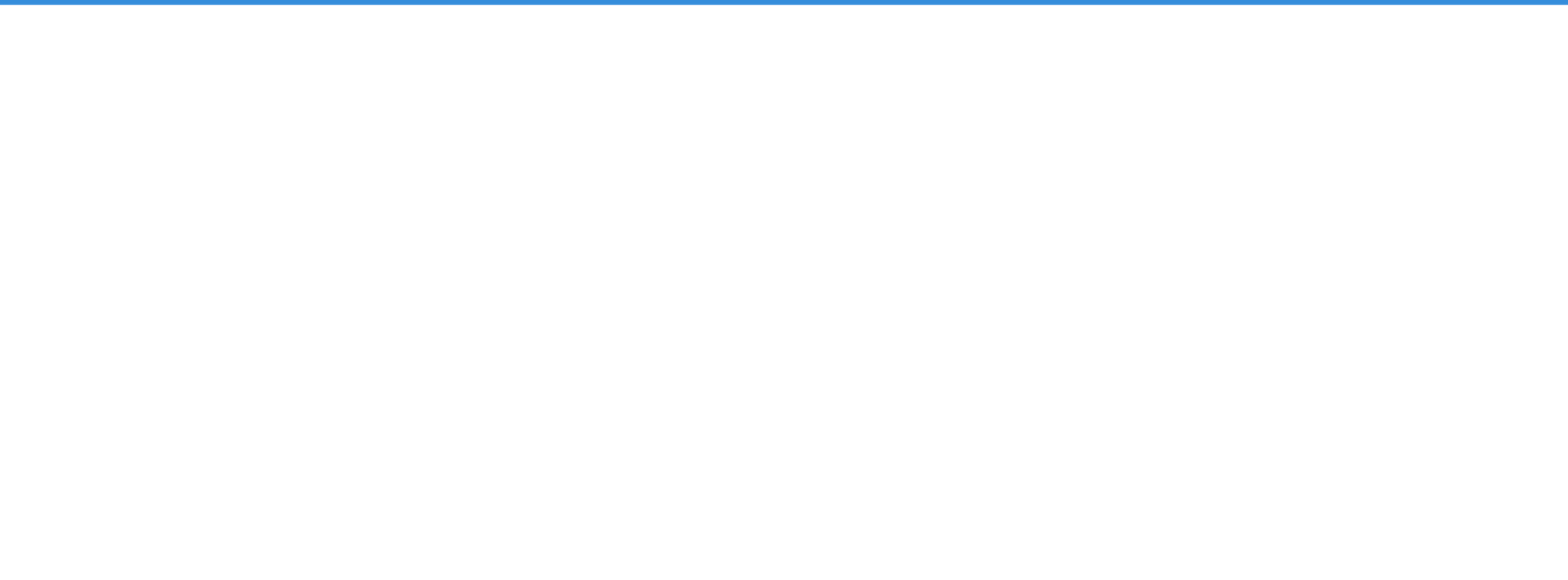
United Nations Environment Programme. Global Environment Facility Transboundary Waters Assessment Programme data portal (n.d.). Available at <http://geftwap.org/data-portal>.

United Nations Water (n.d.). Indicator 6.5.2 Transboundary cooperation. Available at <https://www.sdg6monitoring.org/indicator-652/>.

_____ (2020). The Sustainable Development Goal 6 Global Acceleration Framework. Geneva. Available at <https://www.unwater.org/publications/the-sdg-6-global-acceleration-framework/>.

United Nations Sustainable Development Goals (n.d.). Take action for the Sustainable Development Goals. Available at <https://www.un.org/sustainabledevelopment/sustainable-development-goals/>.

Wessels, J. I. (2009). Water Crisis in The Middle East: An Opportunity for New Forms of Water Governance and Peace. The Whitehead Journal of Diplomacy and International Relations.



Sustainable Development Goal (SDG) indicator 6.5.2 enables the monitoring of operational arrangements for transboundary water cooperation. This second regional report for SDG indicator 6.5.2 focuses on the need to accelerate progress in improving transboundary water cooperation in the Arab region. More Arab countries sharing transboundary basins submitted responses during the second monitoring exercise in 2020 than in the first round in 2017. As a result, there are now nine countries that have a full value for the indicator, which includes values for both the surface water - river and lake basins – and aquifer components, compared with six countries in 2017. This report highlights the importance of cooperation and addresses some of the data gaps previously identified.

Where arrangements for transboundary water cooperation are lacking, innovation is needed to foster cooperation that goes beyond traditional, rigid legal water-share distribution agreements. Ensuring that all transboundary basins are covered by operational arrangements by 2030 will require major efforts, especially from the Arab countries, with a focus on improving the knowledge base while leveraging innovative technologies and making available dedicated financing for transboundary cooperation. SDG indicator 6.5.2 can play a role in fostering dialogue on water cooperation by informing national and transboundary stakeholders and helping them to identify challenges and priorities for transboundary water cooperation and create platforms for information exchange. Cooperation should be based on building trust between riparian countries, which should work together in order to reach sustainable results.

