



Lessons Learned, Lessons Shared

GLOBAL PERSPECTIVES FROM TREATIES ON TRANSBOUNDARY WATERS

*2020 International Conference on the Nile and Grand
Ethiopian Renaissance Dam: Science, Conflict
Resolution and Cooperation*

Florida International University

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DISCLAIMER

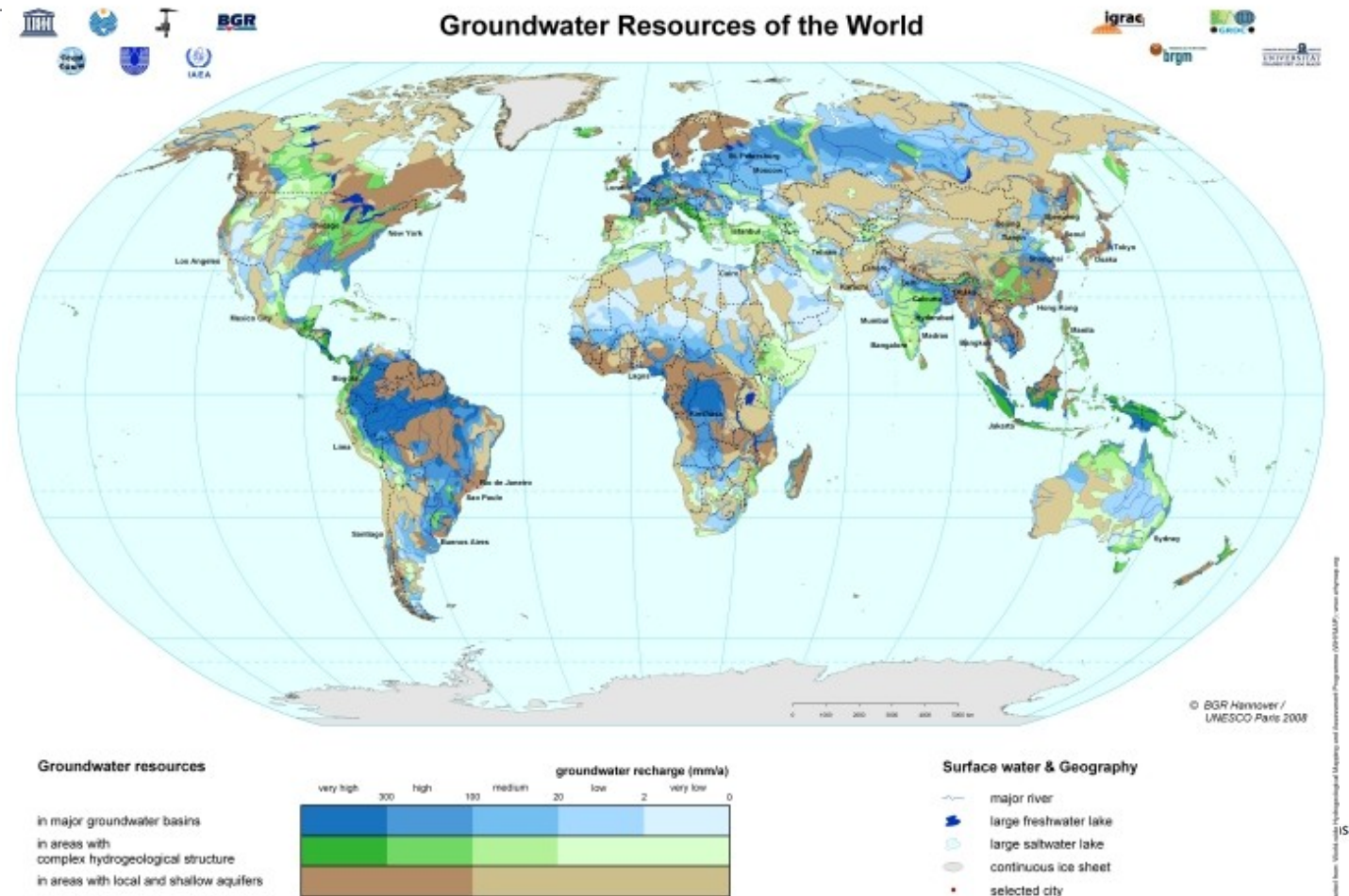
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OUTLINE

- ❑ Transboundary water resources
- ❑ The emergence of regulatory framework
- ❑ Transboundary water treaties
- ❑ The global experience of transboundary water resources management
- ❑ Lessons learned

Transboundary Water Resources

- ✓ **270** transboundary river basins.
- ✓ **200** transboundary aquifers.
- ✓ **39** countries have more than 90% of their territory within one or more transboundary river basins.
- ✓ **21** countries lie entirely within one or more of these watersheds.
- ✓ **40%** of the world population lives in them.



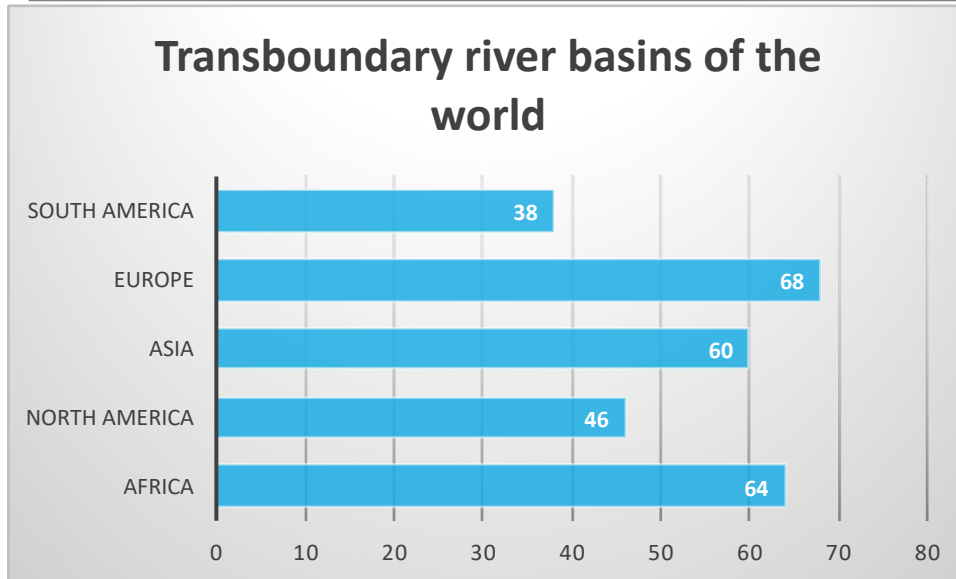
UNEP GEF International Waters: <https://www.grida.no/publications/230>

https://www.whymap.org/whymap/EN/Home/gw_world_g.html

<https://transboundarywaters.science.oregonstate.edu/database-and-research/galleries/global-map-gallery>

Nebiyu Daniel Tiruneh: 2020 International Conference on the Nile and Grand Ethiopian Renaissance Dam: Science,

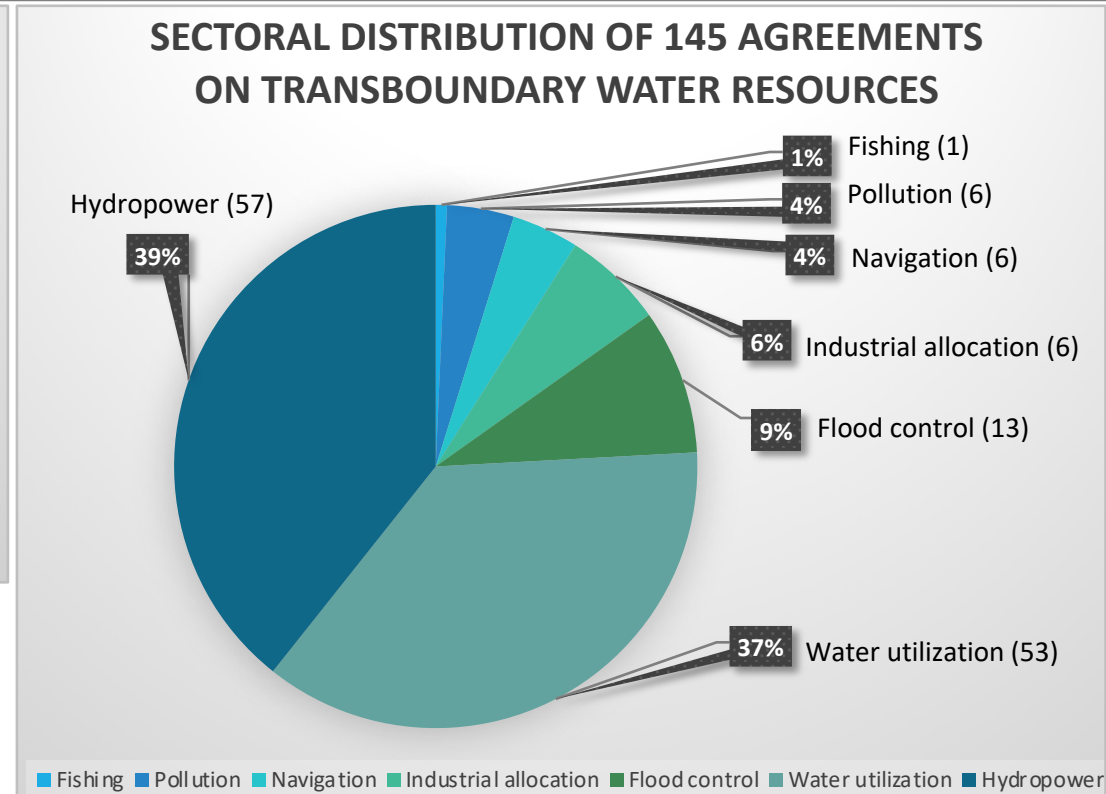
Global Figures on Transboundary Waters



148 countries : Territory within one or more transboundary river basins

39 countries : More than 90% of their territory within one or more transboundary river basins

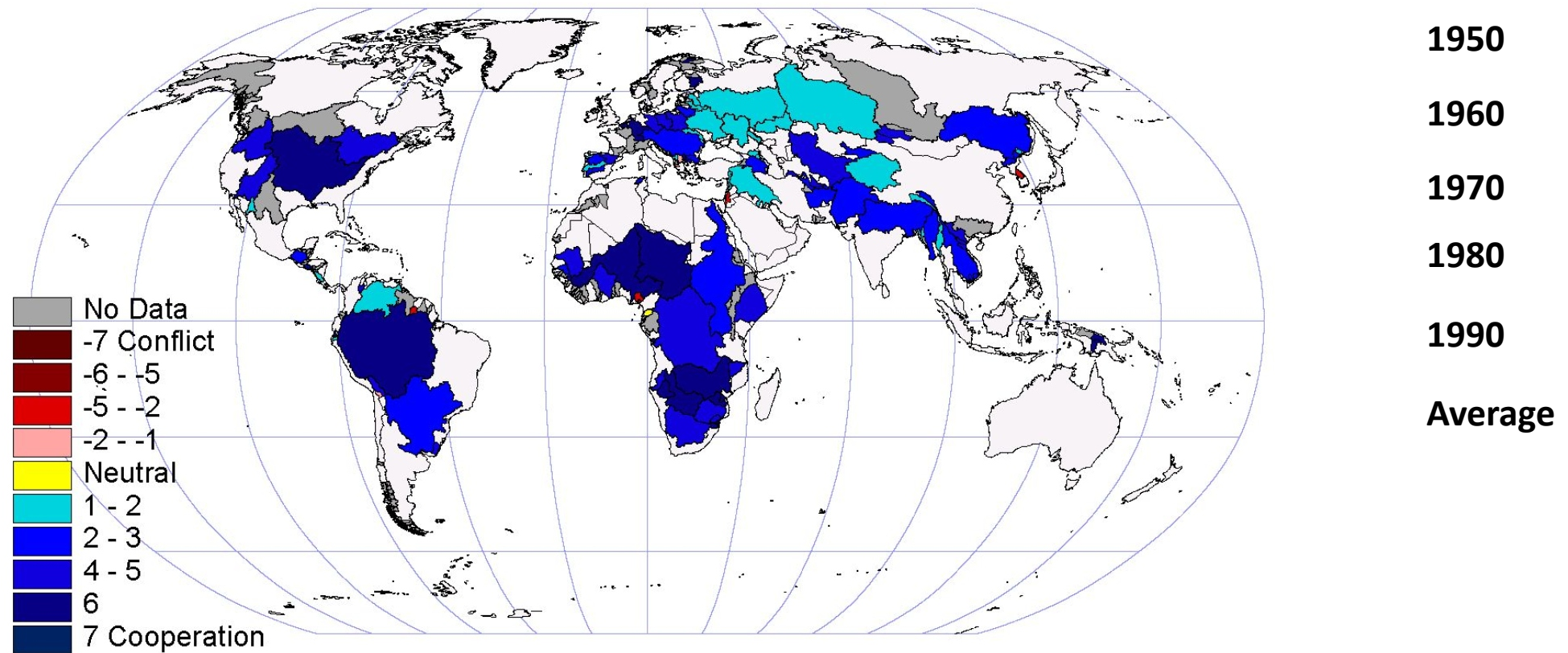
21 countries : Within one or more of these watersheds



Almost **450** agreements

On international waters signed between **1820 and 2007**

Historic conflict and cooperative events



The Emergence of Regulatory Framework to Manage Transboundary Waters

- ✓ More than 300 bilateral and multilateral agreements since 1814.
- ✓ About 37 incidents of acute conflict over water since 1948.
 - ✓ The Indus, The Jordan, The Columbia
- ✓ Approximately 295 international water agreements were negotiated and signed in the same period.
- ✓ The International Law Association (ILA) in 1954 embarked on an ambitious plan to study the legal aspects of the use of the waters of international drainage basins
 - ✓ The Indus
 - ✓ The Jordan
 - ✓ The Nile

Treaties and Agreements

Treaties and Other International Agreements

❑ Major Global and Regional Agreements

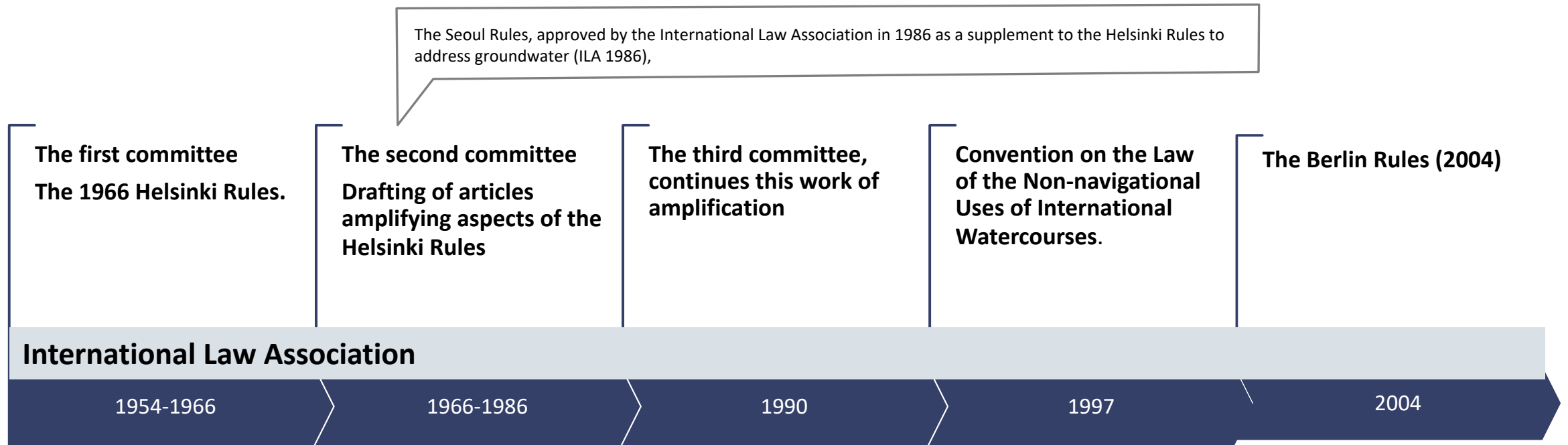
- Convention and Statute on the Regime of Navigable Waterways of International Concern Barcelona, April 20, 1921)
- Convention on Wetlands of International Importance especially as Waterfowl Habitat (Ramsar, February 2, 1971)
- Convention on the Protection and Use of Transboundary Watercourses and International Lakes (Helsinki 1992)
- Protocol on Water and Health to the 1992 Convention on the Protection and Use of Transboundary Watercourses and International Lakes

❑ United Nations Convention on the Law of the Non-Navigational Uses of International Watercourses – Sources of Regional, Multilateral and Bilateral Agreements

❑ Non-Treaty Instruments: The Helsinki Rules, The Berlin Rules, The Seoul Rules,...

Timeline of Water Rules by ILA

NON-TREATY INSTRUMENTS



International Rules and Conventions

The Helsinki Rules

Requires the reasonable and equitable sharing of the benefits of the waters of an international drainage basin,

is seen as the one best suited for achieving the rational management of these waters.

- international drainage basins as indivisible hydrologic units
- includes all tributaries (including tributary groundwater) within the concept of “drainage basin”
- first formulated the phrase “equitable utilization

The Berlin Rules

- Participatory water management
- Conjunctive management
- Integrated management
- Sustainability
- Minimization of environmental harm

Three rules relating to water in a strictly international or transboundary context:

- Cooperation
- Equitable utilization and
- Avoidance of transboundary harm

THE GLOBAL EXPERIENCE OF TRANSBOUNDARY WATER RESOURCES MANAGEMENT

From Database of treaties

ECOLEX The gateway to environmental law

Type of Treaties	Number of Treaties (Search Results)
River	172
Lake	68
Sea	655
Ocean	193
Nile River	5
Amazon River	1
Colorado River	21

TOTAL 1115 as of June 2020

ECOLEX The gateway to environmental law

From Database of treaties

FAO Legal Office WATER TREATIES

Geographical Area	Number of Treaties
Africa	103
AFRICA FAO	69
Alps	53
Amazonia	32
Americas	85
Aral Sea	22
Arctic	62
Asia	181
ASIA AND THE PACIFIC	69
Atlantic Ocean Islands	3
Benelux	13
Black Sea	60
Caribbean	73
Caspian Sea	46
Central Africa	21
Central America	29
Central Asia	151
CIS (Commonwealth of Independent States)	64
East Asian Seas	19
East Pacific	52

TOTAL 1207 as of June 2020
(FAO Legal Office WATER TREATIES Database)

Colorado River Basin

Rivers Colorado, Rio Grande, Tijuana, Yaqui are rivers shared by Mexico and the United States of America.

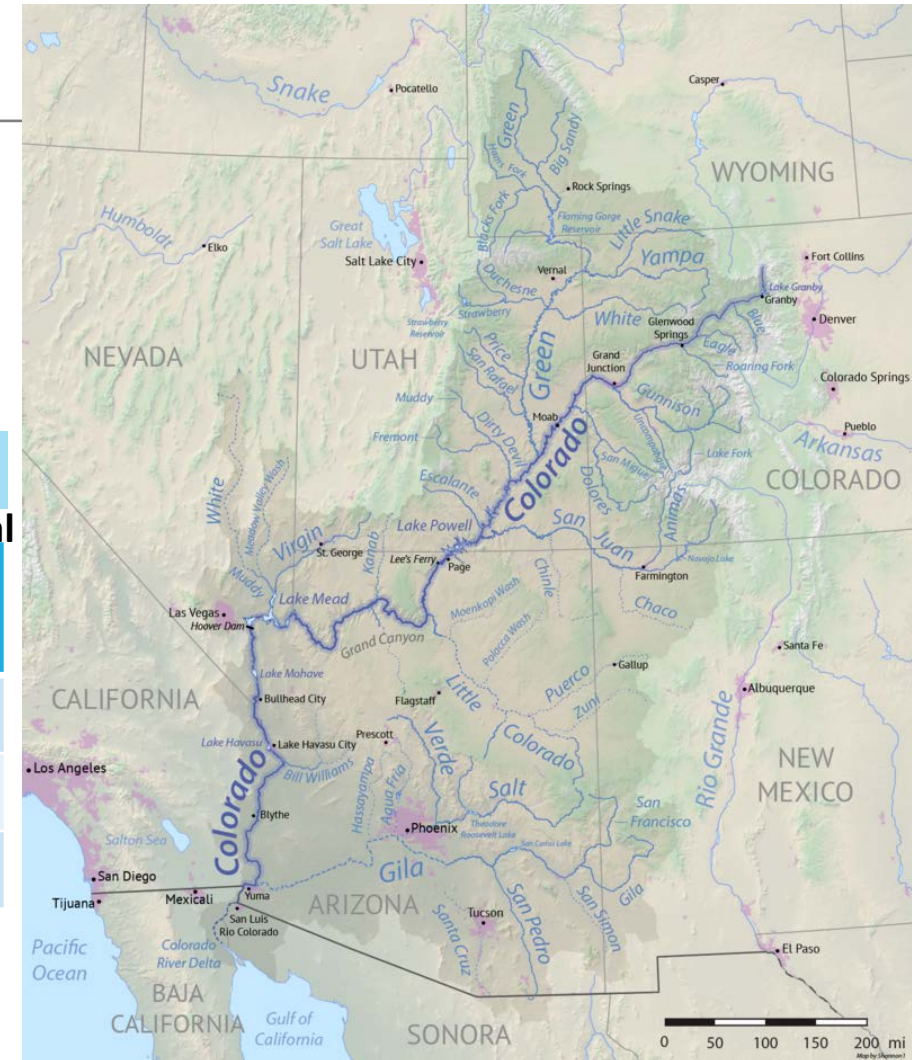
The International Boundary and Water Commission (IBWC) - Comisión Internacional de Límites y Aguas entre México y Estados Unidos (CILA) govern all these rivers shared by the two countries.

Interstate Compact signed in 1922

Upper Basin States, 7.5×10^6 ac-ft/year Total Lower Basin States, 7.5×10^6 ac-ft/year Total

State	Allocation (%)	Allocation x10 ⁶ ac-ft	State	Allocation (%)	Allocation x10 ⁶ ac-ft
Colorado	51.8	3.86	California	58.7	4.4
Utah	23.0	1.71	Arizona	37.3	2.8
Wyoming	14.9	1.04	Nevada	4.0	0.3
New Mexico	11.3	0.84	Treaty signed in 1944 Mexico 1.5x10⁶ ac-ft/year		
Arizona	0.5	0.05			

Treaty signed in 1944
Mexico 1.5×10^6 ac-ft/year



Danube River Basin

Governed by multilateral agreements since 1856

Non-navigational use governed by the Convention on Cooperation for the Protection and Sustainable Use of the Danube (the “Convention” or “DRPC”), signed on 29 June 1994 and entered into force in October 1998.

DRPC established the International Commission for the Protection of the Danube River (“ICPDR” or “Commission”).

The DRPC and ICPDR Contracting Parties are Austria, Bosnia-Herzegovina, Bulgaria, Croatia, the Czech Republic, Germany, Hungary, Moldova, Montenegro, Romania, Serbia, the Slovak Republic, Slovenia, and Ukraine.

Provides mechanisms for:

- ☐ Dispute Resolution,
- ☐ Data Information Sharing, Exchange, and Harmonization
- ☐ Funding and Financing
- ☐ Benefit Sharing
- ☐ Compliance and Monitoring



DANUBE
Area: 797,335 km²
Countries
Ukraine; Romania;
Albania; Italy;
Czech Republic;
Kosovo; Poland;
Montenegro;
Macedonia;
Moldova; Slovenia;
Austria; Croatia;
Bosnia and
Herzegovina;
Hungary;
Switzerland;
Germany; Republic
of Serbia; Slovakia;
Bulgaria

Jordan River Basin

- ❑ Diverse ecosystem, extreme seasonal and annual variability of river flow (ex- 40% of annual flow in February, but 3-4% in summer and autumn when needed most).
- ❑ Surface water 35%, groundwater 56% of the water resources of the basin.
- ❑ Several dams on the river (IR, HY, WS, FP, RE, NAV)
- ❑ Water quality an issue (esp. Lake Tiberias)
- ❑ The 1994 peace agreement between Jordan and Israel has provisions for the alleviation of water shortages → created a Joint Water Committee (JWC).
- ❑ The treaty specifies allocations of the Yarmouk River and groundwater abstraction.
- ❑ includes other alternative and innovative ways of sharing resources.



Upper Tributaries

Hasbani: Emerging in Lebanon, flowing mostly in Lebanon.

Banyas: Emerging and flowing in Syria.

Dan: Emerging and flowing inside Israel.

The three tributaries meet at a location inside Israel and form the beginning of the Jordan River

Lower Tributaries

Yarmouk: Four tributaries in Syria, one in Jordan, flowing in a gorge where the common borders are located. Downstream it forms the borders between Jordan and Israel.

Area = 18,500 km²

40% - Jordan

37% - Israel

10% - Syria

9% - West Bank

4% - Lebanon

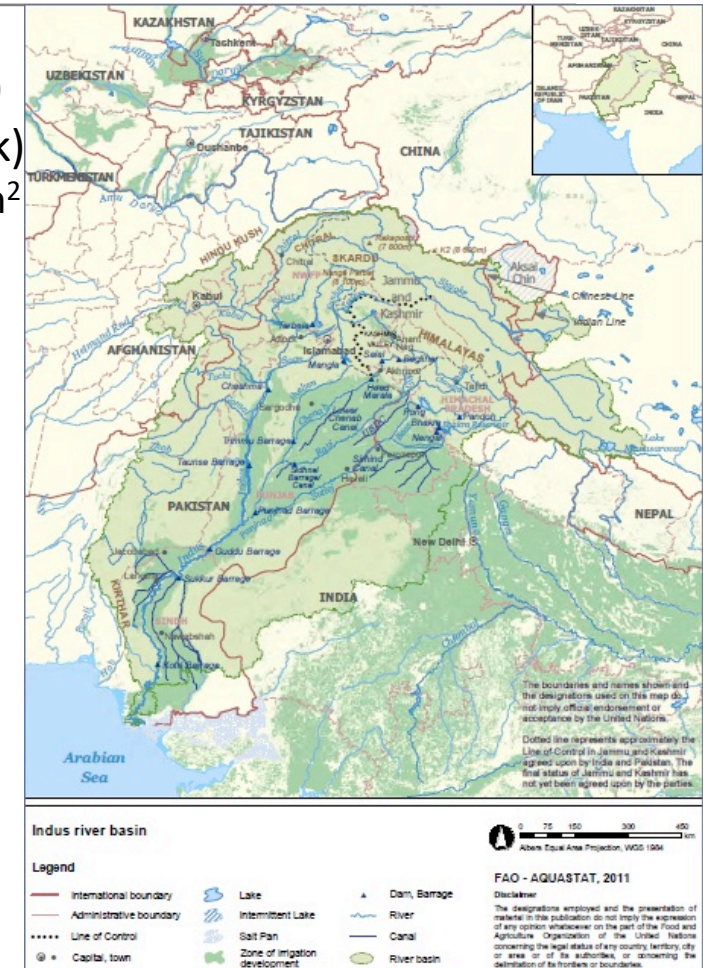
Indus River Basin

- ❑ Diverse ecosystem that extends from the Himalayas to the dry alluvial plains of Sindh province in Pakistan.
- ❑ Climate varies –subtropical to semi-arid.
- ❑ Surface water: glacier melt, snowmelt, rainfall and runoff.
- ❑ Extensive aquifer (16.2 million ha.)
- ❑ Irrigation boundaries resulted in Indo-Pakistan water dispute (1948) [India unilaterally cut off supply to Pakistan canals].
- ❑ Indus Water Treaty (1960).
- ❑ Indus Basin Project (1960-1971): 8 canals, 6 barrages, 3 dams, 4 remodeling of existing works.
- ❑ Extensive developments resulted in Pakistan owning the world's largest contiguous irrigation system.

Two main tributaries
Kabul (on the right bank)
Panjnad (on the left bank)

Area = 1.12 million km²
47% - Pakistan
39% - India
8% - China
6% - Afghanistan

- The Sutlej Valley Project (1933) [4 barrages, 2 canals]
- Kotri, Taunsa and Guddu barrages (1958) [controlled irrigation]
- The Indus Basin Project (1960-1971) two major storage reservoirs Jhelum (Mangla) and Indus (Tarbela)



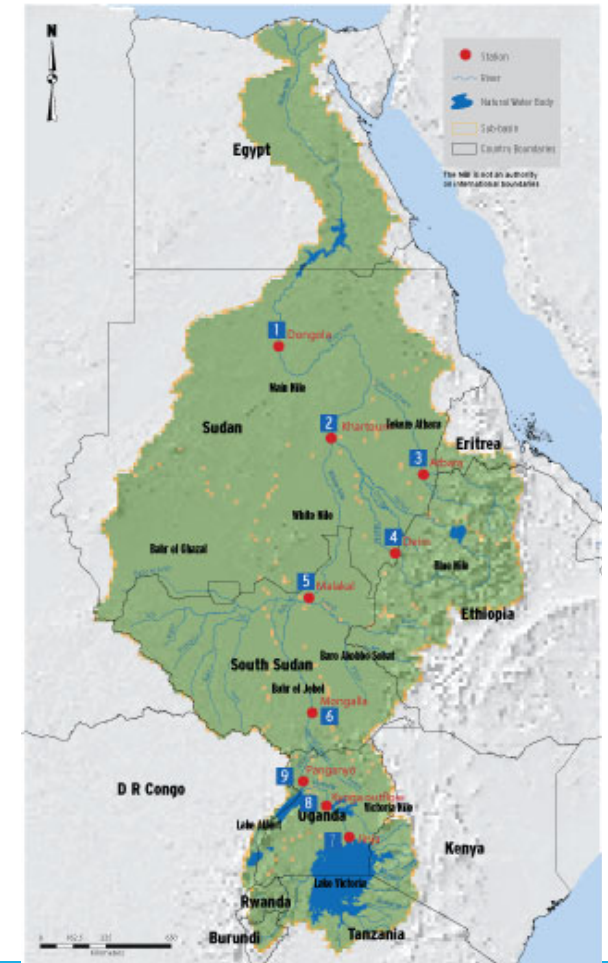
Nile River Basin

Country	Estimated Total Area		Area in the Nile Basin	
	(km ²)	(km ²)	(of total basin Area) (%)	(of total country area) (%)
Burundi	27,834	13,860	0.44	49.39
DR Congo	2,345,410	21,796	0.69	0.91
Egypt	996,960	302,452	9.52	30.34
Eritrea	121,722	25,697	0.81	21.11
Ethiopia	1,144,035	365,318	11.50	31.93
Kenya	593,116	51,363	1.62	8.66
Rwanda	26,338	20,625	0.65	84.01
South Sudan	644,329	620,626	19.54	97.71
Sudan	1,864,049	1,396,230	43.95	74.90
Tanzania	945,000	118,507	3.73	12.69
Uganda	241,248	240,067	7.56	99.51
Total		3,176,541		

River Length: 6,695 km
Area of the Nile Basin: 3,176,541 km²
Population: 257 million

Eleven countries share the river: Burundi, the Democratic Republic of the Congo, Egypt, Eritrea, Ethiopia, Kenya, Rwanda, the Sudan, South Sudan, the United Republic of Tanzania and Uganda.

The Nile Basin Initiative (NBI) is an inter-governmental partnership of 10 Nile Basin countries namely; Burundi, DR Congo, Egypt, Ethiopia, Kenya, Rwanda, South Sudan, The Sudan, Tanzania and Uganda, established on 22nd February, 1999. Eritrea participates as an observer.



Orange-Senqu River Basin

The total Orange-Senqu River basin extends over four countries, Botswana, Lesotho, Namibia, and South Africa

Total Area = 1,000,000 km²

South Africa: 64.2% Namibia: 24.5%

Botswana: 7.9% Lesotho: 3.4%

'Agreement for the Establishment of the Orange-Senqu Commission' (November 3, 2000)

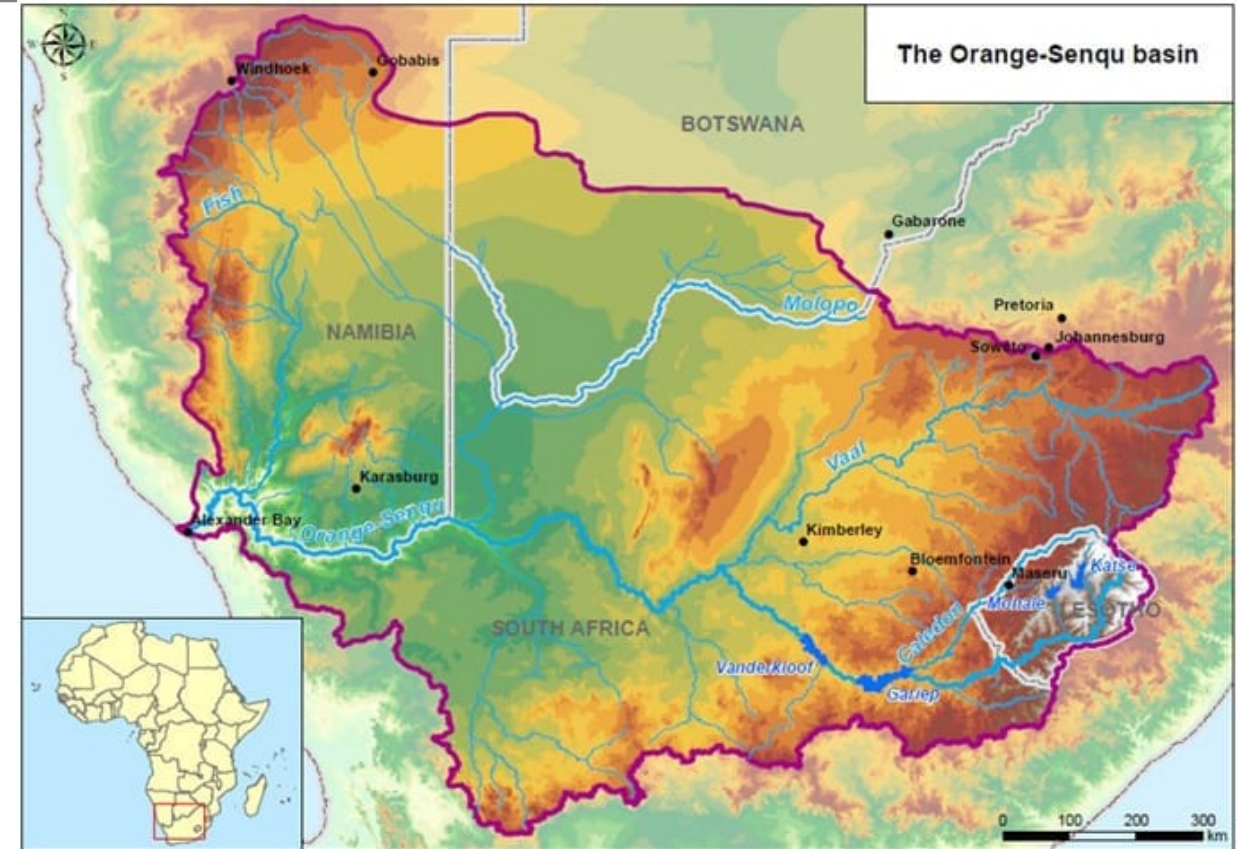
The Orange-Senqu River Commission (ORASECOM) promotes the equitable and sustainable development of the resources of the Orange-Senqu River.

ORASECOM agreement refers to, and recognizes the following agreements:

- Helsinki Rules (1966)

- UN Convention on Non-Navigational Uses of International Watercourses (1997)

- The SADC Revised Protocol on Shared Watercourse Systems (2000)



QUANTIFYING COOPERATION

SUPPORTING MECHANISM TO ESTABLISH A DECISION SUPPORT TOOL

Water Cooperation Quotient

- | | |
|---|--|
| <input type="checkbox"/> Agreement | <input type="checkbox"/> Floods, droughts and ecosystem protection |
| <input type="checkbox"/> Communication mechanism | <input type="checkbox"/> Water infrastructure |
| <input type="checkbox"/> Technical projects | <input type="checkbox"/> Inclusion |
| <input type="checkbox"/> Exchange of data | <input type="checkbox"/> Political commitment |
| <input type="checkbox"/> Alternative dispute resolution | <input type="checkbox"/> Institutional functioning |

The WCQ distinguishes between:

- basic and active water cooperation
- technical and political dynamics and
- routine and effective actions

WCQ of a riparian nation is computed using ten parameters. These parameters are indicative of water cooperation in the technical and the political realm.

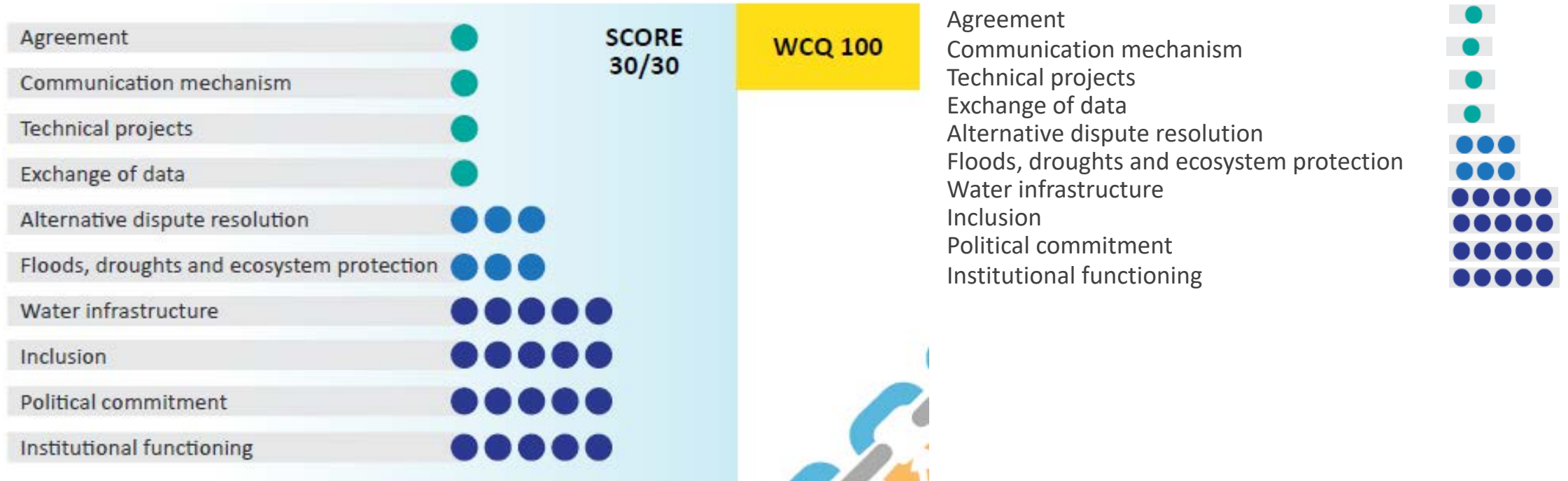
Riparian countries with

WCQ < 23.33 are likely to face the risk of war.

WCQ ≥ 50 likely to enjoy a relatively peaceful and stable relationship and zero risk of war.

Scoring and WCQ

Total Score 30

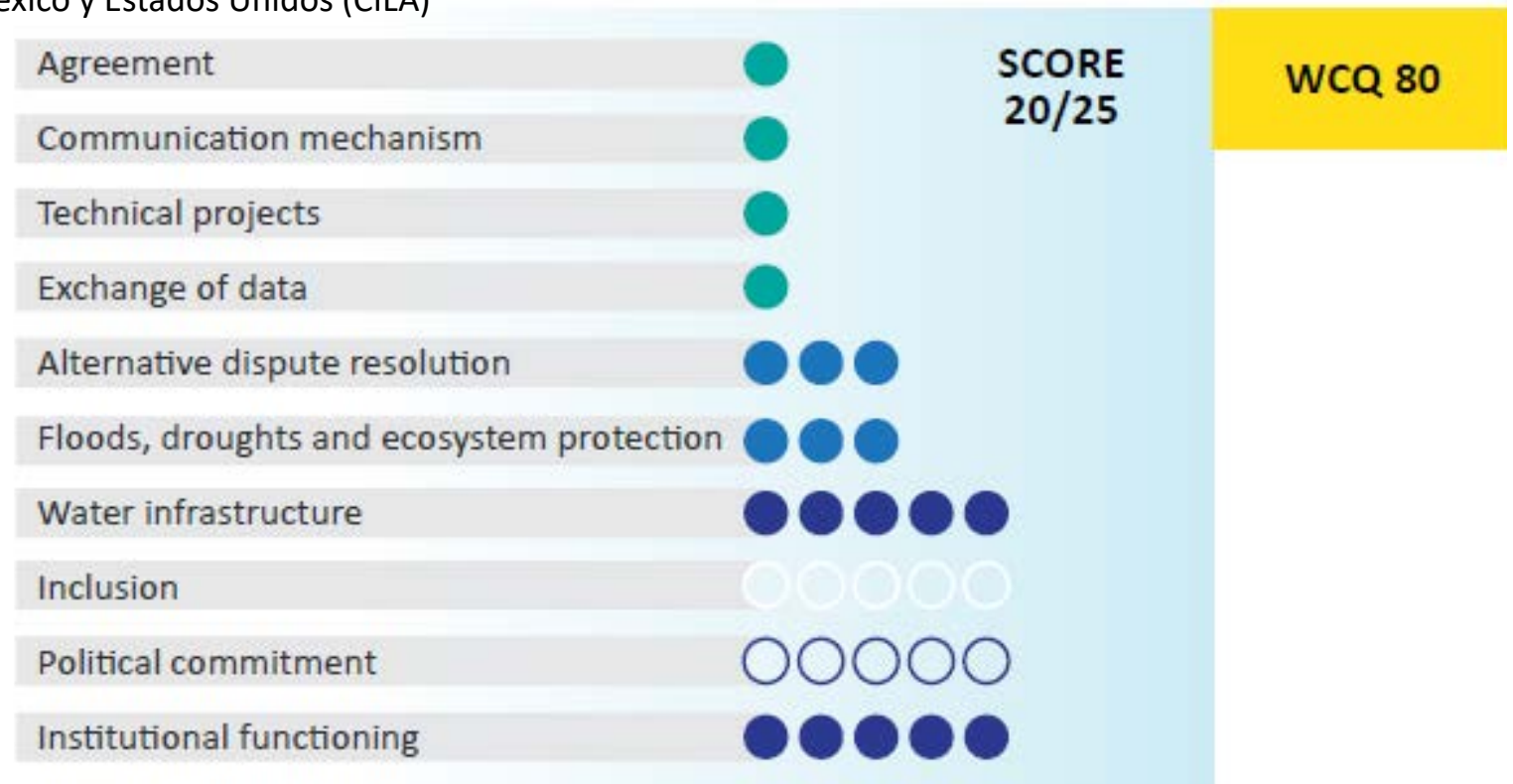


WCQ Comparison: Colorado River Basin

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)

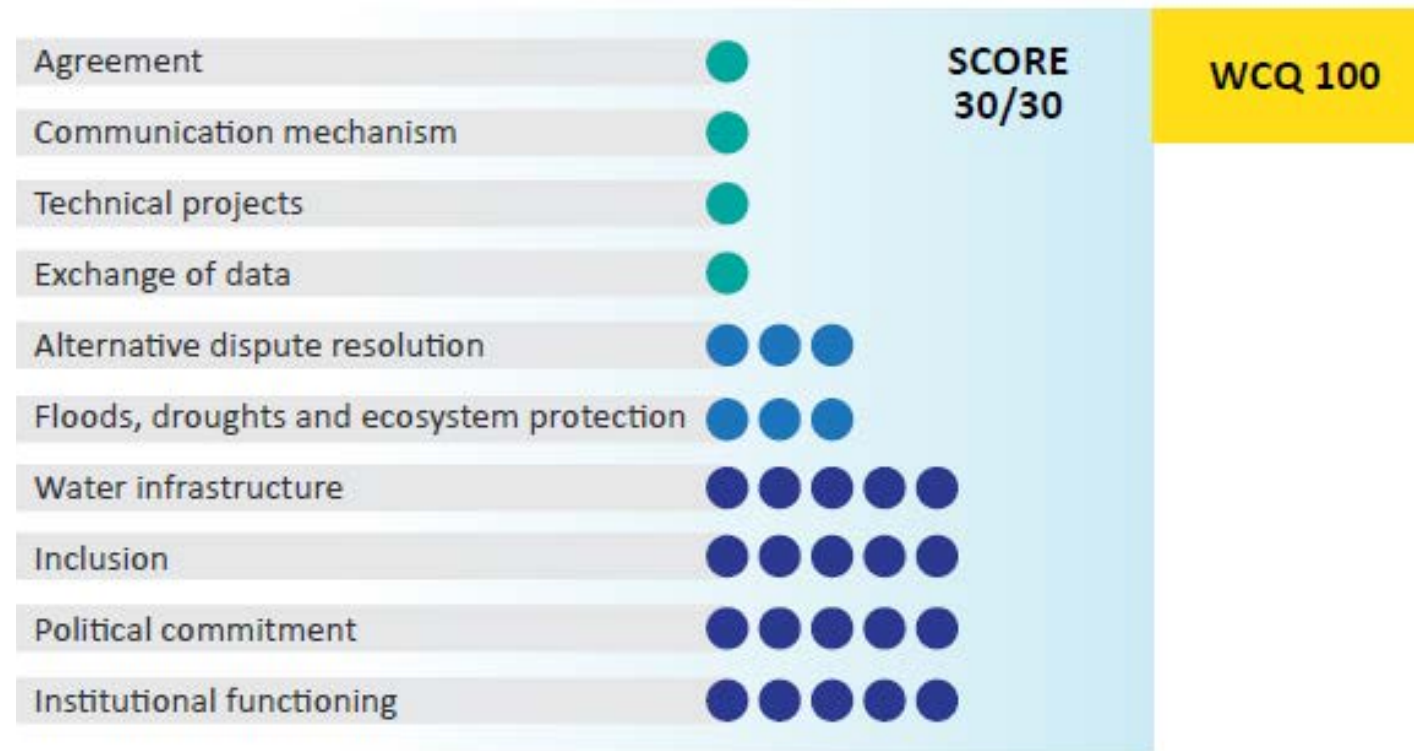


WCQ Comparison: Danube River Basin

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)



WCQ Comparison: Jordan River Basin

Jordan River*

Countries: Israel, Jordan, Lebanon, Syria**

Authority:

Israel-Jordan: Israeli-Jordanian Joint Water Committee

Israel-Lebanon: No cooperation

	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
SCORE	17/30	0/30
WCQ	56.67	0

WCQ Comparison: Indus River Basin

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
SCORE	6/30	0/30	1/30
WCQ	20	0	3.33

WCQ Comparison: Nile River Basin

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)

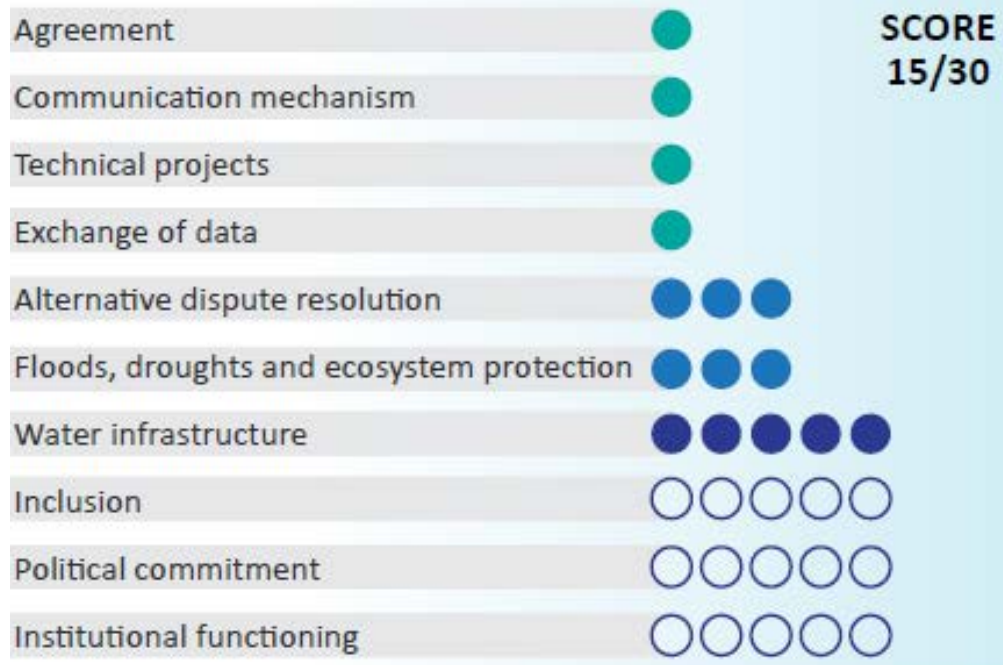
	NBI	PJTC
Agreement	1	1
Communication mechanism	1	1
Technical projects	1	1
Exchange of data	1	1
Alternative dispute resolution	0	0
Floods, droughts and ecosystem protection	3	3
Water infrastructure	0	0
Inclusion	0	0
Political commitment	0	5
Institutional functioning	5	5
SCORE	12/30	17/30
WCQ	40	56.67

WCQ Comparison: Okavango and Orange

Okavango **WCQ 50**

Countries: Angola, Botswana, Namibia, Zimbabwe*

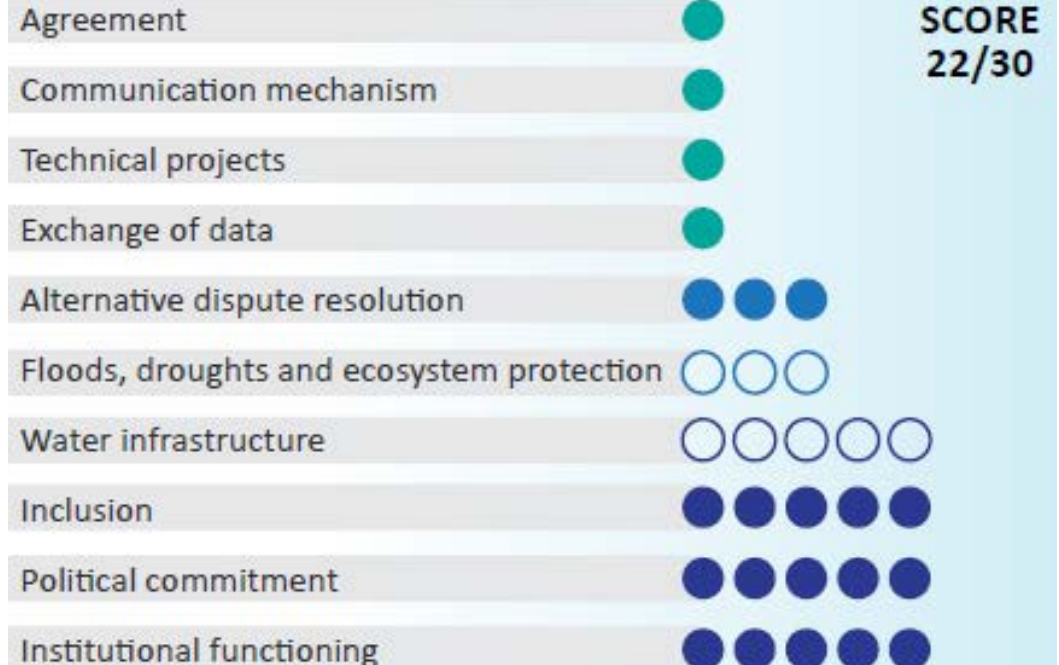
Authority: Permanent Okavango River Basin Water Commission (OKACOM)



Orange **WCQ 73.33**

Countries: Botswana, Lesotho, Namibia, South Africa

Authority: Orange-Senqu River Commission (ORASECOM)



Lessons learned

- ❑ Water resources have been bones of contention as well as entry points of overall cooperation.
- ❑ Equitable and reasonable sharing is a core principle that needs to be an integral component of agreements.
- ❑ Agreements are absolutely necessary and delays are the forebearers of wasted opportunities in terms of cooperative economic development.
- ❑ It is important to have a regional sustainable view of water resources development.
- ❑ International cooperation and treaty mechanisms provide a good starting point for regional cooperation agreements
- ❑ Treaties need to have clearly defined arbitration rules and remedial measures
- ❑ Sharing both costs and benefits enhances cooperation.
- ❑ Climate change and ecosystem considerations need to be addressed in regional agreements
- ❑ It is important to contextualize water use on the basis of appropriate technology and resource development.

Points to ponder

- ✓ Transboundary lake and river basins account for an estimated 60 per cent of global freshwater flow and is home to 40 per cent of the world's population. ([UN-Water: Transboundary Waters: Sharing Benefits, Sharing Responsibilities, 2008](#))
- ✓ An estimated 148 states have international basins within their territory, and 21 countries lie entirely within them. ([4th UN World Water Development Report, 2012](#))
- ✓ Around 60 per cent of the world's international river basins lack any type of cooperative management framework. ([4th UN World Water Development Report, 2012](#))
- ✓ In the 20th century, only seven minor skirmishes took place between nations over shared water resources, while over 300 treaties were signed during the same period of time. ([UN-Water: Transboundary Waters: Sharing Benefits, Sharing Responsibilities, 2008](#))
- ✓ There are numerous examples where transboundary waters have proved to be a source of cooperation rather than conflict. ([4th UN World Water Development Report, 2012](#)). However, failure to engage the basin hegemon constructively will hamper effective cooperation on transboundary waters. ([SIWI: Addressing Power Asymmetry: How Transboundary Water Management May Serve to Reduce Poverty, 2011](#))
- ✓ There are several ways that improved transboundary water management arrangements may bring about benefits for poor people living within shared basins. More equitable and efficient water sharing amongst farmers across borders, for example, can lead to more sustainable water use and more secure yields. ([SIWI: Addressing Power Asymmetry: How Transboundary Water Management May Serve to Reduce Poverty, 2011](#))

Thank You