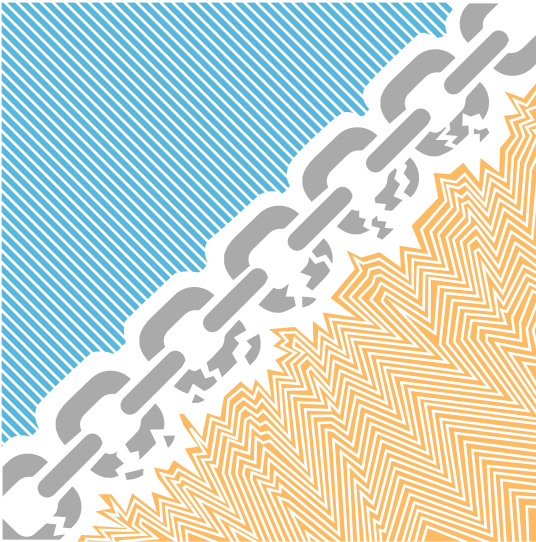


# WATER COOPERATION QUOTIENT

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## 2017



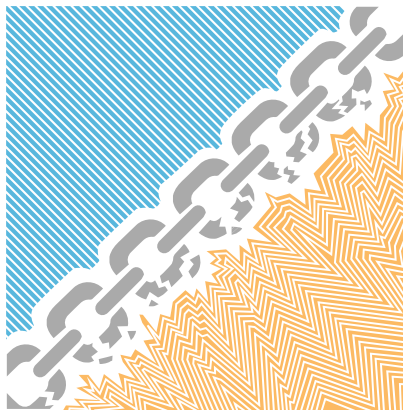


# WATER COOPERATION QUOTIENT

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## 2017

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## PREFACE

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There is a growing consensus on the imperative of trans-boundary cooperation between countries that share rivers, lakes and other freshwater resources. It is reflected in the deliberations of the United Nations Security Council, statements of the UN Secretary General and adoption of the Sustainable Development Goal 6.5.2. It is also at the cornerstone of recommendations made by the InterAction Council and the Global High Level Panel on Water and Peace.

Collaborative and sustainable management of water resources is not merely about diplomatic parleys. It is about improving living conditions of people living in 286 shared river basins of the world. It is about the future of at least one third of the world's population. It is about improving economic productivity and generating peace dividends of billions of dollars.

The question is how to define trans-boundary water cooperation and how to measure it for the benefit of those wanting to advance it. Strictly speaking trans-boundary water cooperation can be defined in terms of technical activities required for the day-to-day management of water relations. In reality, if trans-boundary water cooperation has to have an impact, it must be active, dynamic and politically driven.

The Water Cooperation Quotient distinguishes between basic and active water cooperation, between technical and political dynamics and between routine and effective actions. It reveals that any two countries engaged in active, dynamic, politically driven water cooperation do not go to war for any reason at all. Thus, Water Cooperation Quotient is not only a decision support tool for understanding and measuring levels of water relations, it is also a barometer to assess the risk of war between riparian countries. It is an instrument that the countries sharing freshwater resources with their neighbours can use for phased building of cooperative processes. It is also helpful for the international community in planning their investment decisions in basins which are shared by two or more countries.

The earlier versions of this study were undertaken in 2013 and 2015. They demonstrated strong correlation between water cooperation and comprehensive peace. The present version is constructed using a refined methodology developed in consultation with experts from around the world in bilateral meetings, as well as group discussions and workshops. I am particularly grateful to The Rt. Hon. Lord Alderdice of the Centre for the Resolution of Intractable Conflicts at Oxford University for hosting an international workshop at the House of Lords in October 2016. I wish to acknowledge support and cooperation from Danilo Turk, former President of Slovenia, in the framework of his leadership of the Global High Level Panel on Water and Peace. I also owe gratitude to a large number of experts and leaders for their input and suggestions.

The key message of this report is that water cooperation has to be technically sound and politically meaningful. Therefore, engagement of political leaders in this endeavour is most valuable. I am much delighted that the InterAction Council, an organisation of former Heads of States and Governments, has decided to support the use of Water Cooperation Quotient to bring about peace and development around the world. In particular, I am grateful to Bertie Ahern, former Prime Minister of Ireland, and Olusegun Obasanjo, former President of Nigeria, who are co-chairs of the InterAction Council, for their Foreword.

I urge the governments of riparian countries and their international partners to use the Water Cooperation Quotient as a real time medium to create building blocks of cooperation which are most appropriate for their local realities. The alarming coincidence of winds of war blowing in the regions which lack trans-boundary water cooperation and fruits of peace growing in the regions which deliberately and consciously nurture cooperation between the riparian countries should wake up all of us. That is why the international community is paying increasing attention to the value of water cooperation for the maintenance of peace. I hope that this report will contribute to translate these concerns into desired transformation in several of the shared river basins.

**Sundeep Waslekar**  
**President**  
**Strategic Foresight Group**

**Mumbai, October 2017**

## FOREWORD

### **Ensuring Peace and Security Through Cooperation over Water**

Founded in 1983, the InterAction Council was the first organisation of its kind, bringing together former world leaders to develop solutions to the political, economic and social problems confronting humanity. As the Council has noted, the timely availability of fresh water has for decades been recognized as a global concern. Under current management regimes there is not enough water to support our constantly growing population and to sustain all the uses to which we want to put this precious resource.

The world has been warned many times that water insecurity could radiate outward from water-scarce regions in ways that would have impacts on the rest of the world. Over the past 25 years, each successive UN Secretary General has called for greater emphasis on water in relation to peace. The growing potential for conflict in part related to water scarcity has only made such calls more urgent. In 2010, the InterAction Council recommended that water be an issue of critical concern on the agenda of the United Nations Security Council.

The final communiqué of our 30<sup>th</sup> Annual Plenary Meeting held in China in 2012 reported that, as a result of humanity's over-exploitation and pollution of water resources, there is a growing global water crisis. Now, because of warming generated by changes in the composition of the Earth's atmosphere, the relative stability of the global hydrological cycle has been lost. The consequence is that the management of water in all its forms in the future will involve a great deal more uncertainty than it has in the past. The Council warned that continued stalling on effective action, coupled with population growth, economic instability, disrupted climate patterns and other variables, could reverse hard-earned development gains and preclude meaningful levels of development that can be sustained into the future. If left unaddressed, the Council noted, water scarcity, and the deteriorating water environment will also undermine human health and, in some places, will even affect national and regional stability in ways that could threaten peace.

The Council predicted that changes in fundamental hydrology brought on by warming global temperatures are also likely to cause new and unanticipated kinds of conflict, and that both water scarcity and flooding will become major transboundary water issues. The Council recommended that conflict over water can be avoided by adopting the principles of basin-scale management and cooperation.

In November 2016, the Strategic Foresight Group assisted UN Member States in organizing the first debate in the UN Security Council concerning water, peace and security. The Strategic Foresight Group brought forward many of the concerns shared by the InterAction Council in that debate.

At our 34<sup>th</sup> Annual Plenary Meeting held in 2017 in Dublin, Ireland, the Council affirmed its commitment to helping the world form a clearer, longer view of the water scarcity problem so as to lessen the potential for tension between states over water supply and quality issues. Part of the InterAction Council's commitment is full support of the work of the Strategic Foresight Group and cooperation on the joint launch of its updated edition of the Water Cooperation Quotient.

This ground-breaking report is the only document that offers analysis on the risk of conflict and potential for cooperation among the 146 countries that have shared or transboundary rivers. The Water Cooperation Quotient is an effective decision-making tool for water cooperation and a badly needed barometer for assessing risks of war; one that the InterAction Council urges be employed around the world to promote peace, ensure security and improve human and planetary health through cooperation over shared waters, now and in the future.

**Olusegun Obasanjo**  
**President of Nigeria, 1999-2007**

**Bertie Ahern**  
**Prime Minister of Ireland, 1997-2008**

**Co-Chairs of InterAction Council**



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**Any**  
**two countries**  
**engaged in**  
**ACTIVE WATER**  
**COOPERATION**  
**DO NOT**  
**go to war**  
**for any reason.**



# Introduction

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On 22 November 2016, for the first time in the United Nations history, the UN Security Council convened an Open Session on Water, Peace, and Security. It was attended by 69 member states of the United Nations, including the 15 members of the UN Security Council and chaired by the Foreign Minister of Senegal. This meeting represented a turning point in the changing discourse on water – from being recognized solely as a human rights and development issue, to being increasingly perceived as an important tenet of peace and security.

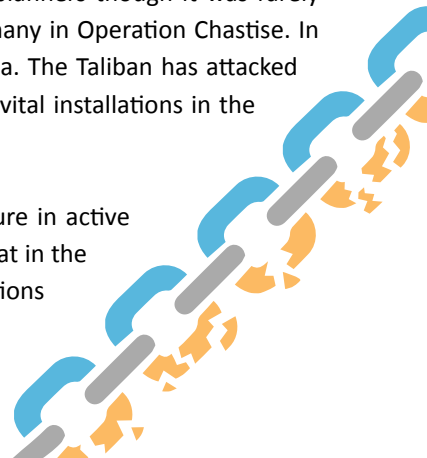
While the meeting marked the beginning of a new phase, the truth is that a growing chorus of voices has been urging the international community to recognize the reality that water is, and has been for quite some time, an issue that will define the security agenda of the 21st century. The Open Session of the UN Security Council followed appeals by successive Secretaries General of the United Nations to examine the linkage between water, peace and conflict.

The UN Security Council convened another discussion on water, war and peace restricted to the members of the Council in the summer of 2017. It was chaired by the President of Bolivia. Around the same time, the InterAction Council, a body of former Heads of States and Governments, recommended at its 34th Annual Plenary that water should be brought to the core of the international security agenda. The Global High Level Panel on Water and Peace also released its recommendations for a global architecture to build a positive water and security relationship in 2017.

The fears about water wars may sound exaggerated considering that water has been an instrument of cooperation over centuries. However, new developments suggest that water can indeed be a weapon or target of war, unless active water cooperation is promoted in a conscious and deliberate way.

Since the Second World War, water has been on the mind of military planners though it was rarely targeted. In 1943, the British Air Force used dam buster bombs in Germany in Operation Chastise. In 1952, the US Air Force attacked Sui-ho water installations in North Korea. The Taliban has attacked the Kajaki and Selma dams in Afghanistan several times. The control of vital installations in the Euphrates-Tigris basin was central to the Daesh's military strategy.

Such attacks continue unabated and are likely to do so in the near future in active conflict zones. The US Department of Homeland Security has revealed that in the first decade of the 21st century, there were 25 attacks on water installations



in Afghanistan, Indonesia, Iraq, Myanmar, Nepal and Pakistan. A report of the Strategic Foresight Group, Water and Violence states that there were 25 attacks on water installations in the Middle East alone during 2011-2015.

As water increasingly finds space in the security discourse, it is necessary to examine the precise nature of cooperation over water. Even when armed forces and armed militants do not use water as a target or weapon of war in a pro-active way, the mere absence of active transboundary water cooperation can increase the risk of war for other reasons. The Strategic Foresight Group report, Water Cooperation for a Secure World (2013) exposed an amazing correlation: the 37 countries which were at risk of war that year were precisely the ones which did not engage in active water cooperation.

In 2015, a new report, Water Cooperation Quotient, was launched based on nuanced parameters that measured the intensity of cooperation in shared watercourses of the world. This was the first time that a differentiation between technical and operational, as well as on-paper and on-the-ground, cooperation was comprehensively measured and compared. It further confirmed the hypothesis coined in 2013 which linked water cooperation to risk of war.

The present edition of the Water Cooperation Quotient (WCQ) tests this hypothesis further with a much more vigorous methodology. It uses the list of 286 shared rivers published by the Global Environment Facility (GEF) for its diagnostic framework. Out of these 286 shared watercourses, 231 are analysed in detail as it is not possible to expect cooperation in the remaining 55 shared watercourses due to high economic cost of cooperation, physical attributes of the water body (e.g. frozen for several months of the year or inaccessible for other reasons), or lack of reliable information.

Total shared watercourses: **286 in 146 countries**

Excluded for various reasons: **55**

Total shared watercourses analysed: **231**

Total shared watercourses where at least minimum cooperation exists: **182**

Total shared watercourses where there is no cooperation at all: **49**

Total shared watercourses where there is active water cooperation: **91**

Total shared watercourses with WCQ of 100: **19 rivers**  
(Governed by 8 river basin arrangements)

Attention towards shared watercourses is also required to achieve Sustainable Development Goal (SDG) 16 on peace, justice and strong institutions. If the current state of water cooperation is compared to the security environment around the world, an interesting correlation can be observed. All the 21 countries that are involved in war or face a risk of war as of mid 2017 have WCQ below 23.33. It doesn't mean that every pair of countries below this score is at risk of war. Some countries may have low score

because their efforts for transboundary water cooperation are relatively new and yet to mature, or they may be facing resource or physical constraints and therefore consciously not opting to pursue intense cooperation. Some pairs may not face the risk of war as defined in this report, but they are involved in extremely tense or cold relationship that dissuades them from active water cooperation. Nevertheless, it is noteworthy that every pair of countries that faces risk of war has WCQ below 23.33. Indeed, even the pairs of countries having no risk of war but other indications of antagonism also tend to have WCQ below 23.33.

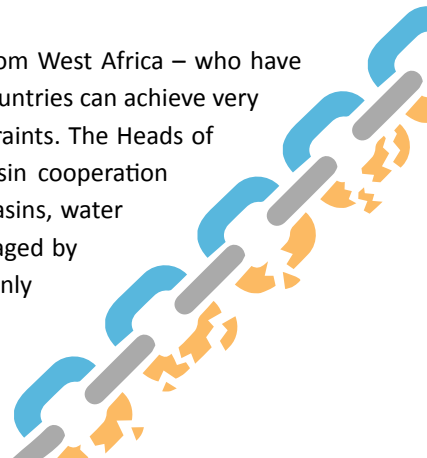
Conversely, all riparian relationships that have WCQ 50 and higher have a relatively peaceful and stable relationship with each other. They may have diplomatic issues or minor disagreements but absolutely zero risk of war. Thus, the countries enjoying peaceful co-existence have active water cooperation and the countries facing risk of war have low or no water cooperation. The same observation was made in the earlier studies in 2013 and 2015. While each study on the relationship between water and war relates to a particular time frame, repeated confirmation of a strong correlation between high score on Water Cooperation Quotient and comprehensive peace between riparian neighbours proves this: **any two countries engaged in active water cooperation do not go to war for any reason.**

A case in point is the relationship between Iraq and Turkey. In 2015, they had low WCQ and indeed the political and strategic relationship between them was then in turmoil. Since 2015, they have been involved in political confidence-building measures, which have also extended to water. As a result, in 2017, they have a higher score on Water Cooperation Quotient and also improved strategic stability in bilateral relations. On the other hand, the relationship between Ukraine and Russia deteriorated since 2014 and at present, they are involved in conflict. They also have low WCQ in this report.

The WCQ can thus be a barometer of strategic stability in a riparian relationship. If the WCQ dips significantly in a given period, as compared to previous observation, it would be helpful to watch the security environment of such countries.

The WCQ can also be a decision support tool for riparian countries to identify and construct building blocks of cooperation. In 2015, the Gambia River Basin Organisation (OMVG) scored 54.54. However, inspired by the success of the Senegal River Basin Organisation (OMVS) in its neighbourhood, it amended its rules and practices to introduce active water cooperation. As measured in the present report, they have reached the highest WCQ of 100 thanks to changes they have introduced in the last two years.

The examples of OMVS, OMVG and Niger Basin Authority – all three from West Africa – who have achieved the top three ranks in the WCQ 2017 – show that developing countries can achieve very high levels of transboundary water cooperation despite economic constraints. The Heads of States of these three basin organisations are involved in governing basin cooperation on a sustainable and collaborative basis. In Senegal and Gambia River basins, water infrastructure is jointly owned by the riparian countries and jointly managed by the river basin organisation. In the Niger River basin, there is no commonly



owned infrastructure; it is nationally owned but developed through joint coordination with each riparian country requiring prior approval for “no harm” from other riparian countries. In the case of five European basins which have WCQ of 100, there is no common ownership and the engagement of Heads of States. However, there is joint management and coordination in the operation of water infrastructure and the water related laws are so well harmonised that the Heads of Government do not need to govern the processes of cooperation and harmonisation.

While three West African and five European basins experience full-fledged cooperation reflected in WCQ of 100, there are many other models of cooperation at various levels of intensity that can be observed in different basins of the world. Thus, riparian countries can use the WCQ as a decision support tool to assess the quality of their cooperation and then identify building blocks from the experience of other basins to construct a cooperative relationship in a phased manner. UN agencies, international organisations, and development cooperation partners can use the WCQ to guide riparian countries in a gradual upward movement in water cooperation. This would include designing priorities and policies for investments in various river basins at any given time depending on the circumstances.

This report shows that there are various water cooperation mechanisms in the world and there does not seem to be one specific type of mechanism that acts as a guarantee for active water cooperation. In fact, the basins that have scored a very high WCQ seem to show the multitude of such cooperative mechanisms. In Europe, the European Union with its European Union Water Framework Directive (EUWFD), as well Flood Directive encourages cooperation and further strengthens River Basin Organisations (RBOs) enabling some of them to score a perfect 100. Similarly, the Association of South East Asian Nations (ASEAN) with its Working Group on Water is further enhancing cooperation in that region. The South African Development Community (SADC) is a special case which helped create many RBOs in their member countries and has also created a platform for political commitment. The Organization of American States (OAS) has from time to time provided a platform for cooperation between member countries.

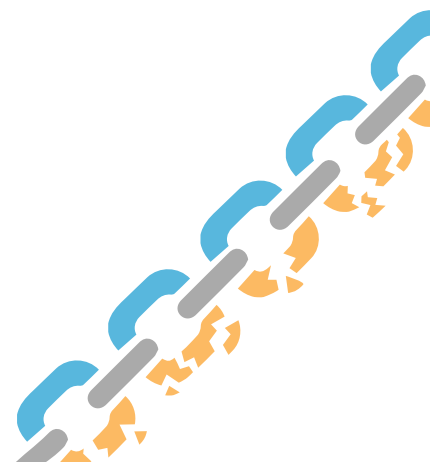
In Africa, there are very strong and autonomous River Basin Organisations focused on one river and its tributaries. In North America, binational commissions governing all watercourses shared by the two countries have been created. This is the case with US-Mexico and US-Canada water relations. Russia, China, Mongolia and India seem to prefer binational commissions governing all shared watercourses between each pair of two countries. A challenge arises if a river also runs through a third or fourth country. In such a situation, a binational commission can experience limitations, as the governance of a shared watercourse may be divided between more than one binational commission.

Each arrangement has its pros and cons. A wide variety of successful models of cooperation exist in different parts of the world, and countries desiring of improving their intensity of cooperation can seek inspiration from any of them and create what is most appropriate for the given shared watercourse.



Finally, the WCQ represents a snapshot of a given time frame. The relations between countries are dynamic. The intensity of cooperation is measured in this particular time frame – in the present case mid 2017 – and it mirrors the reality of the moment. It can change over time. Indeed, if we compare our reports of 2013, 2015 and 2017, we find that some of the relationships have changed and such a change has been reflected in the Water Cooperation Quotient. To some extent, this can be attributed to the evolution of the methodology. But to a large extent, the change in score does represent the changing dynamics of ground realities. The WCQ at any given time therefore provides hope to those with relatively lower degree of cooperation that there is scope to improve the level and quality of cooperation. It provides a challenge to those with relatively higher degree of cooperation that they cannot rest, and must continuously strive to maintain their high standards. As water cooperation has a strong correlation with comprehensive peace, stakes are significant. A high score on Water Cooperation Quotient indicates not only sustainable management of water resources but also strategic stability and security of the state and the society.

It is therefore not surprising that the United Nations Security Council, a body mandated to maintain peace and security in the world, has finally placed water cooperation on its agenda, and the InterAction Council, an organisation of former Heads of States and Governments, has asked for water to be positioned at the core of the global security framework. In the years to come, we can expect growing interest in the linkages between water, peace and security at the highest level of strategic discourse. It is in this context that the Water Cooperation Quotient can help countries navigate their policies to enable them to move from conflict to cooperation in their shared watercourses and from turmoil to tranquillity in their strategic relationships.



# Guide to Understanding Water Cooperation Quotient (WCQ)

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## Definitions

### Basic Water Cooperation

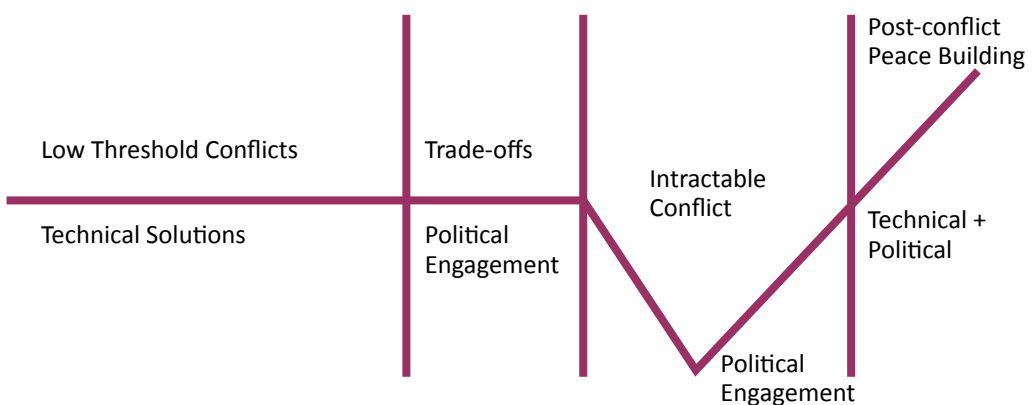
When countries cooperate for the day-to-day management of a shared river basin or lake, it is basic water cooperation. The elements of such types of cooperation are legal and technical, including a treaty determining the allocation of water shares or recognising the need to cooperate, a regular dialogue mechanism at the level of water ministry officials, small or demonstrative technical projects and regular exchange of data pertaining to the quality and/or quantity of the shared watercourse. This type of cooperation does not create huge stakes in mutual relationship and can be suspended easily in times of tension.

### Active Water Cooperation

When the countries cooperate with a focus on vital infrastructure, foster regular high level political engagement to negotiate trade-offs between water and other public goods, and accept autonomous management of the cooperative process, it is active water cooperation. This type of cooperation creates stakes in mutual relationships and peaceful co-existence. It can also provide the means of communication when other channels close during times of difficult relations.

### Explanation:

The difference between basic and active water cooperation can be further understood by observing the process of cooperation and conflict in any basin as seen from the diagram.



Cooperation on small scale projects can be mostly managed with technical tools. At this stage, there is no need for engaging senior political leaders. When there is a desire to create substantial stakes in the relationship and prevent any conflict, emerging or potential, it is necessary to design trade-offs between water and other public goods such as public investments and regional security. At this stage, it is necessary to involve political leaders at the highest level – Heads of Governments – since only they can determine the terms of trade-offs between different ministries in negotiations with foreign countries. Once a water conflict is enmeshed with other divisive factors, it is extremely difficult to resolve. At this stage, high-level political leaders may not want to get involved or may adopt a defensive approach. When the conflict reaches a violent stalemate and parties look for solutions, water needs to be part of a larger package. At this stage, Heads of Government must be involved. Once the conflict is over, water needs to be included in the post-conflict peace building efforts where solutions are technical but guided by political leaders.

It is necessary to have a decision support tool that can offer strategies that may be applicable to each point in the continuum.

## War

War is defined as per Geneva Convention IV of 1949 to be:

“Any difference arising between two States and leading to the intervention of members of the armed forces...”

(Convention (IV) relative to the Protection of Civilian Persons in Time of War, 12 August 1949. Commentary – Article 2. Part I: General provisions.)

### Explanation:

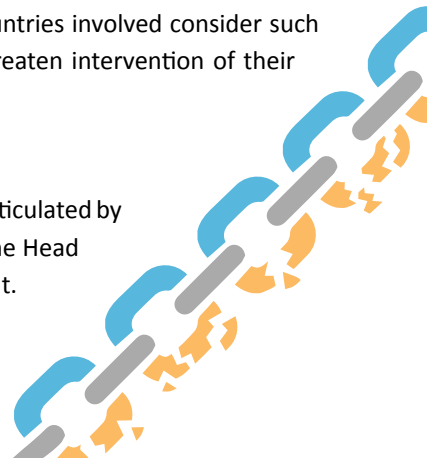
There must be protracted and intense armed hostilities between two nations for it to be called a war within the aforementioned definition.

## Risk of War

1. Existence of a point of contention and absence of effective dispute resolution mechanisms to address it, over which at least one state from time to time has threatened an intervention of its armed forces.
2. Involvement of state authorities of Country X to assist the armed non-state actors in or fighting against country Y, to the extent that Country Y lodges a strong protest with the international community or threatens military action against Country X.
3. Any event that could result in significant loss of life, where the countries involved consider such loss “significant” in their own perception, to the extent that they threaten intervention of their armed forces.

### Explanation:

- Indication of threat is considered to be delivered by a country if it is articulated by Head of Government, serving Cabinet Minister, or official advisor to the Head of Government or the official spokesman of the concerned government.



- The risk of war between nations is calculated for a time frame of five years as this is the average life of a government in most countries and often the period after which major policy changes may be made.
- Nations/States: Any recognised member or non-member with observer state status with the United Nations.
- Armed Non State Actors (ANSA): Organised armed entities that are willing and capable of using violence in pursuit of their political goals and are not a part of any formalized state institutions.

## Reasons

The reason to go to war may or may not be related to water and may include factors such as land, ideology, rivalry for supremacy amongst others.

## Peace

Peace is the implausibility of war, as defined by Yuval Harari in *Sapiens*, and not the absence of war.

### Note:

- There is no global consensus on the term to be used to refer to a water source (rivers/lakes/aquifer) that flows from one country to another. Transboundary, international or shared are some of the ways that countries characterise these water bodies. For the purposes of this report “shared watercourse” is uniformly used to refer to these bodies.
- Nations that have shared watercourses are referred to as riparians.

## Methodology

### Table I: WCQ Ranking

The ranking of the cooperative arrangements that exist in the shared watercourses.

### Table II: WCQ Analytics

The scores in each watercourse separated alphabetically and by continents.

### Table III: Countries at War/Risk of War

A list of countries that are at war or have a risk of war based on the criteria defined in this report.

### Table IV: Riparian Relations

The WCQ score of 146 countries that share 231 watercourses. This section is to measure the bilateral relations between riparians. It also indicates the risk of war between nations.

### Table V: List of Excluded Watercourses

55 watercourses that have been excluded from the tabulation of WCQ, along with their riparians.

### Table VI: Countries with No Shared Surface Watercourses

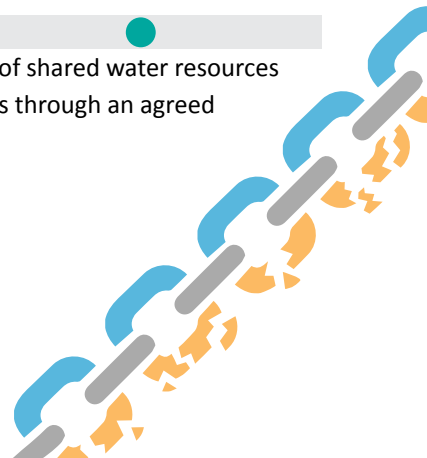
Those countries in the world that do not have any surface watercourses that are shared.

## A. Computation of Water Cooperation Quotient

### A.1 WCQ Parameters

In order to compute the WCQ of a riparian nation, ten parameters have been chosen. These parameters are indicative of water cooperation in the technical and the political realm. The description of the parameters is given below. They have been weighted differently. The weightage of the parameter is done on the basis of whether it represents technical cooperation, in which case it gets a point of 1 each, or political cooperation in which case it gets a point of 5. When countries try to move from technical to political cooperation, it often involves instituting alternative conflict resolution methods and/or environmental, drought or flood control measures. These parameters hence get a point of 3 each.

Parameters	Points
<b>1. Agreement</b> The riparian countries have a legally binding agreement acknowledging the water relationship between them. The agreement may provide for allocation of water resources or for cooperation with or without any reference to allocation.	●
<b>2. Communication mechanism</b> There is a mechanism for regular and formal communication between riparian countries in various forms, including meetings of officials of water ministries. The mechanism may include meetings of Water Ministers, but not other ministers such as Foreign Ministers and Finance Ministers and certainly not Heads of Government. The mechanism may be in the form of committees within respective water ministries.	●
<b>3. Technical Projects</b> The riparian countries engage in collaborative scientific and technical projects in relation to their shared watercourse such as small demonstration projects relating to navigation, irrigation, electricity or livelihood creating activities. It is to be noted that these projects are not those that are carried out by individual countries domestically but are those that are either basin wide or international in nature and are often implemented by or through River Basin Organisation or River Basin Commission (RBO/RBCs) or jointly by the riparian countries. It is to be further noted that these projects are different from large infrastructure projects.	●
<b>4. Exchange of data</b> The riparian countries agree to exchange data on quantity and quality of shared water resources where the data is collected nationally, but exchanged on a regular basis through an agreed channel or it is collected and shared through a basin organisation.	●



## 5. Alternative Dispute Resolution

The riparian countries have a well-defined mechanism for resolving disputes, which could be either through a River Basin Organisation, to which they belong, or through reference to a specific third party. If the countries approach the International Court of Justice (ICJ) to complain against other riparian countries, it is not to be taken into account in this context.

## 6. Floods, Droughts and Ecosystem Protection

The riparian countries agree on long term coordination and cooperation mechanisms to manage floods, drought and ecosystem in a collaborative way, including early warning, rapid response, pollution control, coordination on deforestation, coordination on farming patterns and agricultural trade, and explicit long term coordination mechanism for emergency response.

## 7. Water Infrastructure

Riparian countries agree that all infrastructure related to transboundary water resources such as dams, reservoirs, irrigation networks, navigation are built with active collaboration and transparency in a way that takes into account the interest of all relevant riparian countries and not merely the host country of the concerned project. They could have any one of the following:

- a. Infrastructure in any country built only with prior approval and consent of other riparian countries.
- b. Infrastructure built through joint or coordinated planning; joint investment.
- c. Infrastructure that have joint ownership

It is essential however, that the countries have no other projects that do not have prior approval and have been built over the objections of any of the other riparians.

## 8. Inclusion

All countries in the basin, without exception, are members of the regional or basin wide arrangement.

## 9. Political Commitment

The riparian countries commit to cooperate at the highest political level with either one or both of the following components:

1. Regular engagement at a level higher than Water Ministers, such as:

- a) Foreign Ministers
- b) Heads of Governments

And/Or

2. Co-ordination and harmonization of national laws/policies to satisfy common standards.

10. **Institutional Functioning**



The riparian countries have

- (a) A permanent, independent and joint organisation for transboundary water cooperation such as a River Basin Organisation with an independent secretariat or
- (b) Permanent, though separate entities located in the respective riparian countries, acting as a joint mechanism for water governance, and having regular formal communication in the form of meetings and approval authority for projects in any of the countries

In addition and essentially,

The riparian countries make joint strategic plans and implement them ensuring that the projects are executed within an agreed time frame and are not reduced to mere statements of intention.

**Total Score 30**



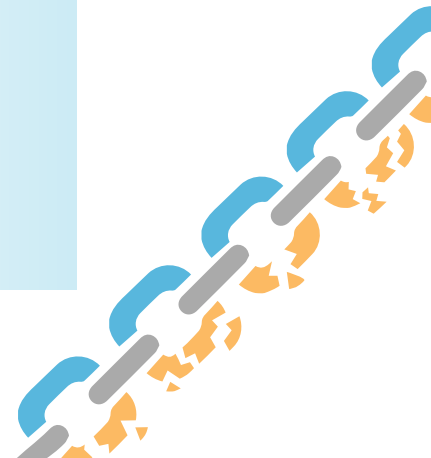
**A.2 Scoring of WCQ**

The ten parameters are applied to a shared watercourse. Based on the absence or the presence of the parameter a score is derived. This score is then converted to a percentage which is termed as the WCQ. The maximum score a shared watercourse could receive is 30 and as such can score a perfect WCQ of 100.

**For Example:**

*River Rhine is shared by Germany, Switzerland, France, Belgium, Netherlands, Luxembourg, Austria, Liechtenstein and Italy and they established the International Commission for the Protection of the Rhine River (ICPR) which has a WCQ of 100 as computed below.*

Agreement	●	<b>SCORE 30/30</b>	<b>WCQ 100</b>
Communication mechanism	●		
Technical projects	●		
Exchange of data	●		
Alternative dispute resolution	● ● ●		
Floods, droughts and ecosystem protection	● ● ●		
Water infrastructure	● ● ● ● ●		
Inclusion	● ● ● ● ●		
Political commitment	● ● ● ● ●		
Institutional functioning	● ● ● ● ●		



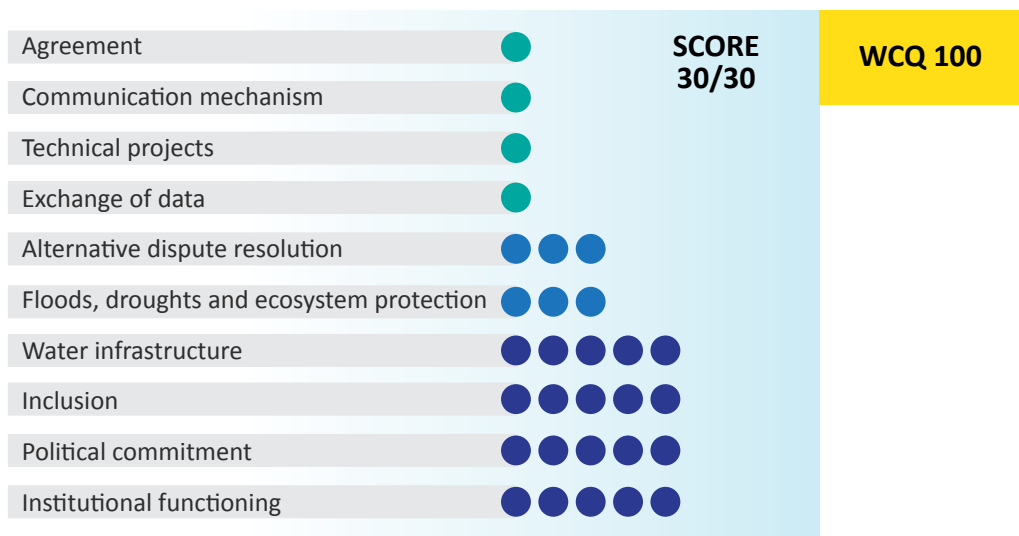
## Scoring of Shared Watercourses

1. There are 286 shared watercourses as per Global Environmental Facility (GEF) database. This evaluation is confined to those watercourses alone.

2. The primary aim of the WCQ is to evaluate cooperation on a river in a holistic manner. Hence, shared watercourses such as Indus scores quite low as the arrangement is primarily to bifurcate the governance of the shared watercourses and not joint management or cooperation.

3. When a shared watercourse has multiple riparian countries and a single governing body, the body has been evaluated.

**For Example:** Rivers Corubal, Gambia, Geba are shared by Gambia, Guinea, Guinea-Bissau, Senegal. These rivers are governed by one authority-The Gambia River Basin Development Organization (Organisation pour la Mise en Valeur du fleuve Gambie) (OMVG). Therefore, for the evaluation of WCQ it is OMVG that is taken into consideration.



4. When a shared watercourse with multiple riparian countries has no single river basin arrangement then the following has been done:

- All combinations of pairs of countries that share a border and physically share the river are evaluated and scored.

- All combinations of river basin arrangements existing in the basin are evaluated and scored.

- Please note:

a. Any river with 3 or more riparian countries and without a single governing body does not receive points under the parameter of inclusion.

b. Several shared watercourses do not neatly fall under a single category of river basin arrangement. Through this report we have endeavoured to include all possible combinations to fully evaluate a shared



watercourse and the corresponding relations between nations that share them.

**For Example:**

a) **The Dnieper River** is shared between Ukraine, Belarus and Russia. There is no single authority here governing the entire basin and including all the riparians. Hence, bilateral relations between the nations physically sharing the river are taken into consideration as given below.

Cooperative mechanisms that are existing in the basin:

- *Belarus-Ukraine: Permanent Cross-Border Commission on the Development of the Dnieper-Vistula Waterway*
- *Russia-Belarus: Joint Russian-Belarusian Commission on Protection and Rational Use of Transboundary Water Bodies*
- *Russia-Ukraine: No authority.*

	Belarus-Ukraine	Belarus-Russia	Russia-Ukraine
Agreement	1	1	1
Communication mechanism	1	1	0
Technical projects	1	0	0
Exchange of data	1	1	0
Alternative dispute resolution	0	3	0
Floods, droughts and ecosystem protection	0	0	0
Water infrastructure	5	0	0
Inclusion	0	0	0
Political commitment	5	0	0
Institutional functioning	5	0	0
<b>SCORE</b>	<b>19/30</b>	<b>6/30</b>	<b>1/30</b>
<b>WCQ</b>	<b>63.33</b>	<b>20</b>	<b>3.33</b>

b) **Ganges-Brahmaputra-Meghna** has multiple countries with multiple arrangements. Here, all the arrangements that the countries that physically share a river have been evaluated.

Countries: India, Bangladesh, Bhutan, China, Nepal

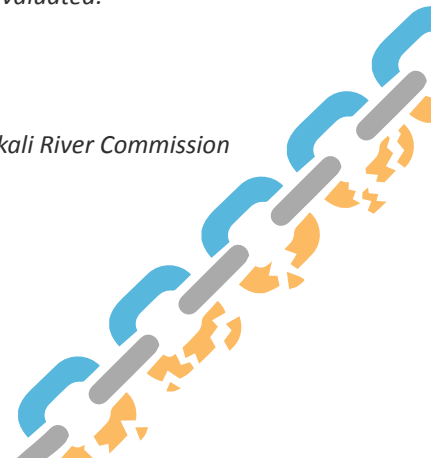
Authority:

*India-Bangladesh: India-Bangladesh Joint Rivers Commission (JRC)*

*India-Nepal: India-Nepal Joint Committee on Water Resources and Mahakali River Commission*

*India-Bhutan: India-Bhutan Joint Group of Experts on Flood Issues*

*India-China: India-China Joint Experts Level Mechanism.*



	India-Bangladesh	India-Bhutan	India-China	India-Nepal
Agreement	1	1	1	1
Communication mechanism	1	1	1	1
Technical projects	1	1	0	1
Exchange of data	1	1	1	1
Alternative dispute resolution	3	0	0	3
Floods, droughts & ecosystem protection	3	3	3	3
Water infrastructure	0	5	0	0
Inclusion	0	0	0	0
Political commitment	5	0	0	0
Institutional functioning	0	5	0	0
<b>SCORE</b>	<b>15/30</b>	<b>17/30</b>	<b>6/30</b>	<b>10/30</b>
<b>WCQ</b>	<b>50</b>	<b>56.67</b>	<b>20</b>	<b>33.33</b>

5. When there is a single or multiple watercourses shared only between two countries, then the parameter on inclusion is deemed to be not applicable. Hence the total WCQ score possible is 25 rather than 30. Such rivers are often governed by a single river basin arrangement such as a binational commission covering all shared rivers between a pair of countries.

**For Example:** Rivers Colorado, Rio Grande, Tijuana, Yaqui are rivers shared by Mexico and United State of America (USA). The International Boundary and Water Commission (IBWC) - Comisión Internacional de Límites y Aguas entre México y Estados Unidos (CILA) governs all these rivers shared by the two countries. Hence the parameter on inclusion is not applied here as below.

Agreement	●	<b>SCORE</b> <b>20/25</b>	<b>WCQ 80</b>
Communication mechanism	●		
Technical projects	●		
Exchange of data	●		
Alternative dispute resolution	● ● ●		
Floods, droughts and ecosystem protection	● ● ●		
Water infrastructure	● ● ● ● ●		
Inclusion	○ ○ ○ ○ ○		
Political commitment	○ ○ ○ ○ ○		
Institutional functioning	● ● ● ● ●		

6. When any regional organization or protocol has a role to play in any specific shared watercourse and it does correspond to the parameter, this has been taken into consideration for evaluation. For example several countries in Europe have been able to harmonise their policies based on European Union Water Framework Directive (EUWFD) to be applicable in individual basins. It can be done through an RBO or otherwise. They have been taken into consideration to evaluate the parameter on political commitment. This is also the case of ASEAN and SADC.

7. Regional economic cooperation organisations with water charters are not taken into consideration under the parameter of Communication Mechanism unless they are the only cooperative body on water and they are specifically dealing with shared watercourses.

### Scoring of Countries

1. The relations between riparian countries are evaluated in Table IV. A riparian nation should not only share a border with another riparian but also physically share the specific watercourse.

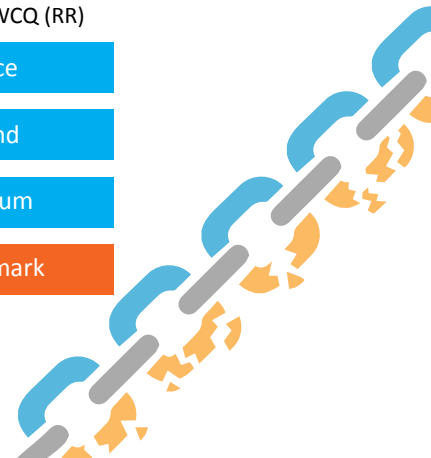
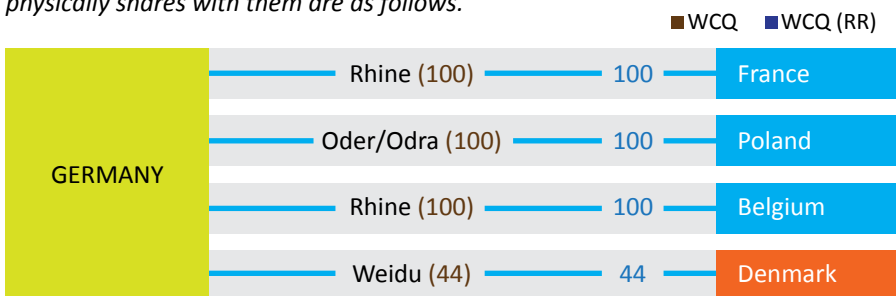
2. The share of every country in the watercourse is taken into consideration. When a country has a share of the river which is less than 1 per cent, the country is not taken into consideration for evaluation. However, such a country has been considered when it is a part of the basin arrangement.

3. When a country has a share of more than 1 per cent, yet considers it not necessary to be a part of the river basin arrangement as it considers the shared watercourse insignificant, then the country has been excluded for evaluation.

4. The shared watercourses that have been excluded for various reasons including insignificance have not been evaluated (See Table V). Hence the total number of countries that have been actually evaluated here is 139 out of the total 146.

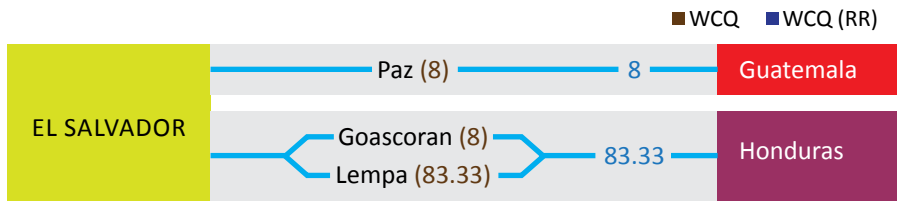
5. The final WCQ score is evaluated in order to evaluate the relations between countries. It is then represented as WCQ (Riparian Relations) i.e. WCQ (RR). The WCQ (RR) score for a country would be its corresponding WCQ score on the shared watercourse with its immediate neighbour.

**For Example:** Germany's WCQ with its 4 neighbouring nations based on the watercourses that it physically shares with them are as follows.



6. When two countries share multiple watercourses with separate arrangements for each of them, the highest WCQ score is the WCQ (RR).

**For Example:** WCQ (RR) of El Salvador is given below. Note that its WCQ (RR) with Honduras is 83.33 as it is the highest.



### B. Computation of Risk of War and the process of establishing its causal link with WCQ

The Risk of War between neighbouring countries has also been evaluated based on the definitions provided earlier. Only countries sharing a border are taken into consideration for the computation of risk of war.

The WCQ and the Risk of War between nations that physically share borders as well as rivers were then compared. The following causal link emerged:

- Any two countries in active water cooperation (certainly) do not go to war
- Any two countries facing war or risk of war (certainly) do not have active water cooperation
- Any two countries not engaged in active water cooperation do not necessarily go to war.

- 1. When countries have a WCQ (RR) 50 and above, they are on the path of peace building and have no risk of war. This is when we see that countries have completed the transition into political cooperation. At this stage countries have technical, transitional and at least one or more of the political parameters i.e parameters 7, 8, 9, 10.
- 2. When a country has a WCQ (RR) of 23.33 or higher and less than 50, it shows signs of peace building because it is transcending the realm of technical cooperation. This is when countries have technical cooperation and at least one component of transitional parameters i.e parameters 5 and 6.
- 3. When a country has a WCQ (RR) score less than 23.33, it could be at a risk of war. This is when there is only technical cooperation between countries i.e when countries have one or more of the parameters between 1 and 4 but none from 5- 10.

## Caveats of WCQ

### 1. Significance of shared watercourses

Some shared watercourses can be considered insignificant for various reasons and hence have no cooperation. The reasons are as follows:

- Some watercourses are primarily within one country with a less than 1 per cent share in another.
- Some watercourses may be physically too remote to be harnessed and therefore the concerned countries may not want to cooperate on them.
- In some cases, potential economic costs of cooperation in terms of expenditure on cooperative mechanism and projects may far outweigh potential economic benefits and therefore countries may not want to cooperate.

Those rivers excluded for insignificance as well as for other reasons are listed in Table V.

WCQ is effective while measuring cooperation on shared watercourses that are considered significant by the riparian countries. The countries may avoid cooperation on watercourses that they do not consider significant enough for various reasons.

Avoidance of cooperation because of the adverse physical attributes of the water body or concern for high cost without considerable returns is benign and has no implications for wider relationship.

Some watercourses may have economic potential outweighing economic costs and yet countries may avoid cooperation for hidden political and security reasons. This is a deliberate avoidance of cooperation and has strong implications for wider relationship.

If two countries are engaged in active or near active cooperation on one or two rivers but not on all of the rivers shared by them, in most situations it would indicate an overall interest in a collaborative relationship but avoidance of cooperation over some water bodies for benign reasons. In such a situation, the concerned riparian countries will have reduced or no risk of war.

While using WCQ it is necessary to know if the reason for avoidance of cooperation is established in a credible way. However, the examination of correlation between risk of war and absence of cooperation can implicitly explain the reason for avoidance of cooperation.

### 2. Fragmentation of basin cooperation

Another caveat relates to large basins shared by three or more countries. In regions where there is mature cooperation, all the countries cooperate through a single basin organisation. This is an inclusive process and provides hope for regional peace.

In regions where such a sense of common purpose is missing, some, but not all, pairs of countries in the basin cooperate. If the non-cooperating countries



are geographically far away from each other, their avoidance of cooperation is benign with no relevance for risk of war. However, if they are immediate neighbours and yet do not want to cooperate; their avoidance of cooperation is deliberate with adverse implication for the war and peace equation. Overall, the failure of all or most countries to cooperate through a single basin mechanism represents a fragmented situation.

### 3. Time Frame

The most significant caveat is with reference to time frame. As already mentioned, the WCQ is for a defined period and is a dynamic score. It represents a statistical photograph of the state of cooperation at the given moment. It should not be seen as a commentary on the long-term nature of relationships between any countries.

### 4. Data sources for WCQ

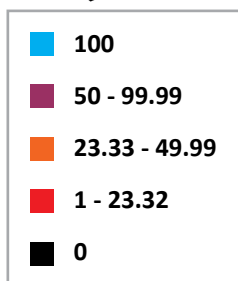
This report is based on primarily publically available information in four out of the five UN languages (English, Spanish, French and Russian) supplemented by expert input from different parts of the world. We have used various databases such as the Global Environment Facility (GEF) for the list of 286 shared watercourses to construct WCQ. What has been noticed thus far is that the countries that have good cooperation also tend to make information available which is accessible publically thereby increasing transparency. This could further serve as a point of reference for those nations that may have not scored so well. When nations are willing to share basic information on cooperation, they would not only enhance their score but also a general image of a nation that encourages transparency in data sharing.

### 5. Palestine

As the Palestinian Territories are not sovereign, the Palestinian Authority is not in a position to decide on water cooperation with Israel with a free will. Therefore, Israel-Palestine relations are not included in this study.

## Legend

WCQ

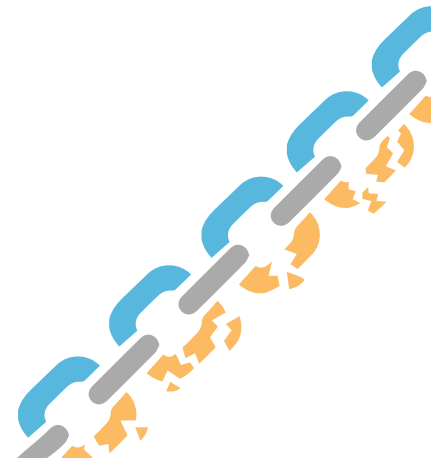


## Other Initiatives

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A number of attempts have been made to measure transboundary cooperation over the years. The Oregon State University was a pioneer in this effort by making data on transboundary water treaties available in the public domain. The database provides useful information such as the respective water shares of countries in every basin, legal treaties and some case studies. This report draws some of the information, in particular on many of the treaties and water shares of riparian countries from the Oregon State University database, as per availability on their website as of June 2017. [www.transboundarywaters.orst.edu](http://www.transboundarywaters.orst.edu)

In 2017, two UN agencies are mandated to prepare development indicators in compliance with SDG 6.5.2 which is about promoting water cooperation. This task is assigned to UN Economic Commission for Europe (UNECE) and United Nations Educational, Scientific and Cultural Organization (UNESCO). The UNECE has sent a questionnaire to UN member states which is comprehensive covering a very broad spectrum of issues. It will provide very valuable insight in compliance of the SDG 6.5.2 for those countries that respond fully, substantially and honestly. As WCQ is an independent effort, it provides parameters for all 146 countries in the world that have shared watercourses as observed independently using common criteria, without depending on the political will of the countries to share information. The emphasis of WCQ is on parameters that can be useful for political and strategic inference.



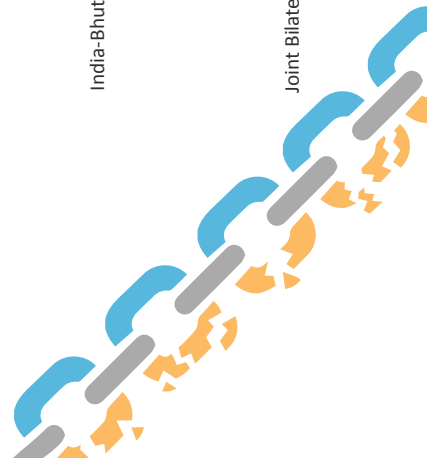
# Table 1: Water Cooperation Quotient Ranking

The Organization for Development of the Senegal River (Organisation pour la Mise en Valeur du fleuve Sénégal) (OMVS) (Guinea, Mali, Mauritania, Senegal)	100
The Gambia River Basin Development Organization (Organisation pour la Mise en Valeur du fleuve Gambie) (OMVG) (Gambia, Guinea, Guinea-Bissau, Senegal)	100
(Benin, Burkina Faso, Cameroon, Chad, Côte d'Ivoire, Guinea, Mali, Niger, Nigeria)	100
Niger Basin Authority (NBA)	100
International Commission for the Protection of the Danube River (ICPDR) (Austria, Bosnia and Herzegovina, Bulgaria, Croatia, Czech Republic, Germany, Hungary, Moldova, Montenegro, Romania, Serbia, Slovakia, Slovenia, Ukraine)	100
(Austria, Belgium, France, Germany, Italy, Lichtenstein, Luxembourg, Netherlands)	100
International Commission for the Protection of the Rhine River (ICPR)	100
Commission for the Application and Development of Albufeira Convention (Spain-Portugal)	100
Finnish- Russian Joint Commission on the Utilization of Frontier Waters (JWC) (Finland-Russia)	100
International Commission for the Protection of the Odra/Oder River against Pollution (Czech Republic, Germany, Poland, Slovakia)	100
Intergovernmental Coordinating Committee of the Countries of La Plata Basin (Comité Intergubernamental Coordinador de los Países de la Cuenca del Plata) (CIC) (Argentina, Bolivia, Brazil, Paraguay, Uruguay)	90
Brazil – Uruguay Joint Commission – for Lagoon Mirim (Comisión Mixta Uruguaya – Brasileña para el Desarrollo de la Cuenca de la Laguna Merin) (CLM) (Brazil-Uruguay)	88
The Autonomous Binational Authority of Lake Titicaca (Autoridad Binacional Autónoma del Lago Titicaca) (ALT) (Bolivia-Peru)	88
Joint Commission on the Protection and Sustainable Use of Transboundary Waters -Estonia and Russia (Estonia-Russia)	88
The International Scheidt Commission (Belgium-France)	88
Permanent Joint Technical Commission (PJTC) (Angola-Namibia)	84
TRIFINIO Plan (El Salvador, Guatemala, Honduras)	83.33
Tripartite Permanent Technical Committee (TPTC) (Mozambique, South Africa, Swaziland)	83.33
Finnish-Swedish Transboundary River Commission (FSTRC)/FRC (Finland-Sweden)	83.33
Tripartite Permanent Technical Committee (TPTC) and Komati Basin Water Authority (KOBWA) (Mozambique, South Africa, Swaziland)	83.33
International Boundary and Water Commission (IBWC) - Comisión Internacional de Límites y Aguas entre México y Estados Unidos (CILA) (Mexico-United States of America(USA))	80
Binational Commission for the Integrated Management of the Hydric Resources of Zarumilla River Basin between Ecuador and Peru (Comisión Binacional para la Gestión Integrada de los Recursos Hídricos de la Cuenca Transfronteriza del Río Zarumilla entre Ecuador y Perú) (Ecuador-Peru)	80
Amazon Cooperation Treaty Organization (ACTO) (Bolivia, Brazil, Colombia, Ecuador, Guyana, Peru, Venezuela)	73.33
Orange-Senqu River Commission (ORASECOM) (Botswana, Lesotho, Namibia, South Africa)	73.33



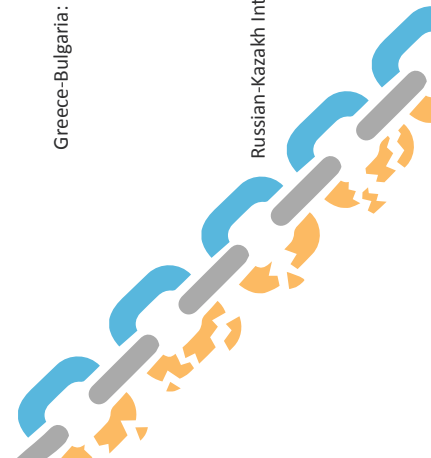
WCC ■ 100 ■ 50 - 99.99 ■ 23.33 - 49.99 ■ 1 - 23.32 ■ 0

International Joint Commission (IJC) (Canada-United States of America(USA))	68
Binational Technical Committee of Hydrographical Basins – Colombia and Ecuador (Comité Técnico Binacional de Cuencas Hidrográficas de Colombia y Ecuador) (Colombia-Ecuador)	68
Finnish-Norwegian Transboundary Water Commission (Finland-Norway)	68
Chu-Talas Commission (Kazakhstan-Kyrgyzstan)	68
The International Commission for the Protection of Italo-Swiss Waters (Commissione internazionale per la protezione delle acque italo-svizzer) (CIPAS) (Italy-Switzerland)	68
International Fund for saving the Aral Sea (IFAS) and Multiple permanent joint and regional bodies including Interstate Coordination Water Commission (ICWC) (Kazakhstan, Kyrgyzstan, Tajikistan, Turkmenistan, Uzbekistan) *Aral Sea	66.67
International Commission of the Congo-Oubangui-Sangha Basin (Commission Internationale du Bassin Congo-Oubangui-Sangha) (CICOS) (Angola, Cameroon, Central African Republic, Democratic Republic of the Congo (Brazzaville))	66.67
International Commission for the Protection of Elbe River (Austria, Czech Republic, Germany, Poland)	66.67
Mekong River Commission and Lancang-Mekong Commission (Cambodia, China, Laos, Myanmar, Thailand, Vietnam)	66.67
Volta Basin Authority (VBA) (Benin, Burkina Faso, (Côte d'Ivoire), Ghana, Mali, Togo)	66.67
Zambezi Watercourse Commission (ZAMCOM) (Angola, Botswana, Malawi, Mozambique, Namibia, Tanzania, Zimbabwe)	66.67
Zambezi River Authority (ZRA) (Zambia-Zimbabwe)	66.67
Technical French-Swiss Committee (Comité Technique Franco-Suisse) (France-Switzerland)	64
Binational Commission for Integrated Management of the Sixaola River Basin (Comisión Binacional para el manejo integral del Río Sixaola) (Costa Rica-Panama)	64
Permanent Cross-Border Commission on the Development of the Dnieper-Vistula Waterway (Belarus-Ukraine) *Dnieper, *Vistula/Wista	63.33
India-Bangladesh Joint Rivers Commission (JRC) (Bangladesh-India)	60
The Joint Expert Working Group (Bulgaria-Greece)	60
India-Bhutan Joint Group of Experts on Flood Issues (Bhutan-India) * Ganges-Brahmaputra-Meghna	56.67
Israeli-Jordanian Joint Water Committee (Israel-Jordan) * Jordan River	56.67
Permanent Joint Technical Commission for the Nile Waters (PJTC) (Egypt-Sudan) * Nile	56.67
Polish-Ukrainian Transboundary Waters Commission (Poland-Ukraine) *Vistula/Wista	56.67
Joint Bilateral Commission Dominican Republic – Haiti (Comisión Mixta Bilateral Dominico-Haitiana) (Dominican Republic- Haiti)	56



Technical Working Group (Bulgaria-Turkey)	56
International Commission on Limits and Water (Comisión Internacional de Límites y Agua ) (CILA) (Guatemala-Mexico)	56
*Kura-Araks (Armenia-Iran)	53.33
Lake Chad Basin Commission (LCBC) (Cameroon, Chad,Central African Republic, Libya, Niger, Nigeria)	53.33
Limpopo Watercourse Commission (LIMCOM) (Botswana, Mozambique, South Africa, Zimbabwe)	53.33
Joint Technical Committee (Iraq-Turkey) *Tigris-Euphrates	53.33
Golok (Malaysia-Thailand)	52
India-Bangladesh Joint Rivers Commission (JRC) (Bangladesh-India) * Ganges-Brahmaputra-Meghna	50
Permanent Okavango River Basin Water Commission (OKACOM) (Angola, Botswana, Namibia)	50
Polish-Slovak Transboundary Waters Commission (Poland-Slovakia) *Vistula/Wista	50
Joint Commission for Puyango-Tumbes and Catamayo-Chira Basins (Comisión Mixta Ecuatoriana-Peruana para las cuencas Puyango-Tumbes y Catamayo-Chira) (Ecuador-Peru)	48
Advisory Council of the Gauja/Koiva River Basin (Estonia-Latvia)	48
Interstate Water Committee (ISWC) (Bosnia and Herzegovina-Croatia)	48
International Commission on Limits and Water (Comisión Internacional de Límites y Agua) (CILA) (Guatemala-Mexico) *Hondo	46.67
Permanent Binational Commission to Strengthen Economic Cooperation and Physical Integration – Sub-Commission of Environment (Comisión Binacional de carácter permanente con el objeto de intensificar la cooperación económica y la integración física – Subcomisión de ambiente) (Argentina-Chile)	44
North-South WFD Coordination Group (Ireland-United Kingdom)	44
Song Vam Co Dong (Cambodia-Vietnam)	44
Ministries of Respective Countries (Denmark-Germany)	44
Ca/Song Koi (Laos-Vietnam)	40
Ma (Laos-Vietnam)	40
Nile Basin Initiative (NBI) (Burundi, Democratic Republic of the Congo (DRC), [Egypt], Ethiopia, Kenya, Rwanda, South Sudan, Sudan, Tanzania, Uganda) *Nile	40
Pakchan (Myanmar-Thailand)	40

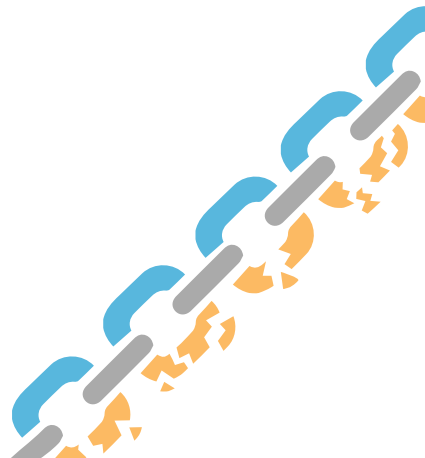
Pandaruan (Brunei-Malaysia)	40
Polish-Belarusian Intergovernmental Coordination Commission for Transboundary Cooperation (Belarus-Poland) *Vistula/Wista	40
Permanent Binational Commission to Strengthen Economic Cooperation and Physical Integration – Sub-Commission of Environment (Comisión Binacional de carácter permanente con el objeto de intensificar la cooperación económica y la integración física – Subcomisión de ambiente) (Argentina-Chile) *Zapaleri	36.67
Joint Technical Commission of Bidasoa (Comisión Técnica Mixta del Bidasoa) (France-Spain)	36
Cuvelai Watercourse Commission (CUVECOM) (Angola-Namibia)	36
India-Nepal Joint Committee on Water Resources and Mahakali River Commission (India-Nepal) * Ganges-Brahmaputra-Meghna	33.33
Iran and Turkmenistan Joint Management Commission for Doosti Dam (on Harirud) (Iran-Turkmenistan) * Hari/Harirud	33.33
*Kura-Araks (Azerbaijan-Georgia)	33.33
Dniester (Moldova-Ukraine)	32
Joint Permanent Commission for the Hydro-Economy (Commissione mista permanente per l'idroeconomia) (Italy-Slovenia)	32
Expert/Joint Working Group on Cooperation on Water and Environment ("Expert WG") (Bulgaria-Greece) *Maritsa	30
Lake Tanganyika Authority (ITA) (Burundi, Democratic Republic of the Congo (DRC), Tanzania, Zambia)	30
Working Groups within Respective Ministries (Latvia-Lithuania)	28
Russia-Mongolia Working Groups (Mongolia-Russia)	28
Russian-Kazakh Intergovernmental Commission on Joint Use and Protection of Transboundary Water Courses (Kazakhstan-Russia)	28
Coordination Permanent Committee (France-Italy)	28
Joint Russian-Chinese Commission on the Management and Protection of Transboundary Waters (China-Russia)	28
Greece-Bulgaria: Expert/Joint Working Group on Cooperation on Water and Environment ("Expert WG") (Bulgaria-Greece) *Struma	26.67
Russia-China Joint Commission (China-Russia) *Amur	23.33
Russia-Mongolia Working Groups (Mongolia-Russia) *Amur	23.33
Technical Working Group (Bulgaria-Turkey) *Maritsa	23.33
Russian-Kazakh Intergovernmental Commission on Joint Use and Protection of Transboundary Water Courses (Kazakhstan-Russia) *Ob	23.33
Russia-Mongolia Working Groups (Mongolia-Russia) *Pu Lon T'o	23.33



Atrak (Iran-Turkmenistan)	20
Joint Permanent Water Commission for Buzi, Pungwe and Sabi River Basin (BuPuSa) (Mozambique-Zimbabwe)	20
Joint Russian-Belarusian Commission on Protection and Rational Use of Transboundary Water Bodies (Belarus-Russia) *Dnieper	20
India-China Joint Experts Level Mechanism (China-India) *Ganges-Brahmaputra-Meghna	20
Iran-Afghanistan: Helmand River Delta Commission (Afghanistan-Iran) *Helmand	20
Kazakhstan-China Joint Commission in the Field of Use and Protection of Transboundary Rivers (Joint Commission) (China-Kazakhstan) *Ili/Kunes He	20
Permanent Indus Commission between India and Pakistan (India-Pakistan) *Indus	20
*Kura-Araks (Iran-Azerbaijan)	20
Lake Prespa (Albania, Greece, Macedonia)	20
Commission on the Environment of the Russian-Lithuanian Council for Long-Term Cooperation between Regional and Local Authorities in the Kaliningradoblast and in Lithuania (Lithuania-Russia) *Neman	20
*Neman (Belarus-Lithuania)	20
Kazakhstan-China Joint Commission in the Field of Use and Protection of Transboundary Rivers (Joint Commission) (China-Kazakhstan) *Ob, *Pu Lon To	20
Ruvuma River Joint Water Commission (JWC) (Mozambique-Tanzania)	20
*Yarmouk (Jordan-Syria)	20
Joint Russian-Belarusian Commission on Protection and Rational Use of Transboundary Water Bodies (Belarus-Russia) *Daugava	16.67
*Maritsa (Greece-Turkey)	16.67
Joint Russian-Belarusian Commission on Protection and Rational Use of Transboundary Water Bodies (Belarus-Russia) *Neman	16.67
Samur (Azerbaijan-Russia)	16
Joint Technical Committee (Tigris) (Iran-Iraq) *Tigris	13-33
Umbeluzi (Mozambique-Swaziland)	13-33
Joint Boundary Water Commission (JBWC) (Georgia-Turkey)	12
Permanent Greek-Albanian Commission on Transboundary Freshwater Issues (Albania-Greece)	12
International Commission on Limits and Water (Comisión Internacional de Límites y Agua) (CILA) (Belize-Mexico) *Hondo	10

Technical Binational Commission for the Formulation of an Integral Conservation and Plan of Use of Catatumbo River (Comisión Técnica Binacional para la Formulación del Plan de Conservación y Aprovechamiento Integral de la Cuenca del Río Catatumbo) (Colombia-Venezuela)	8
Binational Management Group Goasoran (Grupo Gestor Binacional de Goasoran) (El Salvador-Honduras)	8
Kogilnik (Moldova-Ukraine)	8
Binational Commission for Paz River (Comisión Binacional del Río Paz) (El Salvador-Guatemala)	8
Expert Group meetings (Latvia-Lithuania) *Daugava	6.67
*Daugava (Belarus-Lithuania)	6.67
Interstate Commission of Armenia and Turkey on the Use of Akhuryan Water Reservoir (Akhuryan River flows in to Aras); Joint Technical Committee to Manage Dam between Turkey and Armenia on Arpacay River (Armenia-Turkey) *Kura-Araks	6.67
*Kura-Araks (Georgia-Turkey)	6.67
Polish Lithuanian Commission on Transboundary Waters (Lithuania-Poland) *Neman	6.67
Joint Committee of Protection and Using the Transboundary Waters of China and Mongolia (China-Mongolia) *Pu Lon T'o	6.67
An Nahr Al Kabir (Lebanon-Syria)	4
Bei Jiang/Hsi (China-Vietnam)	4
Beilun (China-Vietnam)	4
Joint Commission of Limits and Characterization of the Uruguay-Brazil border (Comisión Mixta de Límites y Caracterización de la frontera Uruguay-Brasil) (Brazil-Uruguay)	4
Don, Elancik, Mius (Russia-Ukraine)	4
Mono River Basin Authority (MBA) (Benin-Togo)	4
*Asi/Orontes (Lebanon-Syria)	3.33
Komoe-Bia-Tano Basin Authority (Burkina Faso, Côte d'Ivoire, Ghana, Mali)	3.33
*Dnieper (Russia-Ukraine)	3.33
*Indus (China-India)	3.33
*Kura-Araks (Armenia-Georgia)	3.33
Cavally-Cestos-Sassandra Basin Authority (Côte d'Ivoire, Guinea, Liberia)	3.33
*Tigris-Euphrates (Iraq-Syria)	3.33

Table 1: Water Cooperation Quotient Ranking



\*Tigris-Euphrates (Turkey-Syria) 3.33 █

Amacuro, Barima (Guyana-Venezuela) 0 █

\*Aral Sea (Afghanistan-Tajikistan) 0 █

\*Aral Sea (Afghanistan-Turkmenistan) 0 █

\*Aral Sea (Afghanistan-Uzbekistan) 0 █

\*Asi/Orontes (Syria-Turkey) 0 █

Astara Chay (Azerbaijan-Iran) 0 █

Belize (Mopán in Guatemala), Moho, Sarstun, Temash (Belize-Guatemala) 0 █

Cancoso/Lauca (Bolivia-Chile) 0 █

Chamelecon (Guatemala-Honduras) 0 █

Changuinola, Chiriquí, Corredores/Colorado (Costa Rica-Panamá) 0 █

Choluteca, Coco/Segovia, Negro (Honduras-Nicaragua) 0 █

Conventillos, San Juan (Costa Rica-Nicaragua) 0 █

Daoura, Dra, Guir, Oued Bon Naima, Tafna (Algeria-Morocco) 0 █

\*Daugava (Belarus-Latvia) 0 █

\*Daugava (Latvia-Russia) 0 █

Digul, Fly, Jayapura, Maro, Sepik, Tami, Tjeroaka/Wanggoe, Vanimo-Green (Indonesia-Papua New Guinea) 0 █

Drin (Albania, Macedonia, Montenegro, Serbia) 0 █

Essequibo (Guyana, Suriname, Venezuela) 0 █

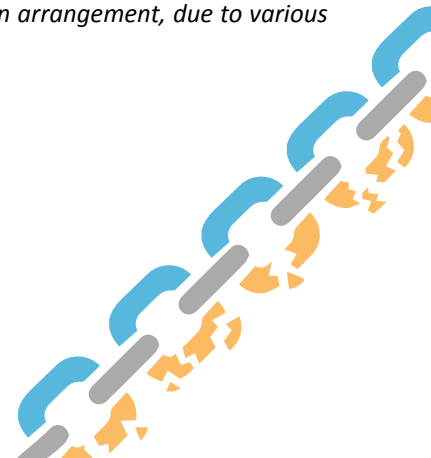
Gash (Eritrea, Ethiopia, Sudan) 0 █

Hamun-i-Mashkel/Rakshan (Afghanistan, Iran, Pakistan) 0 █

Han (North Korea-South Korea)	0
*Hari/ Harirud, Kowl E Namaksar (Afghanistan-Iran)	0
*Helmand, *Indus (Afghanistan-Pakistan)	0
*Ili/Kunes He (Kazakhstan-Kyrgyzstan)	0
*Jordan River (Israel-Lebanon)	0
Juba-Shibeli (Ethiopia, Kenya, Somalia)	0
Kaladan (India-Myanmar)	0
Krka (Bosnia and Herzegovina-Croatia)	0
*Kura-Araks (Armenia-Azerbaijan)	0
Lava/Pregel, Prohladnaja (Poland-Russia)	0
Murgab (Afghanistan-Turkmenistan)	0
*Neman (Poland-Russia)	0
Orinoco (Colombia-Venezuela)	0
Psou, Sulak, Terek (Georgia-Russia)	0
Salween (China, Myanmar, Thailand)	0
*Struma (Greece-Macedonia)	0
*Struma (Bulgaria-Macedonia)	0
*Struma (Bulgaria-Serbia)	0
Thukela (Lesotho-South Africa)	0
Vardar (Greece, Macedonia, Serbia)	0
*Yarmouk (Israel-Syria)	0
*Zapaleri (Argentina-Bolivia)	0

\*The river is covered by multiple river basin authorities and/or relationships.

**Note:** The countries listed here are only those that are either part of the river basin arrangement (excluding observer states) or have been evaluated as part of the relationship over the river. The countries mentioned in '{}' are not currently full-fledged members of the river basin arrangement, due to various reasons such as inactivity or non-ratification of agreement.



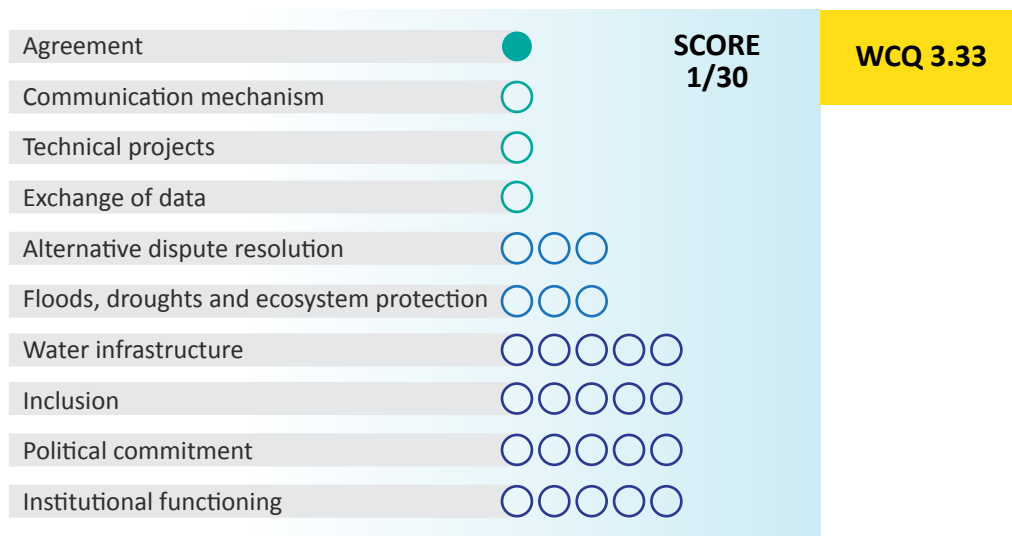
# Table II: Water Cooperation Quotient Analytics

## Africa

### Bia, Komoe, Tano

**Countries:** Burkina Faso, Côte d'Ivoire, Ghana, Mali

**Authority:** No authority\*



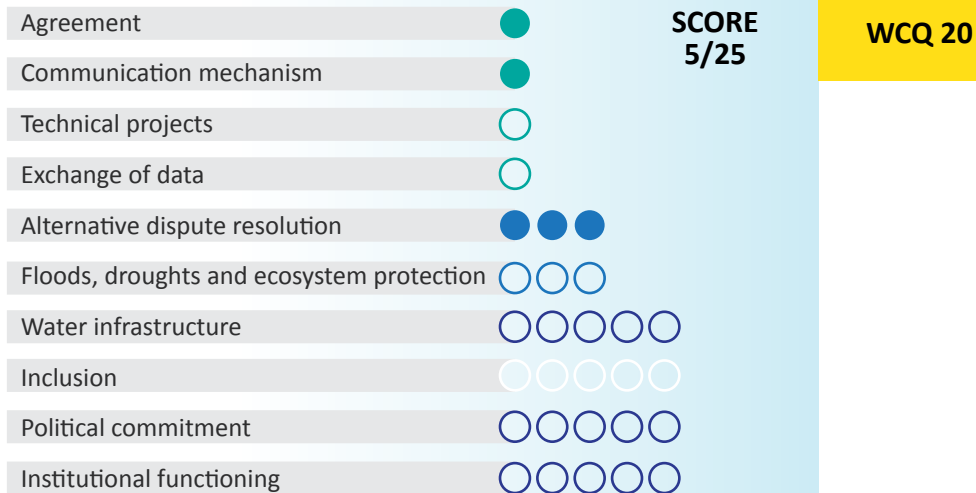
\*The Komoe-Bia-Tano Basin Authority is still in the process of being set up. As of 2017, workshops are being held to discuss the structure and functions of the Authority.



## Buzi, Pungwe, Sabi

**Countries:** Mozambique-Zimbabwe

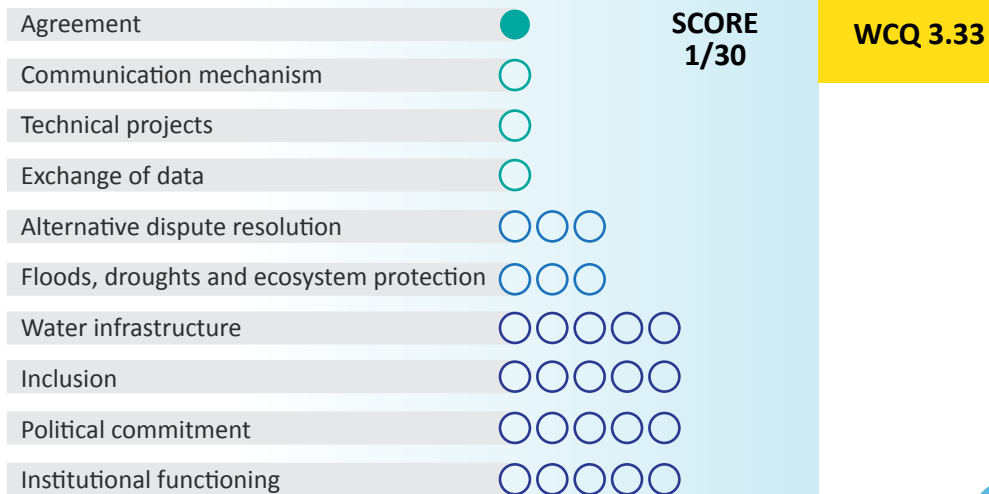
**Authority:** Joint Permanent Water Commission for Buzi, Pungwe and Sabi River Basin (BuPuSa)



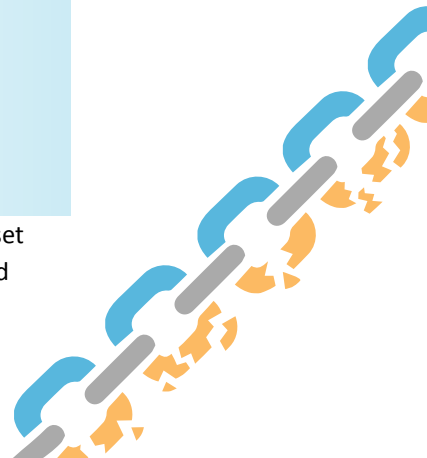
## Cavally, Cestos, Sassandra

**Countries:** Côte d'Ivoire, Guinea, Liberia

**Authority:** No authority\*



\*The Komoe-Bia-Tano Basin Authority is still in the process of being set up. As of 2017, workshops are being held to discuss the structure and functions of the Authority.



## Congo

**Countries:** Angola, Cameroon, Central African Republic, Democratic Republic of the Congo (DRC), Gabon, Republic of the Congo (Brazzaville), Tanzania, Zambia

**Authority:**

International Commission of the Congo-Oubangui-Sangha Basin (Commission Internationale du Bassin Congo-Oubangui-Sangha) (CICOS)

Lake Tanganyika Authority (LTA)\*

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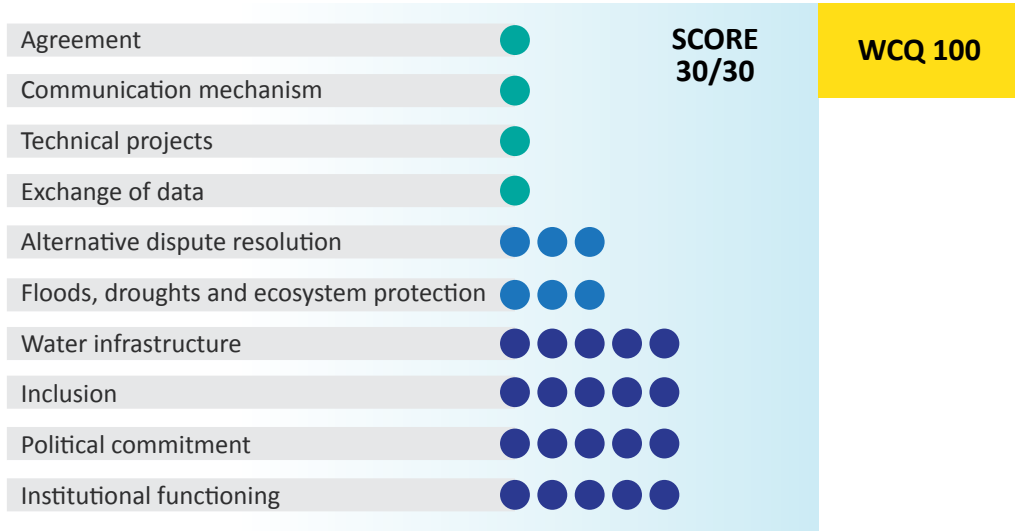
	CICOS	LTA
Agreement	1	1
Communication mechanism	1	1
Technical projects	1	1
Exchange of data	1	0
Alternative dispute resolution	3	3
Floods, droughts and ecosystem protection	3	3
Water infrastructure	5	0
Inclusion	0	0
Political commitment	0	0
Institutional functioning	5	0
<b>SCORE</b>	<b>20/30</b>	<b>9/30</b>
<b>WCQ</b>	<b>66.67</b>	<b>30</b>

\*The following countries are members of LTA- Burundi, Democratic Republic of the Congo (DRC), Tanzania and Zambia

## Corubal, Gambia, Geba

**Countries:** Gambia, Guinea, Guinea-Bissau, Senegal

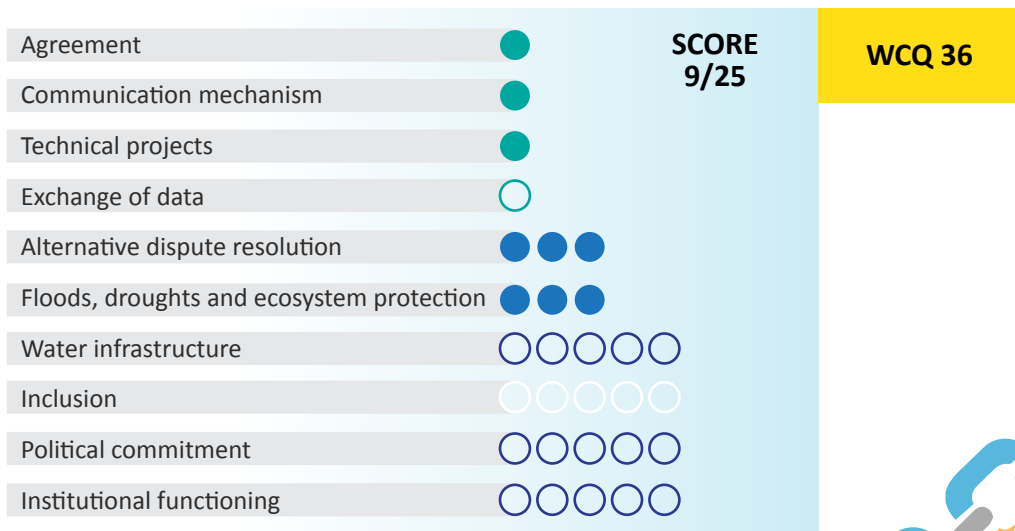
**Authority:** The Gambia River Basin Development Organization (Organisation pour la Mise en Valeur du fleuve Gambie) (OMVG)



## Cuvelai/Etosa

**Countries:** Angola-Namibia

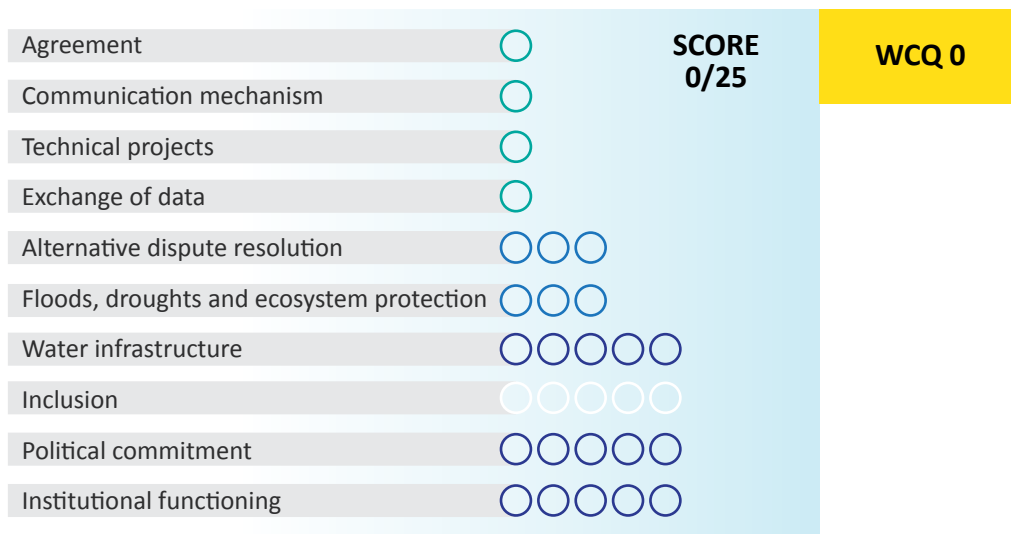
**Authority:** Cuvelai Watercourse Commission (CUVECOM)



## Daoura, Dra, Guir, Oued Bon Naima, Tafna

**Countries:** Algeria-Morocco

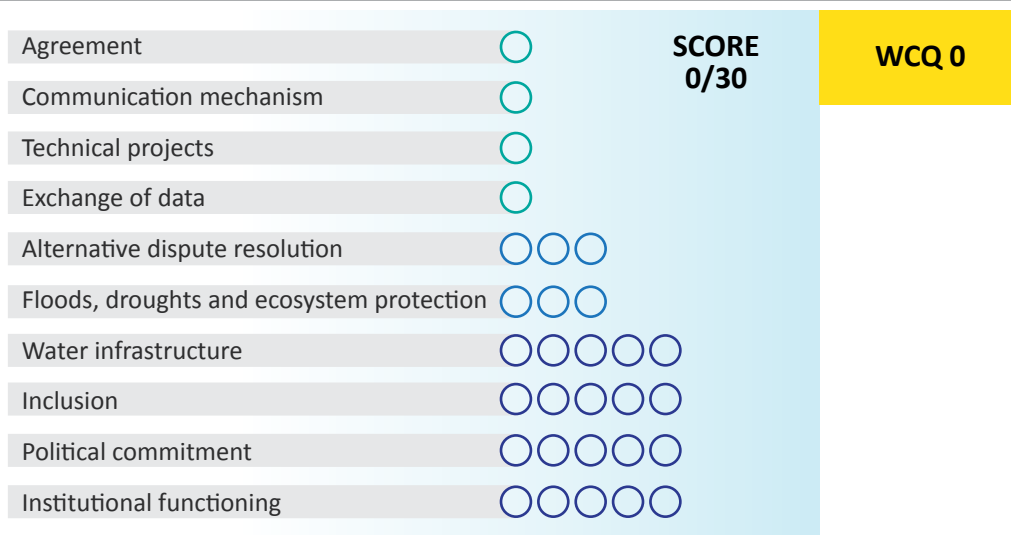
**Authority:** No cooperation



## Gash

**Countries:** Eritrea, Ethiopia, Sudan

**Authority:** No cooperation\*

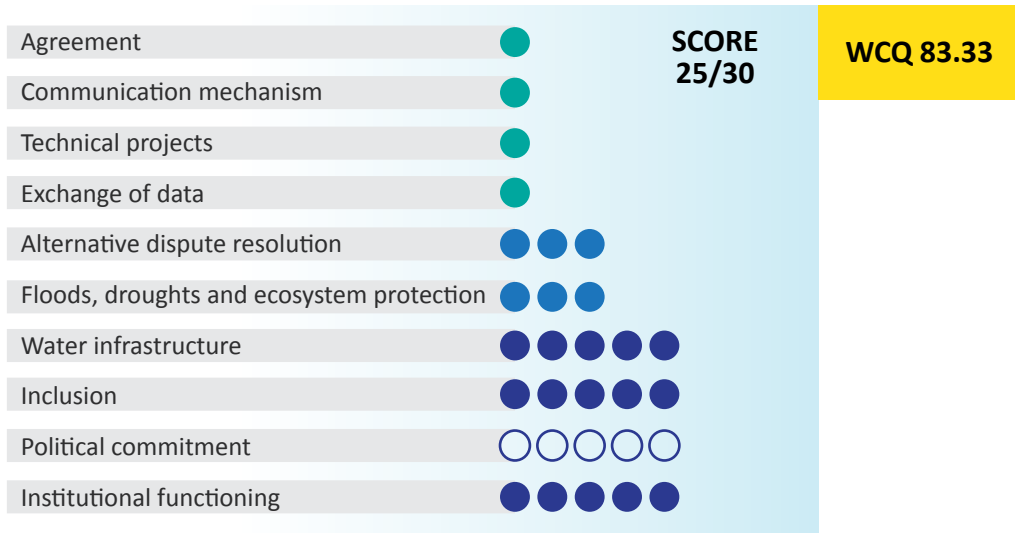


\*The exact nature of bilateral processes between Sudan and Eritrea on the Gash River is unknown.

## Incomati

**Countries:** Mozambique, South Africa, Swaziland

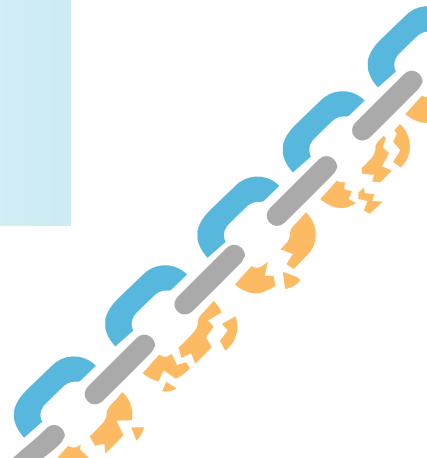
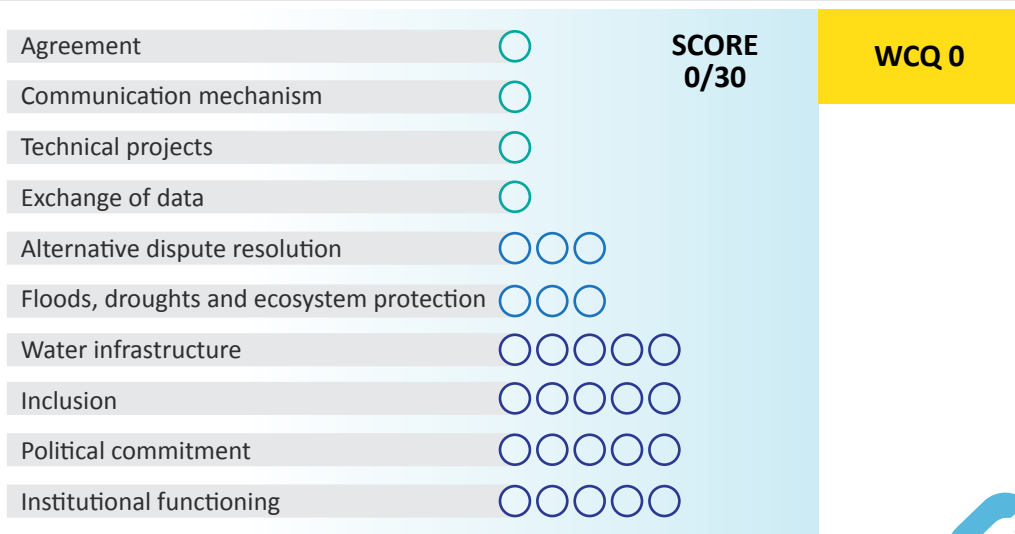
**Authority:** Mozambique, South Africa, Swaziland: Tripartite Permanent Technical Committee (TPTC)  
South Africa-Swaziland: Komati Basin Water Authority (KOBWA)



## Juba-Shibeli

**Countries:** Ethiopia, Kenya, Somalia

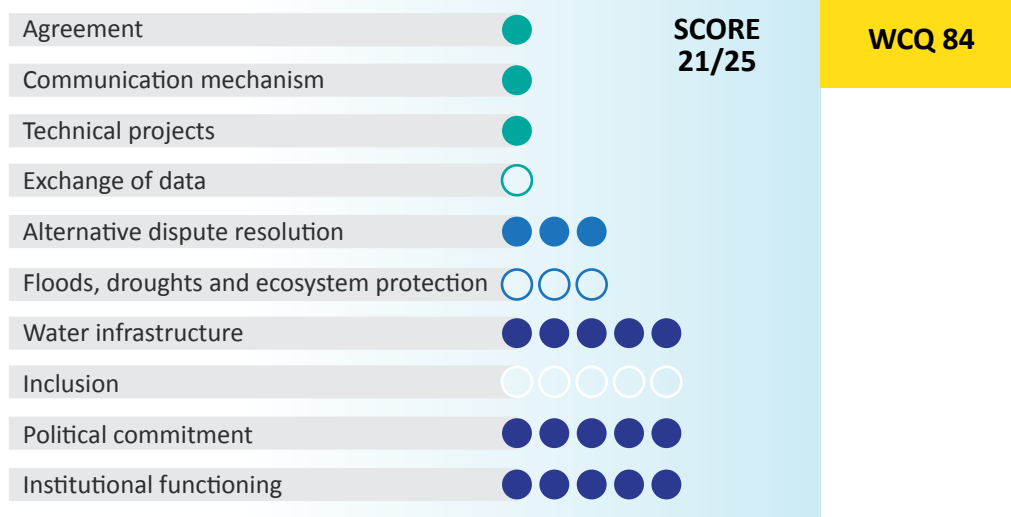
**Authority:** No cooperation



## Kunene

**Countries:** Angola-Namibia

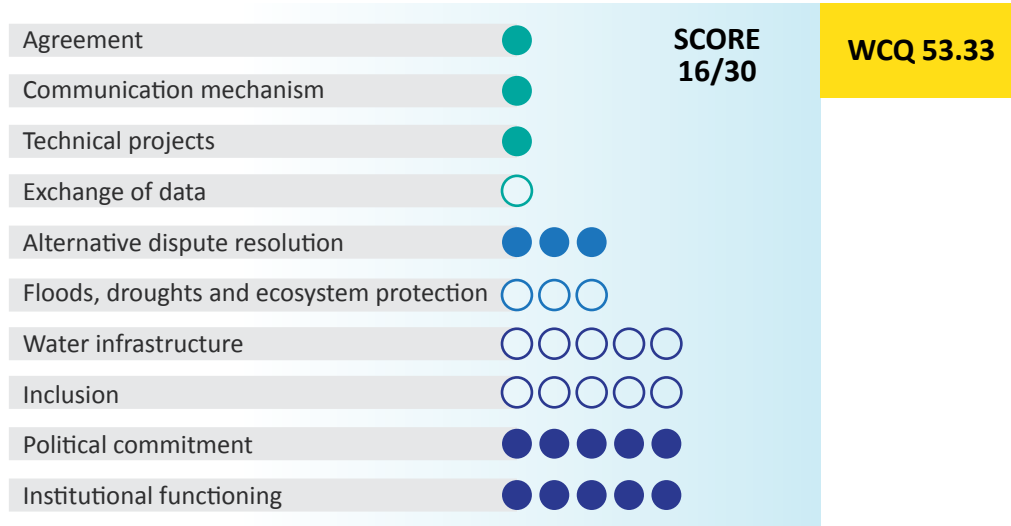
**Authority:** Permanent Joint Technical Commission (PJTC)



## Lake Chad

**Countries:** Algeria\*\*, Cameroon, Central African Republic, Chad, Libya\*, Niger, Nigeria, Sudan\*\*

**Authority:** Lake Chad Basin Commission (LCBC)



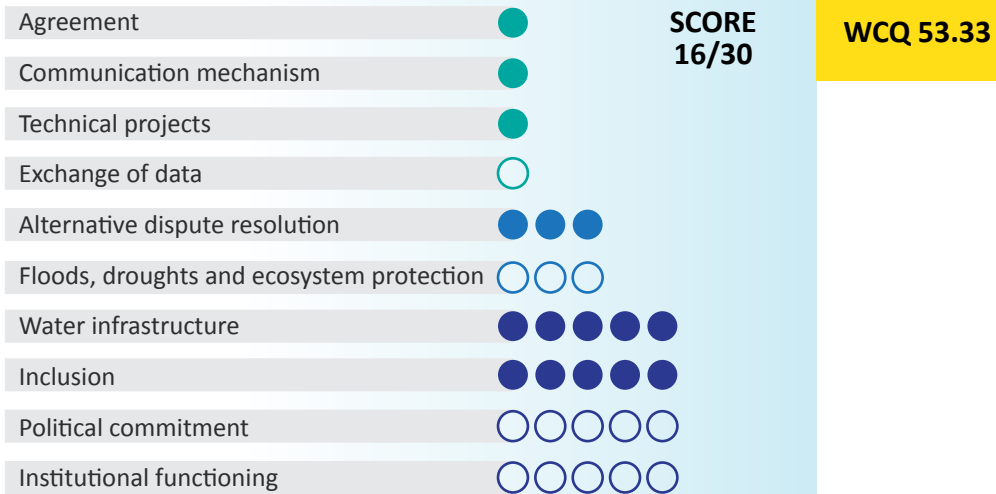
\*Libya's share of the Lake Chad Basin is less than one per cent, although it is a member of LCBC. Lake Chad's flow in Libya is undetermined.

\*\*Algeria and Sudan are Observer States in LCBC. While not riparians, Democratic Republic of Congo (DRC), Egypt and Republic of the Congo (Brazzaville) are also Observer States in LCBC.

## Limpopo

**Countries:** Botswana, Mozambique, South Africa, Zimbabwe

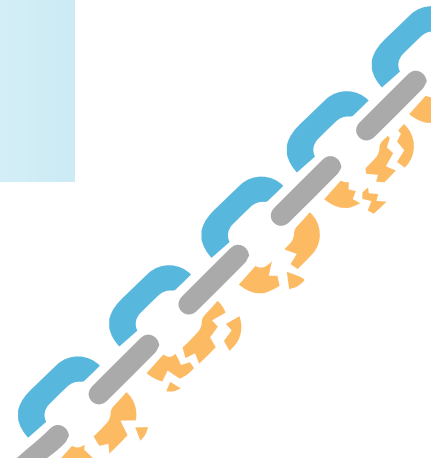
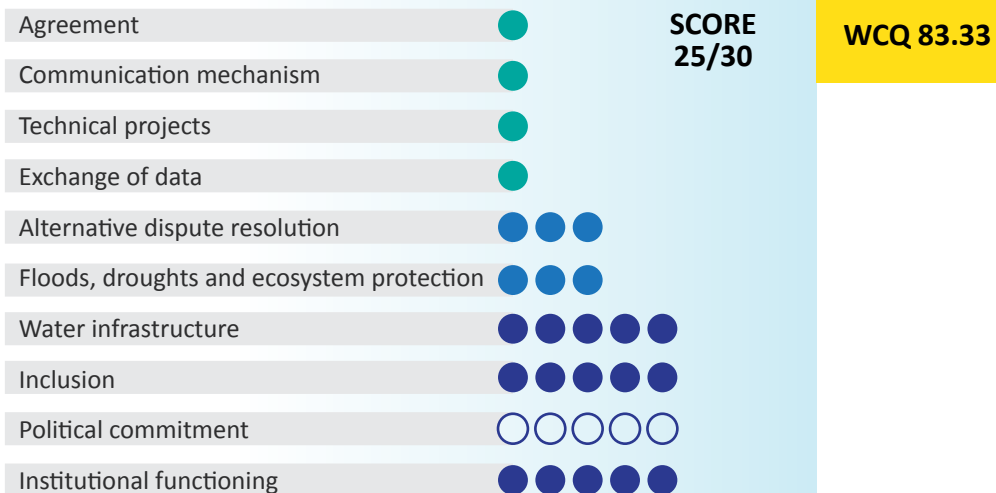
**Authority:** Limpopo Watercourse Commission (LIMCOM)



## Maputo

**Countries:** Mozambique, South Africa, Swaziland

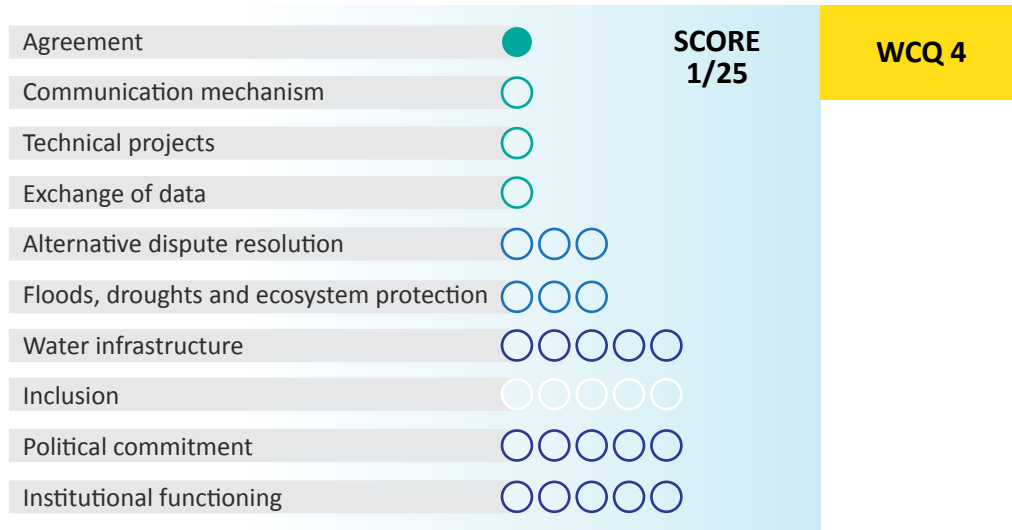
**Authority:** Tripartite Permanent Technical Committee (TPTC)



## Mono

**Countries:** Benin-Togo

**Authority:** Mono River Basin Authority (MBA)\*

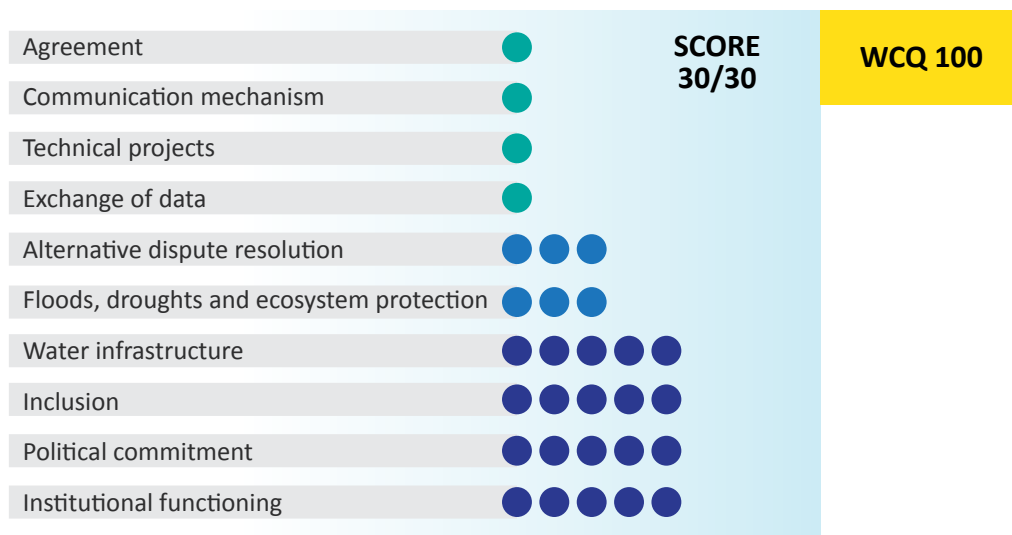


\*Mono River Basin Authority (MBA) was very recently set up in the year 2014.

## Niger

**Countries\*:** Benin, Burkina Faso, Cameroon, Chad, Côte d'Ivoire, Guinea, Mali, Niger, Nigeria

**Authority:** Niger Basin Authority (NBA)



\*Algeria while a part of the Niger basin is not a member of NBA as its share of the river is hydrologically inactive.



## Nile

**Countries:** Burundi, Democratic Republic of the Congo (DRC), Egypt\*, Eritrea\*\*, Ethiopia, Kenya, Rwanda, South Sudan, Sudan, Tanzania, Uganda

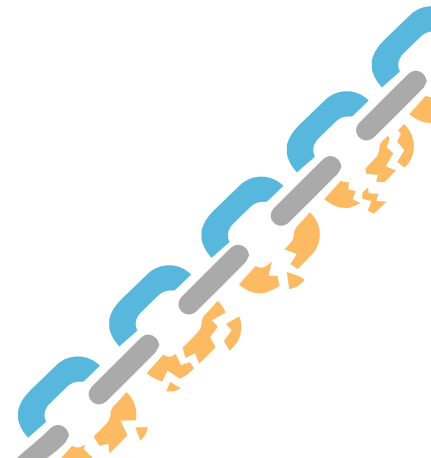
**Authority:** Nile Basin Initiative (NBI)

Egypt-Sudan: Permanent Joint Technical Commission for the Nile Waters (PJTC)

	NBI	PJTC
Agreement	1	1
Communication mechanism	1	1
Technical projects	1	1
Exchange of data	1	1
Alternative dispute resolution	0	0
Floods, droughts and ecosystem protection	3	3
Water infrastructure	0	0
Inclusion	0	0
Political commitment	0	5
Institutional functioning	5	5
<b>SCORE</b>	<b>12/30</b>	<b>17/30</b>
<b>WCQ</b>	<b>40</b>	<b>56.67</b>

\*Egypt is presently not participating in the Nile Basin Initiative.

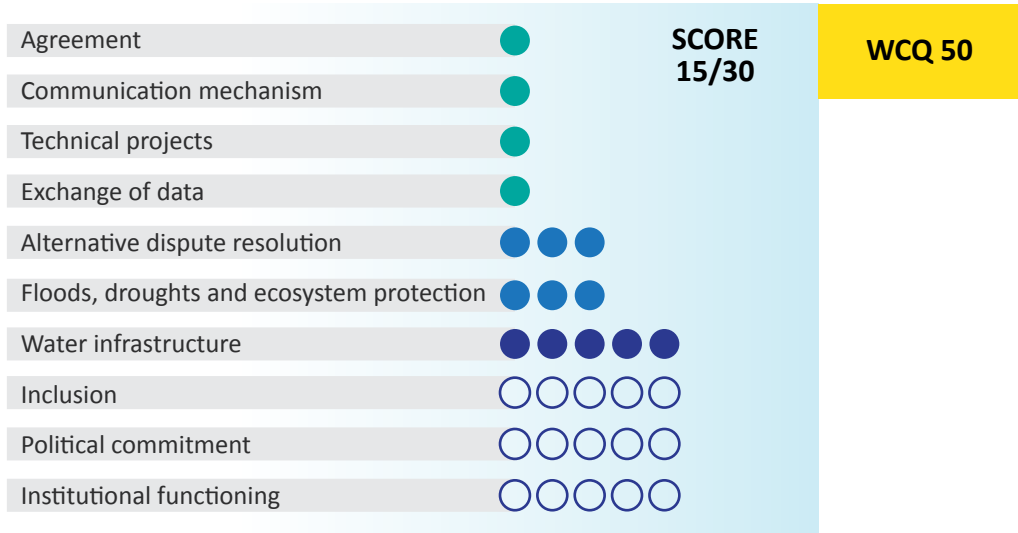
\*\*Eritrea is an Observer State in NBI.



## Okavango

**Countries:** Angola, Botswana, Namibia, Zimbabwe\*

**Authority:** Permanent Okavango River Basin Water Commission (OKACOM)

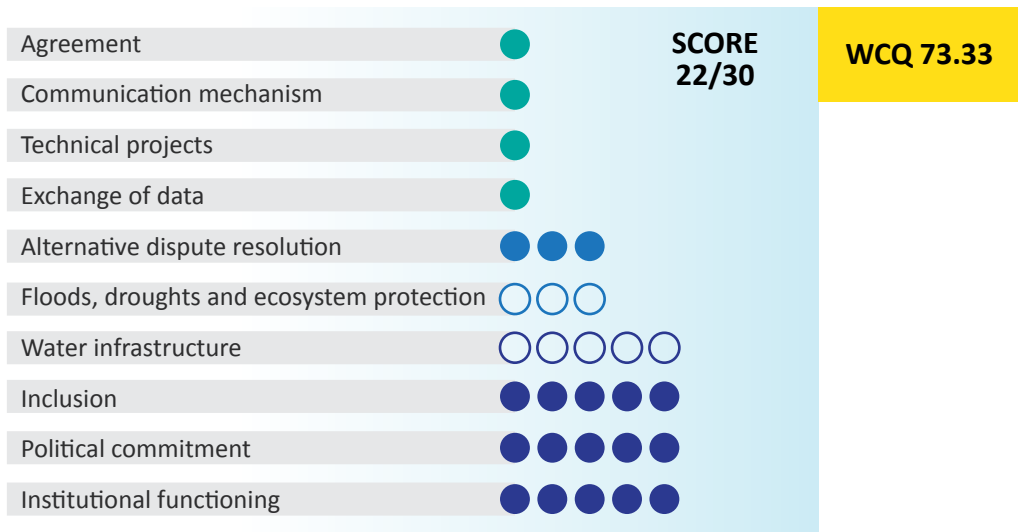


\* Zimbabwe which has a share of 3 per cent of the Niger River is not a member state of OKACOM.

## Orange

**Countries:** Botswana, Lesotho, Namibia, South Africa

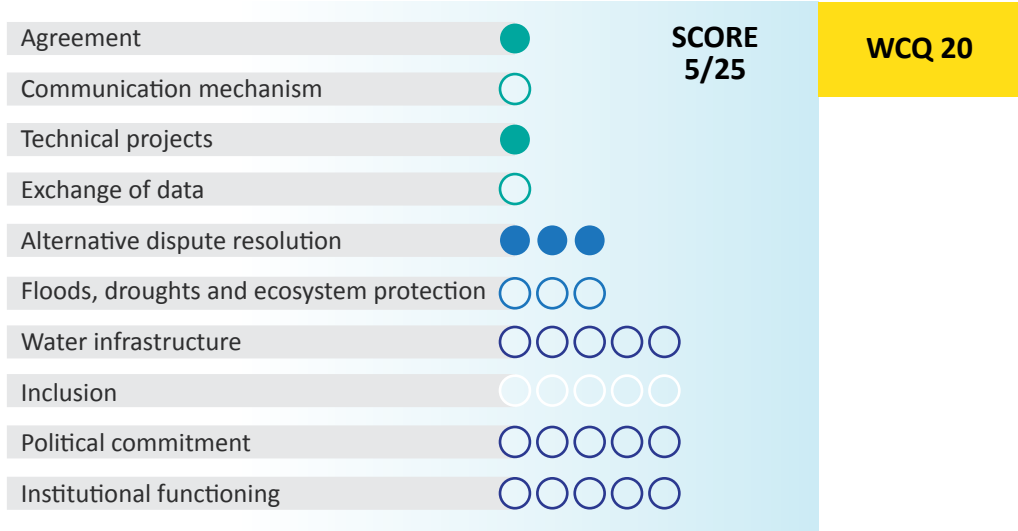
**Authority:** Orange-Senqu River Commission (ORASECOM)



## Ruvuma

**Countries:** Mozambique-Tanzania

**Authority:** Joint Water Commission\*

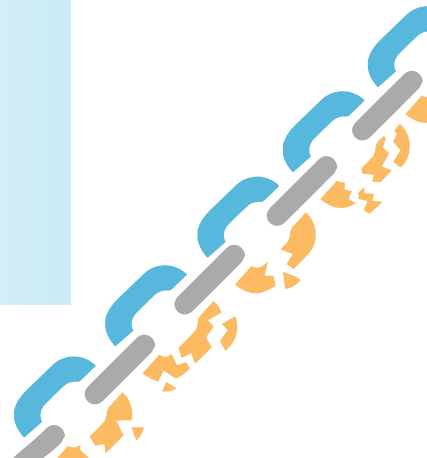
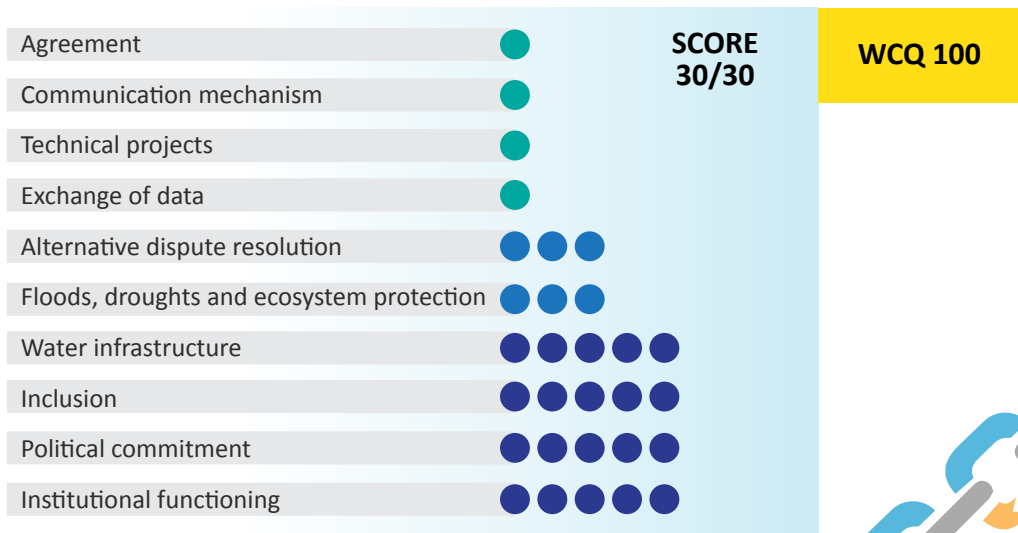


\*Joint Water Commission for the Ruvuma River was established in the year 2009, but there is no information available on meetings of the Commission.

## Senegal

**Countries:** Guinea, Mali, Mauritania, Senegal

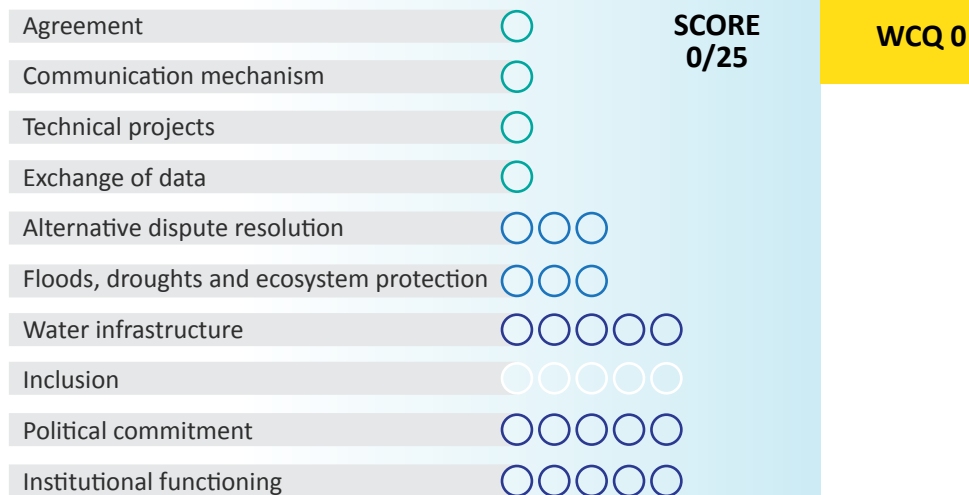
**Authority:** The Organization for Development of the Senegal River (Organisation pour la Mise en Valeur du fleuve Sénégal) (OMVS)



## Thukela

**Countries:** Lesotho-South Africa

**Authority:** No cooperation\*

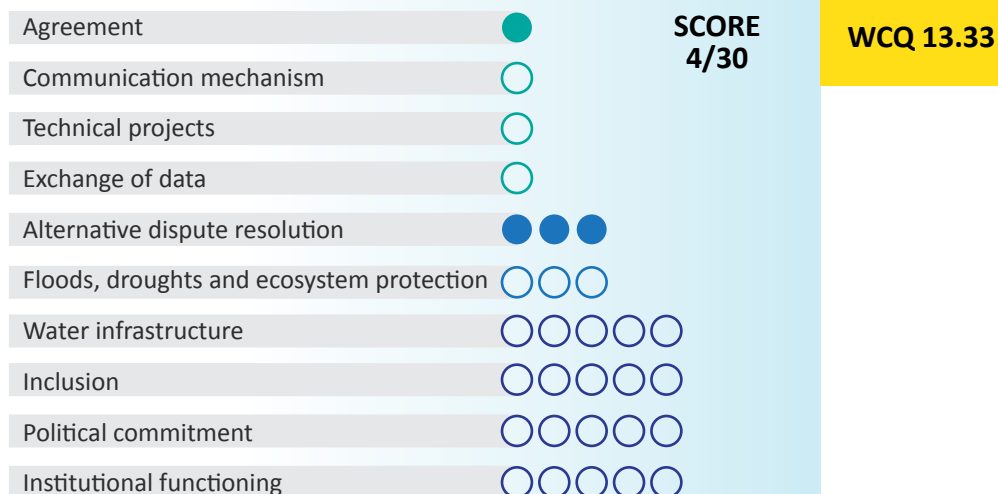


\*There is no cooperation as Lesotho opposed South Africa's plans for construction of projects on the Thukela River. South Africa in consultation with Lesotho has decided not to execute the plans.

## Umbeluzi

**Countries:** Mozambique-Swaziland

**Authority:** No authority\*

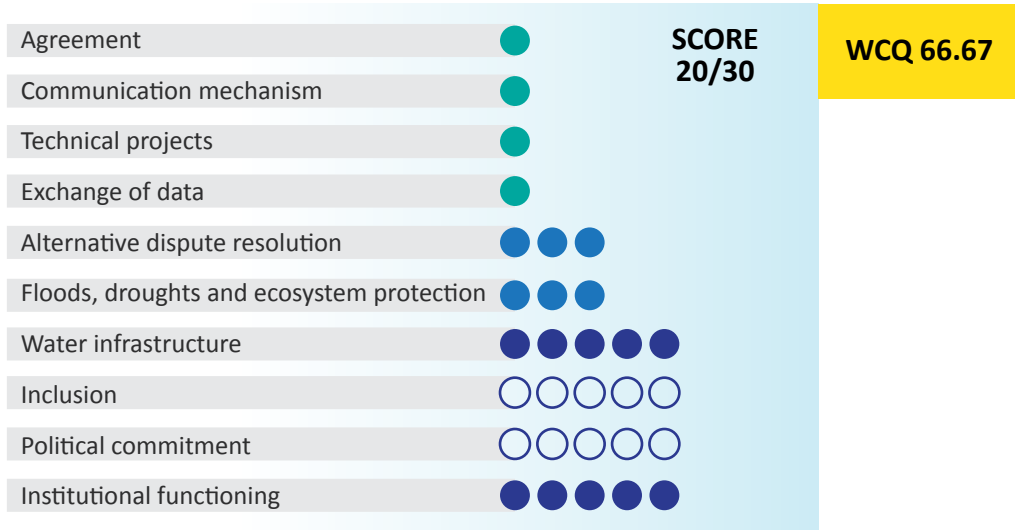


\*A Committee for the Umbeluzi River was established in the year 2004 but has had only one meeting so far.

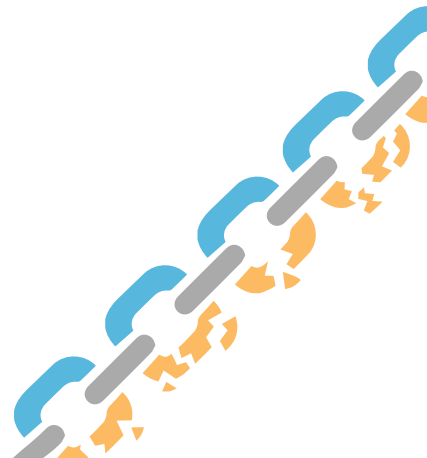
## Volta

**Countries:** Benin, Burkina Faso, Côte d'Ivoire\*, Ghana, Mali, Togo

**Authority:** Volta Basin Authority (VBA)



\*Côte d'Ivoire has signed but not yet ratified the Convention on the Status of the Volta River and Establishment of the Volta River Basin Authority. However, it participates fully in the activities of the VBA. Therefore points for inclusion have not been awarded.



## Zambezi

**Countries:** Angola, Botswana, Malawi, Mozambique, Namibia, Tanzania, Zambia\*, Zimbabwe

**Authority:**

Zambezi Watercourse Commission (ZAMCOM)

Zambia-Zimbabwe: Zambezi River Authority (ZRA)

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	ZAMCOM	ZRA
Agreement	1	1
Communication mechanism	1	1
Technical projects	1	1
Exchange of data	1	1
Alternative dispute resolution	3	3
Floods, droughts and ecosystem protection	3	3
Water infrastructure	0	0
Inclusion	0	0
Political commitment	5	5
Institutional functioning	5	5
<b>SCORE</b>	<b>20/30</b>	<b>20/30</b>
<b>WCQ</b>	<b>66.67</b>	<b>66.67</b>

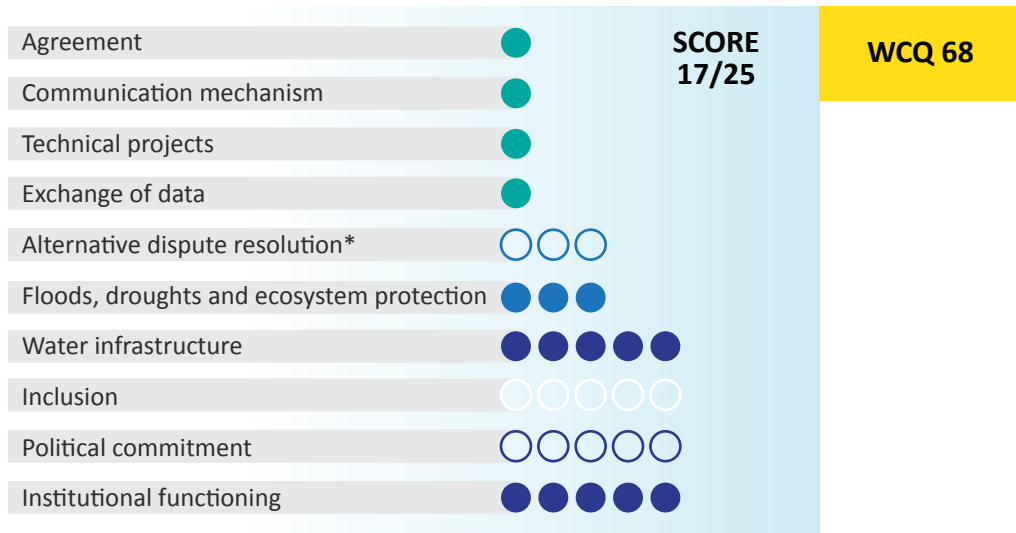
\*Zambia is not a member of ZAMCOM.

## North and Central America

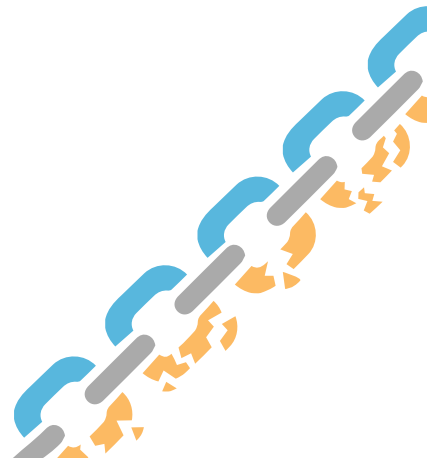
**Alsek, Chilkat, Columbia, Firth, Fraser, Mississippi, Nelson-Saskatchewan, Skagit, St. Croix, St. John, St. Lawrence, Stikine, Taku, Whiting, Yukon**

**Countries:** Canada-United States of America (USA)

**Authority:** International Joint Commission (IJC)



\*There is a treaty provision for Alternative Dispute Resolution but it has been increasingly ignored in recent times.

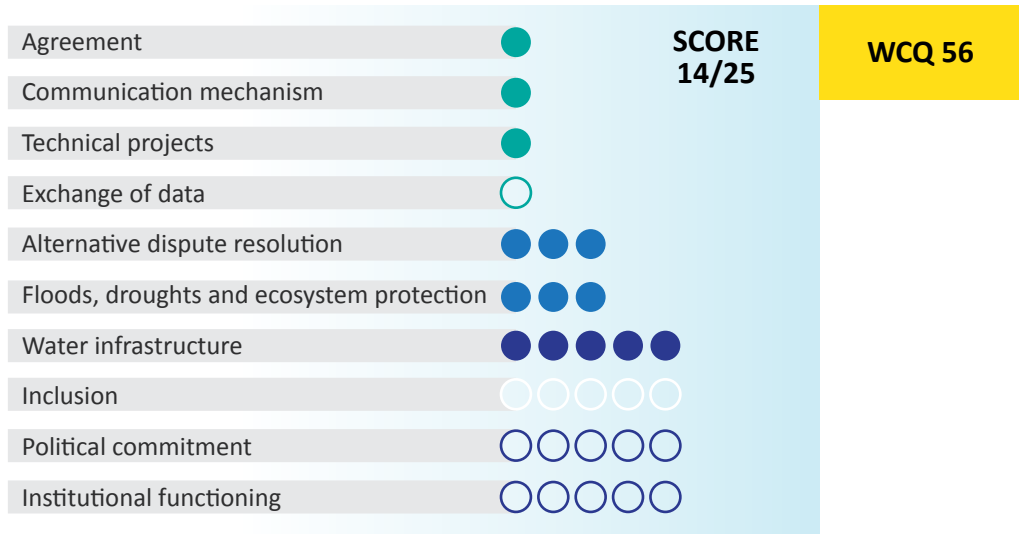


## Artibonite, Massacre, Pedernales

**Countries:** Dominican Republic-Haiti

**Authority:**

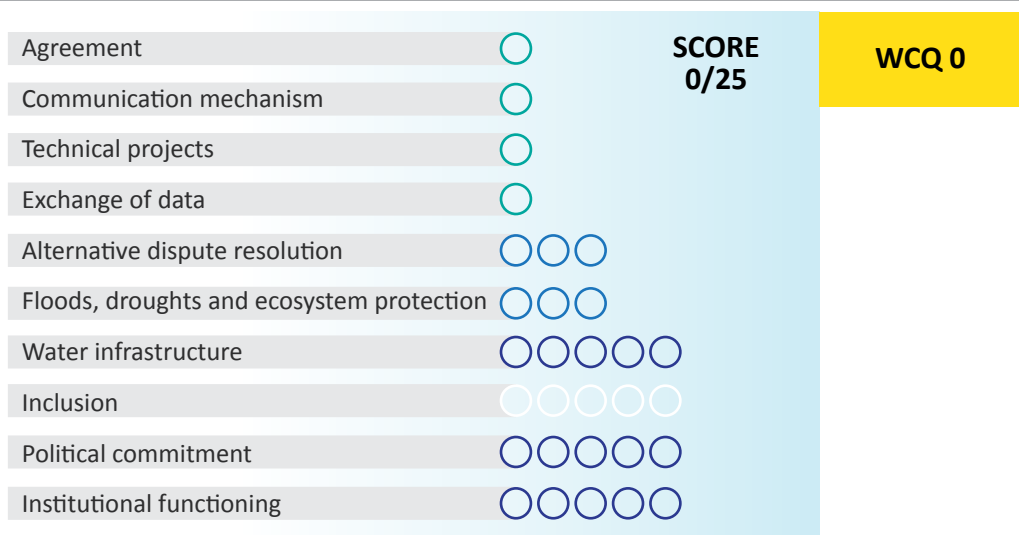
Joint Bilateral Commission Dominican Republic-Haiti (Comisión Mixta Bilateral Dominico-Haitiana)



## Belize (Mopán in Guatemala), Moho, Sarstun, Temash

**Countries:** Belize-Guatemala

**Authority:** No cooperation

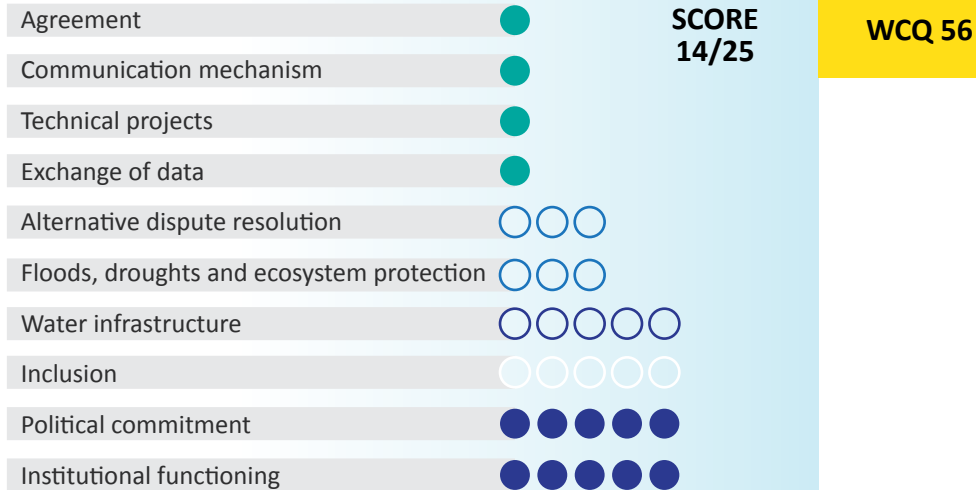




## Candelaria, Coatán Achute, Grijalva, Suchiate

**Countries:** Mexico-Guatemala

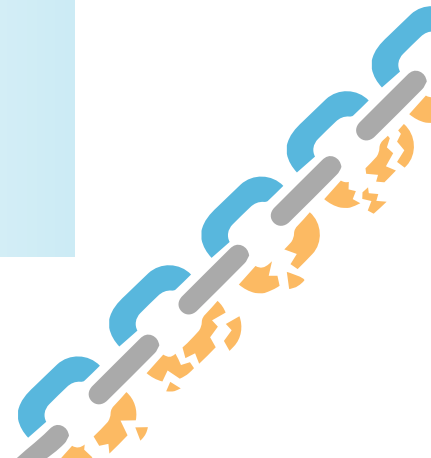
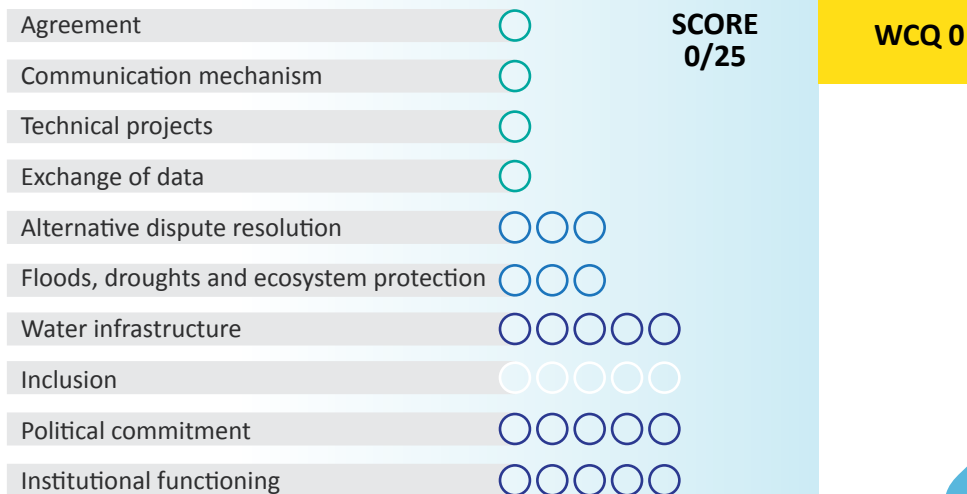
**Authority:** International Commission on Limits and Water (Comisión Internacional de Límites y Agua) (CILA)



## Choluteca, Coco/Segovia, Negro

**Countries:** Honduras-Nicaragua

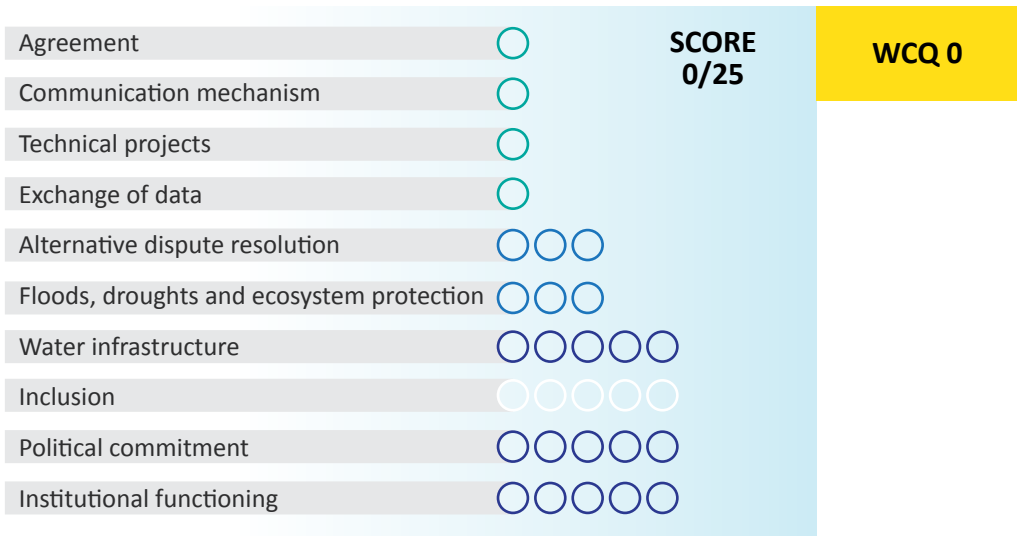
**Authority:** No cooperation



## Chamelecon

**Countries:** Guatemala-Honduras

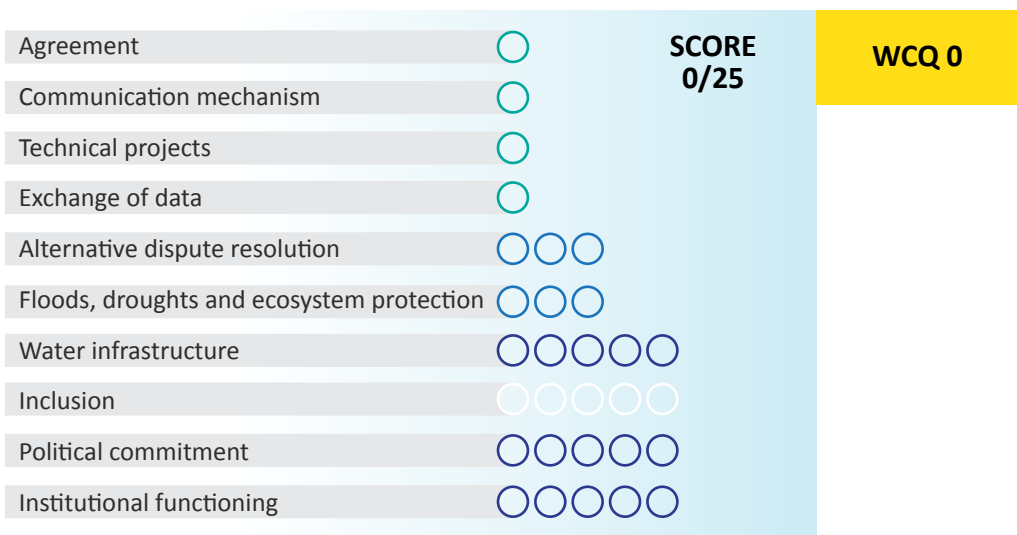
**Authority:** No cooperation



## Changuinola, Chiriquí, Corredores/Colorado

**Countries:** Costa Rica-Panama

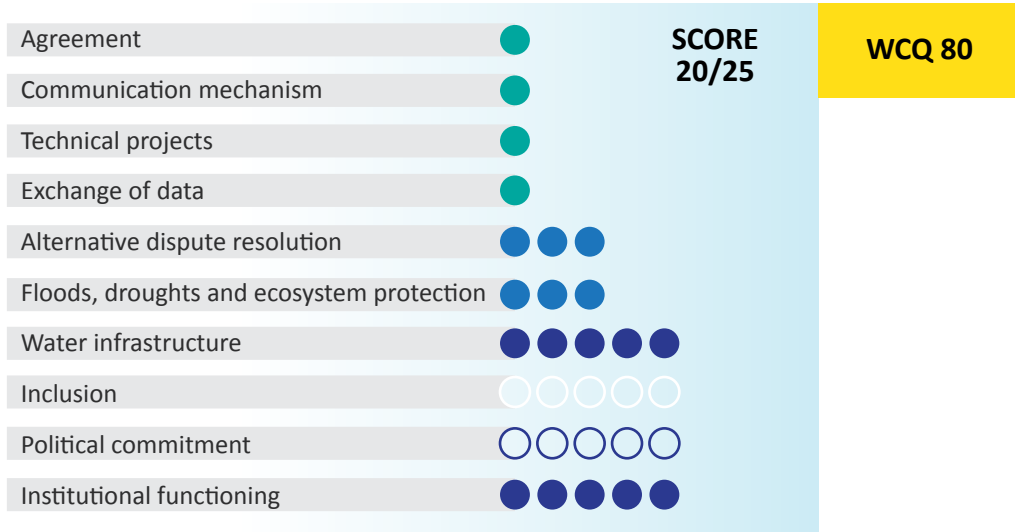
**Authority:** No cooperation



## Colorado, Rio Grande, Tijuana, Yaqui.

**Countries:** Mexico-United States of America (USA)

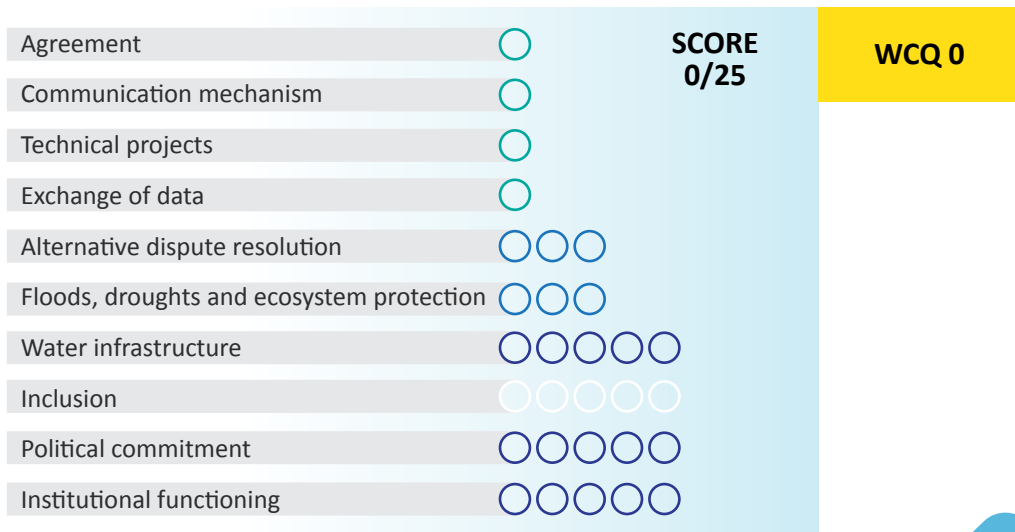
**Authority:** International Boundary and Water Commission (IBWC) - Comisión Internacional de Límites y Aguas entre México y Estados Unidos (CILA)



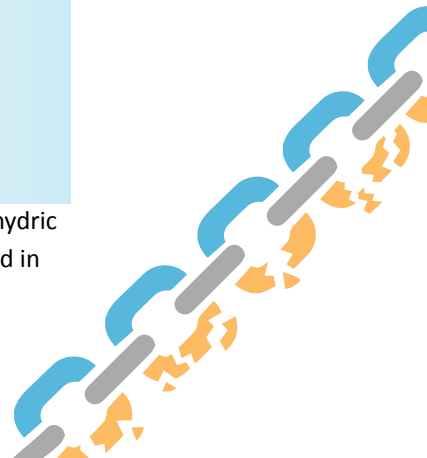
## Conventillos, San Juan\*

**Countries:** Costa Rica-Nicaragua

**Authority:** No cooperation



\*The strategic program of action for the integrated management of hydric resources and sustainable development of San Juan River was created in 2001; however there is no evidence of current operation.

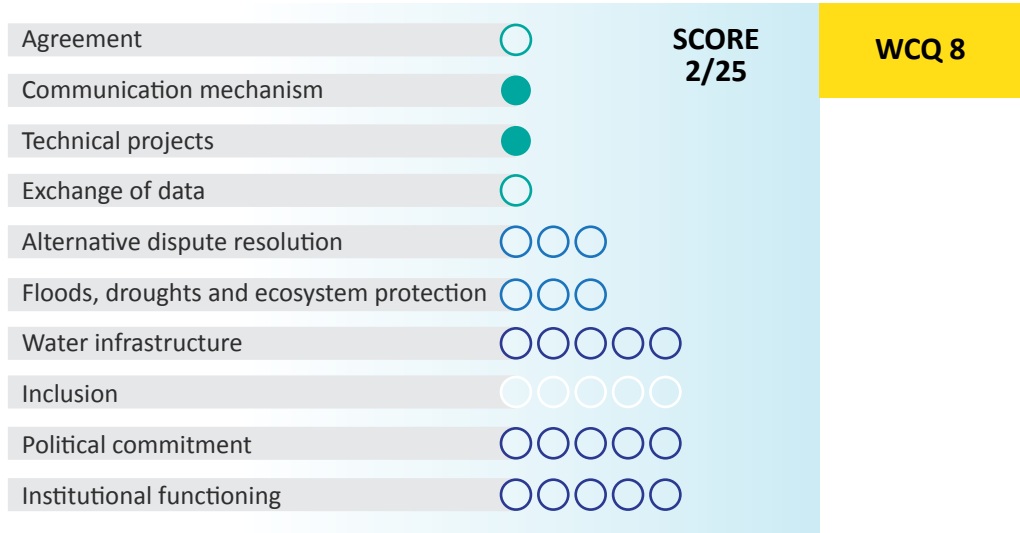


# Goascoran

**Countries:** El Salvador-Honduras

**Authority:** Binational Management Group Goascoran (Grupo Gestor Binacional de Goascoran)

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## Hondo

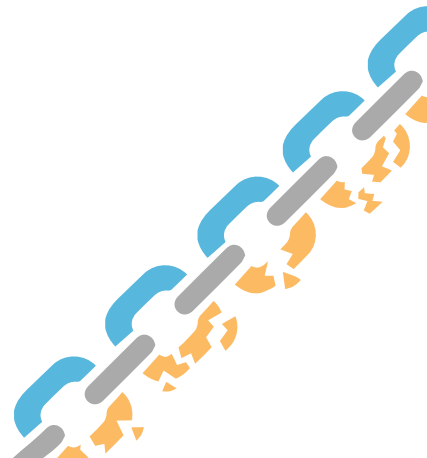
**Countries:** Belize, Guatemala, Mexico

**Authority:**

Belize-Mexico: International Commission on Limits and Water (Comisión Internacional de Límites y Agua) (CILA)

Guatemala-Mexico: International Commission on Limits and Water (Comisión Internacional de Límites y Agua) (CILA)

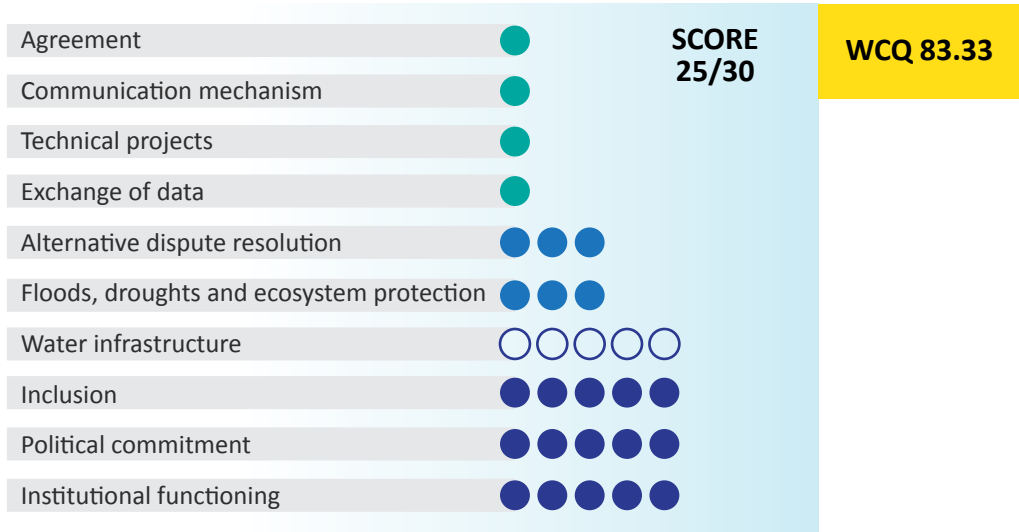
	Belize-Mexico	Guatemala-Mexico
Agreement	1	1
Communication mechanism	1	1
Technical projects	0	1
Exchange of data	1	1
Alternative dispute resolution	0	0
Floods, droughts and ecosystem protection	0	0
Water infrastructure	0	0
Inclusion	0	0
Political commitment	0	5
Institutional functioning	0	5
<b>SCORE</b>	<b>3/30</b>	<b>14/30</b>
<b>WCQ</b>	<b>10</b>	<b>46.67</b>



## Lempa, Motagua

**Countries:** El Salvador, Guatemala, Honduras

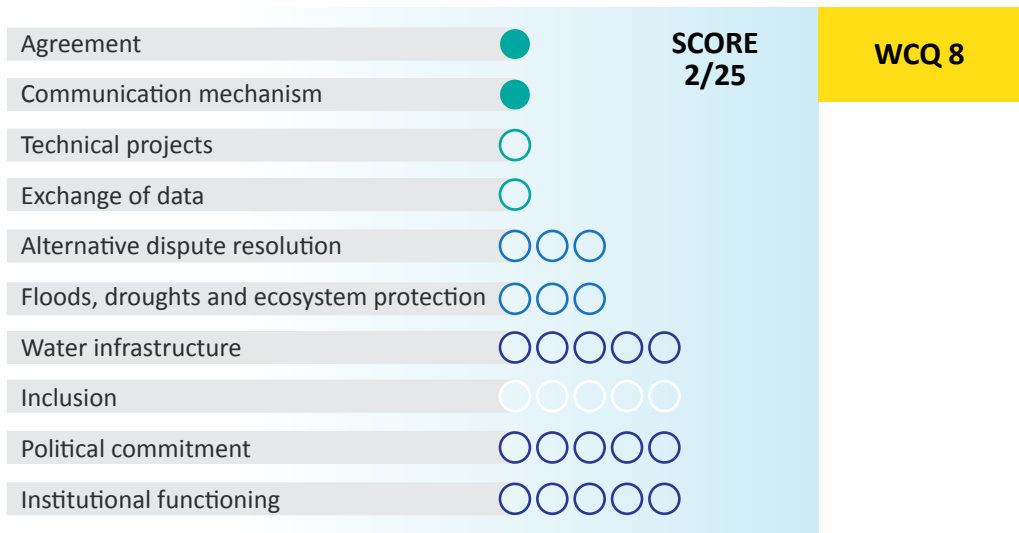
**Authority:** TRIFINIO Plan



## Paz

**Countries:** El Salvador-Guatemala

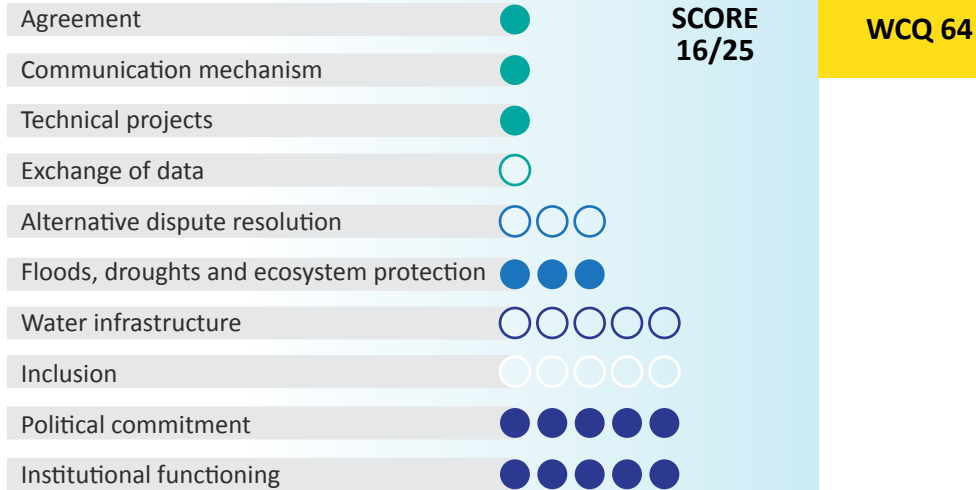
**Authority:** Binational Commission for Paz River (Comisión Binacional del Río Paz)



## Sixaola

**Countries:** Costa Rica-Panama

**Authority:** Binational Commission for Integrated Management of the Sixaola River Basin (Comisión Binacional para el manejo integral del Río Sixaola)

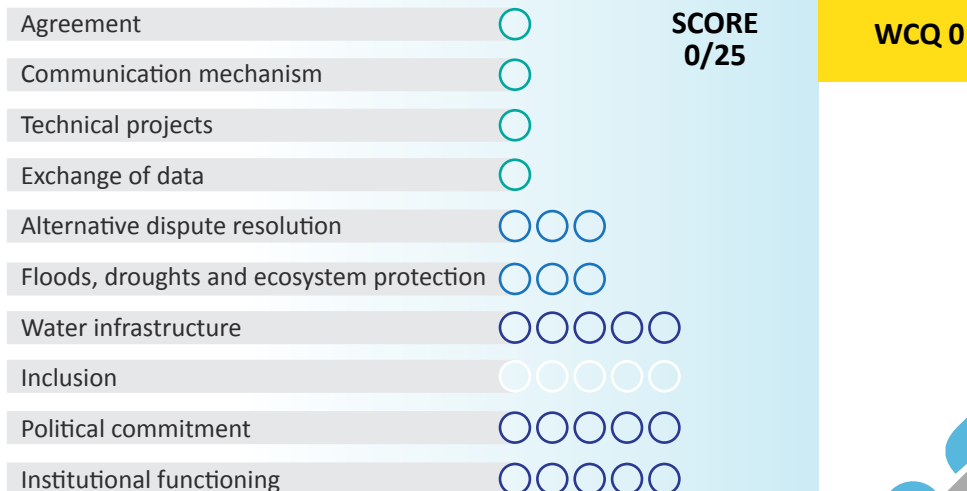


## South America

### Amacuro, Barima

**Countries:** Guyana-Venezuela

**Authority:** No cooperation

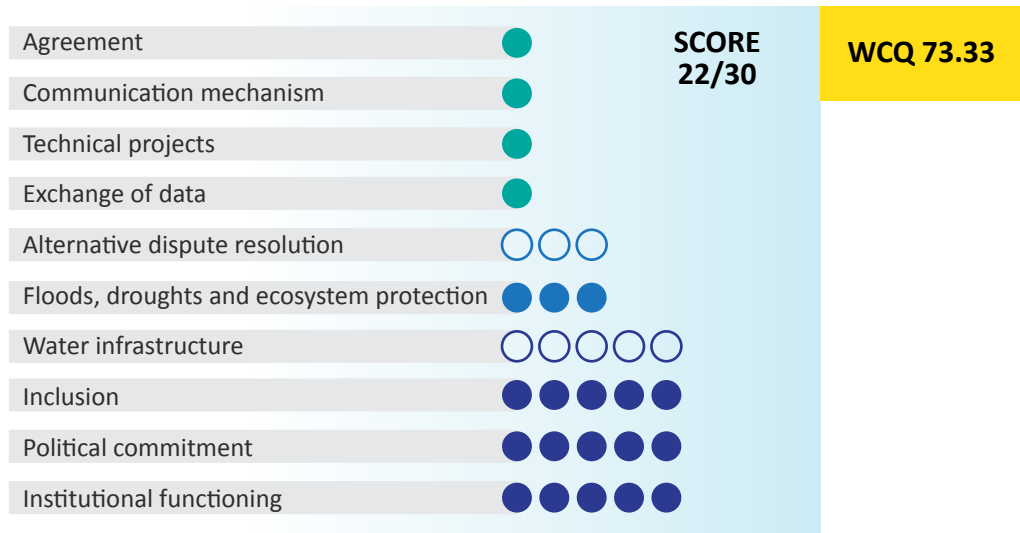


## Amazon

**Countries:** Bolivia, Brazil, Colombia, Ecuador, Guyana, Peru, Suriname\*, Venezuela

**Authority:** Amazon Cooperation Treaty Organization (ACTO)

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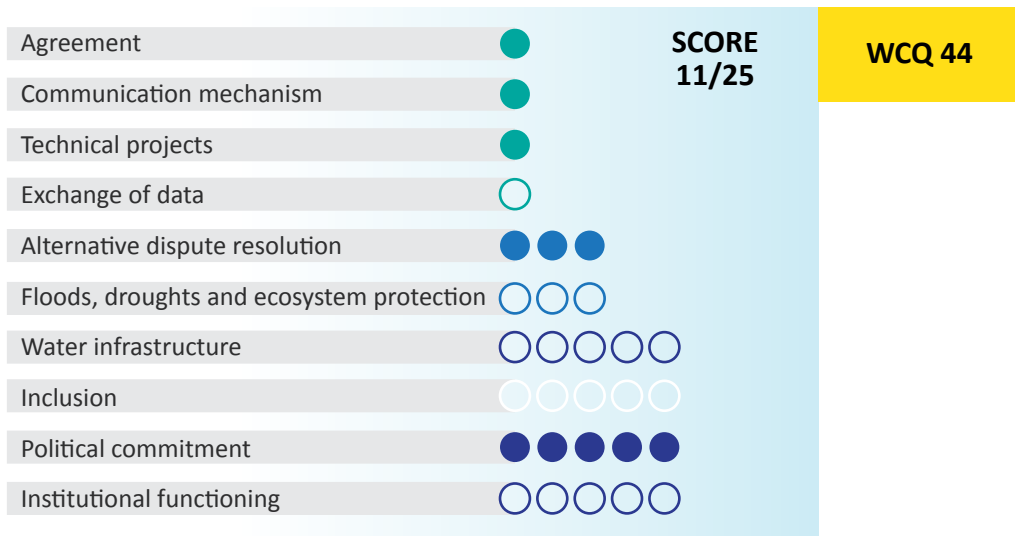
\*While Suriname is a member ACTO, it only participates for the Amazon Forest. Also, its share of the river is less than one per cent. Hence, it is not taken into account for evaluation.



## Aviles, Aysen, Baker, Carmen Silva/Chico, Comau, Cullen, Gallegos/Chico, Lake Fagnano, Palena, Pascua, Puelo, Rio Grande (South America), San Martin, Seno Union/Serrano, Valdivia, Yelcho

**Countries:** Argentina-Chile

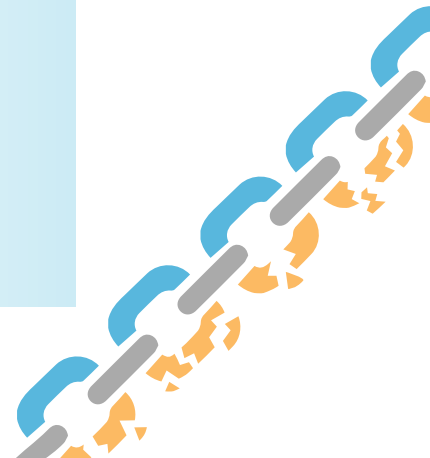
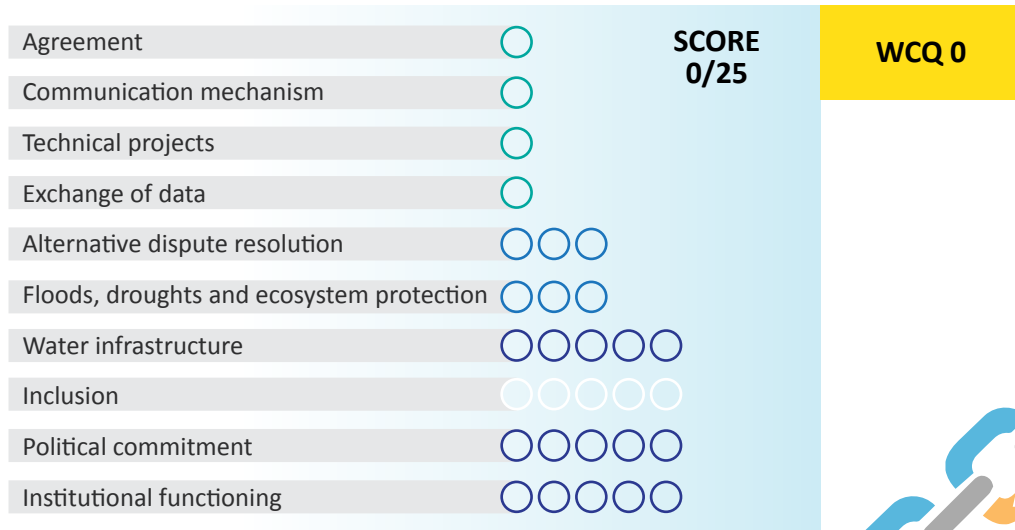
**Authority:** Permanent Binational Commission to Strengthen Economic Cooperation and Physical Integration – Sub-Commission of Environment (Comisión Binacional de carácter permanente con el objeto de intensificar la cooperación económica y la integración física – Subcomisión de ambiente)



## Cancoso/Lauca

**Countries:** Bolivia-Chile

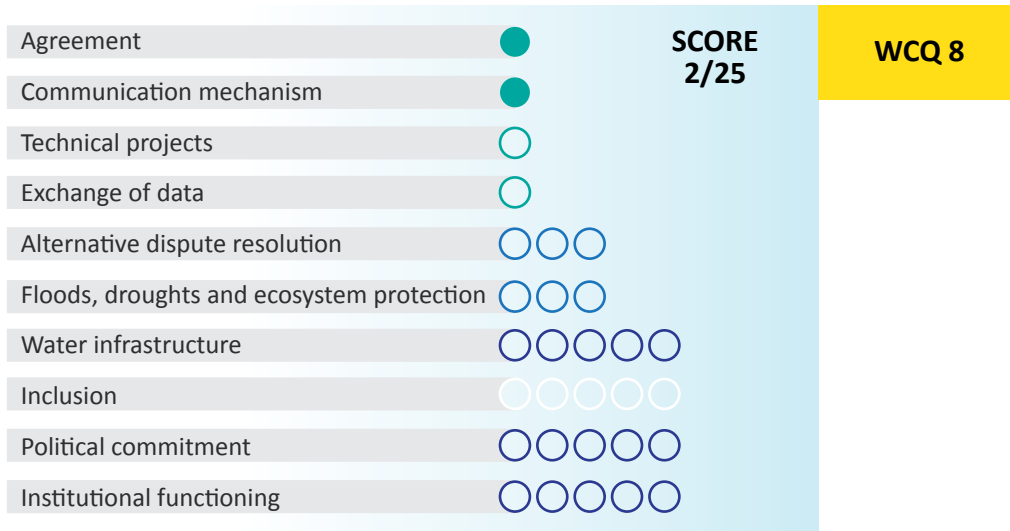
**Authority:** No cooperation



## Catatumbo

**Countries:** Colombia-Venezuela

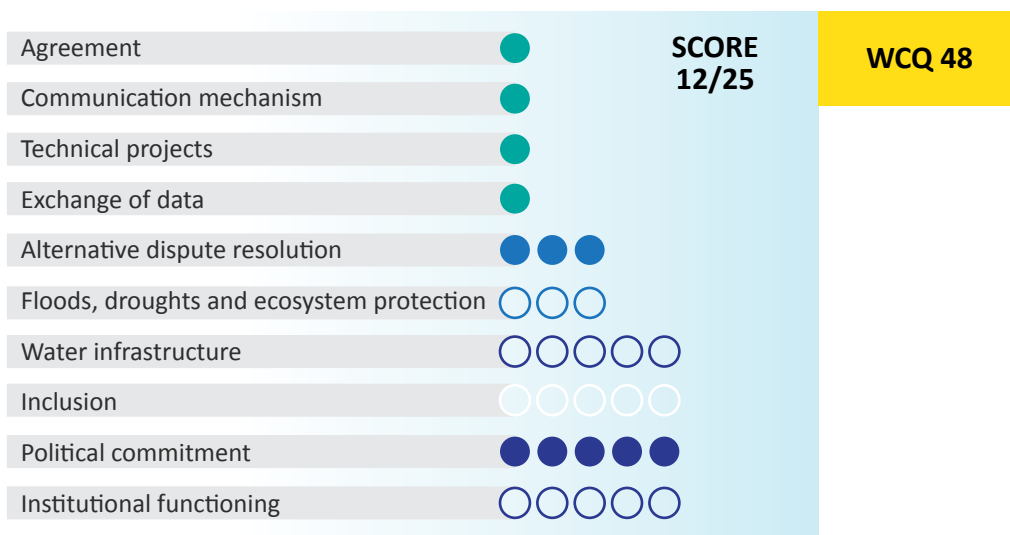
**Authority:** Technical Binational Commission for the Formulation of an Integral Conservation and Plan of Use of Catatumbo River (Comisión Técnica Binacional para la Formulación del Plan de Conservación y Aprovechamiento Integral de la Cuenca del Río Catatumbo)



## Chira, Tumbes

**Countries:** Ecuador-Peru

**Authority:** Joint Commission for Puyango-Tumbes and Catamayo-Chira basins (Comisión Mixta Ecuatoriana-Peruana para las cuencas Puyango-Tumbes y Catamayo-Chira)



## Chuy/Chui

**Countries:** Brazil-Uruguay

**Authority:** Joint Commission of Limits and Characterization of the Uruguay-Brazil Border (Comisión Mixta de Límites y Caracterización de la frontera Uruguay-Brasil)

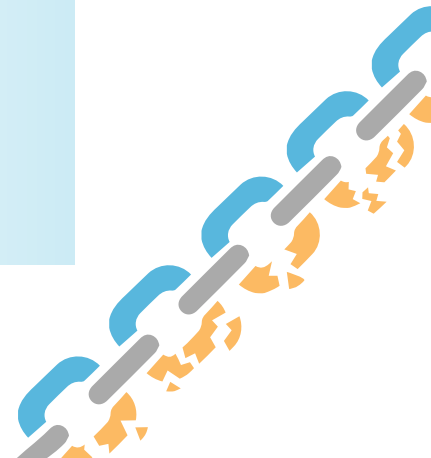
Agreement	<input checked="" type="radio"/>	<b>SCORE 1/25</b>	<b>WCQ 4</b>
Communication mechanism	<input type="radio"/>		
Technical projects	<input type="radio"/>		
Exchange of data	<input type="radio"/>		
Alternative dispute resolution	<input type="radio"/> <input type="radio"/> <input type="radio"/>		
Floods, droughts and ecosystem protection	<input type="radio"/> <input type="radio"/> <input type="radio"/>		
Water infrastructure	<input type="radio"/> <input type="radio"/> <input type="radio"/> <input type="radio"/> <input type="radio"/>		
Inclusion	<input type="radio"/> <input type="radio"/> <input type="radio"/> <input type="radio"/> <input type="radio"/>		
Political commitment	<input type="radio"/> <input type="radio"/> <input type="radio"/> <input type="radio"/> <input type="radio"/>		
Institutional functioning	<input type="radio"/> <input type="radio"/> <input type="radio"/> <input type="radio"/> <input type="radio"/>		

## Essequibo

**Countries:** Guyana, Suriname, Venezuela

**Authority:** No cooperation

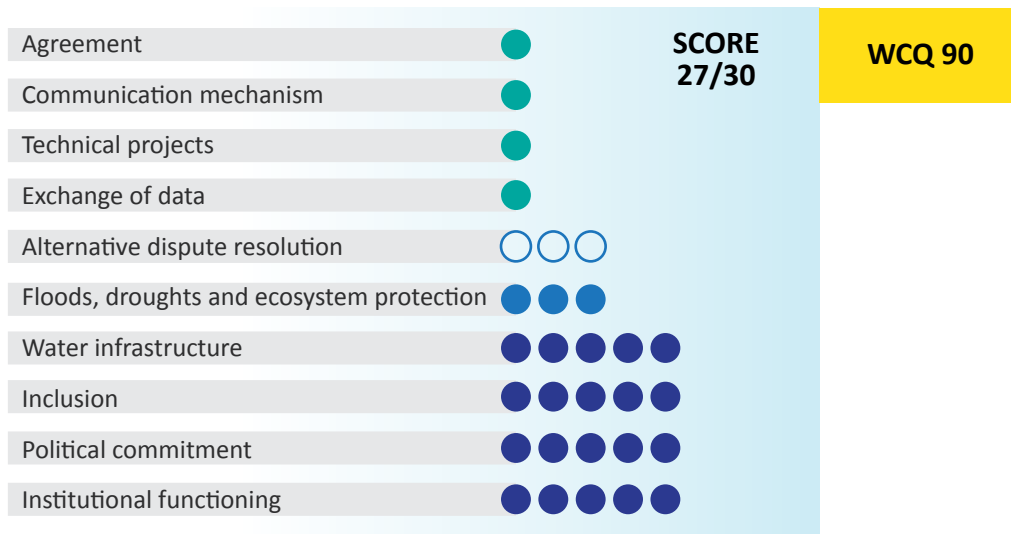
Agreement	<input type="radio"/>	<b>SCORE 0/30</b>	<b>WCQ 0</b>
Communication mechanism	<input type="radio"/>		
Technical projects	<input type="radio"/>		
Exchange of data	<input type="radio"/>		
Alternative dispute resolution	<input type="radio"/> <input type="radio"/> <input type="radio"/>		
Floods, droughts and ecosystem protection	<input type="radio"/> <input type="radio"/> <input type="radio"/>		
Water infrastructure	<input type="radio"/> <input type="radio"/> <input type="radio"/> <input type="radio"/> <input type="radio"/>		
Inclusion	<input type="radio"/> <input type="radio"/> <input type="radio"/> <input type="radio"/> <input type="radio"/>		
Political commitment	<input type="radio"/> <input type="radio"/> <input type="radio"/> <input type="radio"/> <input type="radio"/>		
Institutional functioning	<input type="radio"/> <input type="radio"/> <input type="radio"/> <input type="radio"/> <input type="radio"/>		



## La Plata

**Countries:** Argentina, Bolivia, Brazil, Paraguay, Uruguay

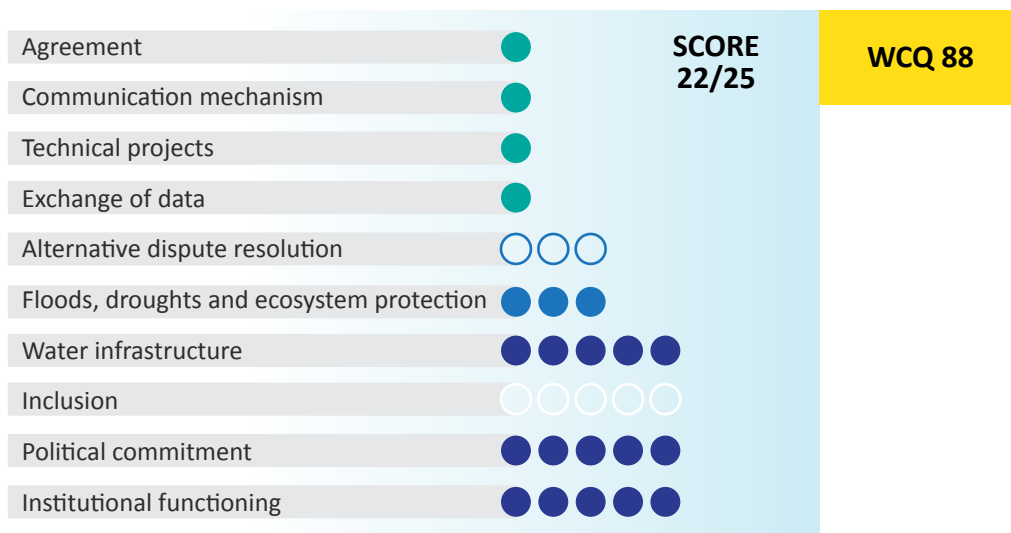
**Authority:** Intergovernmental Coordinating Committee of the Countries of La Plata Basin (Comité Intergubernamental Coordinador de los Países de la Cuenca del Plata) (CIC)



## Lagoon Mirim

**Countries:** Brazil-Uruguay

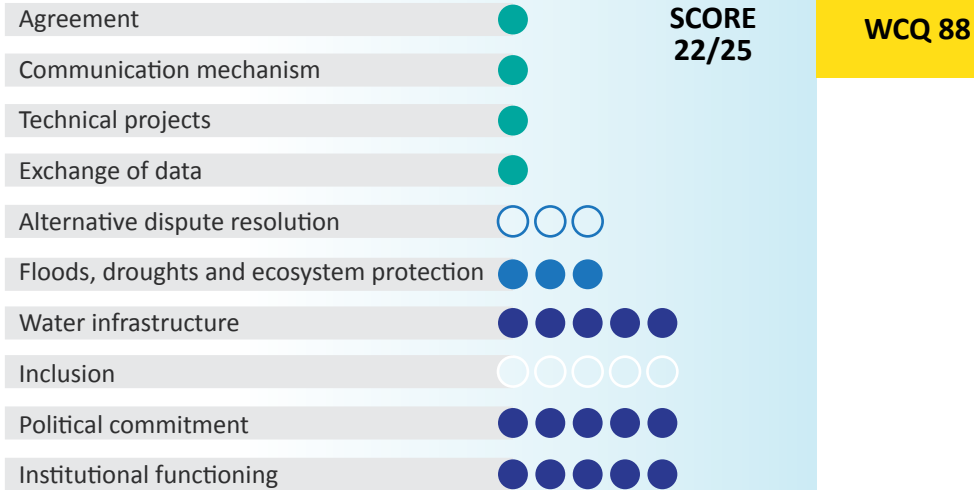
**Authority:** Brazil – Uruguay Joint Commission – for Lagoon Mirim (Comisión Mixta Uruguaya – Brasileña para el Desarrollo de la Cuenca de la Laguna Merín) (CLM)



## Lake Titicaca-Poopo System

**Countries:** Bolivia, Chile\*, Peru

**Authority:** The Autonomous Binational Authority of Lake Titicaca (Autoridad Binacional Autonoma del Lago Titicaca) (ALT)

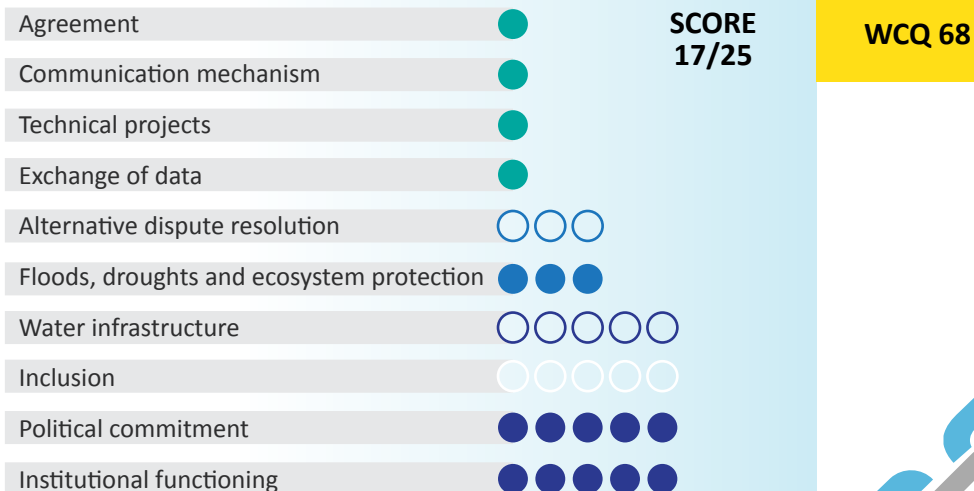


\*The Lake is irrelevant for Chile hence it's not a part of the basin arrangement and is not being evaluated.

## Mataje, Mira

**Countries:** Colombia-Ecuador

**Authority:** Binational Technical Committee of Hydrographical Basins – Colombia and Ecuador (Comité Técnico Binacional de Cuencas Hidrográficas de Colombia y Ecuador)



# Orinoco

**Countries:** Colombia-Venezuela

**Authority:** No cooperation

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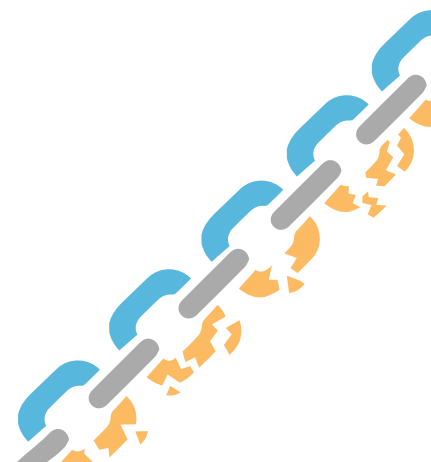
Agreement	<input type="radio"/>	<b>SCORE</b> <b>0/25</b>	<b>WCQ 0</b>
Communication mechanism	<input type="radio"/>		
Technical projects	<input type="radio"/>		
Exchange of data	<input type="radio"/>		
Alternative dispute resolution	<input type="radio"/> <input type="radio"/> <input type="radio"/>		
Floods, droughts and ecosystem protection	<input type="radio"/> <input type="radio"/> <input type="radio"/>		
Water infrastructure	<input type="radio"/> <input type="radio"/> <input type="radio"/> <input type="radio"/> <input type="radio"/>		
Inclusion	<input type="radio"/> <input type="radio"/> <input type="radio"/> <input type="radio"/> <input type="radio"/>		
Political commitment	<input type="radio"/> <input type="radio"/> <input type="radio"/> <input type="radio"/> <input type="radio"/>		
Institutional functioning	<input type="radio"/> <input type="radio"/> <input type="radio"/> <input type="radio"/> <input type="radio"/>		

## Zapaleri

**Countries:** Argentina, Bolivia, Chile

**Authority:** Argentina-Chile: Permanent Binational Commission to Strengthen Economic Cooperation and Physical Integration – Sub-Commission of Environment (Comisión Binacional de carácter permanente con el objeto de intensificar la cooperación económica y la integración física – Subcomisión de ambiente)  
Argentina-Bolivia: No cooperation

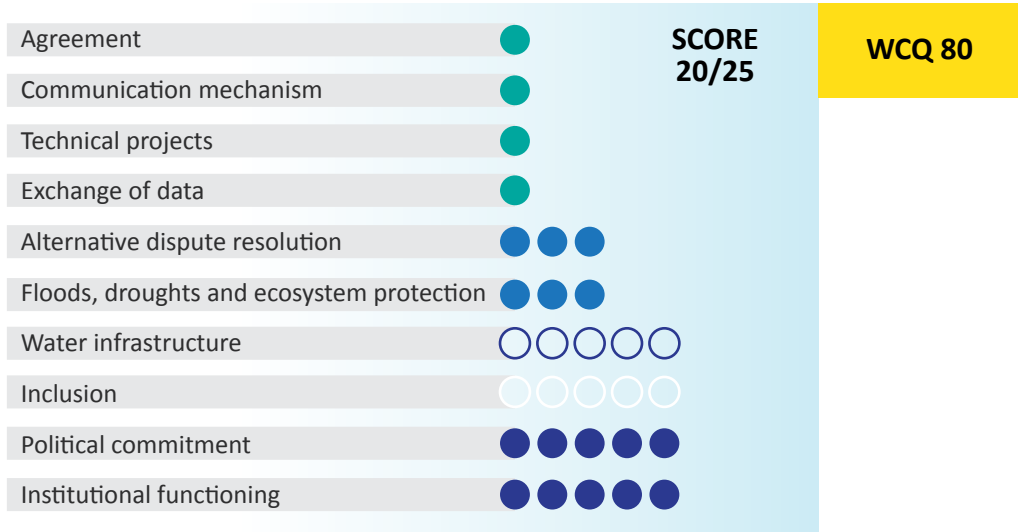
	Argentina-Chile	Argentina-Bolivia
Agreement	1	0
Communication mechanism	1	0
Technical projects	1	0
Exchange of data	0	0
Alternative dispute resolution	3	0
Floods, droughts and ecosystem protection	0	0
Water infrastructure	0	0
Inclusion	0	0
Political commitment	5	0
Institutional functioning	0	0
<b>SCORE</b>	<b>11/30</b>	<b>0/30</b>
<b>WCQ</b>	<b>36.67</b>	<b>0</b>



## Zarumilla

**Countries:** Ecuador-Peru

**Authority:** Binational Commission for the Integrated Management of the Hydric Resources of Zarumilla River Basin between Ecuador and Peru (Comisión Binacional para la Gestión Integrada de los Recursos Hídricos de la Cuenca Transfronteriza del Río Zarumilla entre Ecuador y Perú)

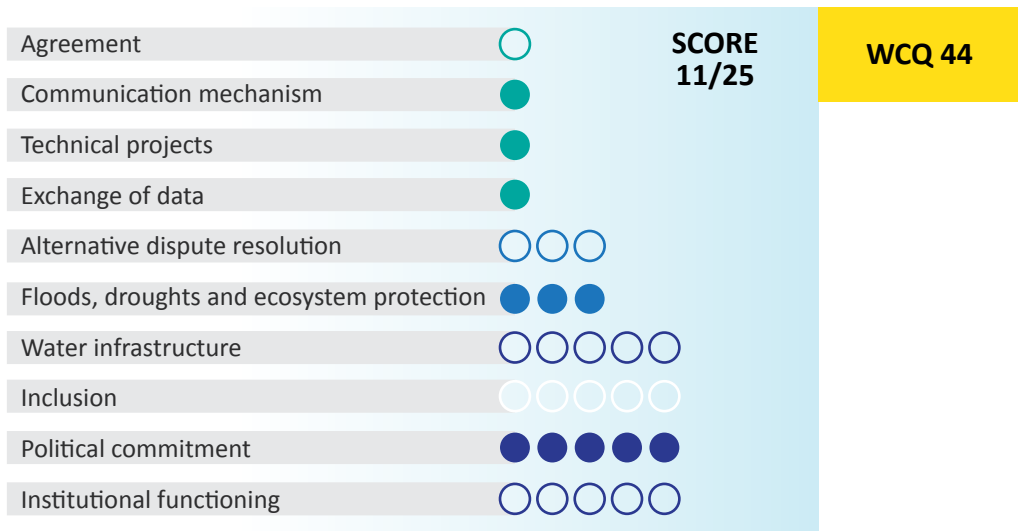


## Europe

### Bann, Castletown, Erne, Fane, Flurry, Foyle, Lough Melvin

**Countries:** Ireland-United Kingdom

**Authority:** North-South WFD Coordination Group

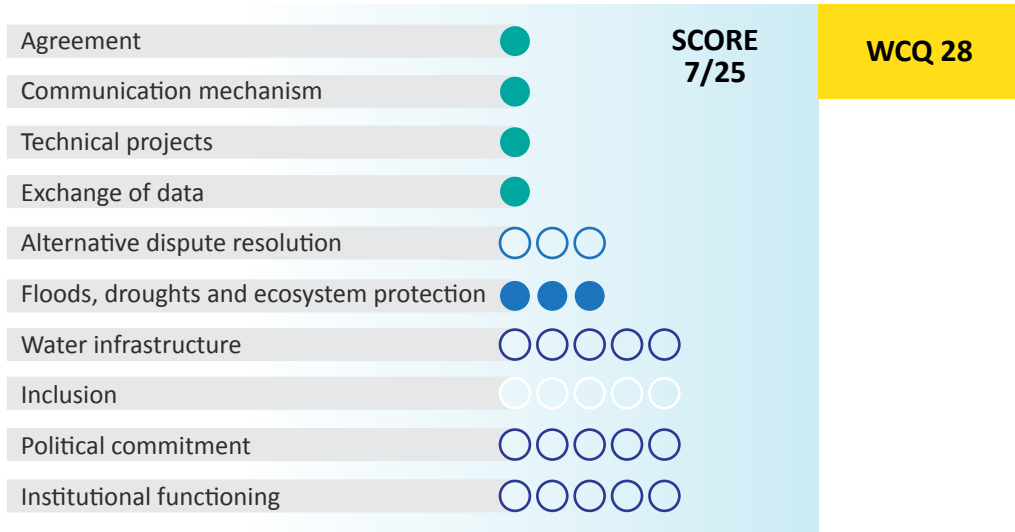




## Barta, Lielupe, Venta

**Countries:** Latvia-Lithuania

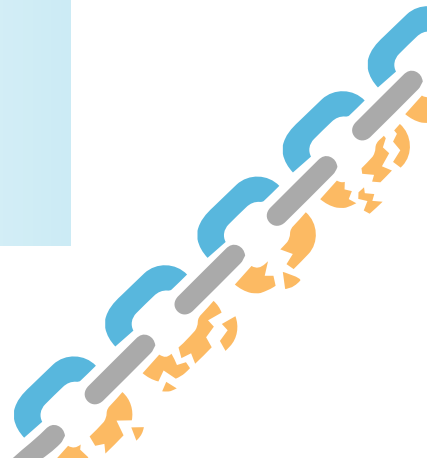
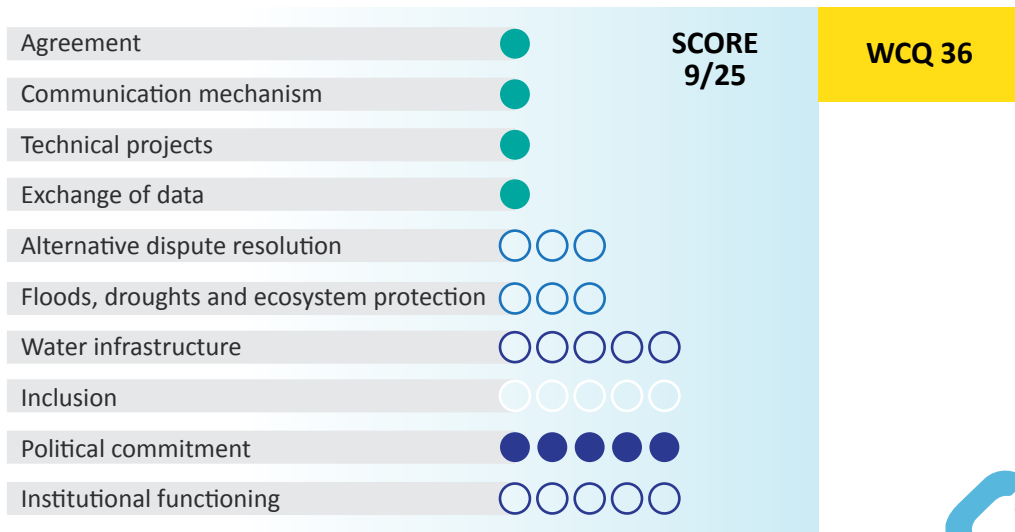
**Authority:** Working Groups within Respective Ministries



## Bidasoa

**Countries:** France-Spain

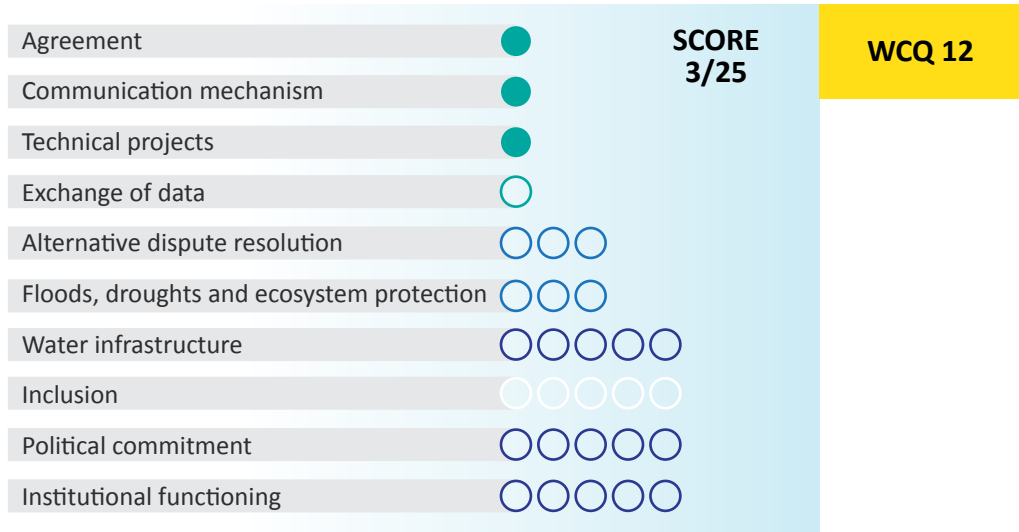
**Authority:** Joint Technical Commission of Bidasoa (Comisión Técnica Mixta del Bidasoa)



## Coruh

**Countries:** Georgia-Turkey

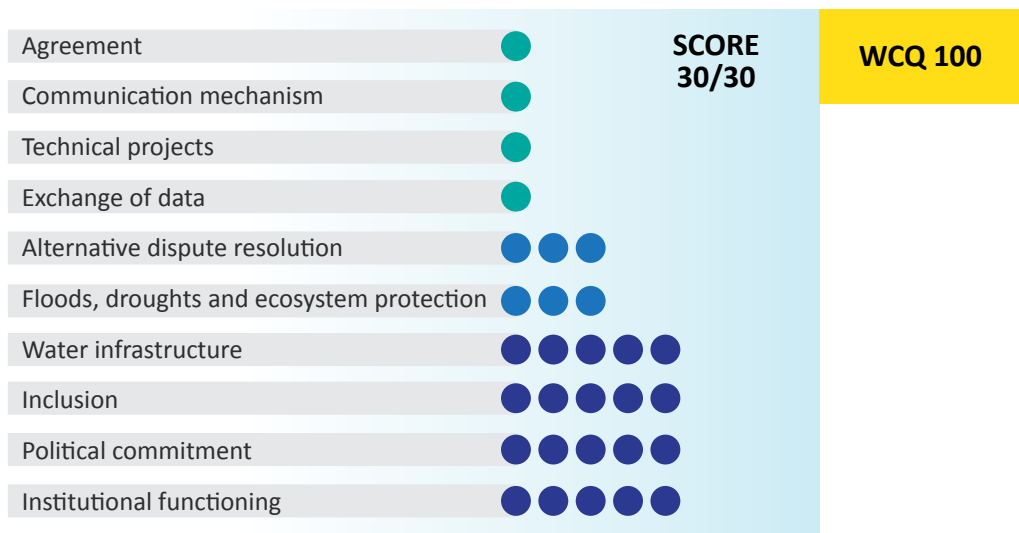
**Authority:** Joint Boundary Water Commission (JBWC)



## Danube

**Countries:** Austria, Bosnia and Herzegovina, Bulgaria, Croatia, Czech Republic, Germany, Hungary, Moldova, Montenegro, Romania, Serbia, Slovakia, Slovenia, Ukraine

**Authority:** International Commission for the Protection of the Danube River (ICPDR)



## Daugava

**Countries:** Belarus, Latvia, Lithuania, Russia

**Authority:** Belarus-Russia: Joint Russian-Belarusian Commission on Protection and Rational Use of Transboundary Water Bodies

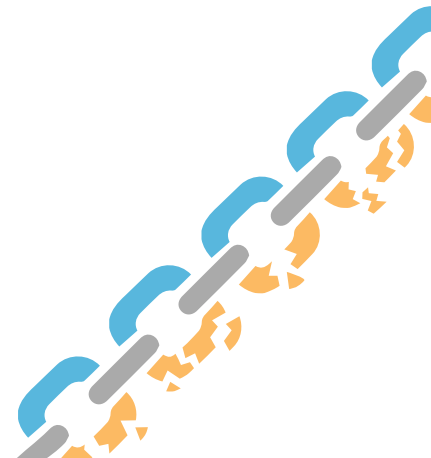
Belarus-Lithuania: No authority

Latvia-Lithuania: Expert Group meetings

Latvia-Russia: No cooperation

Belarus-Latvia: No cooperation

	Belarus-Russia	Belarus-Lithuania	Latvia-Lithuania	Latvia-Russia	Belarus-Latvia
Agreement	1	1	1	0	0
Communication mechanism	1	0	1	0	0
Technical projects	0	0	0	0	0
Exchange of data	0	1	0	0	0
Alternative dispute resolution	3	0	0	0	0
Floods, droughts & ecosystem protection	0	0	0	0	0
Water infrastructure	0	0	0	0	0
Inclusion	0	0	0	0	0
Political commitment	0	0	0	0	0
Institutional functioning	0	0	0	0	0
<b>SCORE</b>	<b>5/30</b>	<b>2/30</b>	<b>2/30</b>	<b>0/30</b>	<b>0/30</b>
<b>WCQ</b>	<b>16.67</b>	<b>6.67</b>	<b>6.67</b>	<b>0</b>	<b>0</b>



## Dnieper

**Countries:** Belarus, Russia, Ukraine

**Authority:**

Belarus-Ukraine: Permanent Cross-Border Commission on the Development of the Dnieper-Vistula Waterway

Belarus-Russia: Joint Russian-Belarusian Commission on Protection and Rational Use of Transboundary Water Bodies

Russia-Ukraine: No authority

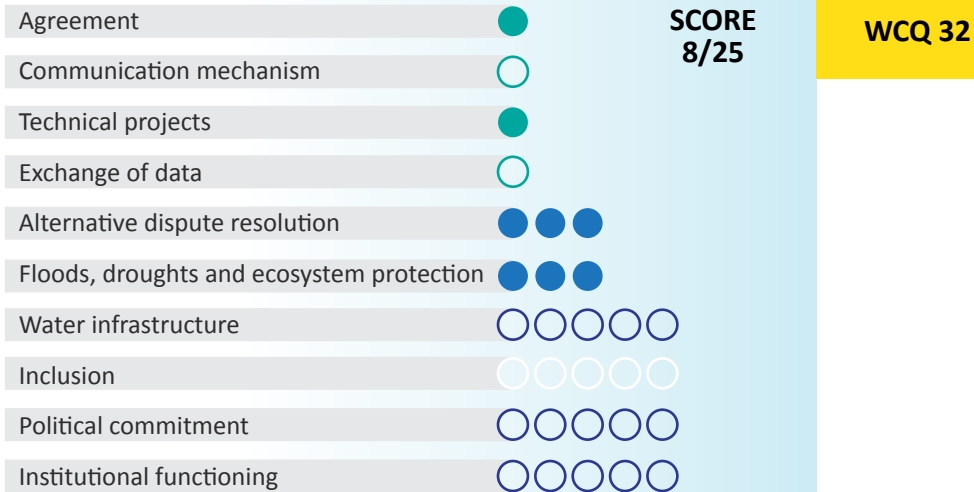
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	Belarus-Ukraine	Belarus-Russia	Russia-Ukraine
Agreement	1	1	1
Communication mechanism	1	1	0
Technical projects	1	0	0
Exchange of data	1	1	0
Alternative dispute resolution	0	3	0
Floods, droughts and ecosystem protection	0	0	0
Water infrastructure	5	0	0
Inclusion	0	0	0
Political commitment	5	0	0
Institutional functioning	5	0	0
<b>SCORE</b>	<b>19/30</b>	<b>6/30</b>	<b>1/30</b>
<b>WCQ</b>	<b>63.33</b>	<b>20</b>	<b>3.33</b>

## Dniester

**Countries:** Moldova-Ukraine

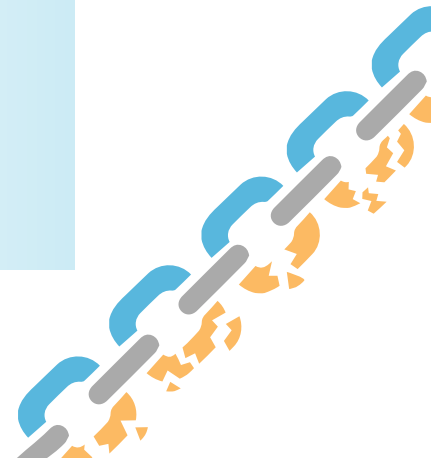
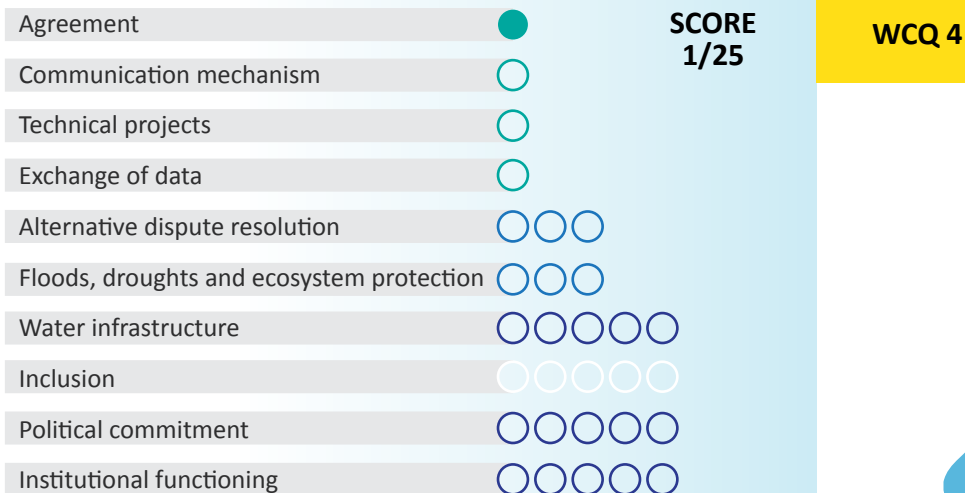
**Authority:** No authority



## Don, Elancik, Mius

**Countries:** Russia-Ukraine

**Authority:** No authority

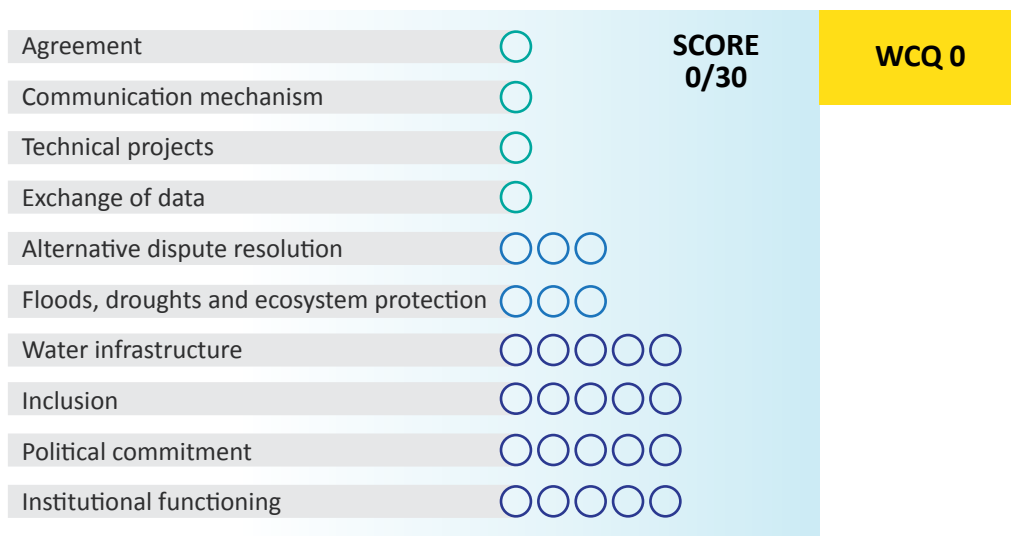


## Drin

**Countries:** Albania, Macedonia, Montenegro, Serbia

**Authority:** No cooperation

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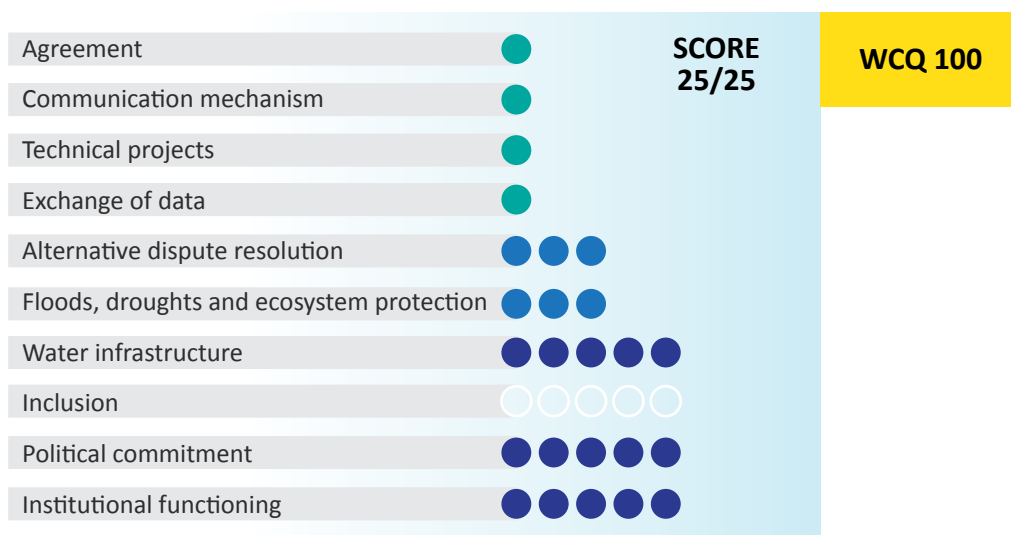


## Douro/Duero, Guadiana, Lima, Mino, Tagus/Tejo

**Countries:** Portugal-Spain

**Authority:** Commission for the Application and Development of Albufeira Convention

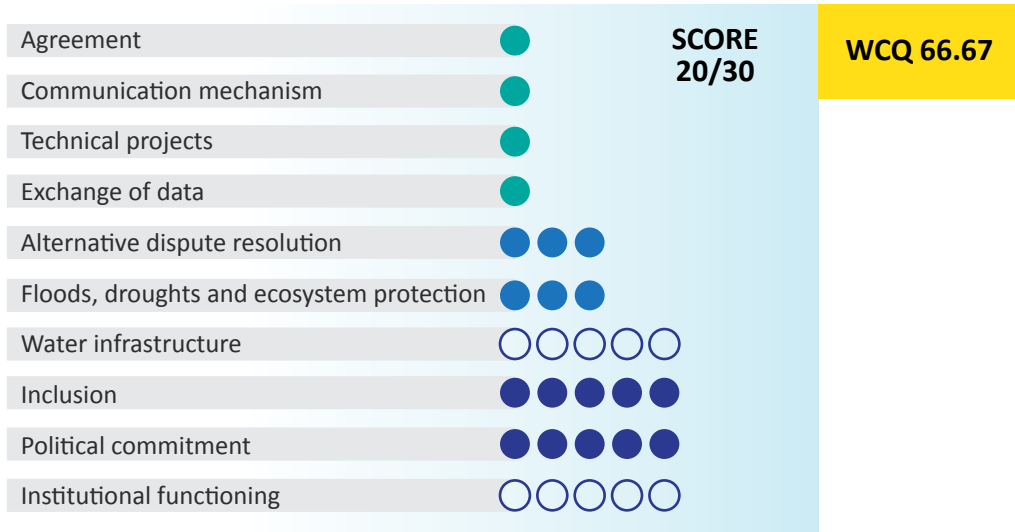
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## Elbe

**Countries:** Austria, Czech Republic, Germany, Poland

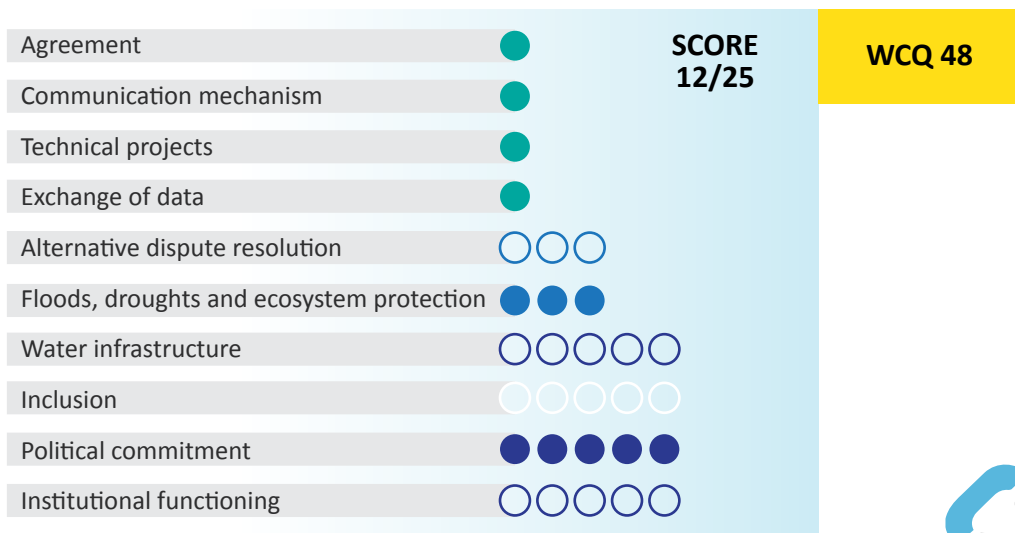
**Authority:** International Commission for the Protection of Elbe River



## Gauja, Salaca

**Countries:** Estonia-Latvia

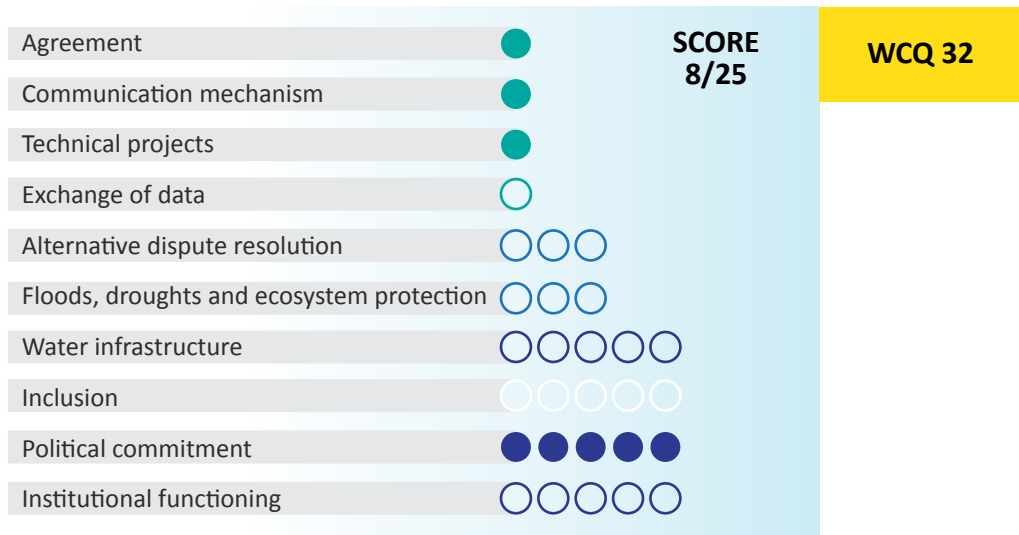
**Authority:** Advisory Council of the Gauja/Koiva River Basin



## Isonzo

**Countries:** Italy-Slovenia

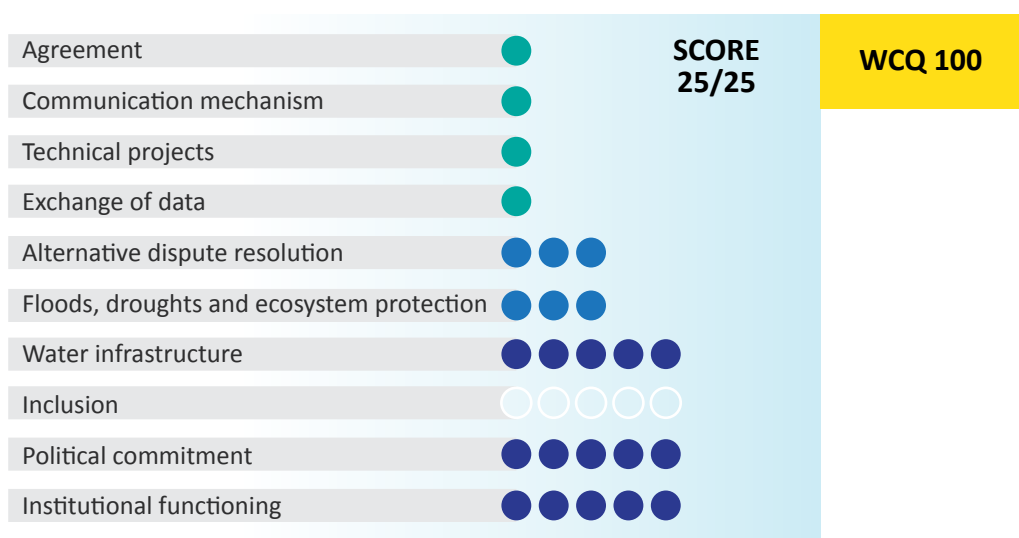
**Authority:** Joint Permanent Commission for the Hydro-Economy (Commissione mista permanente per l'idroeconomia)



## Kemi, Olanga, Oulu, Pasvik\*, Tuloma, Vuoksa

**Countries:** Finland-Russia

**Authority:** Finnish-Russian Joint Commission on the Utilization of Frontier Waters (JWC)



\*Pasvik is a river also shared by Norway. However on expert consultation, it has been confirmed that the river is considered to be important for cooperation only between Russia and Finland for they have the major share.



## Kogilnik

**Countries:** Moldova-Ukraine

**Authority:** No authority

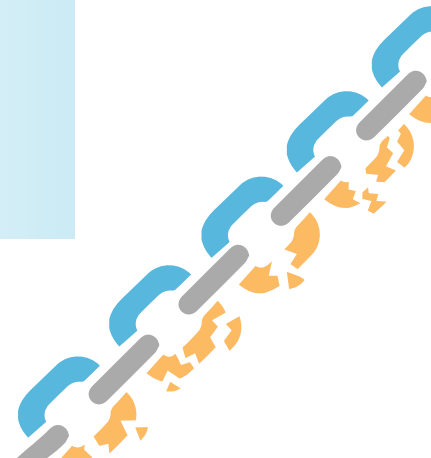
Agreement	<input checked="" type="radio"/>	<b>SCORE 2/25</b>	<b>WCQ 8</b>
Communication mechanism	<input type="radio"/>		
Technical projects	<input type="radio"/>		
Exchange of data	<input checked="" type="radio"/>		
Alternative dispute resolution	<input type="radio"/> <input type="radio"/> <input type="radio"/>		
Floods, droughts and ecosystem protection	<input type="radio"/> <input type="radio"/> <input type="radio"/>		
Water infrastructure	<input type="radio"/> <input type="radio"/> <input type="radio"/> <input type="radio"/> <input type="radio"/>		
Inclusion	<input type="radio"/> <input type="radio"/> <input type="radio"/> <input type="radio"/> <input type="radio"/>		
Political commitment	<input type="radio"/> <input type="radio"/> <input type="radio"/> <input type="radio"/> <input type="radio"/>		
Institutional functioning	<input type="radio"/> <input type="radio"/> <input type="radio"/> <input type="radio"/> <input type="radio"/>		

## Krka

**Countries:** Bosnia and Herzegovina-Croatia

**Authority:** No cooperation

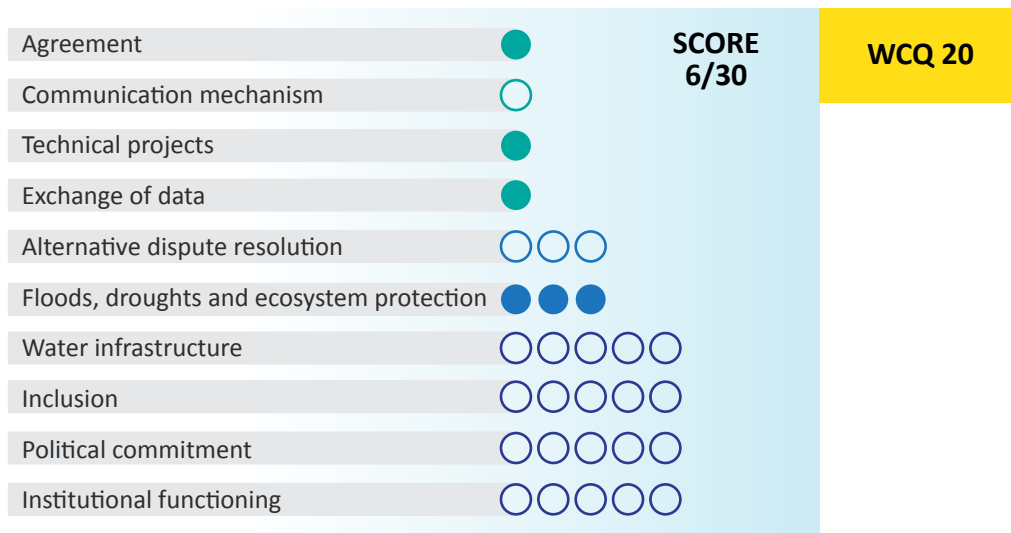
Agreement	<input type="radio"/>	<b>SCORE 0/25</b>	<b>WCQ 0</b>
Communication mechanism	<input type="radio"/>		
Technical projects	<input type="radio"/>		
Exchange of data	<input type="radio"/>		
Alternative dispute resolution	<input type="radio"/> <input type="radio"/> <input type="radio"/>		
Floods, droughts and ecosystem protection	<input type="radio"/> <input type="radio"/> <input type="radio"/>		
Water infrastructure	<input type="radio"/> <input type="radio"/> <input type="radio"/> <input type="radio"/> <input type="radio"/>		
Inclusion	<input type="radio"/> <input type="radio"/> <input type="radio"/> <input type="radio"/> <input type="radio"/>		
Political commitment	<input type="radio"/> <input type="radio"/> <input type="radio"/> <input type="radio"/> <input type="radio"/>		
Institutional functioning	<input type="radio"/> <input type="radio"/> <input type="radio"/> <input type="radio"/> <input type="radio"/>		



## Lake Prespa

**Countries:** Albania, Greece, Macedonia

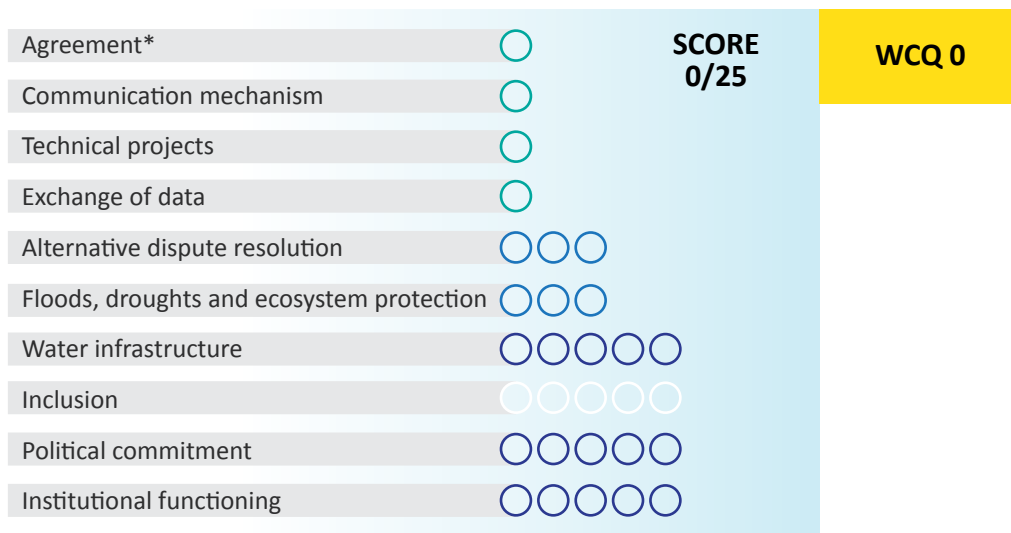
**Authority:** No authority



## Lava/Pregel

**Countries:** Poland-Russia

**Authority:** No cooperation



\*Agreement between the Government of the Polish People's Republic and the Government of the Union of Soviet Socialist Republics Concerning the Use of Water Resources in Frontier Waters , 1964 is not functional.

## Maritsa

**Countries:** Bulgaria, Greece, Turkey

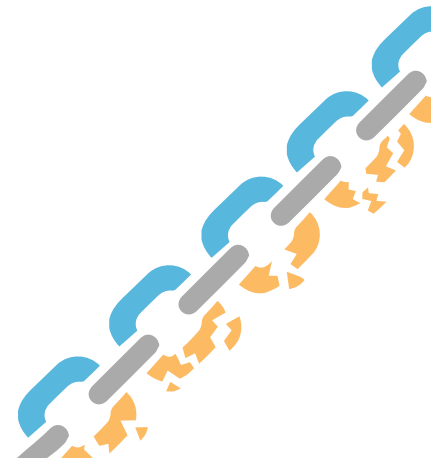
**Authority:**

Bulgaria-Turkey: Technical Working Group

Bulgaria-Greece: Expert/Joint Working Group on Cooperation on Water and Environment (“Expert WG”)

Greece-Turkey: No authority

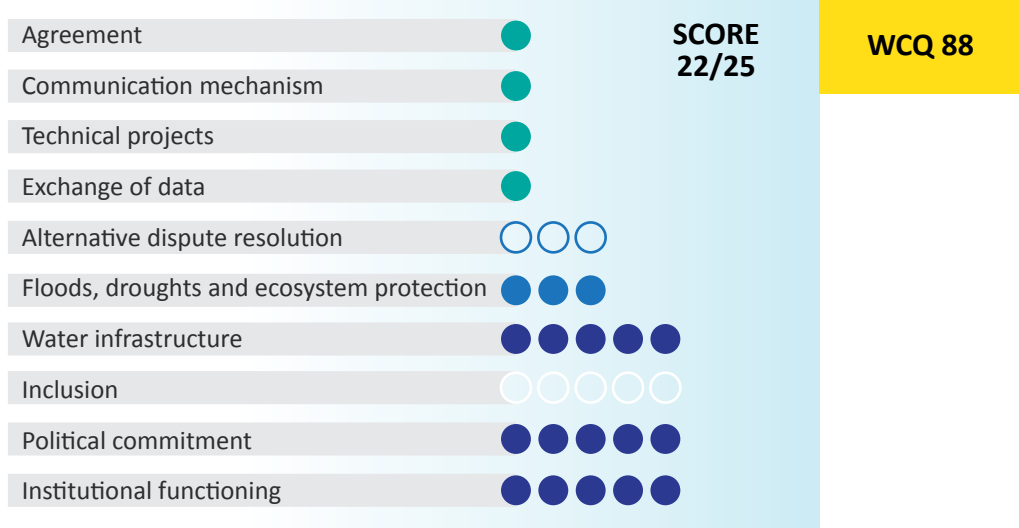
	Bulgaria-Greece	Bulgaria-Turkey	Greece-Turkey
Agreement	1	1	1
Communication mechanism	1	1	0
Technical projects	1	1	1
Exchange of data	1	1	0
Alternative dispute resolution	0	3	3
Floods, droughts and ecosystem protection	0	0	0
Water infrastructure	0	0	0
Inclusion	0	0	0
Political commitment	5	0	0
Institutional functioning	0	0	0
<b>SCORE</b>	<b>9/30</b>	<b>7/30</b>	<b>5/30</b>
<b>WCQ</b>	<b>30</b>	<b>23.33</b>	<b>16.67</b>



## Narva

**Countries\*:** Estonia-Russia

**Authority:** Estonia-Russia: Joint Commission on the Protection and Sustainable Use of Transboundary Waters

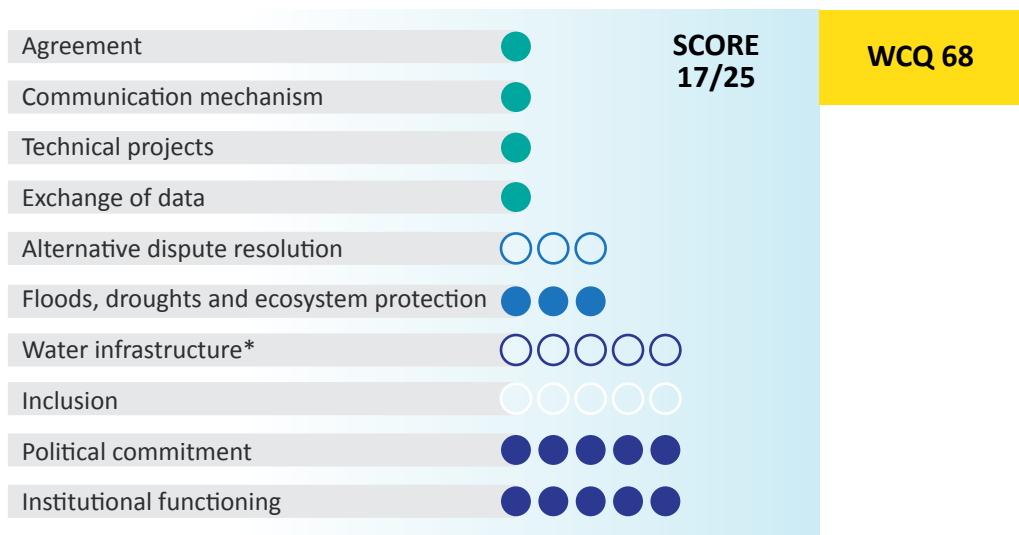


\*Belarus and Latvia are not considered a part of the basin as confirmed by experts

## Naatamo, Tana

**Countries:** Finland-Norway

**Authority:** Finnish-Norwegian Transboundary Water Commission



\*Water infrastructure is not appropriate here as the rivers are in Lapland region and are used for fishing extensively

## Neman

**Countries:** Belarus, Lithuania, Poland, Russia

**Authority:**

Lithuania-Poland: Polish Lithuanian Commission on Transboundary Waters

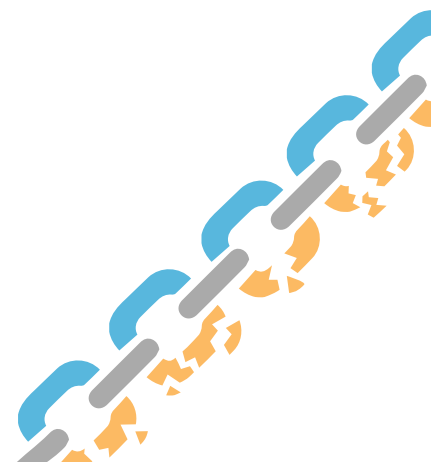
Belarus-Russia: Joint Russian-Belarusian Commission on Protection and Rational Use of Transboundary Water Bodies

Lithuania-Russia: Commission on the Environment of the Russian-Lithuanian Council for Long-Term Cooperation between Regional and Local Authorities in the Kaliningrad Oblast and in Lithuania

Russia-Poland: No cooperation

Belarus-Lithuania: No authority

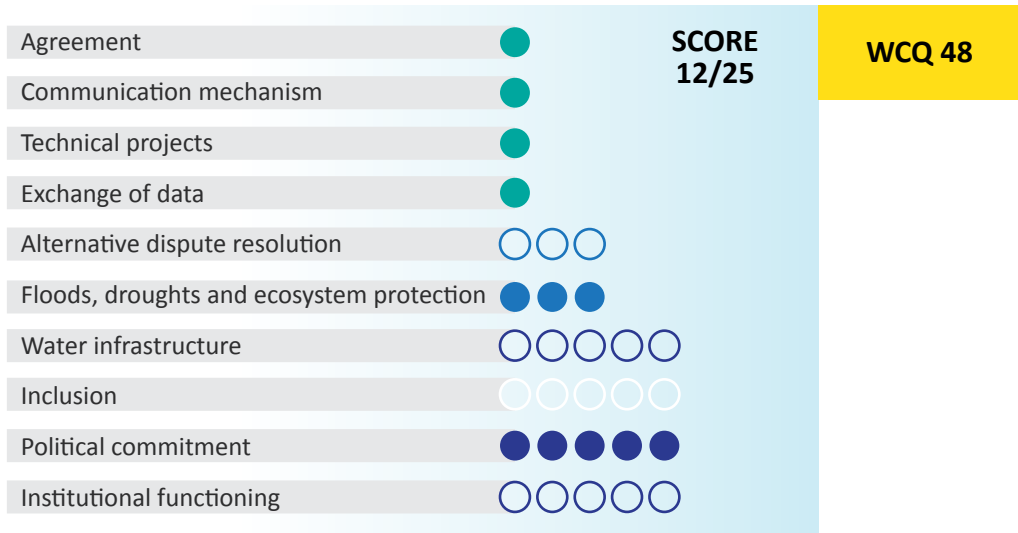
	Lithuania -Poland	Belarus -Russia	Belarus- Lithuania	Poland- Russia	Lithuania- Russia
Agreement	1	1	1	0	1
Communication mechanism	1	1	0	0	1
Technical projects	0	0	0	0	0
Exchange of data	0	0	0	0	1
Alternative dispute resolution	0	3	0	0	0
Floods, droughts & ecosystem protection	0	0	0	0	3
Water infrastructure	0	0	5	0	0
Inclusion	0	0	0	0	0
Political commitment	0	0	0	0	0
Institutional functioning	0	0	0	0	0
<b>SCORE</b>	<b>2/30</b>	<b>5/30</b>	<b>6/30</b>	<b>0/30</b>	<b>6/30</b>
<b>WCQ</b>	<b>6.67</b>	<b>16.67</b>	<b>20</b>	<b>0</b>	<b>20</b>



## Neretva

**Countries:** Bosnia and Herzegovina-Croatia

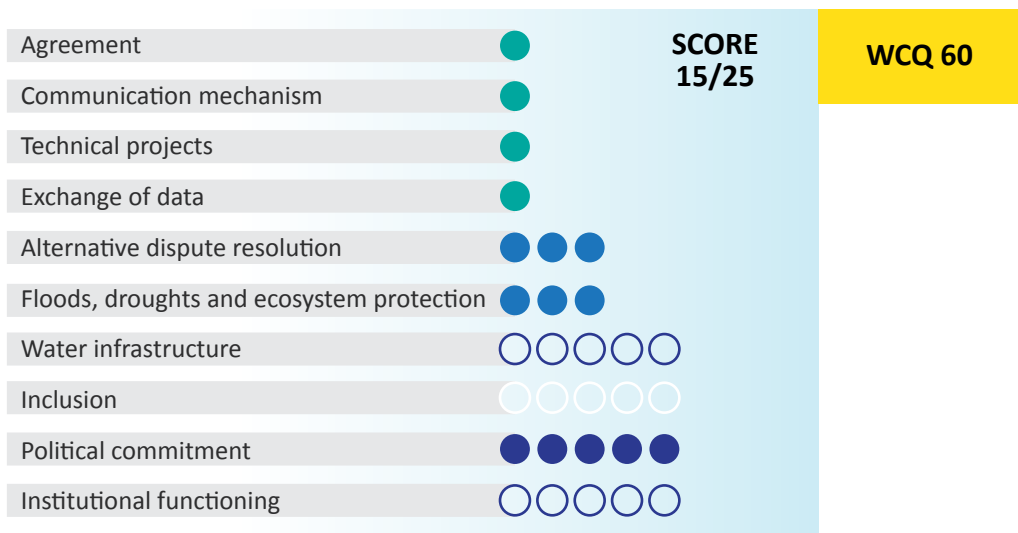
**Authority:** Interstate Water Committee (ISWC)



## Nestos

**Countries:** Bulgaria-Greece

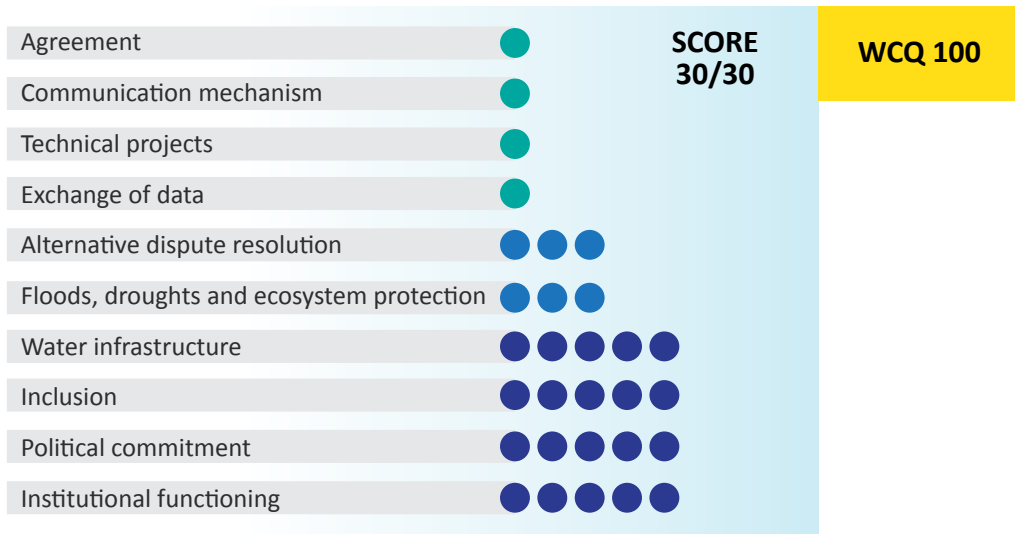
**Authority:** Expert/Joint Working Group on Cooperation on Water and Environment ("Expert WG")



## Oder/Odra

**Countries:** Czech Republic, Germany, Poland, Slovakia

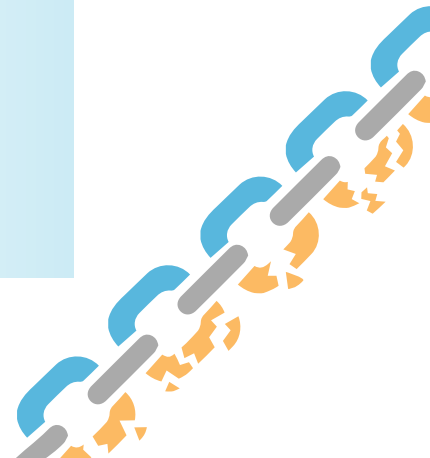
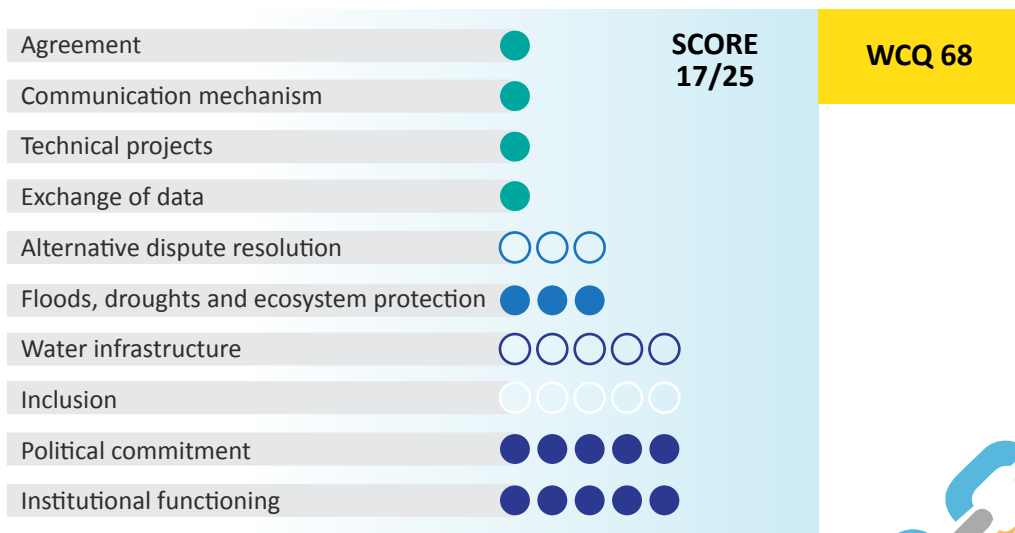
**Authority:** International Commission for the Protection of the Odra/Oder River against Pollution



## Po

**Countries:** Italy-Switzerland

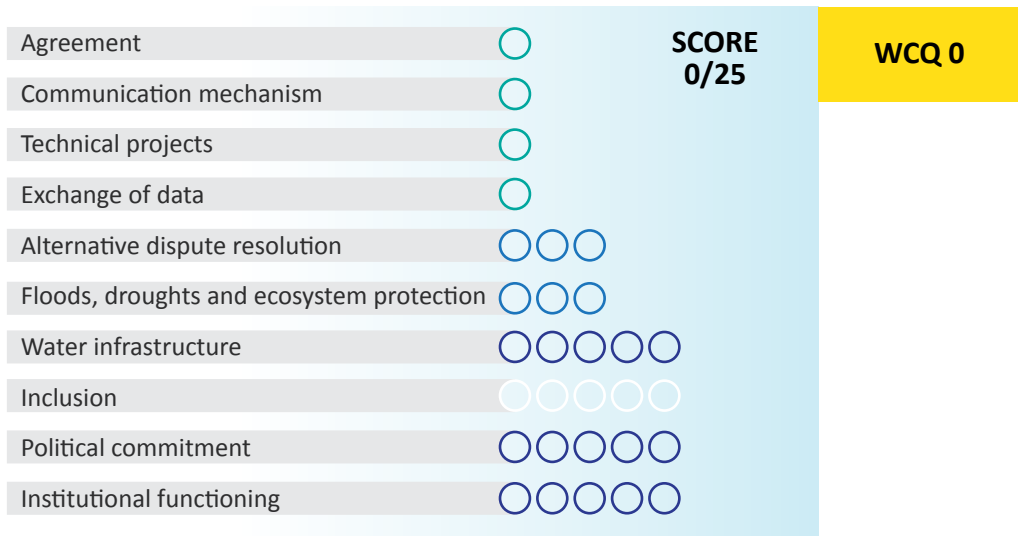
**Authority:** The International Commission for the Protection of Italo-Swiss Waters (Commissione internazionale per la protezione delle acque italo-svizzere) (CIPAIS)



## Psou, Sulak, Terek

Countries: Georgia-Russia

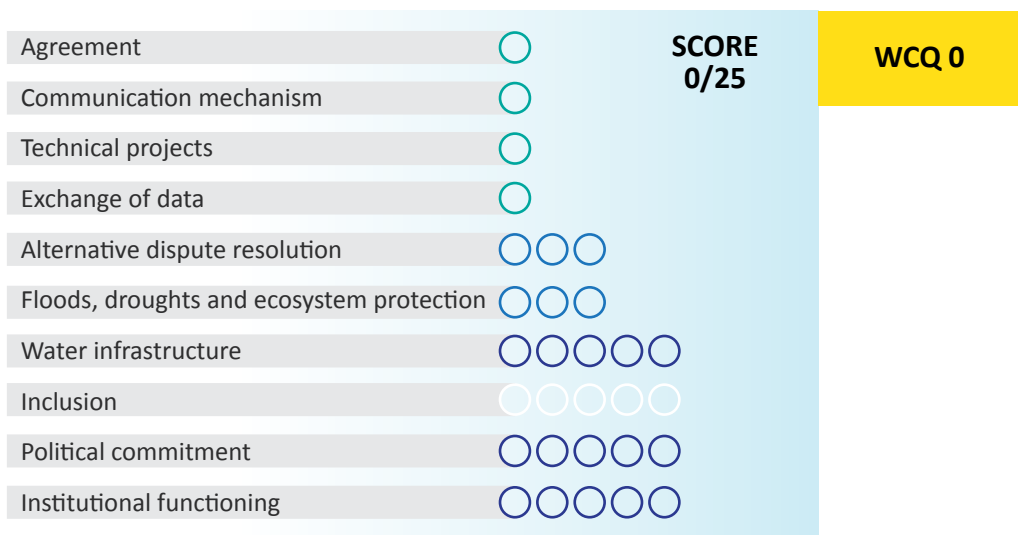
Authority: No cooperation



## Prohladnaja

Countries: Poland-Russia

Authority: No cooperation

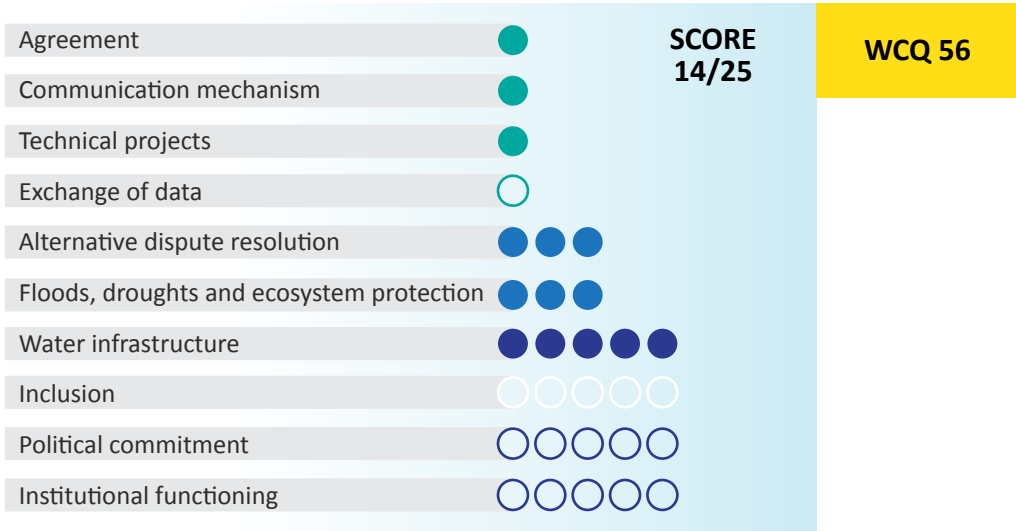




## Rezvaya, Velaka

**Countries:** Bulgaria-Turkey

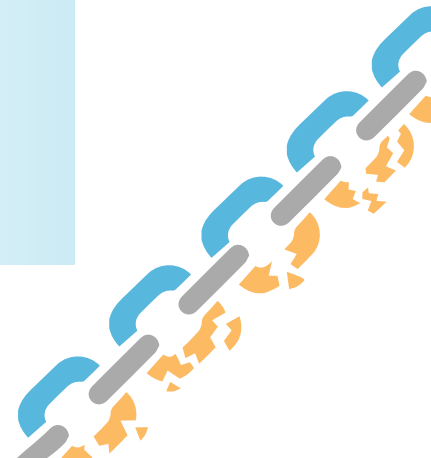
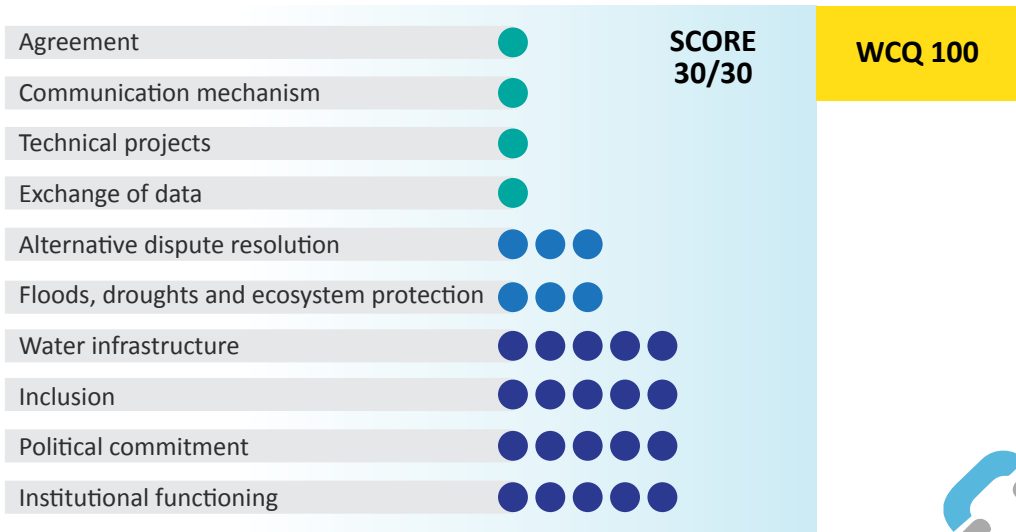
**Authority:** Technical Working Group



## Rhine

**Countries:** Austria, Belgium, France, Germany, Italy, Liechtenstein, Luxembourg, Netherlands, Switzerland

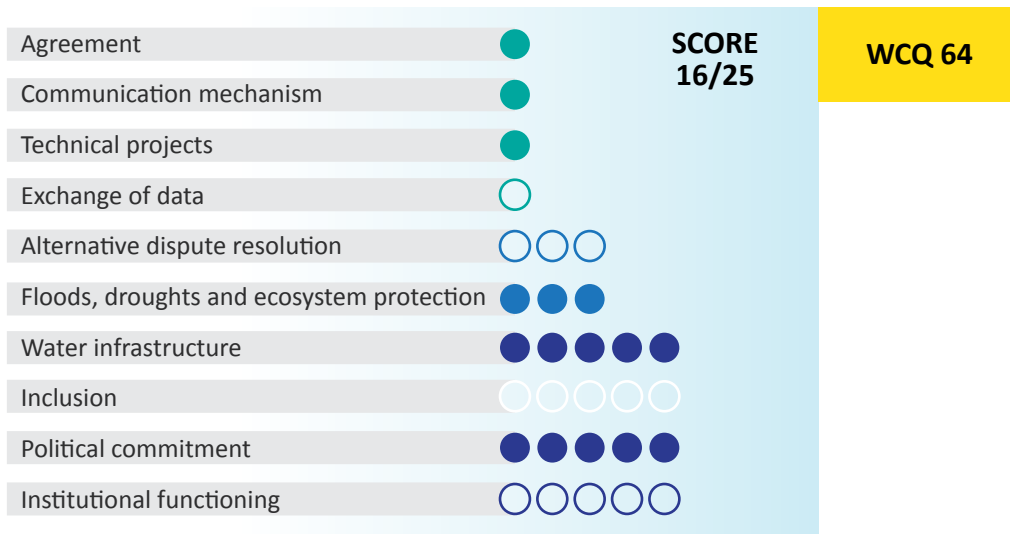
**Authority:** International Commission for the Protection of the Rhine River (ICPR)



## Rhone

**Countries:** France-Switzerland

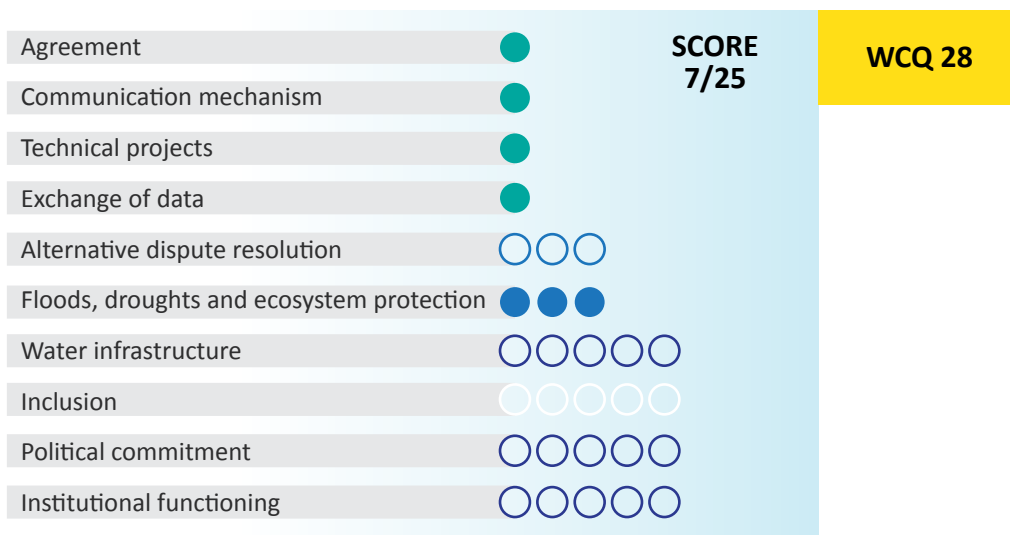
**Authority:** Technical French-Swiss Committee (Comité Technique Franco-Suisse)



## Roia

**Countries:** France-Italy

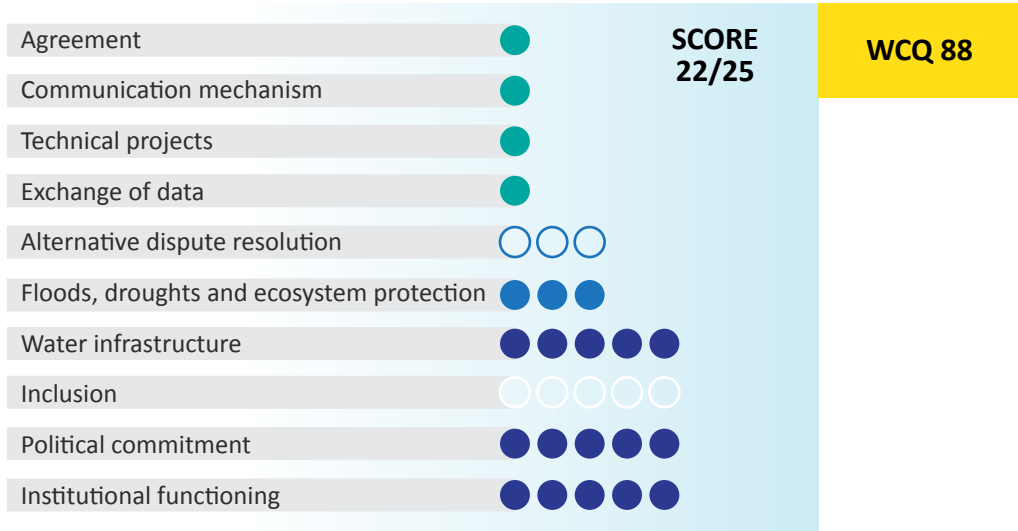
**Authority:** Coordination Permanent Committee



## Schelde, Yser

**Countries:** Belgium-France

**Authority:** The International Scheldt Commission



## Struma

**Countries:**Bulgaria, Greece, Macedonia, Serbia

**Authority:**

Bulgaria-Greece: Expert/Joint Working Group on Cooperation on Water and Environment (“Expert WG”)

Greece-Macedonia: No cooperation

Bulgaria-Macedonia: No cooperation

Bulgaria-Serbia: No cooperation

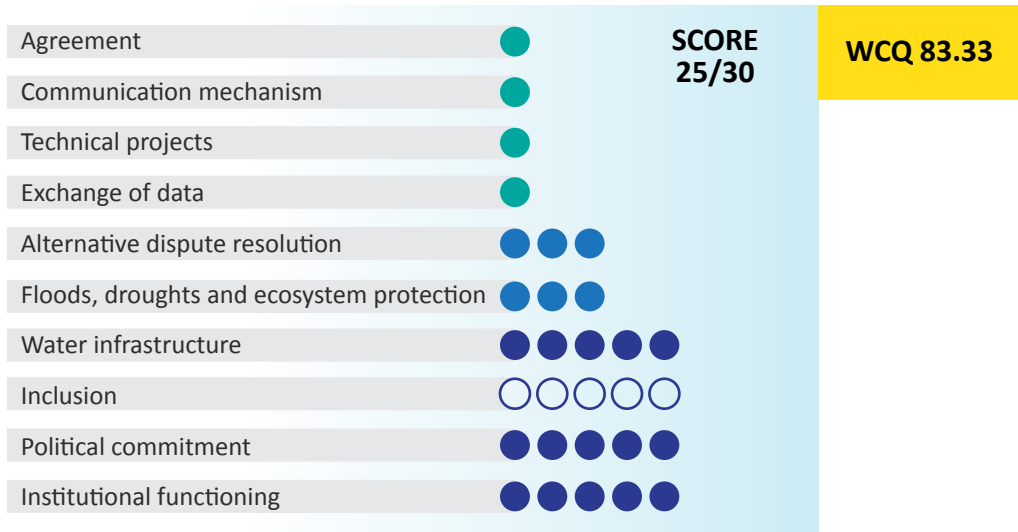
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	Bulgaria - Greece	Greece-Macedonia	Bulgaria-Macedonia	Bulgaria-Serbia
Agreement	1	0	0	0
Communication mechanism	1	0	0	0
Technical projects	1	0	0	0
Exchange of data	0	0	0	0
Alternative dispute resolution	0	0	0	0
Floods, droughts & ecosystem protection	0	0	0	0
Water infrastructure	0	0	0	0
Inclusion	0	0	0	0
Political commitment	5	0	0	0
Institutional functioning	0	0	0	0
<b>SCORE</b>	<b>8/30</b>	<b>0/30</b>	<b>0/30</b>	<b>0/30</b>
<b>WCQ</b>	<b>26.67</b>	<b>0</b>	<b>0</b>	<b>0</b>

## Torne/Tornealven\*

**Countries:** Finland-Sweden

**Authority:** Finnish-Swedish Transboundary River Commission (FSTRC)/FRC

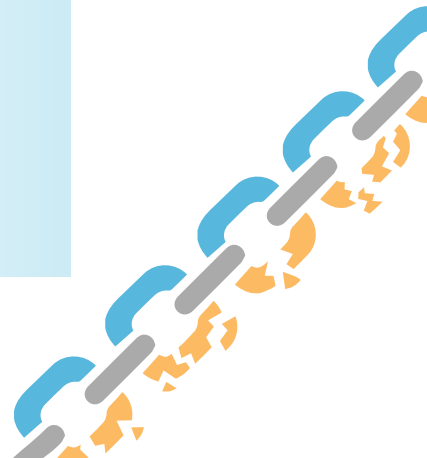
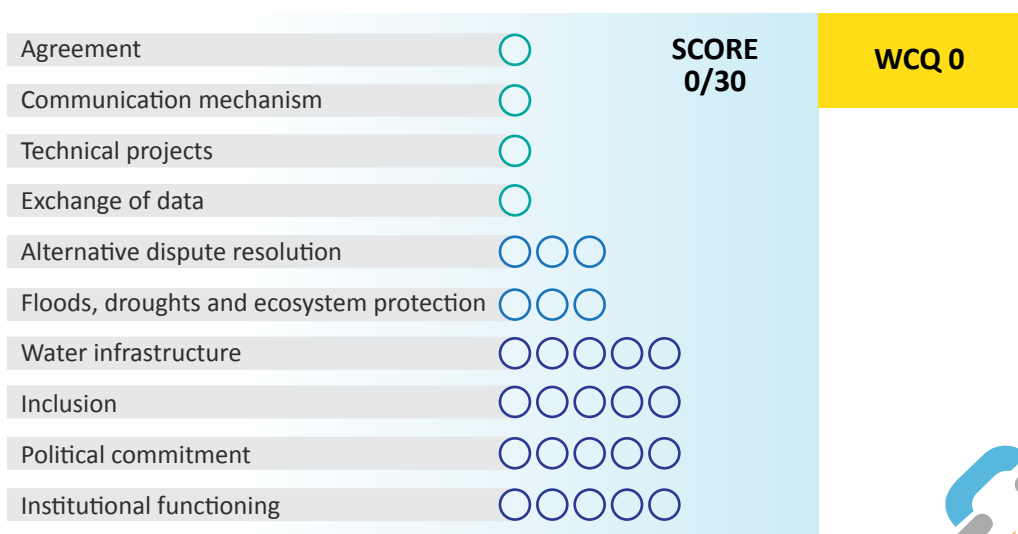


\*The Torne is also shared by Norway but is relatively insignificant for it.

## Vardar

**Countries:** Greece, Macedonia, Serbia

**Authority:** No cooperation

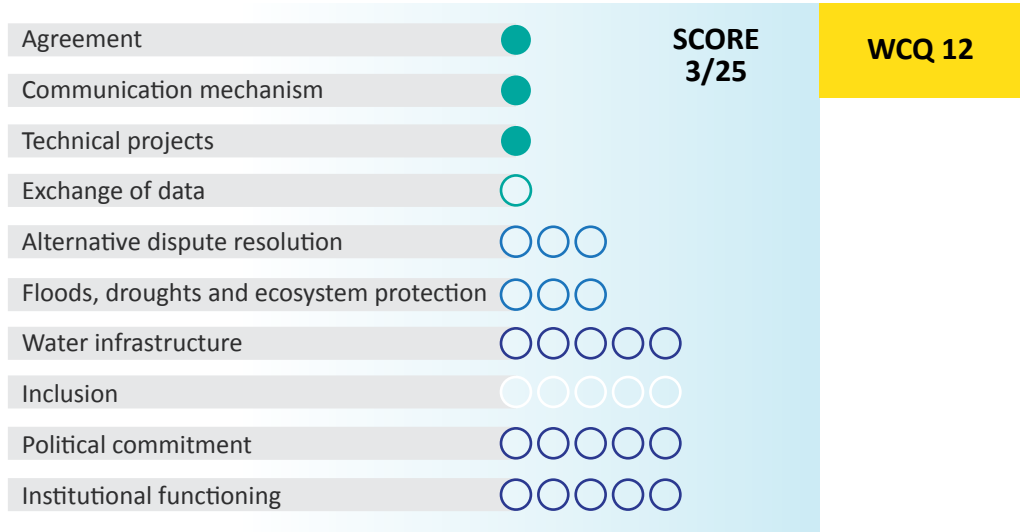


# Vijose

**Countries:** Albania-Greece

**Authority:** Permanent Greek-Albanian Commission on Transboundary Freshwater Issues

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## Vistula/Wista

**Countries:** Belarus, Poland, Slovakia, Ukraine

**Authority:**

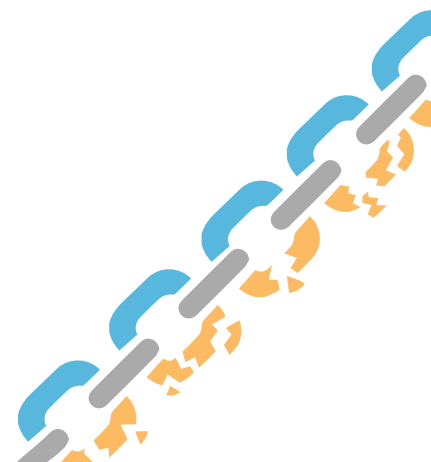
Poland-Ukraine: Polish-Ukrainian Transboundary Waters Commission

Poland-Slovakia: Polish-Slovak Transboundary Waters Commission

Belarus-Poland: Polish-Belarusian Intergovernmental Coordination Commission for Transboundary Cooperation

Belarus-Ukraine: Permanent Cross Border Commission on the Development of the Dnieper/Vistula Water

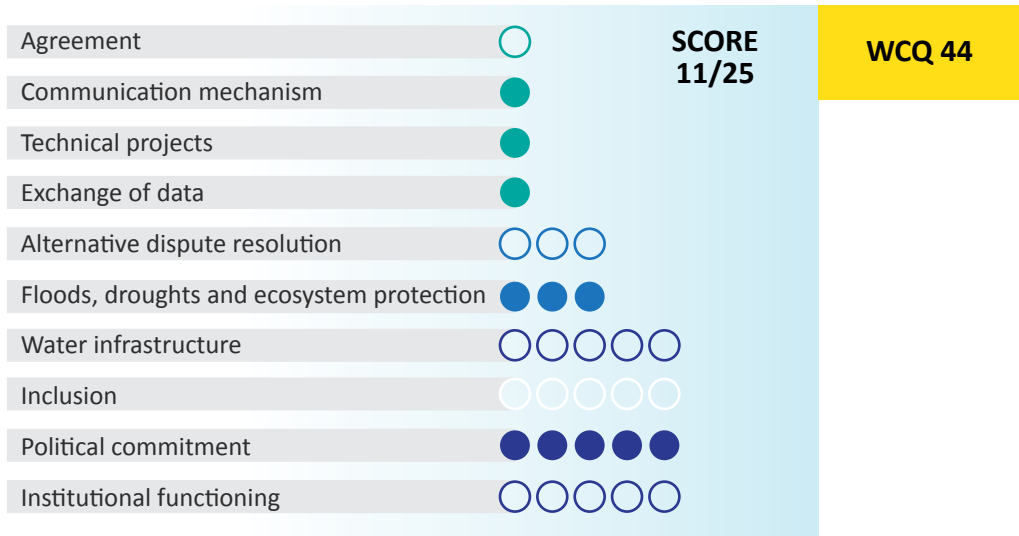
	Poland-Ukraine	Poland-Slovakia	Belarus-Poland	Belarus-Ukraine
Agreement	1	0	1	1
Communication mechanism	1	1	1	1
Technical projects	1	0	1	1
Exchange of data	1	1	1	1
Alternative dispute resolution	0	0	0	0
Floods, droughts & ecosystem protection	3	3	3	0
Water infrastructure	5	5	0	5
Inclusion	0	0	0	0
Political commitment	5	5	5	5
Institutional functioning	0	0	0	5
<b>SCORE</b>	<b>17/30</b>	<b>15/30</b>	<b>12/30</b>	<b>19/30</b>
<b>WCQ</b>	<b>56.67</b>	<b>50</b>	<b>40</b>	<b>63.33</b>



# Wiedau

**Countries:** Denmark-Germany

**Authority:** Ministries of Respective Countries





## Asia

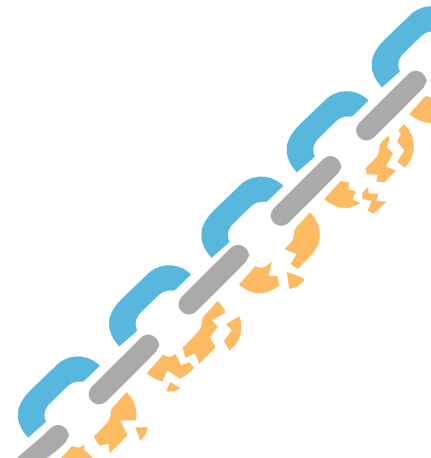
### Amur

**Countries:** China, Mongolia, Russia

**Authority:** China-Russia: Russia-China Joint Commission

Mongolia-Russia: Russia-Mongolia Working Groups

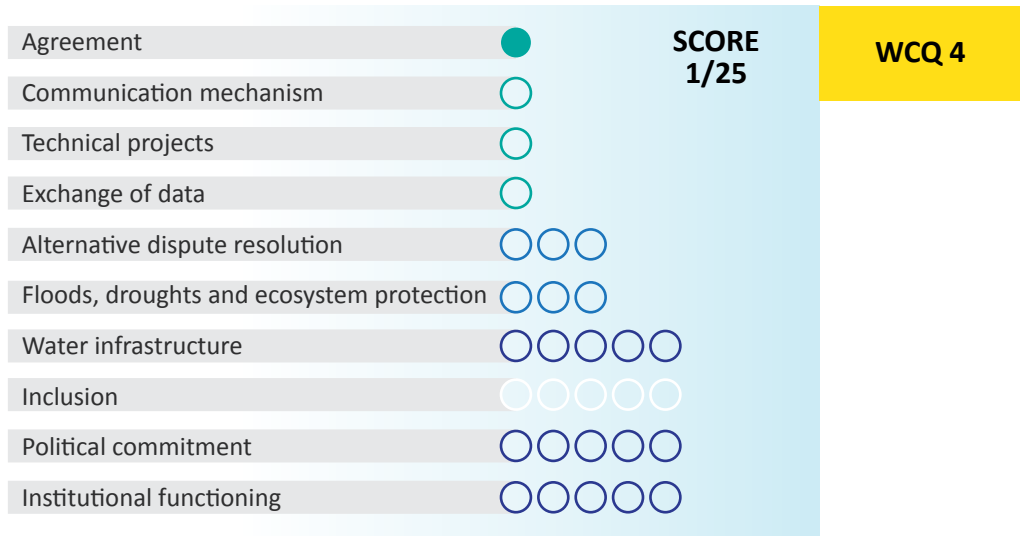
	China-Russia	Mongolia-Russia
Agreement	1	1
Communication mechanism	1	1
Technical projects	1	1
Exchange of data	1	1
Alternative dispute resolution	0	0
Floods, droughts and ecosystem protection	3	3
Water infrastructure	0	0
Inclusion	0	0
Political commitment	0	0
Institutional functioning	0	0
<b>SCORE</b>	<b>7/30</b>	<b>7/30</b>
<b>WCQ</b>	<b>23.33</b>	<b>23.33</b>



# An Nahr Al Kabir

**Countries:** Lebanon-Syria\*

**Authority:** No authority



\*Since 2011, due to the protracted armed conflict Syria has been unable to attend to its transboundary water relations.

## Aral Sea

**Countries:** Afghanistan, Kyrgyzstan, Kazakhstan, Tajikistan, Turkmenistan, Uzbekistan

**Authority:**

International Fund for saving the Aral Sea (IFAS) and multiple permanent joint and regional bodies including Interstate Coordination Water Commission (ICWC)\*

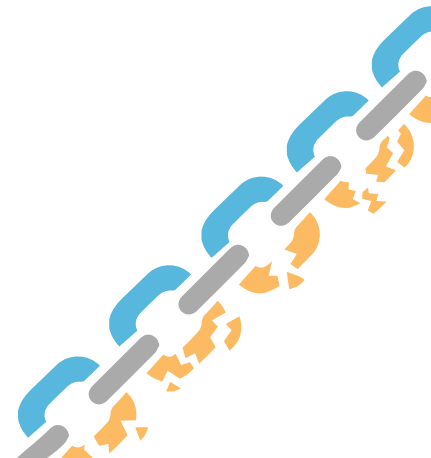
Afghanistan-Tajikistan: No Cooperation

Afghanistan-Turkmenistan: No Cooperation

Afghanistan-Uzbekistan: No Cooperation

	IFAS/ICWC	Afghanistan-Tajikistan	Afghanistan-Turkmenistan	Afghanistan-Uzbekistan
Agreement	1	0	0	0
Communication mechanism	1	0	0	0
Technical projects	1	0	0	0
Exchange of data	1	0	0	0
Alternative dispute resolution	3	0	0	0
Floods, droughts & ecosystem protection	3	0	0	0
Water infrastructure	0	0	0	0
Inclusion	0	0	0	0
Political commitment	5	0	0	0
Institutional functioning	5	0	0	0
<b>SCORE</b>	<b>20/30</b>	<b>0/30</b>	<b>0/30</b>	<b>0/30</b>
<b>WCQ</b>	<b>66.67</b>	<b>0</b>	<b>0</b>	<b>0</b>

\*Afghanistan is not part of the Basin Organisations.



## Asi/Orontes

**Countries:** Lebanon, Syria\*, Turkey

**Authority:** Lebanon-Syria: No authority

Syria-Turkey: No cooperation

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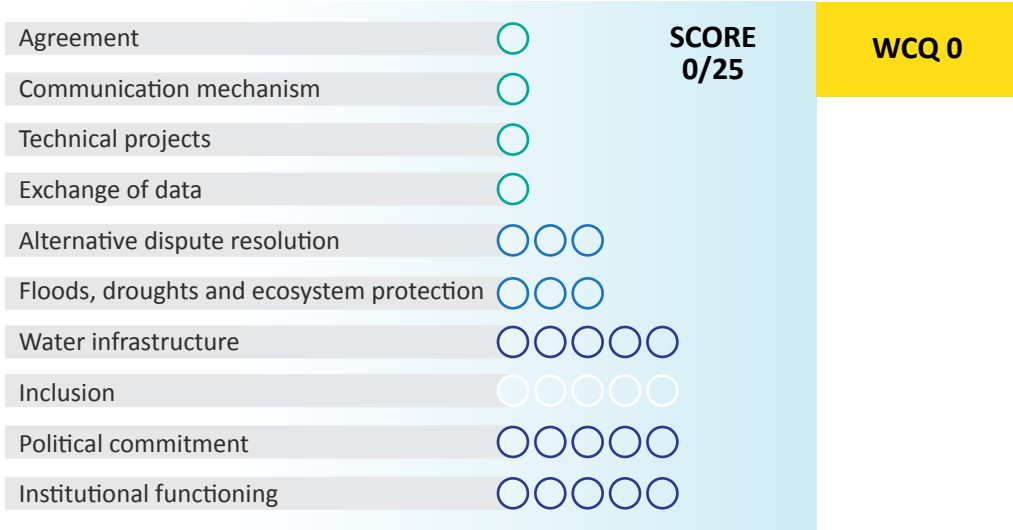
	Lebanon-Syria	Syria-Turkey
Agreement	1	0
Communication mechanism	0	0
Technical projects	0	0
Exchange of data	0	0
Alternative dispute resolution	0	0
Floods, droughts and ecosystem protection	0	0
Water infrastructure	0	0
Inclusion	0	0
Political commitment	0	0
Institutional functioning	0	0
<b>SCORE</b>	<b>1/30</b>	<b>0/30</b>
<b>WCQ</b>	<b>3.33</b>	<b>0</b>

\*Since 2011, due to the protracted armed conflict Syria has been unable to attend to its transboundary water relations.

## Astara Chay

**Countries:** Azerbaijan-Iran

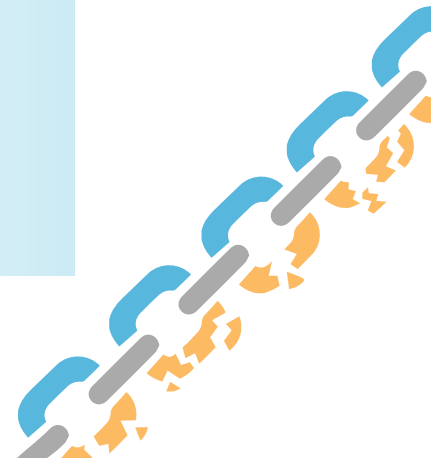
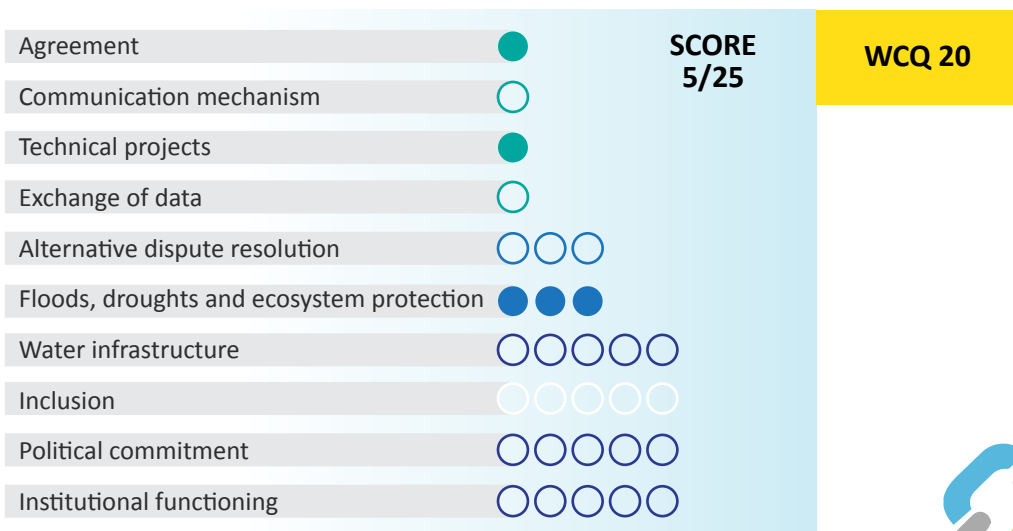
**Authority:** No cooperation



## Atrak

**Countries:** Iran-Turkmenistan

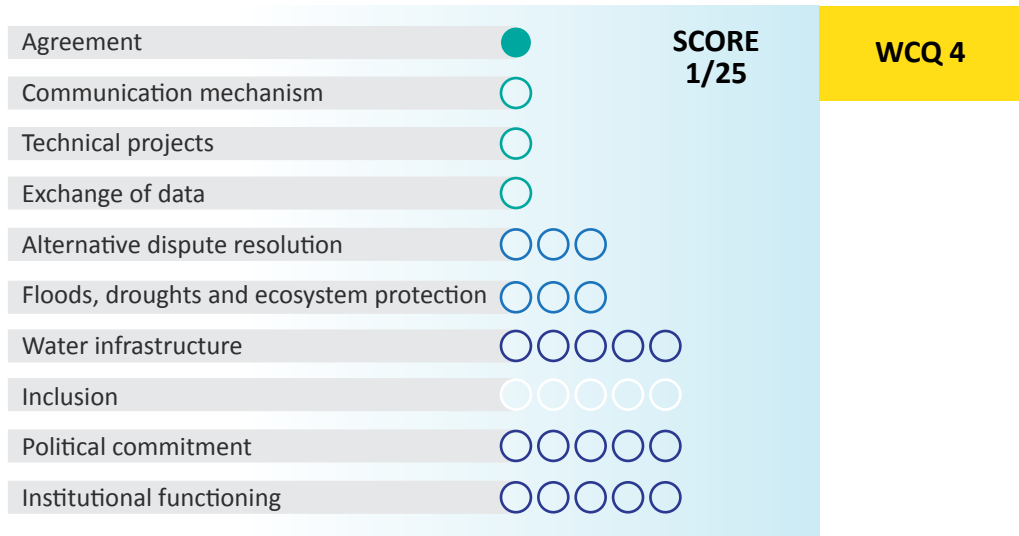
**Authority:** No authority



## Bei Jiang/Hsi

**Countries:** China-Vietnam

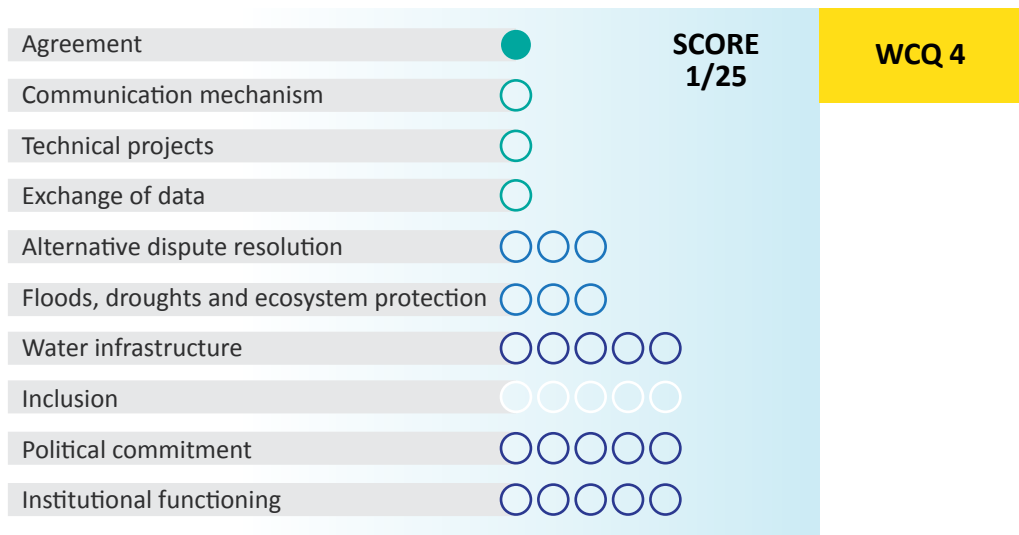
**Authority:** No authority



## Beilun

**Countries:** China-Vietnam

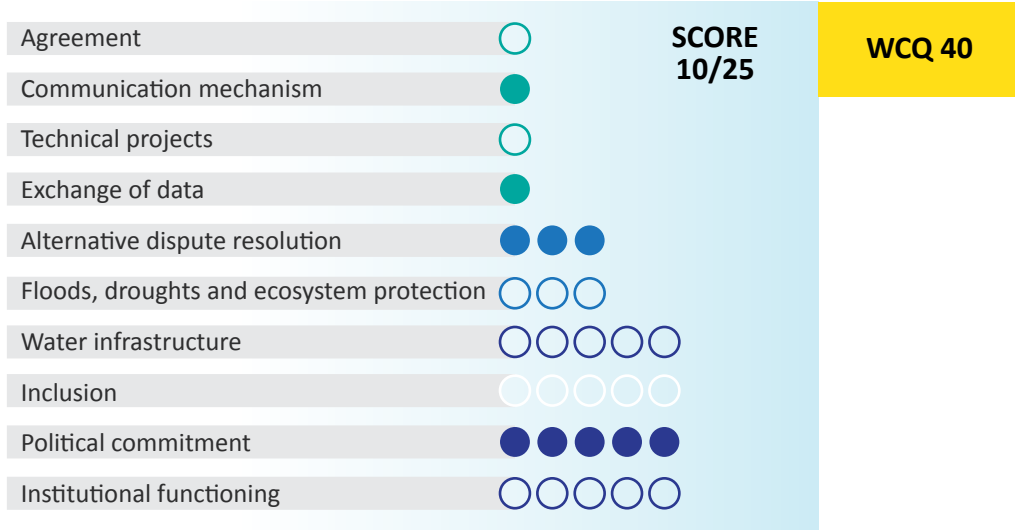
**Authority:** No authority



## Ca/Song Koi

**Countries:** Laos-Vietnam

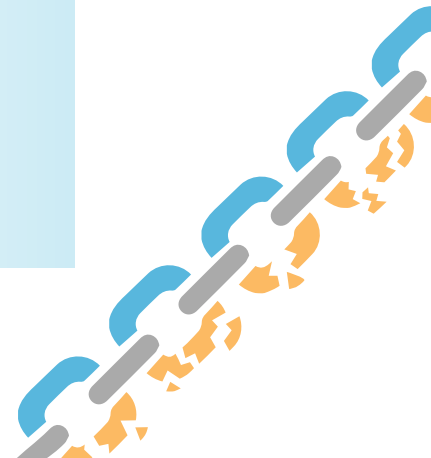
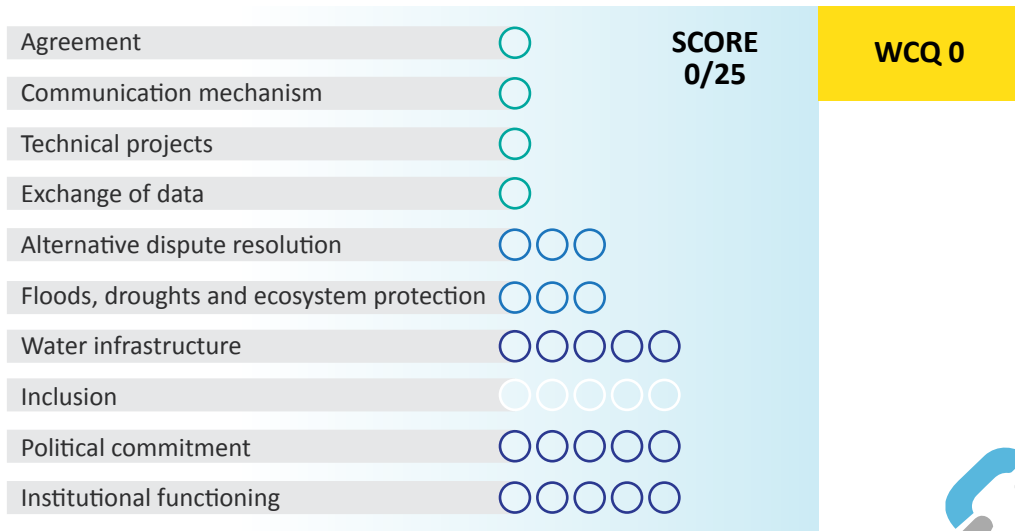
**Authority:** No authority



## Digul, Fly, Jayapura, Maro, Sepik, Tami, Tjeroaka/Wanggoe, Vanimo-Green

**Countries:** Indonesia-Papua New Guinea

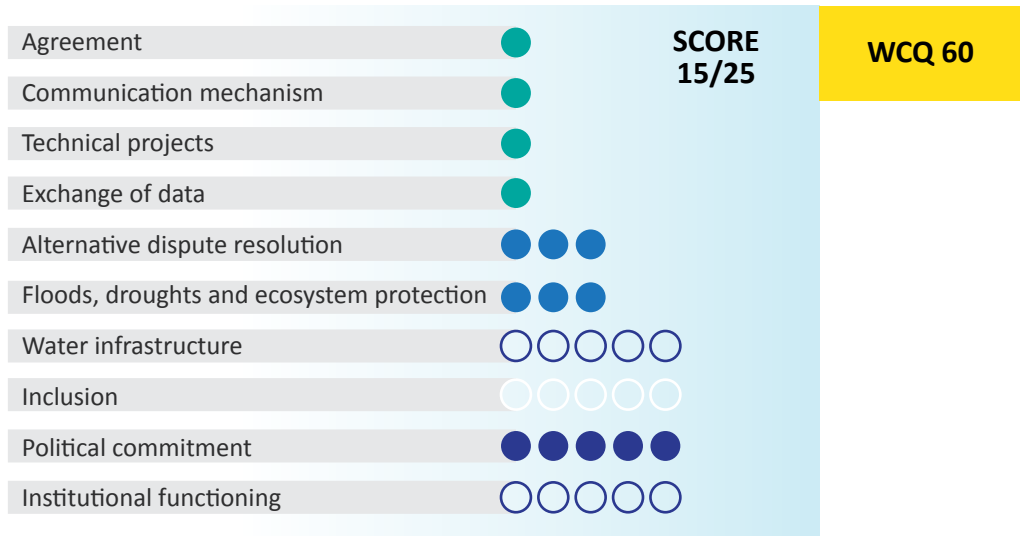
**Authority:** No cooperation



## Feni, Karnaphuli, Muhuri (aka Little Feni)

**Countries:** Bangladesh-India

**Authority:** India-Bangladesh Joint Rivers Commission (JRC)





## Ganges-Brahmaputra-Meghna

**Countries:** Bangladesh, Bhutan, China, India, Nepal

**Authority:**

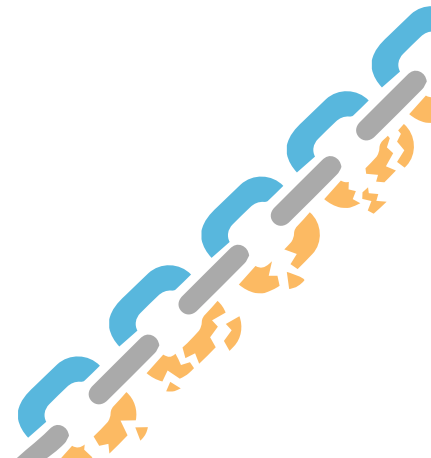
Bangladesh-India: India-Bangladesh Joint Rivers Commission (JRC)

India-Nepal: India-Nepal Joint Committee on Water Resources and Mahakali River Commission

Bhutan-India: India-Bhutan Joint Group of Experts on Flood Issues

China-India: India-China Joint Experts Level Mechanism

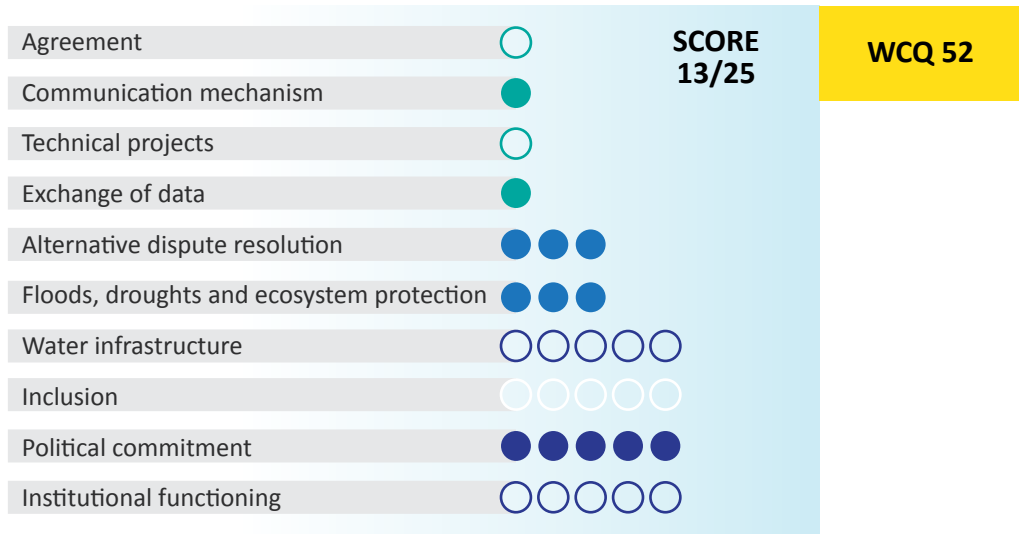
	Bangladesh- India	Bhutan-India	China-India	India-Nepal
Agreement	1	1	1	1
Communication mechanism	1	1	1	1
Technical projects	1	1	0	1
Exchange of data	1	1	1	1
Alternative dispute resolution	3	0	0	3
Floods, droughts & ecosystem protection	3	3	3	3
Water infrastructure	0	5	0	0
Inclusion	0	0	0	0
Political commitment	5	0	0	0
Institutional functioning	0	5	0	0
<b>SCORE</b>	<b>15/30</b>	<b>17/30</b>	<b>6/30</b>	<b>10/30</b>
<b>WCQ</b>	<b>50</b>	<b>56.67</b>	<b>20</b>	<b>33.33</b>



## Golok

**Countries:** Malaysia-Thailand

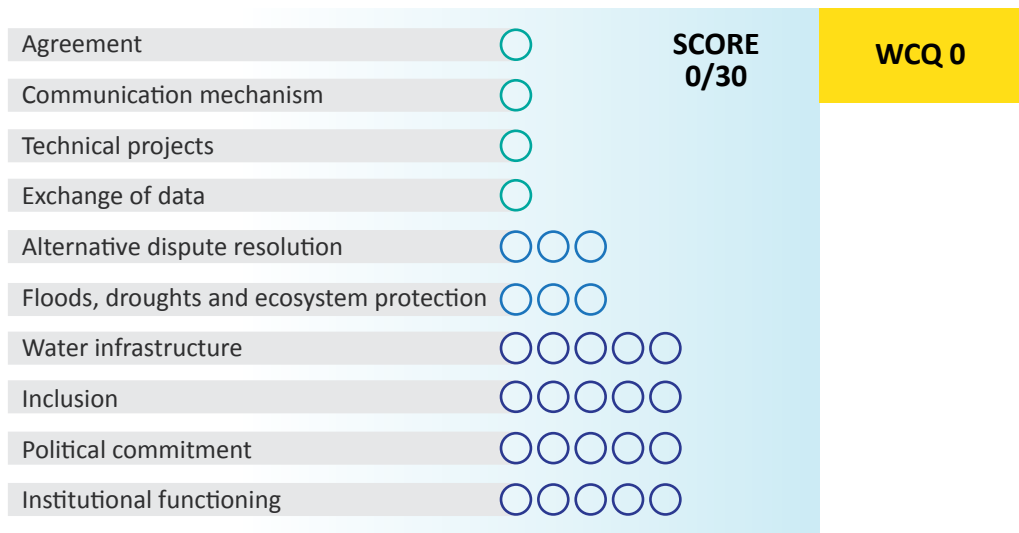
**Authority:** No authority



## Hamun-i-Mashkel/Rakshan

**Countries:** Afghanistan, Iran, Pakistan

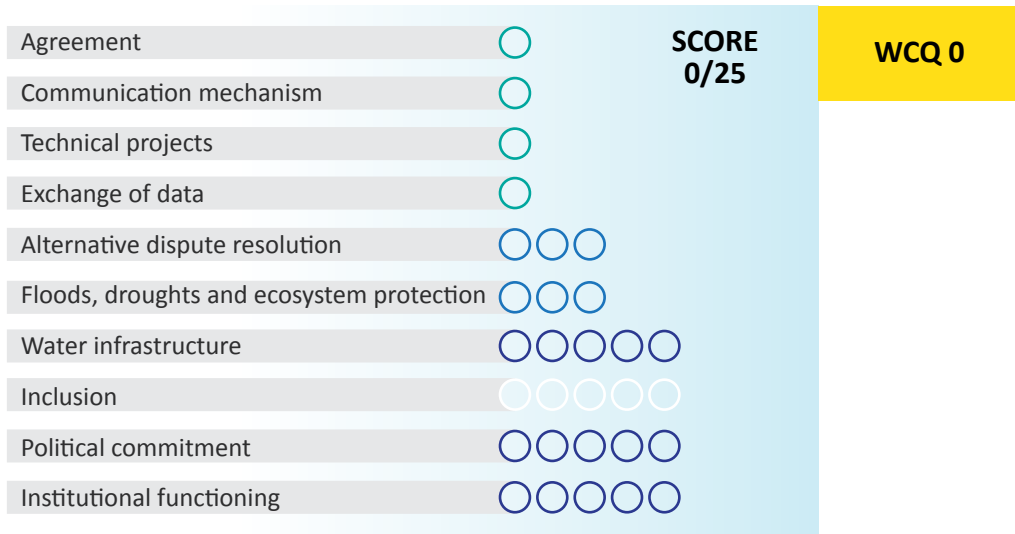
**Authority:** No cooperation



## Han

**Countries:** North Korea-South Korea

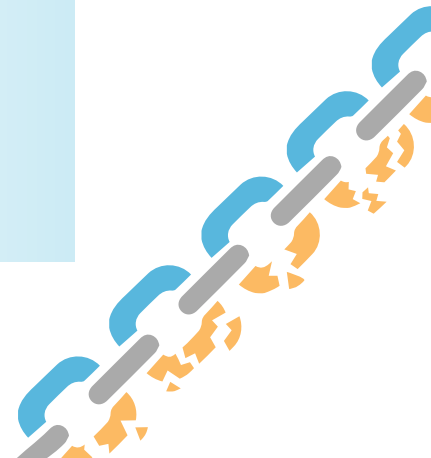
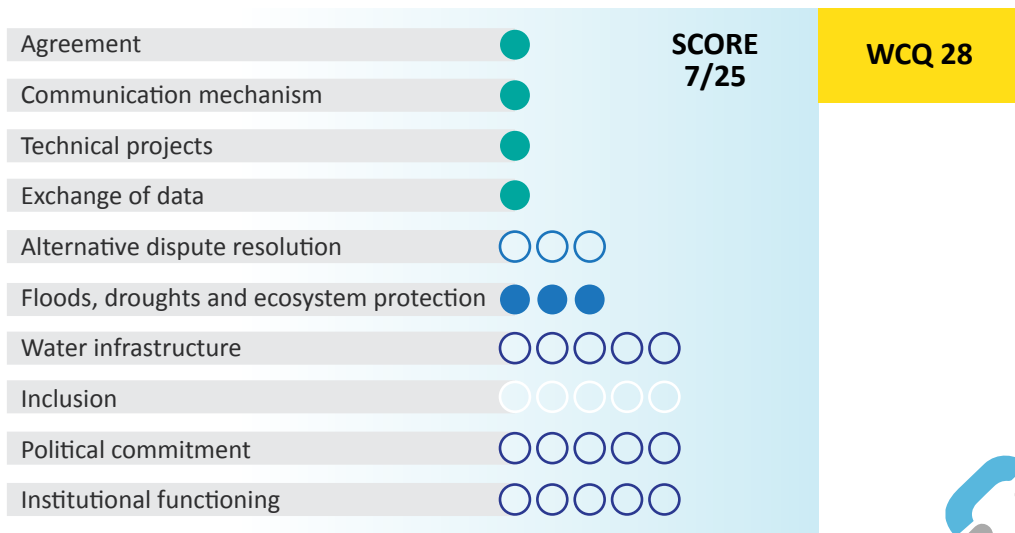
**Authority:** No cooperation



## Har Us Nur, Jenisej/Yenisey, Lake Ubsa-Nur/Uvs Nuur

**Countries:** Mongolia-Russia

**Authority:** Russia-Mongolia Working Groups



## Hari/ Harirud

**Countries:** Afghanistan, Iran, Turkmenistan

**Authority:**

Iran-Turkmenistan: Iran and Turkmenistan Joint Management Commission for Doosti Dam (on Harirud)

Afghanistan-Iran: No cooperation

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	Afghanistan-Iran	Iran-Turkmenistan
Agreement	0	1
Communication mechanism	0	1
Technical projects	0	0
Exchange of data	0	0
Alternative dispute resolution	0	0
Floods, droughts and ecosystem protection	0	3
Water infrastructure	0	5
Inclusion	0	0
Political commitment	0	0
Institutional functioning	0	0
<b>SCORE</b>	<b>0/30</b>	<b>10/30</b>
<b>WCQ</b>	<b>0</b>	<b>33.33</b>

## Helmand

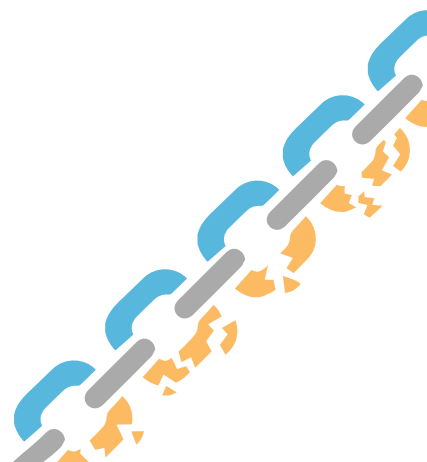
**Countries:** Afghanistan, Iran, Pakistan

**Authority:**

Afghanistan-Iran: Helmand River Delta Commission

Afghanistan-Pakistan: No cooperation

	Afghanistan-Iran	Afghanistan-Pakistan
Agreement	1	0
Communication mechanism	1	0
Technical projects	0	0
Exchange of data	1	0
Alternative dispute resolution	3	0
Floods, droughts and ecosystem protection	0	0
Water infrastructure	0	0
Inclusion	0	0
Political commitment	0	0
Institutional functioning	0	0
<b>SCORE</b>	<b>6/30</b>	<b>0/30</b>
<b>WCQ</b>	<b>20</b>	<b>0</b>



## Ili/Kunes He

**Countries:** China, Kazakhstan, Kyrgyzstan

**Authority:**

China-Kazakhstan: Kazakhstan-China Joint Commission in the Field of Use and Protection of Transboundary Rivers (Joint Commission)

Kazakhstan-Kyrgyzstan: No cooperation

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	China-Kazakhstan	Kazakhstan-Kyrgyzstan
Agreement	1	0
Communication mechanism	1	0
Technical projects	0	0
Exchange of data	1	0
Alternative dispute resolution	0	0
Floods, droughts and ecosystem protection	3	0
Water infrastructure	0	0
Inclusion	0	0
Political commitment	0	0
Institutional functioning	0	0
<b>SCORE</b>	<b>6/30</b>	<b>0/30</b>
<b>WCQ</b>	<b>20</b>	<b>0</b>

## Indus

**Countries:** Afghanistan, China, India, Pakistan

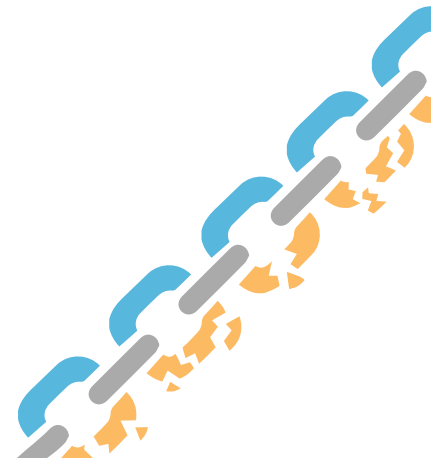
**Authority:**

India-Pakistan: Permanent Indus Commission between India and Pakistan

Afghanistan-Pakistan: No cooperation

China-India: No authority

	India-Pakistan	Afghanistan-Pakistan	China-India
Agreement	1	0	0
Communication mechanism	1	0	0
Technical projects	0	0	0
Exchange of data	1	0	1
Alternative dispute resolution	3	0	0
Floods, droughts and ecosystem protection	0	0	0
Water infrastructure	0	0	0
Inclusion	0	0	0
Political commitment	0	0	0
Institutional functioning	0	0	0
<b>SCORE</b>	<b>6/30</b>	<b>0/30</b>	<b>1/30</b>
<b>WCQ</b>	<b>20</b>	<b>0</b>	<b>3.33</b>



## Jordan River\*

**Countries:** Israel, Jordan, Lebanon, Syria\*\*

**Authority:**

Israel-Jordan: Israeli-Jordanian Joint Water Committee

Israel-Lebanon: No cooperation

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	Israel-Jordan	Israel-Lebanon
Agreement	1	0
Communication mechanism	1	0
Technical projects	1	0
Exchange of data	1	0
Alternative dispute resolution	0	0
Floods, droughts and ecosystem protection	3	0
Water infrastructure	5	0
Inclusion	0	0
Political commitment	0	0
Institutional functioning	5	0
<b>SCORE</b>	<b>17/30</b>	<b>0/30</b>
<b>WCQ</b>	<b>56.67</b>	<b>0</b>

\* Under the Jordan River, the bilateral relationships between Israel and Jordan as well as Israel and Lebanon have been evaluated. The bilateral relationship between Jordan – Syria has been evaluated separately in the document.

\*\*Since 2011, due to the protracted armed conflict Syria has been unable to attend to its transboundary water relations.



## Kaladan

**Countries:** India-Myanmar

**Authority:** No cooperation

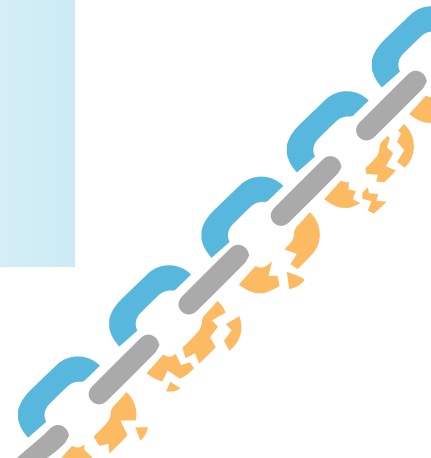
Agreement	<input type="radio"/>	<b>SCORE 0/25</b>	<b>WCQ 0</b>
Communication mechanism	<input type="radio"/>		
Technical projects	<input type="radio"/>		
Exchange of data	<input type="radio"/>		
Alternative dispute resolution	<input type="radio"/> <input type="radio"/> <input type="radio"/>		
Floods, droughts and ecosystem protection	<input type="radio"/> <input type="radio"/> <input type="radio"/>		
Water infrastructure	<input type="radio"/> <input type="radio"/> <input type="radio"/> <input type="radio"/> <input type="radio"/>		
Inclusion	<input type="radio"/> <input type="radio"/> <input type="radio"/> <input type="radio"/> <input type="radio"/>		
Political commitment	<input type="radio"/> <input type="radio"/> <input type="radio"/> <input type="radio"/> <input type="radio"/>		
Institutional functioning	<input type="radio"/> <input type="radio"/> <input type="radio"/> <input type="radio"/> <input type="radio"/>		

## Kowl E Namaksar

**Countries:** Afghanistan-Iran

**Authority:** No cooperation

Agreement	<input type="radio"/>	<b>SCORE 0/25</b>	<b>WCQ 0</b>
Communication mechanism	<input type="radio"/>		
Technical projects	<input type="radio"/>		
Exchange of data	<input type="radio"/>		
Alternative dispute resolution	<input type="radio"/> <input type="radio"/> <input type="radio"/>		
Floods, droughts and ecosystem protection	<input type="radio"/> <input type="radio"/> <input type="radio"/>		
Water infrastructure	<input type="radio"/> <input type="radio"/> <input type="radio"/> <input type="radio"/> <input type="radio"/>		
Inclusion	<input type="radio"/> <input type="radio"/> <input type="radio"/> <input type="radio"/> <input type="radio"/>		
Political commitment	<input type="radio"/> <input type="radio"/> <input type="radio"/> <input type="radio"/> <input type="radio"/>		
Institutional functioning	<input type="radio"/> <input type="radio"/> <input type="radio"/> <input type="radio"/> <input type="radio"/>		



## Kura-Araks

**Countries:** Armenia, Azerbaijan, Georgia, Iran, Turkey

**Authority:**

Armenia-Turkey: Interstate Commission of Armenia and Turkey on the Use of Akhuryan Water Reservoir (Akhuryan River flows in to Aras); Joint Technical Committee to Manage Dam between Turkey and Armenia on Arpacay River

Georgia-Turkey: No authority

Armenia-Iran: No authority

Armenia-Azerbaijan: No authority

Azerbaijan-Iran: No authority

Azerbaijan-Georgia: No authority

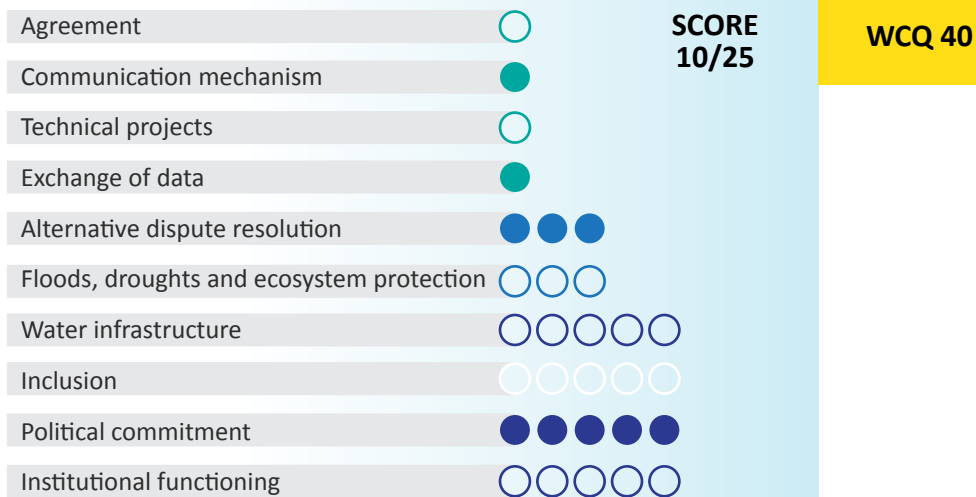
Armenia-Georgia: No authority

	Armenia -Turkey	Georgia -Turkey	Armenia -Iran	Armenia- Azerbaijan	Azerbaijan -Iran	Azerbaijan -Georgia	Armenia -Georgia
Agreement	1	1	1	0	1	1	1
Communication mechanism	1	0	0	0	0	0	0
Technical projects	0	1	1	0	0	1	0
Exchange of data	0	0	1	0	0	0	0
Alternative dispute resolution	0	0	0	0	0	0	0
Floods, droughts & ecosystem protection	0	0	3	0	0	3	0
Water infrastructure	0	0	5	0	5	0	0
Inclusion	0	0	0	0	0	0	0
Political commitment	0	0	5	0	0	5	0
Institutional functioning	0	0	0	0	0	0	0
<b>SCORE</b>	<b>2/30</b>	<b>2/30</b>	<b>16/30</b>	<b>0/30</b>	<b>6/30</b>	<b>10/30</b>	<b>1/30</b>
<b>WCQ</b>	<b>6.67</b>	<b>6.67</b>	<b>53.33</b>	<b>0</b>	<b>20</b>	<b>33.33</b>	<b>3.33</b>

## Ma

**Countries:** Laos-Vietnam

**Authority:** No authority

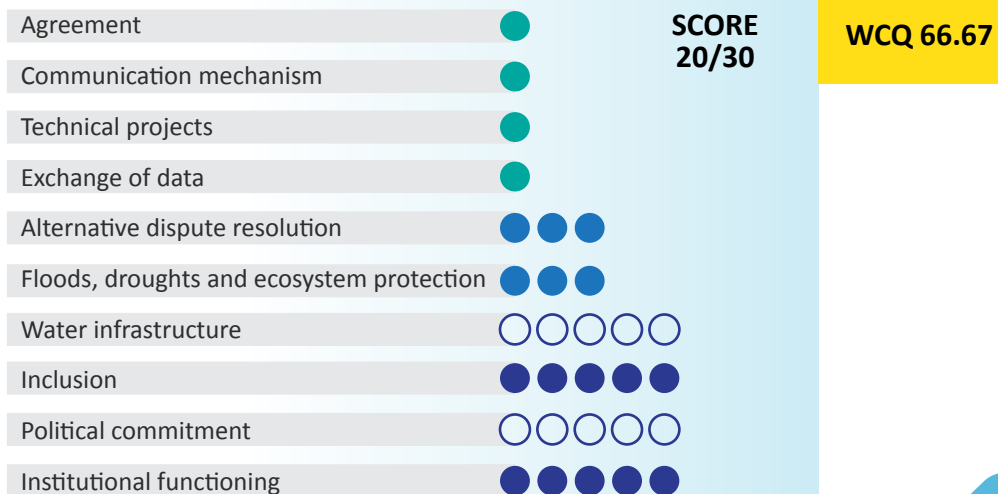


## Mekong

**Countries:** Cambodia, China, Laos, Myanmar, Thailand, Vietnam

**Authority:** Mekong River Commission\*

Lancang-Mekong Commission



\*China and Myanmar are observer states in the Mekong River Commission (MRC), while all six countries are members of Lancang-Mekong Commission

# Murgab

**Countries:** Afghanistan-Turkmenistan

**Authority:** No cooperation

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Agreement	<input type="radio"/>	<b>SCORE</b> <b>0/25</b>	<b>WCQ 0</b>
Communication mechanism	<input type="radio"/>		
Technical projects	<input type="radio"/>		
Exchange of data	<input type="radio"/>		
Alternative dispute resolution	<input type="radio"/> <input type="radio"/> <input type="radio"/>		
Floods, droughts and ecosystem protection	<input type="radio"/> <input type="radio"/> <input type="radio"/>		
Water infrastructure	<input type="radio"/> <input type="radio"/> <input type="radio"/> <input type="radio"/> <input type="radio"/>		
Inclusion	<input type="radio"/> <input type="radio"/> <input type="radio"/> <input type="radio"/> <input type="radio"/>		
Political commitment	<input type="radio"/> <input type="radio"/> <input type="radio"/> <input type="radio"/> <input type="radio"/>		
Institutional functioning	<input type="radio"/> <input type="radio"/> <input type="radio"/> <input type="radio"/> <input type="radio"/>		

## Ob

**Countries:** China, Kazakhstan, Russia

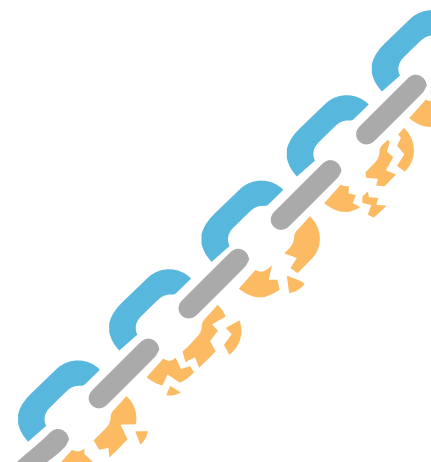
**Authority:**

Kazakhstan-Russia: Russian-Kazakh Intergovernmental Commission on Joint Use and Protection of Transboundary Water Courses

China-Kazakhstan\*: Kazakhstan-China Joint Commission in the field of Use and Protection of Transboundary Rivers (Joint Commission)

	Kazakhstan-Russia	China-Kazakhstan
Agreement	1	1
Communication mechanism	1	1
Technical projects	1	0
Exchange of data	1	1
Alternative dispute resolution	0	0
Floods, droughts and ecosystem protection	3	3
Water infrastructure	0	0
Inclusion	0	0
Political commitment	0	0
Institutional functioning	0	0
<b>SCORE</b>	<b>7/30</b>	<b>6/30</b>
<b>WCQ</b>	<b>23.33</b>	<b>20</b>

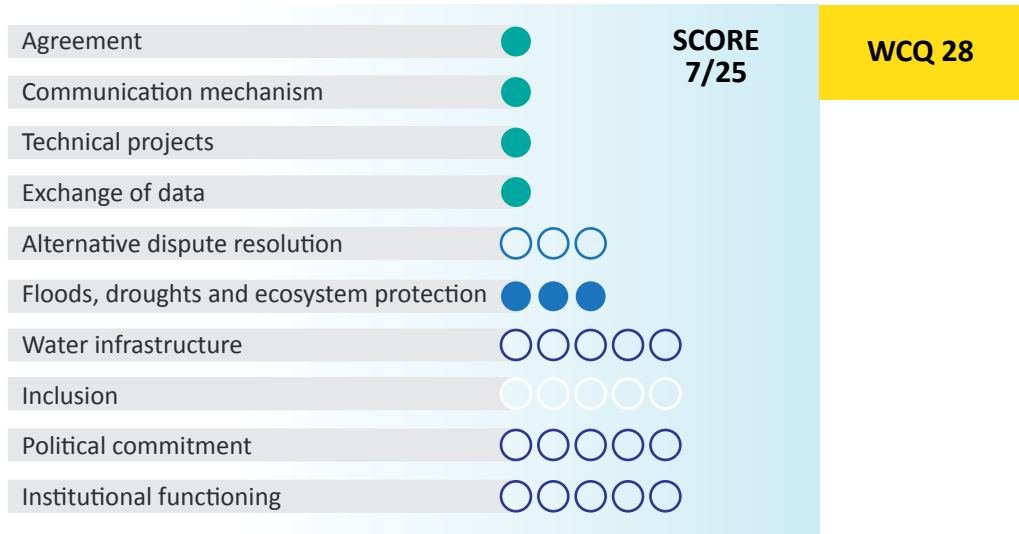
\*Although China has less than one per cent of the Ob River, it is a riparian to the Irtys (tributary of the Ob) and as such is covered under China and Kazakhstan's binational commission on shared waters.



## Oral/Ural

**Countries:** Kazakhstan-Russia

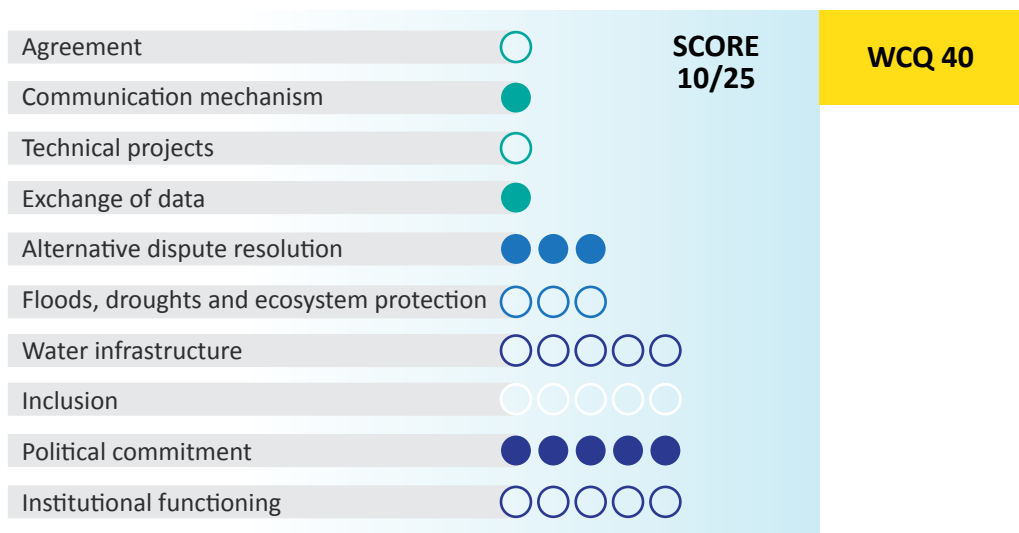
**Authority:** Russian-Kazakh Intergovernmental Commission on Joint Use and Protection of Transboundary Water Courses



## Pakchan

**Countries:** Myanmar-Thailand

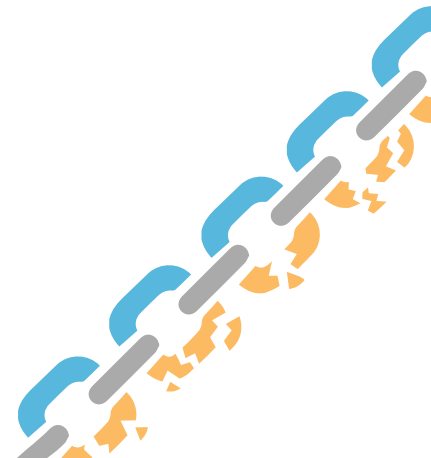
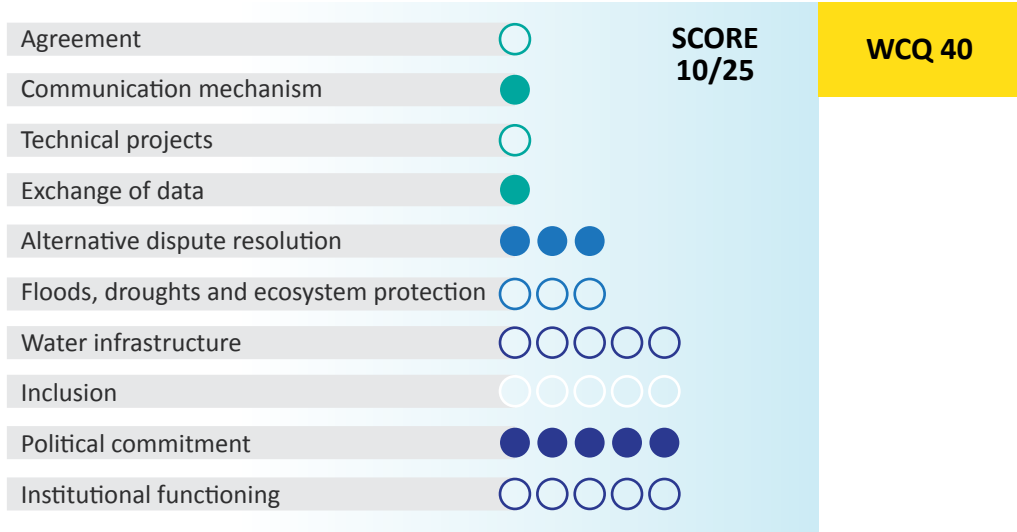
**Authority:** No authority



## Pandaruan

**Countries:** Brunei-Malaysia

**Authority:** No authority



## Pu Lon T'o

**Countries:** China, Kazakhstan, Mongolia, Russia

**Authority:**

China-Mongolia: Joint Committee of Protection and Using the Transboundary Waters of China and Mongolia

China-Kazakhstan: Kazakhstan-China Joint Commission in the field of Use and Protection of Transboundary Rivers (Joint Commission)

Mongolia-Russia: Russia-Mongolia Working Groups

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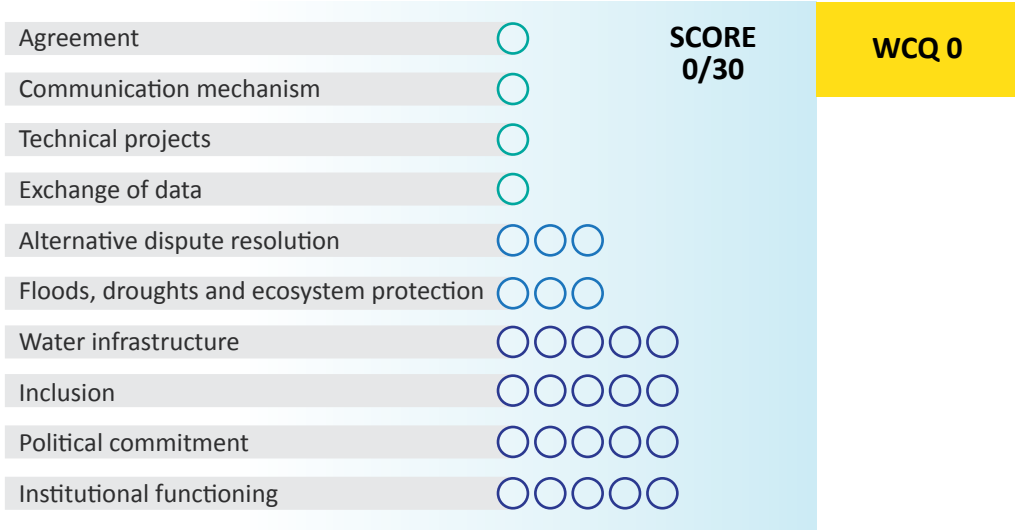
	China-Mongolia	Mongolia-Russia	China-Kazakhstan
Agreement	1	1	1
Communication mechanism	1	1	1
Technical projects	0	1	0
Exchange of data	0	1	1
Alternative dispute resolution	0	0	0
Floods, droughts and ecosystem protection	0	3	3
Water infrastructure	0	0	0
Inclusion	0	0	0
Political commitment	0	0	0
Institutional functioning	0	0	0
<b>SCORE</b>	<b>2/30</b>	<b>7/30</b>	<b>6/30</b>
<b>WCQ</b>	<b>6.67</b>	<b>23.33</b>	<b>20</b>



## Salween

**Countries:** China, Myanmar, Thailand\*

**Authority:** No cooperation

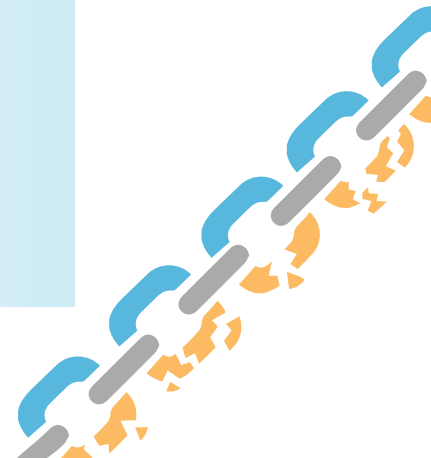
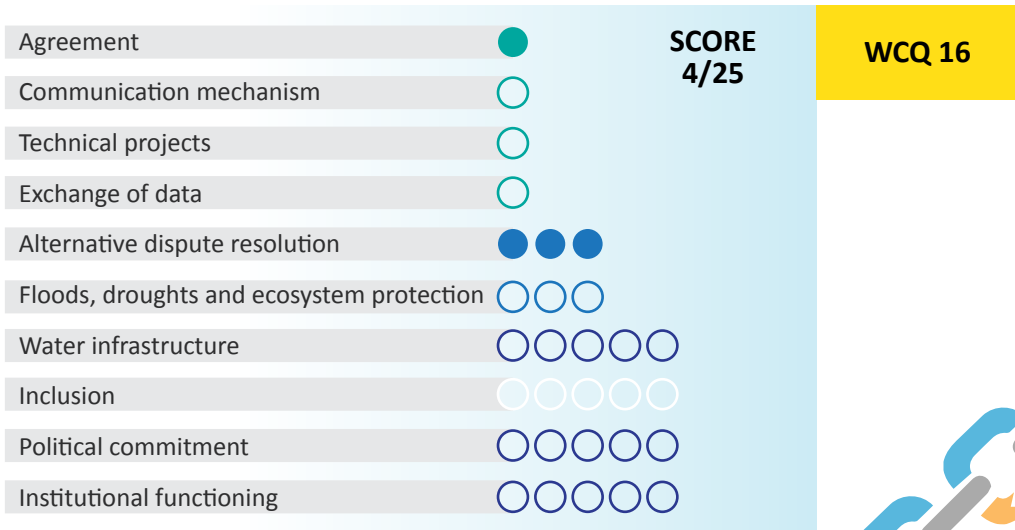


\*Thailand's share of the Salween is under 4 per cent. As a result, the relationship has not been awarded points under the evaluation of the ASEAN Working Group on Water.

## Samur

**Countries:** Azerbaijan-Russia

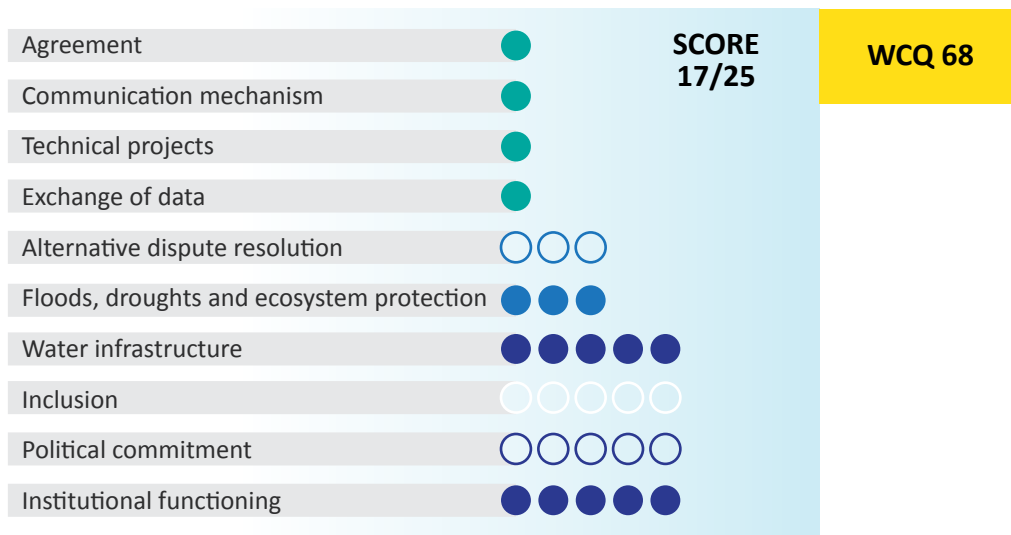
**Authority:** No authority



## Shu/Chu, Talas

**Countries:** Kazakhstan-Kyrgyzstan

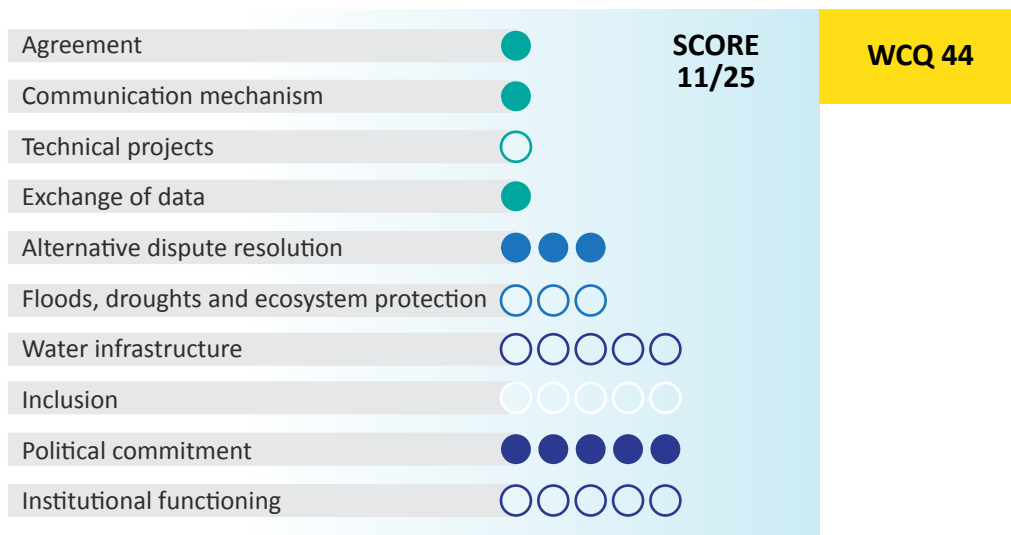
**Authority:** Chu-Talas Commission



## Song Vam Co Dong

**Countries:** Cambodia-Vietnam

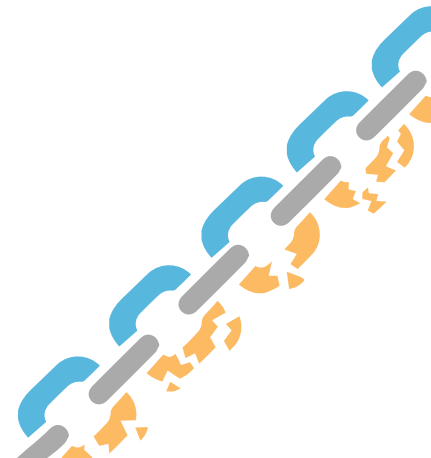
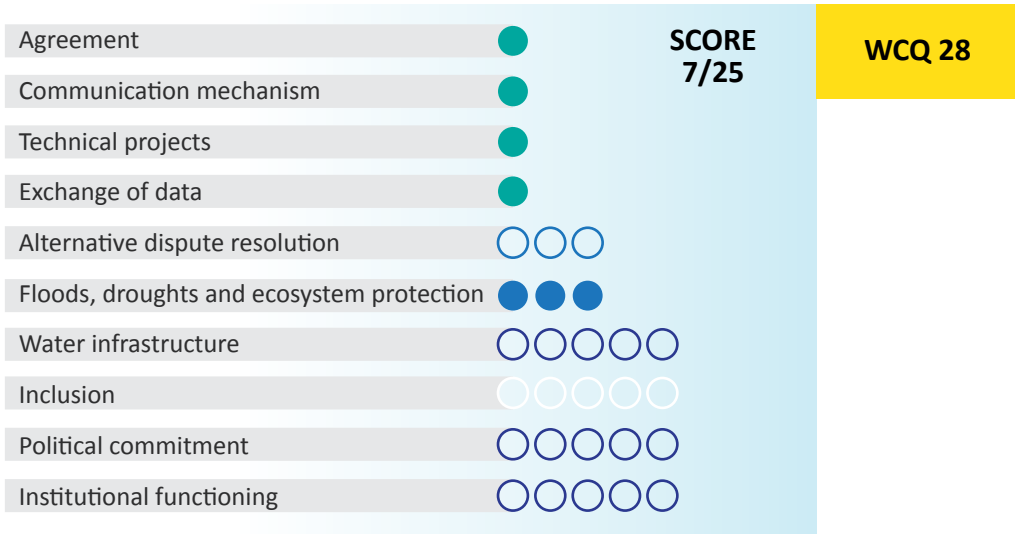
**Authority:** No authority



## Sujfun

**Countries:** China-Russia

**Authority:** Joint Russian-Chinese Commission on the Management and Protection of Transboundary Waters



## Tigris-Euphrates

### Countries:

Tigris: Iran, Iraq, Syria\*, Turkey

Euphrates: Iraq, Syria\*, Turkey

### Authority:

Iran-Iraq: Joint Technical Committee (Tigris)

Iraq-Turkey: Joint Technical Committee

Iraq-Syria: No authority

Syria-Turkey: No authority

	Iran-Iraq (Tigris)	Iraq-Turkey (Tigris and Euphrates)	Iraq-Syria (Tigris and Euphrates)	Syria-Turkey (Tigris and Euphrates)
Agreement	1	1	1	1
Communication mechanism	1	1	0	0
Technical projects	1	1	0	0
Exchange of data	1	0	0	0
Alternative dispute resolution	0	0	0	0
Floods, droughts & ecosystem protection	0	3	0	0
Water infrastructure	0	5	0	0
Inclusion	0	0	0	0
Political commitment	0	5	0	0
Institutional functioning	0	0	0	0
<b>SCORE</b>	<b>4/30</b>	<b>16/30</b>	<b>1/30</b>	<b>1/30</b>
<b>WCQ</b>	<b>13.33</b>	<b>53.33</b>	<b>3.33</b>	<b>3.33</b>

\*Since 2011, due to the protracted armed conflict Syria has been unable to attend to its transboundary water relations.

## Yarmouk

**Countries:** Israel, Jordan, Syria\*

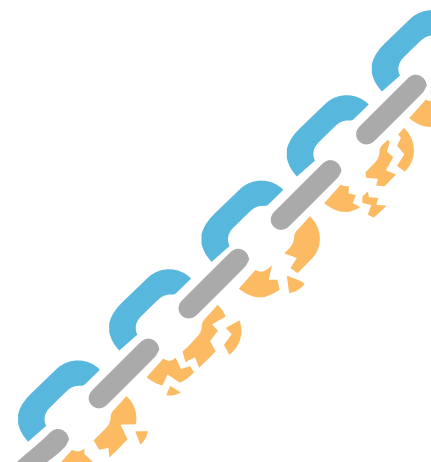
**Authority:**

Jordan-Syria: No authority

Israel-Syria: No cooperation

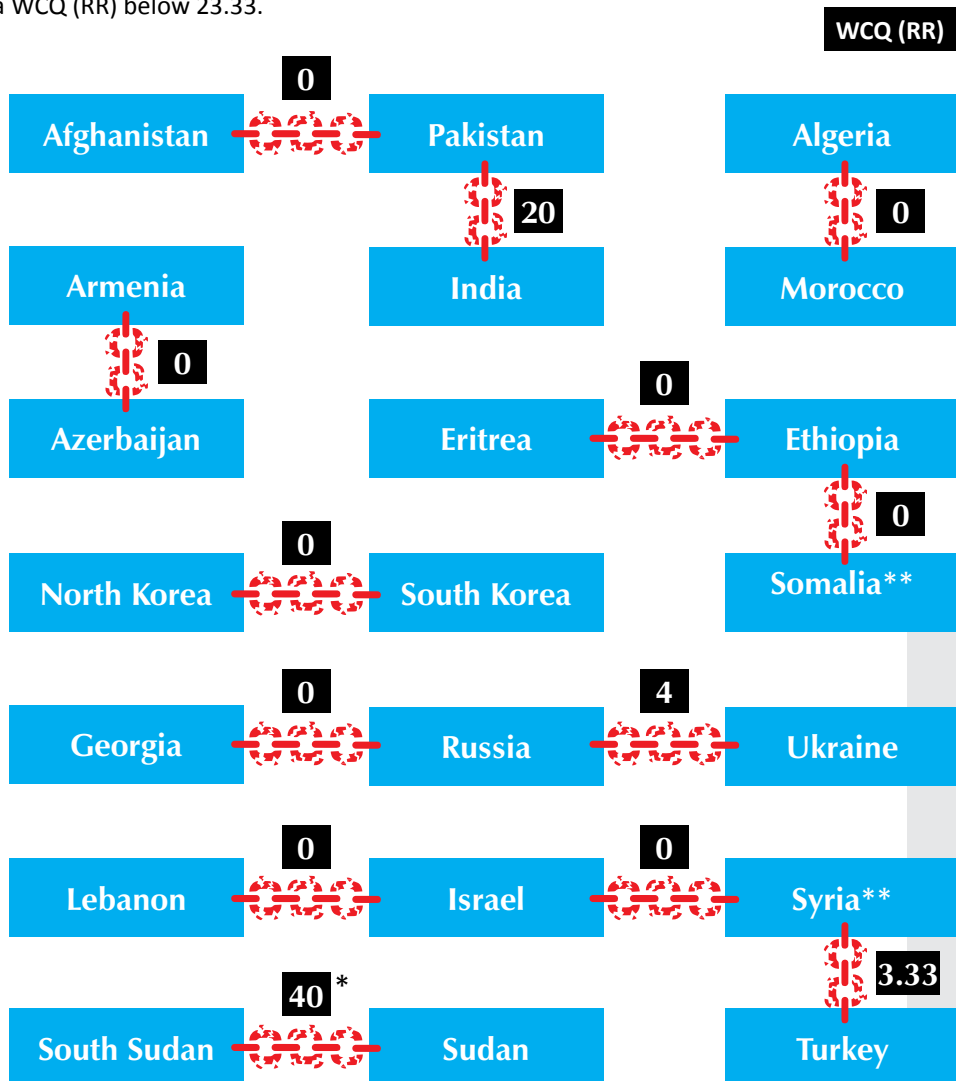
	Jordan-Syria	Israel-Syria
Agreement	1	0
Communication mechanism	0	0
Technical projects	0	0
Exchange of data	0	0
Alternative dispute resolution	0	0
Floods, droughts and ecosystem protection	0	0
Water infrastructure	5	0
Inclusion	0	0
Political commitment	0	0
Institutional functioning	0	0
<b>SCORE</b>	<b>6/30</b>	<b>0/30</b>
<b>WCQ</b>	<b>20</b>	<b>0</b>

\*Since 2011, due to the protracted armed conflict Syria has been unable to attend to its transboundary water relations.

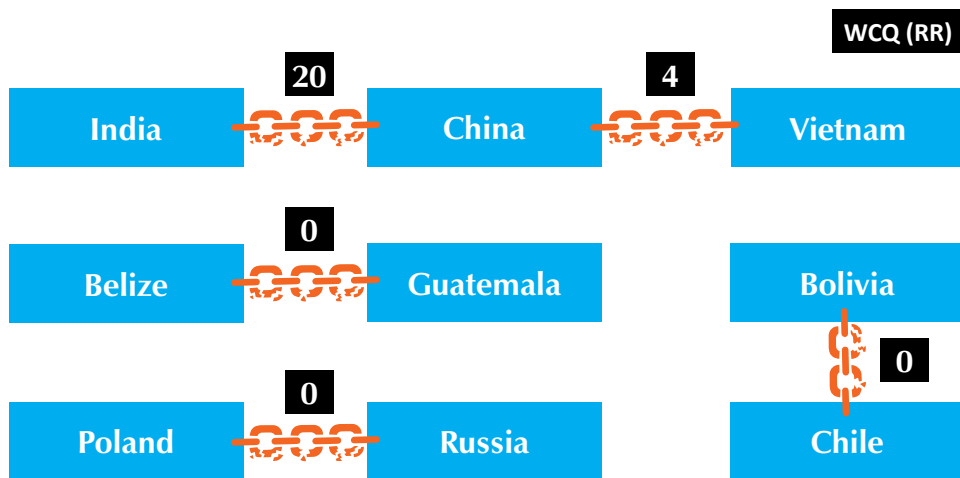


## Table III: Countries at War/Risk of War

Given below is the list of riparian nations that are at a **Risk of War** which have been analysed based on the criteria mentioned previously (See Guide to Understanding WCQ). Risk of War is dynamic and the situation is bound to change with time. Hence this is a snapshot of the situation and facts captured within the time period of 2017. It is worth noting that all the countries except Sudan and South Sudan have a WCQ (RR) below 23.33.



The following relationships were affected by **high tension** during major parts of 2017 for various reasons. They did not face risk of war as per the parameters outlined in this study. The causes of tension were not related to water; yet the deterioration of the security environment seemed to have correlation with water relations.

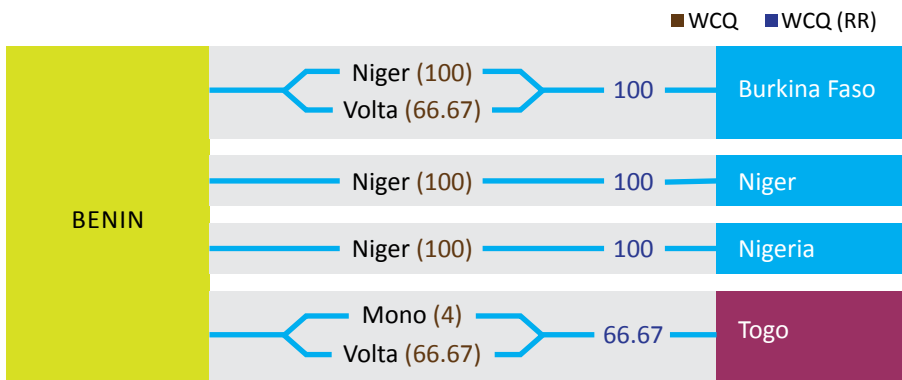
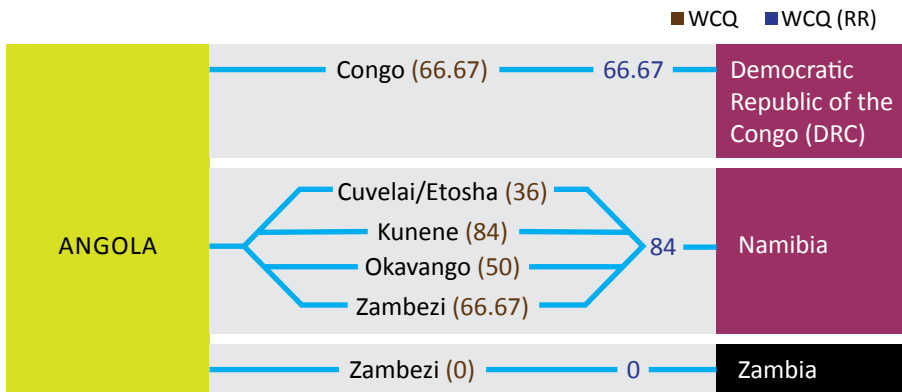
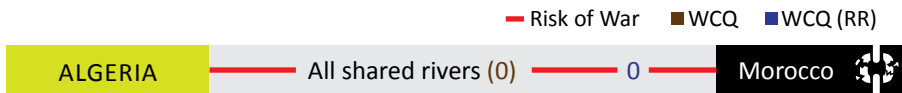


\*Sudan and South Sudan: The two countries are in a state of war; they have disputes over territories and they also support armed non state actors in each other's territories. It comes as an anomaly as they are a part of the Nile Basin Initiative (NBI) which has a score of 40. It must however be noted that the war between Sudan and South Sudan is in effect an extension of the civil war in the erstwhile united Sudan. As the civil war lasted for about six decades after which South Sudan went on to become the world's youngest nation in 2011, the countries will require a few years to stabilize.

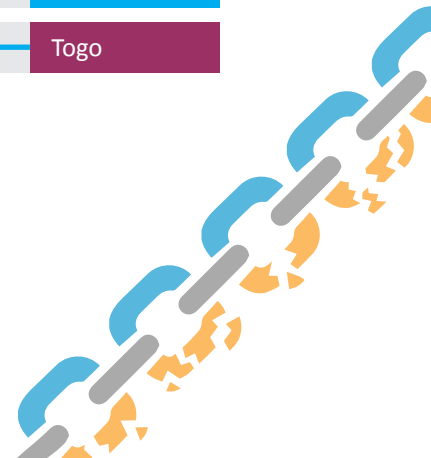
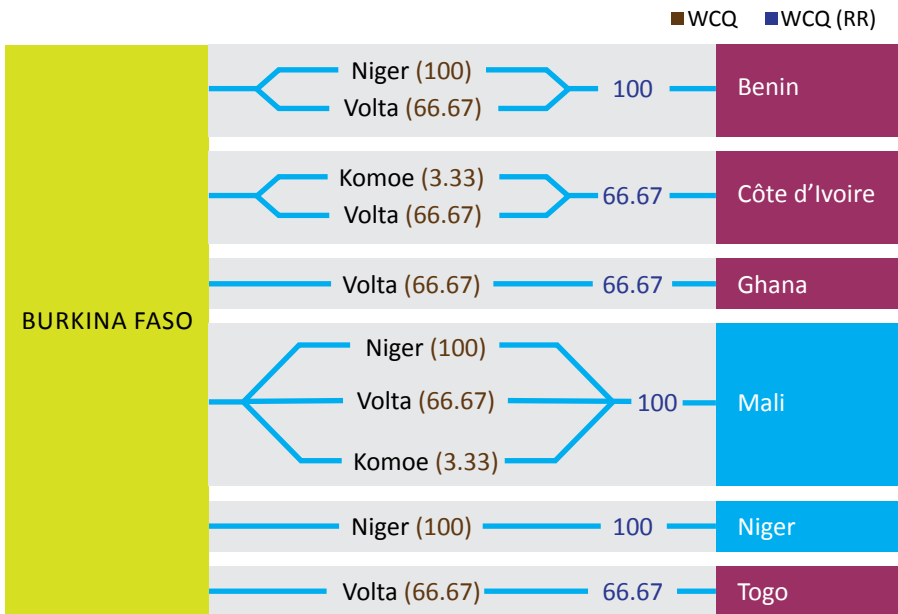
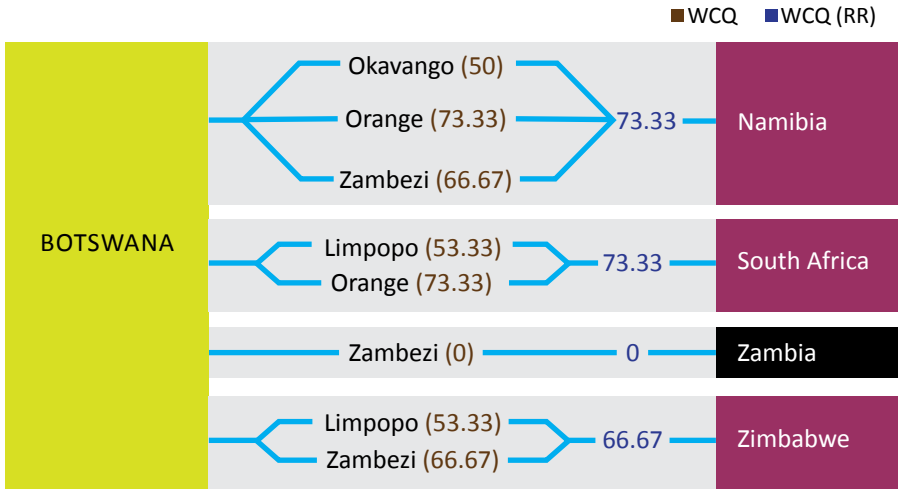
\*\*It must be noted that Syria and Somalia have very fragile state structures since the last few years due to crises and conflicts. Such a fragmented and conflict-ridden state structure is not conducive to building water cooperation.

# Table IV: Riparian Relations

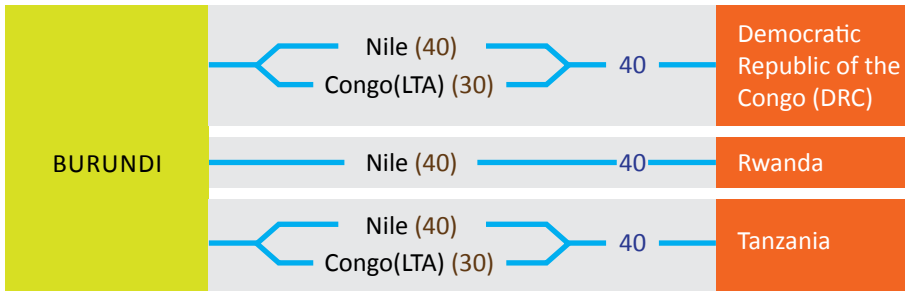
## Africa



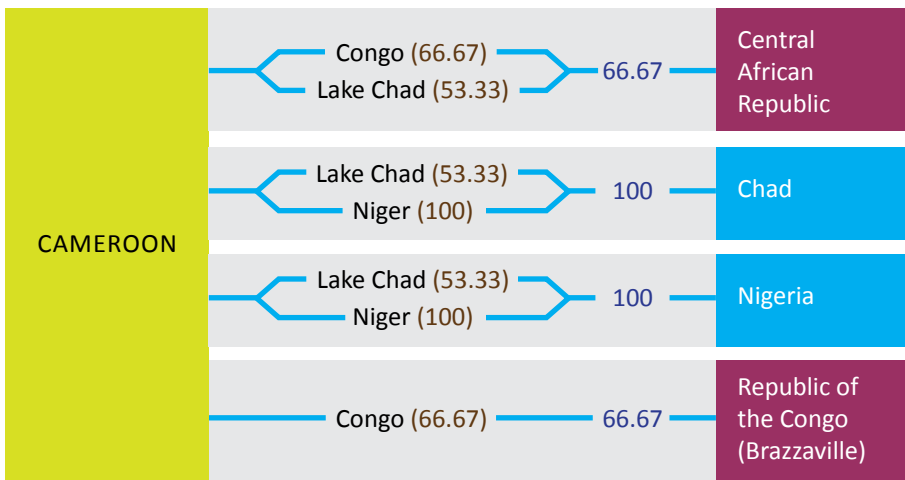




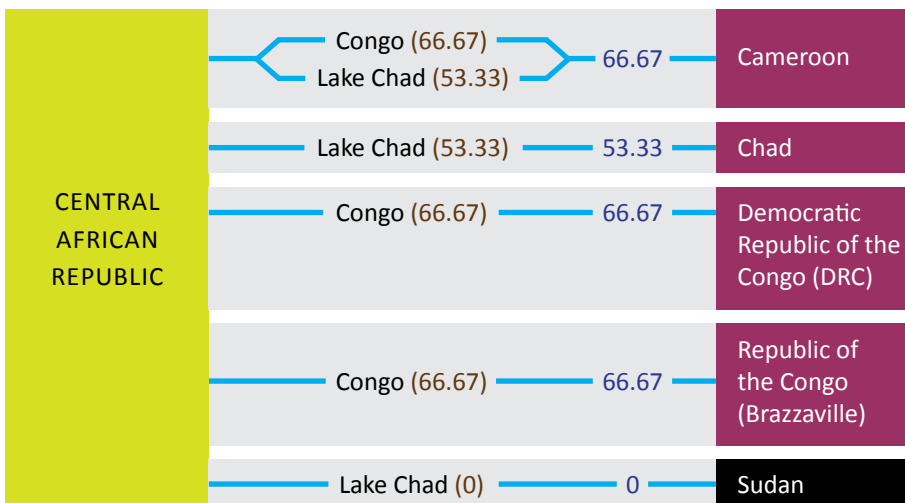
■ WCQ ■ WCQ (RR)

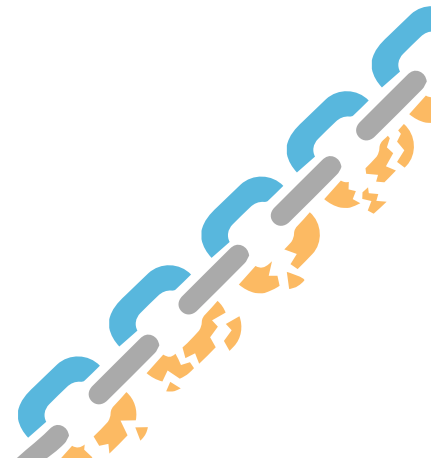
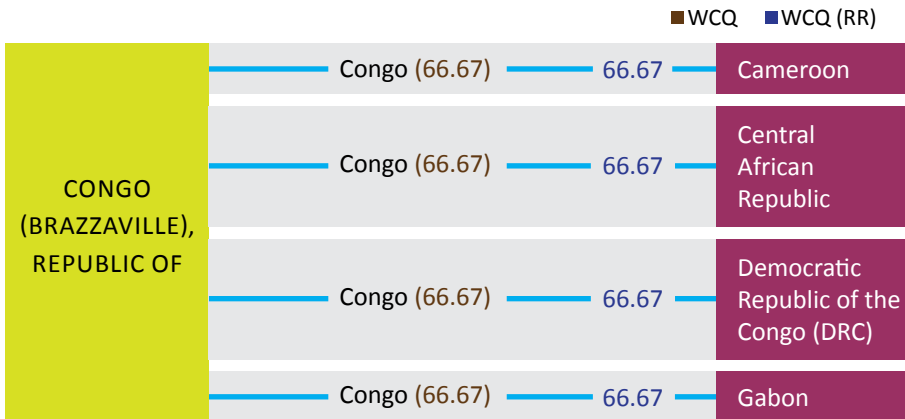
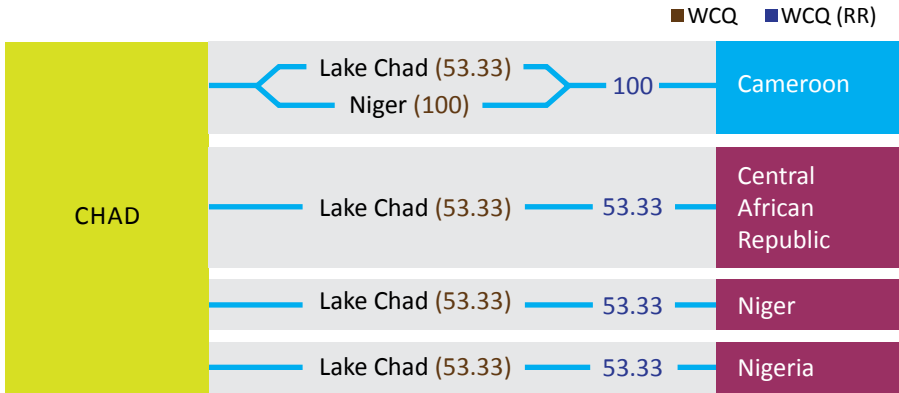


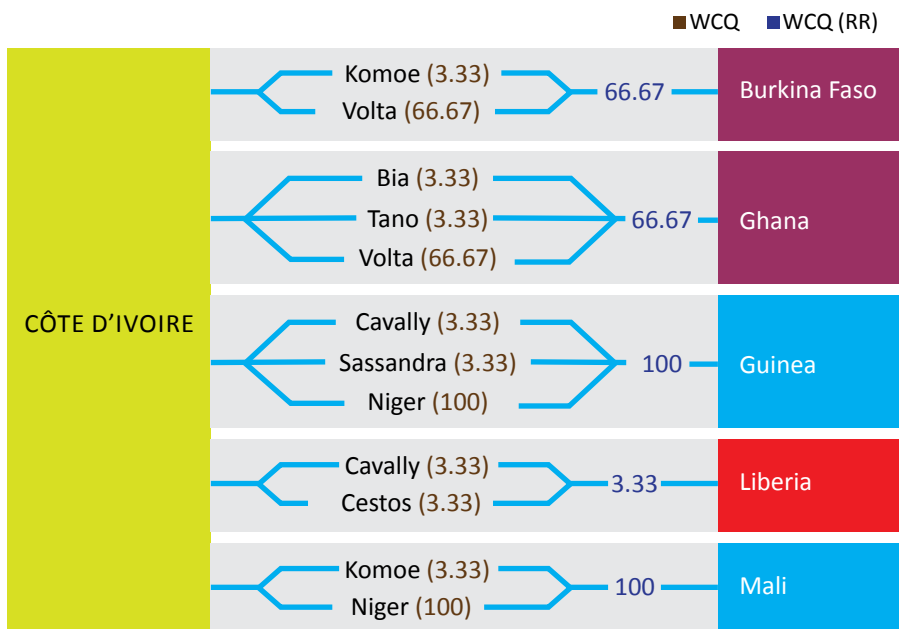
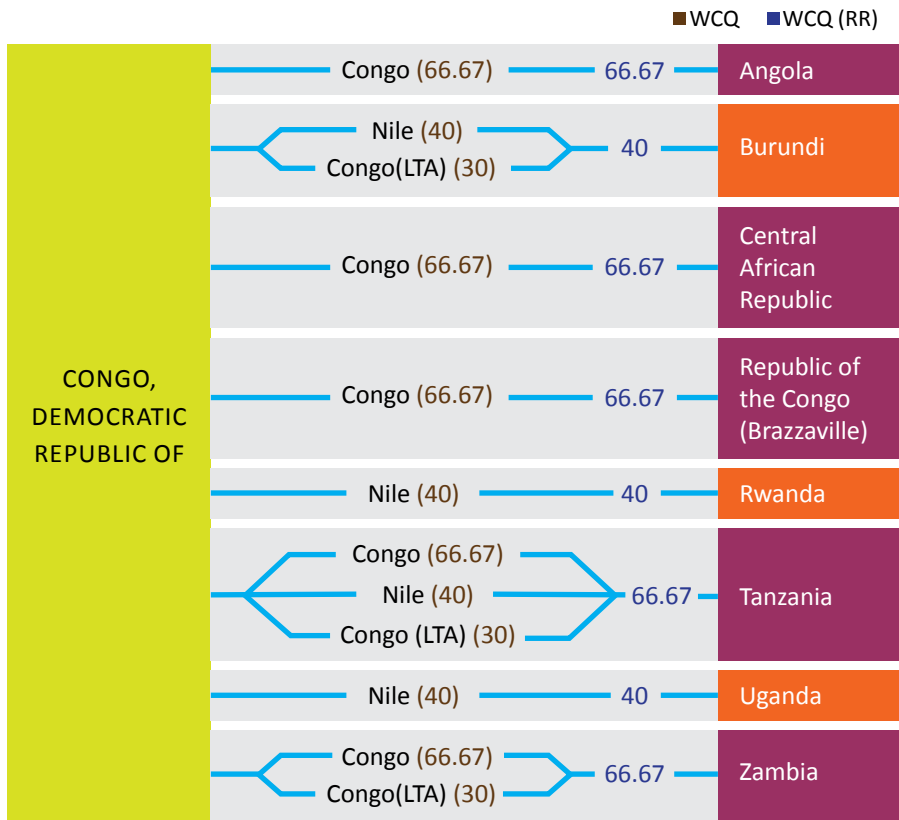
■ WCQ ■ WCQ (RR)

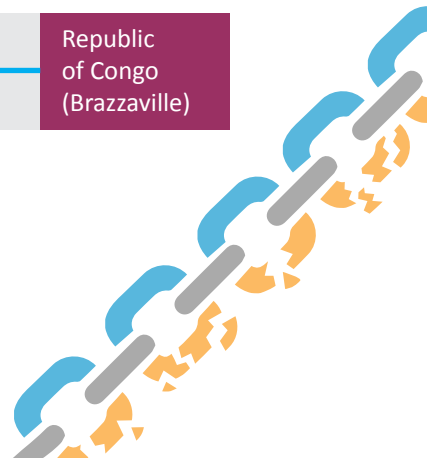
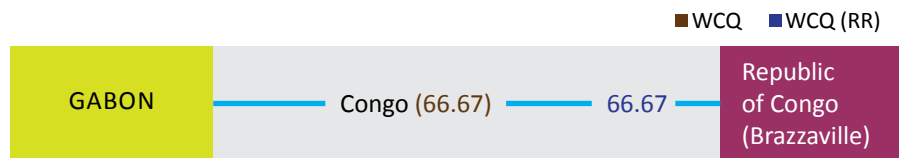
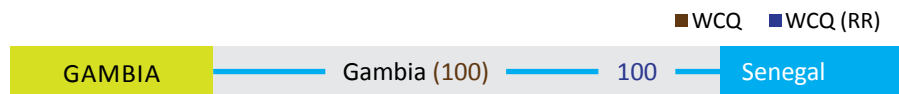
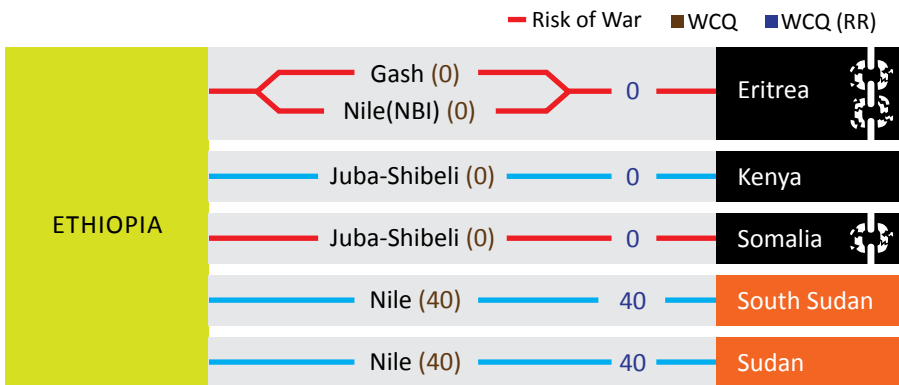
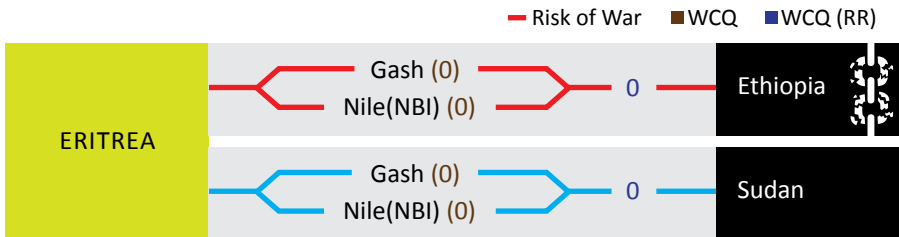
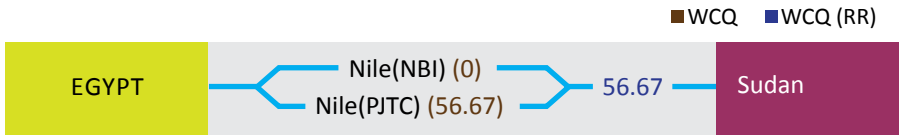


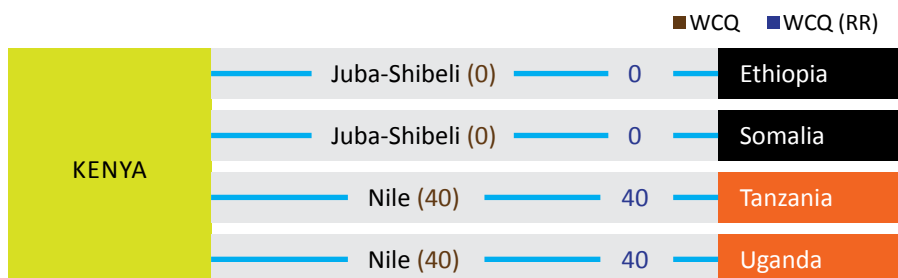
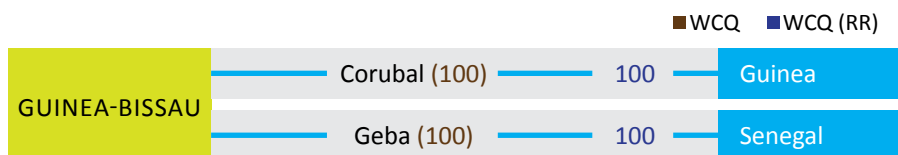
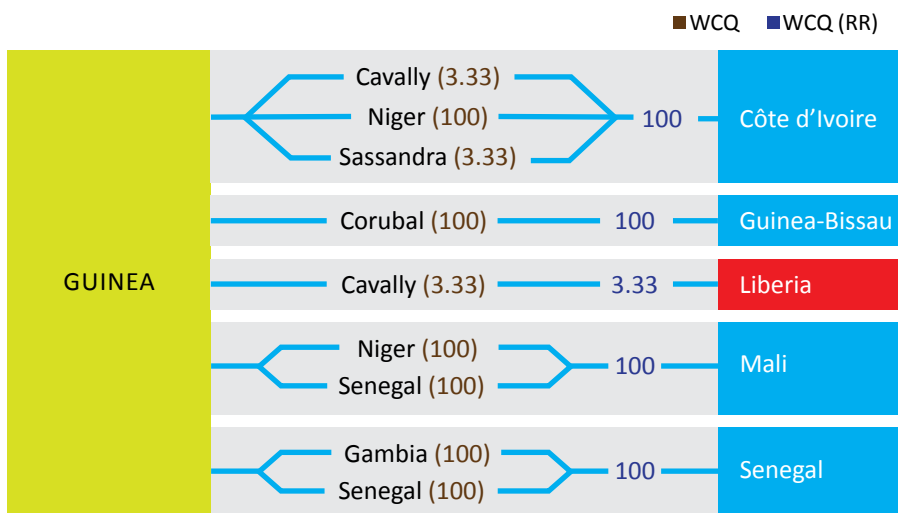
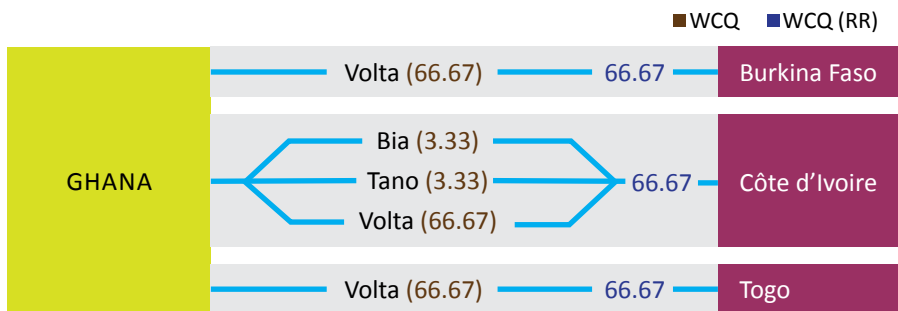
■ WCQ ■ WCQ (RR)

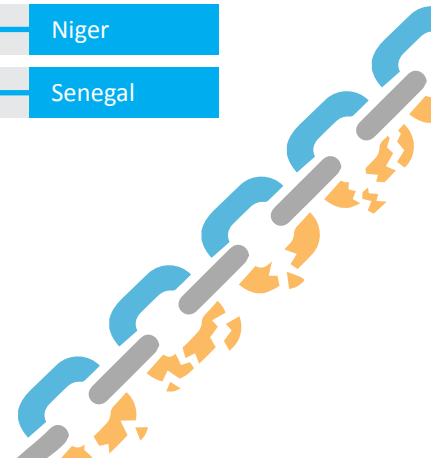
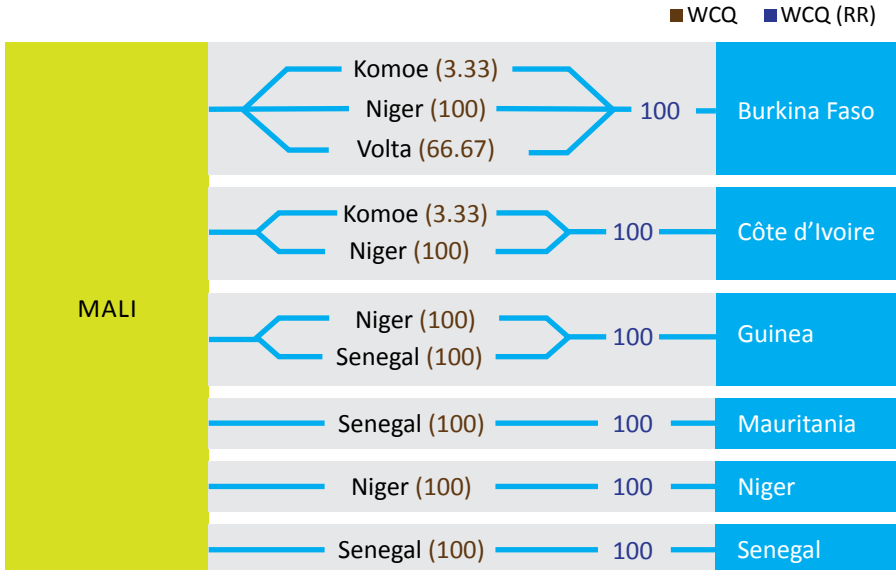
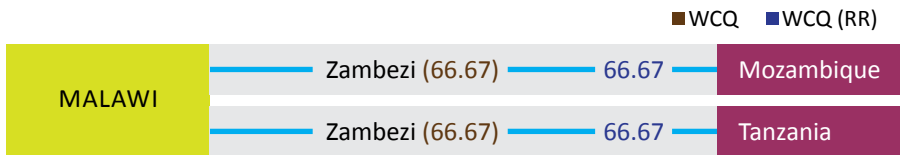
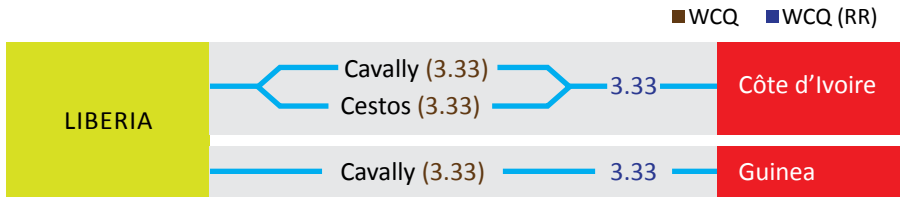
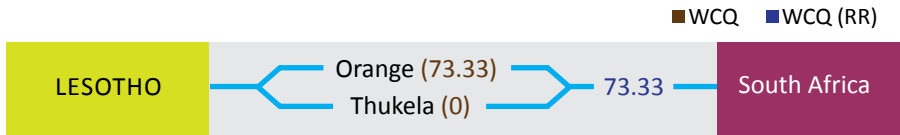


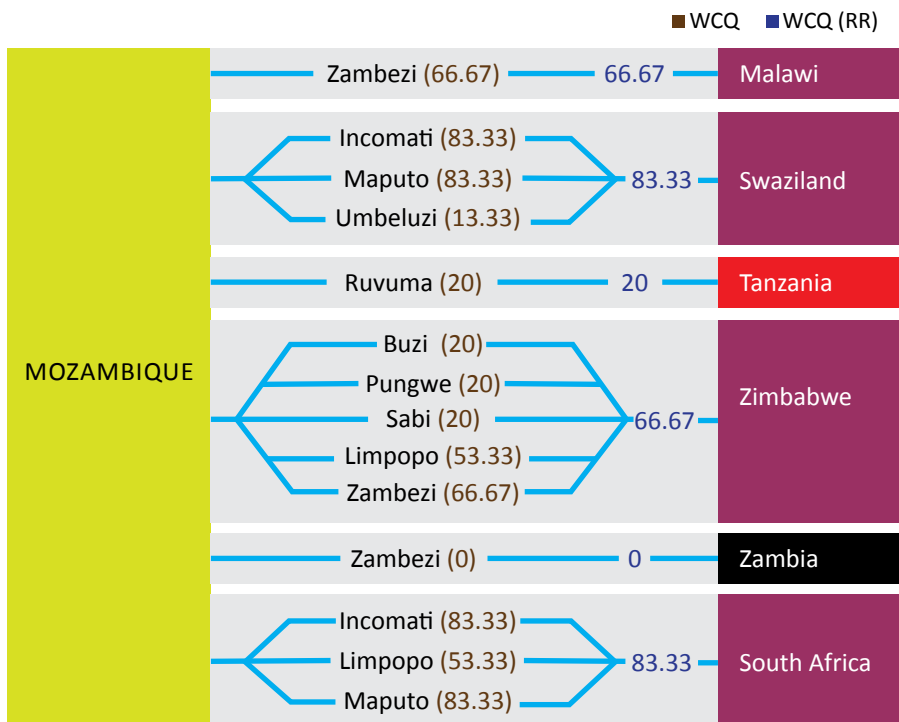
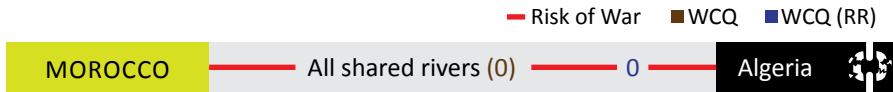
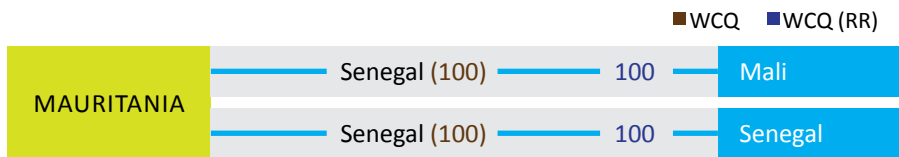




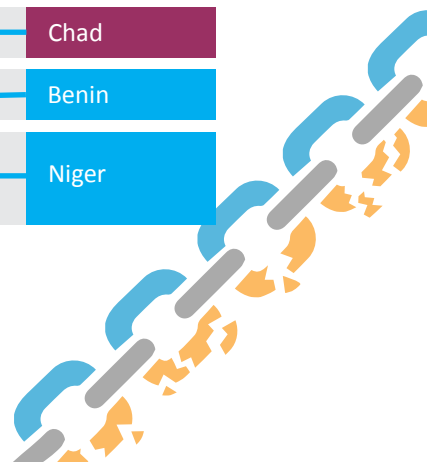
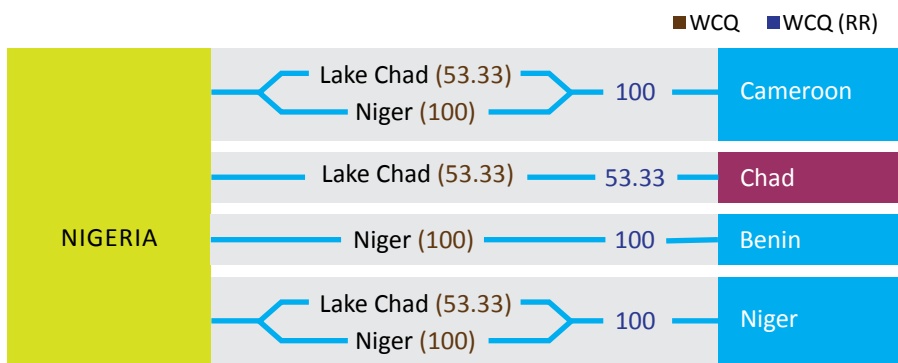
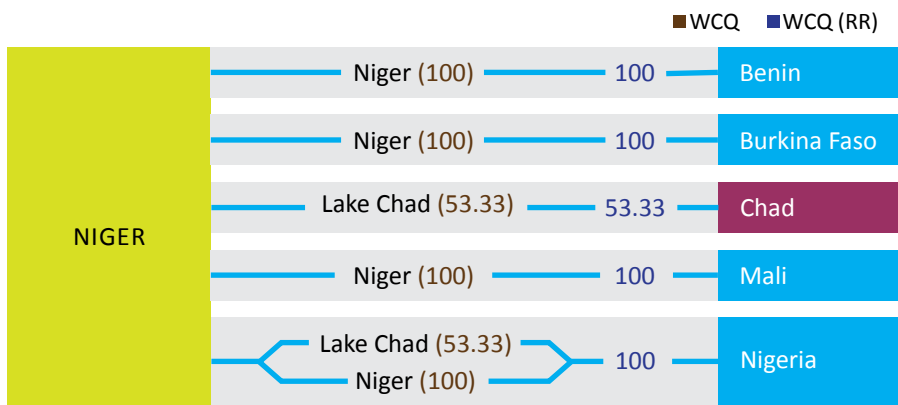
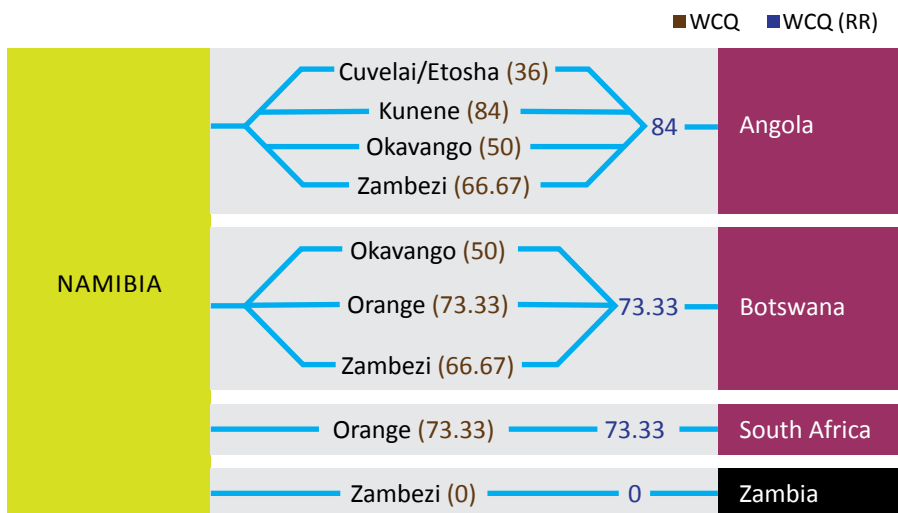


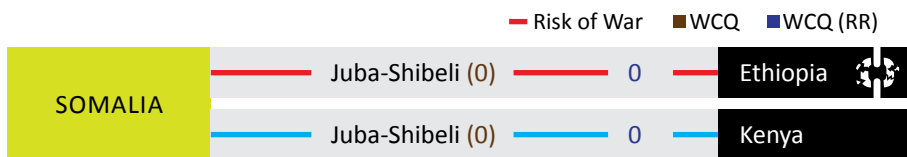
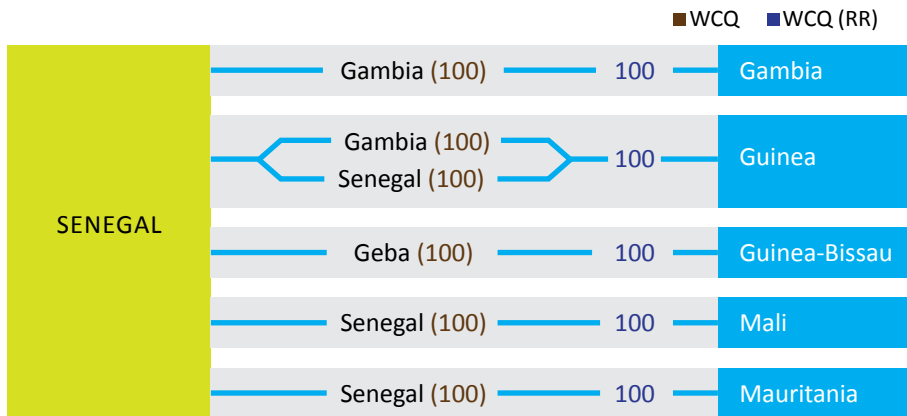
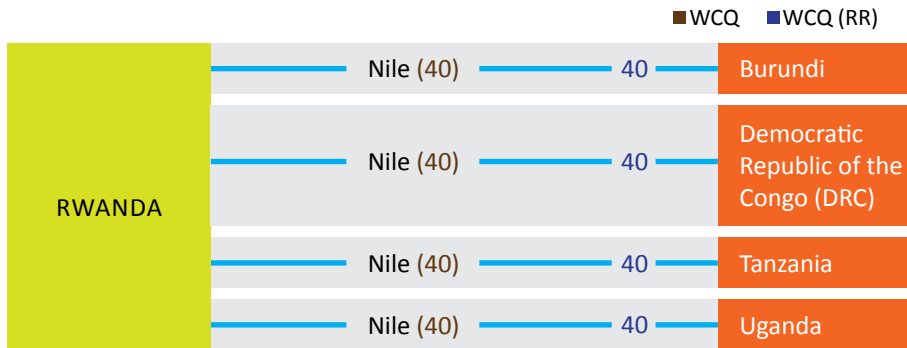


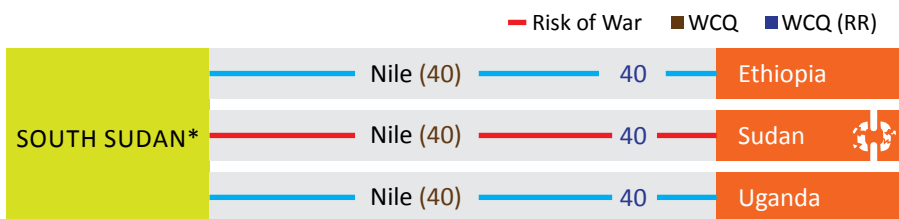
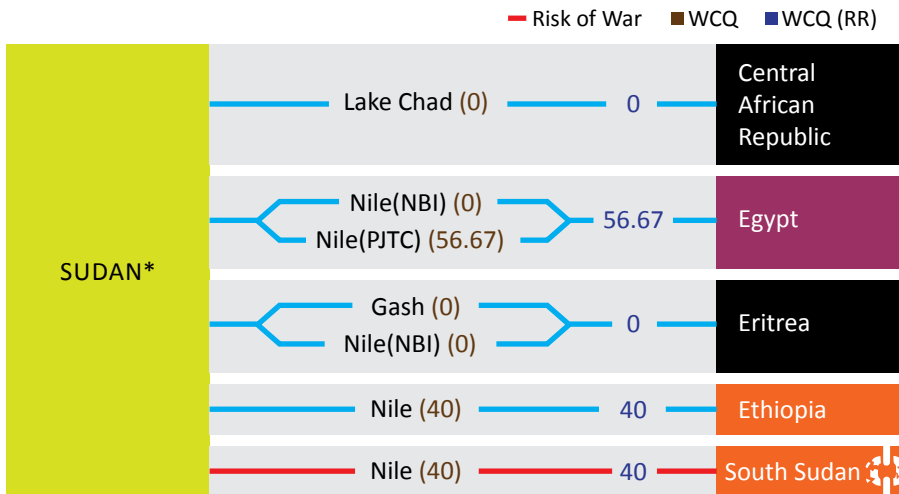
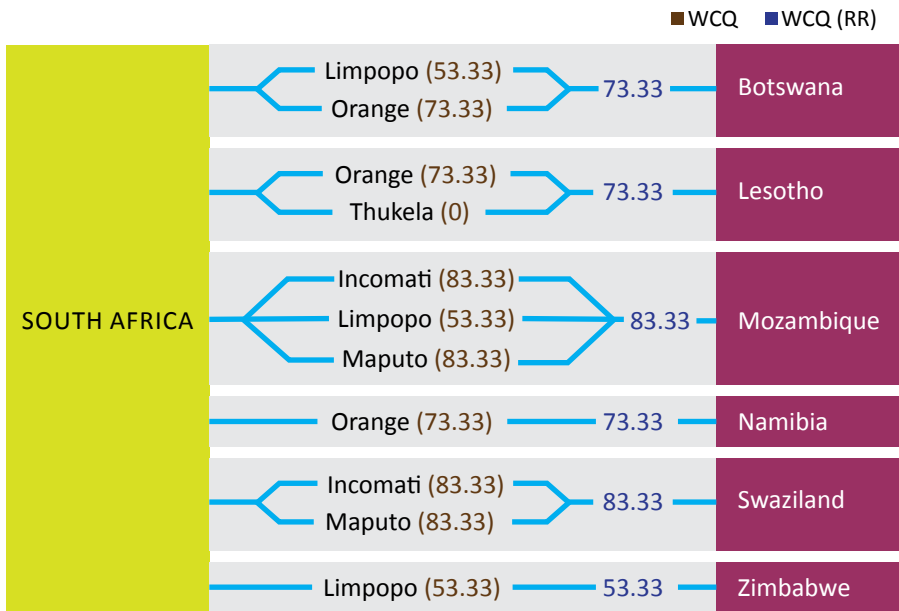




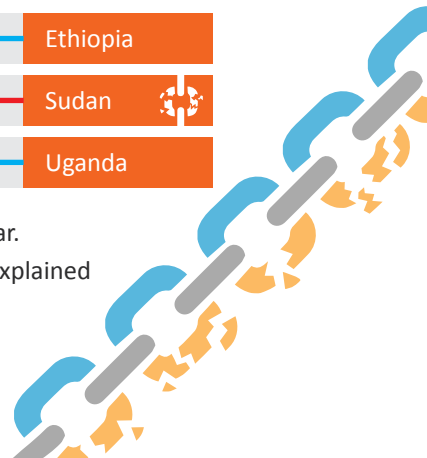


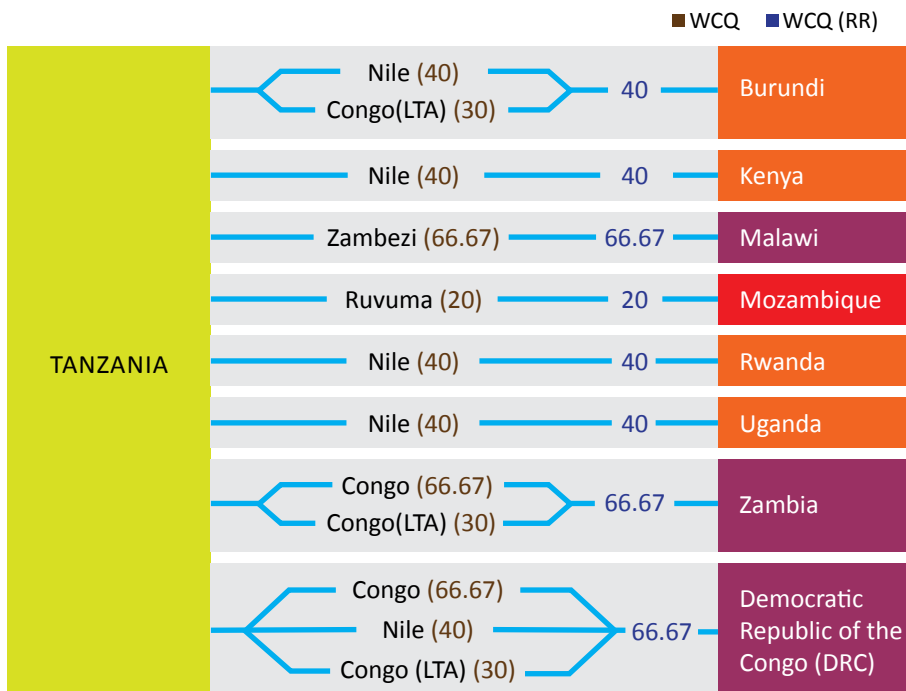
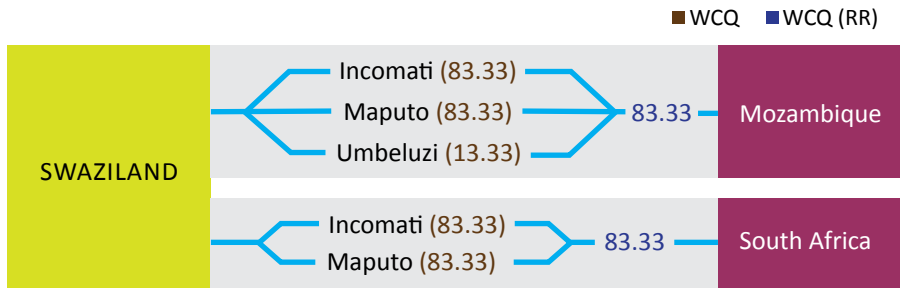


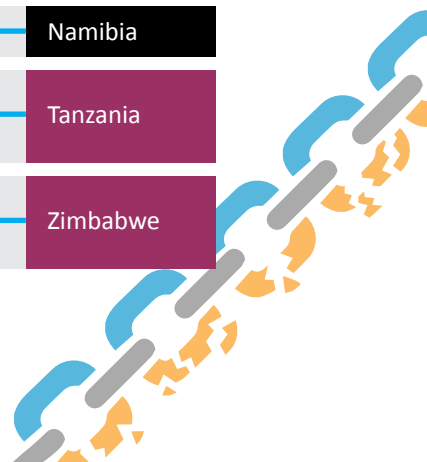
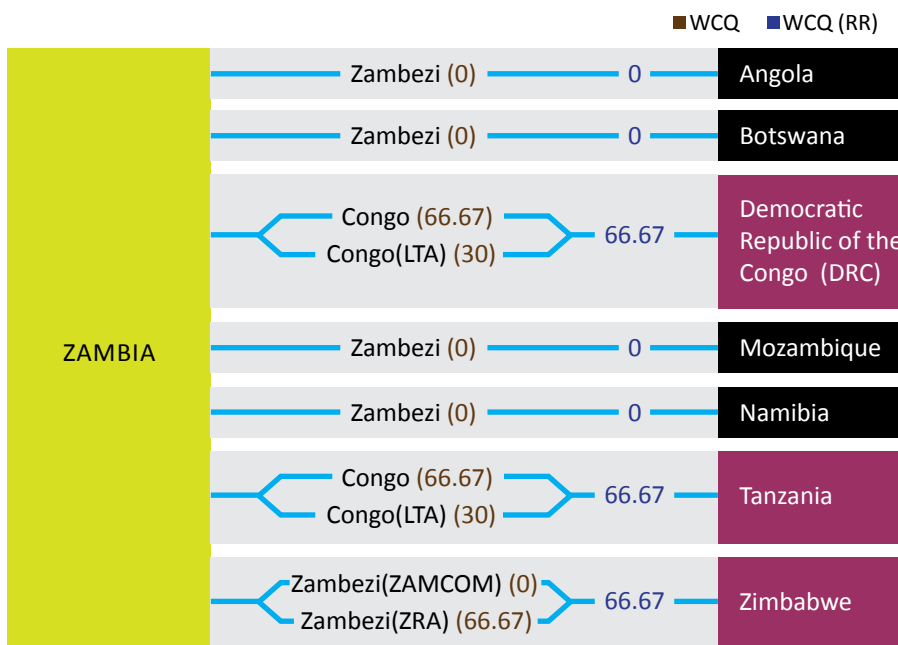
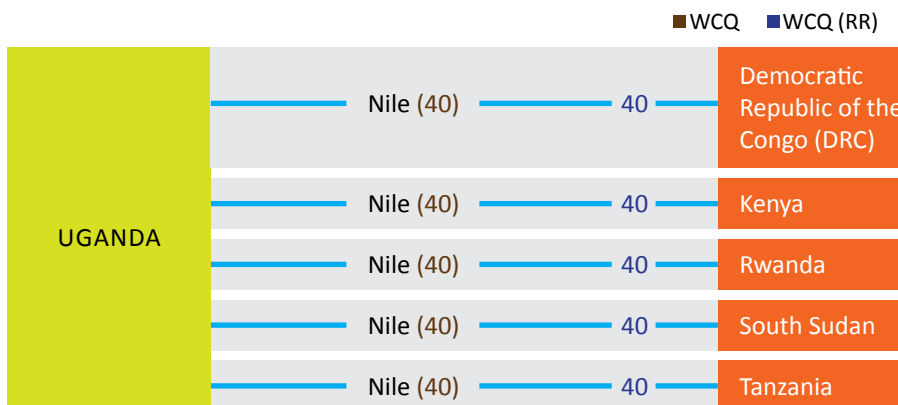
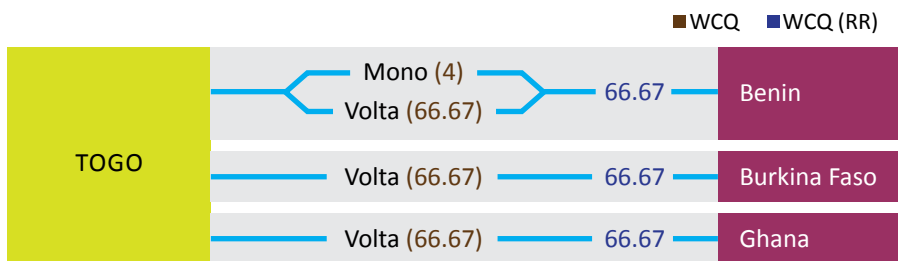


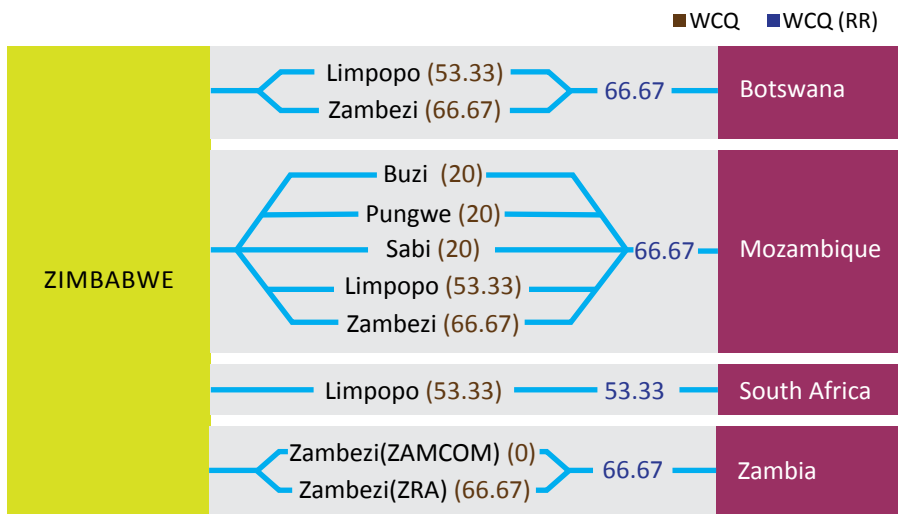


\*Sudan and South Sudan: The two countries are in a state of war. However, their score with NBI is 40. This irregularity has been explained in Chapter II-Countries at War/Risk of War.

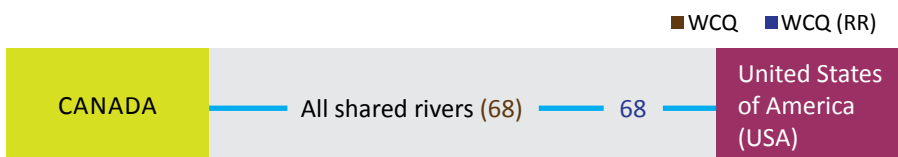
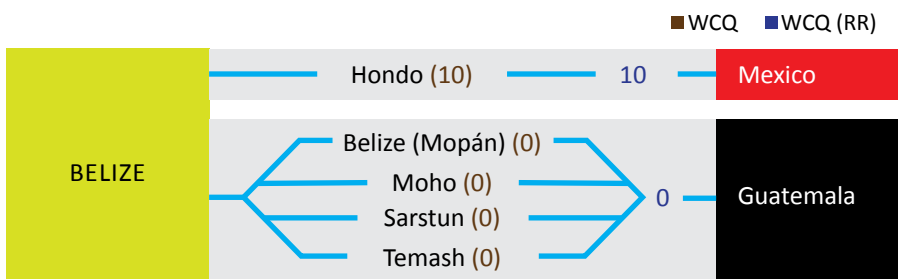


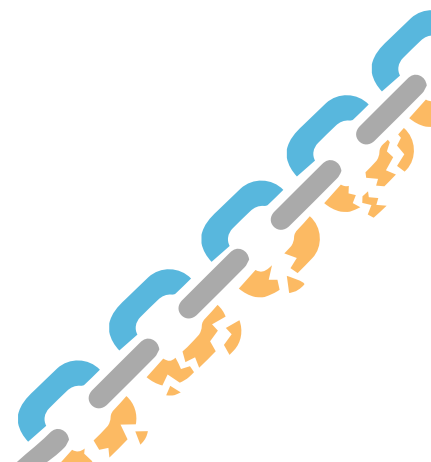
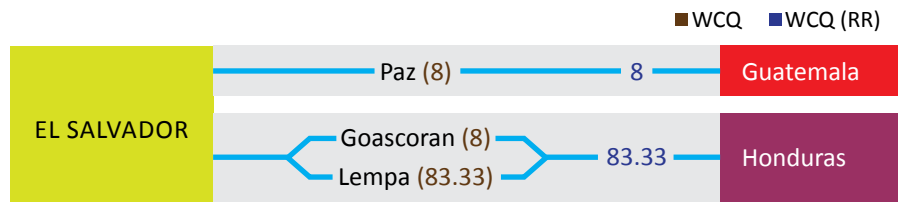
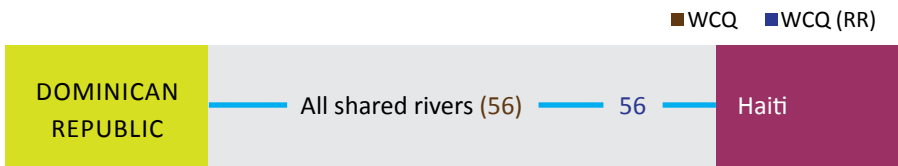
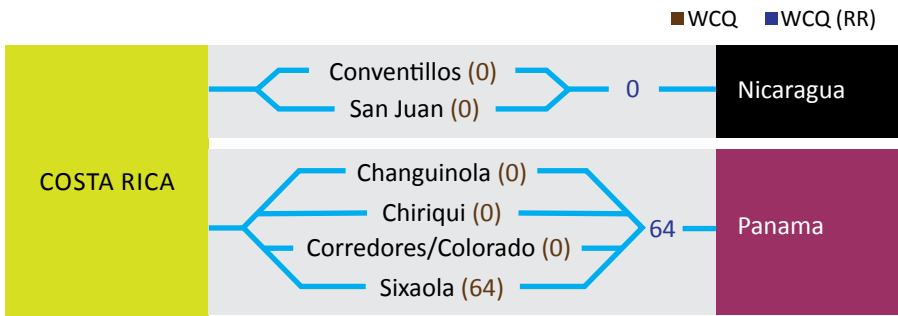


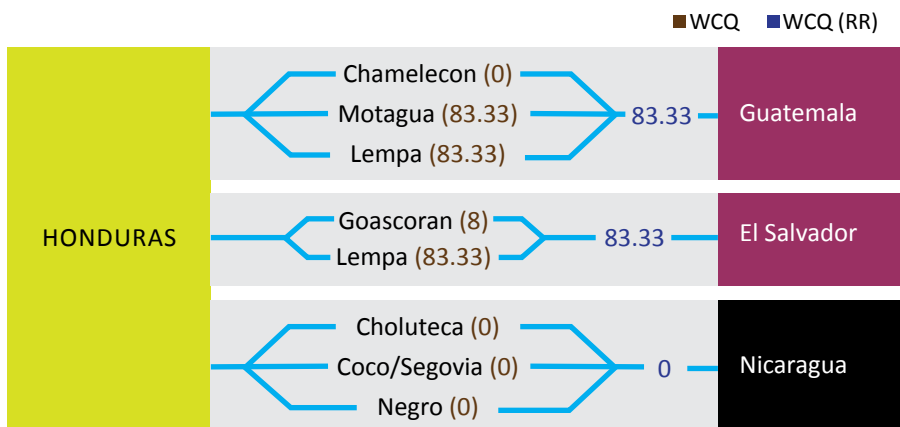
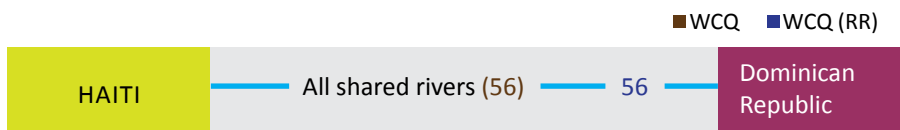
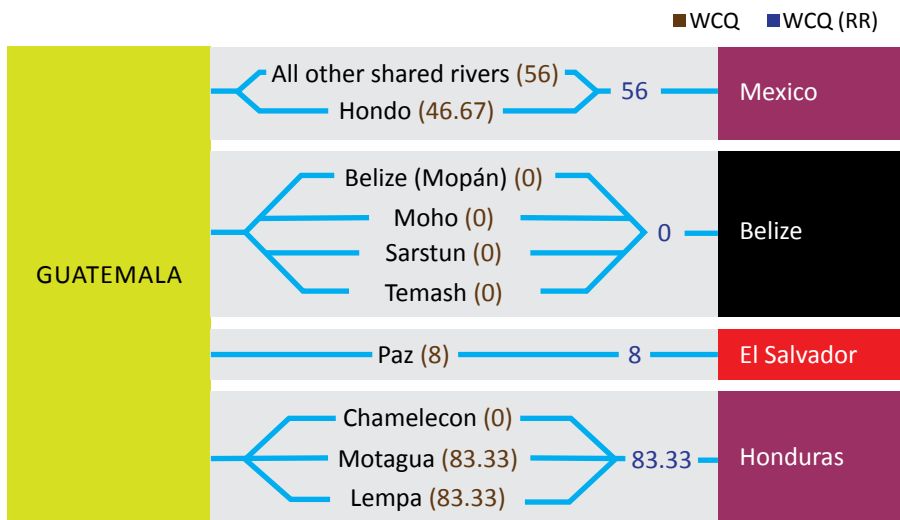




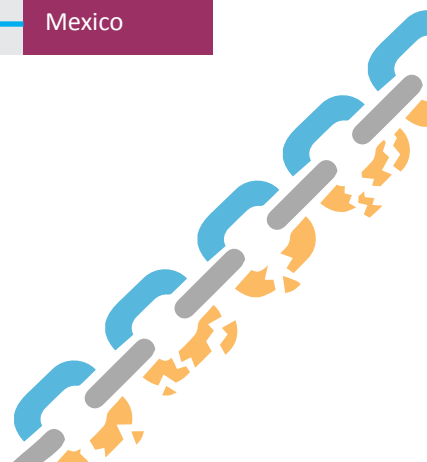
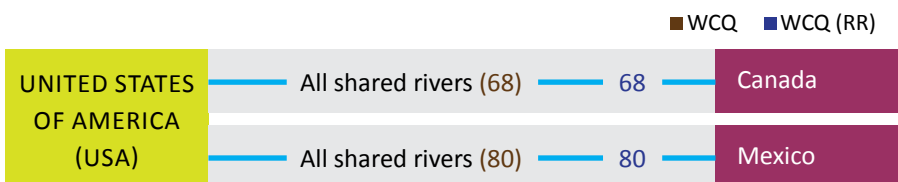
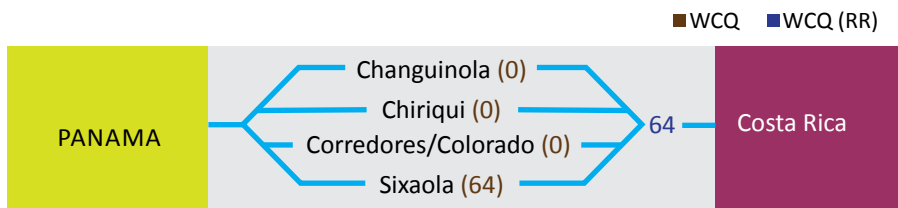
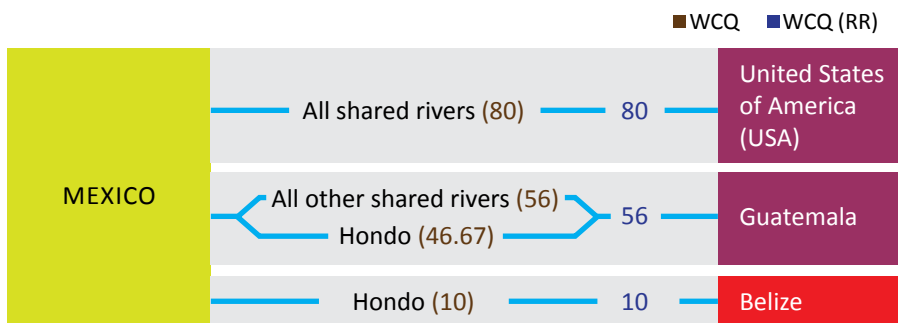
## North and Central America



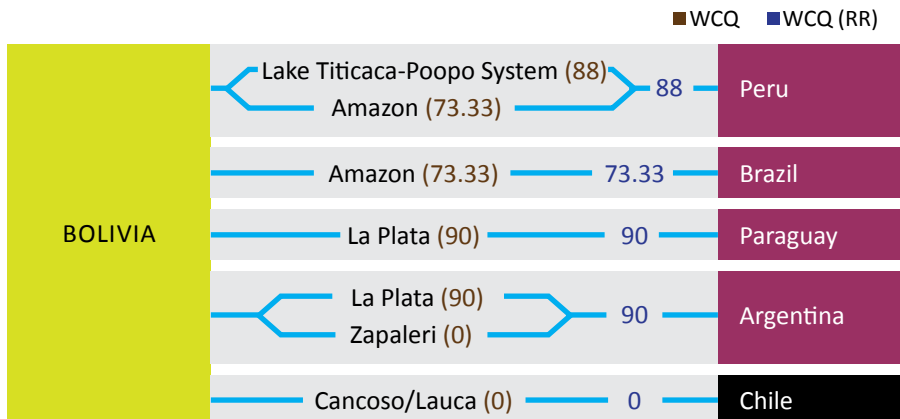
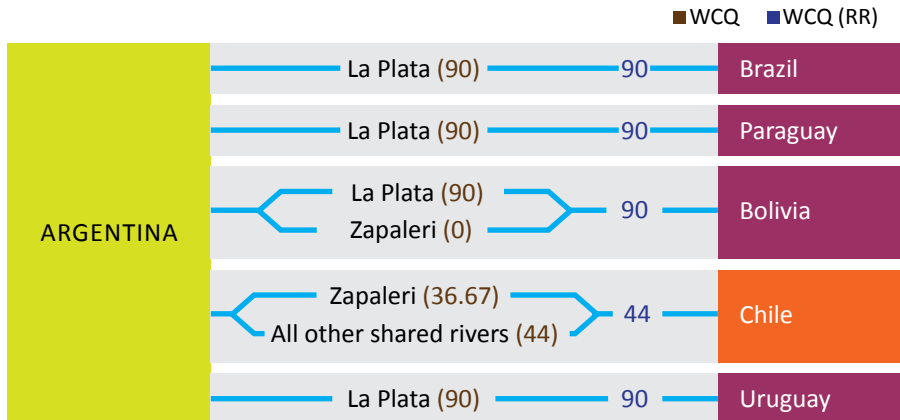


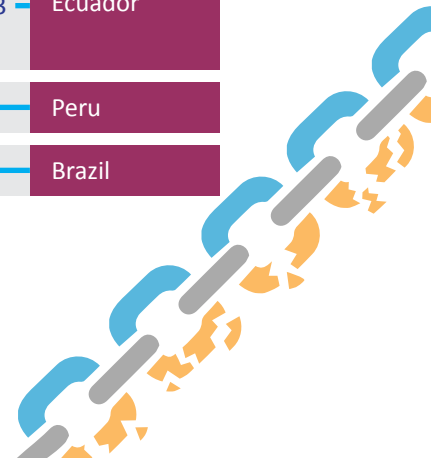
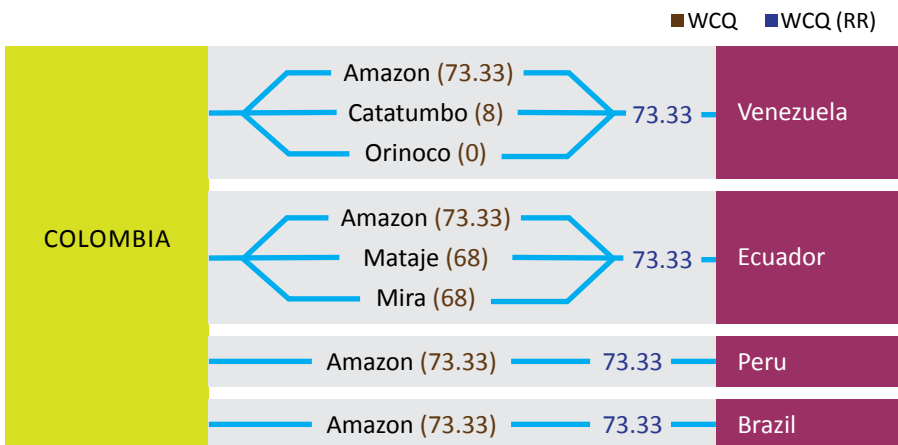
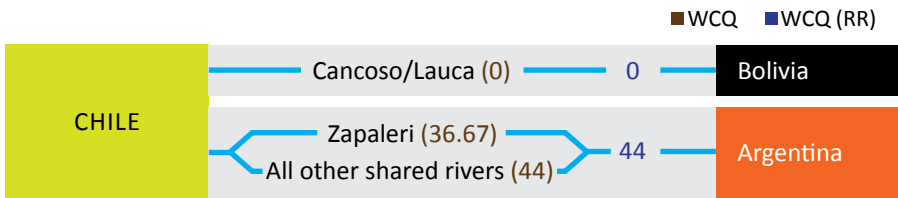
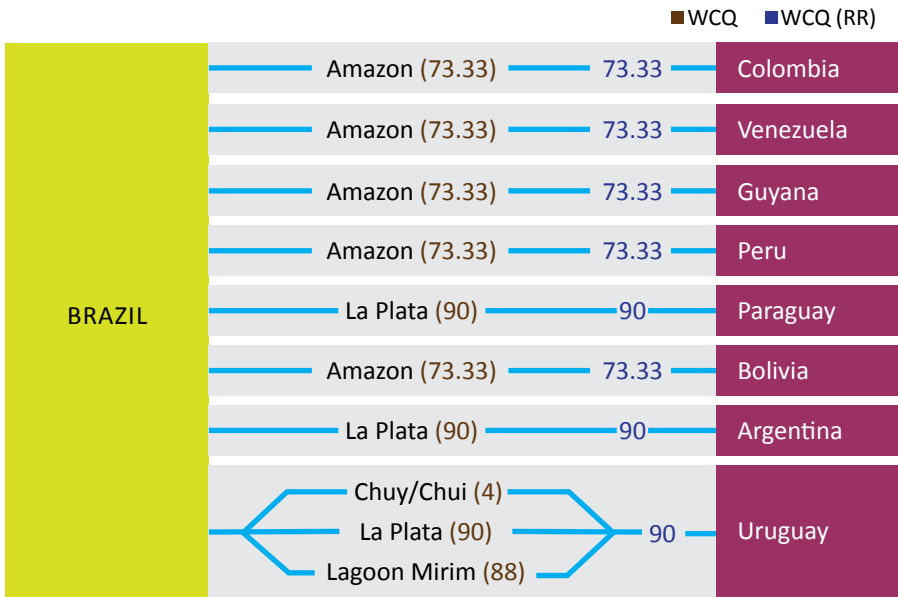


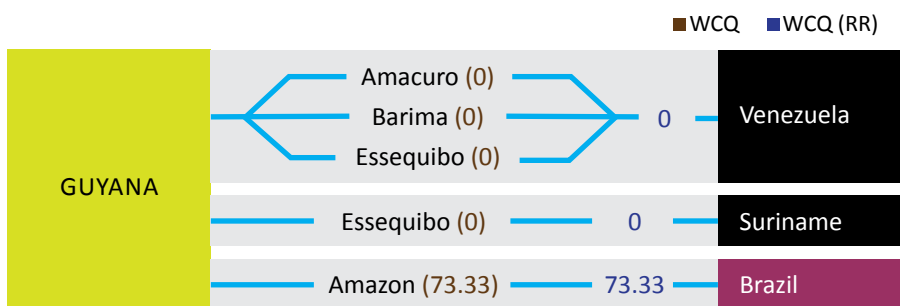
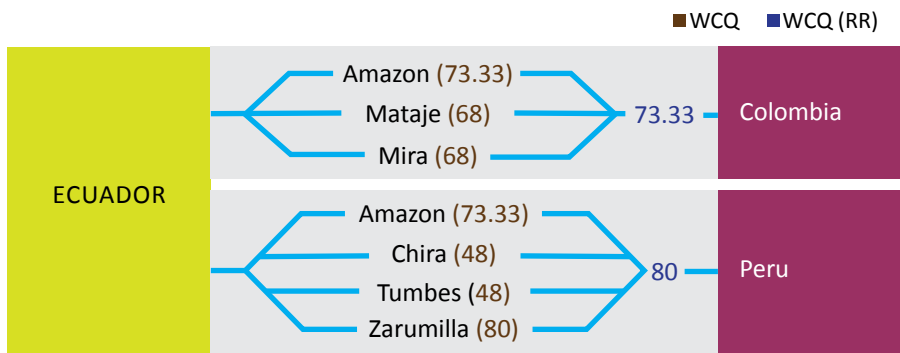


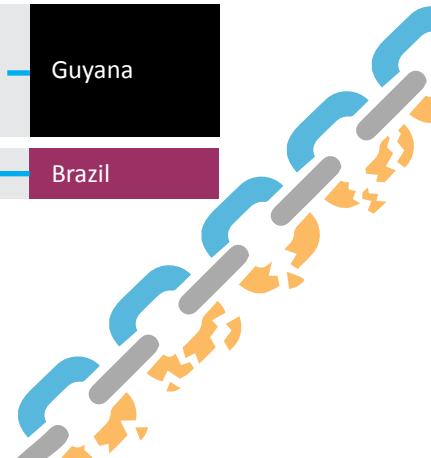
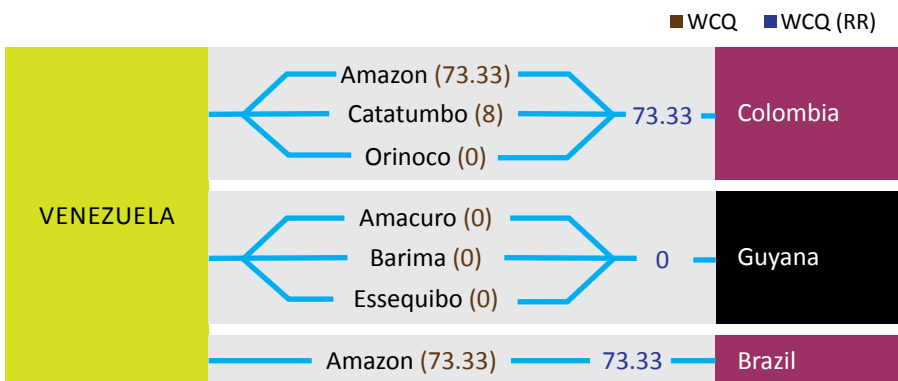
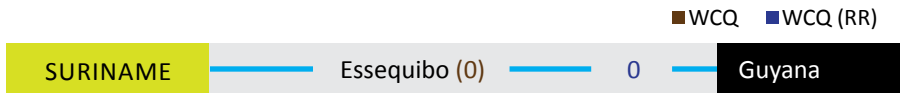
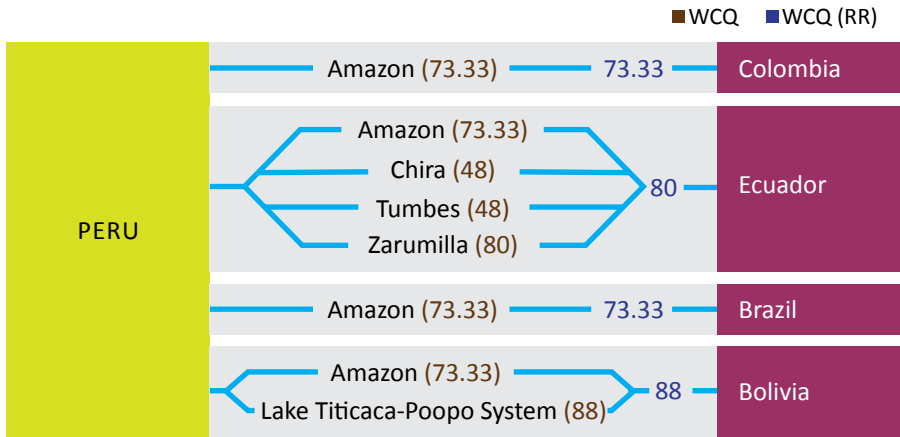


# South America

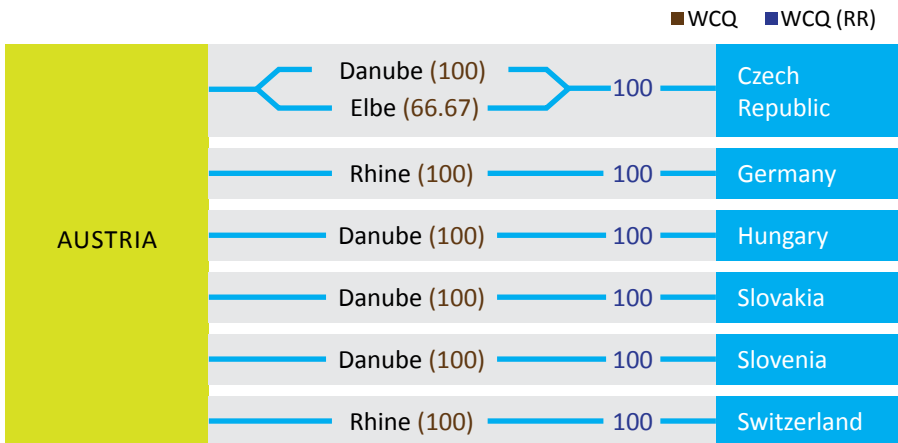
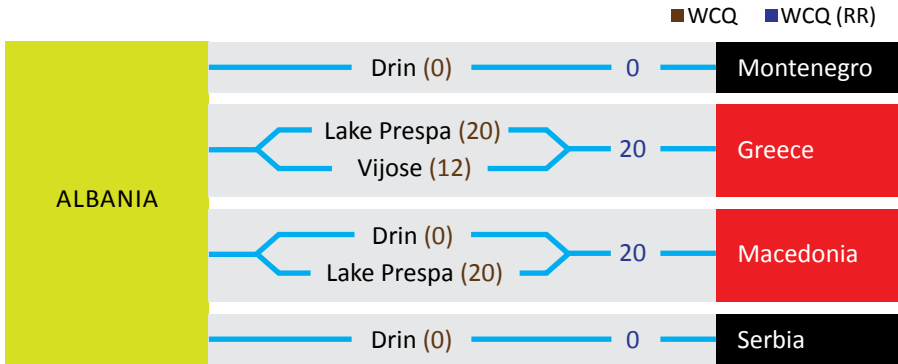


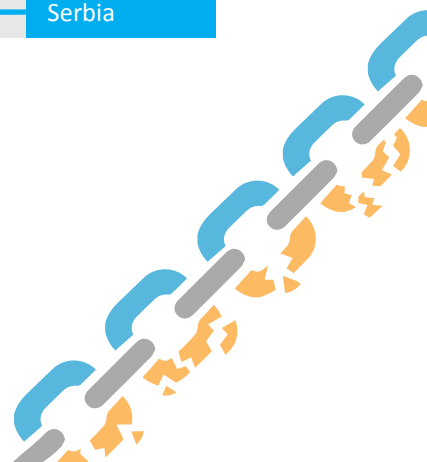
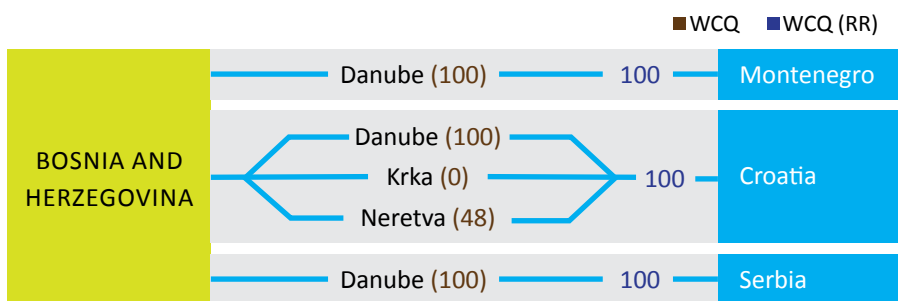
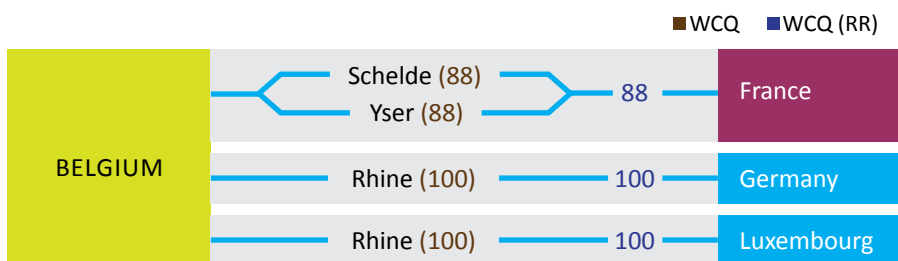
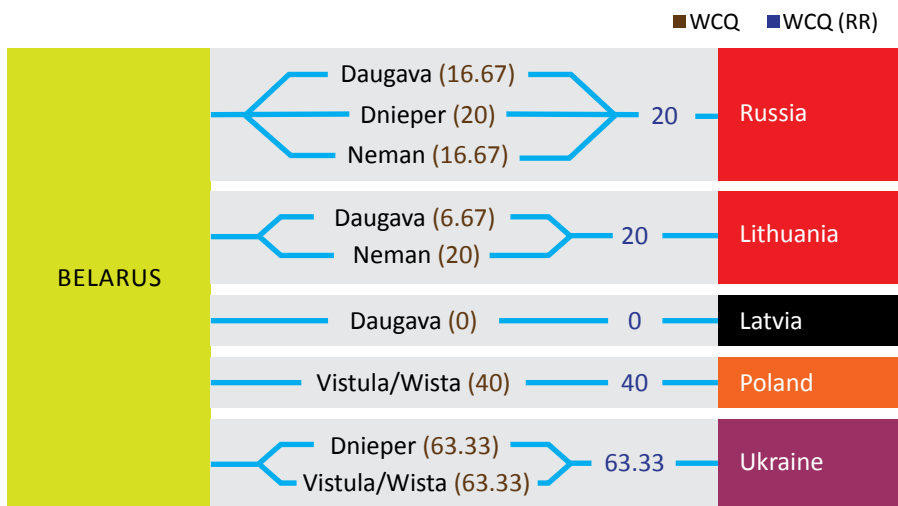


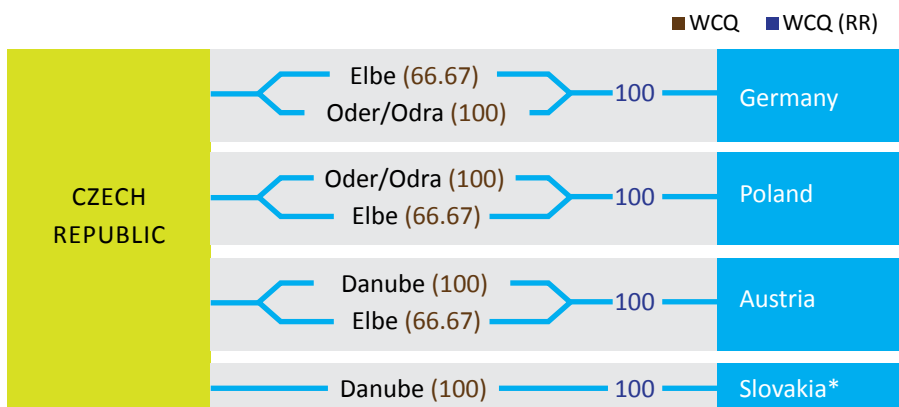
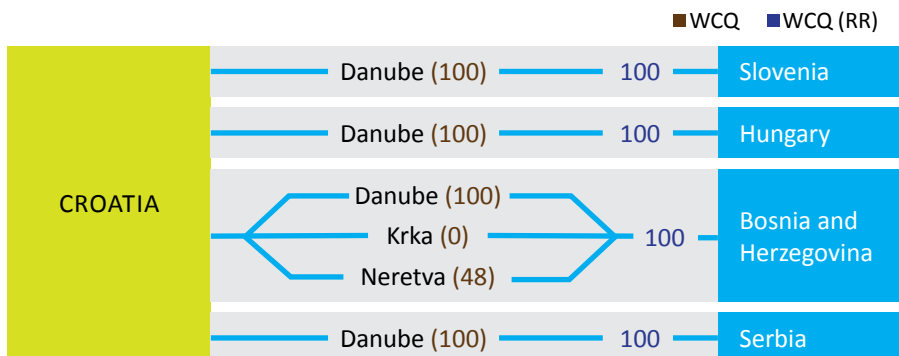
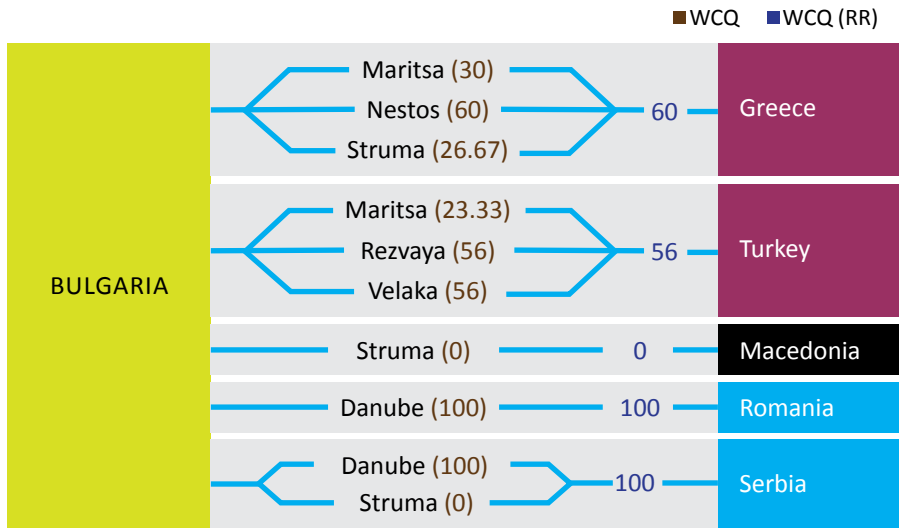




# Europe

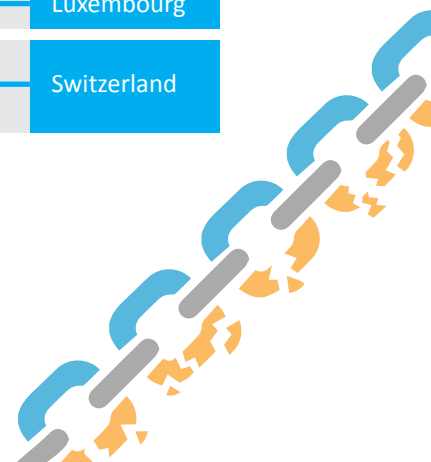
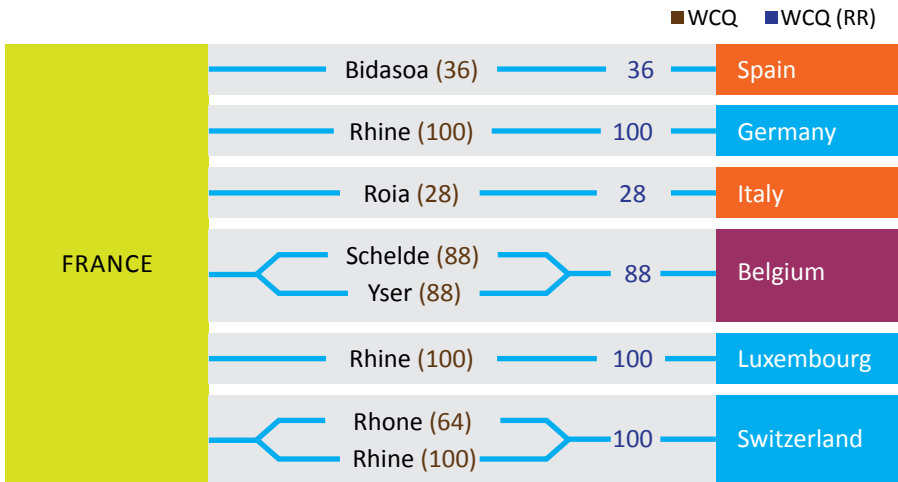
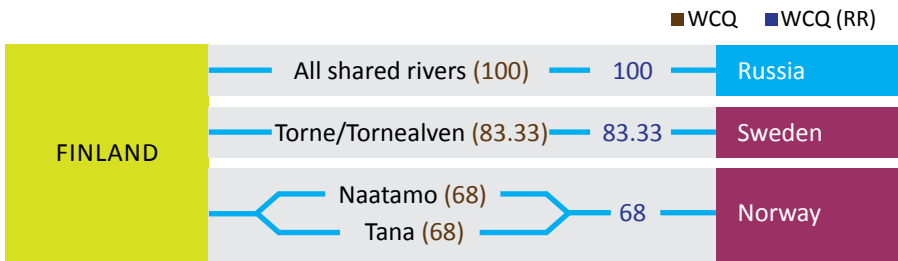
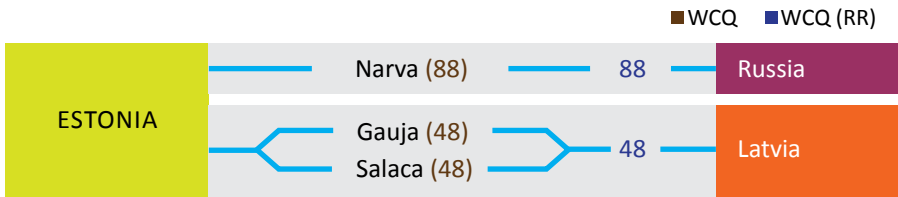
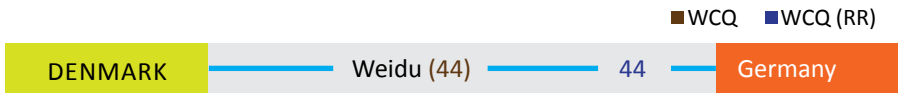


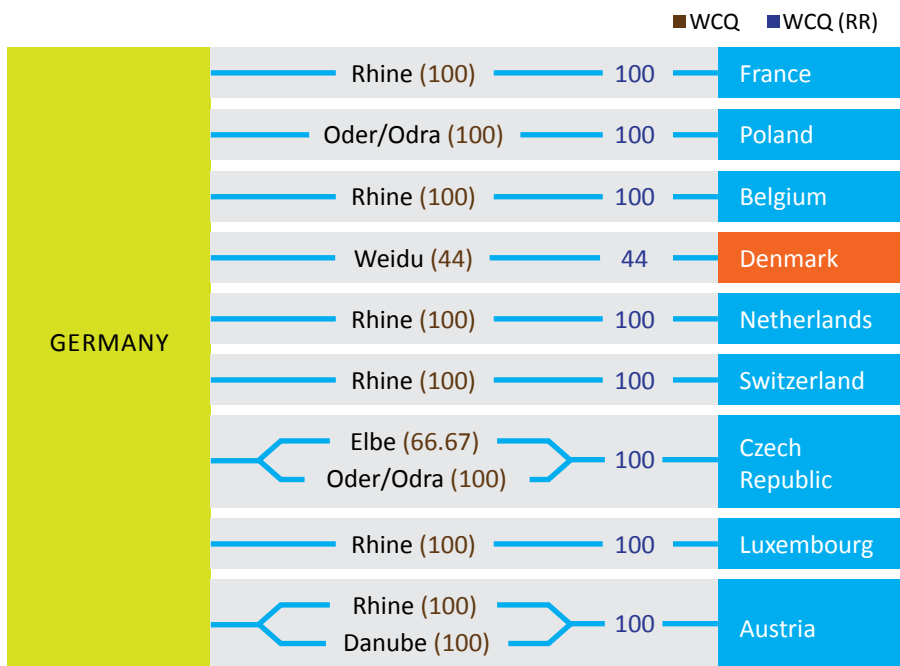
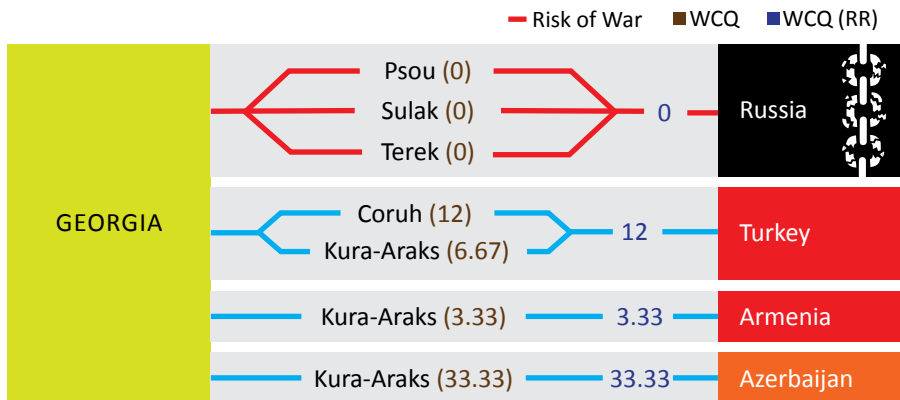


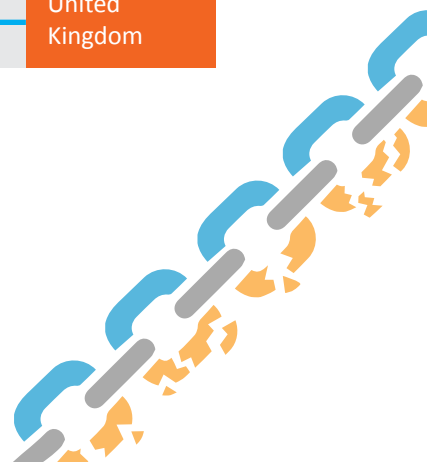
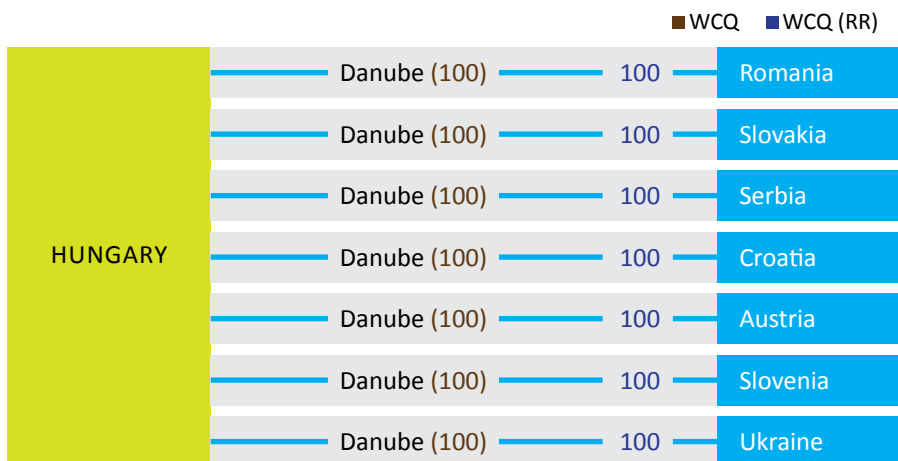
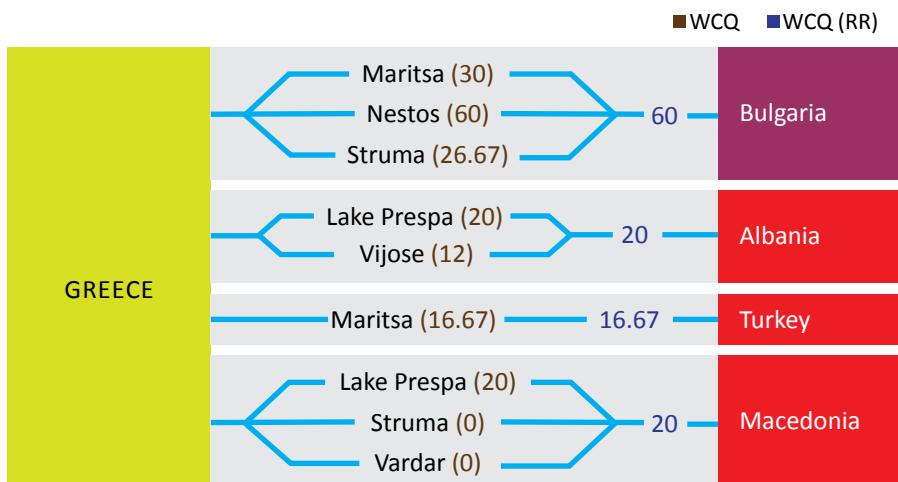


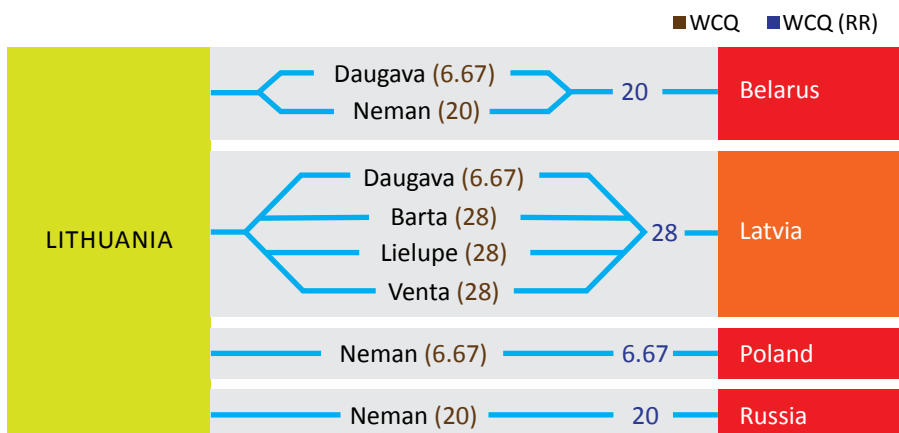
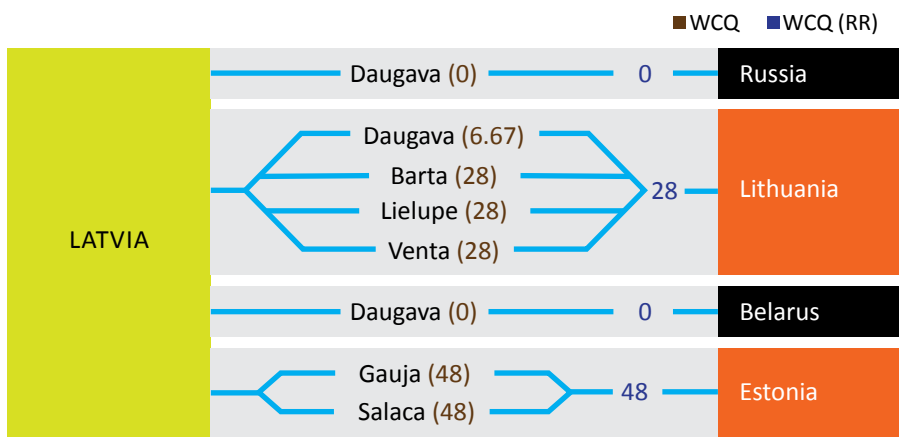
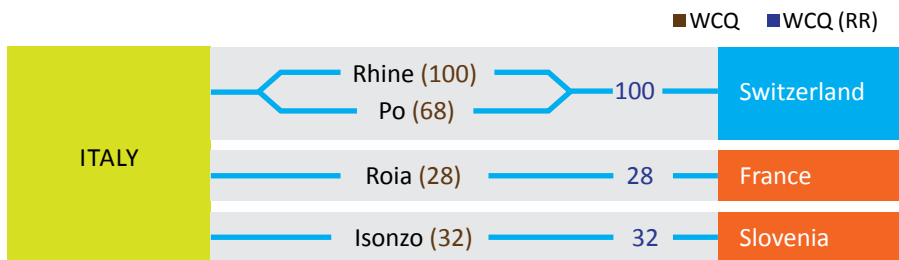
\*Slovakia's share of the river Odra is one per cent. The flow of the river is undetermined.

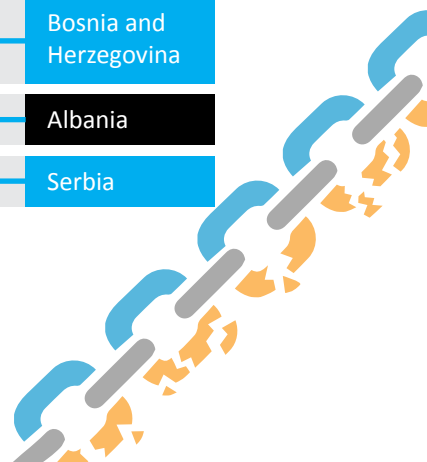
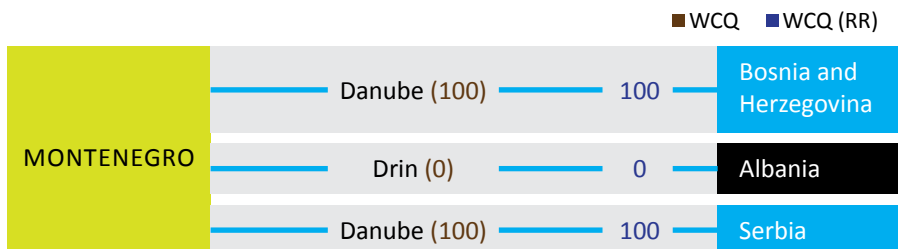
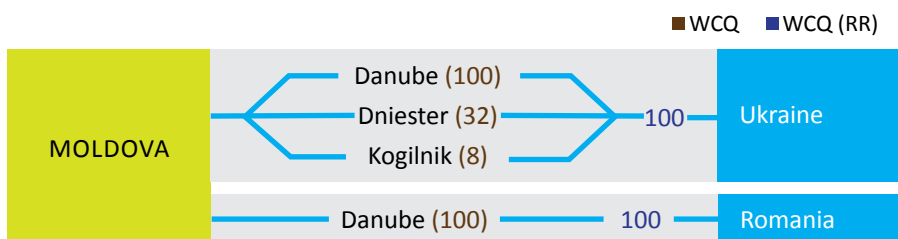
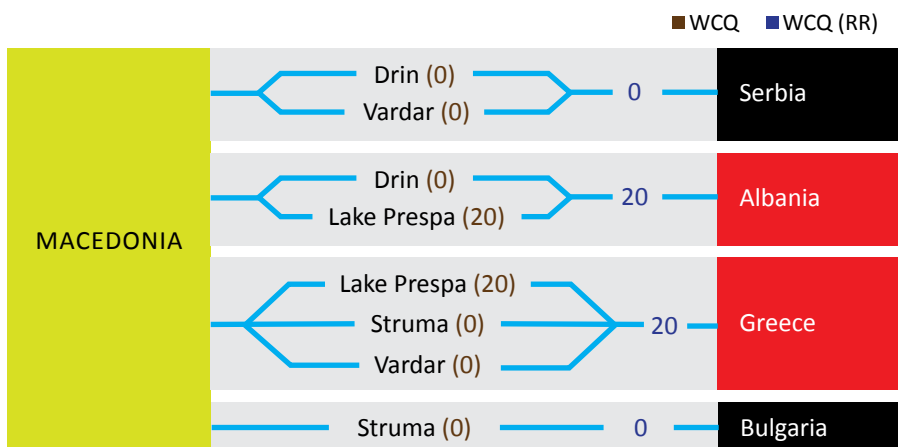
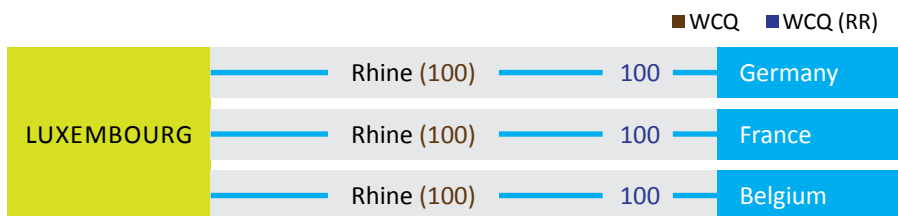


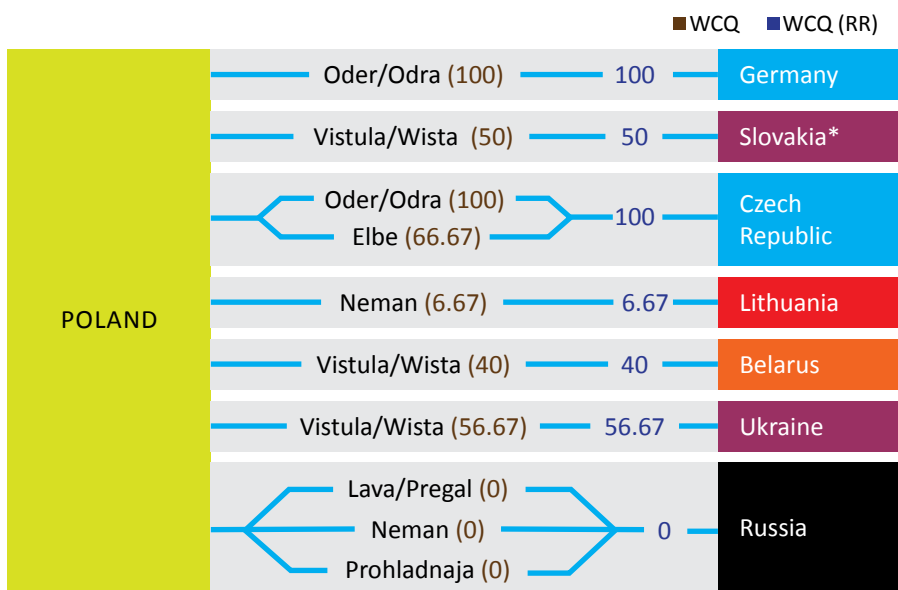
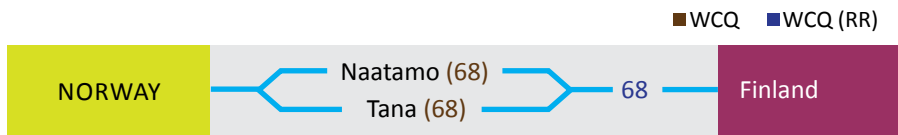
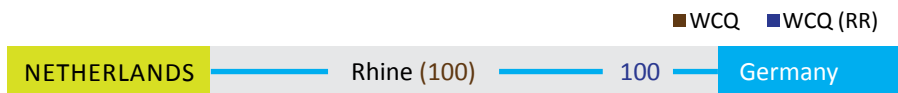




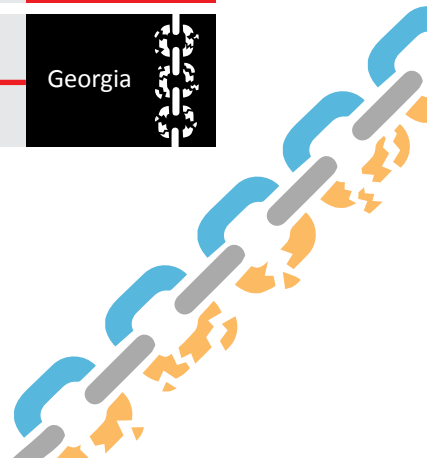
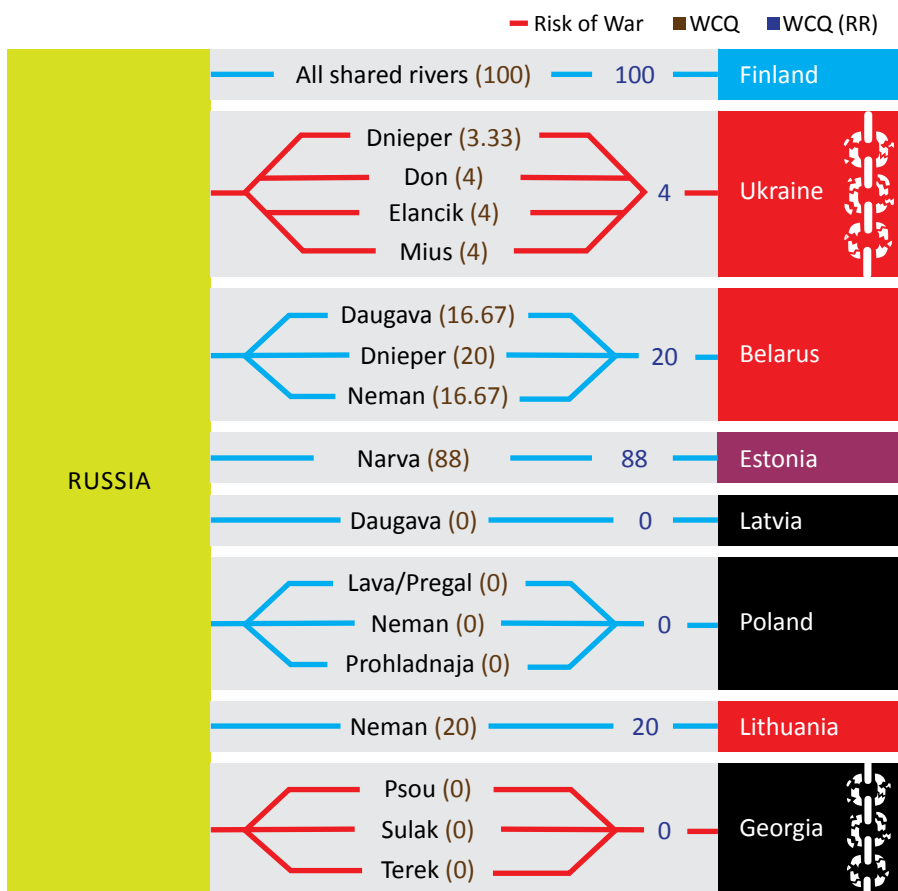
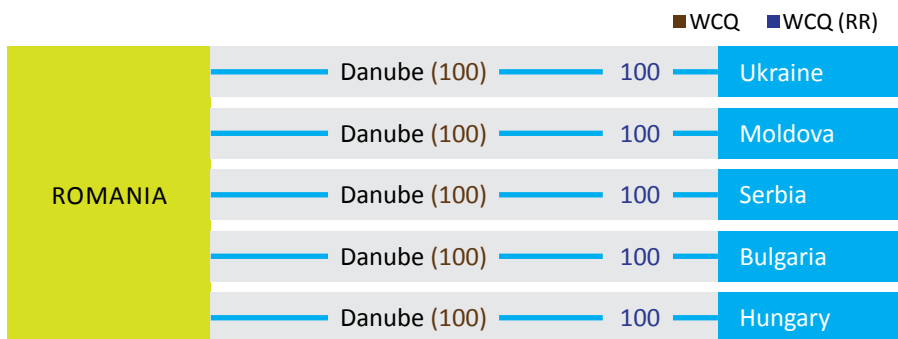


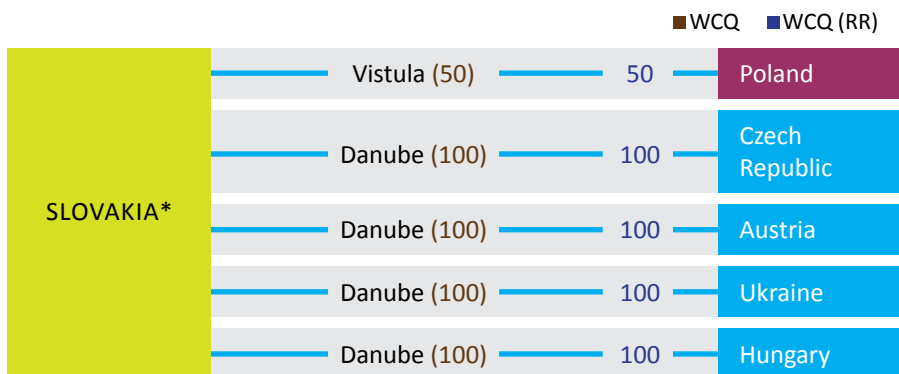
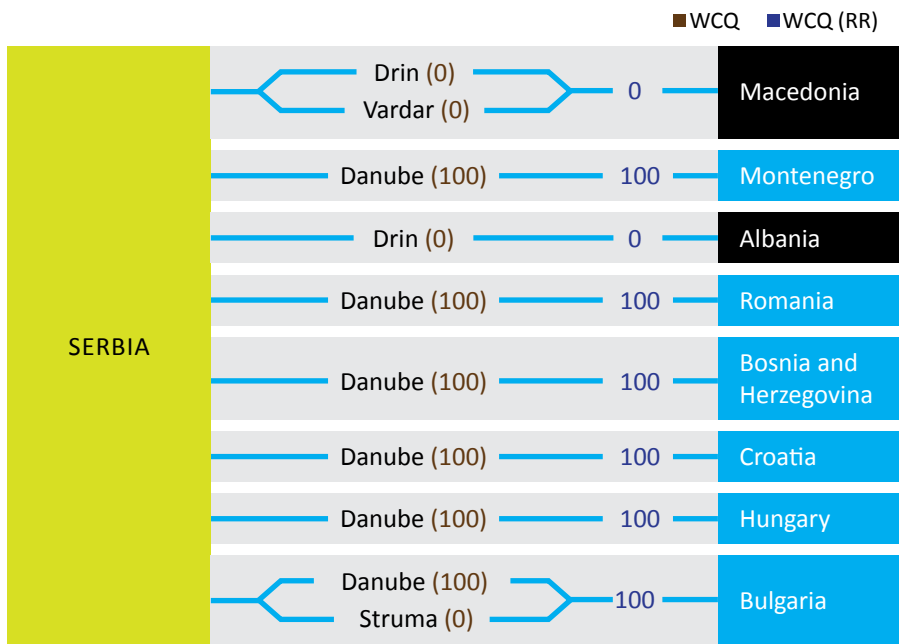




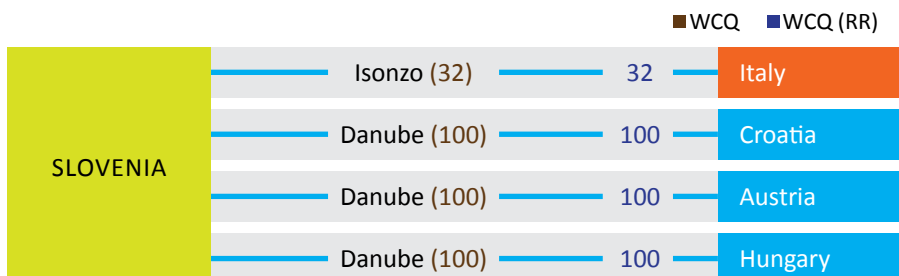


\*Slovakia's share of the river Odra is one per cent. The flow of the river is undetermined.

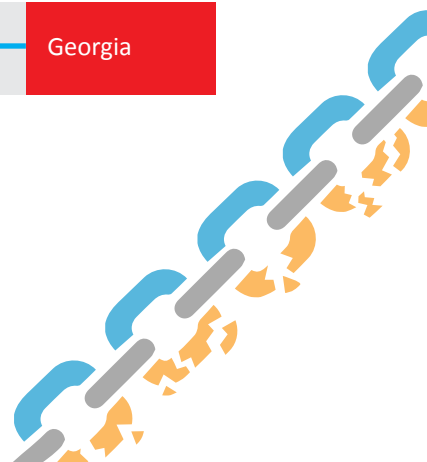
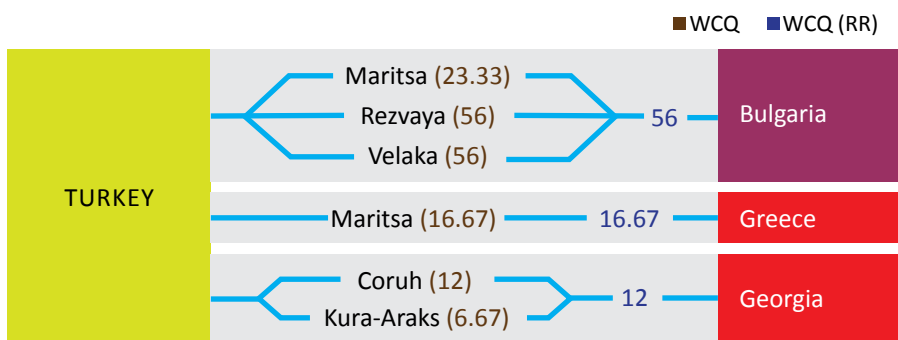
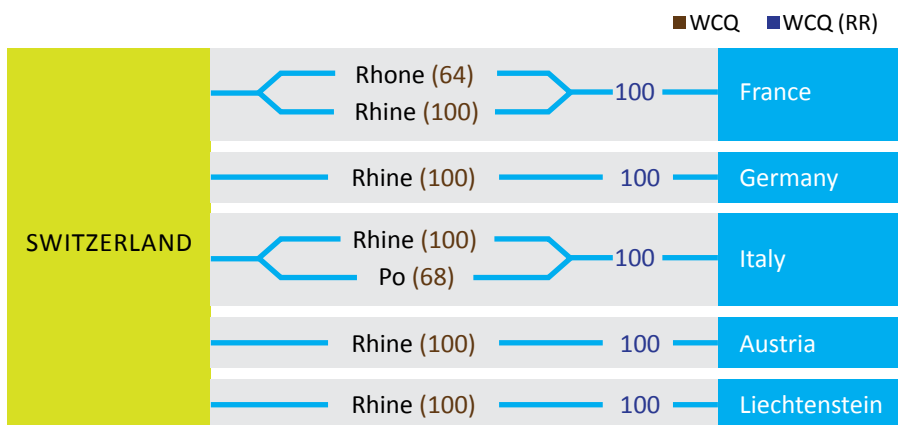
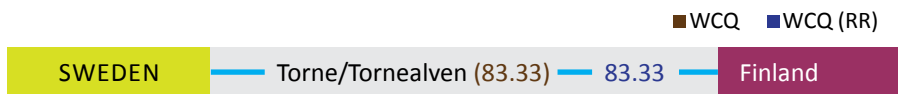
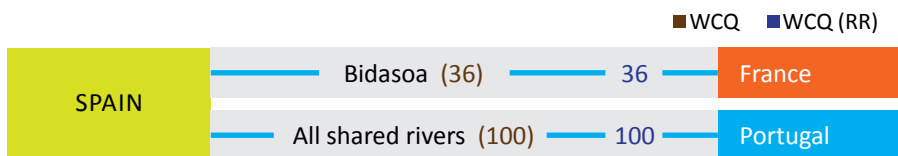


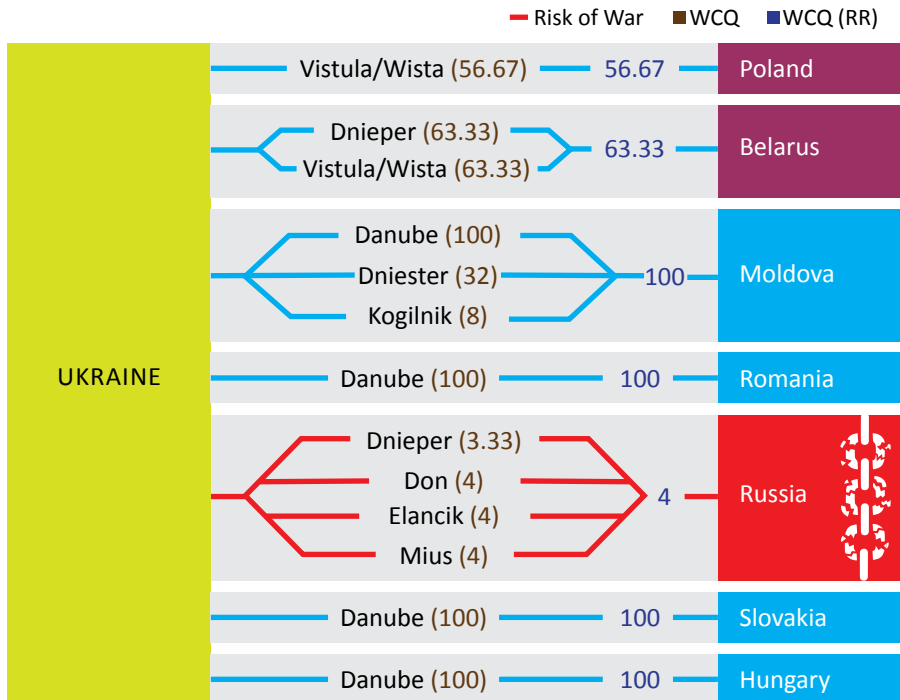


\*Slovakia's share of the river Odra is one per cent. The flow of the river is undetermined.

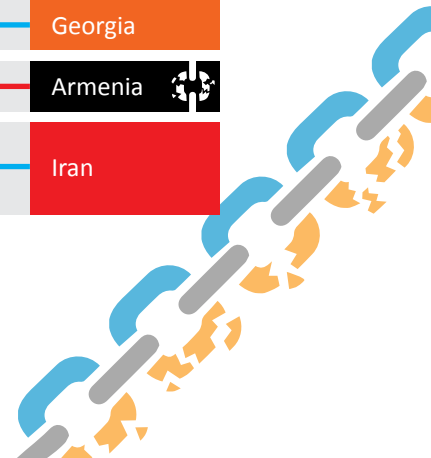
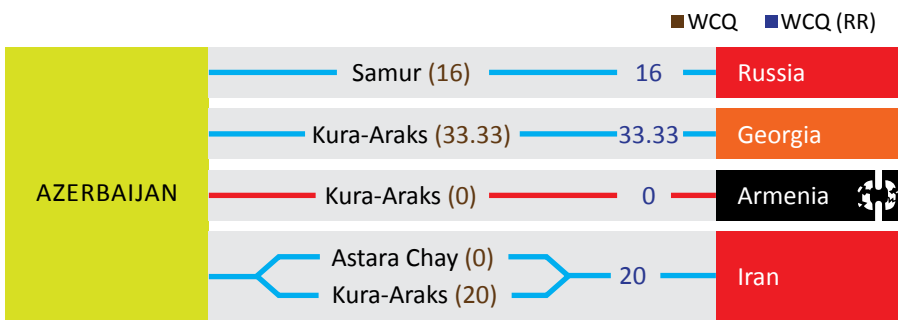
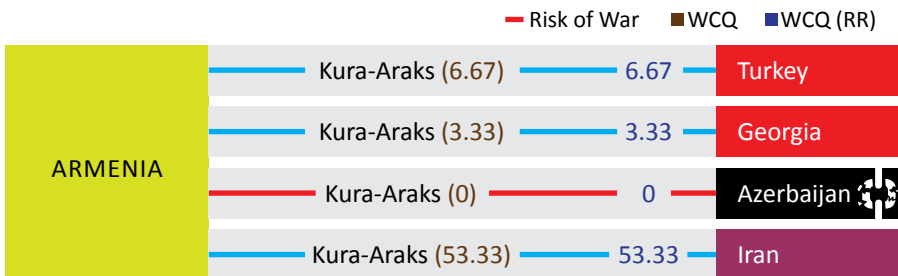
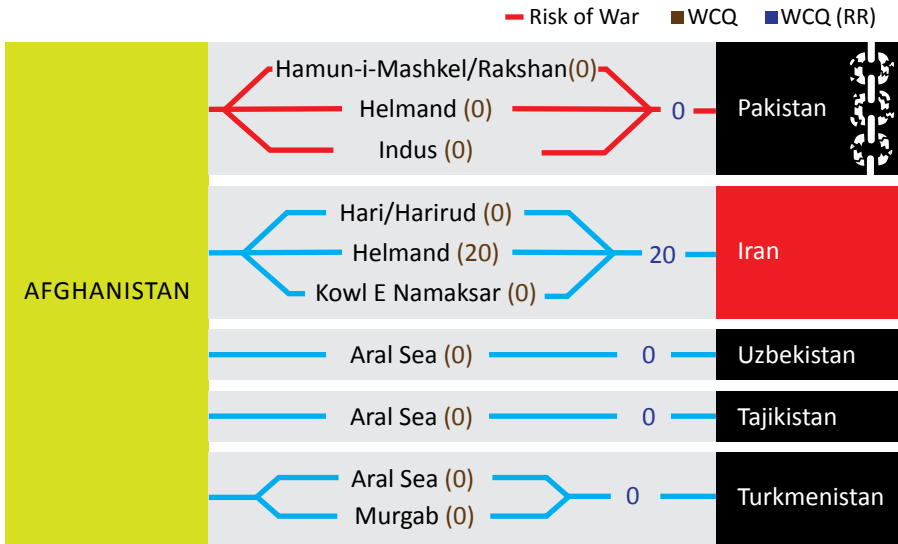


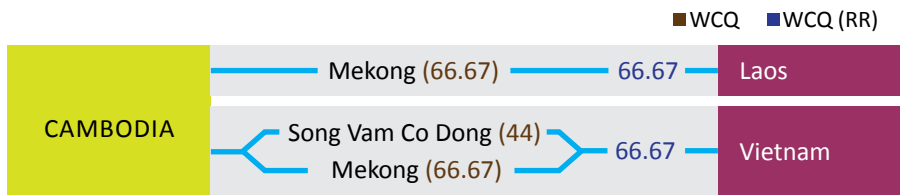
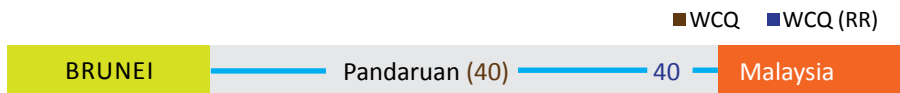
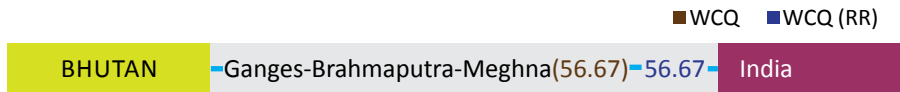
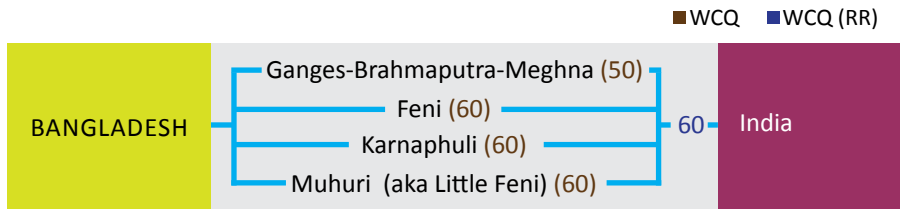


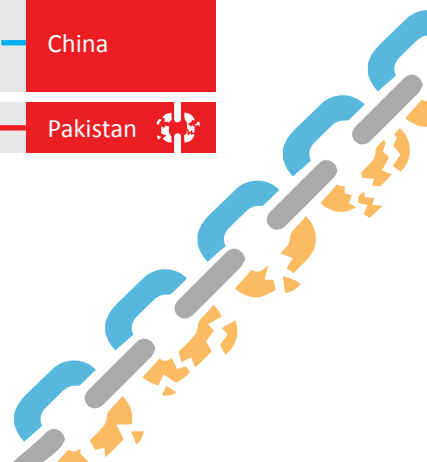
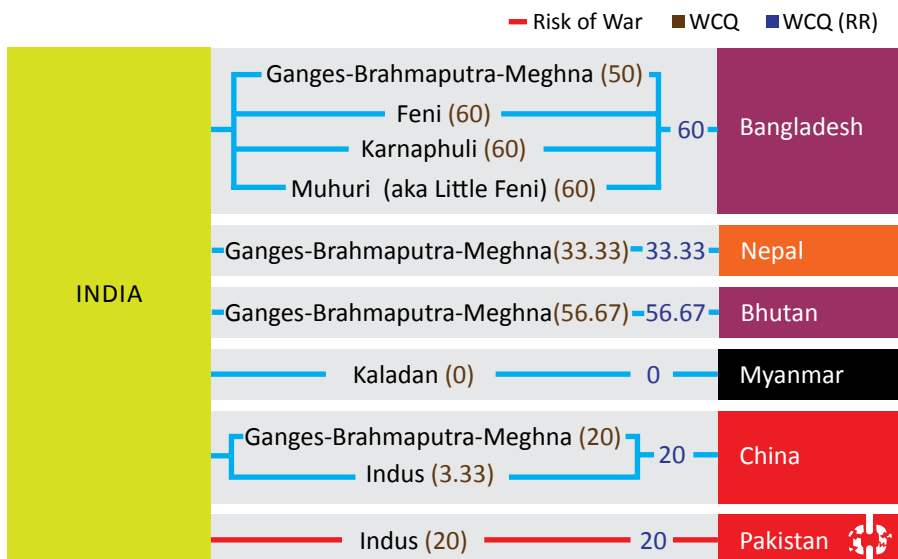
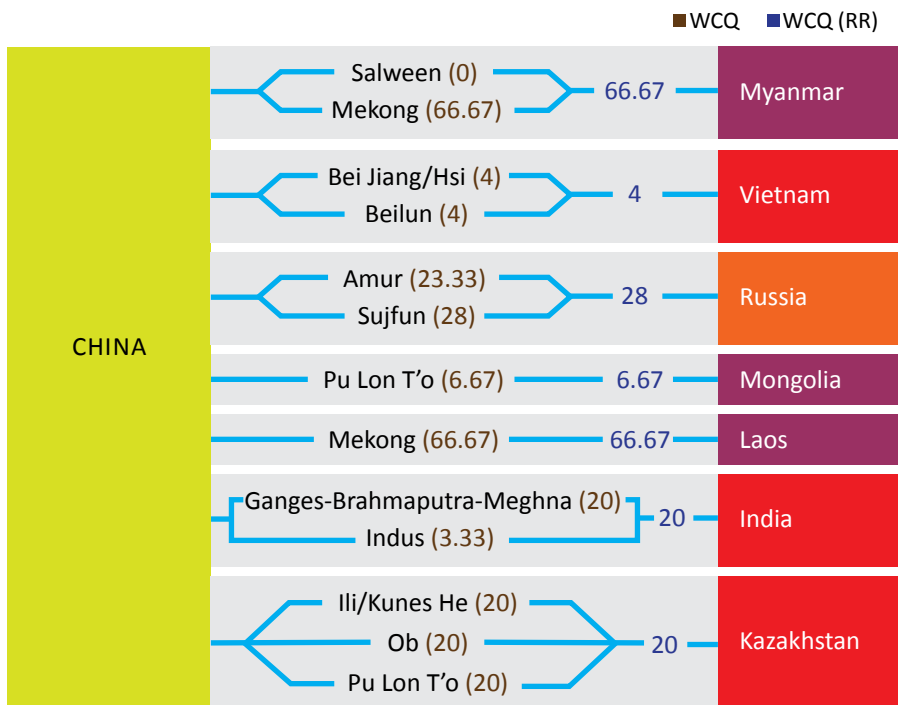


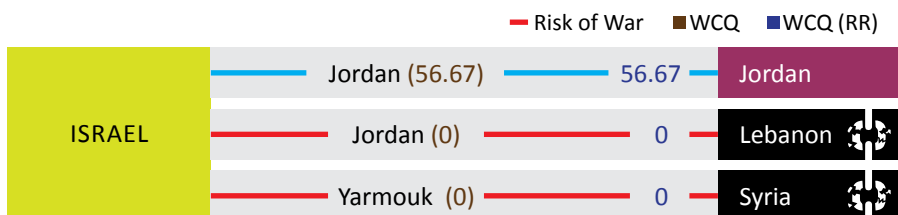
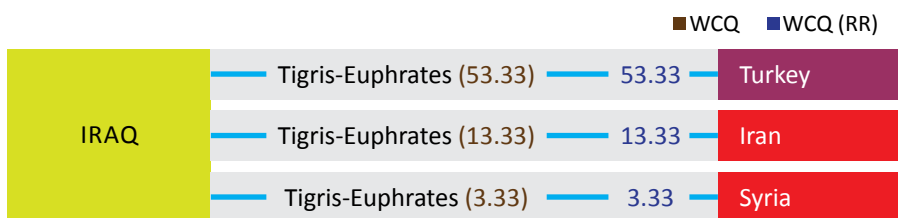
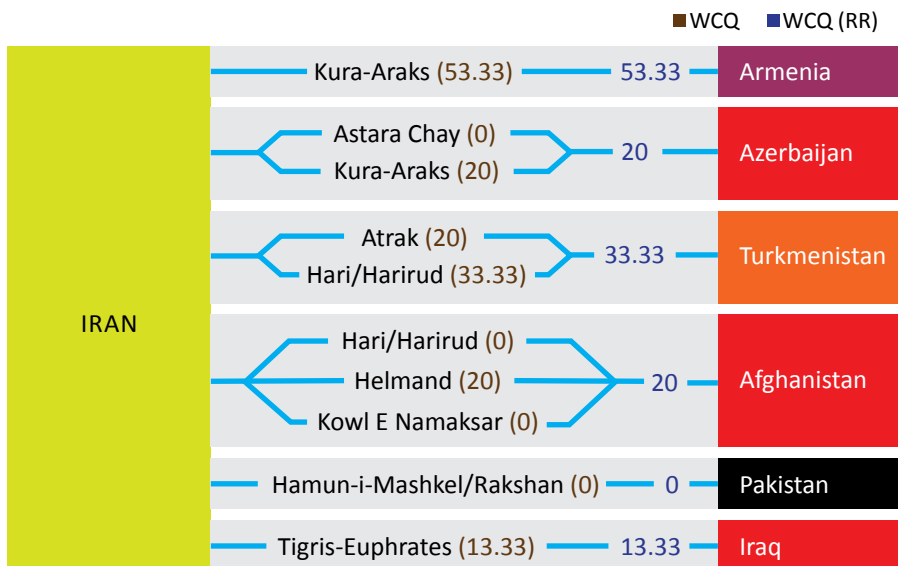
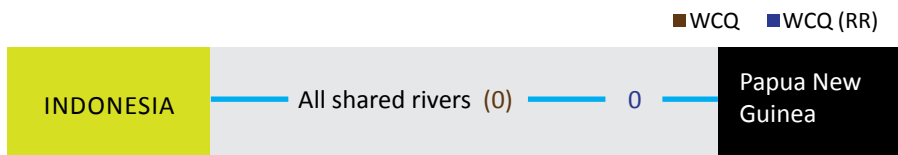


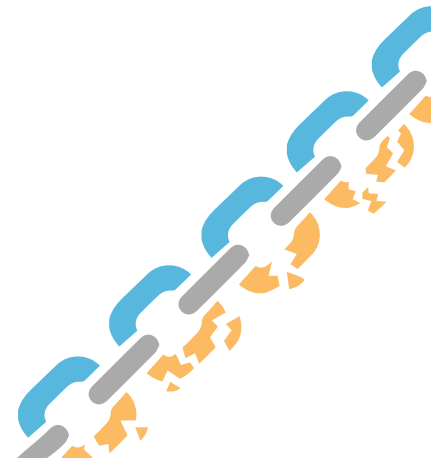
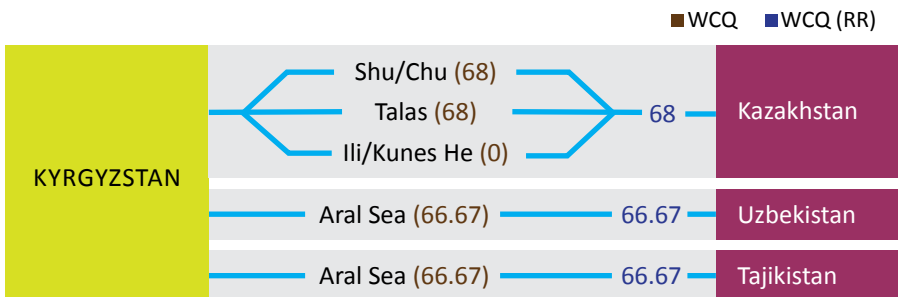
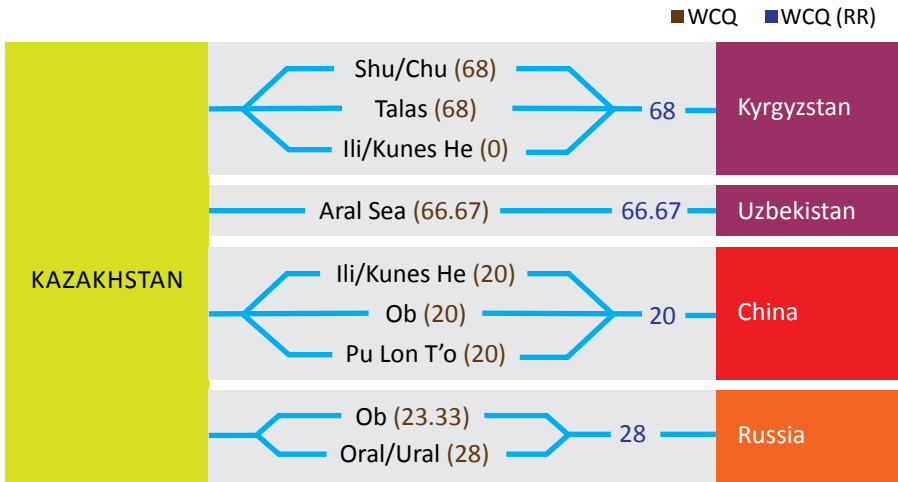
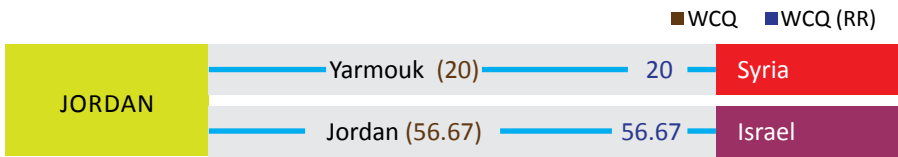
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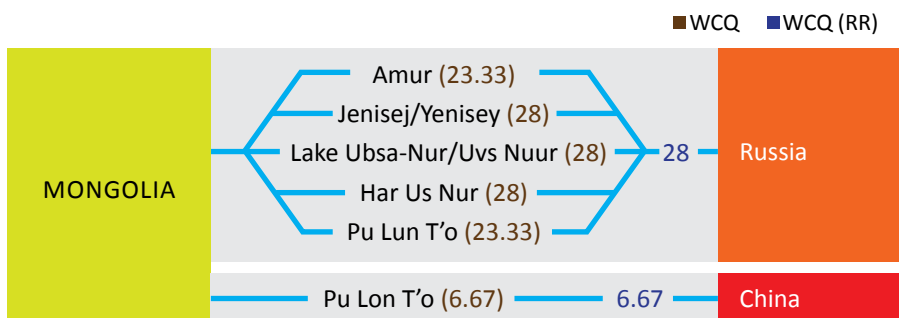
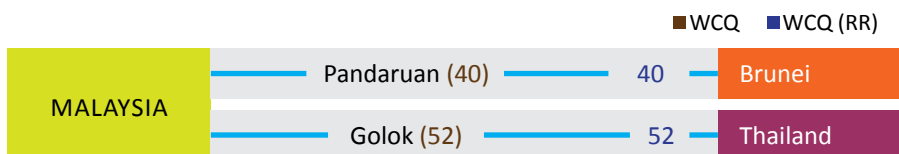
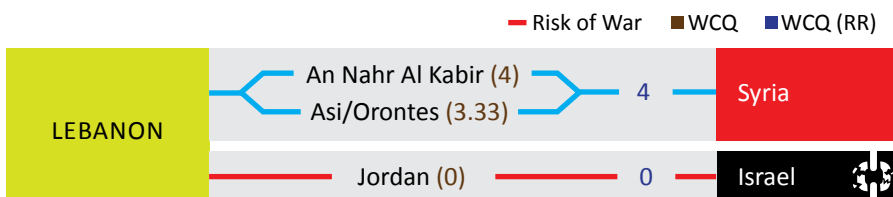
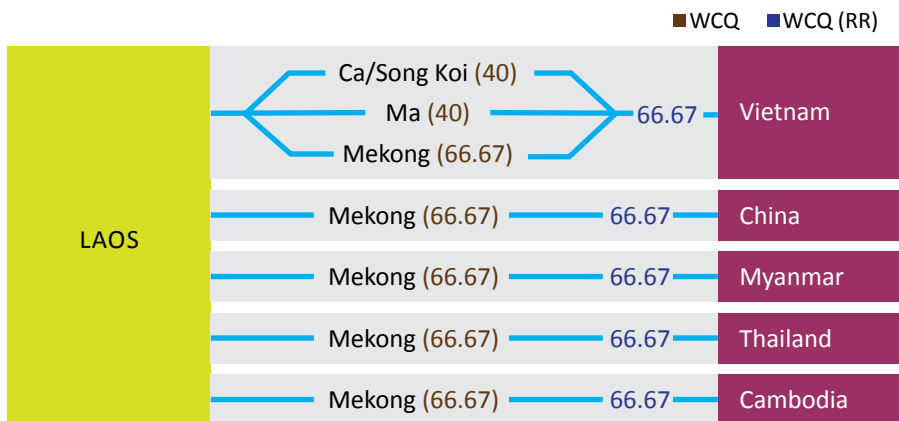




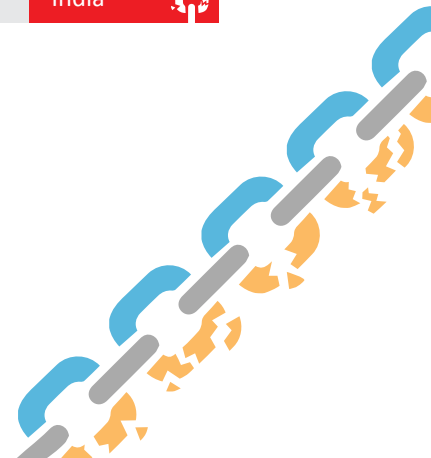
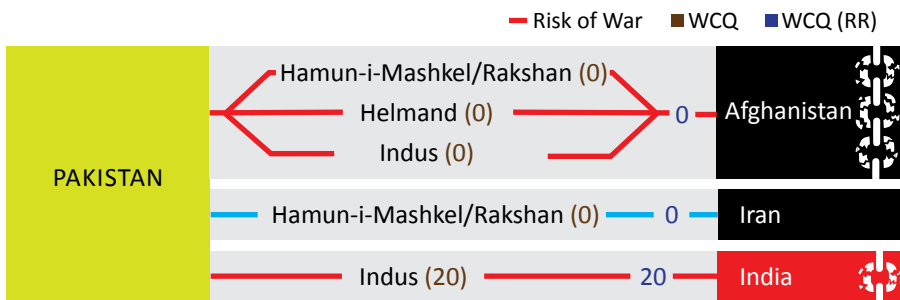
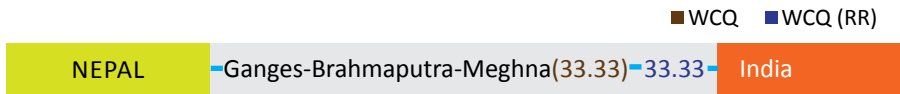
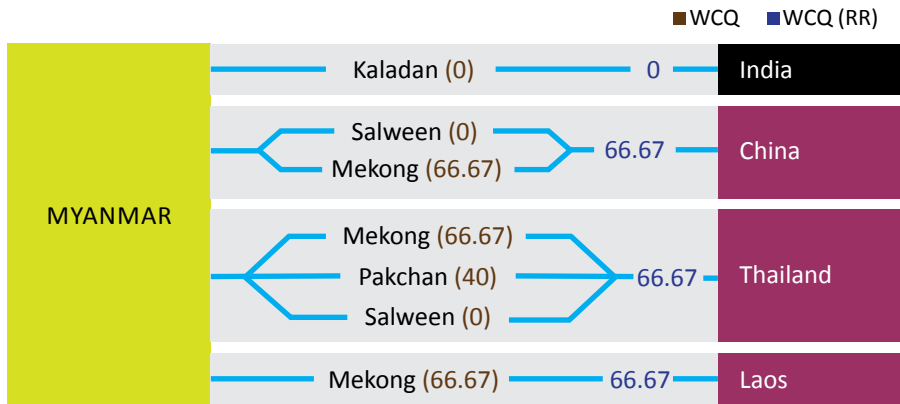




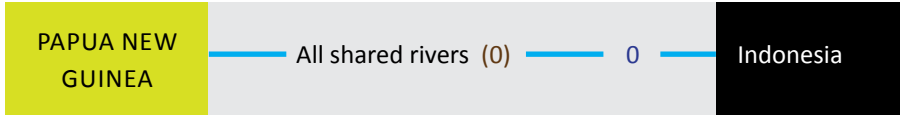




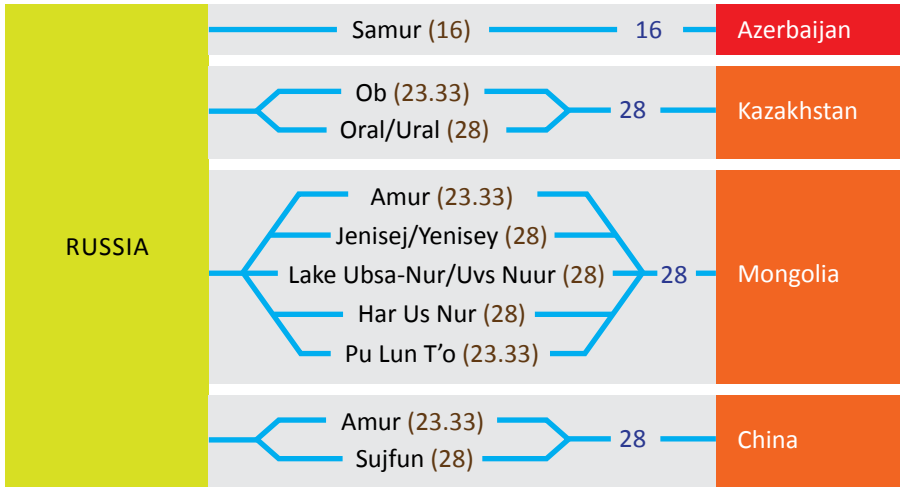




■ WCQ ■ WCQ (RR)



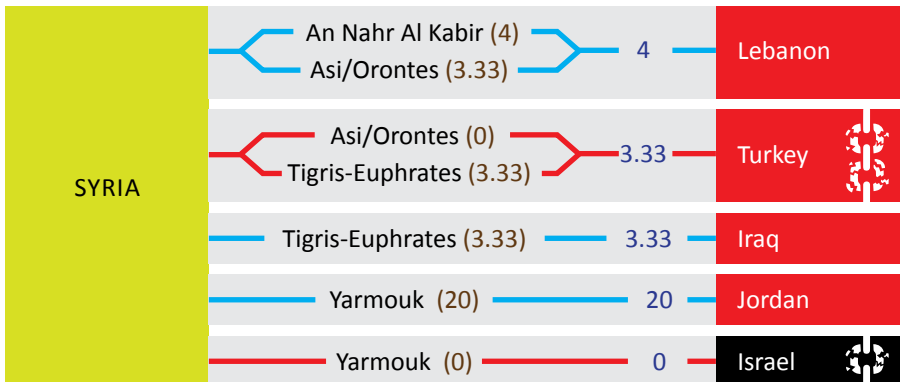
■ WCQ ■ WCQ (RR)

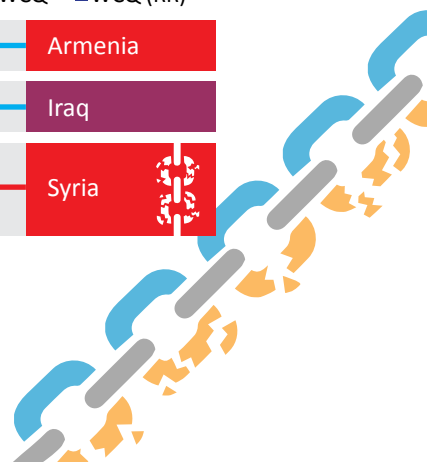
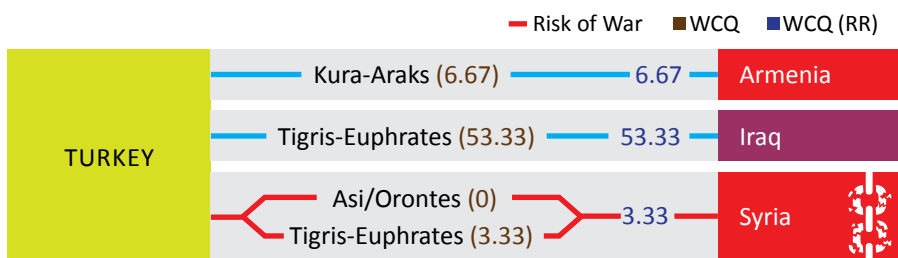
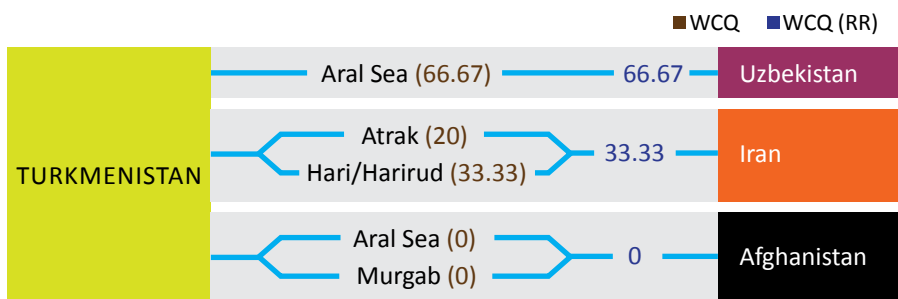
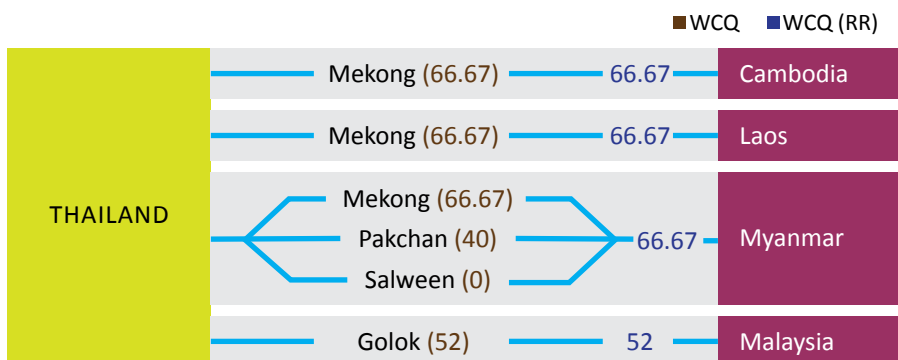
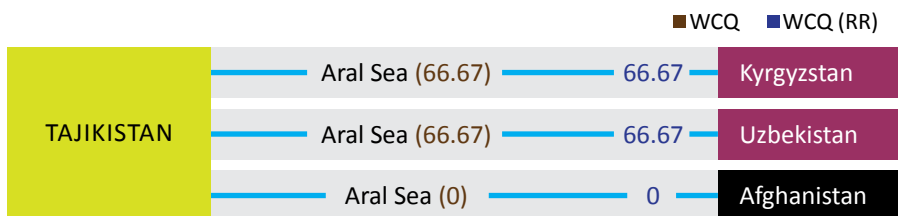


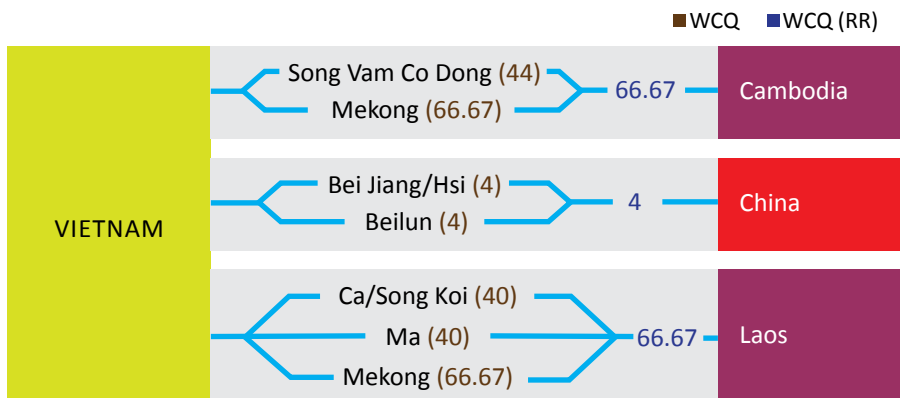
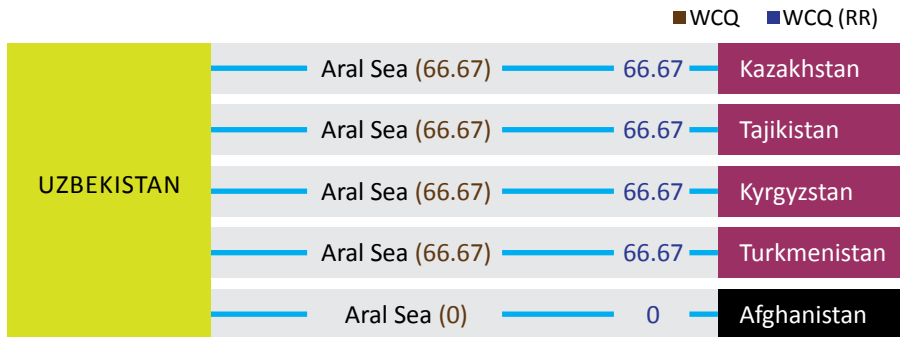
— Risk of War ■ WCQ ■ WCQ (RR)



— Risk of War ■ WCQ ■ WCQ (RR)







## Table V: List of Excluded Watercourses

The following rivers have been excluded for evaluation for various reasons:

- Lack of reliable information
- Lack of significance for the riparians or one of the riparians. Some riparian countries consider a river insignificant because it is seasonal, or located in a very remote area. For further explanation on this topic see **Caveats of WCQ**.

### Africa

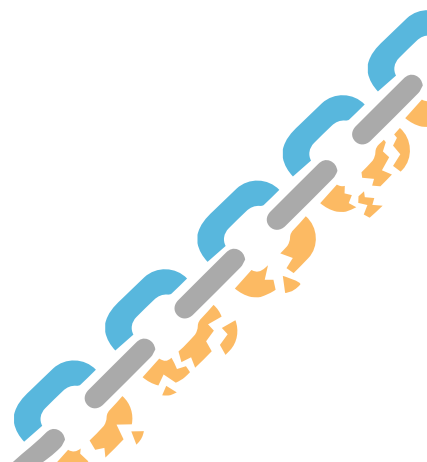
Basin	Countries
Akpa	Cameroon Nigeria
Atui	Mauritania Western Sahara
Awash	Ethiopia Djibouti Eritrea Somalia
Baraka	Eritrea Sudan
Benito/Ntem	Cameroon Equatorial Guinea Gabon
Chiloango	Democratic Republic of the Congo (DRC) Angola Republic of the Congo (Brazzaville)
Cross	Nigeria Cameroon
Great Scarcies	Guinea Sierra Leone
Lake Natron	Tanzania Kenya

<b>Lake Turkana</b>	Ethiopia Kenya South Sudan Uganda
<b>Little Scarcies</b>	Sierra Leone Guinea
<b>Loffa</b>	Liberia Guinea
<b>Lotagipi Swamp</b>	Kenya Sudan South Sudan Ethiopia Uganda
<b>Mana-Morro</b>	Liberia Sierra Leone
<b>Mbe</b>	Gabon Equatorial Guinea
<b>Medjerda</b>	Tunisia Algeria
<b>Moa</b>	Sierra Leone Guinea Liberia
<b>Nyanga</b>	Gabon Republic of the Congo (Brazzaville)
<b>Ogooue</b>	Gabon Republic of the Congo (Brazzaville) Cameroon Equatorial Guinea
<b>Oueme</b>	Benin Nigeria Togo
<b>Pangani</b>	Tanzania Kenya
<b>Sanaga</b>	Central African Republic Cameroon Nigeria
<b>St. John (Africa)</b>	Liberia Guinea
<b>St. Paul</b>	Liberia Guinea

<b>Umba</b>	Tanzania Kenya
<b>Utamboni</b>	Gabon Equatorial Guinea

## Americas

<b>Basin</b>	<b>Countries</b>
<b>Corantijn/Courantyne</b>	Guyana Suriname Brazil
<b>El Naranjo</b>	Costa Rica Nicaragua
<b>Jurado</b>	Colombia Panama
<b>Maroni</b>	Suriname French Guiana Brazil
<b>Oiapoque/Oyupock</b>	French Guiana Brazil
<b>Patia</b>	Colombia Ecuador



## Europe

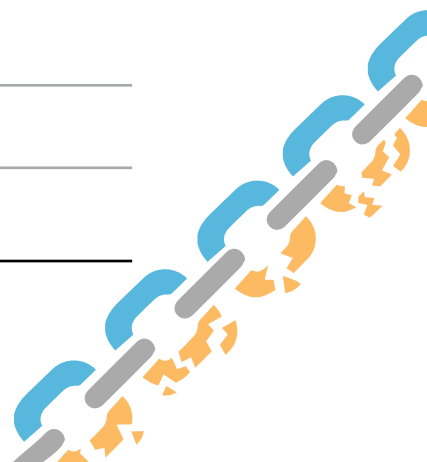
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<b>Basin</b>	<b>Countries</b>
<b>Dragonja</b>	Croatia Slovenia
<b>Ebro</b>	Spain Andorra France
<b>Garonne</b>	France Spain Andorra
<b>Glama</b>	Norway Sweden
<b>Jakobselv</b>	Norway Russia
<b>Klaralven</b>	Sweden Norway
<b>Parnu</b>	Estonia Latvia
<b>Sarata</b>	Ukraine Moldova
<b>Seine</b>	France Belgium Luxembourg



## Asia

<b>Basin</b>	<b>Countries</b>
<b>Bahukalat</b>	Iran Pakistan
<b>Bangau</b>	Brunei Malaysia
<b>Dasht</b>	Pakistan Iran
<b>Irrawaddy</b>	Myanmar China India
<b>Loes</b>	Indonesia Timor-Leste
<b>Nahr El Kebir</b>	Syria Turkey
<b>Red / Song Hong</b>	China Vietnam Laos
<b>Saigon</b>	Vietnam Cambodia
<b>Sebuku</b>	Indonesia Malaysia
<b>Sembakung</b>	Indonesia Malaysia
<b>Tarim</b>	China Kyrgyzstan Pakistan Tajikistan Afghanistan
<b>Tumen</b>	China North Korea Russia
<b>Wadi Al Izziyah</b>	Lebanon Israel
<b>Yalu</b>	China North Korea



# Table VI: COUNTRIES WITH NO SHARED SURFACE WATERCOURSES

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## Africa

Cabo Verde  
Comoros  
Madagascar  
Mauritius  
São Tomé and Príncipe  
Seychelles

## Asia

Bahrain  
Japan  
Kuwait  
Maldives  
Oman  
Philippines  
Qatar  
Saudi Arabia  
Singapore  
Sri Lanka  
United Arab Emirates (UAE)  
Yemen

## Americas

Antigua and Barbuda  
Bahamas  
Barbados  
Cuba  
Dominica  
Grenada  
Jamaica  
Saint Kitts and Nevis  
Saint Lucia  
Saint Vincent and the Grenadines  
Trinidad and Tobago

## Oceania

Australia  
Federal States of Micronesia  
Fiji  
Kiribati  
Marshall Islands  
Nauru  
New Zealand  
Palau  
Samoa  
Solomon Islands  
Tonga  
Tuvalu  
Vanuatu

## Europe

Cyprus  
Iceland  
Malta  
Monaco  
San Marino

## ANNEXURE: PROCESS

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### Process of developing the WCQ

Strategic Foresight Group conceptualised the Water Cooperation Quotient through in-house research on the relationship between water and war. In November 2013, it published a report, *Water Cooperation for a Secure World*, to examine this relationship and the application of the analytical framework to the Middle East. The report was launched by HRH Prince Hassan bin Talal, then Chairman of the UN Secretary General's Advisory Board on Water. Comments on the report led to the construction of the Water Cooperation Quotient on a preliminary basis.

The first edition of the Water Cooperation Quotient was launched in Dakar, Senegal in August 2015 by a group of Ministers from the Senegal River Basin Organisation (OMVS). Later on, the document was circulated among experts for criticism and suggestions. It was discussed at consultations in Moscow, a workshop at the Nile Basin Initiative in Entebbe, a workshop at the House of Lords, London, and electronic consultations in Central America. These interactions from experts in several parts of the world helped to refine the methodology and restructure the tool. Later on operative data on the ten parameters was collected for all 146 countries with shared watercourses from public sources in four of the five UN languages - English, French, Spanish and Russian. If any facts are in variance with those used in this document because they are not available through open sources, some errors are bound to take place but utmost care was taken to minimise the probability of error for these reasons.

The list of participants at the various workshops and consultations is noted below. While SFG appreciates input received from the participants, it has drawn its own inferences for research application. The participants are therefore not responsible for the contents of this document.

#### **Roundtable at the House of Lords, London, October 2016**

1. The Right Hon Lord Alderdice, former Speaker of the Northern Ireland Parliament and Director of the Centre for the Resolution of Intractable Conflicts at Harris Manchester College, Oxford University
2. H E Danilo Turk, former President of Slovenia, Chairman of Global High Level Panel on Water and Peace
3. H E Kabine Komara, former Prime Minister of Guinea, High Commissioner of the Senegal River Basin Commission
4. Minister Pär Stenbäck, former Foreign Minister of Finland

5. Dr Joakim Harlin, Vice-Chair of UN-Water and Chief of Freshwater Ecosystems Unit at UNEP
6. Dr Uri Shani, former Water Commissioner of Israel
7. Dr Ephraim Sneh, former Health Minister and Deputy Defence Minister of Israel
8. Dr Dogan Altinbilek, Vice Chairman of World Water Council, Turkey
9. Dr Aaron Salzberg , Special Coordinator for Water Resources, State Department, USA
10. Dr Alexander Sokolov, Director of International Scientific and Educational Foresight Centre at the Higher School of Economics, National Research University, Russia
11. Prof. Andras Szöllösi-Nagy, Research Director, Institute for Advanced Studies, Hungary
12. Dr Fritz Holzwarth, Rector of UNESCO-IHE, Delft, Netherlands
13. Mr Edward Mortimer, Distinguished Fellow, All Souls College, Oxford University, UK
14. Dr David Grey, Professor of Environmental Studies at Oxford University, UK
15. Dr Aaron Wolf, Professor of Geography at College of Earth, Ocean, and Atmospheric Sciences, Oregon State University, USA
16. Dr John Nyaoro, Executive Director of Nile Basin Initiative, Uganda
17. Dr Thomas Axworthy, Secretary General, InterAction Council, Canada
18. Mr Robert Sandford, Senior Advisor on Water Issues, InterAction Council, Canada
19. Dr Mark Smith, Director of Global Water Programme, International Union for the Conservation of Nature (IUCN), Switzerland
20. Mr Jean-Louis Oliver, Secretary General, French Water Academy
21. Dr Alexander Verbeek, Senior Advisor, Stockholm Environment Institute (on sabbatical from the Netherlands Ministry for Foreign Affairs)
22. Mr Jean-Paul Penrose, Senior Adviser, Climate & Environment Department, Department for International Development, Government of UK
23. Mr Johan Gely, Head of Global Water Initiatives, Swiss Agency for Development and Cooperation, Switzerland
24. Dr. Susanne Schmeier, Coordinator, Trans-boundary Water Management, Deutsche Gesellschaft für internationale Zusammenarbeit (GIZ) , Germany
25. Sir David Richmond, Chief Executive, Brazzaville Foundation for Peace and Conservation, London
26. Dr Gareth Price, Senior Research Fellow, Asia Programme, Chatham House, London
27. Dr Daanish Mustafa, Department of Geography , King's College London, UK

### **Consultations in London, October 2016**

1. Prof Tony Allan, Emeritus Professor, King's College, London
2. Dr Naho Mirumachi, Lecturer, King's College, London
3. Prof Mark Zeitoun, Professor of Water Security and Policy, School of International Development,

University of East Anglia

4. Mr David Tickner, Chief Adviser for Freshwater, WWF-UK

### **Consultations in Moscow, September 2016**

1. Dr Tatiana Bokova, Deputy Head of Federal Agency for Water Resources, Russia
2. Mr Bo Libert, Regional Adviser on Environment, Convention on the Protection and Use of Transboundary Watercourses and International Lakes, United National Economic Commission on Europe, United Nations
3. Dr Mikhail Bolgov, Institute of Water Problems, Russian Academy of Sciences, Russia
4. Dr Liliana N Proskuryakova, Leading Research Fellow, Research Laboratory for S&T Studies Director, National Center for Academic Mobility Institute for Statistical Studies and Economics of Knowledge, Higher School of Economics, National Research University, Russia
5. Dr Alexander Sokolov, Director of International Scientific and Educational Foresight Centre at the Higher School of Economics, National Research University, Russia

### **Workshop in Entebbe, August 2016**

1. Ms Judith Enaw, Secretary General, CICOS
2. Dr Charles Biney, Executive Secretary, Volta Basin Authority
3. Mr Collin Zwane, Chief Executive Officer, Komati Basin Water Authority
4. Ms Aminata Sokhna Diop, Chief of External Finance Division, OMVS
5. Mr Kabir Silla Sonko, Director of Environment and Sustainable Department, OMVG
6. Mr Rapule Pule, Water Resources Specialist, ORASECOM
7. Dr John Rao Nyaoro, Executive Director, Nile Basin Initiative
8. Ms Dorothy Kaggwa, Head Strategic Planning and Management, Nile Basin Initiative
9. Dr Mohsen Alarabawy, Water Resources Management Specialist, Nile Basin Initiative
10. Ms Jane Baitwa Kyomuhendo, Regional Communication Specialist, Nile Basin Initiative
11. Prof Dr Hasan Z Sarikaya, former Undersecretary, Ministry of Forestry and Environment, Turkey
12. Mr Koussai Quteishat, Former Secretary General, Ministry of Water and Irrigation and Water Authority of Jordan, Jordan
13. Dr Maysoon Zoubi, Former Secretary General, Ministry of Water Resources, Jordan
14. Dr Muhammad Saidam, Chief Science Officer, Royal Scientific Society, Jordan
15. Prof Dr Ahmet Saatci, President, Turkish Water Institute, Turkey
16. Dr Sadeq Jawad, Adviser to the Prime Minister on Water Issues, Iraq
17. Mr Raad Abdul Jalil, Director General, Ministry of Water Resources, Iraq

18. Dr Maha Alziydi, Technical Expert, Ministry of Water Resources, Iraq
19. Mr Abdurrahman Uluirmak, Deputy General Director Ministry of Forestry and Water Affairs  
General Directorate for Water Management, Turkey
20. Dr Ramadhan H. Mohammed, General Director, DUHOK-ECO, Iraq
21. Dr Ibrahim Gurer, Faculty of Engineering, Gazi University, Turkey
22. Prof Dr Ali Unal Sorman, Professor, Middle East Technical University, Turkey
23. Dr Dursun Yildiz, Director of Hydropolitics Academy Association, Turkey
24. Mr Hussam Hawwa, Difaf Director, Agr. Eng. / Water Resources Management
25. Dr Ghadah M Al-aammeli, Manager, Almada Group for Media, Culture & Arts, Iraq
26. Mr Adel Fakhir, Baghdad International News Agency, Iraq
27. Mr Duraid Abhraham, Al Zawraa newspaper, Iraq
28. Ms Hana Namrouqa, Senior Columnist, Jordan Times, Jordan
29. Mr Antoine Ajoury, Head, International News department, L'Orient-Le Jour, Lebanon
30. Ms Mey Sayegh, International News Editor, Al-Joumhouria, Lebanon
31. Ms Marwa Osman Khreiss, Leading Journalist, Lebanon

### **Consultations in Central America**

1. Miriam Hirezi, Secretaria Ejecutiva, TRIFINIO Plan, El Salvador
2. Nazareth Porras, Oficial Técnica-Coordinadora BRIDGE-Mesoamérica, Costa Rica
3. Maximiliano Campos, Senior Water Specialist, Organization of American States, Washington

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## Notes

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## About Strategic Foresight Group

Strategic Foresight Group (SFG) has launched a number of global and regional initiatives to use water as a force for peace. There are 286 shared river basins in the world. Over 2 billion people live in shared river basins of the developing world. Substantial improvements in trans-boundary water relations can lead to better utilisation of this vital natural resource, reduce the risk of conflict, and generate a peace dividend of several billion dollars.

SFG has played a critical role in recognition of the strategic importance of water by important countries including the convening of the first ever debate on water, peace and security in the **United Nations Security Council**. It has created the **Water Cooperation Quotient** to measure the intensity of cooperation between countries sharing water resources. It has cooperated with the Government of Switzerland to establish the **Global High Level Panel on Water and Peace**, co-convened by 15 countries, to recommend worldwide architecture for positive water and peace linkages. SFG has collaborated with the Brazzaville Foundation for Peace and Conservation to conceive the **Congo Basin Blue Fund** for water cooperation among 11 countries of the Congo Basin in Africa. It has formed the **Blue Peace Community** of champions of trans-boundary water cooperation in the Middle East at a time when violent conflicts have engulfed the region. It has sensitised several million people from all continents through articles on water cooperation in over **100 different newspapers** in various languages. It has also been engaged in regional initiatives for water diplomacy in Africa, Asia and the Middle East.

Strategic Foresight Group is an international think-tank based in Mumbai which is known for creating new forms of intellectual capital. Its recommendations have been discussed in the United Nations, World Bank, World Economic Forum (Davos), European Parliament, Indian Parliament, UK House of Commons and House of Lords, UN Alliance of Civilizations, among other institutions from around the world.

In addition to water diplomacy, SFG is known for its pioneering work in conflict resolution, deconstructing terror, scenario planning, and mapping global paradigm shifts.



**“This ground-breaking report is the only document that offers analysis on the risk of conflict and potential for cooperation among the 146 countries that have shared or transboundary rivers. The Water Cooperation Quotient is an effective decision-making tool for water cooperation and a badly needed barometer for assessing risks of war; one that the InterAction Council urges be employed around the world to promote peace, ensure security and improve human and planetary health through cooperation over shared waters, now and in the future.”**

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**Olusegun Obasanjo**

President of Nigeria, 1999-2007

**Bertie Ahern**

Prime Minister of Ireland, 1997-2008

**Co-chairs of the InterAction Council**

**“This fascinating report provides a unique insight into the state of transboundary water cooperation worldwide and offers a valuable instrument for management of disputes and prevention of conflict. It should become a standard manual in the “toolbox” of policy makers and diplomats and serve in their efforts to devise effective conflict prevention strategies. Moreover, the water cooperation quotient should inspire policy makers to think and use the full potential of water cooperation for the well being of their peoples.”**

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**Danilo Turk**

President of Slovenia, 2007-2012

Chairman of the Global High Level Panel on Water and Peace

**“This report offers detailed and unassailable analysis on the risk of conflict and same time outlines possibilities for potential cooperation among the 146 countries that share transboundary rivers. The Water Cooperation Quotient is an effective conflict prevention and peace-making tool for water cooperation and it should be present on the mind and action of every decision-making authority around the world.”**

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**J. Ramos-Horta**

President of Timor-Leste, 2007-2012

Prime Minister of Timor-Leste, 2006-2007

Nobel Peace Prize Laureate, 1996

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