The Economist INTELLIGENCE UNIT | PUBLIC POLICY

The Blue Peace Index 2019
Methodology Note

A report by The Economist Intelligence Unit

Sponsored by

Schweizerische Eidgenossenschaft
Confédération suisse
Confederazione Svizzera
Confederaziun svizra

Contents

© The Economist Intelligence Unit Limited 2019

Research and Framework Development

- **Literature review:** The initial step in the development of the methodology was a literature review, carried out by researchers at The Economist Intelligence Unit (EIU) across policy documents, academic literature and other studies on transboundary water management and collaboration. The aim was to identify existing frameworks, indicators and data sources on key aspects of sustainable management of transboundary water sources, which could be used in the development of this new benchmarking tool.
- **Preliminary framework development:** An initial framework was developed on the basis of the literature review and expert interviews. The EIU then hosted an in-person day-long workshop with 9 global experts, and conducted 11 additional interviews with experts from the private and public sectors, academia and international institutions, to review the preliminary framework and to assist with identifying additional indicators.
- Further to expert recommendations, the EIU performed **additional rounds of verification** to establish the best possible metrics, such as data audits, literature searches and data analysis.

Research question

The Blue Peace Index examines countries' regulatory and institutional landscapes, as well as environmental and political outcomes to be able to answer the following question:

To what extent are countries/basins managing their shared water resources in a sustainable, equitable and collaborative manner?

Key definitions:

- **Sustainable** refers to balancing economic, social and environmental values in the use of natural resources and taking into account the natural and environmental characteristics and capacity of international water courses.
- **Equitable** refers to reflecting the economic and social needs of riparian actors to achieve the maximum benefit for all with a minimum of detriment to each. This does not necessarily mean an equal portion of the resource or equal share of uses and benefits.
- **Collaborative/participatory** refers to the need to involve users, planners and policymakers at all levels in the management and development of the shared water resources through transparent and deliberative decision-making processes.

© The Economist Intelligence Unit Limited 2019

Index Domains and Focus Areas

The Blue Peace Index framework focuses on five domains:

1. Policy and legal frameworks

National and basin-level policies, laws and regulations are essential for establishing an enabling environment that is conducive for sustainable and equitable management of water resources. This is particularly important for management of resources in an integrated and coordinated way. Integrated water resource management (IWRM) takes into account the different water sources, as well as their various users, with the aim of maximising positive social, economic and environmental benefits. IWRM requires a shared common platform that, in turn, usually requires supporting a legal or regulatory framework. Coordinated management of shared water resources, in particular, requires not only a robust transboundary framework, but also an alignment with national and sub-national policies and regulations. This domain assesses the extent to which countries have been able to develop robust, yet flexible, legislative and regulatory frameworks at national as well as basin level. It examines water laws and developed integrated approaches for the development, management and use of shared water resources.

2. Institutional arrangements and participation

In order to manage water effectively and sustainably at the national and basin level, there is a need to establish underlying political, social, economic and administrative institutions to deliver this cooperation. This requires all stakeholders of the common water resource to cooperate jointly in managing, protecting, and developing the shared resources. To coordinate the various actors and interests, stakeholder engagement and public participation are key at the local and river basin levels. Activities such as information and data sharing and capacity building play an important role in connecting pivotal actors. They also help to reinforce and complement existing frameworks, initiatives and expertise to coordinate and execute political action. This domain analyses the level to which countries have been able to develop appropriate institutional arrangements for cross-sector coordination, capacity building, information sharing, and stakeholder engagement.

3. Water management instruments

Water management instruments are national or basin-level tools that coordinate and integrate the management of shared water resources. They can cover aspects such as water allocation and water pollution, as well as management of extreme events such as floods and droughts. These mechanisms are essential for harmonised and responsive decision-making, but also contribute to the development of broader shared vision and trust among riparian actors. This domain assesses the extent to which countries and basins have been able to develop and implement these management mechanisms and methods to put water policies and laws into practice.

© The Economist Intelligence Unit Limited 2019

4. Infrastructure and financing

The effective development and management of shared water resources requires appropriate and sustainable financing. This needs to be sourced both from government spending and with contributions from the private sector. Where finance availability is constrained at the macroeconomic level, basins need to be able to meet the necessary requirements to attract donor or international institutional support. This domain assesses how comprehensively and sustainably investment in water management is conducted at a national and international level, incorporating consideration of: dedicated government spending on water, the general environment for financing infrastructure projects, and how far innovative measures for finance are being made available.

5. Cooperation context

In addition to all of the policy, regulatory and institutional tools outlined above, sustainable management of shared water resources is inherently related to a country's or basin's broader socio-economic, physical, geographic and political realities. To account for this context, this domain considers the major drivers and risk factors relating to peace within the chosen environments, such as water stress, exposure to natural disasters, political instability, and economic cooperation and vulnerabilities. However, the indicators are selected to capture some degree of "agency" that countries can exercise, excluding purely hydrological and geographical indicators that countries cannot influence. The indicators are split across five domains. In this way the index aims to provide a comprehensive view on the status of peace as an essential part of sustainable management of shared resources in the featured countries and basins.

© The Economist Intelligence Unit Limited 2019

Indicator List

#	Indicator name	Indicator question	Scoring	Source
1.1	National water policy			
1.1.1	National water law/ policy	Does the country have a national water resources law or policy?	2 - Yes, the national water law or policy exists, and it is fully in force, fully implemented and has been updated in the last ten years 1 - Partially, the national water law or policy exists, but is either not fully in force, not being fully implemented or has not been updated in the last ten years 0 - No national water law or policy exists	EIU research
1.1.2	Integrated Water Resources Management (IWRM) principles	Does the national water resources law or policy refer to the principles of Integrated Water Resources Management (IWRM)?	2 - Yes, the national water law or policy exists and includes IWRM principles comprehensively OR there is a separate IWRM policy in the country 1 - Partially, the national water law or policy exists but includes only some principles of IWRM 0 - No, the national water resources law or policy does not include principles of IWRM	EIU research
1.1.3	Transboundary impact provisions	Does the national water resources law or policy refer to measures to prevent, control or reduce any transboundary impact?	2 - Yes, the national water law or policy refers to measures to prevent, control and reduce transboundary-level impact, and these measures are described comprehensively 1 - Partially, the national water law or policy refers to measures to prevent, control and reduce transboundary-level impact, but these measures are not described comprehensively 0 - No, the national water law or policy does not include reference to transboundary-level impacts	EIU research
1.2	National environmental policy			
1.2.1	National wastewater discharge permitting system	Does the country have a national licensing or permitting system for wastewater discharges (e.g. in industry, mining, energy, municipal, wastewater management)?	2 - Yes, for multiple sectors 1 - Partially, for some sectors 0 - No	EIU research
1.2.2	Polluter pays principle	Does the national legislation or policy apply the polluter pays principle?	2 - Yes, there is a comprehensive polluter pays principle outlined in the national legislation or policy and it is fully adopted or implemented 1 - Partially, the polluter pays principle is outlined in the national legislation or policy, but it is not fully adopted or implemented 0 - No, national legislation or policy does not apply the polluter pays principle	EIU research
1.2.3	Transboundary Environmental Impact Assessment (EIA)	Does the country require Environmental Impact Assessment (EIA) to be conducted for transboundary-level projects?	2 - Yes, EIA is required for transboundary-level projects and procedures to conduct it are described in detail in the national legislation or policy 1 - Partially, EIA is required for transboundary-level projects, but the procedures to conduct it are not described in detail in the national legislation or policy 0 - No, EIA is not required for transboundary-level projects	EIU research

© The Economist Intelligence Unit Limited 2019

1.2.4	Environmental Impact Assessment (EIA) public consultations	Does the Environmental Impact Assessment (EIA) require public consultations?	2 - Yes, EIA requires public consultation to be conducted for all projects 1 - Partially, EIA requires public consultation only for some projects 0 - No, public consultations are not required in the EIA process	EIU research
1.3	**International water conventions**			
1.3.1	International water conventions	Has the country ratified any of the following international or regional water conventions?	2 - Yes, the country has ratified one of the global UN conventions 1 - Partially, the country has ratified only a regional convention 0 - No, the country has not ratified any international or regional water conventions (i) 1992 Convention on the Protection and Use of TBW and International Lakes (Water Convention) (ii) 1997 Convention on the Law of the Non-navigational Uses of International Watercourses (iii) Regional water convention (e.g. Convention for the prevention of conflicts related to the management of shared water resources in Central Africa)	EIU research
1.4	**Basin water policy framework**			
1.4.1	Transboundary water management (TBWM) agreement	Does the country have any formal transboundary water management (TBWM) agreement with the basin states?	3 - Yes, the country is a full member of a multilateral TBWM agreement pertaining to the basin 2 - Partially, the country has bilateral TBWM agreements with multiple countries in the basin OR the country is not a signatory of the multilateral agreement but has observer status 1 - Partially, the country has a bilateral agreement with only one country in the basin 0 - No, the country does not have formal agreements with any country in the basin	EIU research
1.4.2	Joint management plan	Is there a joint or coordinated management plan or strategy being developed by the joint body specifically on the transboundary waters subject to cooperation?	2 - Yes, there is a management plan developed by the joint body (River Basin Organisation, RBO) and the country is a full member of the RBO 1 - Partially - for example, the country has a separate bilateral agreement such as MoUs with the RBO which covers some parts of the plan 0 - No, there is no management plan OR there is no formal collaboration	EIU research
1.4.3	Water allocation mechanism	Does the agreement/management plan outline methods of water sharing/water allocation?	2 - Yes, there is a management plan developed by the joint body (RBO) which covers water sharing/water allocation and the country is a full member of the RBO 1 - Partially - for example, the country has a separate bilateral agreement such as MoUs with the RBO which covers aspects of water sharing/water allocation 0 - No, there is no management plan OR there is no formal collaboration on water sharing/water allocation	EIU research

© The Economist Intelligence Unit Limited 2019

1.4.4	Transboundary water management (TBWM) sectoral scope	Does the sectoral scope of the agreement/management plan cover multiple sectors?	2 - Yes, there is a management plan developed by the joint body which covers multiple sectors and the country is a full member of the joint body 1 - Partially - for example, the country has a bilateral agreement such as MoUs with the joint body which covers only limited sectors 0 - No, there is no management plan or there is no formal collaboration	EIU research
1.4.5	Dispute resolution mechanism	Does the agreement/management plan outline a dispute resolution mechanism?	2 - Yes, there is a management plan developed by the joint body (RBO) which covers dispute resolution mechanisms and the country is a full member of the RBO 1 - Partially - for example, the country has a bilateral agreement such as MoUs with the RBO which covers aspects of dispute settlements 0 - No, there is no management plan OR there is no formal collaboration on dispute settlements	EIU research
2	**Institutional arrangements and participation**			
2.1	National water agency			
2.1.1	National water agency	Is there a dedicated ministry or central agency responsible for water resources management in the country?	2 - Yes, such an agency exists in the country and it includes sustainable and efficient water use management in its mandate 1 - Partially, such an agency exists in the country but does not include sustainable and efficient water use management in its mandate 0 - No such agency exists in the country	EIU research
2.1.2	National water capacity building	Does the agency run any capacity-building programmes aimed at developing water management capabilities in the country?	2 - Yes, the agency runs comprehensive capacity development programmes across the country as well as with different stakeholders 1 - Partially, the agency has some capacity-development initiatives, but these are ad hoc or are limited geographically 0 - No, the agency does not run any capacity-building programmes	EIU research
2.2	National stakeholder engagement			
2.2.1	Inter-ministerial stakeholder engagement	Is there a platform of coordination among national government authorities responsible for water resources, policy, planning and management?	2 - Yes, such a platform exists for consultation with other ministries on water 1- Partially, such a platform exists for consultation with other ministries but is not specific to water 0 - No such platform for consultation exists	EIU research
2.2.2	Regional and local stakeholders engagement	Is there a platform for local stakeholders to take part in relevant water policy, planning and management at the national level?	2 - Yes, such a platform exists for consultation with many local stakeholders 1 - Partially, such a platform exists for consultation with only limited local stakeholders 0 - No such platform for consultation exists	EIU research
2.2.3	Broader public stakeholders engagement	Is there a platform that enables the private sector and all social groups (including women and marginalised societies) to be involved in decision-making regarding water resources management and use?	2 - Yes, such a platform exists for consultation with both private sector and marginalised groups (including women) 1 - Partially, such a platform exists for consultation with either one of them 0 - No such platform for consultation exists	EIU research

© The Economist Intelligence Unit Limited 2019

2.3	National data sharing			
2.3.1	Inter-ministerial data sharing	Does the national-level body share water-related data with other relevant bodies (other ministries)?	2 - Yes, there are mechanisms to share data with other ministries 1 - Partially, there are some data-sharing mechanisms, but these operate on an ad hoc basis 0 - No such data-sharing mechanism exists	EIU research
2.3.2	National public data sharing	Are there mechanisms to share data at the local level as well as with the broader public?	2 - Yes, there is a permanent database or regular reports on data that are published and updated regularly and are publicly available 1 - Partially, there are publicly available reports on data, but these are published on an ad hoc basis 0 - No such data-sharing mechanism exists	EIU research
2.4	Basin-level body			
2.4.1	Joint River Basin Organisation (RBO) operational body	Is the country a member of a joint operational body formed from a transboundary water management (TBWM) agreement with the basin states?	2 - Yes, there is a joint operational body in place and the country is a full member 1 - Partially - for example, there is a joint operational body in place but the country is either its observer or a dialogue partner 0 - No, there is no formal joint operational body	EIU research
2.4.2	River Basin Organisation (RBO) secretariat	Is the country a member of a permanent secretariat?	2 - Yes, there is a centralised permanent secretariat in place and the country is a full member of it 1 - Partially - for example, there is a centralised permanent secretariat in place but the country has only observer status, OR there is no centralised permanent secretariat but each country has its own secretariat 0 - No, there is no permanent secretariat	EIU research
2.4.3	Joint water capacity building	Are there any joint capacity-building practices run by the operational joint body?	2 - Yes, there are joint capacity-building exercises run by the joint body such as RBO and the country participates extensively in them 1 - Partially - for example, the country participates only at some level of capacity-building exercises run by the RBO 0 - No, there are no capacity-building exercises run by the RBO	EIU research
2.5	Basin stakeholder engagement			
2.5.1	Inter-governmental stakeholder engagement	Is there any organisational structure by the joint body for regular engagement among basin states at ministerial (or above) level?	2 - Yes, such a platform for consultation among basin states exists in the joint body and the country is a full member of it 1 - Partially, such a platform for consultation among basin states exists in the joint body but the country has only observer status 0 - No such platform for consultation exists	EIU research
2.5.2	Basin public stakeholder engagement	Is there any organisational structure by the joint body to engage different stakeholders?	2 - Yes, a platform for consultation with different stakeholders exists in the joint body and the country is a full member 1 - Partially - for example, no such platform for consultation exists in the joint body but some stakeholders have observer status OR there is an ad hoc consultation with the local stakeholders 0 - No such platform for consultation exists	EIU research

© The Economist Intelligence Unit Limited 2019

2.6	Basin data sharing			
2.6.1	Inter-governmental data sharing	Is there any shared database or platform in place for basin states to exchange data on areas such as environmental conditions, research activities, and the application of best available techniques or emission-monitoring data?	2 - Yes, there is a shared platform developed by the joint body for the exchange of data on these areas and the country is a full member 1 - Partially - for example, there is a shared platform for the exchange of data and the country is not a permanent member but shares data on the basis of a bilateral agreement with the joint body 0 - No, there is no formal data exchange platform	EIU research
2.6.2	Public data sharing	Is the shared database or platform in place for basin states publicly available?	2 - Yes, there is a publicly available shared database developed by the joint body and the country is a full member 1 - Partially - for example, only limited data is publicly available on the shared database OR only limited data on the country is available on the database 0 - No, there is no formal data exchange platform	EIU research
3	**Water management instruments**			
3.1	National water availability management			
3.1.1	National water quantity monitoring	Is there a system for national monitoring of water availability?	2 - Yes, there is a regular monitoring programme of water availability and results are publicly available 1 - Partially, there is a monitoring programme of water availability, but it is not regular, or the results are not publicly available 0 - No, there is no system for national monitoring of water availability	EIU research
3.1.2	National water efficiency programme	Has the government implemented any programme to enhance water use efficiency?	2 - Yes, for multiple sectors 1 - Partially, for some sectors 0 - No, there are no programmes to enhance water use efficiency	EIU research
3.2	National pollution control			
3.2.1	National water quality monitoring	Is there a national programme for monitoring of water pollution?	2 - Yes, there is a regular monitoring programme of water pollution and results are publicly available 1 - Partially, there is a monitoring programme of water pollution, but it is not regular, or the results are not publicly available 0 - No, there is no national programme for monitoring water pollution	EIU research
3.2.2	National water pollution reduction programme	Are there any specific measures to reduce sources of water pollution at the national level?	2 - Yes, for multiple sectors 1 - Partially, for some sectors 0 - No, there are no measures to reduce sources of water pollution at the national level	EIU research
3.3	National disaster management			
3.3.1	National disaster risk management plan	Does the country have any national disaster risk management plan that includes reducing impacts of water-related disasters?	2 - Yes, there is a comprehensive national disaster risk management plan which covers water-related disasters, is fully implemented, and has been updated in the last five years 1 - Partially, there is a disaster risk management plan but it is not comprehensive. For example, it does not cover water-related disasters, is not fully implemented, and has not been updated in the last five years 0 - No, there is no disaster risk management plan	EIU research

© The Economist Intelligence Unit Limited 2019

3.3.2	National climate change adaptation strategy	Does the country have a national adaptation plan for climate change?	2 - Yes, there is a comprehensive national climate change adaptation plan, fully implemented, and it has been updated in the last 5 years 1 - Partially; there is a climate change adaptation plan but it is not comprehensive. For example, it does not cover loss due to floods, droughts, etc., is not fully implemented, and has not been updated in the last five years 0 - No, there is no climate change adaptation plan	EIU research
3.4	Basin water availability management			
3.4.1	Joint monitoring programme	Do the basin states carry out joint monitoring in the transboundary basin?	2 - Yes, the joint body carries out regular joint monitoring programmes and the country participates 1 - Partially - for example, the joint body carries out regular joint monitoring programmes but the country has only observer status 0 - No, there is no formal collaboration on joint monitoring aspects	EIU research
3.4.2	Joint assessment programme	Do the basin states carry out joint assessment in the transboundary basin?	2 - Yes, the joint body carries out regular joint assessment programmes and the country participates 1 - Partially - for example, the joint body carries out regular joint assessment programmes but the country has only observer status 0 - No, there is no formal collaboration on joint assessment activities	EIU research
3.5	Basin pollution control			
3.5.1	Joint water quality standards	Are there any joint water quality standards that the basin states agreed to use?	2 - Yes, there is a management plan developed by the joint body which covers joint water quality standards and the country is a full member 1 - Partially - for example, the country has a bilateral agreement with the joint body which covers aspects of joint water quality standards 0 - No, there is no formal collaboration on water quality standards	EIU research
3.5.2	Joint water pollution reduction programme	Are there any measures implemented such as notification and communications or a joint alarm system by the joint bodies to prevent or limit the transboundary impact of accidental pollution?	2 - Yes, the measures are outlined in the management plan of the joint body to limit the transboundary impact of accidental pollution and the country is a full member 1 - Partially - for example, the country has a bilateral agreement with the joint body which covers areas of notification and communications or a joint alarm system to limit the transboundary impact of accidental pollution 0 - No, there is no formal collaboration among basin states to limit the transboundary impact of accidental pollution	EIU research

© The Economist Intelligence Unit Limited 2019

3.6	Basin disaster management			
3.6.1	Joint alarm system	Are there any measures implemented such as a coordinated or joint alarm system for floods or droughts to prevent or limit the transboundary impact of extreme weather events?	2 - Yes, the measures to limit the transboundary impact of extreme weather events are undertaken by the joint body and the country is a full member 1 - Partially - for example, the country has a bilateral agreement with the joint body which covers a joint alarm system for floods or droughts to limit the transboundary impact of extreme weather events 0 - No, there is no formal collaboration among basin states to limit the transboundary impact of extreme weather conditions	EIU research
3.6.2	Joint mutual assistance system	Are procedures in place for mutual assistance in case of a critical situation?	2 - Yes, there are procedures outlined in the agreement or the management plan of the joint body for mutual assistance in case of a critical situation and the country is a full member 1 - Partially - for example, the country has a bilateral agreement with the joint body which covers procedures for mutual assistance in case of critical situations 0 - No, there is no formal collaboration among basin states in case of critical situations	EIU research
4	**Infrastructure and financing**			
4.1	National-level investment			
4.1.1	Infrastructure quality	Dam capacity per capita and infrastructure risk	This indicator measures the dam capacity and quality of infrastructure in the country. The dam capacity measures total dam storage capacity per capita in the country. Infrastructure risk is a measure of the potential for losses due to failures of basic services, organisational structures and facilities. (Low, 0-100, High)	EIU Risk Briefing / FAO Aquastat
4.1.2	National water budget	Is there a specific budget allocated to investment for water resources development that includes a focus on infrastructure?	2 - Yes, there is a dedicated budget allocated for the development of national water resources 1 - Partially, there is a national water resources development strategy, but there is no dedicated budget allocated to it 0 - No, there is no budget allocated for the development of water resources	EIU research
4.1.3	National source of revenue allocated to water development	Is there any national source of revenue allocated specifically to development of water resources (e.g. revenue from national levies or fees allocated specifically to water resource development)?	2 - Yes, there is a system for the collection of revenues that are allocated explicitly to the development of water resources 1 - Partially, there is a system for collection of revenue, but it is not allocated explicitly to water resources development 0 - No, there is no system for collection of revenue	EIU research
4.1.4	Watershed protection funding	Does the government of the country run any public subsidy programme for watershed protection?	2 - Yes, there is a comprehensive national public subsidy programme implemented by the government for watershed protection 1 - Partially - for example, there is a public subsidy programme implemented by NGOs with some support from local or national government for watershed protection 0 - No, there is no public subsidy programme implemented by the government for watershed protection	EIU research

© The Economist Intelligence Unit Limited 2019

4.1.5	Sovereign debt risk	Sovereign debt risk	Risk of a build-up in arrears of principal and/or interest on foreign- and/or local-currency debt that is the direct obligation of the sovereign or guaranteed by the sovereign. The sovereign risk rating is informed by scores for a combination of political, policy, cyclical and structural variables. (Low, 0-100, High).	EIU Risk Briefing
4.2	**Private sector investment**			
4.2.1	Water-related PPP projects	Number of water-related PPP projects completed in the country since 2000 (per million people)	Ratio of total number of projects per country to the total national population.	World Bank
4.2.2	Overall number of PPP projects	Number of PPP projects (not related to the water sector) completed in the country since 2000 (per million people)	Ratio of total number of projects per country to the total national population.	World Bank
4.2.3	Currency risk	Currency risk	Risk of a devaluation against the reference currency (usually the US dollar, occasionally the euro) of 25% or more in nominal terms over the next 12-month period. The currency risk rating is informed by scores for a combination of political, policy, cyclical and structural variables. (Low, 0-100, High)	EIU Risk Briefing
4.2.4	Green finance	Are there any green bonds issued in the country?	2 - Yes, there have been numerous water-specific green bonds issued in the country 1 - Partially, there have been some green bonds issued in the country, but these are not specifically water-related or are of limited size 0 - No, there have been no green bonds issued in the country	Climate Bonds Initiative
4.3	**Investment climate**			
4.3.1	Registering property (including land)	Registering property (including land)	The registering property indicator takes into account the procedures, time and cost it takes to transfer a property. (Low, 0-100, High)	World Bank - Ease of Doing Business
4.3.2	Getting credit	Getting credit	The getting credit indicator assesses how easy it is for businesses to access credit in the country. It measures the legal rights of borrowers and lenders with respect to secured transactions and the reporting of credit information. (Low, 0-20, High)	World Bank - Ease of Doing Business
4.3.3	Dealing with construction permits	Dealing with construction permits	Dealing with construction permits takes into account the procedures, time and cost involved in completing all formalities to construct a building. (Low, 0-100, High)	World Bank - Ease of Doing Business
4.3.4	Financial and regulatory risk	Financial and regulatory risk	Regulatory risk assesses how strong the legal and regulatory system is in safeguarding investments, while financial risk assesses whether the financial market is stable, liquid and deep enough to serve business needs. (Low, 0-100, High)	EIU Risk Briefing
4.4	**RBO operational financing**			
4.4.1	National River Basin Organisation (RBO) funding	Does the country contribute to the financing of the transboundary water organisation?	2 - Yes, the country being a full member of the transboundary water organisation contributes to its funding 1 - Partially - for example, the country has a separate bilateral agreement such as MoUs with the transboundary water organisation under which it agrees to contribute some funding 0 - No, the country does not contribute in funding of the transboundary water organisation	EIU research

© The Economist Intelligence Unit Limited 2019

4.4.2	Joint investment programmes	Are there any joint investment programmes or active fundraising efforts to acquire more funds for water resource management projects at the basin level?	2 - Yes, there are investment programmes undertaken by the joint body and the country is a full member of the joint body 1 - Partially - for example, there are investment programmes undertaken separately by the country in collaboration with the joint body through a bilateral agreement on fundraising efforts to acquire more funds 0 - No, there are no formal investment programmes	EIU research
4.5	Basin infrastructure financing			
4.5.1	Private sector investment	Does the joint institution receive any private sector funding through PPPs for water infrastructure development, such as dam or reservoir construction at the basin level?	2 - Yes, the joint body receives funding through PPPs and the country is a full member 1 - Partially - for example, the joint body receives funding through PPPs and the country contributes in the funding of the PPP project 0 - No, there are no PPPs at the basin level	EIU research
4.5.2	Innovative River Basin Organisation (RBO) funding	Has there been any alternative funding instrument set up by the RBO, such as: (i) trust funds, (ii) revolving funds, or (iii) Green Bonds?	2 - Yes, the joint body has set up at least one of the alternative funding instruments and the country is a full member 1 - Partially - for example, the joint body has set up at least one of the alternative funding instruments and the country has contributed to its set-up. although it is not a member of the joint body 0 - No, the joint body has set up no alternative funding instrument for financing of TBWM	EIU research
5	**Cooperation context**			
5.1	**Water stress**			
5.1.1	Water stress	Level of water stress	Proportion of water withdrawal by all sectors in relation to the available water resources.	FAO Aquastat
5.1.2	Exposure to droughts and floods	Exposure to droughts and floods	The exposure to drought and flood indicator measures the risk of drought and flood that the inhabitants of the country face.	Inform Risk Index
5.1.3	Wastewater treatment	Wastewater treatment	Percentage of wastewater that undergoes at least primary treatment in each country, normalised by the proportion of the population connected to a municipal wastewater collection system.	Environmental Performance Index - Yale University
5.1.4	Change in open water bodies	Change in national spatial extent of open water bodies (%)	Percentage change of spatial extent of open water bodies over time, using a 2001-2005 baseline period.	UN Water
5.2	Socio-economic exposure			
5.2.1	Drinking water access	Access to basic drinking water	Percentage of people using at least basic water services. Basic drinking water services is defined as drinking water from an improved source, provided that the collection time is not more than 30 minutes for a round trip.	JMP/WHO
5.2.2	Exposure to agricultural water stress	Agricultural water stress and share of agriculture as % of GDP	The Agricultural Water Stress indicator identifies agricultural water stress of agricultural land under irrigation, calculated as a ratio of annual irrigation water consumption to the average annual run-off. The agricultural water stress indicator is combined with the share of the country's GDP derived from agriculture.	World Bank/ Transboundary Waters Assessment Programme (TWAP)

© The Economist Intelligence Unit Limited 2019

5.2.3	Economic dependence on water resources	Economic dependence on water resources	The economic dependence indicator measures the degree to which economies are dependent on the water resources of transboundary basins. This is assessed through a weighted average of the economic activity of each country coming from the given river basin area compared to the rest of the respective country.	Transboundary Waters Assessment Programme (TWAP)
5.2.4	Prevalence of undernourishment	Undernourishment (%)	Prevalence of undernourishment measures the proportion of the population whose habitual food consumption is insufficient to provide the dietary energy levels that are required to maintain a normal active and healthy life.	FAO
5.3	**Political stability**			
5.3.1	Government effectiveness risk	Government effectiveness risk	This indicator is a qualitative assessment measuring how credible the political culture of the country is in fostering the effective operation of businesses. (Low, 0-100, High)	EIU Risk Briefing
5.3.2	Share of women in national parliaments	Proportion of seats held by women in national parliaments (%)	Percentage of parliamentary seats in a single or lower chamber held by women.	World Bank
5.3.3	Social inclusion	Political participation and civil liberties	This indicator is a qualitative assessment that measures levels of political participation and civil liberties in the country based on the two pillars of the EIU Democracy Index.	EIU Democracy Index
5.3.4	Security risk	Security risk	This indicator is a qualitative assessment of the intensity of internal conflicts of a nation state along with its level of security. (Low, 0-100, High)	EIU Risk Briefing
5.4	**Propensity to conflict**			
5.4.1	Military spending	Military spending (% of GDP)	Average military expenditure as a share of GDP is an indicator of the portion of national resources used for military purposes.	World Bank
5.4.2	Water-related conflicts	Water-related conflicts	Water-related conflicts measure whether water has been the trigger of a conflict in the country or been used as a weapon in a conflict since 2000. 0 = No conflict since 2000; 1 = 1-5 conflicts; 2 = 6-9 conflicts; 3 = 10 or more conflicts since 2000	Pacific Institute / EIU research
5.4.3	International tensions	International tensions	This indicator is a qualitative assessment of the extent to which international disputes/tensions such as regional armed conflict and disputes over trade, borders, and human rights negatively affect the economy. The scale is 0-4 (peaceful to very aggressive).	EIU Risk Briefing
5.5	**Economic relations with basin states**			
5.5.1	Share of regional trade	Trade levels between the country and its riparian neighbours	The share of regional trade measures the proportion of the country's trade (exports and imports) with its riparian neighbours to its overall trade flows.	EIU / Trademap
5.5.2	Regional trade agreements	Are economic relations between the country and its other riparian neighbours supported by codified agreements?	2 - Yes, the country has monetary or custom union with at least one riparian state 1 - Partially, the country has bilateral free trade agreements with at least one riparian state 0 - No evidence of collaborating on economic aspects with other riparian states	EIU research
5.5.3	Regional freedom of movement	Share of riparian countries whose citizens are granted visa-free access	Percentage of riparian states having visa-free travel to the host country.	Passport Index

© The Economist Intelligence Unit Limited 2019

Technical Notes

Construction of the scores

Normalisation

Indicator scores are normalised and then aggregated across categories to enable a comparison of broader concepts across countries. Normalisation rebases the raw indicator data to a common unit so that it can be aggregated. All indicators in this model are normalised to a 0–100 scale, where 100 indicates the best performance and 0 represents the worst.

Indicators are transformed on the basis of a min/max normalisation, based on the formula:

x = (x - Min(x)) / (Max(x) - Min(x)) *100, where Min(x) and Max(x) are, respectively, the lowest and highest values in the 24 countries, for indicators in which the highest/lowest-scoring countries among the 24 are representative of the highest/lowest-scoring countries globally. Where the highest/lowest scoring among the 24 countries are not reflective of best/worst-performing countries globally, Min(x) and Max(x) are set to the 10th and 90th percentile of the global sample for the given indicator.

Weightings

The role of weightings in an index is to reflect the importance attached to each domain and/or indicator. As a default, equal weight was attached to each domain of the index, each focus area within the domain, and each indicator within each focus area. The index and the underlying indicators were designed as a holistic assessment of managing transboundary water resources as a tool for the promotion of peace and cooperation in the regions. However, the index workbook does allow users to change the weights of individual domains, focus areas and indicators to explore the results of the study under alternative combinations of the relative importance of individual aspects.

© The Economist Intelligence Unit Limited 2019

Methodology for Missing Data

When designing the Blue Peace Index, the EIU made every effort to ensure data availability and minimise the impact of data gaps. Overall, 99% of the data was available from established secondary or primary data sources for the selected 74 indicators.

The framework includes 27 quantitative indicators with an average of 97% data available for the selected 24 countries. Where data was missing, we developed a standard approach for filling the gaps. Generally, when a data point was not available from the central source, we explored alternative sources in the following hierarchical order:

i) Alternative international sources
ii) National sources
iii) Third-party sources
iv) EIU estimates from our country analysts or bespoke methods

Estimates for data gaps per indicator

Indicator 4.1.1: Infrastructure quality: Dam capacity per capita and infrastructure risk

Sub-indicator 1: Infrastructure Risk (No data gap present)
Sub-indicator 2: Dam capacity per capita
Definition: This indicator measures total dam storage capacity per capita.
[Dam capacity per capita] = 1,000,000*[Total dam capacity]/ [Total population]
Unit: m3/inhabitant
Source: FAO AQUASTAT
Time-period: Varied (2013–2015)
Data gaps: Missing data for Cambodia

Estimation Approach: The average of Dam Capacity per Capita for rest of the riparian states (i.e. China, Laos, Myanmar, Thailand and Vietnam) in Mekong region was calculated to fill the data gap for Cambodia.

Indicator 4.1.5: Sovereign debt risk

Definition: The sovereign debt risk level provides investors with insights into the credit quality of the entire country.
Unit: Index score (Low, 0-100, High)
Source: The EIU Risk Briefing
Time-period: 2018
Data gaps: Missing data for Guinea, Mali and Mauritania

© The Economist Intelligence Unit Limited 2019

Estimation Approach: Regional average values were used to fill the data gaps. For Mali, average value of countries in the West African Economic and Monetary Union (WAEMU) covered in the EIU Risk Briefing were used (Senegal and Côte D'Ivoire) were used. For Guinea, median value of EIU risk scores for the countries that are m Economic Community of West African States (ECOWAS), but not WAEMU were used (Ghana and Nigeria). For Mauritania the EIU country risk model was applied, using Senegal as a benchmark. The EIU country experts verified feasibility of these values.

Indicator 4.2.1: Number of water-related PPP projects completed in the country since 2000 (per million people)

Definition: This indicator measures the number of PPP projects related to water and sewerage per one million people in the country since 2000. A higher the ratio indicates greater the involvement of the private sector of the country in the development of water-related infrastructure.
Unit: Ratio of total number of projects per country to the total national population in millions
Source: World Bank
Time-period: Water and sewerage projects since 2000
Data gaps: Missing data for Croatia and Slovenia

Estimation Approach: Regional average values for the countries with available data (Bosnia and Herzegovina and Serbia) were used to fill the gaps for Slovenia and Croatia. Additional research and expert interviews confirmed that these values are reasonable estimates.

Indicator 4.2.2: Number of PPP projects (not related to water sector) completed in the country since 2000 (per million people)

Definition: This indicator measures the number of PPP projects related to energy, ICT and transport per one million people in the country since 2000. A higher the ratio indicates greater the involvement of the private sector of the country in the development of water-related infrastructure.
Unit: Ratio of total number of projects per country to the total national population in millions
Source: World Bank
Time-period: Other projects since 2000 (Energy, transport and ICT)
Data gaps: Missing data for Croatia and Slovenia

Estimation Approach: Regional average values for the countries with available data (Bosnia and Herzegovina and Serbia) were used to fill the gaps for Slovenia and Croatia. Additional research and expert interviews confirmed that these values are reasonable estimates.

Indicator 4.2.3: Currency risk

Definition: Currency risks are risks that arise from changes in the relative valuation of currencies.
Unit: Index score (Low, 0–100, High)
Source: The EIU Risk Briefing
Time-period: 2018
Data gaps: Missing data for Guinea, Mali and Mauritania

© The Economist Intelligence Unit Limited 2019

Estimation Approach: Regional average values were used to fill the data gaps. For Mali, the average value of countries in the West African Economic and Monetary Union (WAEMU) covered in the EIU Risk Briefing (Senegal and Côte D'Ivoire) were used. For Guinea, the median value of EIU risk scores for the countries that are Economic Community of West African States (ECOWAS), but not WAEMU, were used (Ghana and Nigeria). For Mauritania, the EIU country risk model was applied, using Senegal as a benchmark. The EIU country experts verified the values.

Indicator 5.1.3: Wastewater treatment

Definition: This indicator measures the percentage of wastewater that undergoes at least primary treatment in each country, normalised by the proportion of the population connected to a municipal wastewater collection system.
Unit: Index score (Low, 0–100, High)
Source: Environmental Performance Index (EPI) developed by Yale University
Time-period: 2018
Data gaps: Missing data for Syria
Estimation Approach: The wastewater treatment score (45 out of 100) from the 2014 EPI edition was used for Syria to fill the data gap.

Indicator 5.2.2: Agricultural water stress and share of agriculture as % of GDP

Sub indicator 1: Agricultural water stress (No data gap present)
Sub indicator 2: Share of agriculture in GDP (%)
Definition: The share of the country's GDP derived from agriculture. The higher the share, is the greater the need to coordinate and cooperate on water resources management with the riparian states.
Unit: %
Source: World Bank
Time-period: 2017
Data gaps: Missing data for Venezuela and Syria

Estimation Approach: To fill the data gap for Syria, an estimate provided by the FAO was used. The estimate is 26% for 2017. The data gap for Venezuela was filled using the EIU estimation for 2017 (5%). [1]

Indicator 5.2.4: Prevalence of undernourishment (%) (3-year average)

Definition: This indicator measures the proportion of the population whose habitual food consumption is insufficient to provide the dietary energy levels that are required to maintain a normal active and healthy life.
Unit: %
Source: FAO
Time period: 2015–2017
Data gaps: Missing data for Syria

Estimation Approach: The average of two countries in a state of war – Iraq (27.7%) and Yemen (34.4%) – was calculated to arrive at an estimate for Syria (31%). The EIU country experts confirmed these values as reasonable estimates.

© The Economist Intelligence Unit Limited 2019

Indicator 5.4.1: Average level of military expenditure (% of GDP)

Definition: This indicator measures the percentage of all current and capital expenditures on the armed forces, including peacekeeping forces; defence ministries and other government agencies engaged in defence projects; paramilitary forces, if these are trained and equipped for military operations; and military space activities.
Unit: %
Source: World Bank
Time-period: 2013–2017
Data gaps: Missing data for Syria

Estimation Approach: To fill the data gap for Syria, an estimate provided by the Global Security was used. The estimate is 4.5% for the time period 2006–2016. [2] The average is close to the proportion of the estimated defence budget in 2019 (4.6%). [3]

[1] Counting the Cost: Agriculture in Syria after six years of crisis
http://www.fao.org/emergencies/resources/documents/resources-detail/en/c/878213/

[2] Syria – Military Spending. Global Security
https://www.globalsecurity.org/military/world/syria/budget.htm#_msocom_3

[3] Syria – Military Strength. Global Firepower
https://www.globalfirepower.com/country-military-strength-detail.asp?country_id=syria

© The Economist Intelligence Unit Limited 2019

Copyright

© 2019 The Economist Intelligence Unit Limited. All rights reserved. Neither this publication nor any part of it may be reproduced, stored in a retrieval system, or transmitted in any form or by any means, electronic, mechanical, photocopying, recording or otherwise, without the prior permission of The Economist Intelligence Unit Limited.

While every effort has been taken to verify the accuracy of this information, The Economist Intelligence Unit Ltd. cannot accept any responsibility or liability for reliance by any person on this report or any of the information, opinions or conclusions set out in this report.

Cover image - © Piotr Krzeslak/Shutterstock

The Economist INTELLIGENCE UNIT PUBLIC POLICY

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