The Economist INTELLIGENCE UNIT | PUBLIC POLICY

The Blue Peace Index 2019

A report by The Economist Intelligence Unit

Supported by

Schweizerische Eidgenossenschaft
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Swiss Agency for Development and Cooperation SDC

Contents

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Acknowledgements

This report summarises the key findings of the Blue Peace Index research programme, developed by the Economist Intelligence Unit (EIU) with support from the Swiss Agency for Development and Cooperation (SDC). The findings are based on an extensive literature review, consultation with an expert panel, and a comprehensive interview programme conducted by the EIU between January and July 2019. In total, more than 20 representatives from international institutions, NGOs, government entities, the private sector and academia were interviewed.

The EIU bears sole responsibility for the content of this report. The findings and views expressed do not necessarily reflect the views of the partners and experts.

The report was produced by a team of EIU researchers, writers, editors, and graphic designers, including:

Matus Samel – Project Manager
Beth Warne – Lead Analyst
Devika Saini – Analyst
Adam Green – Contributing Author
Conor Griffin – Project Adviser
Audra Martin – Technical Adviser
Marcus Krackowizer – Data tool Developer
Gareth Owen – Graphic Designer
Kerry Hughes – Sub-editor

Johan Gély, Eileen Hofstetter and Stéphanie Piers de Raveschoot of the Swiss Agency for Development and Cooperation (SDC) provided expert guidance to the research and development of the report.

The project has benefited from counsel provided at various stages by a panel of experts consisting of prominent authorities on different aspects of transboundary water cooperation. These include the following:

- Dr Christian Bréthaut, Assistant Professor, University of Geneva, Geneva Water Hub
- Dr James Dalton, Director, Global Water Programme, International Union for Conservation of Nature (IUCN)
- Dr Alan Nicol, Strategic Program Leader, Promoting Sustainable Growth, International Water Management Institute (IWMI)
- Ms. Belynda Petrie, CEO and co-founder, OneWorld Sustainable Investments
- Dr Benjamin Pohl, Senior Project Manager, adelphi

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- Professor Alistair Rieu-Clarke, Professor of Law, Northumbria School of Law
- Dr Susanne Schmeier, Senior Lecturer in Water Law and Diplomacy, IHE Delft
- Mr Alex Simalabwi, GWPSA Executive Secretary & Head-Africa Coordination, GWP Global Head–Climate Resilience
- Professor Mark Zeitoun, Professor of Water Security and Policy, University of East Anglia

The project team is also grateful for the support of experts who have volunteered their time to inform the content of this report:

- Dr Cheikh Faye, Researcher, Geography Department, Assane Seck University of Ziguinchor, Laboratory of Geomatics and Environment
- Dr Beatriz Garcia, School of Law, Western Sydney University.
- Dr Kim Geheb, Principal Scientist, Mekong Region Futures Institute
- Dr Alejandro Iza, Head of Environmental Law Programme, IUCN
- Mr Diego Jara, Legal Officer, Environmental Law Programme, IUCN
- Dr Jonathan Lautze, Research Group Leader, Integrated Basin and Aquifer Management, International Water Management Institute (IWMI)
- Dr Naho Mirumachi, Senior Lecturer, Department of Geography, King's College London
- Mr Greg Shapland, Associate Fellow, Middle East and North Africa Programme, Chatham House
- Dr Shelley McMillan, Senior Water Resources Management Specialist, The World Bank Group.
- Mr Stephen Stec, J.D., M.Phil., Environmental Sciences and Policy Department, Central European University
- Professor Aaron Wolf, Geographer in the College of Earth, Ocean, and Atmospheric Sciences, Oregon State University

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Executive Summary

What is the Blue Peace Index?

The Blue Peace Index examines the extent to which countries and basins are managing their shared water resources in a sustainable, equitable and collaborative manner. The index is a tool for understanding challenges and opportunities for improving transboundary water cooperation and management of shared water resources.

The first edition of the index examines 24 countries, across five selected transboundary river basins, on 74 qualitative and quantitative indicators.* Some indicators are assessed at a national level and others are assessed at a basin level. All indicators are designed to capture some degree of "agency" that countries can exercise. Purely hydrological and geographical indicators are therefore excluded as countries cannot influence them. The indicators are split across five domains: Policy and legal frameworks, Institutions and participation, Water management instruments, Infrastructure and financing, and Cooperation context.

Why a Blue Peace Index?

Reliance on stressed transboundary water resources is growing

By 2050, more than 50% of the world's population will live in water-scarce regions and, with almost 60% of freshwater flows coming from transboundary rivers, these resources will become increasingly crucial in ensuring people have an adequate water supply. This creates an urgent need to manage these shared resources in a sustainable, equitable and collaborative manner.

Diverse stakeholders need a common framework to boost cooperation

To improve management of shared water resources and boost transboundary water cooperation, policymakers and diplomats must work closely with scientific and technical experts at local, national and international levels. In developing the index, the EIU explored various elements that impact management of shared water resources and transboundary cooperation and grouped them into five domains. The index thus provides stakeholders with a common framework to understand the complexity of this issue and to organise a co-ordinated response.

Countries and basins need to know how and where to act

Policymakers, donors and practitioners working in transboundary water are typically constrained by limited resources. The index analyses countries' management and cooperation over shared water across a broad range of indicators. It thus allows stakeholders to identify and understand their countries' relative strengths and weaknesses, enabling them to address the most relevant challenges. The index's distinction between domestic and basin-level indicators also enables stakeholders to understand whether they should focus their activities on domestic or regional-level policies and institutions.

Investors and researchers can utilise a holistic assessment of water policy environments

Moving away from a focus on short-term risk factors, the index assesses the underlying policy, legal and institutional environment for sustainable water management and collaboration in the countries

* For a detailed description of the indicators, sources and index methodology, see the Blue Peace Index methodology note.

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and basins, as well as the broader cooperation context in the regions. In the long term, the index will therefore allow for a holistic exploration of the drivers and requisite conditions for sustainable collaboration over shared water resources.

The index's overarching objectives are to:

- Incentivise stakeholders to improve their performance by tracking, and publishing, their progress in this space
- Highlight the optimal policy and management solutions available to respond to transboundary water opportunities and challenges
- Increase awareness of the concept of Blue Peace in the broader water management and peace-building communities
- Spur a public debate on the desirable goals and best practices for sustainable water management
- Provide a tool for a holistic assessment of drivers and conditions for sustainable collaboration over shared water resources

Blue Peace Index Framework

I. Policy and legal frameworks	II. Institutions and participation	III. Water management instruments	IV. Infrastructure and financing	V. Cooperation context
1.1 National water policy National water legislation and policies and application of integrated water management principles.	**2.1 National water agency** Existence and capacity of a national water agency.	**3.1 Water availability management** National water monitoring and water use efficiency programmes.	**4.1 National public investment** National public funding for the development of water resources, including infrastructure.	**5.1 Water stress** National water availability and quality.
1.2 National environmental policy National policies for limiting water pollution and transboundary environmental impact.	**2.2 National stakeholder engagement** National programmes for engaging key water policy stakeholders, such as government agencies, user associations and the broader public.	**3.2 Pollution control** National water pollution control strategies and programmes.	**4.2 Private sector investment** Availability and involvement of private funding for the development of water resources, including infrastructure.	**5.2 Socio-economic exposure** Countries' socio-economic exposure to changes in water availability.
1.3 International water conventions Ratification of international water conventions.	**2.3 National data sharing** National platforms for sharing data between government agencies and the broader public.	**3.3 National disaster management** National plans for disaster management and climate change adaptation.	**4.3 Investment climate** Overall national investment climate, including ease of doing business and regulatory and financial risks.	**5.3 Political stability** Government stability, security situation and broader political and social.
1.4 Basin water policy framework Existence and comprehensiveness of international transboundary water agreements.	**2.4 Basin level body** Existence and capacity of a joint basin-level operational institution.	**3.4 Basin water availability management** Joint basin-level water-monitoring and assessment programmes.	**4.4 Basin organisation operational financing** Funding for a joint basin-level institution and joint investment programmes.	**5.4 Propensity for conflict** Level of militarisation and existence of water-related conflicts.
	2.5 Basin stakeholder engagement Basin-level programmes for engaging key water policy stakeholders, such as government agencies, user associations and broader public.	**3.5 Basin pollution control** Joint basin-level water pollution control strategies and programmes.	**4.5 Basin infrastructure financing** Private sector involvement and alternative sources of funding for joint basin-level investment.	**5.5 Economic relations with neighbouring states** Economic integration of countries in the basin.
	2.6 Basin data sharing Basin-level platforms for sharing data between government agencies and the broader public.	**3.6 Basin disaster management** Joint basin-level disaster monitoring and response strategies and programmes.		

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The Blue Peace Index 2019, the first year of the index, assesses management of shared water resources in five selected river basins and 24 countries that fall within them. The basins for the pilot edition of the index represent important cases from different geographical regions and different quality of transboundary water management and cooperation. The Blue Peace Index will be expanded in the next editions to provide a more comprehensive global coverage and a tool to measure developments over time.

Basins and countries assessed

Amazon (Latin America)	Mekong (Asia)	Sava (Europe)	Senegal (Africa)	Tigris–Euphrates (MENA)
Bolivia	Cambodia	Bosnia and Herzegovina	Guinea	Iran
Brazil	China	Croatia	Mali	Iraq
Colombia	Laos	Serbia	Mauritania	Syria
Ecuador	Myanmar	Slovenia	Senegal	Turkey
Peru	Thailand			
Venezuela	Vietnam			

Blue Peace Index: Key findings

Amazon River Basin

- **Key strengths:** The Amazon Basin, and its riparian states, have relatively strong water management institutions, low water stress and actively engage stakeholders at the national and transboundary level.
- **Key challenges:** Although the basin countries are experienced at attracting private sector investment at the national level - for example, through water public–private partnerships (PPPs) - this has not been translated into engaging private funding at the basin level.
- **Key opportunities:** Mechanisms for transboundary cooperation on *technical* aspects of water management, especially data sharing, pollution control and disaster management, remain to be addressed.

Mekong River Basin

- **Key strengths:** Helped by the Mekong River Commission's (MRC) strong technical focus, the basin performs relatively well on technical water management instruments, such as water availability management, pollution control and disaster management.

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- **Key challenges:** The absence of a transboundary water agreement covering the whole basin and its tributaries (China and Myanmar are only observer members of the MRC) inhibits deeper collaboration.
- **Key opportunities:** The basin is developing considerable water infrastructure, both at a national and cross-border level. However, a lack of coordination over these projects creates significant tensions between states.

Senegal River Basin

- **Key strengths:** The Senegal River Basin Organisation (OMVS) is underpinned by a comprehensive agreement and joint financing mechanisms, and the basin has strong mechanisms to engage national and transboundary stakeholders.
- **Key challenges:** The basin has a difficult natural environment, affecting food security and access to drinking water. Strong mechanisms for water management and pollution control are lacking.
- **Key opportunities:** The OMVS is among the most comprehensive and active transboundary institutions covered in this index, but the national institutions and programmes often lag behind. This creates an opportunity for learning between the riparian states, and between national and international institutions.

Sava River Basin

- **Key strengths:** The Sava Basin represents "best practice" in many areas of transboundary water management. Its policy and legal frameworks have aligned with the EU and international water law and all basin countries have ratified the UNECE Water Convention. The basin also has strong water management instruments, including pollution control and data-sharing mechanisms.
- **Key challenges:** Comprehensive mechanisms for stakeholder engagement are lacking and joint investment programmes are limited.
- **Key opportunities:** The Sava River Basin Commission (ISRBC) could become a catalyst for participatory engagement of local stakeholders, and a platform for learning between the riparian states.

Tigris-Euphrates River Basin

- **Key strengths:** The Tigris-Euphrates Basin faces considerable challenges in all index areas and a particularly difficult political and environmental context. Nevertheless, all countries in the region have maintained at least basic institutional and legal arrangements to manage their water resources, and Iraq and Syria have both signed the UN Watercourses Convention.
- **Key challenges:** The absence of a regional cooperation mechanism has reduced collaboration among states to limited and ad hoc arrangements, which in turn has made water allocation and pollution control particularly challenging.
- **Key opportunities:** At an international level, the Tigris-Euphrates could learn from other basins that have suffered riparian conflict such as the Sava River Basin. A focus on the technical aspects of water management, such as data sharing, might help actors move cooperation into a less diplomatically fraught domain.

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Promoting Blue Peace: Key recommendations

1. Political will: Move water to the top of the political agenda

- Water cooperation requires political leadership and engagement from government entities outside the water, environment and agriculture sectors that have traditionally prioritised it.
- Linking water to a wider range of policy goals, and integrating water diplomacy into regional and bilateral political dialogues can help identify new ways forward when shared benefits are not initially evident. Commitment to joint benefit-sharing can yield various economic, environmental, and political benefits.

2. Stronger institutions: Build the foundations for cooperation

- National and transboundary water management institutions carry out complex work requiring significant technical, legal, and policy skills and capabilities. They also need advanced technologies, such as data sensors and meteorological stations that can be challenging to develop, especially in resource-constrained settings.
- External financial and technical support can play a critical part in facilitating the creation and early-stage development of water cooperation institutions, particularly in politically and diplomatically sensitive contexts.

3. Developing trust: The "momentum of history"

- The trade-off between harnessing the developmental potential of transboundary waters versus protecting ecological systems makes for fractious negotiations. Tensions between states over industry pollution and disruption from dam development are common.
- In these contexts, trust and good faith are critical to negotiations. Joint identification and assessment of shared benefits can help facilitate cooperation even under challenging circumstances. History shows that small-scale technical collaboration, however fragile in the early stages, can steadily build a deepening foundation that allows countries to work through difficulties.

4. Inclusive decision-making: Find the common ground

- Water management and transboundary water cooperation can affect people's fundamental rights and livelihoods. If water management practices do not adequately balance the needs of different communities, individual disputes can develop into long-term conflicts—often fuelled by myths or narratives that deepen antipathy between communities.
- Inclusive and participatory decision-making is crucial for balancing interests, and securing sustained support and collaboration from diverse communities.

5. Evidence-based decision-making: Inform and communicate

- Water is not a static resource. Climate change, evolving usage patterns, economic geography and flux in the stakeholder community mean that collaboration is a continuous process, and not a one-time agreement.

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- Data about the potential impact of water-related development, including dams and industry, on hydro-dynamics and water quality is critical to ensuring that riparian communities can respond effectively to emerging challenges. Hard evidence and modelling can facilitate dialogue and collaboration, for instance by highlighting the economic and well-being costs of cooperation failures that lead to flooding or drought.

6. Finance: Invest in Blue Peace

- Finance is a critical enabler—or obstacle—to Blue Peace, and will be necessary to fuel all of the five recommendations above, to varying degrees. However, project funding for transboundary cooperation can be difficult to access, especially if the projects are geared towards preservation as opposed to economic returns.
- Channelling more private and public finance into transboundary water management is one of the most pertinent challenges to improving Blue Peace. This will require improved coordination between international donors, more attractive and stable national investment landscapes, as well as a better environment for sustainable PPPs. A greater role for the impact investment community and new financial innovations such as "Blue Peace bonds" can also play a vital role.

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Benchmarking indices: strengths and limitations

The Economist Intelligence Unit (EIU) is a leading expert in designing composite indices that compare countries and cities on their performance in key policy areas. Our indices are based on a robust and transparent methodology and extensive research, and are used by governments, institutions, and foundations around the world to understand policy landscapes and promote positive reforms in countries and areas where the greatest impacts can be achieved.

Strengths of an index approach

- **A holistic approach**—A composite index is designed to cover the key elements of a complex issue. In the Blue Peace Index, this has allowed us to incorporate considerations of the policy and institutional landscape of water management, its translation into activities on the ground, and the broader cooperation context, all within the same tool.
- **Tracking trends over time**—An index approach is designed to be replicable, applying a similar methodology year on year to track progress over time. This is particularly important for the Blue Peace Index as the pressure on transboundary water resources is increasing. A longitudinal body of research is crucial to assess progress in this area.
- **Clear calls to action**—An index approach aims to provide decision-makers with a clear pathway to action. The Blue Peace Index allows countries and basins to identify their strengths and areas for improvement and to share experiences and best practice with other countries and basins.

Limitations of an index approach

- **The need for simplification**—An index is inherently a snapshot in time across numerous countries and focuses on what is measurable and comparable across different environments. This, by necessity, leaves some important areas of nuance not fully reflected. For the Blue Peace Index the role of more intangible factors in cooperation, such as power dynamics between states, the role of culture, or virtual water flows, are particular areas that are not currently reflected in the scoring.
- **Primacy of the state**—The Blue Peace Index examines countries' approaches to managing their transboundary water. This makes the governments and their capabilities and activities the focus of the index. Although certain indicators capture the relationship between the state and other stakeholders, the role of non-state actors in driving or compromising Blue Peace is not fully accounted for in this format.
- **Focus on water management**—A core assumption of the Blue Peace Index is the idea that sustainable, equitable and collaborative management of water resources at the basin and domestic level is the best way to avoid conflict and build peace. This assumption favours a long-term view, impacting the usefulness of the tool as a short-term predictive instrument of where and when conflicts may emerge.
- **Data availability**—Given the need for consistency and comparability, the index relies on publicly available information, including existing datasets and assessments. This, by necessity, excludes some important measures of transboundary water management if comparable data is not available for a significant number of countries. Moreover, information and data about countries with significant capacity constraints, particularly those in volatile contexts such as Syria, can be more difficult to obtain and verify.

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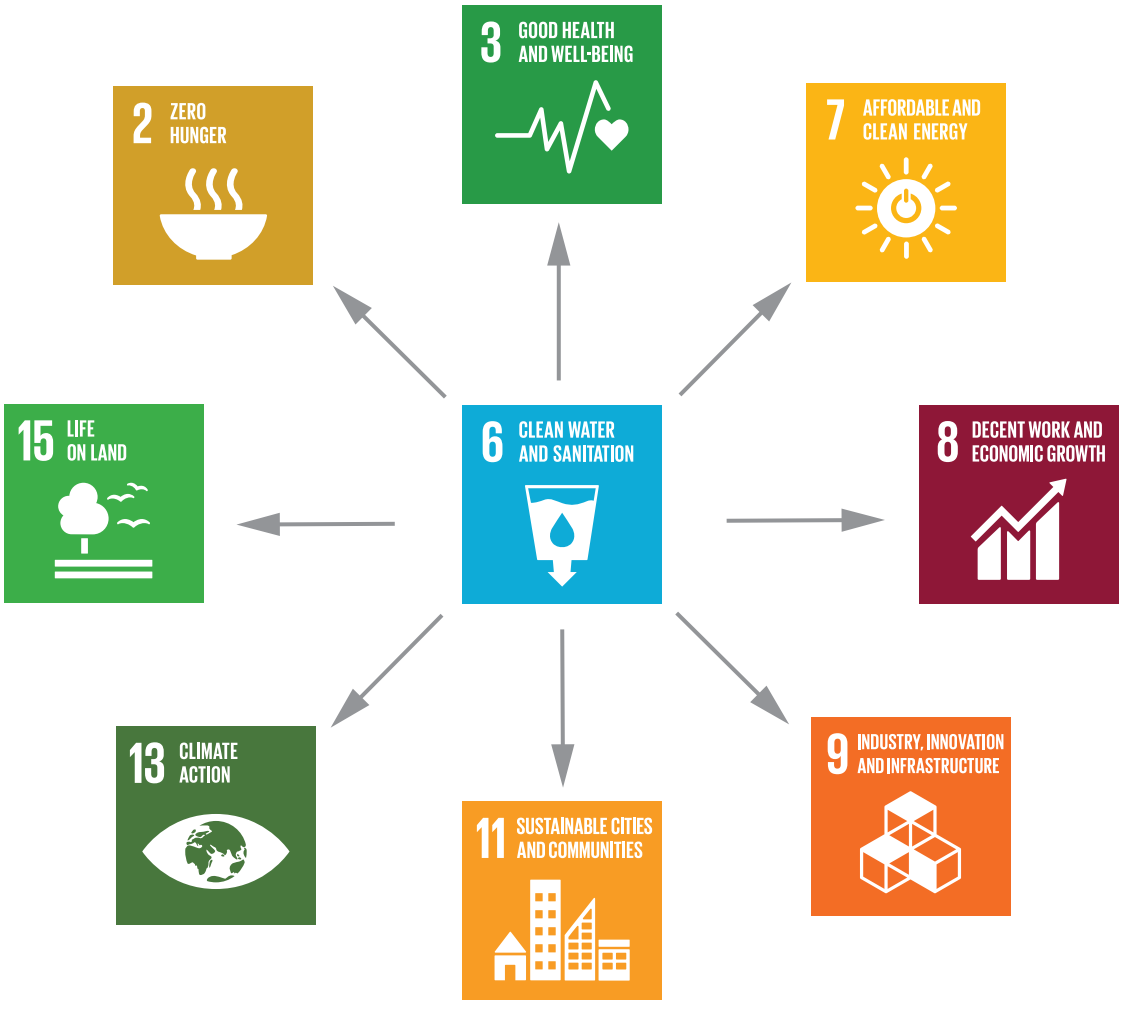
1. Introduction: The need for Blue Peace

1.1 The global freshwater crisis

Approximately 70% of the earth's surface is covered with water, but *freshwater* that can be consumed by humans represents only 2.5% of all the water in the world. Much of this freshwater is trapped in glaciers or ice caps, meaning that less than 1% of the world's water is both freshwater and accessible in liquid form. Of this tiny proportion, the vast majority is found in subterranean, groundwater reserves (aquifers[1]) and only a small fraction is easily accessible surface water in lakes and rivers.[2]

Water is at the core of sustainable development

Clean water and sanitation (SDG6) is linked to environmental, economic and social dimensions of Sustainable Development Goals



Source:The Economist Intelligence Unit.

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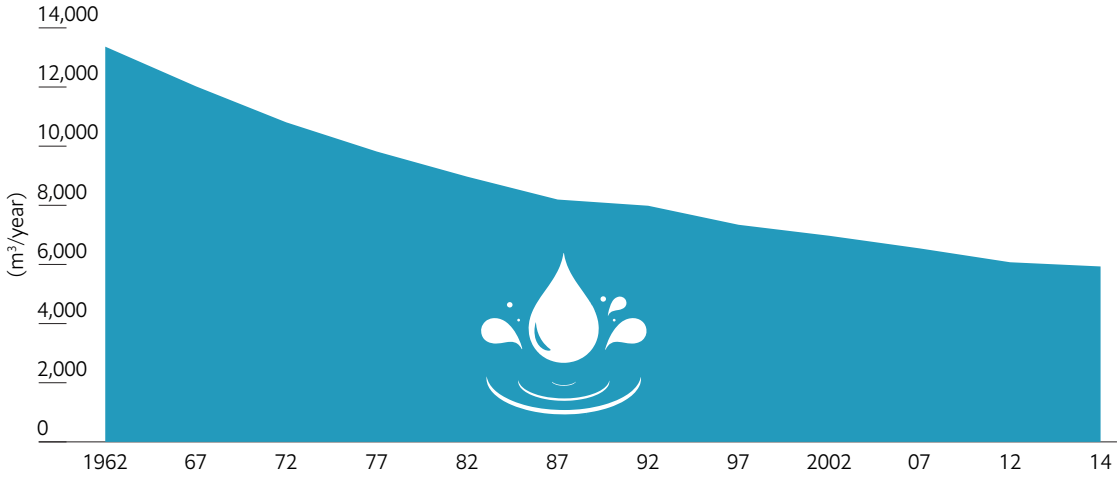
This freshwater is the heartbeat of human health, the global economy and broader societal wellbeing. Not only do we drink freshwater, but we consume it indirectly via the food that we eat, the clothes that we wear, and the products that we buy. In arid regions it is used to irrigate parks and public areas. As such, safe access to freshwater is critical to many of the social and economic objectives outlined in the Sustainable Development Goals (SDGs) framework, in areas as diverse as agriculture, trade, economic growth, energy production, and biodiversity.

Dwindling fast

Unfortunately, the world has failed to carefully marshal its water resources. Over the past century, available freshwater resources have been increasingly strained as withdrawal rates have risen

Drying out

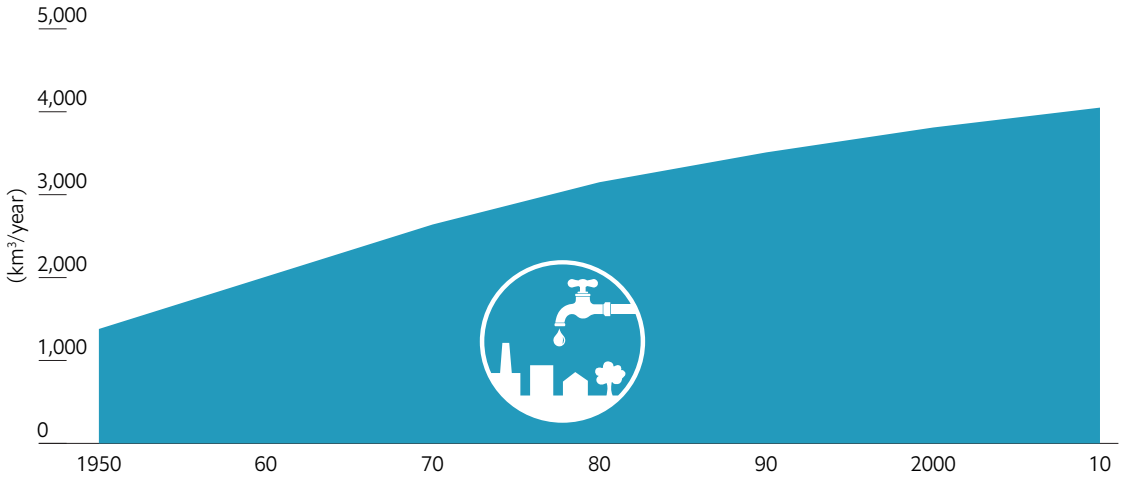
Global freshwater resources (per capita)



Source: FAO, AQUASTAT, 2015.

Using more

Global Water Withdrawals



Source: FAO, AQUASTAT, 2015.

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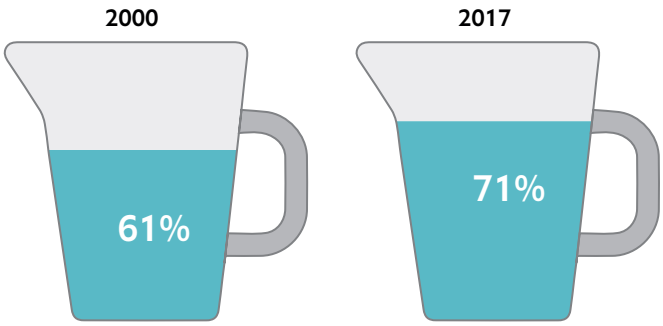
almost six-fold, compared with a four-fold increase in the world's population. By 2014, the average global availability of renewable freshwater had dwindled to less than 6,000 cubic metres per person per year—a precipitous drop of around 40% since the 1970s.[3] Moreover, freshwater resources are distributed unevenly around the world and are subject to seasonal changes, exposing an estimated 4bn people (more than a half of the world's population) to severe water scarcity during at least one month of the year. As the world's demand for water continues to grow—by approximately 1% per year—available resources are strained further.[4]

The growth in water demand is in part a success story. Today a majority of the world's population has access to safe drinking water. In developing countries and emerging markets, access has surged in recent decades as a result of technological innovation, political will, activities of international agencies, and the galvanising effect of the Millennium Development Goals (MDGs) and their successor, the SDGs. However, per capita water use in these markets remains far below that of developed countries and one in four (2.1bn) people still lack access to safely managed drinking water services, and two in three (4.5bn) to safely managed sanitation services.[5]

More people access better water
Share of people with access to safely managed drinking water



Notes: Safely managed water services refer to an improved water source (i.e one that adequately protects the water from outside contamination, such as piped household water connection) located on premises, available when needed, and free from microbiological and priority chemical contamination.

Source: WHO/UNICEF JMP, 2019

However, this increase in access to safe drinking water accounts for only a small proportion of the surge in water demand. Agriculture (including irrigation, livestock and aquaculture) is by far the largest consumer of freshwater, accounting for almost 70% of annual water withdrawals globally.[6] An explosion in water-intensive agriculture, along with an expansion of water-intensive industry and inefficient irrigation practices, has been among the dominant drivers of water demand. In the past three decades, food production has increased by more than 100%, and it is estimated that irrigated food production will increase by more than 50% by 2050.[7] Developments in the energy sector, including the growth of water-intensive fracking and biofuels, have further exacerbated water use.

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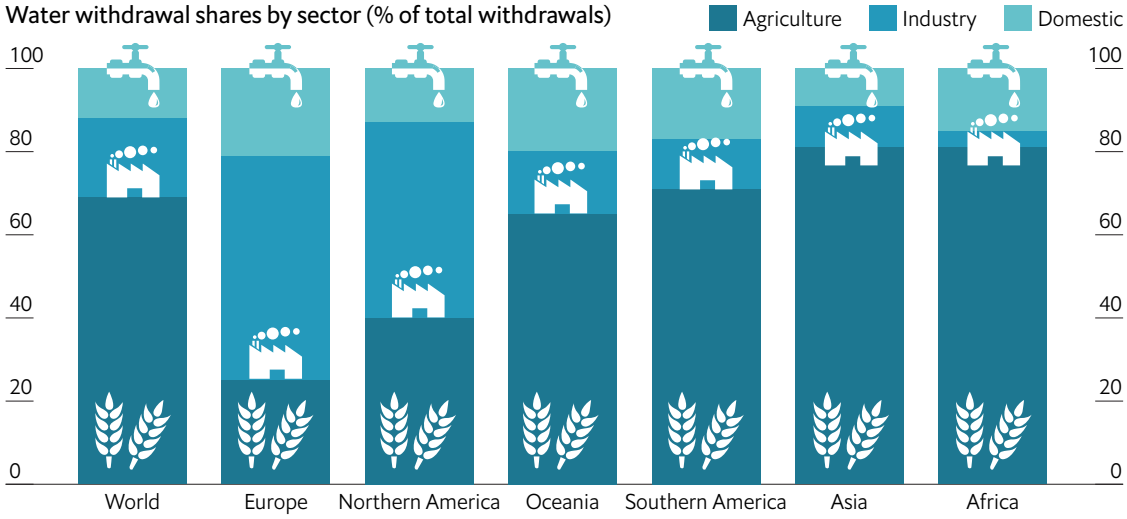
Watering the world

Water withdrawal shares by sector (% of total withdrawals)



Source: FAO, AQUASTAT, 2015

A challenging outlook

Under current projections, the world's demand for freshwater is expected to continue rising at similar rates until 2050.[8] If realised, the results could be extremely challenging—putting 45% of the world's global gross domestic product (GDP), 52% of its population, and 40% of its grain production at risk.[9] Indeed, The World Economic Forum's 2019 *Global Risks Report* placed the water crisis (defined as "a significant decline in the available quality and quantity of fresh water") as the fourth largest risk facing the world, after weapons of mass destruction, extreme weather, and climate change (both also closely linked to water).[10]

1.2 The need for transboundary action

National and local governments will need to undertake an array of policies to mitigate the effects of freshwater scarcity, from innovative wastewater treatment, to the use of technology to curb waste. However, the scope for any individual country to address the issue in isolation is limited by the realities of nature, as water knows no borders. Transboundary river basins provide 60% of the world's freshwater flow and are home to 40% of the world's population. These basins are essential for agriculture, industry, energy generation, and domestic drinking water and sanitation.[11]

Unlike water, collaboration often stops at the border

There is a worrying lack of formal collaboration structures to govern these critical transboundary water resources. Globally, there are an estimated 286 transboundary river and lake basins, spanning 148 states. Only 84 basins have joint water management bodies—and their institutional capacity varies considerably. The number of shared aquifers without joint management bodies is considerably higher - only nine of the over 350 transboundary aquifers across the world have permanent joint management mechanisms.[12]

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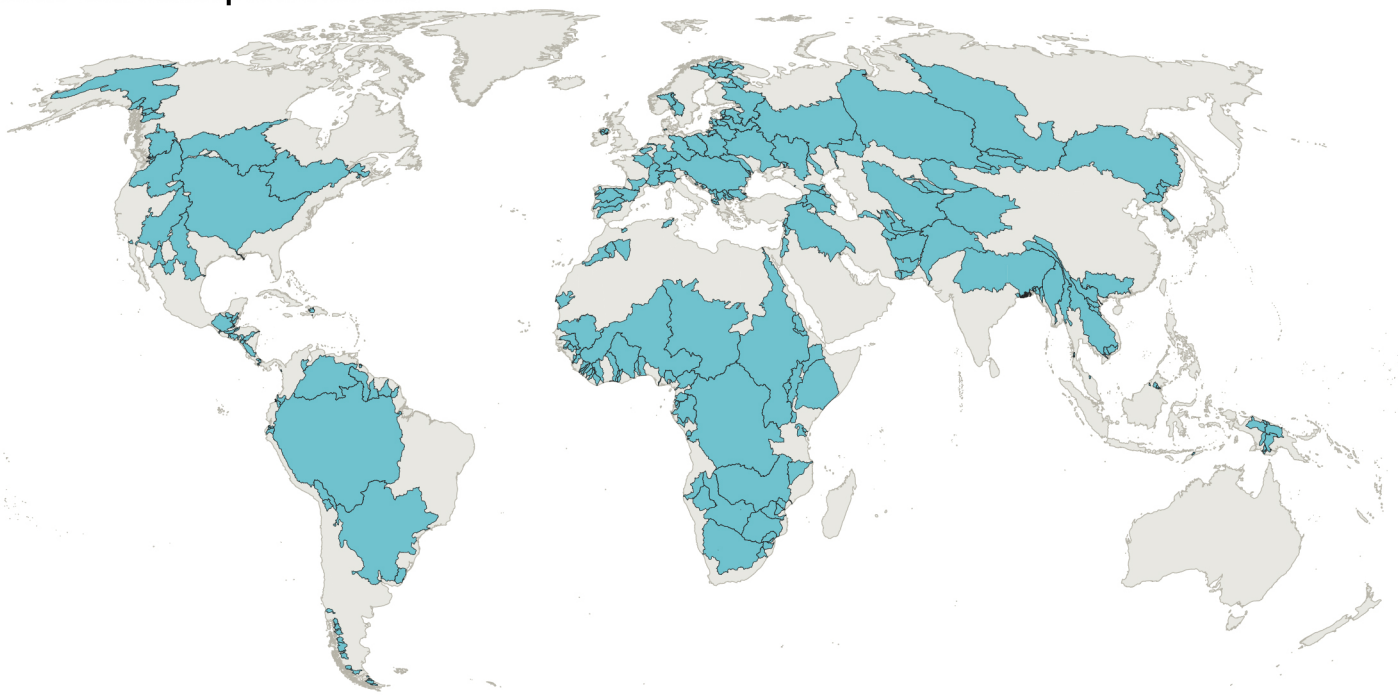
Water does not stop at the borders



Source: Transboundary Water Assessment Program, Global Environment Facility, 2016.

This lack of cooperation contributes to considerable economic, social and environmental damage. New dams that lack joint planning redirect water and destabilise ecological systems. Upstream pollution compromises water quality for downstream users. Flooding is worsened when warnings about impending risks are not shared due to poor communication between countries. Although open water wars have been relatively rare in recent history, a lack of cooperation and equitable management can lead to conflict between, or within states, as evidenced in countries as diverse as Darfur, Somalia, Iraq and Syria through to Chennai, Bolivia and the US.[13] One of the ongoing, and most deadly, examples of this is a dispute over access to land and water points between Fulani herders and Dogon farmers on the Mali–Burkina Faso border.[14] A previous agreement, which allowed Fulani herders to pass into Mali to access these resources, broke down in 2012, leading to deadly conflict. Violence in the region persists, with the Norwegian NGO ACAPS recently citing drought and continued water scarcity as factors intensifying the tension between the two sides, triggering continued clashes.[15]

Even if tensions over water do not develop into open conflict, they can harm the broader bilateral relationships between states. For example, in the wider dispute between India and Pakistan over the Kashmir region, water has been weaponised, with dam construction on the Ravi River being used by the Indian government as a reprisal for supposed Pakistani aggression in the contested territory.[16]

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1.3 What is Blue Peace?

Blue Peace refers to water cooperation across borders to foster stability and sustainable development. This can be in the form of shared institutions and legal frameworks which bring countries together in a commitment to resolve differences peacefully—and to use their shared water as a foundation for wider economic and diplomatic collaboration.

Blue Peace frames water cooperation as a "positive-sum" outcome in which participants enjoy more benefits from working together than they would working alone. Commitment to share benefits that come from the use of transboundary water resources can yield various economic, environmental, and political gains and incentives for cooperation. The gains vary from enhanced energy security and protected biodiversity through to reduced flooding and drought and optimisation of investments.[17] Water is thus conceptualised as an instrument of cooperation. Blue Peace primarily focuses on transboundary basins, the geographical units that encompass the natural hydraulic flows of water in rivers, lakes, and aquifers and that cross political or jurisdictional boundaries.[18]

Blue Peace is advanced when stakeholders come together to make equitable decisions about—and jointly invest in—shared water resources to promote peace and stability. Since the emergence of the concept in the early 2010s, the movement has grown to incorporate contributions from international organisations, governmental agencies, the private sector, NGOs, research institutions, artists, and young people.[19] Blue Peace champions the fair and sustainable management of shared water resources as a means to achieving peace, utilising a variety of diplomatic, political, technical, and financial tools to transform water from a source of dispute into an instrument of cooperation.

History on its side

The goal of Blue Peace is supported by ample historical evidence of the power of treaties and diplomatic mechanisms to safeguard cooperation, even during political conflict. Indeed, in some instances collaboration over water resources has gone further and provided a foundation for broader diplomatic engagement.[20] The Tigris and Euphrates rivers in ancient Mesopotamia, often described as the "cradle of civilisation", saw some of the earliest recorded conflicts over water resources, but also efforts to develop communal canals, irrigation works, and legal frameworks to govern the critical sources of water. The Mesopotamian city states of Umma and Lagash fought over water supplies more than 5,000 years ago, but also reached the earliest recorded agreement to settle their disputes.[21] Water and irrigation also featured prominently in one of the oldest written laws, the *Code of Hammurabi*, a collection of 282 laws regulating life in the Babylonian Empire (c.1750 BC).

In the modern era, states have embarked on many cooperation efforts and joint institutions for transboundary water management. The most prominent of these are River Basin Organisations (RBOs)—institutionalised forms of cooperation based on binding international agreements covering the geographically defined area of an international river or lake basin. These organisations can be characterised by their principles, norms, rules and governance mechanisms.[22] One of the first RBOs was the Central Commission for the Navigation of the Rhine (CCNR), created in 1815.[23] Since then, many multi-country cooperation mechanisms such as RBOs, commissions and joint bodies, have been formed, from West Africa to Eastern Europe and Latin America. The substantial variations in their structure, mandate, operational mode, and impact reflect the different contexts that they emerged from and the lack of "one-size-fits-all" solutions.

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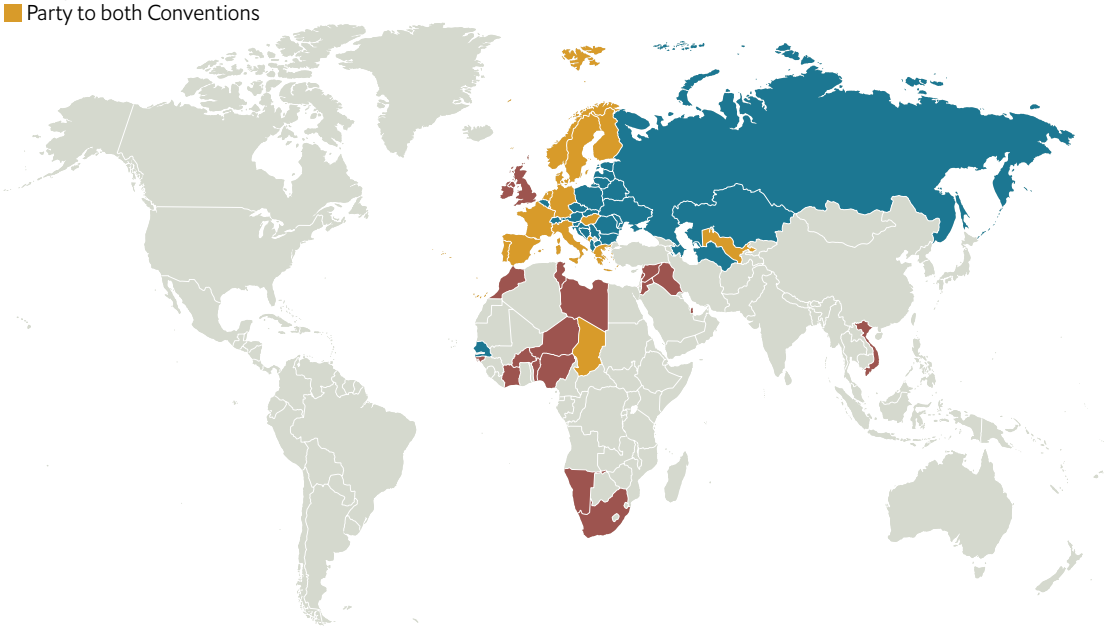
A steady flow of actors and laws

The cast of institutional actors has grown over the decades, from national water agencies, supranational bodies, and international organisations, to include donors, multilateral development agencies, international financial institutions, universities and NGOs.[24] Institutional proliferation has been underpinned by the development of international water law. The 1966 Helsinki Rules on the Uses of International Rivers developed by the International Law Association established international guidelines regulating the use of transboundary rivers and connected groundwater, despite a lack of formal status and enforcing mechanism. Subsequently, the 1992 UNECE Water Convention and the 1997 UN Watercourses Convention codified the international water law and articulated the core principles of equitable and reasonable utilisation, and the obligation to cause no significant harm.[25] International water law helped challenge the concept of absolute territorial sovereignty, instead promoting limited sovereignty that recognised reciprocal rights and responsibilities. Despite significant progress, however, relatively few countries in the world have ratified these international conventions, so far.

Slow to sign

(Global signatories to UN Conventions relating to transbounday freshwater)



Source: The United Nations Economic Commission for Europe (UNECE).

1.4 The benefits of Blue Peace: New public goods

Blue Peace is a multidimensional movement that recognises water as a potential source of conflict, while also appreciating its power to foster peace. The benefits of transboundary water cooperation are diverse and extensive, cutting across economic, health, social, environmental and political domains. Working together does not merely mean avoiding negative scenarios, such as flooding or pollution, but creating public goods that provide more than countries could achieve on their own.

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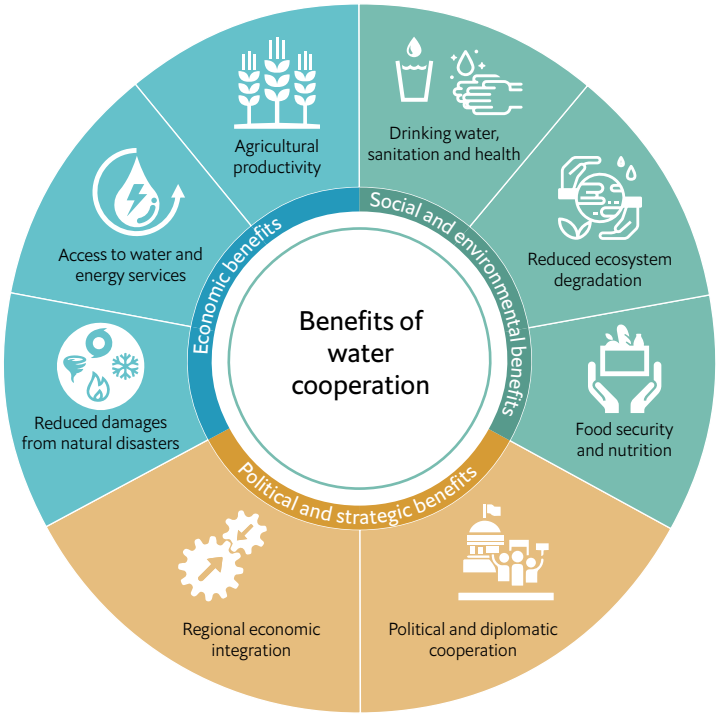
More than meets the eye
Benefits of water cooperation



Source: Adapted from adelphi and CAREC, "Rethinking Water in Central Asia: The Costs of Inaction and Benefits of Water Cooperation", 2017.

Economic: Agricultural and industrial production, energy access and hazard avoidance

The stability and reliability of transboundary water flows are critical to economic growth. Major industries like energy and mining—critical inputs to economic competitiveness for many low-income countries—are water-intensive. Agriculture and fishing on the waters, banks and deltas of rivers provide livelihoods for millions, especially in Asia and Africa. The Mekong River's annual floods, for instance, are far from just a destructive force. They improve the fecundity of freshwater fisheries, redeposit sediment, and provide water that can be stored for dry periods. While the average annual cost of flood damage in Mekong is estimated at US$60–$70m, the flood "dividend", correctly harnessed, puts its positive value significantly higher at US$8–$10bn.[27]

Harnessing the power of water through sustainable and responsibly developed hydro-infrastructures can generate power domestically and across borders. This reduces the costs of energy for governments, companies, and citizens, boosts the output of energy-intensive economic activities, and frees up resources to spend on other productivity-boosting activities such as healthcare and education. For example, Bhutan's bilateral hydropower relationship with India is estimated to have contributed to a trebling of the Buddhist kingdom's GDP per capita since 2000, rising from US$780 to US$2,600 in 2014.[28]

However, these positive externalities can be realised only by active collaboration. India has assisted Bhutan in building almost all of the country's current hydropower capacity, with Bhutan exporting power to India for most of the year, and importing between January and March. Similarly, the Vuoksi agreement between Russia and Finland regulates the water flows on the river, preventing damage in both countries from extreme flows, and optimising the performance of hydropower assets that benefit both sides.

Transboundary water collaboration can also prevent natural and economic disasters from occurring. The flooding of the River Elbe in 2013 caused downstream damage of €250m (US$280m) in Dresden alone, and could have been avoided had upstream flood protection measures been in place.[29] In particular, coordinated flood warnings are critical. One estimate found that flood warnings 48 hours ahead of an event can avoid 4–40% of subsequent damage, with expected benefits of €400 (US$450) for every €1 invested.[30] However, flood warnings and flood protection measures require shared data, communication protocols, and a scientific understanding of how river basins function, necessitating a basin-level perspective and coordination.

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Case study The Orange-Senqu River Basin

Water as an economic driver

The Orange-Senqu River Basin, shared between South Africa, Lesotho, Namibia, and Botswana, clearly demonstrates how transboundary riparian cooperation can contribute to regional economic development. One of the most intensely developed basins in Africa, it is the location of the continent's largest industrial area, and one of its most productive agricultural regions.[1]

The Orange-Senqu River Basin Commission (ORASECOM) is currently fundraising for the Lesotho–Botswana Water Transfer Scheme, which will supply water to Botswana, Lesotho and South Africa from the Makhaleng Dam in Lesotho. Having secured US$2m funding from the World Bank, the organisation is now looking to engage the private sector in a feasibility study—a relatively novel approach for RBOs.[2]

This project builds on a strong heritage of leadership from transboundary institutions in the basin—the most well-known of which is the Lesotho Highlands Development Authority, which oversees a multi-decade, multi-project development programme where Lesotho supplies water to South Africa in return for royalties and support in installing hydropower capabilities.[3] Despite existing disagreements about some of the conditions and the lack of review mechanisms in the agreement, the project has created tangible benefits for both parties. One study found that the Lesotho Highlands Water Project contributed to the creation of over 16,000 jobs in Lesotho, and the country's economic growth rose from 3% per annum in the pre-project period to 5.5% per annum during construction.[4]

The basin also demonstrates how cooperation can bring economic benefits beyond large dam-based infrastructure projects. For example, in 1992, South Africa and Namibia signed an agreement to establish the Joint Irrigation Authority (JIA) for the Noordoewer and Vioolsdrift regions in Namibia and South Africa, respectively.[5] The countries agreed to allocate a set volume of water annually to the JIA, which then distributes it between the two regions using the system it installed, operates and maintains. This cooperation mechanism provides water to 884 hectares of farmland, through irrigation channels that cross and re-cross the border five times over a 28 km stretch of river.[6]

ORASECOM also promotes the sustainable development of its shared water resources. Notably, it developed the first climate change model for the Orange-Senqu River Basin, delineating different climate change scenarios and their implications for river flow. The organisation is currently preparing Transboundary Environmental Impact Assessment (EIA) Guidelines that will outline the conditions and procedures for conducting EIAs for projects with transboundary or basin-wide significance.[7]

[1] Adelphi. "Integrating Water and Climate Diplomacy in the Orange-Senqu River". 2017. https://www.adelphi.de/en/publication/integrating-water-and-climate-diplomacy-orange-senqu-river

[2] Orange-Senqu River Commission (ORASECOM). Lesotho-Botswana Water Transfer (L-BWT) Scheme. 2018. http://www.orasecom.org/_system/writable/DMSStorage/2711P2953_project_pitches_LBWT_web_FINAL.pdf

[3] Lesotho Highlands Development Authority (LHDA). "Project Phases: Social and Environment Programmes". http://www.lhda.org.ls/lhdaweb/projectphases/phasei

[4] Orange-Senqu River Commission (ORASECOM) and Lesotho Department of Water Affairs. "Khubelu Protection Case Study: Protecting the Source of Lesotho's 'White Gold' ". 2018. http://www.orasecom.org/_system/writable/DMSStorage/2701EN_Khubelu%20Wetlands%20Protection%20Case%20Study-web.pdf

[5] Keller, E. J. "Critiquing Cooperation: Transboundary Water Governance and Adaptive Capacity in the Orange-Senqu Basin". https://onlinelibrary.wiley.com/doi/full/10.1111/j.1936-704X.2012.03126.x

[6] Matthews, S. "Water Wheel - South Africa and Namibia ensuring enough irrigation water together". (Water Wheel, 13(6)). 2014. https://journals.co.za/content/waterb/13/6/EJC162538;jsessionid=YYHrkf8nGJS44Z8vCm1aTGiZ.sabinetlive

[7] Climate Diplomacy, Adelphi, Federal Foreign Office. "Water and Climate Diplomacy: Integrative Approaches for Adaptive Action in Transboundary River Basins". 2016. http://www.idaea.csic.es/sites/default/files/Water%20and%20Climate%20Diplomacy%20Report%202016.pdf

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Social and environmental: Health, food security and ecosystem protection

Stable access to clean water, recently recognised as a basic human right, is essential for people's survival and well-being. Despite some improvements, in 2017 more than 2.1bn people still lacked access to safely managed drinking water.[31] Transboundary cooperation has helped to improve access, as seen in the Senegal River Basin, following the introduction of shared management of dams.[32]

Diseases related to poor water quality, such as cholera and typhoid, affect more than 1bn people, imposing a significant burden on the most vulnerable groups in low- and middle-income countries.[33] Water polluted by industry, pesticides and unregulated groundwater extraction also has damaging effects on physical and mental health, especially for children. The Lancet Commission on Pollution and Health found that unsafe water and sanitation, resulting from pollution, was linked to US$404bn in global welfare damages in 2015. Costs were disproportionately higher in low-income countries where they amounted to more than 3% of Gross National Income (GNI).[34] Critically, transboundary efforts to tackle pollution and improve water quality have been shown to have a higher overall cost–benefit ratio when compared with unilateral efforts. The theory behind the benefits of a joint approach is that pollution is inherently a system-level problem, with the source and impacts of pollution occurring in different places, and often in different states. Therefore, by coordinating efforts, such as identifying priority pollutants and tackling them simultaneously in upstream and downstream areas, interventions are more effective and costs more equitably shared between polluter and polluted.[35]

Apart from boosting access to safe water, transboundary water collaboration can help to ensure that critical health services are provided in the absence of other stakeholders. For example, West Africa's OMVS (Organisation pour la mise en valeur du fleuve Sénégal –Senegal River Basin Development Organisation) has carried out critical food security and malaria prevention work. Its regional funding mechanism for malaria intervention, for example, ensured the availability of diagnostic tests, insecticide-impregnated nets and malaria treatments at a time when key donors had to withdraw or freeze funding in the region.[36]

At an environmental level, transboundary water cooperation is vital in reducing habitat degradation and biodiversity loss. For instance, scientific research conducted by RBOs provides data for the scenario planning that informs decisions about whether projects with potentially significant ecological impacts, such as new infrastructure, should be pursued. RBO agreements can also stipulate key conditions and regulations that the projects must uphold, such as pollution levels.[37] As well as mitigating ecological destruction, transboundary water cooperation can promote regeneration—for instance, by developing spawning grounds for marine fish species, restoring supportive environments for migratory birds and sharing best practices and technologies for drought-resistant farming.[38] In contrast, a lack of cooperation can have devastating ecological consequences. Vietnam's drought in 2016, the worst in 90 years, was blamed by some experts on upstream reservoir dams which, they claim, increased evaporation rates.[39]

Beyond health and environment, inadequate access to water can have a high social cost. Notably, it can exacerbate gender inequalities, with women and girls more likely to travel long distances for water and sanitation facilities, putting them at greater risk of violence and harm. Furthermore, although vulnerable groups are often excluded from discussions about water management, especially at a transboundary level, they are the people who are most likely to suffer the adverse effects of

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development and mismanagement.[40] Common examples of this include the displacement of poorer, rural communities to make way for dams and their associated reservoirs, and interruptions to flow affecting subsistence agriculture, which relies on less versatile irrigation techniques.[41] Noting these realities, more recently established RBOs, such as the Limpopo River Basin Commission, are now taking active steps to give women, local populations and minorities a more central role in decision-making over water resources (see case study, below).

Case study The Limpopo River Basin Commission

Putting inclusion at the centre

Although it is one of the newest RBOs in the region, established in 2003, the Limpopo Watercourse Commission (LIMCOM) is taking innovative steps to incorporate social and environmental factors into its activities. As a starting point, the river basin riparian states—Botswana, Mozambique, South Africa and Zimbabwe—incorporated in LIMCOM's mandate an explicit provision for the inclusion of local stakeholders and consideration of "social and cultural heritage matters" when planning for the basin's development.[1] This commitment was underscored by one of the commission's first activities—a workshop on how to scale up inclusive participation of stakeholders in the organisation's decision-making.[2]

LIMCOM has since translated this theory into practice—for example, when it developed a new flood defence system in Mozambique. Supported by the German Development Agency (GIZ), it incorporated innovative practices into the planning and development of the new system, such as including a gender specialist when conducting local stakeholder engagements to ensure that women are effectively empowered to participate in the process.

Consultations have also included a focus on the "social and cultural myths around water", helping to ensure that information such as flood risk warnings is transmitted such that communications have credibility at the local level.[3] On the environmental side, LIMCOM is one of the first RBOs to go beyond regulating surface water and engage with the management of groundwater, establishing a groundwater committee and cooperation mechanism for the Ramotswa, Tuli Karoo and Limpopo aquifers.[4]

Regional integration: Economics, diplomacy and peace-building

The advantages of transboundary water collaboration go beyond the direct economic, social and environmental benefits that countries enjoy. Cooperation over water can instil a deeper level of regional economic and political integration between countries, which in turn has diverse economic and political benefits. A recent example can be seen in India and Bangladesh, where a US$400m project with the World Bank is helping the countries move more goods via inland waterways, boosting trade though lower transportation costs and reducing congestion delays.[42]

Another is the Sava River Basin in south-east Europe, where water cooperation provided the foundations for closer economic integration. The EU membership aspiration provided a stimulus for water governance improvements—and the focus on rehabilitating war-ravaged economic infrastructures, such as bridges and ports, has helped unlock regional opportunities in tourism, trade and navigation. Indeed, transboundary water collaboration played a vital role in promoting

[1] Limpopo Basin Permanent Technical Committee. "Roadmap for Stakeholder Participation for the Limpopo Watercourse Commission". 2010. http://limpopo.riverawarenesskit.org/LIMPOPORAK_COM/_SYSTEM/DMSSTORAGE/3451EN/LIMCOM_STAKEHOLDER_PARTICIPATIO.PDF

[2] *ibid.*

[3] Limpopo Watercourse Commission. "A Lifeline Against the Floods: Lessons from Mozambique". 2018. https://www.giz.de/en/downloads/Lower%20Limpopo%20Case%20Study_web.pdf

4 International Water Management Institute. "The Limpopo Watercourse Commission (LIMCOM) in Southern Africa launches its first-ever Groundwater Committee". 2019. http://conjunctivecooperation.iwmi.org/2019/04/04/the-limpopo-watercourse-commission-limcom-in-southern-africa-launches-its-first-ever-groundwater-committee/

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post-conflict rehabilitation in the region through the Framework Agreement on the Sava River Basin (2002). This established the first multilateral framework for the countries of the former Yugoslavia and provided a mechanism to pursue post-conflict rehabilitation (see case study, below).[43]

Collaboration over water can endure even when broader relations are strained. The Mekong Committee (1957–76) and the Interim Mekong Committee (1978–92) both existed and operated in the context of the Cold War, which split the countries between anti-Communist and pro-Communist blocs. This predecessor to the Mekong River Commission is "one of very few regional institutions to survive the difficult period of cold war and ideological confrontation".[44]

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Case study Sava River Basin Commission

A story of post-conflict cooperation

At the end of the war in the Balkans (1991–99), the Sava River, which had previously flowed through one federal state, Yugoslavia, was shared by five riparians: Bosnia and Herzegovina, Croatia, Slovenia, Serbia and Montenegro. The conflict had a profound economic, environmental and social impact on the local populations (see basin profile below), and both the Dayton Accords (1995) and Kumanovo Agreement (1999) achieved only an uneasy, fragile and imperfect peace.[1] The EU was keen to support efforts to avoid a resurgence of hostilities and identified water, and in particular the management of the Sava River, as an area where the interests of the newly formed countries converged.[2]

The Stability Pact for South Eastern Europe, an initiative started in 1999, initiated cooperation among the Sava riparian states and provided a forum for collaboration on rehabilitating waterways, ports and commercial traffic infrastructure. Initial discussions were kept deliberately narrow, focusing on areas such as navigation, where the economic benefits for all were pronounced. The riparian countries were able to hold technical discussions shortly after the end of hostilities, due in part to an institutional history of joint management, and personal relationships between experts and technocrats who had collaborated in the former Yugoslavia. The Framework Agreement on the Sava River Basin and the Protocol on the Navigation Regime, both signed in 2002, were designed to promote regional basin cooperation on navigation, economic development, water management and environmental protection. As progress was made in this area, other representatives were included, such as the Organization for Security and Co-operation in Europe (OSCE), which were able to broaden the perspective and facilitate the building of trust during negotiations.[3]

Although the diplomatic situation in the region remains complicated, and the operations of the International Sava River Basin Commission (ISRBC) are still narrowly focused, the level of cooperation over management of the Sava River Basin has remained open and functioning. The ISRBC is now able to publish and implement joint plans for river basin management, including recommendations on areas such as domestic water pricing and EIAs, based on jointly compiled assessments of the river basin conditions.[4] In spite of its limitations, the ISRBC has served as a platform for cooperation in a region with a history of complex relations and diverse national identities, religions and cultures. This has allowed for the development of other initiatives involving different sectors of society, industry and agriculture that can further promote stability and cooperation in the region.

[1] L Hadzic. "As Dayton undergoes proposals for reform, the status of freedom of movement, refugee returns, and war crimes in Bosnia and Herzegovina". Human Rights Review 9.1 (2008): 137–151; V Musliu. "Mapping Narratives on Failed States. The Case of Kosovo". International Relations 46.3 (2015): 271–294.

[2] Geneva Water Hub. "Hydro-Diplomacy for Water, Peace and Security: Beyond Shared Water Management". 2017. https://www.genevawaterhub.org/sites/default/files/atoms/files/roundtable_hydro-diplomacy_20170427.pdf

[3] Lund University - Stephen, S. and Kovandiz, J. "A river ran through it: Post-conflict peacebuilding on the Sava River in former Yugoslavia". 2011. https://lup.lub.lu.se/search/publication/10b59385-75fa-41a8-b4ca-ec549a36c7fa

[4] International Sava River Basin Commission. "About Us: Sava Commission". https://www.savacommission.org/sava

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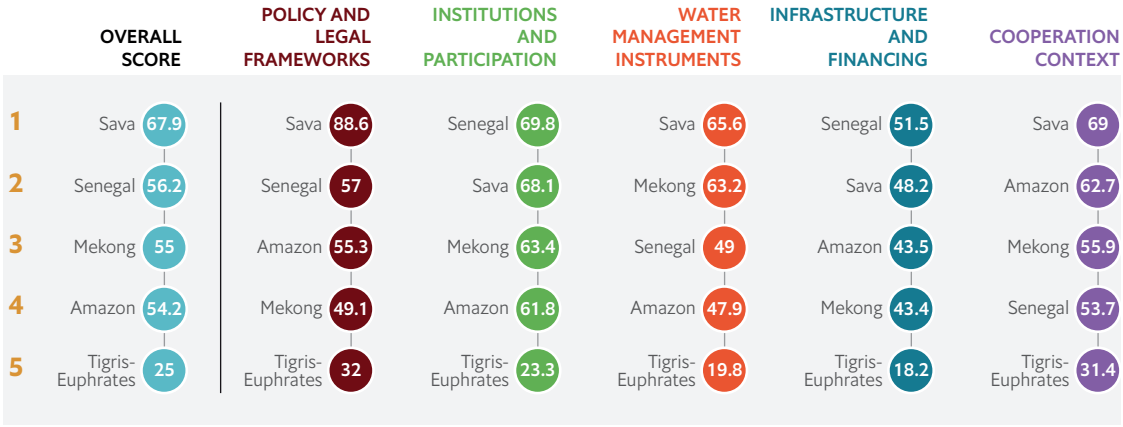
2. Blue Peace in selected basins

The Blue Peace Index is a research tool that measures how well countries manage transboundary water resources. In 2019, the first year of the index, it assesses management of shared water resources in five selected river basins and 24 countries that fall within them. The basins for the pilot edition of the index were selected as important cases representing different geographical regions and different quality of transboundary water management and cooperation. The Blue Peace Index will be expanded in the next editions to provide a more comprehensive global coverage and a tool to measure developments over time.

The countries and basins are assessed on 74 qualitative and quantitative indicators, some of which are national-level and others are assessed at the basin level. The basin scores are aggregated from basin-level scores and national-level scores of countries in the basin. The average basin scores in the index currently reflect the average of the five basins covered in this edition. All indicators are designed to capture some degree of "agency" that countries can exercise. Purely hydrological and geographical indicators are therefore excluded as countries cannot influence them. The indicators are split across five domains: Policy and legal frameworks, Institutions and participation, Water management instruments, Infrastructure and financing, and Cooperation context.

Blue Peace Index: Basin-level scores



Source: Economist Intelligence Unit

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Blue Peace Index: Country-level scores

	OVERALL SCORE	POLICY AND LEGAL FRAMEWORKS	INSTITUTIONS AND PARTICIPATION	WATER MANAGEMENT INSTRUMENTS	INFRASTRUCTURE AND FINANCING	COOPERATION CONTEXT
1	Slovenia 75.8	Croatia 93.3	Thailand 84.7	Thailand 91.7	Senegal 56.7	Slovenia 80.7
2	Croatia 73.1	Slovenia 89.2	Mali 83.3	Slovenia 83.3	Thailand 55.5	Croatia 71.7
3	Thailand 68.7	Senegal 88.5	Senegal 77.8	Cambodia 79.2	Slovenia 55.1	Brazil 68.1
4	Senegal 66.3	Bosnia and Herzegovina 86	Croatia 75	Croatia 75	Peru 54.5	Laos 65.8
5	Serbia 63.2	Serbia 86	Peru 73.6	Colombia 66.7	Brazil 53.2	Peru 65
6	Vietnam 62.7	Vietnam 74.2	Brazil 72.2	Mali 66.7	Colombia 52.9	Serbia 64.5
7	Mali 62.3	Bolivia 63.3	Cambodia 70.8	Peru 66.7	Mali 51.6	Colombia 64.4
8	Peru 62.3	Mali 57.3	Slovenia 70.8	Vietnam 66.7	Croatia 50.4	Bolivia 62.9
9	Brazil 60.1	Ecuador 56	Mauritania 68.1	Laos 58.3	China 49	Senegal 62.7
10	Bosnia and Herzegovina 59.5	Venezuela 55	Serbia 65.3	Bolivia 54.2	Mauritania 49	Vietnam 61.5
11	Colombia 57.6	Brazil 52.9	Vietnam 63.9	Brazil 54.2	Guinea 48.7	Ecuador 61
12	Cambodia 56.9	Colombia 52.9	Bosnia and Herzegovina 61.1	Serbia 54.2	Vietnam 47.3	Guinea 60.9
13	Laos 55	Peru 51.9	Venezuela 61.1	Bosnia and Herzegovina 50	Cambodia 46.1	Thailand 60.5
14	Bolivia 54.9	Laos 51.3	Bolivia 59.7	China 50	Serbia 46	Bosnia and Herzegovina 59.1
15	China 49.4	Thailand 51.3	China 56.9	Senegal 45.8	Laos 45.6	Venezuela 54.9
16	Ecuador 49.1	Mauritania 43.8	Laos 54.2	Guinea 41.7	Bosnia and Herzegovina 41.1	Mali 52.3
17	Mauritania 48.2	Cambodia 41.9	Ecuador 52.8	Mauritania 41.7	Ecuador 38.1	China 51.5
18	Guinea 48	China 39.6	Colombia 51.4	Ecuador 37.5	Turkey 35	Myanmar 49.5
19	Venezuela 41.4	Guinea 38.5	Guinea 50	Turkey 37.5	Bolivia 34.5	Turkey 49.2
20	Turkey 40.7	Myanmar 36.5	Myanmar 50	Myanmar 33.3	Venezuela 27.8	Cambodia 46.6
21	Myanmar 37.2	Turkey 36	Turkey 45.8	Iran 29.2	Iran 18.8	Mauritania 38.7
22	Iran 26.7	Iraq 35.6	Iran 22.2	Iraq 8.3	Myanmar 16.8	Iran 37.7
23	Iraq 17.6	Syria 30.8	Syria 18.1	Venezuela 8.3	Iraq 14.5	Iraq 22.6
24	Syria 14.8	Iran 25.6	Iraq 6.9	Syria 4.2	Syria 4.6	Syria 16.1

Source: Economist Intelligence Unit

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2.1 Amazon River Basin

A) Geography and hydrology

The Amazon River is approximately 6,400 km long, ranging from the Andes Mountains in the west, within 160 km of the Pacific Ocean, to the Atlantic Ocean on the north-eastern coast of Brazil, the river's mouth. The Amazon Basin, which holds approximately one-fifth of the planet's freshwater, spans more than 6m square km, covering the greater part of Brazil and Peru, large swathes of Colombia, Ecuador and Bolivia, with a smaller incursion into Venezuela. Over 30m people live in the Amazon biome, mostly within the major riparians mentioned above, but also in Guyana, Suriname and French Guiana.

Hydrologically, the Amazon River has several distinct attributes. First, Brazil dominates its course, encompassing two-thirds of the main stream and the largest portion of its basin. The second is its rainforest, covering two-thirds of the Amazon Basin, running along the floodplains and lining the Amazon's blackwater rivers, and providing the swamps, marshes and streams that allow the breadth of biodiversity to flourish.[45]

B) Evolution of cooperation

Formal water collaboration began with the 1978 Amazon Cooperation Treaty (ACT), initiated by Brazil and signed by eight countries to promote development, strengthen sovereignty over territories, and foster cooperation. Two decades later, the countries signed an amendment to create the Amazon Cooperation Treaty Organisation (ACTO), an international body with a permanent secretariat in Brasília and its own dedicated budget, funded by the member states and international partners.

ACTO has been supported by international partners. The German and Dutch development agencies, for instance, supported a programme whose outcomes included satellite-linked control stations for monitoring deforestation; the creation of the first official deforestation map; electronic authorisation procedures for trade in endangered species of flora and fauna; and DNA analysis of traded trees to allow authorities to assess checks to tackle the illegal timber trade.[46] The Global Environment Facility (GEF) is another partner. Its Amazon project convenes all eight countries, with outputs including analysis of hydro-vulnerability and data and information integration.

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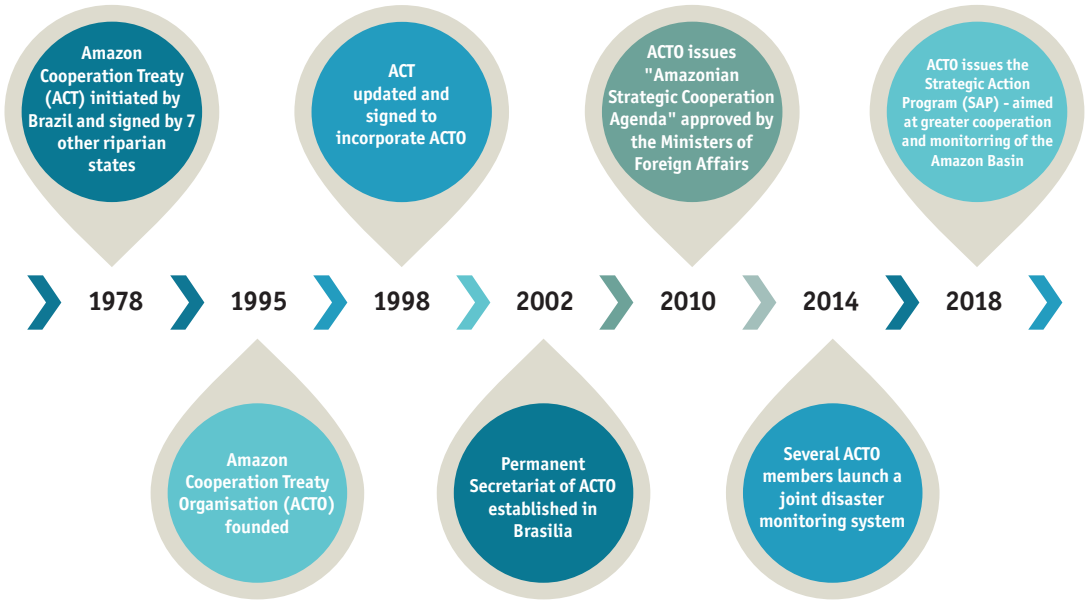
Evolution of cooperation in the Amazon Basin



Source: The Economist Intelligence Unit.

ACTO is not dedicated solely to water management—many of its focal areas relate to forest protection—but its work interacts with basin issues, including biodiversity, navigation, the development of sensors and hydrometeorological data. Its treaty also includes clauses on the "rational use of water resources".[47] Amazon countries have also signed bilateral water management agreements on issues including environmental protection and hydroelectric infrastructure development, which form part of the overall institutional matrix. These include the 1979 and 1985 agreements between Colombia and Ecuador, a 1979 Colombian–Peruvian treaty, a 1981 Brazil–Colombia deal, and a 1988 Bolivia–Brazil joint declaration on environmental protection.[48]

C) The basin today

To date, water management agreements in the Amazon, whether regional or bilateral, have often focused on the sharing of information, data and policy guidelines—to the detriment of more concrete activities. According to Beatriz Garcia of Western Sydney University, one challenge for ACTO is that its underlying treaty is not river-specific, and so many focal areas and strategic priorities are not directly related to the Amazon Basin and its preservation. The broad mandate includes topics that are valid and important, given the threats faced by the Amazon rainforest—deforestation recently hit the highest rate in a decade[49]—but raises the question of whether the Amazon Basin requires its own institutional body. Such an organisation may be able to better articulate trade-offs between the economic development imperatives of ACTO and consequences for the Amazon River and other rivers in the basin.

The biggest challenge going forward relates to dam development. There are reportedly plans for up to 500 new dams on the Amazon, to be completed in the coming decades.[50] Some projects have

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already wrought havoc. The Belo Monte Dam, currently under construction, will be the world's fourth-largest hydroelectric project. Development has already disrupted the region. In 2015, flooding from its reservoir affected almost 420 square km of lowlands and forests, displacing over 20,000 people, and spreading diseases including dengue fever.[51]

D) Index findings

Strengths

The Amazon Basin overall scores similarly to Senegal and Mekong in the Blue Peace Index. A particular strength is that the Amazon performs reasonably well across all domains. Within these domains, countries do best on the **national water agency** and **stakeholder engagement** indicators, suggesting they have relatively strong domestic institutions for water management. The Amazon also has the lowest combined levels of water stress, indicating a somewhat less challenging context than other basins currently assessed in the index. This suggests that the countries have a strong supply of freshwater but also that they do not extract more than can be renewed. The Amazon Basin countries also have a relatively good record of involving **private sector investment** through infrastructure PPPs in water and other sectors.

Challenges

Although performing relatively well overall, there are several indicators where bilateral coordination remains limited, and where ACTO is currently not as active as it could be. These include basin-wide **data sharing** (where a platform remains under development but not yet launched), **pollution control** and **joint basin investment financing**. Considering how integral the Amazon rainforest is to both regional and global environmental sustainability, the absence of coordinated pollution management is particularly troubling. At the country level, it is of note that only Venezuela has signed (but not ratified) the UN Watercourse Convention.

Opportunities for improvement

Several initiatives, in the development or pilot phase, present significant opportunities for the Amazon Basin to improve its performance. These include the TerraMA2—a **joint monitoring and warning system** for natural disasters used by Brazil, Peru and Bolivia, which could be expanded to cover more riparians—and the data sharing platform, mentioned above, that is currently under development. Historically, moving from inception to implementation has been a considerable challenge for ACTO, so focusing on getting these projects "over the line" and then expanding them is a logical priority in the short term.

Another interesting finding is that, although PPPs are prevalent in the region at the national level, private sector investment in transboundary water infrastructure remains limited. Although increasing infrastructure development can be ecologically and politically challenging, joint basin-wide coordination could make it more sustainable, and ACTO could explore applying regional experience of PPPs to other project types, such as river ports and irrigation infrastructure.

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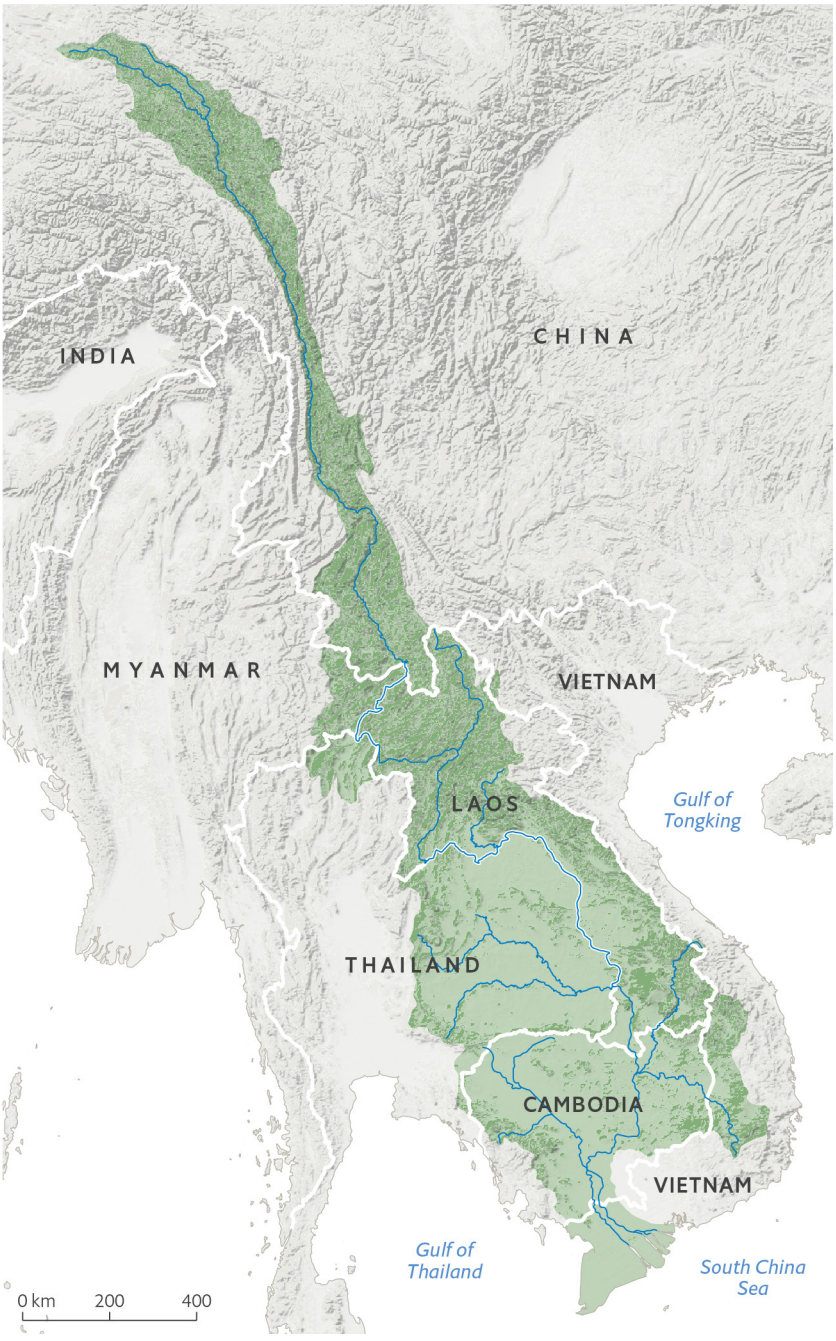
2.2 Mekong River Basin

A) Geography and hydrology



The Mekong is Southeast Asia's longest river and the tenth-largest in the world.[52] Spanning 4,909 km and six countries, it supports the livelihoods of 60m people in its lower basin and holds one the richest inland fisheries in the world.[53]

The Mekong River, originating in south-eastern China, flows through the Autonomous Region of Tibet and Yunnan province, before forming the border between Myanmar and Laos, and Laos and Thailand. The river then passes through Cambodia and re-enters Vietnam—flowing into the South China Sea near Ho Chi Minh City. Two capital cities—Vientiane (Laos) and Phnom Penh (Cambodia)—stand on its banks. The Mekong is among the most international of rivers—a border boundary for over 1,000 km of its course. All the lower-basin countries depend on it for their survival. It provides nearly all the water resources of Laos and Cambodia, as well as critical agricultural support for north-eastern Thailand and Vietnam's rice bowl.[54]

Among the Mekong River's distinct hydrological characteristics are its seasonal and extensive floods. During the wet season, from July to October, monsoon rains cause high flows and regional flooding, borne mostly by Cambodia and Vietnam. But these floods also sustain and reinvigorate freshwater fisheries, enrich soil fertility through deposited sediments, and provide storage water for dry seasons. The costs of floods in the Lower Mekong Basin range between US$60–$70m, but the positive value, if harnessed, is estimated to be approximately $8–$10bn.[55]

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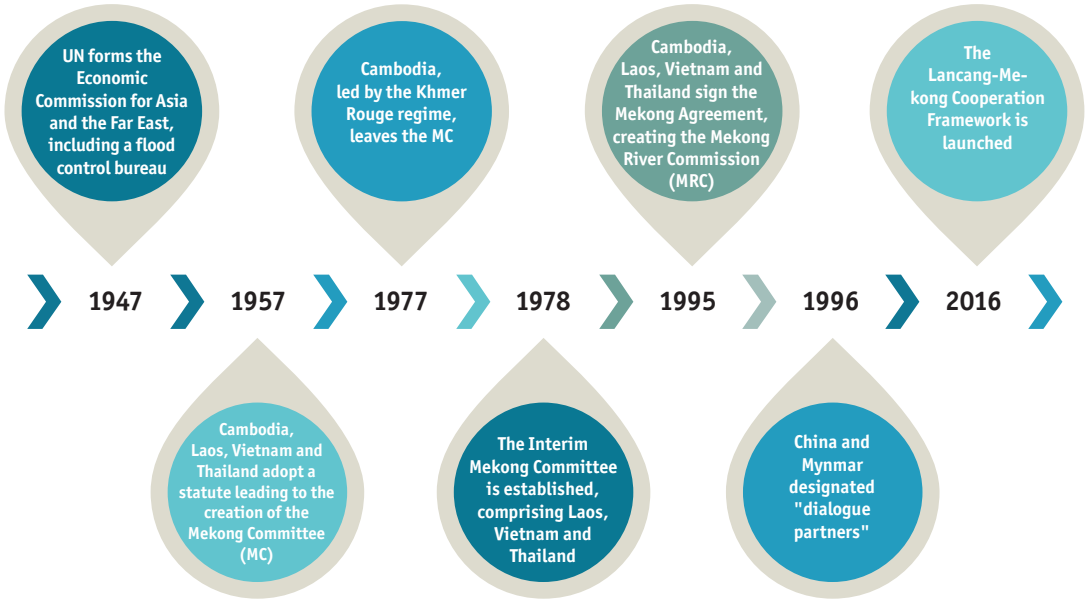
B) Evolution of cooperation

Evolution of cooperation in the Mekong Basin



Source: The Economist Intelligence Unit.

Regional cooperation dates back to the early 1950s when the UN formed the Economic Commission for Asia and the Far East (ECAFE), which included a flood control bureau. The first report exploring the potential for integrated development in the lower Mekong Basin was published in 1952 by the ECAFE, initiating momentum for country collaboration. In 1954, Cambodia, Laos and Vietnam gained independence and three years later joined Thailand to adopt a statute to promote, coordinate, supervise and control the planning of water projects. This led to the creation of the Mekong Committee (MC), making the Mekong one of the earliest basins in the world to come under institutionalised governance.

Despite growing functional powers, including a joint declaration in 1975 enabling the MC to create project agencies, the initiative was weakened by political instability. Cambodia departed in 1977 as part of the Khmer Rouge's isolationist drive and the increased tensions in the region that resulted in the country being invaded by Vietnam in 1979. The Cold War also drove a wedge within the region between anti-Communist Thailand, aligned with the US, and pro-Communist Vietnam and Laos, aligned with the Soviet Union. However, the MC continued its activities, albeit at a reduced level, during the conflict.[56]

In the 1990s, the end of the Cold War sparked fresh cooperation while changing economic dynamics called for new thinking. China was developing large-scale hydropower in the upper Mekong, for instance, and countries were becoming increasingly aware of the ecological risks of large dams. They were also realising that the original MC had certain restrictions that rendered it ill-suited to current needs. Three years of negotiations followed, culminating in a new treaty, the 1995 Mekong Agreement, creating the Mekong River Commission (MRC), an intergovernmental RBO. However, China and

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Myanmar - the two upstream countries - decided not to join as full members and have been designated as "dialogue partners" since 1996.[57]

The deal, while an advance on past arrangements, was also the product of those historical collaborations and institutions, notably the MC and the Interim Mekong Committee.[58] It was heralded at the time as a milestone in international water management on account of its emphasis on joint development, ecological protection and dynamic water allocation.[59] The World Bank has argued that "Few riparians have been able to substantively and maturely address their common interests and differences as well [as the MRC countries]."

C. The basin today

As a "constitution for cooperation", the MRC focuses on technical responsibilities, decision-making procedures for implementing the Mekong Agreement, and conducting scientific work, including monitoring river health. The MRC's work includes monitoring water levels and quality, as well as flood forecasts. Lacking supranational legal regulatory power, its function is more akin to a coordinating body for the national interests of the four lower-basin countries. Our expert interviews suggest that, while the MRC's activities have shone a light on environmental impacts and risks, they have not been able to legally override states' sovereign powers.

Despite these limitations, the MRC has become a case study in water cooperation, attracting visiting missions from other regions including the Middle East. However, experts see challenges in the context of a rapidly changing economic landscape, driven by China's expanding influence, and the emergence of new multilateral investment platforms that will affect the river.

One such platform is the Lancang–Mekong Cooperation Framework, launched in 2016. The framework is a development and investment initiative developed by China and involving Laos, Cambodia, Thailand, Myanmar and Vietnam. It is a far broader framework than the MRC, focusing on everything from infrastructure and finance, to land, agriculture, forestry and poverty alleviation.[60] It does have a bearing on the river—of the billions of dollars reportedly set aside by China for projects, some will be directed towards water-related projects such as research centres—although many projects are geared towards connectivity and trade.[61] Given the Framework's investment and trade remit, it aligns with the Belt and Road Initiative, a massive global trade and investment network with significant impacts on river systems such as through transport infrastructure and energy development.[62] The two have been explicitly linked in government statements, such as regarding China–Cambodia cooperation, along with China–ASEAN (Association of South East Asian Nations) cooperation.[63]

Experts, such as Naho Mirumachi of King's College London, believe it is too soon to evaluate the impact of the Lancang–Mekong Cooperation Framework on water cooperation, but caution against viewing it as a competitor to the MRC given their very different mandates. One key divergence between the two organisations is that the Framework is an Asian-led initiative, whereas the MRC has, since its inception, relied significantly on foreign donor support.

The MRC should participate actively in these wider geoeconomic shifts and regional cooperation mechanisms in order to ensure the health of the Mekong River in the face of disruptions and environmental threats. Infrastructure investments can dramatically impact river flow and hydro-dynamics. Vietnam's drought in 2016—its worst in 90 years—was attributed by some experts to China's reservoir dams which have increased upstream evaporation rates.[64] Going forward, 11 power plants

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are planned along the main stream, and more than 80 along the tributaries and infrastructure. Hydro-energy developments could negatively impact salinity, fish migrations, and nutrients for agricultural production.[65] To the extent that regional investment mechanisms contribute to the development of this infrastructure, the MRC should be a participant.

According to Kim Geheb at the Mekong Region Futures Institute, pollution is a growing hazard, with heavy metals contamination, and disruption from a sand-mining boom causing concerns over the availability of quality water in the Lower Mekong.[66] Disaster relief protocols must also be strengthened. The collapse of a dam in Laos in 2018, which destroyed thousands of homes, highlighted inadequate monitoring and the lack of a coordinated response plan. Careful coordination and planning are required, which in turn necessitates a strong commitment by riparian states to working with and through the MRC.

D) Index results

Strengths

The Mekong Basin performs comparatively well for those indicators pertaining to Water Management Instruments. This is reflective of the MRC's technical focus, with the index highlighting the RBO's active participation in **basin-level water availability management**, **pollution control** and **disaster management**. This strong regional performance on Water Management Instruments is underpinned by strong national performances—with Thailand the highest scoring country in this domain, and almost all other riparians appearing among the top half of the countries covered in this assessment. The Mekong also performs relatively well on **basin-level financing**, as the MRC's "Basket Fund" represents one of the few examples of alternative funding instruments that have been successfully implemented.

Challenges

The **absence of an RBO** that includes all riparian states is a major challenge for the Mekong Basin. Although China and Myanmar are observer members of the MRC, and are pursuing their own institutional arrangements, the lack of a single platform for coordination holds back cooperation in all areas covered by the index. Moreover, the Mekong Agreement covers only the main stream, and does not cover the entire basin with its tributaries.

The Mekong scores below average under the Policy and Legal Frameworks domain, owing to the **limited regional uptake of UN conventions** and the absence of the principles of **Integrated Water Resource Management (IWRM)**[67] and the **polluter-pays principle**[68] in domestic legislation. Other areas where states in the Mekong Basin generally score below average are for indicators relating to local and public stakeholder engagement. This is particularly the case in Myanmar and Laos.

Opportunities for improvement

Since the end of the Cold War there have been various calls—including recently from the prime ministers of both Laos and Cambodia—for China and Myanmar to become full members of the MRC, which would be a positive, yet unlikely, step. The institution could also improve in other ways. The MRC agreements currently contain no clear dispute-resolution mechanism, limiting opportunities for the organisation to oversee and manage any disagreements that arise between the riparian states. Furthermore, there is a large range in scores between the top-performing countries, namely Thailand and Vietnam, and poorly performing countries—particularly Myanmar. This disparity points to opportunities for inter-riparian learning and support to improve overall basin management.

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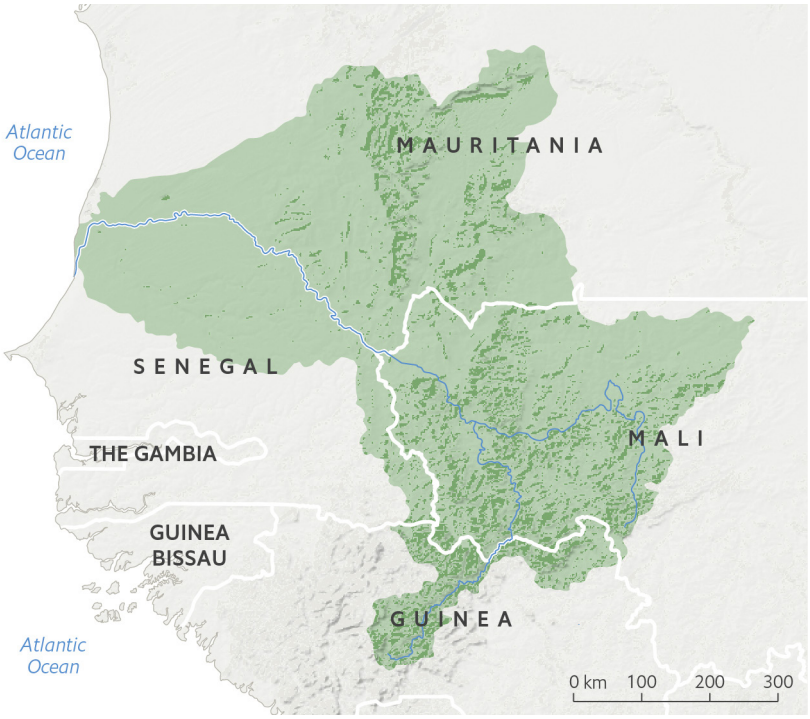
2.3 Senegal River Basin

A. Geography and hydrology



The Senegal River is more than 1,800 km long with a basin covering 280,000 square km. Two of its three headstreams (Falémé and Bafing) rise in the sandstone highlands of Guinea, while the Bakoye rises in western Mali. They join in Mali to form the Senegal which eventually drains into the Atlantic Ocean. The river forms 830 km of the border between Mauritania and Senegal.[69] The population of the river basin is approximately 12m.[70]

The Senegal River supports fertile agricultural land, especially in the alluvial valley between Bakel and Dagana in Senegal. After the annual retreat of the floods, millet, rice and vegetable crops are sown. The river is also a rich source of fish, including Nile Perch, although over-exploitation has threatened this resource. Prior to independence, Mauritania and Senegal participated in water cooperation through the Organisation Autonome de la Vallée (OAV) and the Mission d'Aménagement du Bassin du Fleuve Sénégal (MAS). In 1963, the four riparian states formed their own community with the conclusion of the Bamako Convention for the Development of the Senegal River, the first postcolonial West African treaty covering water resource management.[71]

Today, the Senegal River Basin has one of the world's most effective regional bodies, the Organisation pour la mise en valeur du fleuve Sénégal (OMVS), which was established in 1972. A supranational body, the UN's Food and Agriculture Organisation (FAO), has praised the OMVS for its "equitable sharing of water resources, through development and management, between co-basin states of a transboundary river".[72] Another assessment described the OMVS as a "unique exception" that has bucked the trend of an "overdeveloped sense of national sovereignty" preventing the establishment of an effective international RBO.[73]

One reason for the OMVS's success is the deep shared history and culture of the peoples of Guinea, Mali, Mauritania and Senegal. Despite the disruptions and rifts of the colonial era, all had previously been part of the Malian empire, which flourished between the 13th and 16th centuries, and still regard themselves as "one people" according to Shelley McMillan, Senior Water Resources Specialist at the World Bank. This stands in contrast to parts of Sub-Saharan Africa where ethnic fractionalisation impedes collaboration both between and within countries. "You do not have to convince people here about the importance of coming together. They just want support in making it happen," notes McMillan.

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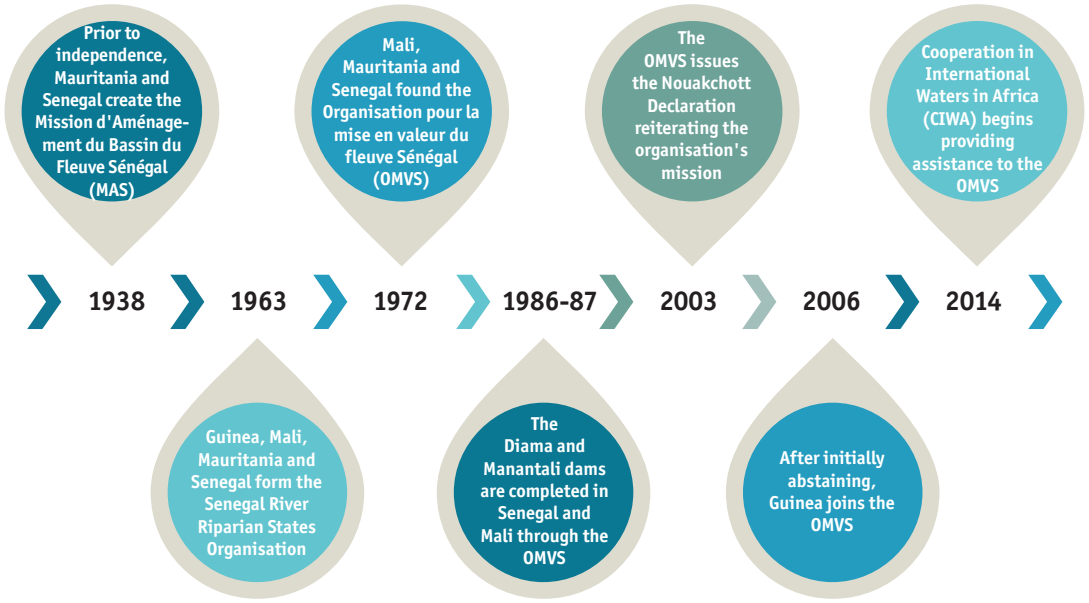
B) History of cooperation

Evolution of cooperation in the Senegal Basin



Source: The Economist Intelligence Unit.

The OMVS was one of the first RBOs in the region, with severe droughts in the riparian counties in the late 1960s providing clear motivation for better water management. In the 1980s, this water scarcity led the organisation to focus on dam projects to improve water storage and help address seasonal variations in freshwater provision for downstream populations.[74] Although Guinea had observer status throughout the early years of the OMVS, and did not object the downstream developments, the integration of this upstream riparian state in 2006 represented a significant step forward for the organisation.

The OMVS has a broad mandate, focusing on joint investment, planning, financing and project implementation. However, it is careful to avoid overreach, respecting the mandate of national entities such as directorates of water and meteorological departments. While many RBOs are de facto restricted to communication, data and information sharing, the OMVS has political clout. Members have ceded elements of sovereignty to the supranational body, which reports to heads of states and presidents, rather than line ministries. This allows the organisation to make complex strategic decisions regarding joint investments and operations, for example.

The OMVS has developed a modelling tool that presents various future scenarios and outcomes relating to potential projects, and on the basis of its forecasts, choices are made. All projects are also agreed by senior decision-makers from all of the countries, as opposed to some RBOs that employ an "upstream–downstream permissions model", in which a country informs riparian communities of development projects and asks if there are objections. The OMVS approach allows for more upfront, joint review of proposals, according to Shelley McMillan, leading to more inclusive decision-making about projects that could have potentially harmful implications for other riparian states.

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C) The basin today

The OMVS plays an unusual role relative to other RBOs, by actively leading aspects of the region's development agenda. In two areas—food security and malaria—it has actually surpassed past efforts of national governments and achieved major gains, according to Shelley McMillan. Senegal and Mauritania are within touching distance of eliminating malaria due in part to its work. The OMVS is well-placed to tackle such issues, given the porous nature of borders and disease, the linkage between water and the malaria parasite, and the critical role of water in the regional food economy.

Despite the impressive achievements of the OMVS, there are multiple challenges for the basin countries today, requiring deepening cooperation. One is the development of more appropriate tools for evidence collection, such as hydrometeorological stations. Another is enhancing the allocation key mechanism described above. Some issues are not yet well-served by the methodology in terms of prioritisation, such as weighing Mali's current interests in enhancing navigation with the regional priority of scaling up agriculture. Others are water scarcity and climate change challenges which may require behavioural changes, such as moving away from low-value, water-intensive crops like rice, despite its cultural importance for the region's people.

D) Index results

Strengths

Owing to the OMVS's status as a supranational organisation that focuses on development financing, the Senegal Basin performs strongly on basin-level **institutional arrangements** and **infrastructure financing**. Notably, the OMVS remains the only RBO to have attracted significant non-donor investment for its infrastructure projects, such as the recently announced deal with Sinohydro to develop the Koukoutamba hydroelectric project in Guinea. Once completed, this is planned to be the fourth and largest hydropower development by the OMVS.[75] Previously, crucial legal and institutional arrangements were put in place by the RBO in the 1990s to allow for the involvement of the private sector, such as the establishment of an inter-state public company—SOGEM (Société de Gestion de l'Energie du barrage de Manantali)—allowing contracts for the operation and maintenance of OMVS dam to be issued to South Africa's Eskom corporation.[76]

At both the basin and country level, the Senegal Basin also performs well on **stakeholder engagement**. The OMVS and the majority of national water agencies provide permanent platforms for broader participation in the water management process. Data-sharing mechanisms support decision-making at a national level, between government ministries and through the RBO.

Challenges

The basin faces significant environmental and developmental challenges, and the countries continue to struggle to meet some of the basic needs of citizens. The four riparian states have the lowest **drinking water access** of all countries in the index. **Undernourishment** is also above average in all countries except Mali. Although not linked explicitly with transboundary cooperation this does suggest a need for improved water management to ensure that no parts of society are excluded from accessing the water they need.

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The individual countries also struggle on indicators pertaining to domestic **water availability management**, **pollution control** and **environmental policies**. As a region that is at a high risk of suffering the effects of climate change, this absence of national safeguards represents a concerning omission.

Opportunities for improvement

The general trend in the Senegal River Basin is strong scores for basin-level indicators and a weaker performance on national-level indicators, particularly in Mauritania and Guinea. An area to explore, therefore, is how the OMVS can help build the capacity of domestic institutions.

Other areas to consider include data sharing (especially with the broader public), capacity building by water management officials, and financing. Although the OMVS, as a supranational organisation, may be able to take on temporarily some of the responsibilities of the state in these areas, it is important for the states themselves to develop their own resources to prevent organisational overreach.

The Sava River is a 945 km tributary to the Danube River, rising in western Slovenia, and passing through the lowlands of Croatia to form a border between Croatia and Bosnia and Herzegovina. It then continues through Serbia, with tributaries from Montenegro, to reach its confluence with the Danube in Belgrade. The Sava River Basin catchment area accounts for more than 60% of the territory of these countries and provides more than 80% of the total available water.[77] The population of the river basin is approximately 9m.[78]

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2.4 Sava River Basin

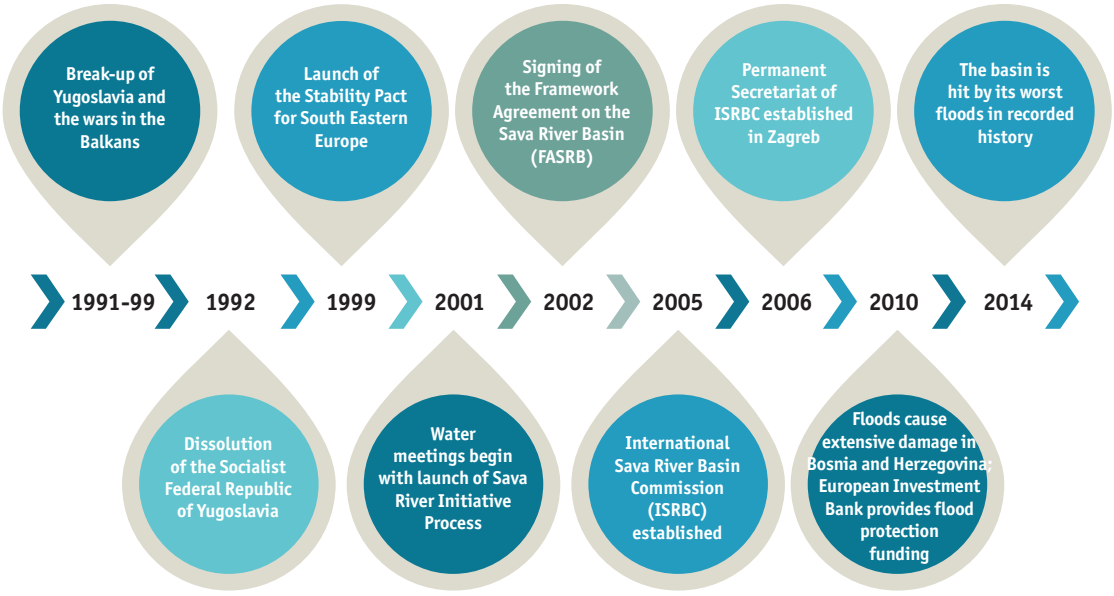
A. Geography and hydrology

The Sava Basin is a major drainage basin for south-eastern Europe, supporting a significant portion of the Dinaric Alps region, via the tributaries of Krka, Kupa, Una, Vrbas, Bosna, and Drina.[79] It has the largest network of alluvial floodplain wetlands in the Danube Basin and the largest lowland forests. Its intact floodplains support flood alleviation and biodiversity.[80] It includes numerous protected areas and is home to a number of threatened species of plants and animals. The river is a cultural asset to its riparian communities, passing through recreational areas, national parks, and forests.[81]

B) Evolution of cooperation

The Framework Agreement on the Sava River Basin (FASRB)[82] and the Protocol on the Navigation Regime, both signed in 2002, promote regional basin cooperation on navigation, economic development, water management and environmental protection. Ratified in 2004, the framework created the International Sava River Basin Commission (ISRBC), with its Secretariat in Croatia. Its goals include upholding the sustainability of aquatic ecosystems, including flora, fauna, natural ponds and wetlands; protecting against the detrimental effects of water, such as flooding,

Evolution of cooperation in the Sava Basin



Source: The Economist Intelligence Unit.

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excessive groundwater, erosion and ice hazards; and resolving conflicts caused by divergent uses of the river.

The RBO is very much a product of the region's history of conflict, marked by the break-up of Yugoslavia and the resulting series of wars. Its challenges principally stem from the destruction wrought during this period, from environmental damage caused by uranium-tipped missiles and the wartime targeting of chemical facilities, to the destruction of navigation infrastructure and the laying of mines. Furthermore, the impact of refugees on the river, including sewage and disposal of plastics and waste materials from camps, meant that "by the late 1980s, the Sava…was clean for only 30 km in the upper flow".[83]

However, according to Stephen Stec of the Central European University, the conflict and history also provided the context for subsequent cooperation. He suggests that collaboration was partly enabled by the fact that all participant countries were part of Yugoslavia until the early 1990s. This meant that, when water meetings began in 2001, they had a head-start thanks to a history of joint management, and personal relationships between experts and technocrats who had collaborated in the former Yugoslavia.

The conflicts also prompted sizeable donor support from the EU. The Stability Pact for South Eastern Europe, launched in 1999, initiated cooperation among the Sava riparian states and provided a forum for collaboration on rehabilitating waterways, ports and commercial traffic infrastructure, and improving environmental protection. EU membership also galvanised action, as accession required alignment with the EU's water management standards and laws.

The ambition to join the EU, and requirements stemming from the membership, appear to have raised river standards, with Slovenia and Croatia - the two countries in the basin that successfully joined the EU - being the most developed in terms of sustainable water management. Europe's desire to promote development in the east also helped the riparian states access development financing. The EIB, for instance, has played a critical role in financing flood resilience and transport infrastructure in Serbia and Bosnia and Herzegovina.

C) The basin today

The priority for the Sava River and basin riparian states today is realising greater economic benefits including waterway transport, hydropower generation, tourism, recreation and agriculture.[85] The river has not yet become an economic corridor for trade, supply chains or resource sharing in the way it was when it was part of Yugoslavia, reflecting the depth of the post-conflict fragmentation in the region.

Navigation and water infrastructure are ISRBC's priorities. This includes linked environmental interventions such as removing war debris and mines to enable water transportation. Restoring damaged infrastructure such as bridges and ports, and aligning countries with European standards for inland navigation are also key focal areas for riparians.[86] European actors are providing critical support. A 2018 €100m agreement with the EIB is integrating Serbia's waterways into the European transport network as part of a wider €205m project to boost shipping across Europe, including on the Rhine, Meuse and Main rivers. The Serbian government believes that improved waterways will help Serbian goods reach European consumers more easily and cheaply, boosting competitiveness.[87]

However, environmental crises—especially flooding—cannot be ignored in the push for development. Floods in 2010 caused widespread damage in Bosnia and Herzegovina, prompting

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a resilience funding project with the EIB.[88] In 2014, the basin was hit by its worst floods in recorded history, with three months of rain falling on the Balkans in three days, killing 20 people and submerging towns and villages. One eastern Bosnian town saw the evacuation of 10,000 people.[89] In the aftermath of these floods, the basin countries and the ISRBC pushed for a development of a joint flood forecasting and warning system that can help predict similar extreme events and coordinate responses to them in the future.[90]

Another challenge is supporting weaker members. In Bosnia and Herzegovina, the institutional set-up is challenging, with water management split between the federal government and the constituent entities that often have different political and strategic priorities. The complex and fragile constitutional set up of the country complicates collaboration, especially at an international level, by making it difficult to select representatives, with treaties signed by one entity not always accepted by the other. Bosnia and Herzegovina also needs support in managing its share of the Sava, especially in dealing with the presence of unexploded bombs which prevent the river's full utilisation as a trade corridor.

D) Index results

Strengths

The Sava River Basin represents "best practice" in many of the transboundary water cooperation areas assessed in this index. It scores above average of the countries covered in the assessment in all domains. It is particularly strong on the Policy and Legal Frameworks domain, reflecting the increasing alignment with the policies and legal framework of the EU, as well as the relatively comprehensive nature of the Sava River Basin Agreement. All riparian states have comprehensive **national water policies** and **relatively strong environmental policy** frameworks. All have ratified the 1992 **UNECE Water Convention**.

At the national level, Slovenia and Croatia are the top performers of all countries currently covered in the index, scoring above average for almost all domestic indicators. At the basin level, **data sharing** between states is a particular strength, alongside **pollution control** and **RBO operational financing**.

Challenges

The index results highlight pockets of weakness in the Sava Basin that have been highlighted by the experts. Notably, **stakeholder engagement** at both the national (especially in Serbia and Bosnia and Herzegovina) and basin level remains below average, limiting access to decision-making from the broader public.

Joint infrastructure financing is nascent, despite a clear need in areas such as joint water monitoring systems. This is mirrored by a comparative absence of private sector investment in water resources at the national level—with the bulk of financing coming from national governments or external support. Also at the national level, it is of note that despite frequent flooding, countries score lower in indicators relating to **natural disaster management**, with the development of Climate Change Adaptation Plans particularly lagging behind.

Opportunities for improvement

The ISRBC may be able to take the initiative in addressing some of these challenges. For example, as

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the countries score mostly above average (expect Bosnia and Herzegovina) when it comes to water availability monitoring, the RBO could play an important role in coordinating a basin-level system.

Similarly, and learning from the approach taken by the OMVS in the Senegal River Basin, the ISRBC could become an advocate for local stakeholder engagement. This could be through supporting the creation of local councils, reporting initially to the ISRBC, which could then also contribute to national-level policymaking. Outside of the ISRBC, the riparian states with stronger performance might also look for opportunities to support Bosnia and Herzegovina which still has room for improvement in several areas and above-average levels of water stress.

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2.5 Tigris–Euphrates River Basin

A) Geography and hydrology

The Tigris–Euphrates system comprises two rivers, their sources 80 km apart, which run a roughly parallel course for 1,900 km (Tigris) and 2,800 km (Euphrates). Mesopotamia, the historic name for this region, means "between two rivers".[91]

The system runs from the valleys and gorges of eastern Anatolia in Turkey through northern Syria and Iraq, merging in south-eastern Iraq to form a portion of the river known as Shatt al-Arab, or Arvand Rud, that forms the border with Iran. This confluence then flows into the Persian Gulf. The Tigris and its tributaries are the main water source for approximately 30m people, and runs through Turkey, Iran, Syria and Iraq. The Euphrates, supporting an estimated 60m people, is a direct water source for 27m people, and encompasses Turkey, Syria and Iraq.[92]

Conditions in the Tigris–Euphrates Basin are deteriorating due to climate change, weak riparian coordination, intensive hydro-development, inefficient agricultural practices, and political instability. Since the 1970s, the Euphrates has seen a 40–45% reduction in downstream water flow following the construction of over 30 dams and barrages.[93] By 2025, its water conditions will be up to eight times more stressed than in 2010, with forecast river flow in Turkey dropping by 15–20% by 2020 compared with 1960–90, as a result of increased temperatures and evaporation related to climate change.[94]

Historically, the natural annual flow of the Euphrates at the Syrian-Turkish border was around 30 billion cubic metres (BCM), but data now shows a decrease in mean annual flow to about 25 BCM.[95] In the Tigris, the Mesopotamian Marshes are a mere 14% of their original size due to upstream damming projects.[96] The river is also subject to multiple pollutants including untreated domestic and industrial waste (such as effluents from copper plants), agricultural run-off and irrigation return flows.[97]

Combined with already intense water scarcity in the Middle East, the worsening state of these rivers is a serious threat to citizens. An estimated 40m people in Iraq, Jordan, Lebanon, Syria and Turkey are hydro-insecure, and 13 out of 30 affected governorates in these countries share international borders, highlighting the importance of greater collaboration to avert the coming crisis.

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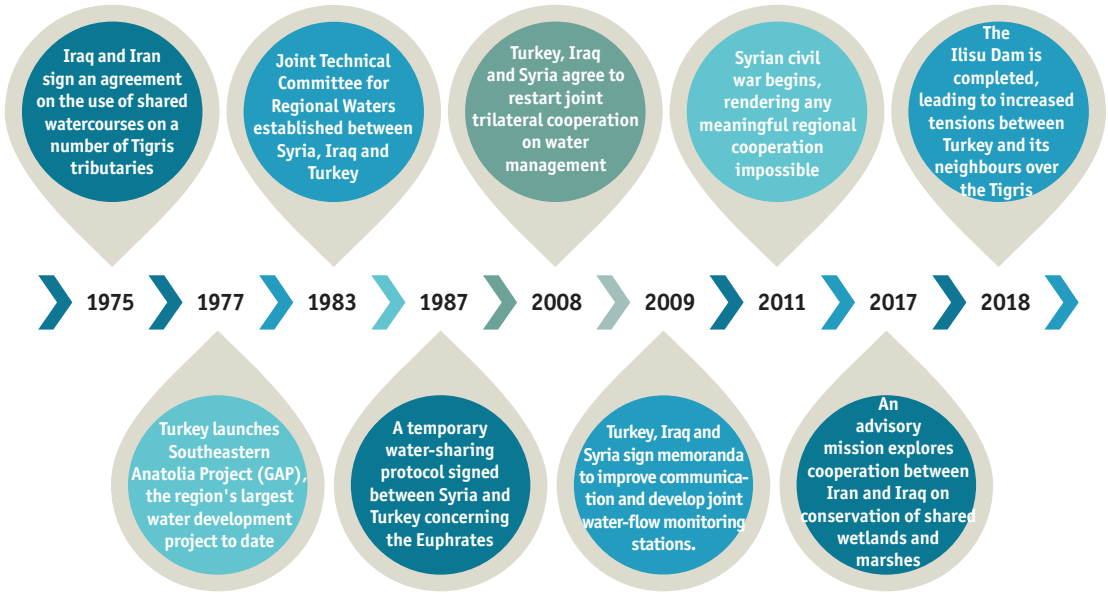
B) Evolution of cooperation

Evolution of cooperation in the Tigris-Euphrates Basin



Source: The Economist Intelligence Unit.

Outright wars over water in the Tigris–Euphrates Basin have been rare, with the only examples of interstate conflict over water dating back to 2500 BC. However, in recent times, state actors and extremist terrorist organisations have increasingly weaponised the power of water control in Iraq and Syria, seizing control of, or damaging, dams at Tabqa, Tishrin, Mosul and Fallujah.[98] Yet this region has seen an equal share of cooperative breakthroughs; it was the birthplace of the first treaty setting out borders between states and rights over waters, and of the first legal text to regulate irrigation rights, the *Code of Hammurabi* of 1790 BC.[99]

In the modern era, efforts to establish committees and institutions for the Euphrates branch began in the early 20th century, led by France and Britain, although firm agreements failed to materialise. Since then, the recurring trend has been for sporadic bilateral engagement but no regional binding mechanisms, and repeated stalled progress due to wider political instability.

In 1987, a temporary water-sharing protocol for the Euphrates was signed between Syria and Turkey. This was the first time a quantified volume of sustained, shared water flow had been agreed, but it was a response to specific security threats at the time rather than the foundation for a long-term agreement. Another tentative step, a technical committee to promote water cooperation, emerged in 1983 but was followed by a breakdown in relations linked to Turkey's filling of the Atatürk Dam in 1990 and made no meaningful progress. Sporadic bilateral agreements have been signed in the recent past between Turkey, Iraq and Syria, but not specifically on water, and mostly not building on previous treaties. There has been no sustained coordination at the regional level. This creates little prospect for constructing a foundation of consensus from which to scale deeper cooperation.

The Tigris has seen occasional bilateral discussions and collaboration, including between Iraq and

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Turkey, its major riparian countries, over issues including data cooperation and harmonisation. In 2017, an advisory mission requested by the Iraqi government explored cooperation between Iran and Iraq over the conservation of shared wetlands and marshes fed by the Tigris, which have been drying out due to upstream dam developments, increased water extraction for agriculture, and reduced rainfall.[100] As discussed above, countries in the region have also engaged in learning missions abroad, including to the Rhine and MRC.[101] While welcome, these engagements fall short of the level of cooperation needed to deal with the challenges the basin faces.

While the Tigris and Euphrates riparian states have shown some restraint in the weaponisation of water, wider conflicts have repeatedly undermined cooperation. Technical coordination efforts in the 1960s and 1970s were derailed by competition between the two wings of the Ba'ath party in Syria and Iraq. In recent years, Syria's civil war has rendered impossible any meaningful regional cooperation, since the country shares more than one river basin and aquifer with each of its neighbours.[102]

Iraq and Iran have also enjoyed some historical cooperation over the Shatt al-Arab, notably the 1975 Algiers Agreement which settled an ongoing border dispute and included provisions on navigation and allocation. However, here too, the outbreak of hostilities between the two states in 1980 meant that cooperation was short-lived.[103] Although a recent détente has led the two countries to return to the negotiating table, the agenda remains largely the same as in 1975, with no discernible diplomatic progress.[104]

C) The basin today

According to expert interviewees, Turkey, which enjoys the largest reserves of renewable water of the group, is the most advanced member in terms of its institutions, skills and capacity in water management. It was the earliest developer of hydropower, exploring its potential as early as 1936 and embarking on major dam construction in the 1970s.[105] This has, in turn, created a serious challenge to regional cooperation as Turkey is the largest contributing nation to the Euphrates, supplying an estimated 89% of the flow, and contributing between 51% and 65% of the annual discharge of the Tigris.[106]

Repeated dam construction has given Turkey unprecedented control over the flow to the downstream countries. This is a major and ongoing concern for countries such as Iraq, where Turkey's filling of the Ilisu Dam has reduced water flow in the Tigris, leading to bans on rice planting and displacement of farmers, prompting protests.[107] Reduced water availability has serious consequences in both Syria and Iraq, which are highly dependent on the transboundary waters flowing in from Turkey and are already among the most water-stressed countries in the world. The wars and violent upheavals in Syria and Iraq have worsened the situation in recent years as they damage key infrastructure and undermine the countries' domestic water management capacities. Perhaps surprisingly, Syria has, despite the all-encompassing civil war, maintained some technical capabilities—testament to the commitment of its water management officials to continue to deliver in challenging circumstances.

Counterintuitively, one reason the region may have avoided open inter-state water war, despite significant tensions and incidents, is in part because of the instability in Iraq and Syria. War and instability reduce the capacity of states and developers to invest in major infrastructure such as dams, thus avoiding the tensions these projects can cause. In recent years, the disarray in Iraq and Syria has lessened their ability to exploit water resources at scale. As these countries move towards an eventual and hoped-for peace, cooperation systems will be critical to ensure that their predicted increase in

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utilisation of transboundary water does not set off new conflicts over the resource.

It is clear that the countries of the basin need to deepen their engagement to tackle emerging challenges, especially climate stress. Crucially, the Tigris–Euphrates countries as a group will need to move beyond bilateralism and forge a regional, collective approach, according to Mark Zeitoun, Professor of Water Policy and Security at the School of International Development, University of East Anglia. They will also need to delegate more negotiating power to relevant water agencies and stakeholders. Finally, Mr Zeitoun argues, it would be beneficial if countries worked towards consensus on underlying facts and data. An agreement on the hydrological realities, albeit only a small step, can ease the difficult discussions around water management and allocation.

D) Index results

Strengths

Despite the extremely challenging situation in the Tigris–Euphrates Basin, there are some relatively positive areas. For example, all countries have a form of a **national water law** or policy as well as a **national agency** (or agencies) with responsibility for water management. Iraq and Syria have both signed the **UN Watercourses Convention**, and Iraq has recently confirmed its intention to join the UNECE Water Convention.

Challenges

The Tigris–Euphrates faces considerable challenges in all areas covered by the index. The basin is the most water-stressed in the index and faces significant, political, security and economic challenges. This difficult context is made worse by only limited bilateral, and almost non-existent regional, cooperation. The absence of a regional cooperation mechanism remains a considerable challenge, and there are very limited regional cooperation channels in other areas (economic or political) that could form a basis of closer engagement on water management.

At the national level, Iraq and Syria rank the lowest on national water management indicators—with a particular concern being the lack of a coherent environmental policy, pollution control measures and high levels of water stress. This poor performance on environmental indicators suggests that the situation in these countries will only deteriorate as the effects of climate change are felt in the region.

Opportunities for improvement

One area for improvement is increasing the general institutional capacity at both a domestic and regional level. At the domestic level this will look different in Iraq and Syria, where the short-term focus has to be on rebuilding damaged infrastructure. By contrast, Turkey should focus on how to develop checks and balances to reduce the cross-border impact of its domestic development. One possibility could be ensuring that the cross-border impacts of projects are made a necessary part of EIAs. Similarly, Iran should focus more on the cross-border impacts of its activities on the Tigris River, and improved communication over the shared water resources with Iraq and Turkey.

At the regional level, as the Tigris–Euphrates looks to develop its institutions, it can learn from other basins that have suffered recent riparian conflict. For example, a focus on the technical aspects of water management, such as data sharing, might help actors move cooperation into a less diplomatically fraught domain (as seen in the Mekong Basin).

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3. Key areas for promoting Blue Peace

The benefits of Blue Peace are plentiful and diverse but the trade-offs and complexities involved in sharing water efficiently and fairly mean that many countries have yet to reap the rewards of cooperation. In some cases, there are no mechanisms or agreements in place; in others, engagements are informal and ad hoc or do not link directly with important decisions such as infrastructure development. Evidence from basins examined in this report and beyond shows the principal challenges to development on Blue Peace– and positive strategies for overcoming them.

3.1 Political will: Moving water to the top of the political agenda

Water cooperation requires political leadership and engagement from individuals outside of the water, environment and agriculture sectors, where the issue tends to be most highly prioritised. Linking water to a wider range of policy goals, and integrating water diplomacy into regional and bilateral political dialogues can help identify new ways forward when shared benefits are not initially evident.

The involvement of political decision-makers is necessary because whether increased water scarcity and environmental pressures trigger conflict, or driver cooperation, cannot be known ahead of time. What matters is having the "right cast of characters", according to Benjamin Pohl, from the climate, environment and development think-tank adelphi. This can be built on longstanding technical collaboration and diplomacy that connects, when and where necessary, with political decision-making at the highest reaches of government. This is, however, often a long-term, non-linear process.

In many contexts, RBOs and cooperation mechanisms focus on scientific research and information sharing. These are, of course, critical. Disagreement about empirical fundamentals, such as flow, quantity and hydrological dynamics, stymie attempts to make decisions on allocation and shared usage, or to estimate the impacts of projects. But focusing only on scientific and technical matters could weaken the impact of findings if political figures or developers do not integrate such insights into their decision-making.

The experience of different basins, including the five assessed in this report, shows that the most effective transboundary arrangements link directly to high-level political officials, have independent status, and are capable of regulating specific decisions. This can require a meaningful surrender of sovereignty by states. The International Commission for the Protection of the Danube River is one example of a mechanism with a distinct legal identity. It is able to act independently, and develop objectives for pollution control, flood risk reduction and environmental health.[108] The Senegal River Basin organisation, the OMVS, is another example. Its members have ceded key elements of sovereignty to an organisation which in turn reports to heads of state, rather than line ministries. In contrast, one challenge facing the MRC is its lack of power to stipulate government actions. It was never designed to mediate, judge or adjudicate how the Mekong River is developed—a feature that weakens its ability to shape project decisions. This creates a challenge that is becoming more evident as infrastructure initiatives grow in scale and number across the region.

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Political will can also be supported through "issue linkage", whereby the benefits of water cooperation are framed with reference to other resonant priorities such as political security and a business-friendly investment climate, or the provision of energy. According to Greg Shapland from Chatham House, these agreements could also be twinned with other objectives, such as "oil-for-water" arrangements, which could benefit Iraq and Turkey, for instance—each is rich in what the other lacks. Similarly, Uzbekistan and Kyrgyzstan could revive a "coal-for-water" deal similar to one that existed when both countries were part of the Soviet Union. Countries can also tie their shared water resources into wider diplomatic agreements, such as the Jordan's 1984 peace treaty with Israel, which could be seen as a "recognition-for-water" deal.

However, experts warn that framing water in a transactional manner can also damage a central tenet in how water should be seen and managed: as a human right. The 1987 Syria–Turkey agreement, for instance, framed water as a security exchange, rather than a resource based on shared rights and needs.

In addition, giving RBOs political status or linking water to political priorities may bring trade-offs. One reason why water cooperation endures during geopolitical tensions, such as in the Mekong region during the Cold War, Israel–Jordan–Palestine following the 2014 Gaza conflict, and in the Senegal River Basin after the coup in Mauritania, is precisely because the organisations managing it were not political entities. This allowed stakeholders to continue to engage on technical matters despite wider political tensions. As such, the politicisation of RBOs involves a delicate balance—cooperating with government decision-makers while remaining sufficiently technical to be immune to wider state disputes between water-bordering countries.

3.2 Stronger institutions: Building foundations for cooperation

RBOs carry out complex work requiring significant skills, capabilities, and technologies, such as data sensors and meteorological stations. Susanne Schmeier, a leading expert on RBOs at IHE Delft, suggests that this can be challenging to develop, especially in resource-constrained settings. Another institutional constraint relates to legal and negotiating powers, which are crucial if RBOs are to shape decision-making about contentious issues.

Positively, low- and middle-income countries have been able to acquire considerable institutional capacity from inauspicious beginnings. When the Mekong agreement was signed in 1995, the World Bank claimed that the countries had surpassed some developed economy peers, specifically the US and Canada, in their speed and resoluteness.[109] Interviewees for this report also note that Syria has maintained a perhaps surprising institutional capacity despite the war, highlighting the country's high political prioritisation of water.

Donor support also plays a role, especially in providing early-stage resources and guidance. UN agencies and the World Bank played a critical part in supporting the creation and early development of many water cooperation institutions. The EU has also provided pivotal support for its regional institutions: the Stability Pact for South Eastern Europe paved the way for cooperation among Sava River Basin countries. Moreover, EU funding assistance and grants have supported management plans in the Danube River Basin, including pollution data and monitoring, while the EIB has supported flood resilience among poorer eastern European nations like Serbia.[110]

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3.3 Developing trust: Building up the "momentum of history"

The trade-offs involved in harnessing transboundary water versus protecting ecological systems can make for fractious negotiations. Tensions between states over issues such as industry pollution and flow disruptions from dam development are common. In such a context, trust and good faith are critical to negotiations and these are often developed on the basis of continuous past interaction. In short, water cooperation, however fragile in the early stages, builds a steadily deepening foundation that allows countries to work through difficulties.

There are many examples of countries forging agreements in the most inauspicious of circumstances, such as Finland and Russia's landmark water agreement in 1964. In Asia, the MRC's 1995 agreement, while a break from past arrangements, depended on accumulated collaborations over everything from data gathering to planning which had been achieved by the lower-Mekong countries over previous decades.[111] In Europe, the Sava River Basin countries, despite considerable tensions in their more recent history, were still able to benefit from once being part of Yugoslavia, during which time direct personal relationships were forged. These were then rekindled to aid subsequent collaborative work.

Deeper historical ties also enable countries to work through difficulties. The people of the Senegal River Basin share a common "long history" reaching back to the Malian empire, creating a cultural cohesion that substantially supports their willingness to work together. Even in the modern era, the OMVS, formed in 1972, was a product of previous joint organisations: the Inter-states Committee and the Organization of the Riparian States of the Senegal River.[112]

Countries can take heart from such experiences, framing even modest preliminary measures as steps towards steadily expanding their cooperation.

3.4 Inclusive decision-making: Finding the common ground

Water management and transboundary water cooperation affect people's rights, and projects must balance the needs of different sectors of society. A major cause of water conflict, according to James Dalton of IUCN, is not between states but rather governments or commercial developers on the one hand, and affected communities on the other, or between communities themselves. Protests and tensions related to issues like pollution, inadequate resettlement logistics, and damage to livelihoods, have affected water infrastructure developments from Bolivia and Brazil to Iran to China and Myanmar. These tensions can turn into conflict dynamics of regular local skirmishes and disputes which may evolve into urban myths or narratives around perceived water injustices and deepen antipathy on both sides.

This foments political instability for governments, and threatens the assets and investments of companies. The bloody history of the Niger Delta, for example, in which armed militants and oil companies have clashed for decades over pollution disputes and resource revenue sharing, have led to the worst possible outcomes for all: the ruin of fisheries and agriculture for the inhabitants and huge costs, dangers and reputational damage to oil companies.

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In pursuing inclusive and participatory consultation, working with legitimate stakeholders will be critical to the Blue Peace agenda.[113] Civil society organisations and NGOs should be part of the conversation, especially around infrastructure development. In Asia, civil society groups are now playing an active role in working with governments and companies, as well as contesting developments.

The dynamics vary by context. In China, for instance, domestic groups are proving better-placed than foreign entities to influence water developments, although there have been engagements between developers and global NGOs, notably International Rivers. In Vietnam, the NGO sector is playing a constructive role in water issues according to Kim Geheb. The country also has an impressive recent history of community-led water management. Between 2005 and 2013, one river delta project, which provided water access to nearly 1.3m people in four provinces, relied on community-led approaches with local residents playing an active role in planning, raising funds and project monitoring.[114] Other positive case studies of community engagement include the Colorado River, whose management organisation has run projects exploring how planned activities will impact different groups and soliciting feedback from those likely to be affected. The risks of failing to engage civil society groups are profound. Violence and social conflict, even on a small scale, should worry governments and transnational corporations since it can derail stability and undermine the security of assets.

Coordinated decision-making also means that all project participants should be engaged in a structured manner. One challenge in the Tigris–Euphrates, for instance, has been the predominance of bilateralism. While this can provide easy wins by reducing the number of issues to be negotiated, it complicates the development of regional mechanisms and could narrow the space for later regional agreements by creating precedents and "facts on the ground" that are not accepted by new joining parties.

3.5 Evidence-based decision-making: Informing and communicating

Water is not a static resource: climate change, usage patterns, economic geography and flux in the stakeholder community all make collaboration a continuous process rather than a one-time agreement.

Many countries forge treaties and deals that fray under the pressure of time. The Colorado River Pact, for instance, was signed in 1922 when upper-basin countries were concerned about the impact of the Hoover Dam in the lower basin.115 Today, a very different set of challenges exists, driven by rising demand for water as a result of population growth and the emergence of regional industries in agriculture, oil and gas, and technology manufacturing. One commentator has criticised the framing of water shortages as "drought" as failing to recognise that changes in usage, rather than climate alone, account for today's problems.[116]

Hard data and evidence about river basins and the impact of activities like dams and industry on hydro-dynamics and water quality are critical to ensuring that riparian communities can respond to emerging challenges. Only scientific evidence can provide the insights. Donors can provide help, such as technologies for monitoring, data gathering and information exchange, as well as funding the underlying budget of RBOs, allowing the scientific work to be conducted in the first place. The MRC,

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a world leader in terms of the use of scientific evidence, depends on donor funding for 90% of its budget.[117] Evidence can also be developed through fact-finding missions from less-developed contexts to world leaders, as with committees from the Middle East who have visited the Rhine Hydrological Commission and MRC.[118]

However, evidence must feed into decision-making in a tangible way. Here, riparian states must move beyond simply collection to processing, archiving and distribution of data for a fully comprehensive approach. Economic modelling and simulations are critical as part of a suite of inputs known as decision-support tools (DSTs). A stand-out example is the OMVS which has developed a rigorous system for water management, the "allocation key".

Hydro-economic modelling allows riparian countries to assess trade-offs between water usage for energy versus agriculture and fisheries, for instance; creates accurate early-warning systems; builds technical knowledge and capacity; and improves understanding of river basin dynamics.[119] Crucially, such research can frame issues in ways relevant to policymakers and governments, when environmental protection messaging alone does not resonate. For example, it can show the economic costs of coordination failures that lead to flooding or drought. This is critical for building up support for joint benefit-sharing mechanisms.

3.6 Finance: Investing in Blue Peace

Finance is a critical enabler—or obstacle—to Blue Peace, required by all of the above components in varying degrees. Cooperative management of shared water resources is dependent on adequate funding for development and maintenance of institutions, information systems and infrastructure. However, funding for transboundary cooperation can be difficult to access, especially if the projects are geared towards environmental preservation as opposed to economic returns, as in the case of hydropower or water transport infrastructure.

Donors have played a major role in channelling finance to RBOs and transboundary cooperation. The Nile Basin Trust Fund, for instance, was established by ten donors, including Canada, Denmark and Sweden, which contributed a total of US$203m, and aid has been critical to the MRC. Development partners are also working with financial institutions to find ways of directing more capital into transboundary cooperation.[120]

Channelling more commercial finance into Blue Peace, and ensuring that capital flowing into river basin geographies supports, rather than undermines, water cooperation, is critical. This is especially the case as the amounts of private finance flowing into dam development and economic infrastructure dwarf the sums invested in environmental protection, RBOs and water cooperation agencies.

Institutional work done by RBOs can provide a foundation for commercial capital to be deployed, even if the RBO does not have the legal status to take out loans directly. The OMVS, for instance, initially struggled to secure private investment for hydro developments in the early 1990s, but after transboundary legal and institutional arrangements had been reinforced by the establishment of an inter-state public company—SOGEM—an operations and maintenance contract was issued to South Africa's Eskom, bringing in its technical and corporate expertise.[121]

RBOs can frame their role as partly an investment-attractiveness function. For example, improving the environment for private investment in the Sava River, whose assets include considerable

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tourism potential given its natural beauty, has been part of the strategic plan of the basin countries. Commercial partners have participated in feasibility study teams to develop transport infrastructure in the Sava Basin.[123] Basin countries can utilise fiscal tools to encourage private investment in key capital-intensive areas including energy, navigation and agriculture, and RBOs can also leverage taxes from the private sector, in turn, to finance their own operations, such as through polluter fees and user fees.[124]

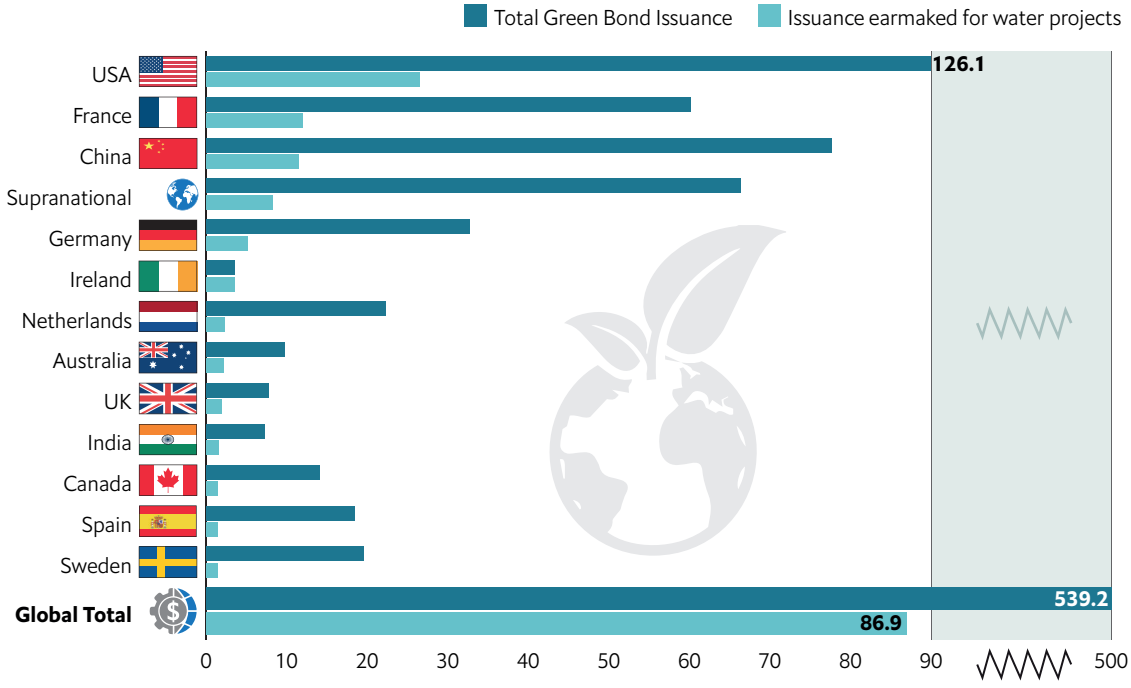
Investment can also be supported by interventions such as the political risk insurance services of the World Bank's Multilateral Investment Guarantee Agency (MIGA) which protects against challenges such as currency incontrovertibility, expropriation, war and unrest and breach of contract. MIGA's water portfolio includes water treatment facilities in Jordan, Russia and Rwanda, as well as desalination in China and Ghana, but is so far limited to national level projects.[125]

Private investment in transboundary water, however, has proven to be more often a risk factor rather than a promoter of Blue Peace since economic returns so frequently conflict with environmental ones. Under the "do no harm" principle, it is perhaps most crucial that financiers understand the risks that economic investments can bring to water cooperation. Fortunately, banks, export credit agencies, insurance companies and regional development banks increasingly see transboundary water conflict as a relevant risk factor to investments like hydropower. In some cases, they insist that projects are linked with RBOs or commissions to ensure transparency and equitable use of water. Countries themselves can mandate this process through inclusion of transboundary considerations in EIAs, as seen in Senegal and Bolivia.[126]

Private financial institutions and investors are also aware of the heightened project risk and

Green Money for Blue projects

USD bn; Total green bond issuance and proprotion allocated to water projects (a)



(a) Only countries that have issued >$1bn for water projects

Source: "Climate Bonds Initiative, 2019

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reputational damage that comes from funding projects with environmentally or socially damaging consequences. The German Commerzbank, for instance, takes account of conflict risks related to competition for water resources between neighbouring countries as part of its policy for hydro projects. ABN Amro, a Dutch bank, has a sustainability policy stipulating that clients ensure that investments involving international waterways are covered by agreements between states—or are supported by assurances that the project in question will not cause harm.

Financial innovation can also help bring new mechanisms to support Blue Peace more directly. The "impact investment" and "sustainable finance" industries have seen rapid growth in recent years, and emerging tools could be applied to water cooperation, such as repurposing "green bonds"[127] and "social impact bonds" into "Blue Peace bonds" at sovereign and corporate levels.[128] Blue Peace bonds could be aimed at local pension funds, insurance companies, corporations, banks and savers, and be backed by the cash flow of underlying water development projects.[129]

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4. Annex I—Country scorecards

Bolivia

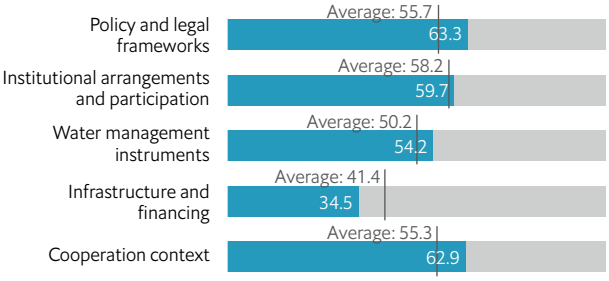


Table 1

Indicator	Value	Source
Population, total (in thousands)	11,052	World Bank
Population growth projection (%)	44	UN DESA
Rural population (% of total population)	31	World Bank
GNI per capita, PPP (current international $)	7,340	World Bank
GDP (current US$) in billions	38	World Bank
Water stress (%)	0.5	FAO
Total renewable water resources per capita (m3/cap)	51,936	FAO

Source: The Economist Intelligence Unit

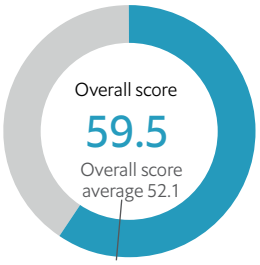
Table 2

OVERALL SCORE	**54.9**
1) POLICY AND LEGAL FRAMEWORKS	**63.3**
1.1) National water policy	83.3
1.1.1) National water law/policy	50
1.1.2) Integrated Water Resources Management (IWRM) principles	100
1.1.3) Transboundary impact provisions	100
1.2) National environmental policy	100
1.2.1) National wastewater discharge permitting system	100
1.2.2) Polluter pays principle	100
1.2.3) Transboundary Environmental Impact Assessment (EIA)	100
1.2.4) Environmental Impact Assessment (EIA) public consultations	100
1.3) International water conventions	0
1.3.1) International water conventions	0
1.4) Basin water policy framework	70
1.4.1) Transboundary water management (TBWM) agreement	100
1.4.2) Joint management plan	100
1.4.3) Water allocation mechanism	0
1.4.4) Transboundary water management (TBWM) sectoral scope	100
1.4.5) Dispute resolution mechanism	50
2) INSTITUTIONAL ARRANGEMENTS AND PARTICIPATION	**59.7**
2.1) National water agency	100
2.1.1) National water agency	100
2.1.2) National water capacity building	100
2.2) National stakeholder engagement	50
2.2.1) Inter-ministerial stakeholders engagement	50
2.2.2) Regional and local stakeholders engagement	50
2.2.3) Broader public stakeholders engagement	50
2.3) National data sharing	50
2.3.1) Inter-ministerial data sharing	50
2.3.2) National public data sharing	50
2.4) Basin level body	83.3
2.4.1) Joint river basin organisation (RBO) operational body	100
2.4.2) River basin organisation (RBO) secretariat	100
2.4.3) Joint water capacity building	50
2.5) Basin stakeholder engagement	75
2.5.1) Inter-governmental stakeholders engagement	100
2.5.2) Basin public stakeholders engagement	50
2.6) Basin data sharing	0
2.6.1) Inter-governmental data sharing	0
2.6.2) Public data sharing	0
3) WATER MANAGEMENT INSTRUMENTS	**54.2**
3.1) Water availability management	75
3.1.1) National water quantity monitoring	100
3.1.2) National water efficiency programme	50
3.2) Pollution control	75
3.2.1) National water quality monitoring	50
3.2.2) National water pollution reduction programme	100
3.3) National disaster management	50
3.3.1) National disaster risk management plan	50
3.3.2) National climate change adaptation strategy	50
3.4) Basin water availability management	75
3.4.1) Joint monitoring programme	100
3.4.2) Joint assessment programme	50
3.5) Basin pollution control	0
3.5.1) Joint water quality standards	0
3.5.2) Joint water pollution reduction programme	0
3.6) Basin disaster management	50
3.6.1) Joint alarm system	100
3.6.2) Joint mutual assistance system	0

4) INFRASTRUCTURE AND FINANCING	34.5
4.1) National level investment	65.2
4.1.1) Infrastructure quality	18.2
4.1.2) National water budget	100
4.1.3) National source of reveneue allocated to water development	100
4.1.4) Watershed protection funding	50
4.1.5) Sovereign debt risk	57.9
4.2) Private sector investment	19.4
4.2.1) Water-related PPP projects	0
4.2.2) Overall number of PPP projects	15.8
4.2.3) Currency risk	61.9
4.2.4) Green finance	0
4.3) Investment climate	38.1
4.3.1) Registering property (including land)	22.2
4.3.2) Getting Credit	35
4.3.3) Dealing with construction permits	56
4.3.4) Financial and regulatory risk	39.1
4.4) RBO operational financing	50
4.4.1) National River Basin Organisation (RBO) funding	100
4.4.2) Joint investment programmes	0
4.5) Basin infrastructure financing	0
4.5.1) Private sector investment	0
4.5.2) Innovative River Basin Organisation (RBO) funding	0

5) COOPERATION CONTEXT	62.9
5.1) Water stress	63.1
5.1.1) Water stress	99.8
5.1.2) Exposure to droughts and floods	66
5.1.3) Wastewater treatment	63.7
5.1.4) Change in open water bodies	22.9
5.2) Socio-economic exposure	49.9
5.2.1) Drinking water access	61.9
5.2.2) Exposure to agricultural water stress	73.3
5.2.3) Economic dependence on water resources	25
5.2.4) Prevalence of undernourishment	39.3
5.3) Political stability	64.5
5.3.1) Government effectiveness risk	35
5.3.2) Share of women in national parliaments	100
5.3.3) Social inclusion	67.1
5.3.4) Security Risk	56
5.4) Political relations with basin states	76.8
5.4.1) Military spending	63.6
5.4.2) Water-related conflicts	66.7
5.4.3) International tensions	100
5.5) Economic relations with basin states	60.2
5.5.1) Share of regional trade	30.7
5.5.2) Regional trade agreements	50
5.5.3) Regional freedom of movement	100

Bosnia and Herzegovina



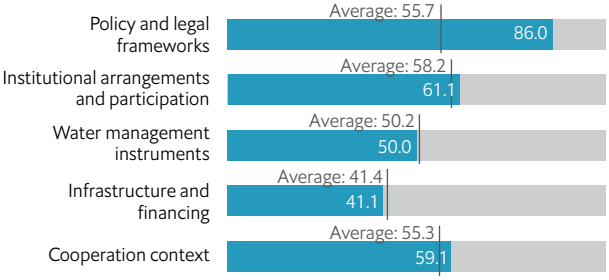


Table 1

Indicator	Value	Source
Population, total (in thousands)	3,507	World Bank
Population growth projection (%)	-13	UN DESA
Rural population (% of total population)	52	World Bank
GNI per capita, PPP (current international $)	13,050	World Bank
GDP (current US$) in billions	18	World Bank
Water stress (%)	1.4	FAO
Total renewable water resources per capita (m3/cap)	10,693	FAO

Source: The Economist Intelligence Unit

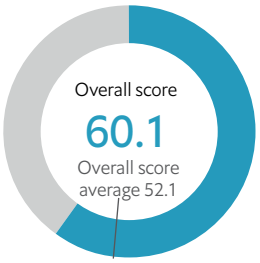
Table 2

OVERALL SCORE	**59.5**
1) POLICY AND LEGAL FRAMEWORKS	**86**
1.1) National water policy	66.7
1.1.1) National water law/policy	100
1.1.2) Integrated Water Resources Management (IWRM) principles	50
1.1.3) Transboundary impact provisions	50
1.2) National environmental policy	87.5
1.2.1) National wastewater discharge permitting system	100
1.2.2) Polluter pays principle	50
1.2.3) Transboundary Environmental Impact Assessment (EIA)	100
1.2.4) Environmental Impact Assessment (EIA) public consultations	100
1.3) International water conventions	100
1.3.1) International water conventions	100
1.4) Basin water policy framework	90
1.4.1) Transboundary water management (TBWM) agreement	100
1.4.2) Joint management plan	100
1.4.3) Water allocation mechanism	50
1.4.4) Transboundary water management (TBWM) sectoral scope	100
1.4.5) Dispute resolution mechanism	100
2) INSTITUTIONAL ARRANGEMENTS AND PARTICIPATION	**61.1**
2.1) National water agency	50
2.1.1) National water agency	100
2.1.2) National water capacity building	0
2.2) National stakeholder engagement	33.3
2.2.1) Inter-ministerial stakeholders engagement	50
2.2.2) Regional and local stakeholders engagement	50
2.2.3) Broader public stakeholders engagement	0
2.3) National data sharing	75
2.3.1) Inter-ministerial data sharing	100
2.3.2) National public data sharing	50
2.4) Basin level body	83.3
2.4.1) Joint river basin organisation (RBO) operational body	100
2.4.2) River basin organisation (RBO) secretariat	100
2.4.3) Joint water capacity building	50
2.5) Basin stakeholder engagement	50
2.5.1) Inter-governmental stakeholders engagement	50
2.5.2) Basin public stakeholders engagement	50
2.6) Basin data sharing	75
2.6.1) Inter-governmental data sharing	50
2.6.2) Public data sharing	100
3) WATER MANAGEMENT INSTRUMENTS	**50**
3.1) Water availability management	25
3.1.1) National water quantity monitoring	50
3.1.2) National water efficiency programme	0
3.2) Pollution control	50
3.2.1) National water quality monitoring	50
3.2.2) National water pollution reduction programme	50
3.3) National disaster management	50
3.3.1) National disaster risk management plan	50
3.3.2) National climate change adaptation strategy	50
3.4) Basin water availability management	75
3.4.1) Joint monitoring programme	50
3.4.2) Joint assessment programme	100
3.5) Basin pollution control	50
3.5.1) Joint water quality standards	0
3.5.2) Joint water pollution reduction programme	100
3.6) Basin disaster management	50
3.6.1) Joint alarm system	50
3.6.2) Joint mutual assistance system	50

4) INFRASTRUCTURE AND FINANCING	41.1
4.1) National level investment	56.7
4.1.1) Infrastructure quality	28.3
4.1.2) National water budget	50
4.1.3) National source of revenue allocated to water development	100
4.1.4) Watershed protection funding	50
4.1.5) Sovereign debt risk	55.4
4.2) Private sector investment	18.6
4.2.1) Water-related PPP projects	0
4.2.2) Overall number of PPP projects	12.1
4.2.3) Currency risk	62.3
4.2.4) Green finance	0
4.3) Investment climate	55
4.3.1) Registering property (including land)	48.9
4.3.2) Getting Credit	65
4.3.3) Dealing with construction permits	53
4.3.4) Financial and regulatory risk	53
4.4) RBO operational financing	75
4.4.1) National River Basin Organisation (RBO) funding	100
4.4.2) Joint investment programmes	50
4.5) Basin infrastructure financing	0
4.5.1) Private sector investment	0
4.5.2) Innovative River Basin Organisation (RBO) funding	0

5) COOPERATION CONTEXT	59.1
5.1) Water stress	47.7
5.1.1) Water stress	99
5.1.2) Exposure to droughts and floods	57.7
5.1.3) Wastewater treatment	0
5.1.4) Change in open water bodies	34.3
5.2) Socio-economic exposure	69.7
5.2.1) Drinking water access	97.2
5.2.2) Exposure to agricultural water stress	81.7
5.2.3) Economic dependence on water resources	0
5.2.4) Prevalence of undernourishment	100
5.3) Political stability	45.5
5.3.1) Government effectiveness risk	27.5
5.3.2) Share of women in national parliaments	33.7
5.3.3) Social inclusion	61.2
5.3.4) Security Risk	59.5
5.4) Political relations with basin states	71.7
5.4.1) Military spending	81.8
5.4.2) Water-related conflicts	100
5.4.3) International tensions	33.3
5.5) Economic relations with basin states	60.6
5.5.1) Share of regional trade	31.7
5.5.2) Regional trade agreements	50
5.5.3) Regional freedom of movement	100

Brazil



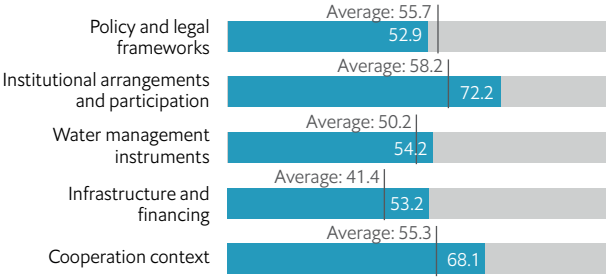


Table 1

Indicator	Value	Source
Population, total (in thousands)	2,09,288	World Bank
Population growth projection (%)	11	UN DESA
Rural population (% of total population)	14	World Bank
GNI per capita, PPP (current international $)	15,200	World Bank
GDP (current US$) in billions	2,056	World Bank
Water stress (%)	1.3	FAO
Total renewable water resources per capita (m3/cap)	41,316	FAO

Source: The Economist Intelligence Unit

Table 2

OVERALL SCORE	60.1
1) POLICY AND LEGAL FRAMEWORKS	**52.9**
1.1) National water policy	66.7
1.1.1) National water law/policy	100
1.1.2) Integrated Water Resources Management (IWRM) principles	50
1.1.3) Transboundary impact provisions	50
1.2) National environmental policy	75
1.2.1) National wastewater discharge permitting system	100
1.2.2) Polluter pays principle	100
1.2.3) Transboundary Environmental Impact Assessment (EIA)	50
1.2.4) Environmental Impact Assessment (EIA) public consultations	50
1.3) International water conventions	0
1.3.1) International water conventions	0
1.4) Basin water policy framework	70
1.4.1) Transboundary water management (TBWM) agreement	100
1.4.2) Joint management plan	100
1.4.3) Water allocation mechanism	0
1.4.4) Transboundary water management (TBWM) sectoral scope	100
1.4.5) Dispute resolution mechanism	50
2) INSTITUTIONAL ARRANGEMENTS AND PARTICIPATION	**72.2**
2.1) National water agency	100
2.1.1) National water agency	100
2.1.2) National water capacity building	100
2.2) National stakeholder engagement	100
2.2.1) Inter-ministerial stakeholders engagement	100
2.2.2) Regional and local stakeholders engagement	100
2.2.3) Broader public stakeholders engagement	100
2.3) National data sharing	75
2.3.1) Inter-ministerial data sharing	50
2.3.2) National public data sharing	100
2.4) Basin level body	83.3
2.4.1) Joint river basin organisation (RBO) operational body	100
2.4.2) River basin organisation (RBO) secretariat	100
2.4.3) Joint water capacity building	50
2.5) Basin stakeholder engagement	75
2.5.1) Inter-governmental stakeholders engagement	100
2.5.2) Basin public stakeholders engagement	50
2.6) Basin data sharing	0
2.6.1) Inter-governmental data sharing	0
2.6.2) Public data sharing	0
3) WATER MANAGEMENT INSTRUMENTS	**54.2**
3.1) Water availability management	50
3.1.1) National water quantity monitoring	100
3.1.2) National water efficiency programme	0
3.2) Pollution control	75
3.2.1) National water quality monitoring	100
3.2.2) National water pollution reduction programme	50
3.3) National disaster management	75
3.3.1) National disaster risk management plan	50
3.3.2) National climate change adaptation strategy	100
3.4) Basin water availability management	75
3.4.1) Joint monitoring programme	100
3.4.2) Joint assessment programme	50
3.5) Basin pollution control	0
3.5.1) Joint water quality standards	0
3.5.2) Joint water pollution reduction programme	0
3.6) Basin disaster management	50
3.6.1) Joint alarm system	100
3.6.2) Joint mutual assistance system	0

4) INFRASTRUCTURE AND FINANCING	53.2
4.1) National level investment	85.7
4.1.1) Infrastructure quality	64.6
4.1.2) National water budget	100
4.1.3) National source of revenue allocated to water development	100
4.1.4) Watershed protection funding	100
4.1.5) Sovereign debt risk	63.8
4.2) Private sector investment	77.3
4.2.1) Water-related PPP projects	100
4.2.2) Overall number of PPP projects	87
4.2.3) Currency risk	72.3
4.2.4) Green finance	50
4.3) Investment climate	52.9
4.3.1) Registering property (including land)	26.7
4.3.2) Getting Credit	50
4.3.3) Dealing with construction permits	50
4.3.4) Financial and regulatory risk	85.1
4.4) RBO operational financing	50
4.4.1) National River Basin Organisation (RBO) funding	100
4.4.2) Joint investment programmes	0
4.5) Basin infrastructure financing	0
4.5.1) Private sector investment	0
4.5.2) Innovative River Basin Organisation (RBO) funding	0

5) COOPERATION CONTEXT	68.1
5.1) Water stress	65.9
5.1.1) Water stress	99.1
5.1.2) Exposure to droughts and floods	42.4
5.1.3) Wastewater treatment	81.1
5.1.4) Change in open water bodies	40.9
5.2) Socio-economic exposure	93
5.2.1) Drinking water access	76.1
5.2.2) Exposure to agricultural water stress	95.8
5.2.3) Economic dependence on water resources	100
5.2.4) Prevalence of undernourishment	100
5.3) Political stability	50.4
5.3.1) Government effectiveness risk	54
5.3.2) Share of women in national parliaments	11.3
5.3.3) Social inclusion	82.3
5.3.4) Security Risk	54.2
5.4) Political relations with basin states	80
5.4.1) Military spending	73.2
5.4.2) Water-related conflicts	66.7
5.4.3) International tensions	100
5.5) Economic relations with basin states	51.1
5.5.1) Share of regional trade	3.4
5.5.2) Regional trade agreements	50
5.5.3) Regional freedom of movement	100

Cambodia

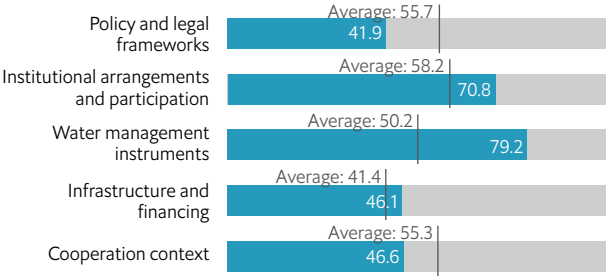


Table 1

Indicator	Value	Source
Population, total (in thousands)	16,005	World Bank
Population growth projection (%)	38	UN DESA
Rural population (% of total population)	77	World Bank
GNI per capita, PPP (current international $)	3,760	World Bank
GDP (current US$) in billions	22	World Bank
Water stress (%)	0.6	FAO
Total renewable water resources per capita (m3/cap)	29,747	FAO

Source: The Economist Intelligence Unit

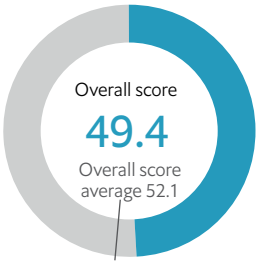
Table 2

OVERALL SCORE	**56.9**
1) POLICY AND LEGAL FRAMEWORKS	**41.9**
1.1) National water policy	50
1.1.1) National water law/policy	50
1.1.2) Integrated Water Resources Management (IWRM) principles	50
1.1.3) Transboundary impact provisions	50
1.2) National environmental policy	37.5
1.2.1) National wastewater discharge permitting system	100
1.2.2) Polluter pays principle	0
1.2.3) Transboundary Environmental Impact Assessment (EIA)	0
1.2.4) Environmental Impact Assessment (EIA) public consultations	50
1.3) International water conventions	0
1.3.1) International water conventions	0
1.4) Basin water policy framework	80
1.4.1) Transboundary water management (TBWM) agreement	100
1.4.2) Joint management plan	100
1.4.3) Water allocation mechanism	50
1.4.4) Transboundary water management (TBWM) sectoral scope	100
1.4.5) Dispute resolution mechanism	50
2) INSTITUTIONAL ARRANGEMENTS AND PARTICIPATION	**70.8**
2.1) National water agency	50
2.1.1) National water agency	50
2.1.2) National water capacity building	50
2.2) National stakeholder engagement	50
2.2.1) Inter-ministerial stakeholders engagement	50
2.2.2) Regional and local stakeholders engagement	50
2.2.3) Broader public stakeholders engagement	50
2.3) National data sharing	75
2.3.1) Inter-ministerial data sharing	100
2.3.2) National public data sharing	50
2.4) Basin level body	100
2.4.1) Joint river basin organisation (RBO) operational body	100
2.4.2) River basin organisation (RBO) secretariat	100
2.4.3) Joint water capacity building	100
2.5) Basin stakeholder engagement	75
2.5.1) Inter-governmental stakeholders engagement	100
2.5.2) Basin public stakeholders engagement	50
2.6) Basin data sharing	75
2.6.1) Inter-governmental data sharing	100
2.6.2) Public data sharing	50
3) WATER MANAGEMENT INSTRUMENTS	**79.2**
3.1) Water availability management	50
3.1.1) National water quantity monitoring	50
3.1.2) National water efficiency programme	50
3.2) Pollution control	50
3.2.1) National water quality monitoring	50
3.2.2) National water pollution reduction programme	50
3.3) National disaster management	100
3.3.1) National disaster risk management plan	100
3.3.2) National climate change adaptation strategy	100
3.4) Basin water availability management	100
3.4.1) Joint monitoring programme	100
3.4.2) Joint assessment programme	100
3.5) Basin pollution control	75
3.5.1) Joint water quality standards	100
3.5.2) Joint water pollution reduction programme	50
3.6) Basin disaster management	100
3.6.1) Joint alarm system	100
3.6.2) Joint mutual assistance system	100

4) INFRASTRUCTURE AND FINANCING	46.1
4.1) National level investment	56.6
4.1.1) Infrastructure quality	24.7
4.1.2) National water budget	100
4.1.3) National source of reveneue allocated to water development	50
4.1.4) Watershed protection funding	50
4.1.5) Sovereign debt risk	58.4
4.2) Private sector investment	24
4.2.1) Water-related PPP projects	0
4.2.2) Overall number of PPP projects	32.9
4.2.3) Currency risk	63.2
4.2.4) Green finance	0
4.3) Investment climate	49.7
4.3.1) Registering property (including land)	33.3
4.3.2) Getting Credit	80
4.3.3) Dealing with construction permits	44
4.3.4) Financial and regulatory risk	41.6
4.4) RBO operational financing	75
4.4.1) National River Basin Organisation (RBO) funding	100
4.4.2) Joint investment programmes	50
4.5) Basin infrastructure financing	25
4.5.1) Private sector investment	0
4.5.2) Innovative River Basin Organisation (RBO) funding	50

5) COOPERATION CONTEXT	46.6
5.1) Water stress	39.4
5.1.1) Water stress	99.7
5.1.2) Exposure to droughts and floods	29.5
5.1.3) Wastewater treatment	0
5.1.4) Change in open water bodies	28.2
5.2) Socio-economic exposure	36.6
5.2.1) Drinking water access	44.7
5.2.2) Exposure to agricultural water stress	57.9
5.2.3) Economic dependence on water resources	0
5.2.4) Prevalence of undernourishment	43.9
5.3) Political stability	30
5.3.1) Government effectiveness risk	17.5
5.3.2) Share of women in national parliaments	30.8
5.3.3) Social inclusion	23.1
5.3.4) Security Risk	48.8
5.4) Political relations with basin states	65
5.4.1) Military spending	61.5
5.4.2) Water-related conflicts	100
5.4.3) International tensions	33.3
5.5) Economic relations with basin states	62
5.5.1) Share of regional trade	46
5.5.2) Regional trade agreements	100
5.5.3) Regional freedom of movement	40

China



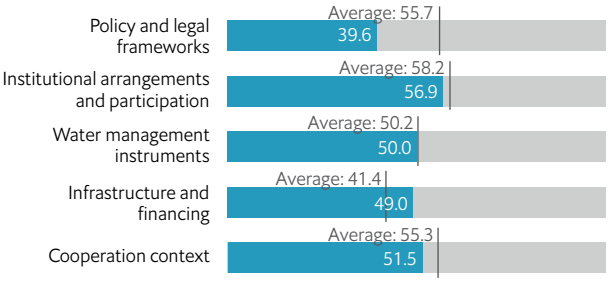


Table 1

Indicator	Value	Source
Population, total (in thousands)	13,86,395	World Bank
Population growth projection (%)	-2	UN DESA
Rural population (% of total population)	42	World Bank
GNI per capita, PPP (current international $)	16,760	World Bank
GDP (current US$) in billions	12,238	World Bank
Water stress (%)	29.4	FAO
Total renewable water resources per capita (m3/cap)	1,971	FAO

Source: The Economist Intelligence Unit

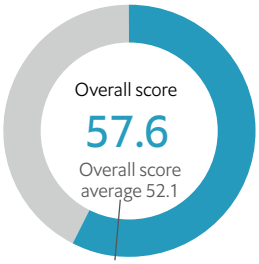
Table 2

OVERALL SCORE	**49.4**
1) POLICY AND LEGAL FRAMEWORKS	**39.6**
1.1) National water policy	50
1.1.1) National water law/policy	100
1.1.2) Integrated Water Resources Management (IWRM) principles	50
1.1.3) Transboundary impact provisions	0
1.2) National environmental policy	75
1.2.1) National wastewater discharge permitting system	100
1.2.2) Polluter pays principle	100
1.2.3) Transboundary Environmental Impact Assessment (EIA)	50
1.2.4) Environmental Impact Assessment (EIA) public consultations	50
1.3) International water conventions	0
1.3.1) International water conventions	0
1.4) Basin water policy framework	33.3
1.4.1) Transboundary water management (TBWM) agreement	66.7
1.4.2) Joint management plan	50
1.4.3) Water allocation mechanism	0
1.4.4) Transboundary water management (TBWM) sectoral scope	50
1.4.5) Dispute resolution mechanism	0
2) INSTITUTIONAL ARRANGEMENTS AND PARTICIPATION	**56.9**
2.1) National water agency	75
2.1.1) National water agency	100
2.1.2) National water capacity building	50
2.2) National stakeholder engagement	66.7
2.2.1) Inter-ministerial stakeholders engagement	100
2.2.2) Regional and local stakeholders engagement	50
2.2.3) Broader public stakeholders engagement	50
2.3) National data sharing	75
2.3.1) Inter-ministerial data sharing	50
2.3.2) National public data sharing	100
2.4) Basin level body	50
2.4.1) Joint river basin organisation (RBO) operational body	50
2.4.2) River basin organisation (RBO) secretariat	50
2.4.3) Joint water capacity building	50
2.5) Basin stakeholder engagement	25
2.5.1) Inter-governmental stakeholders engagement	50
2.5.2) Basin public stakeholders engagement	0
2.6) Basin data sharing	50
2.6.1) Inter-governmental data sharing	50
2.6.2) Public data sharing	50
3) WATER MANAGEMENT INSTRUMENTS	**50**
3.1) Water availability management	100
3.1.1) National water quantity monitoring	100
3.1.2) National water efficiency programme	100
3.2) Pollution control	75
3.2.1) National water quality monitoring	50
3.2.2) National water pollution reduction programme	100
3.3) National disaster management	100
3.3.1) National disaster risk management plan	100
3.3.2) National climate change adaptation strategy	100
3.4) Basin water availability management	25
3.4.1) Joint monitoring programme	50
3.4.2) Joint assessment programme	0
3.5) Basin pollution control	0
3.5.1) Joint water quality standards	0
3.5.2) Joint water pollution reduction programme	0
3.6) Basin disaster management	0
3.6.1) Joint alarm system	0
3.6.2) Joint mutual assistance system	0

4) INFRASTRUCTURE AND FINANCING	49
4.1) National level investment	86.4
4.1.1) Infrastructure quality	52.1
4.1.2) National water budget	100
4.1.3) National source of reveneue allocated to water development	100
4.1.4) Watershed protection funding	100
4.1.5) Sovereign debt risk	80
4.2) Private sector investment	62.4
4.2.1) Water-related PPP projects	58.3
4.2.2) Overall number of PPP projects	11.4
4.2.3) Currency risk	80.1
4.2.4) Green finance	100
4.3) Investment climate	71.2
4.3.1) Registering property (including land)	91.1
4.3.2) Getting Credit	60
4.3.3) Dealing with construction permits	65
4.3.4) Financial and regulatory risk	68.8
4.4) RBO operational financing	25
4.4.1) National River Basin Organisation (RBO) funding	0
4.4.2) Joint investment programmes	50
4.5) Basin infrastructure financing	0
4.5.1) Private sector investment	0
4.5.2) Innovative River Basin Organisation (RBO) funding	0

5) COOPERATION CONTEXT	51.5
5.1) Water stress	61.8
5.1.1) Water stress	73.3
5.1.2) Exposure to droughts and floods	39.3
5.1.3) Wastewater treatment	80.2
5.1.4) Change in open water bodies	54.3
5.2) Socio-economic exposure	87.7
5.2.1) Drinking water access	93.8
5.2.2) Exposure to agricultural water stress	79
5.2.3) Economic dependence on water resources	100
5.2.4) Prevalence of undernourishment	78.2
5.3) Political stability	44.4
5.3.1) Government effectiveness risk	51.3
5.3.2) Share of women in national parliaments	41
5.3.3) Social inclusion	14.9
5.3.4) Security Risk	70.2
5.4) Political relations with basin states	45.1
5.4.1) Military spending	60.4
5.4.2) Water-related conflicts	33.3
5.4.3) International tensions	41.7
5.5) Economic relations with basin states	18.6
5.5.1) Share of regional trade	5.8
5.5.2) Regional trade agreements	50
5.5.3) Regional freedom of movement	0

Colombia



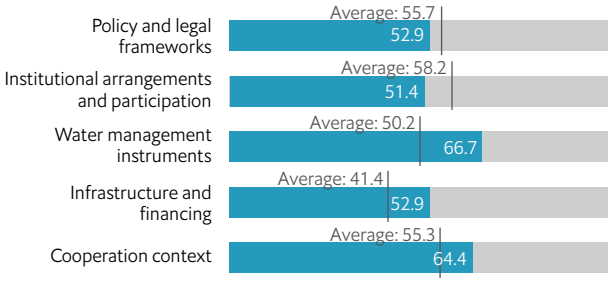


Table 1

Indicator	Value	Source
Population, total (in thousands)	49,066	World Bank
Population growth projection (%)	12	UN DESA
Rural population (% of total population)	20	World Bank
GNI per capita, PPP (current international $)	14,090	World Bank
GDP (current US$) in billions	315	World Bank
Water stress (%)	0.9	FAO
Total renewable water resources per capita (m3/cap)	48,098	FAO

Source: The Economist Intelligence Unit

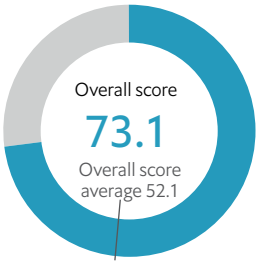
Table 2

OVERALL SCORE	**57.6**
1) POLICY AND LEGAL FRAMEWORKS	**52.9**
1.1) National water policy	66.7
1.1.1) National water law/policy	100
1.1.2) Integrated Water Resources Management (IWRM) principles	100
1.1.3) Transboundary impact provisions	0
1.2) National environmental policy	75
1.2.1) National wastewater discharge permitting system	100
1.2.2) Polluter pays principle	100
1.2.3) Transboundary Environmental Impact Assessment (EIA)	50
1.2.4) Environmental Impact Assessment (EIA) public consultations	50
1.3) International water conventions	0
1.3.1) International water conventions	0
1.4) Basin water policy framework	70
1.4.1) Transboundary water management (TBWM) agreement	100
1.4.2) Joint management plan	100
1.4.3) Water allocation mechanism	0
1.4.4) Transboundary water management (TBWM) sectoral scope	100
1.4.5) Dispute resolution mechanism	50
2) INSTITUTIONAL ARRANGEMENTS AND PARTICIPATION	**51.4**
2.1) National water agency	50
2.1.1) National water agency	100
2.1.2) National water capacity building	0
2.2) National stakeholder engagement	50
2.2.1) Inter-ministerial stakeholders engagement	50
2.2.2) Regional and local stakeholders engagement	50
2.2.3) Broader public stakeholders engagement	50
2.3) National data sharing	50
2.3.1) Inter-ministerial data sharing	50
2.3.2) National public data sharing	50
2.4) Basin level body	83.3
2.4.1) Joint river basin organisation (RBO) operational body	100
2.4.2) River basin organisation (RBO) secretariat	100
2.4.3) Joint water capacity building	50
2.5) Basin stakeholder engagement	75
2.5.1) Inter-governmental stakeholders engagement	100
2.5.2) Basin public stakeholders engagement	50
2.6) Basin data sharing	0
2.6.1) Inter-governmental data sharing	0
2.6.2) Public data sharing	0
3) WATER MANAGEMENT INSTRUMENTS	**66.7**
3.1) Water availability management	100
3.1.1) National water quantity monitoring	100
3.1.2) National water efficiency programme	100
3.2) Pollution control	100
3.2.1) National water quality monitoring	100
3.2.2) National water pollution reduction programme	100
3.3) National disaster management	100
3.3.1) National disaster risk management plan	100
3.3.2) National climate change adaptation strategy	100
3.4) Basin water availability management	75
3.4.1) Joint monitoring programme	100
3.4.2) Joint assessment programme	50
3.5) Basin pollution control	0
3.5.1) Joint water quality standards	0
3.5.2) Joint water pollution reduction programme	0
3.6) Basin disaster management	25
3.6.1) Joint alarm system	0
3.6.2) Joint mutual assistance system	50

4) INFRASTRUCTURE AND FINANCING	52.9
4.1) National level investment	71.7
4.1.1) Infrastructure quality	36.5
4.1.2) National water budget	100
4.1.3) National source of reveneue allocated to water development	100
4.1.4) Watershed protection funding	50
4.1.5) Sovereign debt risk	72.1
4.2) Private sector investment	66.4
4.2.1) Water-related PPP projects	95.9
4.2.2) Overall number of PPP projects	40.9
4.2.3) Currency risk	78.8
4.2.4) Green finance	50
4.3) Investment climate	76.4
4.3.1) Registering property (including land)	68.9
4.3.2) Getting Credit	95
4.3.3) Dealing with construction permits	69
4.3.4) Financial and regulatory risk	72.9
4.4) RBO operational financing	50
4.4.1) National River Basin Organisation (RBO) funding	100
4.4.2) Joint investment programmes	0
4.5) Basin infrastructure financing	0
4.5.1) Private sector investment	0
4.5.2) Innovative River Basin Organisation (RBO) funding	0

5) COOPERATION CONTEXT	64.4
5.1) Water stress	73.2
5.1.1) Water stress	99.5
5.1.2) Exposure to droughts and floods	69.1
5.1.3) Wastewater treatment	77.2
5.1.4) Change in open water bodies	47.2
5.2) Socio-economic exposure	88.8
5.2.1) Drinking water access	75
5.2.2) Exposure to agricultural water stress	94.3
5.2.3) Economic dependence on water resources	100
5.2.4) Prevalence of undernourishment	86
5.3) Political stability	50.9
5.3.1) Government effectiveness risk	58.8
5.3.2) Share of women in national parliaments	26.8
5.3.3) Social inclusion	69.2
5.3.4) Security Risk	48.8
5.4) Political relations with basin states	55
5.4.1) Military spending	31.7
5.4.2) Water-related conflicts	33.3
5.4.3) International tensions	100
5.5) Economic relations with basin states	53.8
5.5.1) Share of regional trade	11.4
5.5.2) Regional trade agreements	50
5.5.3) Regional freedom of movement	100

Croatia



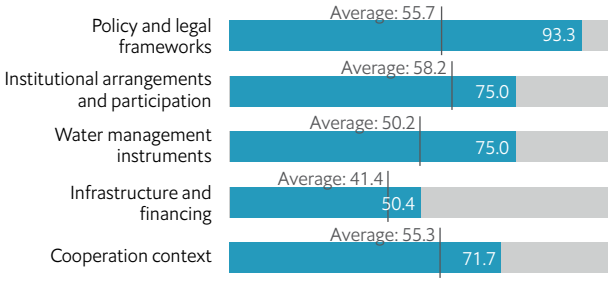


Table 1

Indicator	Value	Source
Population, total (in thousands)	4,125	World Bank
Population growth projection (%)	-16	UN DESA
Rural population (% of total population)	43	World Bank
GNI per capita, PPP (current international $)	25,810	World Bank
GDP (current US$) in billions	55	World Bank
Water stress (%)	1.0	FAO
Total renewable water resources per capita (m3/cap)	25,185	FAO

Source: The Economist Intelligence Unit

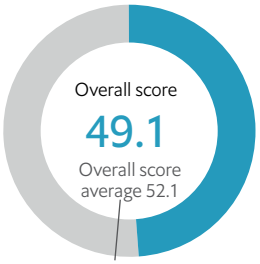
Table 2

OVERALL SCORE	**73.1**
1) POLICY AND LEGAL FRAMEWORKS	**93.3**
1.1) National water policy	83.3
1.1.1) National water law/policy	100
1.1.2) Integrated Water Resources Management (IWRM) principles	100
1.1.3) Transboundary impact provisions	50
1.2) National environmental policy	100
1.2.1) National wastewater discharge permitting system	100
1.2.2) Polluter pays principle	100
1.2.3) Transboundary Environmental Impact Assessment (EIA)	100
1.2.4) Environmental Impact Assessment (EIA) public consultations	100
1.3) International water conventions	100
1.3.1) International water conventions	100
1.4) Basin water policy framework	90
1.4.1) Transboundary water management (TBWM) agreement	100
1.4.2) Joint management plan	100
1.4.3) Water allocation mechanism	50
1.4.4) Transboundary water management (TBWM) sectoral scope	100
1.4.5) Dispute resolution mechanism	100
2) INSTITUTIONAL ARRANGEMENTS AND PARTICIPATION	**75**
2.1) National water agency	100
2.1.1) National water agency	100
2.1.2) National water capacity building	100
2.2) National stakeholder engagement	66.7
2.2.1) Inter-ministerial stakeholders engagement	100
2.2.2) Regional and local stakeholders engagement	50
2.2.3) Broader public stakeholders engagement	50
2.3) National data sharing	75
2.3.1) Inter-ministerial data sharing	50
2.3.2) National public data sharing	100
2.4) Basin level body	83.3
2.4.1) Joint river basin organisation (RBO) operational body	100
2.4.2) River basin organisation (RBO) secretariat	100
2.4.3) Joint water capacity building	50
2.5) Basin stakeholder engagement	50
2.5.1) Inter-governmental stakeholders engagement	50
2.5.2) Basin public stakeholders engagement	50
2.6) Basin data sharing	75
2.6.1) Inter-governmental data sharing	50
2.6.2) Public data sharing	100
3) WATER MANAGEMENT INSTRUMENTS	**75**
3.1) Water availability management	100
3.1.1) National water quantity monitoring	100
3.1.2) National water efficiency programme	100
3.2) Pollution control	100
3.2.1) National water quality monitoring	100
3.2.2) National water pollution reduction programme	100
3.3) National disaster management	25
3.3.1) National disaster risk management plan	50
3.3.2) National climate change adaptation strategy	0
3.4) Basin water availability management	75
3.4.1) Joint monitoring programme	50
3.4.2) Joint assessment programme	100
3.5) Basin pollution control	75
3.5.1) Joint water quality standards	50
3.5.2) Joint water pollution reduction programme	100
3.6) Basin disaster management	75
3.6.1) Joint alarm system	100
3.6.2) Joint mutual assistance system	50

4) INFRASTRUCTURE AND FINANCING	50.4
4.1) National level investment	82.8
4.1.1) Infrastructure quality	43.6
4.1.2) National water budget	100
4.1.3) National source of reveneue allocated to water development	100
4.1.4) Watershed protection funding	100
4.1.5) Sovereign debt risk	70.4
4.2) Private sector investment	27.4
4.2.1) Water-related PPP projects	11.5
4.2.2) Overall number of PPP projects	18.9
4.2.3) Currency risk	79.2
4.2.4) Green finance	0
4.3) Investment climate	66.7
4.3.1) Registering property (including land)	75.6
4.3.2) Getting Credit	55
4.3.3) Dealing with construction permits	56
4.3.4) Financial and regulatory risk	80.3
4.4) RBO operational financing	75
4.4.1) National River Basin Organisation (RBO) funding	100
4.4.2) Joint investment programmes	50
4.5) Basin infrastructure financing	0
4.5.1) Private sector investment	0
4.5.2) Innovative River Basin Organisation (RBO) funding	0

5) COOPERATION CONTEXT	71.7
5.1) Water stress	71.3
5.1.1) Water stress	99.4
5.1.2) Exposure to droughts and floods	63.3
5.1.3) Wastewater treatment	86.6
5.1.4) Change in open water bodies	35.8
5.2) Socio-economic exposure	71.5
5.2.1) Drinking water access	100
5.2.2) Exposure to agricultural water stress	86
5.2.3) Economic dependence on water resources	0
5.2.4) Prevalence of undernourishment	100
5.3) Political stability	63
5.3.1) Government effectiveness risk	58.8
5.3.2) Share of women in national parliaments	27.6
5.3.3) Social inclusion	72.7
5.3.4) Security Risk	92.9
5.4) Political relations with basin states	78.7
5.4.1) Military spending	69.5
5.4.2) Water-related conflicts	100
5.4.3) International tensions	66.7
5.5) Economic relations with basin states	74.3
5.5.1) Share of regional trade	22.9
5.5.2) Regional trade agreements	100
5.5.3) Regional freedom of movement	100

Ecuador



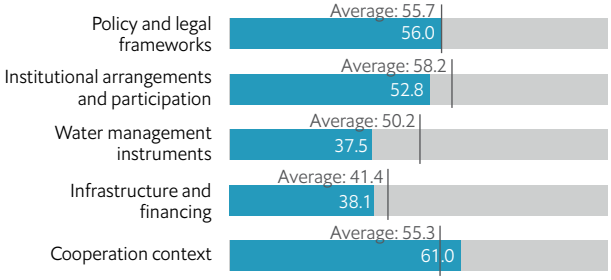


Table 1

Indicator	Value	Source
Population, total (in thousands)	16,625	World Bank
Population growth projection (%)	38	UN DESA
Rural population (% of total population)	36	World Bank
GNI per capita, PPP (current international $)	11,330	World Bank
GDP (current US$) in billions	104	World Bank
Water stress (%)	3.7	FAO
Total renewable water resources per capita (m3/cap)	26,611	FAO

Source: The Economist Intelligence Unit

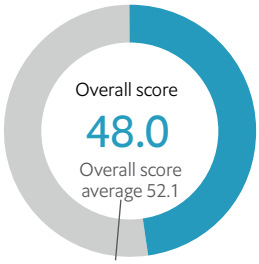
Table 2

OVERALL SCORE	**49.1**
1) POLICY AND LEGAL FRAMEWORKS	**56**
1.1) National water policy	66.7
1.1.1) National water law/policy	100
1.1.2) Integrated Water Resources Management (IWRM) principles	100
1.1.3) Transboundary impact provisions	0
1.2) National environmental policy	87.5
1.2.1) National wastewater discharge permitting system	100
1.2.2) Polluter pays principle	100
1.2.3) Transboundary Environmental Impact Assessment (EIA)	50
1.2.4) Environmental Impact Assessment (EIA) public consultations	100
1.3) International water conventions	0
1.3.1) International water conventions	0
1.4) Basin water policy framework	70
1.4.1) Transboundary water management (TBWM) agreement	100
1.4.2) Joint management plan	100
1.4.3) Water allocation mechanism	0
1.4.4) Transboundary water management (TBWM) sectoral scope	100
1.4.5) Dispute resolution mechanism	50
2) INSTITUTIONAL ARRANGEMENTS AND PARTICIPATION	**52.8**
2.1) National water agency	100
2.1.1) National water agency	100
2.1.2) National water capacity building	100
2.2) National stakeholder engagement	33.3
2.2.1) Inter-ministerial stakeholders engagement	50
2.2.2) Regional and local stakeholders engagement	50
2.2.3) Broader public stakeholders engagement	0
2.3) National data sharing	25
2.3.1) Inter-ministerial data sharing	0
2.3.2) National public data sharing	50
2.4) Basin level body	83.3
2.4.1) Joint river basin organisation (RBO) operational body	100
2.4.2) River basin organisation (RBO) secretariat	100
2.4.3) Joint water capacity building	50
2.5) Basin stakeholder engagement	75
2.5.1) Inter-governmental stakeholders engagement	100
2.5.2) Basin public stakeholders engagement	50
2.6) Basin data sharing	0
2.6.1) Inter-governmental data sharing	0
2.6.2) Public data sharing	0
3) WATER MANAGEMENT INSTRUMENTS	**37.5**
3.1) Water availability management	50
3.1.1) National water quantity monitoring	50
3.1.2) National water efficiency programme	50
3.2) Pollution control	25
3.2.1) National water quality monitoring	0
3.2.2) National water pollution reduction programme	50
3.3) National disaster management	100
3.3.1) National disaster risk management plan	100
3.3.2) National climate change adaptation strategy	100
3.4) Basin water availability management	25
3.4.1) Joint monitoring programme	0
3.4.2) Joint assessment programme	50
3.5) Basin pollution control	0
3.5.1) Joint water quality standards	0
3.5.2) Joint water pollution reduction programme	0
3.6) Basin disaster management	25
3.6.1) Joint alarm system	0
3.6.2) Joint mutual assistance system	50

4) INFRASTRUCTURE AND FINANCING	38.1
4.1) National level investment	67.3
4.1.1) Infrastructure quality	38.8
4.1.2) National water budget	100
4.1.3) National source of reveneue allocated to water development	100
4.1.4) Watershed protection funding	50
4.1.5) Sovereign debt risk	47.5
4.2) Private sector investment	22.2
4.2.1) Water-related PPP projects	9.7
4.2.2) Overall number of PPP projects	19.9
4.2.3) Currency risk	59.4
4.2.4) Green finance	0
4.3) Investment climate	50.9
4.3.1) Registering property (including land)	57.8
4.3.2) Getting Credit	45
4.3.3) Dealing with construction permits	66
4.3.4) Financial and regulatory risk	34.7
4.4) RBO operational financing	50
4.4.1) National River Basin Organisation (RBO) funding	100
4.4.2) Joint investment programmes	0
4.5) Basin infrastructure financing	0
4.5.1) Private sector investment	0
4.5.2) Innovative River Basin Organisation (RBO) funding	0

5) COOPERATION CONTEXT	61
5.1) Water stress	51.2
5.1.1) Water stress	96.9
5.1.2) Exposure to droughts and floods	64.8
5.1.3) Wastewater treatment	0
5.1.4) Change in open water bodies	43.1
5.2) Socio-economic exposure	68.4
5.2.1) Drinking water access	64.7
5.2.2) Exposure to agricultural water stress	77.6
5.2.3) Economic dependence on water resources	50
5.2.4) Prevalence of undernourishment	81.4
5.3) Political stability	59.7
5.3.1) Government effectiveness risk	35
5.3.2) Share of women in national parliaments	68.4
5.3.3) Social inclusion	68.8
5.3.4) Security Risk	66.7
5.4) Political relations with basin states	70
5.4.1) Military spending	43.4
5.4.2) Water-related conflicts	100
5.4.3) International tensions	66.7
5.5) Economic relations with basin states	55.5
5.5.1) Share of regional trade	16.5
5.5.2) Regional trade agreements	50
5.5.3) Regional freedom of movement	100

Guinea



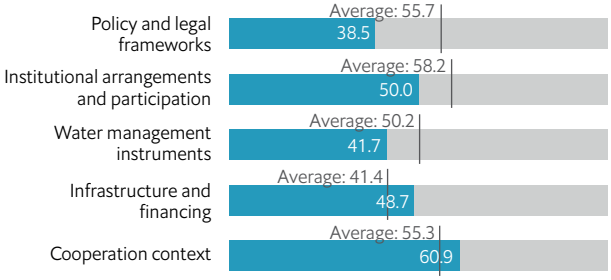


Table 1

Indicator	Value	Source
Population, total (in thousands)	12,717	World Bank
Population growth projection (%)	111	UN DESA
Rural population (% of total population)	64	World Bank
GNI per capita, PPP (current international $)	2,230	World Bank
GDP (current US$) in billions	11	World Bank
Water stress (%)	0.3	FAO
Total renewable water resources per capita (m3/cap)	17,771	FAO

Source: The Economist Intelligence Unit

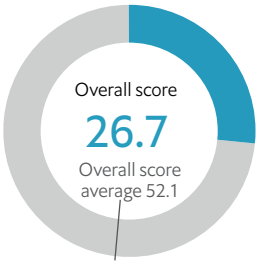
Table 2

OVERALL SCORE	**48**
1) POLICY AND LEGAL FRAMEWORKS	**38.5**
1.1) National water policy	16.7
1.1.1) National water law/policy	50
1.1.2) Integrated Water Resources Management (IWRM) principles	0
1.1.3) Transboundary impact provisions	0
1.2) National environmental policy	37.5
1.2.1) National wastewater discharge permitting system	0
1.2.2) Polluter pays principle	50
1.2.3) Transboundary Environmental Impact Assessment (EIA)	0
1.2.4) Environmental Impact Assessment (EIA) public consultations	100
1.3) International water conventions	0
1.3.1) International water conventions	0
1.4) Basin water policy framework	100
1.4.1) Transboundary water management (TBWM) agreement	100
1.4.2) Joint management plan	100
1.4.3) Water allocation mechanism	100
1.4.4) Transboundary water management (TBWM) sectoral scope	100
1.4.5) Dispute resolution mechanism	100
2) INSTITUTIONAL ARRANGEMENTS AND PARTICIPATION	**50**
2.1) National water agency	50
2.1.1) National water agency	50
2.1.2) National water capacity building	50
2.2) National stakeholder engagement	0
2.2.1) Inter-ministerial stakeholders engagement	0
2.2.2) Regional and local stakeholders engagement	0
2.2.3) Broader public stakeholders engagement	0
2.3) National data sharing	0
2.3.1) Inter-ministerial data sharing	0
2.3.2) National public data sharing	0
2.4) Basin level body	100
2.4.1) Joint river basin organisation (RBO) operational body	100
2.4.2) River basin organisation (RBO) secretariat	100
2.4.3) Joint water capacity building	100
2.5) Basin stakeholder engagement	100
2.5.1) Inter-governmental stakeholders engagement	100
2.5.2) Basin public stakeholders engagement	100
2.6) Basin data sharing	50
2.6.1) Inter-governmental data sharing	100
2.6.2) Public data sharing	0
3) WATER MANAGEMENT INSTRUMENTS	**41.7**
3.1) Water availability management	25
3.1.1) National water quantity monitoring	50
3.1.2) National water efficiency programme	0
3.2) Pollution control	0
3.2.1) National water quality monitoring	0
3.2.2) National water pollution reduction programme	0
3.3) National disaster management	50
3.3.1) National disaster risk management plan	50
3.3.2) National climate change adaptation strategy	50
3.4) Basin water availability management	100
3.4.1) Joint monitoring programme	100
3.4.2) Joint assessment programme	100
3.5) Basin pollution control	25
3.5.1) Joint water quality standards	0
3.5.2) Joint water pollution reduction programme	50
3.6) Basin disaster management	50
3.6.1) Joint alarm system	100
3.6.2) Joint mutual assistance system	0

4) INFRASTRUCTURE AND FINANCING	48.7
4.1) National level investment	41.3
4.1.1) Infrastructure quality	3.5
4.1.2) National water budget	100
4.1.3) National source of reveneue allocated to water development	0
4.1.4) Watershed protection funding	50
4.1.5) Sovereign debt risk	53
4.2) Private sector investment	15.5
4.2.1) Water-related PPP projects	0
4.2.2) Overall number of PPP projects	4.1
4.2.3) Currency risk	58.1
4.2.4) Green finance	0
4.3) Investment climate	36.4
4.3.1) Registering property (including land)	26.7
4.3.2) Getting Credit	30
4.3.3) Dealing with construction permits	74
4.3.4) Financial and regulatory risk	15
4.4) RBO operational financing	100
4.4.1) National River Basin Organisation (RBO) funding	100
4.4.2) Joint investment programmes	100
4.5) Basin infrastructure financing	50
4.5.1) Private sector investment	50
4.5.2) Innovative River Basin Organisation (RBO) funding	50

5) COOPERATION CONTEXT	60.9
5.1) Water stress	78.3
5.1.1) Water stress	100
5.1.2) Exposure to droughts and floods	90
5.1.3) Wastewater treatment	51.1
5.1.4) Change in open water bodies	72
5.2) Socio-economic exposure	56.4
5.2.1) Drinking water access	18.2
5.2.2) Exposure to agricultural water stress	67.8
5.2.3) Economic dependence on water resources	100
5.2.4) Prevalence of undernourishment	39.6
5.3) Political stability	34.5
5.3.1) Government effectiveness risk	15
5.3.2) Share of women in national parliaments	34.7
5.3.3) Social inclusion	35.9
5.3.4) Security Risk	52.4
5.4) Political relations with basin states	68.4
5.4.1) Military spending	38.5
5.4.2) Water-related conflicts	66.7
5.4.3) International tensions	100
5.5) Economic relations with basin states	67
5.5.1) Share of regional trade	0.9
5.5.2) Regional trade agreements	100
5.5.3) Regional freedom of movement	100

Iran



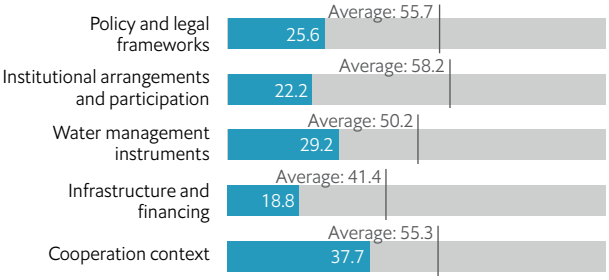


Table 1

Indicator	Value	Source
Population, total (in thousands)	81,163	World Bank
Population growth projection (%)	15	UN DESA
Rural population (% of total population)	26	World Bank
GNI per capita, PPP (current international $)	20,880	World Bank
GDP (current US$) in billions	454	World Bank
Water stress (%)	90.0	FAO
Total renewable water resources per capita (m3/cap)	1,688	FAO

Source: The Economist Intelligence Unit

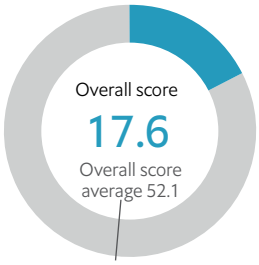
Table 2

OVERALL SCORE	**26.7**
1) POLICY AND LEGAL FRAMEWORKS	**25.6**
1.1) National water policy	33.3
1.1.1) National water law/policy	50
1.1.2) Integrated Water Resources Management (IWRM) principles	50
1.1.3) Transboundary impact provisions	0
1.2) National environmental policy	62.5
1.2.1) National wastewater discharge permitting system	100
1.2.2) Polluter pays principle	100
1.2.3) Transboundary Environmental Impact Assessment (EIA)	0
1.2.4) Environmental Impact Assessment (EIA) public consultations	50
1.3) International water conventions	0
1.3.1) International water conventions	0
1.4) Basin water policy framework	6.7
1.4.1) Transboundary water management (TBWM) agreement	33.3
1.4.2) Joint management plan	0
1.4.3) Water allocation mechanism	0
1.4.4) Transboundary water management (TBWM) sectoral scope	0
1.4.5) Dispute resolution mechanism	0
2) INSTITUTIONAL ARRANGEMENTS AND PARTICIPATION	**22.2**
2.1) National water agency	50
2.1.1) National water agency	50
2.1.2) National water capacity building	50
2.2) National stakeholder engagement	33.3
2.2.1) Inter-ministerial stakeholders engagement	100
2.2.2) Regional and local stakeholders engagement	0
2.2.3) Broader public stakeholders engagement	0
2.3) National data sharing	50
2.3.1) Inter-ministerial data sharing	100
2.3.2) National public data sharing	0
2.4) Basin level body	0
2.4.1) Joint river basin organisation (RBO) operational body	0
2.4.2) River basin organisation (RBO) secretariat	0
2.4.3) Joint water capacity building	0
2.5) Basin stakeholder engagement	0
2.5.1) Inter-governmental stakeholders engagement	0
2.5.2) Basin public stakeholders engagement	0
2.6) Basin data sharing	0
2.6.1) Inter-governmental data sharing	0
2.6.2) Public data sharing	0
3) WATER MANAGEMENT INSTRUMENTS	**29.2**
3.1) Water availability management	50
3.1.1) National water quantity monitoring	50
3.1.2) National water efficiency programme	50
3.2) Pollution control	75
3.2.1) National water quality monitoring	50
3.2.2) National water pollution reduction programme	100
3.3) National disaster management	50
3.3.1) National disaster risk management plan	0
3.3.2) National climate change adaptation strategy	100
3.4) Basin water availability management	0
3.4.1) Joint monitoring programme	0
3.4.2) Joint assessment programme	0
3.5) Basin pollution control	0
3.5.1) Joint water quality standards	0
3.5.2) Joint water pollution reduction programme	0
3.6) Basin disaster management	0
3.6.1) Joint alarm system	0
3.6.2) Joint mutual assistance system	0

4) INFRASTRUCTURE AND FINANCING	18.8
4.1) National level investment	29.3
4.1.1) Infrastructure quality	31
4.1.2) National water budget	50
4.1.3) National source of reveneue allocated to water development	0
4.1.4) Watershed protection funding	0
4.1.5) Sovereign debt risk	65.4
4.2) Private sector investment	15.6
4.2.1) Water-related PPP projects	0
4.2.2) Overall number of PPP projects	1.7
4.2.3) Currency risk	60.6
4.2.4) Green finance	0
4.3) Investment climate	49.3
4.3.1) Registering property (including land)	53.3
4.3.2) Getting Credit	50
4.3.3) Dealing with construction permits	69
4.3.4) Financial and regulatory risk	25
4.4) RBO operational financing	0
4.4.1) National River Basin Organisation (RBO) funding	0
4.4.2) Joint investment programmes	0
4.5) Basin infrastructure financing	0
4.5.1) Private sector investment	0
4.5.2) Innovative River Basin Organisation (RBO) funding	0

5) COOPERATION CONTEXT	37.7
5.1) Water stress	39.5
5.1.1) Water stress	17.8
5.1.2) Exposure to droughts and floods	50.9
5.1.3) Wastewater treatment	64.3
5.1.4) Change in open water bodies	25.1
5.2) Socio-economic exposure	68.4
5.2.1) Drinking water access	81.3
5.2.2) Exposure to agricultural water stress	50.9
5.2.3) Economic dependence on water resources	50
5.2.4) Prevalence of undernourishment	91.6
5.3) Political stability	29.2
5.3.1) Government effectiveness risk	24.6
5.3.2) Share of women in national parliaments	1.3
5.3.3) Social inclusion	26.1
5.3.4) Security Risk	64.9
5.4) Political relations with basin states	26
5.4.1) Military spending	44.5
5.4.2) Water-related conflicts	33.3
5.4.3) International tensions	0
5.5) Economic relations with basin states	25.5
5.5.1) Share of regional trade	9.8
5.5.2) Regional trade agreements	0
5.5.3) Regional freedom of movement	66.7

Iraq



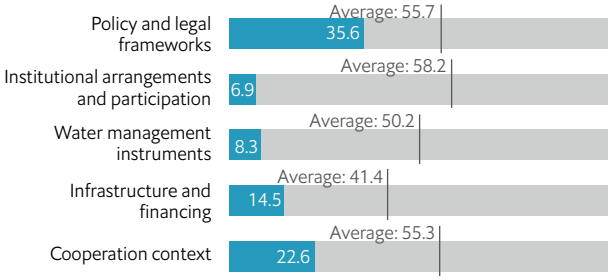


Table 1

Indicator	Value	Source
Population, total (in thousands)	38,275	World Bank
Population growth projection (%)	113	UN DESA
Rural population (% of total population)	30	World Bank
GNI per capita, PPP (current international $)	16,530	World Bank
GDP (current US$) in billions	192	World Bank
Water stress (%)	93.1	FAO
Total renewable water resources per capita (m3/cap)	2,348	FAO

Source: The Economist Intelligence Unit

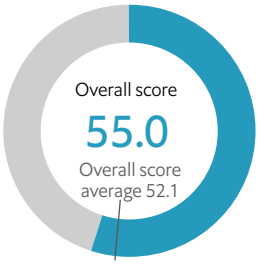
Table 2

OVERALL SCORE	**17.6**
1) POLICY AND LEGAL FRAMEWORKS	**35.6**
1.1) National water policy	16.7
1.1.1) National water law/policy	50
1.1.2) Integrated Water Resources Management (IWRM) principles	0
1.1.3) Transboundary impact provisions	0
1.2) National environmental policy	12.5
1.2.1) National wastewater discharge permitting system	0
1.2.2) Polluter pays principle	50
1.2.3) Transboundary Environmental Impact Assessment (EIA)	0
1.2.4) Environmental Impact Assessment (EIA) public consultations	0
1.3) International water conventions	100
1.3.1) International water conventions	100
1.4) Basin water policy framework	13.3
1.4.1) Transboundary water management (TBWM) agreement	66.7
1.4.2) Joint management plan	0
1.4.3) Water allocation mechanism	0
1.4.4) Transboundary water management (TBWM) sectoral scope	0
1.4.5) Dispute resolution mechanism	0
2) INSTITUTIONAL ARRANGEMENTS AND PARTICIPATION	**6.9**
2.1) National water agency	25
2.1.1) National water agency	50
2.1.2) National water capacity building	0
2.2) National stakeholder engagement	0
2.2.1) Inter-ministerial stakeholders engagement	0
2.2.2) Regional and local stakeholders engagement	0
2.2.3) Broader public stakeholders engagement	0
2.3) National data sharing	0
2.3.1) Inter-ministerial data sharing	0
2.3.2) National public data sharing	0
2.4) Basin level body	16.7
2.4.1) Joint river basin organisation (RBO) operational body	0
2.4.2) River basin organisation (RBO) secretariat	0
2.4.3) Joint water capacity building	50
2.5) Basin stakeholder engagement	0
2.5.1) Inter-governmental stakeholders engagement	0
2.5.2) Basin public stakeholders engagement	0
2.6) Basin data sharing	0
2.6.1) Inter-governmental data sharing	0
2.6.2) Public data sharing	0
3) WATER MANAGEMENT INSTRUMENTS	**8.3**
3.1) Water availability management	25
3.1.1) National water quantity monitoring	50
3.1.2) National water efficiency programme	0
3.2) Pollution control	0
3.2.1) National water quality monitoring	0
3.2.2) National water pollution reduction programme	0
3.3) National disaster management	25
3.3.1) National disaster risk management plan	50
3.3.2) National climate change adaptation strategy	0
3.4) Basin water availability management	0
3.4.1) Joint monitoring programme	0
3.4.2) Joint assessment programme	0
3.5) Basin pollution control	0
3.5.1) Joint water quality standards	0
3.5.2) Joint water pollution reduction programme	0
3.6) Basin disaster management	0
3.6.1) Joint alarm system	0
3.6.2) Joint mutual assistance system	0

4) INFRASTRUCTURE AND FINANCING	14.5
4.1) National level investment	27
4.1.1) Infrastructure quality	40.2
4.1.2) National water budget	50
4.1.3) National source of reveneue allocated to water development	0
4.1.4) Watershed protection funding	0
4.1.5) Sovereign debt risk	45
4.2) Private sector investment	15.6
4.2.1) Water-related PPP projects	0
4.2.2) Overall number of PPP projects	4.7
4.2.3) Currency risk	57.5
4.2.4) Green finance	0
4.3) Investment climate	30.1
4.3.1) Registering property (including land)	40
4.3.2) Getting Credit	0
4.3.3) Dealing with construction permits	68
4.3.4) Financial and regulatory risk	12.5
4.4) RBO operational financing	0
4.4.1) National River Basin Organisation (RBO) funding	0
4.4.2) Joint investment programmes	0
4.5) Basin infrastructure financing	0
4.5.1) Private sector investment	0
4.5.2) Innovative River Basin Organisation (RBO) funding	0

5) COOPERATION CONTEXT	22.6
5.1) Water stress	30.9
5.1.1) Water stress	14.9
5.1.2) Exposure to droughts and floods	38.3
5.1.3) Wastewater treatment	70.2
5.1.4) Change in open water bodies	0
5.2) Socio-economic exposure	29.4
5.2.1) Drinking water access	60.7
5.2.2) Exposure to agricultural water stress	45.3
5.2.3) Economic dependence on water resources	0
5.2.4) Prevalence of undernourishment	11.6
5.3) Political stability	30.6
5.3.1) Government effectiveness risk	20
5.3.2) Share of women in national parliaments	42.3
5.3.3) Social inclusion	60.3
5.3.4) Security Risk	0
5.4) Political relations with basin states	5.5
5.4.1) Military spending	16.6
5.4.2) Water-related conflicts	0
5.4.3) International tensions	0
5.5) Economic relations with basin states	16.4
5.5.1) Share of regional trade	16
5.5.2) Regional trade agreements	0
5.5.3) Regional freedom of movement	33.3

Laos



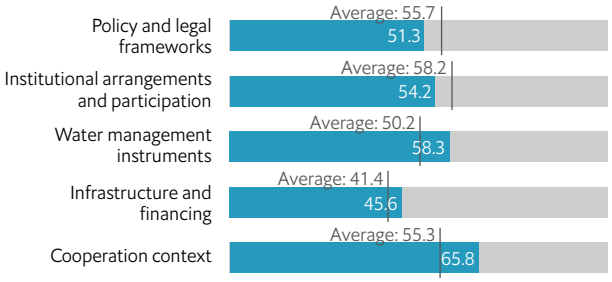


Table 1

Indicator	Value	Source
Population, total (in thousands)	6,858	World Bank
Population growth projection (%)	34	UN DESA
Rural population (% of total population)	66	World Bank
GNI per capita, PPP (current international $)	6,650	World Bank
GDP (current US$) in billions	17	World Bank
Water stress (%)	1.4	FAO
Total renewable water resources per capita (m3/cap)	48,629	FAO

Source: The Economist Intelligence Unit

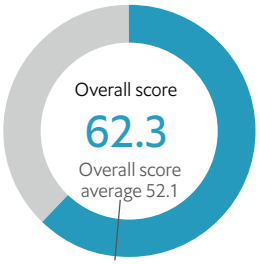
Table 2

OVERALL SCORE	**55**
1) POLICY AND LEGAL FRAMEWORKS	**51.3**
1.1) National water policy	50
1.1.1) National water law/policy	50
1.1.2) Integrated Water Resources Management (IWRM) principles	100
1.1.3) Transboundary impact provisions	0
1.2) National environmental policy	75
1.2.1) National wastewater discharge permitting system	50
1.2.2) Polluter pays principle	50
1.2.3) Transboundary Environmental Impact Assessment (EIA)	100
1.2.4) Environmental Impact Assessment (EIA) public consultations	100
1.3) International water conventions	0
1.3.1) International water conventions	0
1.4) Basin water policy framework	80
1.4.1) Transboundary water management (TBWM) agreement	100
1.4.2) Joint management plan	100
1.4.3) Water allocation mechanism	50
1.4.4) Transboundary water management (TBWM) sectoral scope	100
1.4.5) Dispute resolution mechanism	50
2) INSTITUTIONAL ARRANGEMENTS AND PARTICIPATION	**54.2**
2.1) National water agency	75
2.1.1) National water agency	100
2.1.2) National water capacity building	50
2.2) National stakeholder engagement	0
2.2.1) Inter-ministerial stakeholders engagement	0
2.2.2) Regional and local stakeholders engagement	0
2.2.3) Broader public stakeholders engagement	0
2.3) National data sharing	0
2.3.1) Inter-ministerial data sharing	0
2.3.2) National public data sharing	0
2.4) Basin level body	100
2.4.1) Joint river basin organisation (RBO) operational body	100
2.4.2) River basin organisation (RBO) secretariat	100
2.4.3) Joint water capacity building	100
2.5) Basin stakeholder engagement	75
2.5.1) Inter-governmental stakeholders engagement	100
2.5.2) Basin public stakeholders engagement	50
2.6) Basin data sharing	75
2.6.1) Inter-governmental data sharing	100
2.6.2) Public data sharing	50
3) WATER MANAGEMENT INSTRUMENTS	**58.3**
3.1) Water availability management	0
3.1.1) National water quantity monitoring	0
3.1.2) National water efficiency programme	0
3.2) Pollution control	0
3.2.1) National water quality monitoring	0
3.2.2) National water pollution reduction programme	0
3.3) National disaster management	75
3.3.1) National disaster risk management plan	50
3.3.2) National climate change adaptation strategy	100
3.4) Basin water availability management	100
3.4.1) Joint monitoring programme	100
3.4.2) Joint assessment programme	100
3.5) Basin pollution control	75
3.5.1) Joint water quality standards	100
3.5.2) Joint water pollution reduction programme	50
3.6) Basin disaster management	100
3.6.1) Joint alarm system	100
3.6.2) Joint mutual assistance system	100

4) INFRASTRUCTURE AND FINANCING	45.6
4.1) National level investment	34.4
4.1.1) Infrastructure quality	19.4
4.1.2) National water budget	0
4.1.3) National source of reveneue allocated to water development	50
4.1.4) Watershed protection funding	50
4.1.5) Sovereign debt risk	52.5
4.2) Private sector investment	40.5
4.2.1) Water-related PPP projects	0
4.2.2) Overall number of PPP projects	99.7
4.2.3) Currency risk	62.3
4.2.4) Green finance	0
4.3) Investment climate	52.9
4.3.1) Registering property (including land)	55.6
4.3.2) Getting Credit	60
4.3.3) Dealing with construction permits	68
4.3.4) Financial and regulatory risk	28.1
4.4) RBO operational financing	75
4.4.1) National River Basin Organisation (RBO) funding	100
4.4.2) Joint investment programmes	50
4.5) Basin infrastructure financing	25
4.5.1) Private sector investment	0
4.5.2) Innovative River Basin Organisation (RBO) funding	50

5) COOPERATION CONTEXT	65.8
5.1) Water stress	61.4
5.1.1) Water stress	99
5.1.2) Exposure to droughts and floods	46.7
5.1.3) Wastewater treatment	0
5.1.4) Change in open water bodies	100
5.2) Socio-economic exposure	42.5
5.2.1) Drinking water access	51.8
5.2.2) Exposure to agricultural water stress	67.8
5.2.3) Economic dependence on water resources	0
5.2.4) Prevalence of undernourishment	50.5
5.3) Political stability	38.2
5.3.1) Government effectiveness risk	20
5.3.2) Share of women in national parliaments	46.4
5.3.3) Social inclusion	7.6
5.3.4) Security Risk	78.6
5.4) Political relations with basin states	100
5.4.1) Military spending	100
5.4.2) Water-related conflicts	100
5.4.3) International tensions	100
5.5) Economic relations with basin states	86.7
5.5.1) Share of regional trade	100
5.5.2) Regional trade agreements	100
5.5.3) Regional freedom of movement	60

Mali



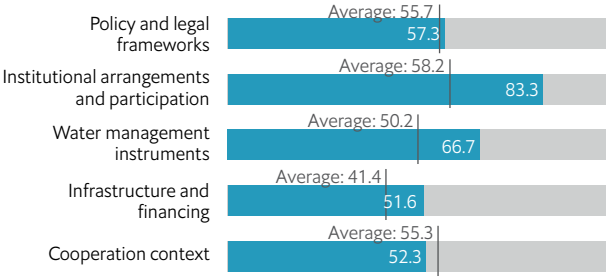


Table 1

Indicator	Value	Source
Population, total (in thousands)	18,542	World Bank
Population growth projection (%)	137	UN DESA
Rural population (% of total population)	58	World Bank
GNI per capita, PPP (current international $)	2,160	World Bank
GDP (current US$) in billions	15	World Bank
Water stress (%)	5.8	FAO
Total renewable water resources per capita (m3/cap)	6,472	FAO

Source: The Economist Intelligence Unit

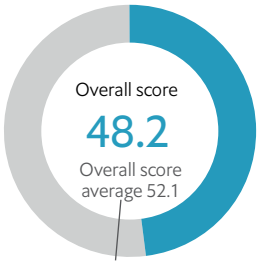
Table 2

OVERALL SCORE	**62.3**
1) POLICY AND LEGAL FRAMEWORKS	**57.3**
1.1) National water policy	66.7
1.1.1) National water law/policy	100
1.1.2) Integrated Water Resources Management (IWRM) principles	100
1.1.3) Transboundary impact provisions	0
1.2) National environmental policy	62.5
1.2.1) National wastewater discharge permitting system	50
1.2.2) Polluter pays principle	50
1.2.3) Transboundary Environmental Impact Assessment (EIA)	50
1.2.4) Environmental Impact Assessment (EIA) public consultations	100
1.3) International water conventions	0
1.3.1) International water conventions	0
1.4) Basin water policy framework	100
1.4.1) Transboundary water management (TBWM) agreement	100
1.4.2) Joint management plan	100
1.4.3) Water allocation mechanism	100
1.4.4) Transboundary water management (TBWM) sectoral scope	100
1.4.5) Dispute resolution mechanism	100
2) INSTITUTIONAL ARRANGEMENTS AND PARTICIPATION	**83.3**
2.1) National water agency	75
2.1.1) National water agency	100
2.1.2) National water capacity building	50
2.2) National stakeholder engagement	100
2.2.1) Inter-ministerial stakeholders engagement	100
2.2.2) Regional and local stakeholders engagement	100
2.2.3) Broader public stakeholders engagement	100
2.3) National data sharing	75
2.3.1) Inter-ministerial data sharing	100
2.3.2) National public data sharing	50
2.4) Basin level body	100
2.4.1) Joint river basin organisation (RBO) operational body	100
2.4.2) River basin organisation (RBO) secretariat	100
2.4.3) Joint water capacity building	100
2.5) Basin stakeholder engagement	100
2.5.1) Inter-governmental stakeholders engagement	100
2.5.2) Basin public stakeholders engagement	100
2.6) Basin data sharing	50
2.6.1) Inter-governmental data sharing	100
2.6.2) Public data sharing	0
3) WATER MANAGEMENT INSTRUMENTS	**66.7**
3.1) Water availability management	75
3.1.1) National water quantity monitoring	100
3.1.2) National water efficiency programme	50
3.2) Pollution control	50
3.2.1) National water quality monitoring	50
3.2.2) National water pollution reduction programme	50
3.3) National disaster management	100
3.3.1) National disaster risk management plan	100
3.3.2) National climate change adaptation strategy	100
3.4) Basin water availability management	100
3.4.1) Joint monitoring programme	100
3.4.2) Joint assessment programme	100
3.5) Basin pollution control	25
3.5.1) Joint water quality standards	0
3.5.2) Joint water pollution reduction programme	50
3.6) Basin disaster management	50
3.6.1) Joint alarm system	100
3.6.2) Joint mutual assistance system	0

4) INFRASTRUCTURE AND FINANCING	51.6
4.1) National level investment	46.2
4.1.1) Infrastructure quality	20.3
4.1.2) National water budget	50
4.1.3) National source of reveneue allocated to water development	100
4.1.4) Watershed protection funding	0
4.1.5) Sovereign debt risk	60.6
4.2) Private sector investment	19.3
4.2.1) Water-related PPP projects	0
4.2.2) Overall number of PPP projects	4
4.2.3) Currency risk	73.4
4.2.4) Green finance	0
4.3) Investment climate	42.7
4.3.1) Registering property (including land)	26.7
4.3.2) Getting Credit	30
4.3.3) Dealing with construction permits	67
4.3.4) Financial and regulatory risk	47.2
4.4) RBO operational financing	100
4.4.1) National River Basin Organisation (RBO) funding	100
4.4.2) Joint investment programmes	100
4.5) Basin infrastructure financing	50
4.5.1) Private sector investment	50
4.5.2) Innovative River Basin Organisation (RBO) funding	50

5) COOPERATION CONTEXT	52.3
5.1) Water stress	43.2
5.1.1) Water stress	95
5.1.2) Exposure to droughts and floods	47.8
5.1.3) Wastewater treatment	0
5.1.4) Change in open water bodies	29.9
5.2) Socio-economic exposure	64.3
5.2.1) Drinking water access	32.5
5.2.2) Exposure to agricultural water stress	36.9
5.2.3) Economic dependence on water resources	100
5.2.4) Prevalence of undernourishment	87.7
5.3) Political stability	30.6
5.3.1) Government effectiveness risk	31.3
5.3.2) Share of women in national parliaments	7.3
5.3.3) Social inclusion	57.5
5.3.4) Security Risk	26.2
5.4) Political relations with basin states	50.9
5.4.1) Military spending	52.7
5.4.2) Water-related conflicts	66.7
5.4.3) International tensions	33.3
5.5) Economic relations with basin states	72.8
5.5.1) Share of regional trade	18.5
5.5.2) Regional trade agreements	100
5.5.3) Regional freedom of movement	100

Mauritania



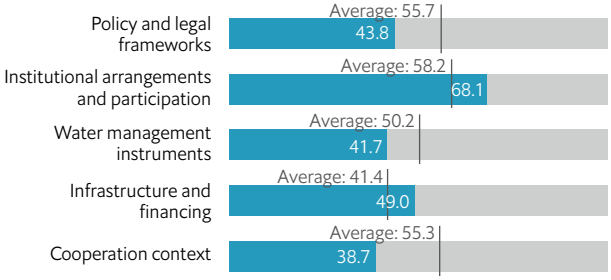


Table 1

Indicator	Value	Source
Population, total (in thousands)	4,420	World Bank
Population growth projection (%)	103	UN DESA
Rural population (% of total population)	47	World Bank
GNI per capita, PPP (current international $)	3,890	World Bank
GDP (current US$) in billions	5	World Bank
Water stress (%)	15.9	FAO
Total renewable water resources per capita (m3/cap)	2,579	FAO

Source: The Economist Intelligence Unit

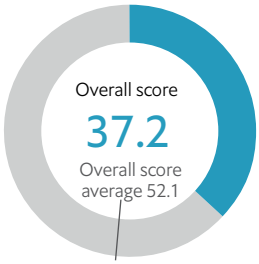
Table 2

OVERALL SCORE	**48.2**
1) POLICY AND LEGAL FRAMEWORKS	**43.8**
1.1) National water policy	50
1.1.1) National water law/policy	100
1.1.2) Integrated Water Resources Management (IWRM) principles	50
1.1.3) Transboundary impact provisions	0
1.2) National environmental policy	25
1.2.1) National wastewater discharge permitting system	0
1.2.2) Polluter pays principle	0
1.2.3) Transboundary Environmental Impact Assessment (EIA)	0
1.2.4) Environmental Impact Assessment (EIA) public consultations	100
1.3) International water conventions	0
1.3.1) International water conventions	0
1.4) Basin water policy framework	100
1.4.1) Transboundary water management (TBWM) agreement	100
1.4.2) Joint management plan	100
1.4.3) Water allocation mechanism	100
1.4.4) Transboundary water management (TBWM) sectoral scope	100
1.4.5) Dispute resolution mechanism	100
2) INSTITUTIONAL ARRANGEMENTS AND PARTICIPATION	**68.1**
2.1) National water agency	50
2.1.1) National water agency	100
2.1.2) National water capacity building	0
2.2) National stakeholder engagement	83.3
2.2.1) Inter-ministerial stakeholders engagement	100
2.2.2) Regional and local stakeholders engagement	100
2.2.3) Broader public stakeholders engagement	50
2.3) National data sharing	25
2.3.1) Inter-ministerial data sharing	50
2.3.2) National public data sharing	0
2.4) Basin level body	100
2.4.1) Joint river basin organisation (RBO) operational body	100
2.4.2) River basin organisation (RBO) secretariat	100
2.4.3) Joint water capacity building	100
2.5) Basin stakeholder engagement	100
2.5.1) Inter-governmental stakeholders engagement	100
2.5.2) Basin public stakeholders engagement	100
2.6) Basin data sharing	50
2.6.1) Inter-governmental data sharing	100
2.6.2) Public data sharing	0
3) WATER MANAGEMENT INSTRUMENTS	**41.7**
3.1) Water availability management	0
3.1.1) National water quantity monitoring	0
3.1.2) National water efficiency programme	0
3.2) Pollution control	0
3.2.1) National water quality monitoring	0
3.2.2) National water pollution reduction programme	0
3.3) National disaster management	75
3.3.1) National disaster risk management plan	50
3.3.2) National climate change adaptation strategy	100
3.4) Basin water availability management	100
3.4.1) Joint monitoring programme	100
3.4.2) Joint assessment programme	100
3.5) Basin pollution control	25
3.5.1) Joint water quality standards	0
3.5.2) Joint water pollution reduction programme	50
3.6) Basin disaster management	50
3.6.1) Joint alarm system	100
3.6.2) Joint mutual assistance system	0

4) INFRASTRUCTURE AND FINANCING	49
4.1) National level investment	33.3
4.1.1) Infrastructure quality	11.7
4.1.2) National water budget	0
4.1.3) National source of reveneue allocated to water development	100
4.1.4) Watershed protection funding	0
4.1.5) Sovereign debt risk	55
4.2) Private sector investment	17.9
4.2.1) Water-related PPP projects	0
4.2.2) Overall number of PPP projects	9.3
4.2.3) Currency risk	62.3
4.2.4) Green finance	0
4.3) Investment climate	43.9
4.3.1) Registering property (including land)	46.7
4.3.2) Getting Credit	30
4.3.3) Dealing with construction permits	69
4.3.4) Financial and regulatory risk	30
4.4) RBO operational financing	100
4.4.1) National River Basin Organisation (RBO) funding	100
4.4.2) Joint investment programmes	100
4.5) Basin infrastructure financing	50
4.5.1) Private sector investment	50
4.5.2) Innovative River Basin Organisation (RBO) funding	50

5) COOPERATION CONTEXT	38.7
5.1) Water stress	28.8
5.1.1) Water stress	85.7
5.1.2) Exposure to droughts and floods	12.5
5.1.3) Wastewater treatment	0
5.1.4) Change in open water bodies	17
5.2) Socio-economic exposure	38
5.2.1) Drinking water access	0
5.2.2) Exposure to agricultural water stress	57.9
5.2.3) Economic dependence on water resources	25
5.2.4) Prevalence of undernourishment	69.1
5.3) Political stability	40.2
5.3.1) Government effectiveness risk	27.5
5.3.2) Share of women in national parliaments	31.4
5.3.3) Social inclusion	49.5
5.3.4) Security Risk	52.4
5.4) Political relations with basin states	47.5
5.4.1) Military spending	17.5
5.4.2) Water-related conflicts	66.7
5.4.3) International tensions	58.3
5.5) Economic relations with basin states	38.9
5.5.1) Share of regional trade	0
5.5.2) Regional trade agreements	50
5.5.3) Regional freedom of movement	66.7

Myanmar



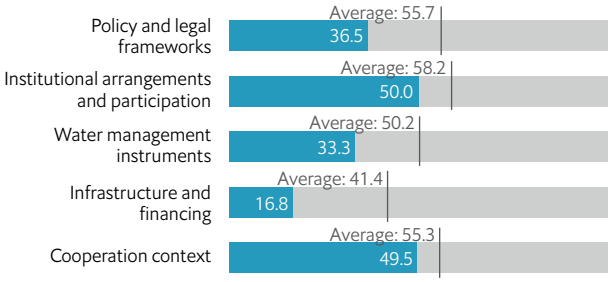


Table 1

Indicator	Value	Source
Population, total (in thousands)	53,371	World Bank
Population growth projection (%)	17	UN DESA
Rural population (% of total population)	70	World Bank
GNI per capita, PPP (current international $)	6,010	World Bank
GDP (current US$) in billions	67	World Bank
Water stress (%)	3.7	FAO
Total renewable water resources per capita (m3/cap)	21,885	FAO

Source: The Economist Intelligence Unit

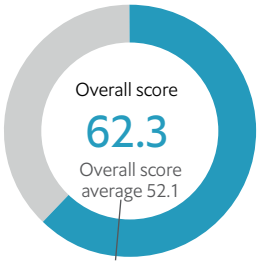
Table 2

OVERALL SCORE	**37.2**
1) POLICY AND LEGAL FRAMEWORKS	**36.5**
1.1) National water policy	50
1.1.1) National water law/policy	50
1.1.2) Integrated Water Resources Management (IWRM) principles	50
1.1.3) Transboundary impact provisions	50
1.2) National environmental policy	62.5
1.2.1) National wastewater discharge permitting system	50
1.2.2) Polluter pays principle	50
1.2.3) Transboundary Environmental Impact Assessment (EIA)	50
1.2.4) Environmental Impact Assessment (EIA) public consultations	100
1.3) International water conventions	0
1.3.1) International water conventions	0
1.4) Basin water policy framework	33.3
1.4.1) Transboundary water management (TBWM) agreement	66.7
1.4.2) Joint management plan	50
1.4.3) Water allocation mechanism	0
1.4.4) Transboundary water management (TBWM) sectoral scope	50
1.4.5) Dispute resolution mechanism	0
2) INSTITUTIONAL ARRANGEMENTS AND PARTICIPATION	**50**
2.1) National water agency	75
2.1.1) National water agency	100
2.1.2) National water capacity building	50
2.2) National stakeholder engagement	50
2.2.1) Inter-ministerial stakeholders engagement	100
2.2.2) Regional and local stakeholders engagement	0
2.2.3) Broader public stakeholders engagement	50
2.3) National data sharing	50
2.3.1) Inter-ministerial data sharing	100
2.3.2) National public data sharing	0
2.4) Basin level body	50
2.4.1) Joint river basin organisation (RBO) operational body	50
2.4.2) River basin organisation (RBO) secretariat	50
2.4.3) Joint water capacity building	50
2.5) Basin stakeholder engagement	25
2.5.1) Inter-governmental stakeholders engagement	50
2.5.2) Basin public stakeholders engagement	0
2.6) Basin data sharing	50
2.6.1) Inter-governmental data sharing	50
2.6.2) Public data sharing	50
3) WATER MANAGEMENT INSTRUMENTS	**33.3**
3.1) Water availability management	50
3.1.1) National water quantity monitoring	50
3.1.2) National water efficiency programme	50
3.2) Pollution control	25
3.2.1) National water quality monitoring	0
3.2.2) National water pollution reduction programme	50
3.3) National disaster management	75
3.3.1) National disaster risk management plan	100
3.3.2) National climate change adaptation strategy	50
3.4) Basin water availability management	25
3.4.1) Joint monitoring programme	50
3.4.2) Joint assessment programme	0
3.5) Basin pollution control	0
3.5.1) Joint water quality standards	0
3.5.2) Joint water pollution reduction programme	0
3.6) Basin disaster management	25
3.6.1) Joint alarm system	50
3.6.2) Joint mutual assistance system	0

4) INFRASTRUCTURE AND FINANCING	16.8
4.1) National level investment	33.9
4.1.1) Infrastructure quality	12.3
4.1.2) National water budget	50
4.1.3) National source of reveneue allocated to water development	0
4.1.4) Watershed protection funding	50
4.1.5) Sovereign debt risk	57.1
4.2) Private sector investment	17.6
4.2.1) Water-related PPP projects	0
4.2.2) Overall number of PPP projects	2.5
4.2.3) Currency risk	67.9
4.2.4) Green finance	0
4.3) Investment climate	32.5
4.3.1) Registering property (including land)	26.7
4.3.2) Getting Credit	10
4.3.3) Dealing with construction permits	70
4.3.4) Financial and regulatory risk	23.4
4.4) RBO operational financing	0
4.4.1) National River Basin Organisation (RBO) funding	0
4.4.2) Joint investment programmes	0
4.5) Basin infrastructure financing	0
4.5.1) Private sector investment	0
4.5.2) Innovative River Basin Organisation (RBO) funding	0

5) COOPERATION CONTEXT	49.5
5.1) Water stress	50.8
5.1.1) Water stress	96.9
5.1.2) Exposure to droughts and floods	49.6
5.1.3) Wastewater treatment	0
5.1.4) Change in open water bodies	56.7
5.2) Socio-economic exposure	63.1
5.2.1) Drinking water access	26.8
5.2.2) Exposure to agricultural water stress	53.7
5.2.3) Economic dependence on water resources	100
5.2.4) Prevalence of undernourishment	71.9
5.3) Political stability	28.8
5.3.1) Government effectiveness risk	22.8
5.3.2) Share of women in national parliaments	10.3
5.3.3) Social inclusion	26.3
5.3.4) Security Risk	56
5.4) Political relations with basin states	51.9
5.4.1) Military spending	22.4
5.4.2) Water-related conflicts	100
5.4.3) International tensions	33.3
5.5) Economic relations with basin states	53.1
5.5.1) Share of regional trade	59.3
5.5.2) Regional trade agreements	100
5.5.3) Regional freedom of movement	0

Peru



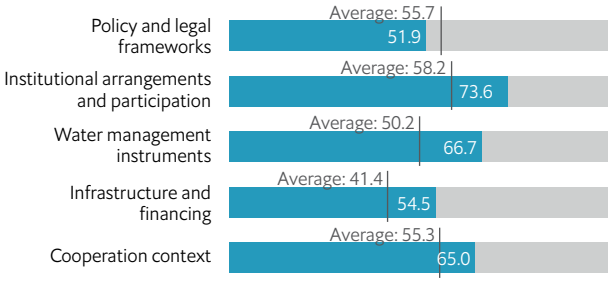


Table 1

Indicator	Value	Source
Population, total (in thousands)	32,165	World Bank
Population growth projection (%)	29	UN DESA
Rural population (% of total population)	22	World Bank
GNI per capita, PPP (current international $)	12,880	World Bank
GDP (current US$) in billions	211	World Bank
Water stress (%)	99.2	FAO
Total renewable water resources per capita (m3/cap)	58,449	FAO

Source: The Economist Intelligence Unit

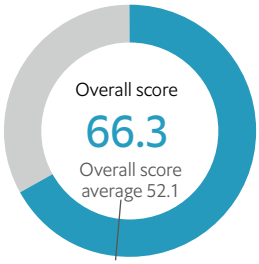
Table 2

OVERALL SCORE	**62.3**
1) POLICY AND LEGAL FRAMEWORKS	**51.9**
1.1) National water policy	50
1.1.1) National water law/policy	50
1.1.2) Integrated Water Resources Management (IWRM) principles	50
1.1.3) Transboundary impact provisions	50
1.2) National environmental policy	87.5
1.2.1) National wastewater discharge permitting system	100
1.2.2) Polluter pays principle	100
1.2.3) Transboundary Environmental Impact Assessment (EIA)	50
1.2.4) Environmental Impact Assessment (EIA) public consultations	100
1.3) International water conventions	0
1.3.1) International water conventions	0
1.4) Basin water policy framework	70
1.4.1) Transboundary water management (TBWM) agreement	100
1.4.2) Joint management plan	100
1.4.3) Water allocation mechanism	0
1.4.4) Transboundary water management (TBWM) sectoral scope	100
1.4.5) Dispute resolution mechanism	50
2) INSTITUTIONAL ARRANGEMENTS AND PARTICIPATION	**73.6**
2.1) National water agency	100
2.1.1) National water agency	100
2.1.2) National water capacity building	100
2.2) National stakeholder engagement	83.3
2.2.1) Inter-ministerial stakeholders engagement	100
2.2.2) Regional and local stakeholders engagement	100
2.2.3) Broader public stakeholders engagement	50
2.3) National data sharing	100
2.3.1) Inter-ministerial data sharing	100
2.3.2) National public data sharing	100
2.4) Basin level body	83.3
2.4.1) Joint river basin organisation (RBO) operational body	100
2.4.2) River basin organisation (RBO) secretariat	100
2.4.3) Joint water capacity building	50
2.5) Basin stakeholder engagement	75
2.5.1) Inter-governmental stakeholders engagement	100
2.5.2) Basin public stakeholders engagement	50
2.6) Basin data sharing	0
2.6.1) Inter-governmental data sharing	0
2.6.2) Public data sharing	0
3) WATER MANAGEMENT INSTRUMENTS	**66.7**
3.1) Water availability management	100
3.1.1) National water quantity monitoring	100
3.1.2) National water efficiency programme	100
3.2) Pollution control	50
3.2.1) National water quality monitoring	50
3.2.2) National water pollution reduction programme	50
3.3) National disaster management	100
3.3.1) National disaster risk management plan	100
3.3.2) National climate change adaptation strategy	100
3.4) Basin water availability management	75
3.4.1) Joint monitoring programme	100
3.4.2) Joint assessment programme	50
3.5) Basin pollution control	0
3.5.1) Joint water quality standards	0
3.5.2) Joint water pollution reduction programme	0
3.6) Basin disaster management	75
3.6.1) Joint alarm system	100
3.6.2) Joint mutual assistance system	50

4) INFRASTRUCTURE AND FINANCING	54.5
4.1) National level investment	73.3
4.1.1) Infrastructure quality	30.2
4.1.2) National water budget	100
4.1.3) National source of reveneue allocated to water development	100
4.1.4) Watershed protection funding	50
4.1.5) Sovereign debt risk	86.3
4.2) Private sector investment	73
4.2.1) Water-related PPP projects	51
4.2.2) Overall number of PPP projects	100
4.2.3) Currency risk	90.9
4.2.4) Green finance	50
4.3) Investment climate	76.3
4.3.1) Registering property (including land)	77.8
4.3.2) Getting Credit	75
4.3.3) Dealing with construction permits	74
4.3.4) Financial and regulatory risk	78.5
4.4) RBO operational financing	50
4.4.1) National River Basin Organisation (RBO) funding	100
4.4.2) Joint investment programmes	0
4.5) Basin infrastructure financing	0
4.5.1) Private sector investment	0
4.5.2) Innovative River Basin Organisation (RBO) funding	0

5) COOPERATION CONTEXT	65
5.1) Water stress	69.2
5.1.1) Water stress	99.2
5.1.2) Exposure to droughts and floods	54.7
5.1.3) Wastewater treatment	88.5
5.1.4) Change in open water bodies	34.5
5.2) Socio-economic exposure	64.6
5.2.1) Drinking water access	50
5.2.2) Exposure to agricultural water stress	80.4
5.2.3) Economic dependence on water resources	50
5.2.4) Prevalence of undernourishment	77.9
5.3) Political stability	57.6
5.3.1) Government effectiveness risk	51.3
5.3.2) Share of women in national parliaments	46.9
5.3.3) Social inclusion	72.7
5.3.4) Security Risk	59.5
5.4) Political relations with basin states	79.3
5.4.1) Military spending	71.1
5.4.2) Water-related conflicts	66.7
5.4.3) International tensions	100
5.5) Economic relations with basin states	54.3
5.5.1) Share of regional trade	12.8
5.5.2) Regional trade agreements	50
5.5.3) Regional freedom of movement	100

Senegal



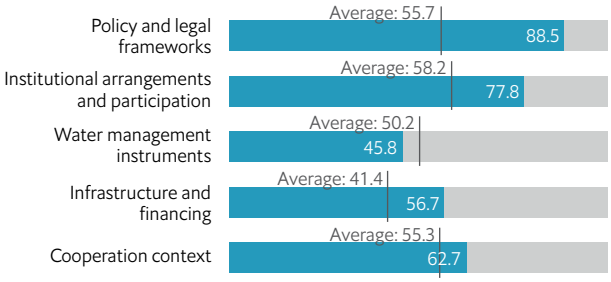


Table 1

Indicator	Value	Source
Population, total (in thousands)	15,851	World Bank
Population growth projection (%)	115	UN DESA
Rural population (% of total population)	53	World Bank
GNI per capita, PPP (current international $)	3,360	World Bank
GDP (current US$) in billions	21	World Bank
Water stress (%)	7.2	FAO
Total renewable water resources per capita (m3/cap)	2,459	FAO

Source: The Economist Intelligence Unit

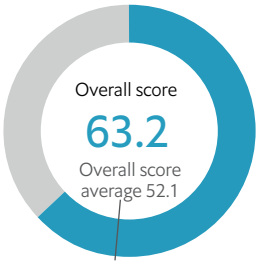
Table 2

OVERALL SCORE	**66.3**
1) POLICY AND LEGAL FRAMEWORKS	**88.5**
1.1) National water policy	66.7
1.1.1) National water law/policy	100
1.1.2) Integrated Water Resources Management (IWRM) principles	100
1.1.3) Transboundary impact provisions	0
1.2) National environmental policy	87.5
1.2.1) National wastewater discharge permitting system	100
1.2.2) Polluter pays principle	50
1.2.3) Transboundary Environmental Impact Assessment (EIA)	100
1.2.4) Environmental Impact Assessment (EIA) public consultations	100
1.3) International water conventions	100
1.3.1) International water conventions	100
1.4) Basin water policy framework	100
1.4.1) Transboundary water management (TBWM) agreement	100
1.4.2) Joint management plan	100
1.4.3) Water allocation mechanism	100
1.4.4) Transboundary water management (TBWM) sectoral scope	100
1.4.5) Dispute resolution mechanism	100
2) INSTITUTIONAL ARRANGEMENTS AND PARTICIPATION	**77.8**
2.1) National water agency	75
2.1.1) National water agency	100
2.1.2) National water capacity building	50
2.2) National stakeholder engagement	66.7
2.2.1) Inter-ministerial stakeholders engagement	50
2.2.2) Regional and local stakeholders engagement	50
2.2.3) Broader public stakeholders engagement	100
2.3) National data sharing	75
2.3.1) Inter-ministerial data sharing	100
2.3.2) National public data sharing	50
2.4) Basin level body	100
2.4.1) Joint river basin organisation (RBO) operational body	100
2.4.2) River basin organisation (RBO) secretariat	100
2.4.3) Joint water capacity building	100
2.5) Basin stakeholder engagement	100
2.5.1) Inter-governmental stakeholders engagement	100
2.5.2) Basin public stakeholders engagement	100
2.6) Basin data sharing	50
2.6.1) Inter-governmental data sharing	100
2.6.2) Public data sharing	0
3) WATER MANAGEMENT INSTRUMENTS	**45.8**
3.1) Water availability management	25
3.1.1) National water quantity monitoring	50
3.1.2) National water efficiency programme	0
3.2) Pollution control	25
3.2.1) National water quality monitoring	50
3.2.2) National water pollution reduction programme	0
3.3) National disaster management	50
3.3.1) National disaster risk management plan	50
3.3.2) National climate change adaptation strategy	50
3.4) Basin water availability management	100
3.4.1) Joint monitoring programme	100
3.4.2) Joint assessment programme	100
3.5) Basin pollution control	25
3.5.1) Joint water quality standards	0
3.5.2) Joint water pollution reduction programme	50
3.6) Basin disaster management	50
3.6.1) Joint alarm system	100
3.6.2) Joint mutual assistance system	0

4) INFRASTRUCTURE AND FINANCING	56.7
4.1) National level investment	57.9
4.1.1) Infrastructure quality	25
4.1.2) National water budget	100
4.1.3) National source of reveneue allocated to water development	100
4.1.4) Watershed protection funding	0
4.1.5) Sovereign debt risk	64.6
4.2) Private sector investment	30.6
4.2.1) Water-related PPP projects	20.5
4.2.2) Overall number of PPP projects	25.7
4.2.3) Currency risk	76.2
4.2.4) Green finance	0
4.3) Investment climate	45
4.3.1) Registering property (including land)	37.8
4.3.2) Getting Credit	30
4.3.3) Dealing with construction permits	60
4.3.4) Financial and regulatory risk	52.4
4.4) RBO operational financing	100
4.4.1) National River Basin Organisation (RBO) funding	100
4.4.2) Joint investment programmes	100
4.5) Basin infrastructure financing	50
4.5.1) Private sector investment	50
4.5.2) Innovative River Basin Organisation (RBO) funding	50

5) COOPERATION CONTEXT	62.7
5.1) Water stress	56.3
5.1.1) Water stress	93.7
5.1.2) Exposure to droughts and floods	50.9
5.1.3) Wastewater treatment	42.7
5.1.4) Change in open water bodies	38
5.2) Socio-economic exposure	46
5.2.1) Drinking water access	33.3
5.2.2) Exposure to agricultural water stress	56.5
5.2.3) Economic dependence on water resources	25
5.2.4) Prevalence of undernourishment	69.1
5.3) Political stability	64.3
5.3.1) Government effectiveness risk	51.3
5.3.2) Share of women in national parliaments	76.4
5.3.3) Social inclusion	59.5
5.3.4) Security Risk	70.2
5.4) Political relations with basin states	77.1
5.4.1) Military spending	64.6
5.4.2) Water-related conflicts	100
5.4.3) International tensions	66.7
5.5) Economic relations with basin states	69.6
5.5.1) Share of regional trade	8.9
5.5.2) Regional trade agreements	100
5.5.3) Regional freedom of movement	100

Serbia



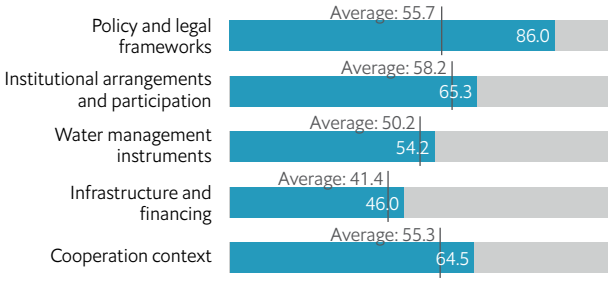


Table 1

Indicator	Value	Source
Population, total (in thousands)	7,021	World Bank
Population growth projection (%)	6	UN DESA
Rural population (% of total population)	44	World Bank
GNI per capita, PPP (current international $)	14,360	World Bank
GDP (current US$) in billions	41	World Bank
Water stress (%)	4.3	FAO
Total renewable water resources per capita (m3/cap)	18,451	FAO

Source: The Economist Intelligence Unit

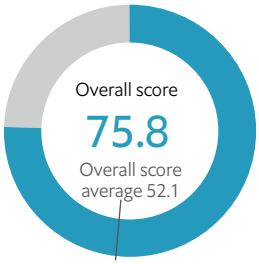
Table 2

OVERALL SCORE	**63.2**
1) POLICY AND LEGAL FRAMEWORKS	**86**
1.1) National water policy	66.7
1.1.1) National water law/policy	50
1.1.2) Integrated Water Resources Management (IWRM) principles	100
1.1.3) Transboundary impact provisions	50
1.2) National environmental policy	87.5
1.2.1) National wastewater discharge permitting system	100
1.2.2) Polluter pays principle	50
1.2.3) Transboundary Environmental Impact Assessment (EIA)	100
1.2.4) Environmental Impact Assessment (EIA) public consultations	100
1.3) International water conventions	100
1.3.1) International water conventions	100
1.4) Basin water policy framework	90
1.4.1) Transboundary water management (TBWM) agreement	100
1.4.2) Joint management plan	100
1.4.3) Water allocation mechanism	50
1.4.4) Transboundary water management (TBWM) sectoral scope	100
1.4.5) Dispute resolution mechanism	100
2) INSTITUTIONAL ARRANGEMENTS AND PARTICIPATION	**65.3**
2.1) National water agency	75
2.1.1) National water agency	100
2.1.2) National water capacity building	50
2.2) National stakeholder engagement	33.3
2.2.1) Inter-ministerial stakeholders engagement	50
2.2.2) Regional and local stakeholders engagement	50
2.2.3) Broader public stakeholders engagement	0
2.3) National data sharing	75
2.3.1) Inter-ministerial data sharing	50
2.3.2) National public data sharing	100
2.4) Basin level body	83.3
2.4.1) Joint river basin organisation (RBO) operational body	100
2.4.2) River basin organisation (RBO) secretariat	100
2.4.3) Joint water capacity building	50
2.5) Basin stakeholder engagement	50
2.5.1) Inter-governmental stakeholders engagement	50
2.5.2) Basin public stakeholders engagement	50
2.6) Basin data sharing	75
2.6.1) Inter-governmental data sharing	50
2.6.2) Public data sharing	100
3) WATER MANAGEMENT INSTRUMENTS	**54.2**
3.1) Water availability management	50
3.1.1) National water quantity monitoring	100
3.1.2) National water efficiency programme	0
3.2) Pollution control	75
3.2.1) National water quality monitoring	100
3.2.2) National water pollution reduction programme	50
3.3) National disaster management	25
3.3.1) National disaster risk management plan	50
3.3.2) National climate change adaptation strategy	0
3.4) Basin water availability management	75
3.4.1) Joint monitoring programme	50
3.4.2) Joint assessment programme	100
3.5) Basin pollution control	50
3.5.1) Joint water quality standards	0
3.5.2) Joint water pollution reduction programme	100
3.6) Basin disaster management	50
3.6.1) Joint alarm system	50
3.6.2) Joint mutual assistance system	50

4) INFRASTRUCTURE AND FINANCING	46
4.1) National level investment	51.1
4.1.1) Infrastructure quality	38.2
4.1.2) National water budget	50
4.1.3) National source of reveneue allocated to water development	100
4.1.4) Watershed protection funding	0
4.1.5) Sovereign debt risk	67.1
4.2) Private sector investment	31.5
4.2.1) Water-related PPP projects	23.1
4.2.2) Overall number of PPP projects	25.7
4.2.3) Currency risk	77
4.2.4) Green finance	0
4.3) Investment climate	72.6
4.3.1) Registering property (including land)	73.3
4.3.2) Getting Credit	65
4.3.3) Dealing with construction permits	84
4.3.4) Financial and regulatory risk	67.9
4.4) RBO operational financing	75
4.4.1) National River Basin Organisation (RBO) funding	100
4.4.2) Joint investment programmes	50
4.5) Basin infrastructure financing	0
4.5.1) Private sector investment	0
4.5.2) Innovative River Basin Organisation (RBO) funding	0

5) COOPERATION CONTEXT	64.5
5.1) Water stress	60.9
5.1.1) Water stress	96.3
5.1.2) Exposure to droughts and floods	46.9
5.1.3) Wastewater treatment	60.5
5.1.4) Change in open water bodies	39.9
5.2) Socio-economic exposure	65.6
5.2.1) Drinking water access	91.7
5.2.2) Exposure to agricultural water stress	81.7
5.2.3) Economic dependence on water resources	0
5.2.4) Prevalence of undernourishment	89.1
5.3) Political stability	66.8
5.3.1) Government effectiveness risk	51.3
5.3.2) Share of women in national parliaments	60.9
5.3.3) Social inclusion	76.4
5.3.4) Security Risk	78.6
5.4) Political relations with basin states	75.4
5.4.1) Military spending	59.4
5.4.2) Water-related conflicts	100
5.4.3) International tensions	66.7
5.5) Economic relations with basin states	54
5.5.1) Share of regional trade	12.1
5.5.2) Regional trade agreements	50
5.5.3) Regional freedom of movement	100

Slovenia



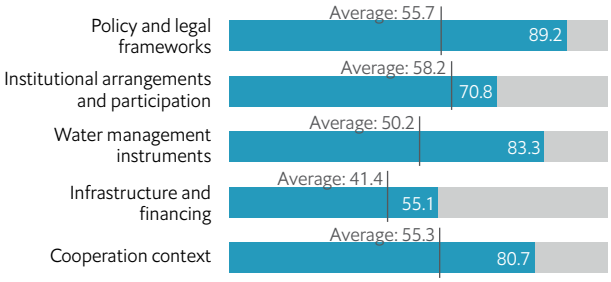


Table 1

Indicator	Value	Source
Population, total (in thousands)	2,066	World Bank
Population growth projection (%)	-6	UN DESA
Rural population (% of total population)	46	World Bank
GNI per capita, PPP (current international $)	33,980	World Bank
GDP (current US$) in billions	49	World Bank
Water stress (%)	6.1	FAO
Total renewable water resources per capita (m3/cap)	15,322	FAO

Source: The Economist Intelligence Unit

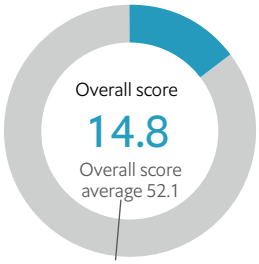
Table 2

OVERALL SCORE	**75.8**
1) POLICY AND LEGAL FRAMEWORKS	**89.2**
1.1) National water policy	66.7
1.1.1) National water law/policy	100
1.1.2) Integrated Water Resources Management (IWRM) principles	50
1.1.3) Transboundary impact provisions	50
1.2) National environmental policy	100
1.2.1) National wastewater discharge permitting system	100
1.2.2) Polluter pays principle	100
1.2.3) Transboundary Environmental Impact Assessment (EIA)	100
1.2.4) Environmental Impact Assessment (EIA) public consultations	100
1.3) International water conventions	100
1.3.1) International water conventions	100
1.4) Basin water policy framework	90
1.4.1) Transboundary water management (TBWM) agreement	100
1.4.2) Joint management plan	100
1.4.3) Water allocation mechanism	50
1.4.4) Transboundary water management (TBWM) sectoral scope	100
1.4.5) Dispute resolution mechanism	100
2) INSTITUTIONAL ARRANGEMENTS AND PARTICIPATION	**70.8**
2.1) National water agency	75
2.1.1) National water agency	100
2.1.2) National water capacity building	50
2.2) National stakeholder engagement	66.7
2.2.1) Inter-ministerial stakeholders engagement	0
2.2.2) Regional and local stakeholders engagement	100
2.2.3) Broader public stakeholders engagement	100
2.3) National data sharing	75
2.3.1) Inter-ministerial data sharing	50
2.3.2) National public data sharing	100
2.4) Basin level body	83.3
2.4.1) Joint river basin organisation (RBO) operational body	100
2.4.2) River basin organisation (RBO) secretariat	100
2.4.3) Joint water capacity building	50
2.5) Basin stakeholder engagement	50
2.5.1) Inter-governmental stakeholders engagement	50
2.5.2) Basin public stakeholders engagement	50
2.6) Basin data sharing	75
2.6.1) Inter-governmental data sharing	50
2.6.2) Public data sharing	100
3) WATER MANAGEMENT INSTRUMENTS	**83.3**
3.1) Water availability management	100
3.1.1) National water quantity monitoring	100
3.1.2) National water efficiency programme	100
3.2) Pollution control	100
3.2.1) National water quality monitoring	100
3.2.2) National water pollution reduction programme	100
3.3) National disaster management	75
3.3.1) National disaster risk management plan	100
3.3.2) National climate change adaptation strategy	50
3.4) Basin water availability management	75
3.4.1) Joint monitoring programme	50
3.4.2) Joint assessment programme	100
3.5) Basin pollution control	75
3.5.1) Joint water quality standards	50
3.5.2) Joint water pollution reduction programme	100
3.6) Basin disaster management	75
3.6.1) Joint alarm system	100
3.6.2) Joint mutual assistance system	50

4) INFRASTRUCTURE AND FINANCING	55.1
4.1) National level investment	88
4.1.1) Infrastructure quality	50
4.1.2) National water budget	100
4.1.3) National source of reveneue allocated to water development	100
4.1.4) Watershed protection funding	100
4.1.5) Sovereign debt risk	90
4.2) Private sector investment	43.1
4.2.1) Water-related PPP projects	11.5
4.2.2) Overall number of PPP projects	18.9
4.2.3) Currency risk	91.8
4.2.4) Green finance	50
4.3) Investment climate	69.4
4.3.1) Registering property (including land)	71.1
4.3.2) Getting Credit	45
4.3.3) Dealing with construction permits	65
4.3.4) Financial and regulatory risk	96.6
4.4) RBO operational financing	75
4.4.1) National River Basin Organisation (RBO) funding	100
4.4.2) Joint investment programmes	50
4.5) Basin infrastructure financing	0
4.5.1) Private sector investment	0
4.5.2) Innovative River Basin Organisation (RBO) funding	0

5) COOPERATION CONTEXT	80.7
5.1) Water stress	82.5
5.1.1) Water stress	94.7
5.1.2) Exposure to droughts and floods	95.6
5.1.3) Wastewater treatment	88.5
5.1.4) Change in open water bodies	51.3
5.2) Socio-economic exposure	78
5.2.1) Drinking water access	99.6
5.2.2) Exposure to agricultural water stress	87.4
5.2.3) Economic dependence on water resources	25
5.2.4) Prevalence of undernourishment	100
5.3) Political stability	78.1
5.3.1) Government effectiveness risk	86.3
5.3.2) Share of women in national parliaments	40
5.3.3) Social inclusion	86
5.3.4) Security Risk	100
5.4) Political relations with basin states	93.9
5.4.1) Military spending	81.8
5.4.2) Water-related conflicts	100
5.4.3) International tensions	100
5.5) Economic relations with basin states	70.8
5.5.1) Share of regional trade	12.3
5.5.2) Regional trade agreements	100
5.5.3) Regional freedom of movement	100

Syria



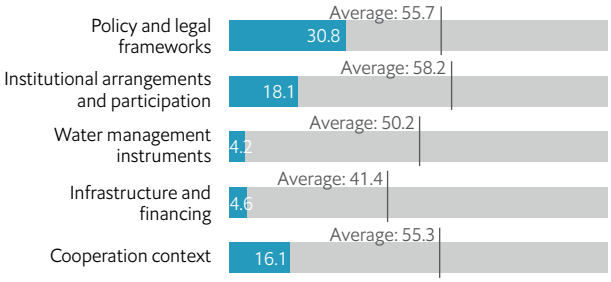


Table 1

Indicator	Value	Source
Population, total (in thousands)	18,270	World Bank
Population growth projection (%)	86	UN DESA
Rural population (% of total population)	47	World Bank
GNI per capita, PPP (current international $)	-	World Bank
GDP (current US$) in billions	40	World Bank
Water stress (%)	109.4	FAO
Total renewable water resources per capita (m3/cap)	920	FAO

Source: The Economist Intelligence Unit

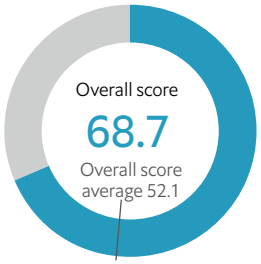
Table 2

OVERALL SCORE	**14.8**
1) POLICY AND LEGAL FRAMEWORKS	**30.8**
1.1) National water policy	16.7
1.1.1) National water law/policy	50
1.1.2) Integrated Water Resources Management (IWRM) principles	0
1.1.3) Transboundary impact provisions	0
1.2) National environmental policy	0
1.2.1) National wastewater discharge permitting system	0
1.2.2) Polluter pays principle	0
1.2.3) Transboundary Environmental Impact Assessment (EIA)	0
1.2.4) Environmental Impact Assessment (EIA) public consultations	0
1.3) International water conventions	100
1.3.1) International water conventions	100
1.4) Basin water policy framework	6.7
1.4.1) Transboundary water management (TBWM) agreement	33.3
1.4.2) Joint management plan	0
1.4.3) Water allocation mechanism	0
1.4.4) Transboundary water management (TBWM) sectoral scope	0
1.4.5) Dispute resolution mechanism	0
2) INSTITUTIONAL ARRANGEMENTS AND PARTICIPATION	**18.1**
2.1) National water agency	75
2.1.1) National water agency	100
2.1.2) National water capacity building	50
2.2) National stakeholder engagement	33.3
2.2.1) Inter-ministerial stakeholders engagement	50
2.2.2) Regional and local stakeholders engagement	50
2.2.3) Broader public stakeholders engagement	0
2.3) National data sharing	0
2.3.1) Inter-ministerial data sharing	0
2.3.2) National public data sharing	0
2.4) Basin level body	0
2.4.1) Joint river basin organisation (RBO) operational body	0
2.4.2) River basin organisation (RBO) secretariat	0
2.4.3) Joint water capacity building	0
2.5) Basin stakeholder engagement	0
2.5.1) Inter-governmental stakeholders engagement	0
2.5.2) Basin public stakeholders engagement	0
2.6) Basin data sharing	0
2.6.1) Inter-governmental data sharing	0
2.6.2) Public data sharing	0
3) WATER MANAGEMENT INSTRUMENTS	**4.2**
3.1) Water availability management	25
3.1.1) National water quantity monitoring	0
3.1.2) National water efficiency programme	50
3.2) Pollution control	0
3.2.1) National water quality monitoring	0
3.2.2) National water pollution reduction programme	0
3.3) National disaster management	0
3.3.1) National disaster risk management plan	0
3.3.2) National climate change adaptation strategy	0
3.4) Basin water availability management	0
3.4.1) Joint monitoring programme	0
3.4.2) Joint assessment programme	0
3.5) Basin pollution control	0
3.5.1) Joint water quality standards	0
3.5.2) Joint water pollution reduction programme	0
3.6) Basin disaster management	0
3.6.1) Joint alarm system	0
3.6.2) Joint mutual assistance system	0

4) INFRASTRUCTURE AND FINANCING	4.6
4.1) National level investment	6.5
4.1.1) Infrastructure quality	19.3
4.1.2) National water budget	0
4.1.3) National source of reveneue allocated to water development	0
4.1.4) Watershed protection funding	0
4.1.5) Sovereign debt risk	13.4
4.2) Private sector investment	8
4.2.1) Water-related PPP projects	0
4.2.2) Overall number of PPP projects	6.3
4.2.3) Currency risk	25.6
4.2.4) Green finance	0
4.3) Investment climate	8.6
4.3.1) Registering property (including land)	15.6
4.3.2) Getting Credit	15
4.3.3) Dealing with construction permits	0
4.3.4) Financial and regulatory risk	4
4.4) RBO operational financing	0
4.4.1) National River Basin Organisation (RBO) funding	0
4.4.2) Joint investment programmes	0
4.5) Basin infrastructure financing	0
4.5.1) Private sector investment	0
4.5.2) Innovative River Basin Organisation (RBO) funding	0

5) COOPERATION CONTEXT	16.1
5.1) Water stress	30.8
5.1.1) Water stress	0
5.1.2) Exposure to droughts and floods	49.5
5.1.3) Wastewater treatment	48
5.1.4) Change in open water bodies	25.8
5.2) Socio-economic exposure	32.7
5.2.1) Drinking water access	89.9
5.2.2) Exposure to agricultural water stress	15.9
5.2.3) Economic dependence on water resources	25
5.2.4) Prevalence of undernourishment	0
5.3) Political stability	7.3
5.3.1) Government effectiveness risk	3.8
5.3.2) Share of women in national parliaments	16.5
5.3.3) Social inclusion	5.2
5.3.4) Security Risk	3.6
5.4) Political relations with basin states	0
5.4.1) Military spending	0
5.4.2) Water-related conflicts	0
5.4.3) International tensions	0
5.5) Economic relations with basin states	9.8
5.5.1) Share of regional trade	29.4
5.5.2) Regional trade agreements	0
5.5.3) Regional freedom of movement	0

Thailand



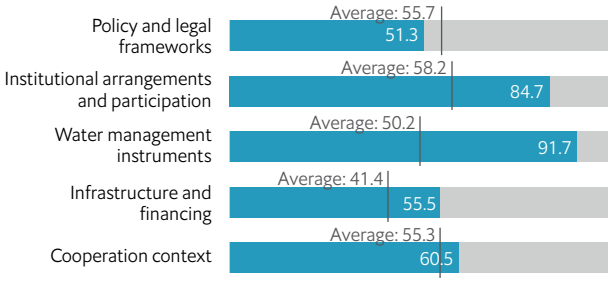


Table 1

Indicator	Value	Source
Population, total (in thousands)	69,038	World Bank
Population growth projection (%)	-5	UN DESA
Rural population (% of total population)	51	World Bank
GNI per capita, PPP (current international $)	17,040	World Bank
GDP (current US$) in billions	455	World Bank
Water stress (%)	84.2	FAO
Total renewable water resources per capita (m3/cap)	6,353	FAO

Source: The Economist Intelligence Unit

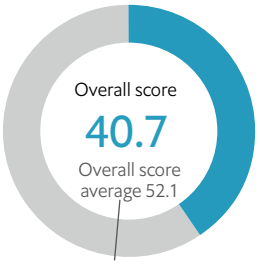
Table 2

OVERALL SCORE	**68.7**
1) POLICY AND LEGAL FRAMEWORKS	**51.3**
1.1) National water policy	50
1.1.1) National water law/policy	100
1.1.2) Integrated Water Resources Management (IWRM) principles	50
1.1.3) Transboundary impact provisions	0
1.2) National environmental policy	75
1.2.1) National wastewater discharge permitting system	100
1.2.2) Polluter pays principle	50
1.2.3) Transboundary Environmental Impact Assessment (EIA)	50
1.2.4) Environmental Impact Assessment (EIA) public consultations	100
1.3) International water conventions	0
1.3.1) International water conventions	0
1.4) Basin water policy framework	80
1.4.1) Transboundary water management (TBWM) agreement	100
1.4.2) Joint management plan	100
1.4.3) Water allocation mechanism	50
1.4.4) Transboundary water management (TBWM) sectoral scope	100
1.4.5) Dispute resolution mechanism	50
2) INSTITUTIONAL ARRANGEMENTS AND PARTICIPATION	**84.7**
2.1) National water agency	75
2.1.1) National water agency	100
2.1.2) National water capacity building	50
2.2) National stakeholder engagement	83.3
2.2.1) Inter-ministerial stakeholders engagement	100
2.2.2) Regional and local stakeholders engagement	100
2.2.3) Broader public stakeholders engagement	50
2.3) National data sharing	100
2.3.1) Inter-ministerial data sharing	100
2.3.2) National public data sharing	100
2.4) Basin level body	100
2.4.1) Joint river basin organisation (RBO) operational body	100
2.4.2) River basin organisation (RBO) secretariat	100
2.4.3) Joint water capacity building	100
2.5) Basin stakeholder engagement	75
2.5.1) Inter-governmental stakeholders engagement	100
2.5.2) Basin public stakeholders engagement	50
2.6) Basin data sharing	75
2.6.1) Inter-governmental data sharing	100
2.6.2) Public data sharing	50
3) WATER MANAGEMENT INSTRUMENTS	**91.7**
3.1) Water availability management	75
3.1.1) National water quantity monitoring	100
3.1.2) National water efficiency programme	50
3.2) Pollution control	100
3.2.1) National water quality monitoring	100
3.2.2) National water pollution reduction programme	100
3.3) National disaster management	75
3.3.1) National disaster risk management plan	50
3.3.2) National climate change adaptation strategy	100
3.4) Basin water availability management	100
3.4.1) Joint monitoring programme	100
3.4.2) Joint assessment programme	100
3.5) Basin pollution control	100
3.5.1) Joint water quality standards	100
3.5.2) Joint water pollution reduction programme	100
3.6) Basin disaster management	100
3.6.1) Joint alarm system	100
3.6.2) Joint mutual assistance system	100

4) INFRASTRUCTURE AND FINANCING	55.5
4.1) National level investment	54.9
4.1.1) Infrastructure quality	44.2
4.1.2) National water budget	100
4.1.3) National source of reveneue allocated to water development	0
4.1.4) Watershed protection funding	50
4.1.5) Sovereign debt risk	80.4
4.2) Private sector investment	50.8
4.2.1) Water-related PPP projects	35.2
4.2.2) Overall number of PPP projects	31.8
4.2.3) Currency risk	86.1
4.2.4) Green finance	50
4.3) Investment climate	71.9
4.3.1) Registering property (including land)	64.4
4.3.2) Getting Credit	70
4.3.3) Dealing with construction permits	72
4.3.4) Financial and regulatory risk	81.3
4.4) RBO operational financing	75
4.4.1) National River Basin Organisation (RBO) funding	100
4.4.2) Joint investment programmes	50
4.5) Basin infrastructure financing	25
4.5.1) Private sector investment	0
4.5.2) Innovative River Basin Organisation (RBO) funding	50

5) COOPERATION CONTEXT	60.5
5.1) Water stress	56.1
5.1.1) Water stress	84.2
5.1.2) Exposure to droughts and floods	29.6
5.1.3) Wastewater treatment	77.1
5.1.4) Change in open water bodies	33.6
5.2) Socio-economic exposure	68.9
5.2.1) Drinking water access	96
5.2.2) Exposure to agricultural water stress	77.6
5.2.3) Economic dependence on water resources	25
5.2.4) Prevalence of undernourishment	77.2
5.3) Political stability	42.5
5.3.1) Government effectiveness risk	55
5.3.2) Share of women in national parliaments	0
5.3.3) Social inclusion	59.2
5.3.4) Security Risk	56
5.4) Political relations with basin states	79.4
5.4.1) Military spending	71.6
5.4.2) Water-related conflicts	100
5.4.3) International tensions	66.7
5.5) Economic relations with basin states	55.7
5.5.1) Share of regional trade	27.1
5.5.2) Regional trade agreements	100
5.5.3) Regional freedom of movement	40

Turkey



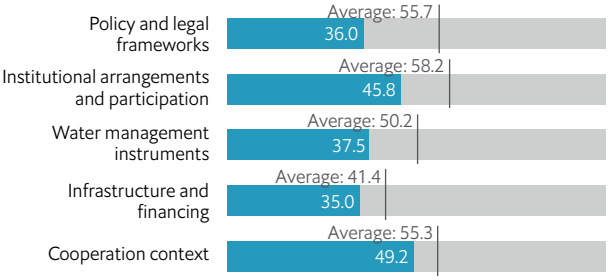


Table 1

Indicator	Value	Source
Population, total (in thousands)	80,745	World Bank
Population growth projection (%)	18	UN DESA
Rural population (% of total population)	25	World Bank
GNI per capita, PPP (current international $)	26,170	World Bank
GDP (current US$) in billions	852	World Bank
Water stress (%)	27.5	FAO
Total renewable water resources per capita (m3/cap)	2,621	FAO

Source: The Economist Intelligence Unit

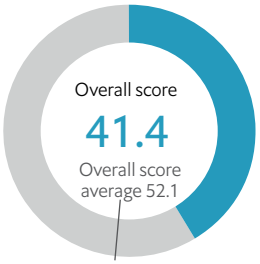
Table 2

OVERALL SCORE	**40.7**
1) POLICY AND LEGAL FRAMEWORKS	**36**
1.1) National water policy	50
1.1.1) National water law/policy	50
1.1.2) Integrated Water Resources Management (IWRM) principles	100
1.1.3) Transboundary impact provisions	0
1.2) National environmental policy	87.5
1.2.1) National wastewater discharge permitting system	100
1.2.2) Polluter pays principle	100
1.2.3) Transboundary Environmental Impact Assessment (EIA)	50
1.2.4) Environmental Impact Assessment (EIA) public consultations	100
1.3) International water conventions	0
1.3.1) International water conventions	0
1.4) Basin water policy framework	6.7
1.4.1) Transboundary water management (TBWM) agreement	33.3
1.4.2) Joint management plan	0
1.4.3) Water allocation mechanism	0
1.4.4) Transboundary water management (TBWM) sectoral scope	0
1.4.5) Dispute resolution mechanism	0
2) INSTITUTIONAL ARRANGEMENTS AND PARTICIPATION	**45.8**
2.1) National water agency	100
2.1.1) National water agency	100
2.1.2) National water capacity building	100
2.2) National stakeholder engagement	83.3
2.2.1) Inter-ministerial stakeholders engagement	100
2.2.2) Regional and local stakeholders engagement	100
2.2.3) Broader public stakeholders engagement	50
2.3) National data sharing	75
2.3.1) Inter-ministerial data sharing	50
2.3.2) National public data sharing	100
2.4) Basin level body	16.7
2.4.1) Joint river basin organisation (RBO) operational body	0
2.4.2) River basin organisation (RBO) secretariat	0
2.4.3) Joint water capacity building	50
2.5) Basin stakeholder engagement	0
2.5.1) Inter-governmental stakeholders engagement	0
2.5.2) Basin public stakeholders engagement	0
2.6) Basin data sharing	0
2.6.1) Inter-governmental data sharing	0
2.6.2) Public data sharing	0
3) WATER MANAGEMENT INSTRUMENTS	**37.5**
3.1) Water availability management	75
3.1.1) National water quantity monitoring	100
3.1.2) National water efficiency programme	50
3.2) Pollution control	75
3.2.1) National water quality monitoring	50
3.2.2) National water pollution reduction programme	100
3.3) National disaster management	75
3.3.1) National disaster risk management plan	50
3.3.2) National climate change adaptation strategy	100
3.4) Basin water availability management	0
3.4.1) Joint monitoring programme	0
3.4.2) Joint assessment programme	0
3.5) Basin pollution control	0
3.5.1) Joint water quality standards	0
3.5.2) Joint water pollution reduction programme	0
3.6) Basin disaster management	0
3.6.1) Joint alarm system	0
3.6.2) Joint mutual assistance system	0

4) INFRASTRUCTURE AND FINANCING	35
4.1) National level investment	63.4
4.1.1) Infrastructure quality	57.5
4.1.2) National water budget	100
4.1.3) National source of reveneue allocated to water development	100
4.1.4) Watershed protection funding	0
4.1.5) Sovereign debt risk	59.6
4.2) Private sector investment	32.8
4.2.1) Water-related PPP projects	0
4.2.2) Overall number of PPP projects	66.7
4.2.3) Currency risk	64.5
4.2.4) Green finance	0
4.3) Investment climate	78.5
4.3.1) Registering property (including land)	82.2
4.3.2) Getting Credit	75
4.3.3) Dealing with construction permits	73
4.3.4) Financial and regulatory risk	83.9
4.4) RBO operational financing	0
4.4.1) National River Basin Organisation (RBO) funding	0
4.4.2) Joint investment programmes	0
4.5) Basin infrastructure financing	0
4.5.1) Private sector investment	0
4.5.2) Innovative River Basin Organisation (RBO) funding	0

5) COOPERATION CONTEXT	49.2
5.1) Water stress	72.8
5.1.1) Water stress	75.1
5.1.2) Exposure to droughts and floods	74.4
5.1.3) Wastewater treatment	92.2
5.1.4) Change in open water bodies	49.6
5.2) Socio-economic exposure	73.5
5.2.1) Drinking water access	100
5.2.2) Exposure to agricultural water stress	69.1
5.2.3) Economic dependence on water resources	25
5.2.4) Prevalence of undernourishment	100
5.3) Political stability	39
5.3.1) Government effectiveness risk	46.3
5.3.2) Share of women in national parliaments	25.3
5.3.3) Social inclusion	35.7
5.3.4) Security Risk	48.8
5.4) Political relations with basin states	47.3
5.4.1) Military spending	58.5
5.4.2) Water-related conflicts	66.7
5.4.3) International tensions	16.7
5.5) Economic relations with basin states	13.2
5.5.1) Share of regional trade	6.2
5.5.2) Regional trade agreements	0
5.5.3) Regional freedom of movement	33.3

Venezuela



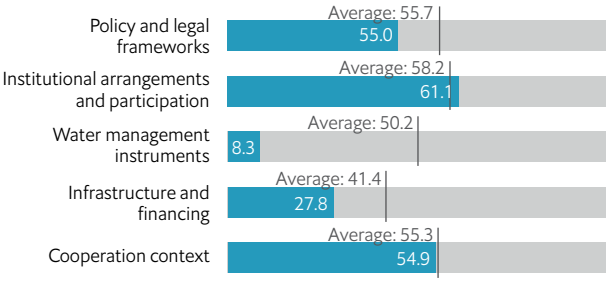


Table 1

Indicator	Value	Source
Population, total (in thousands)	31,977	World Bank
Population growth projection (%)	30	UN DESA
Rural population (% of total population)	12	World Bank
GNI per capita, PPP (current international $)	17,440	World Bank
GDP (current US$) in billions	482	World Bank
Water stress (%)	97.9	FAO
Total renewable water resources per capita (m3/cap)	41,436	FAO

Source: The Economist Intelligence Unit

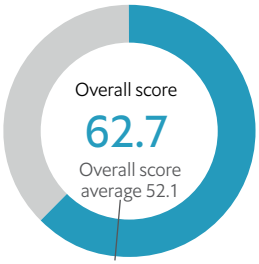
Table 2

OVERALL SCORE	41.4
1) POLICY AND LEGAL FRAMEWORKS	**55**
1.1) National water policy	50
1.1.1) National water law/policy	50
1.1.2) Integrated Water Resources Management (IWRM) principles	100
1.1.3) Transboundary impact provisions	0
1.2) National environmental policy	50
1.2.1) National wastewater discharge permitting system	50
1.2.2) Polluter pays principle	50
1.2.3) Transboundary Environmental Impact Assessment (EIA)	50
1.2.4) Environmental Impact Assessment (EIA) public consultations	50
1.3) International water conventions	50
1.3.1) International water conventions	50
1.4) Basin water policy framework	70
1.4.1) Transboundary water management (TBWM) agreement	100
1.4.2) Joint management plan	100
1.4.3) Water allocation mechanism	0
1.4.4) Transboundary water management (TBWM) sectoral scope	100
1.4.5) Dispute resolution mechanism	50
2) INSTITUTIONAL ARRANGEMENTS AND PARTICIPATION	**61.1**
2.1) National water agency	100
2.1.1) National water agency	100
2.1.2) National water capacity building	100
2.2) National stakeholder engagement	83.3
2.2.1) Inter-ministerial stakeholders engagement	100
2.2.2) Regional and local stakeholders engagement	100
2.2.3) Broader public stakeholders engagement	50
2.3) National data sharing	25
2.3.1) Inter-ministerial data sharing	0
2.3.2) National public data sharing	50
2.4) Basin level body	83.3
2.4.1) Joint river basin organisation (RBO) operational body	100
2.4.2) River basin organisation (RBO) secretariat	100
2.4.3) Joint water capacity building	50
2.5) Basin stakeholder engagement	75
2.5.1) Inter-governmental stakeholders engagement	100
2.5.2) Basin public stakeholders engagement	50
2.6) Basin data sharing	0
2.6.1) Inter-governmental data sharing	0
2.6.2) Public data sharing	0
3) WATER MANAGEMENT INSTRUMENTS	**8.3**
3.1) Water availability management	25
3.1.1) National water quantity monitoring	50
3.1.2) National water efficiency programme	0
3.2) Pollution control	0
3.2.1) National water quality monitoring	0
3.2.2) National water pollution reduction programme	0
3.3) National disaster management	0
3.3.1) National disaster risk management plan	0
3.3.2) National climate change adaptation strategy	0
3.4) Basin water availability management	25
3.4.1) Joint monitoring programme	0
3.4.2) Joint assessment programme	50
3.5) Basin pollution control	0
3.5.1) Joint water quality standards	0
3.5.2) Joint water pollution reduction programme	0
3.6) Basin disaster management	0
3.6.1) Joint alarm system	0
3.6.2) Joint mutual assistance system	0

4) INFRASTRUCTURE AND FINANCING	27.8
4.1) National level investment	47.5
4.1.1) Infrastructure quality	67.9
4.1.2) National water budget	50
4.1.3) National source of reveneue allocated to water development	50
4.1.4) Watershed protection funding	50
4.1.5) Sovereign debt risk	19.6
4.2) Private sector investment	7.8
4.2.1) Water-related PPP projects	10.4
4.2.2) Overall number of PPP projects	0
4.2.3) Currency risk	20.8
4.2.4) Green finance	0
4.3) Investment climate	33.7
4.3.1) Registering property (including land)	26.7
4.3.2) Getting Credit	40
4.3.3) Dealing with construction permits	57
4.3.4) Financial and regulatory risk	11
4.4) RBO operational financing	50
4.4.1) National River Basin Organisation (RBO) funding	100
4.4.2) Joint investment programmes	0
4.5) Basin infrastructure financing	0
4.5.1) Private sector investment	0
4.5.2) Innovative River Basin Organisation (RBO) funding	0

5) COOPERATION CONTEXT	54.9
5.1) Water stress	76.7
5.1.1) Water stress	97.9
5.1.2) Exposure to droughts and floods	83.5
5.1.3) Wastewater treatment	80.7
5.1.4) Change in open water bodies	44.5
5.2) Socio-economic exposure	84.8
5.2.1) Drinking water access	75.7
5.2.2) Exposure to agricultural water stress	95.8
5.2.3) Economic dependence on water resources	100
5.2.4) Prevalence of undernourishment	67.7
5.3) Political stability	28.7
5.3.1) Government effectiveness risk	7.5
5.3.2) Share of women in national parliaments	35.4
5.3.3) Social inclusion	52.9
5.3.4) Security Risk	19
5.4) Political relations with basin states	49.9
5.4.1) Military spending	83
5.4.2) Water-related conflicts	66.7
5.4.3) International tensions	0
5.5) Economic relations with basin states	34.5
5.5.1) Share of regional trade	3.6
5.5.2) Regional trade agreements	0
5.5.3) Regional freedom of movement	100

Vietnam



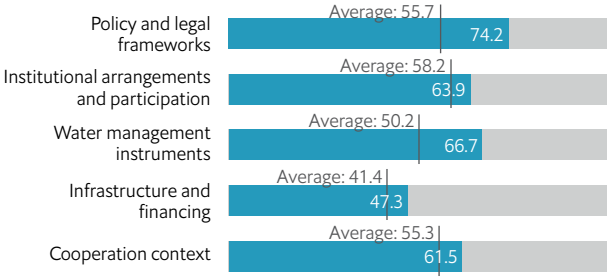


Table 1

Indicator	Value	Source
Population, total (in thousands)	95,541	World Bank
Population growth projection (%)	20	UN DESA
Rural population (% of total population)	65	World Bank
GNI per capita, PPP (current international $)	6,450	World Bank
GDP (current US$) in billions	224	World Bank
Water stress (%)	88.5	FAO
Total renewable water resources per capita (m3/cap)	9,254	FAO

Source: The Economist Intelligence Unit

Table 2

OVERALL SCORE	**62.7**
1) POLICY AND LEGAL FRAMEWORKS	**74.2**
1.1) National water policy	66.7
1.1.1) National water law/policy	100
1.1.2) Integrated Water Resources Management (IWRM) principles	50
1.1.3) Transboundary impact provisions	50
1.2) National environmental policy	50
1.2.1) National wastewater discharge permitting system	50
1.2.2) Polluter pays principle	50
1.2.3) Transboundary Environmental Impact Assessment (EIA)	50
1.2.4) Environmental Impact Assessment (EIA) public consultations	50
1.3) International water conventions	100
1.3.1) International water conventions	100
1.4) Basin water policy framework	80
1.4.1) Transboundary water management (TBWM) agreement	100
1.4.2) Joint management plan	100
1.4.3) Water allocation mechanism	50
1.4.4) Transboundary water management (TBWM) sectoral scope	100
1.4.5) Dispute resolution mechanism	50
2) INSTITUTIONAL ARRANGEMENTS AND PARTICIPATION	**63.9**
2.1) National water agency	50
2.1.1) National water agency	50
2.1.2) National water capacity building	50
2.2) National stakeholder engagement	33.3
2.2.1) Inter-ministerial stakeholders engagement	50
2.2.2) Regional and local stakeholders engagement	50
2.2.3) Broader public stakeholders engagement	0
2.3) National data sharing	50
2.3.1) Inter-ministerial data sharing	50
2.3.2) National public data sharing	50
2.4) Basin level body	100
2.4.1) Joint river basin organisation (RBO) operational body	100
2.4.2) River basin organisation (RBO) secretariat	100
2.4.3) Joint water capacity building	100
2.5) Basin stakeholder engagement	75
2.5.1) Inter-governmental stakeholders engagement	100
2.5.2) Basin public stakeholders engagement	50
2.6) Basin data sharing	75
2.6.1) Inter-governmental data sharing	100
2.6.2) Public data sharing	50
3) WATER MANAGEMENT INSTRUMENTS	**66.7**
3.1) Water availability management	50
3.1.1) National water quantity monitoring	50
3.1.2) National water efficiency programme	50
3.2) Pollution control	0
3.2.1) National water quality monitoring	0
3.2.2) National water pollution reduction programme	0
3.3) National disaster management	50
3.3.1) National disaster risk management plan	50
3.3.2) National climate change adaptation strategy	50
3.4) Basin water availability management	100
3.4.1) Joint monitoring programme	100
3.4.2) Joint assessment programme	100
3.5) Basin pollution control	100
3.5.1) Joint water quality standards	100
3.5.2) Joint water pollution reduction programme	100
3.6) Basin disaster management	100
3.6.1) Joint alarm system	100
3.6.2) Joint mutual assistance system	100

4) INFRASTRUCTURE AND FINANCING	47.3
4.1) National level investment	27.4
4.1.1) Infrastructure quality	28
4.1.2) National water budget	0
4.1.3) National source of reveneue allocated to water development	0
4.1.4) Watershed protection funding	50
4.1.5) Sovereign debt risk	58.8
4.2) Private sector investment	38.1
4.2.1) Water-related PPP projects	6.8
4.2.2) Overall number of PPP projects	22.3
4.2.3) Currency risk	73.1
4.2.4) Green finance	50
4.3) Investment climate	71.2
4.3.1) Registering property (including land)	68.9
4.3.2) Getting Credit	75
4.3.3) Dealing with construction permits	79
4.3.4) Financial and regulatory risk	62
4.4) RBO operational financing	75
4.4.1) National River Basin Organisation (RBO) funding	100
4.4.2) Joint investment programmes	50
4.5) Basin infrastructure financing	25
4.5.1) Private sector investment	0
4.5.2) Innovative River Basin Organisation (RBO) funding	50

5) COOPERATION CONTEXT	61.5
5.1) Water stress	54.8
5.1.1) Water stress	88.5
5.1.2) Exposure to droughts and floods	32.9
5.1.3) Wastewater treatment	33.1
5.1.4) Change in open water bodies	64.5
5.2) Socio-economic exposure	68.4
5.2.1) Drinking water access	83.8
5.2.2) Exposure to agricultural water stress	69.1
5.2.3) Economic dependence on water resources	50
5.2.4) Prevalence of undernourishment	70.9
5.3) Political stability	48.1
5.3.1) Government effectiveness risk	38.8
5.3.2) Share of women in national parliaments	44.8
5.3.3) Social inclusion	30.3
5.3.4) Security Risk	78.6
5.4) Political relations with basin states	72.6
5.4.1) Military spending	51
5.4.2) Water-related conflicts	100
5.4.3) International tensions	66.7
5.5) Economic relations with basin states	63.6
5.5.1) Share of regional trade	30.8
5.5.2) Regional trade agreements	100
5.5.3) Regional freedom of movement	60

Endnotes

[1] An aquifer is a saturated soil or rock layer with spaces that allow water to move through it. When saturated they can store significant quantities of groundwater (water found below the water table). Groundwater represents about 30% of the world's fresh water resources. International Ground Water Assessment Centre. https://www.un-igrac.org/what-groundwater

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LONDON
20 Cabot Square
London
E14 4QW
United Kingdom
Tel: +44 (0) 20 7576 8181
Email: london@eiu.com

NEW YORK
750 Third Avenue
5th Floor
New York, NY 10017
United States
Tel: + 1 212 698 9717
Email: americas@eiu.com

HONG KONG
1301 Cityplaza Four
12 Taikoo Wan Road
Taikoo Shing
Hong Kong
Tel: + 852 2802 7288
Email: asia@eiu.com