

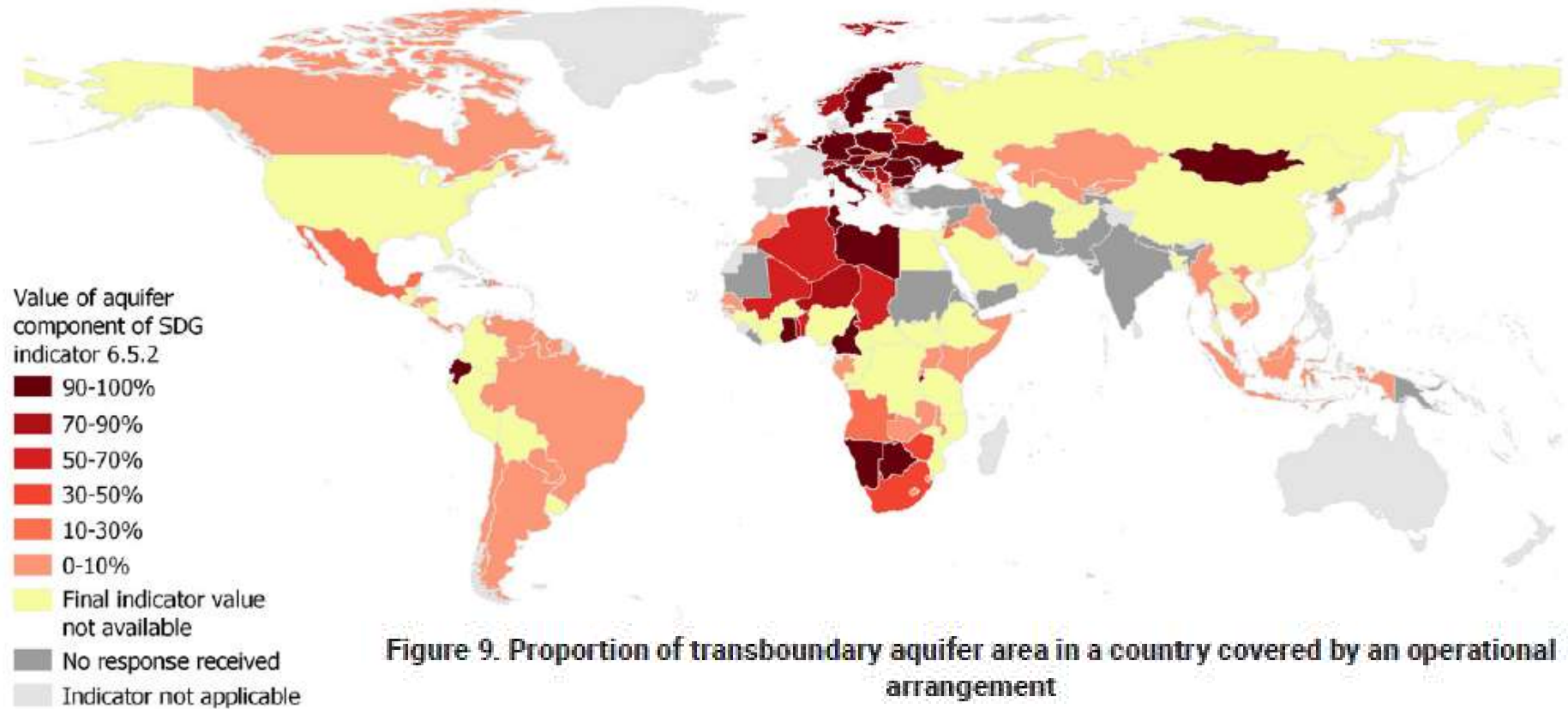
Challenges and good practices about the exchange of data and information on transboundary groundwater

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International Groundwater Resources Assessment Centre

The status of TBA cooperation



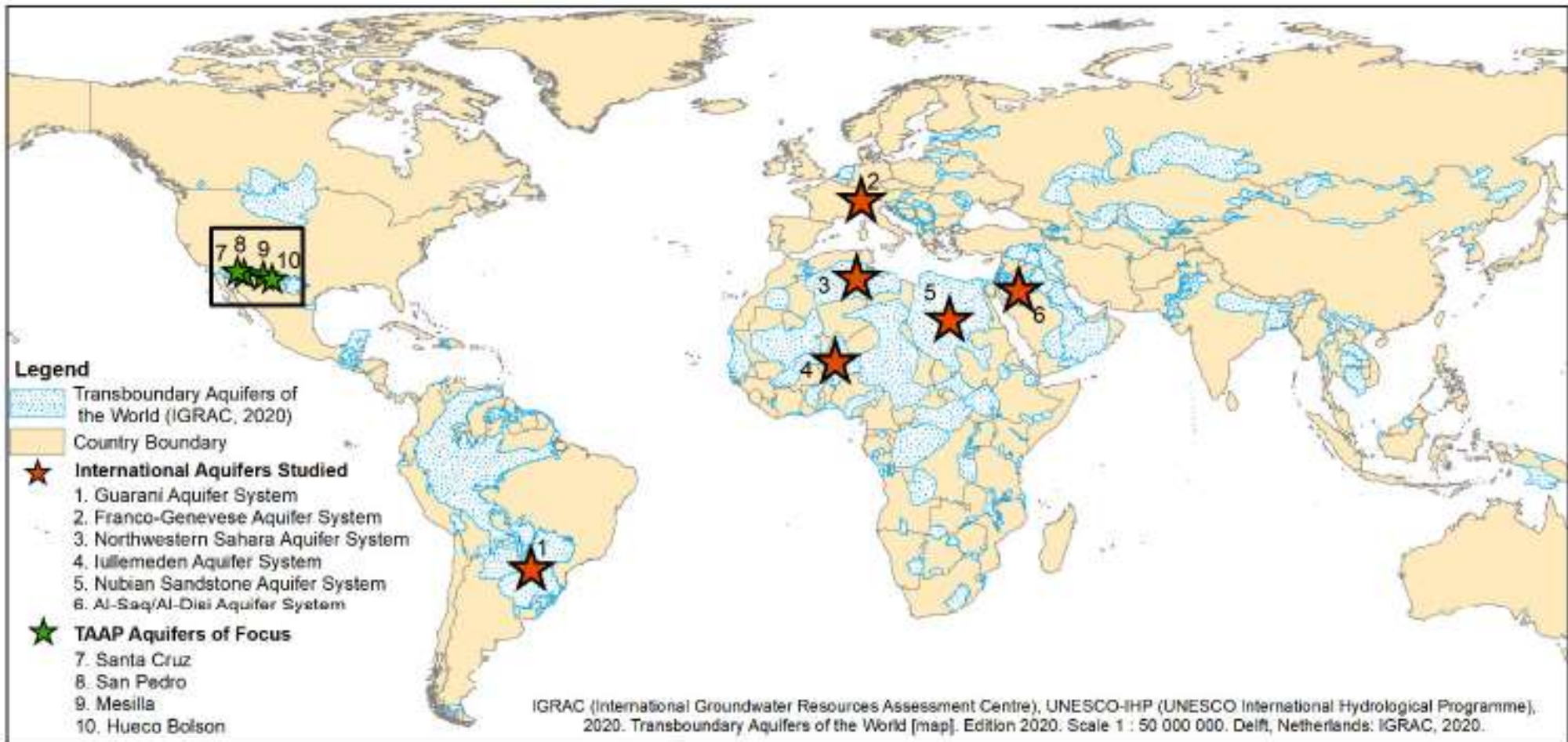
According to the SDG indicator 6.5.2 methodology, an aquifer can be considered in the computation of the indicator value if: i) it is covered by an aquifer-specific arrangement; ii) it is covered under arrangements initially developed for a particular river basin that also include groundwater/aquifers, or in some cases, bilateral arrangements covering all transboundary waters.²³

Only 12 countries report having a total of eight aquifer-specific arrangements in place.^{24, 25} In most cases, countries reported under the second modality.

UNECE & UNESCO-IHP (2021)

https://unece.org/sites/default/files/2021-12/SDG652_2021_2nd_Progress_Report_ENG_web.pdf

- These are:
 - i. the North-Western Sahara Aquifer System Consultation Mechanism;
 - ii. the Guaraní Aquifer Agreement;
 - iii. the Nubian Sandstone Aquifer System Board of Directors (Joint Authority for the Study and Development of the Nubian Sandstone Aquifer System, JASAD-NSAS);
 - iv. *the Statement of Intent on the Governance of the Ocotepeque – Citalá Aquifer;*
 - v. the Agreement over the Al-Sag /Al-Disi Aquifer;
 - vi. *the Cooperation Agreement between the Lithuanian Geological Survey under the Ministry of Environment (LGT) and the Latvian Environment, Geology and Meteorology Centre (LVĢMC) on cross-border groundwater monitoring (2016);*
 - vii. the 2008 Convention on the Protection, Utilization, Recharge and Monitoring of the Franco-Swiss Genevois Aquifer;
 - viii. and the Transboundary Aquifer Assessment Program between Mexico and the U.S. (2009).
 - ix. In addition, the Consultation Mechanism for the Integrated Management of the Water Resources of the Iullemeden and Taoudeni/Tanezrouft Aquifer Systems (ITTAS), initiated with the signing of a memorandum of understanding by Algeria, Burkina Faso, Benin, Niger, Nigeria, Mali, Mauritania, is also mentioned by several countries.



Tapia-Villaseñor, E.M.; Megdal, S.B. (2021)
<https://doi.org/10.3390/w13040530>

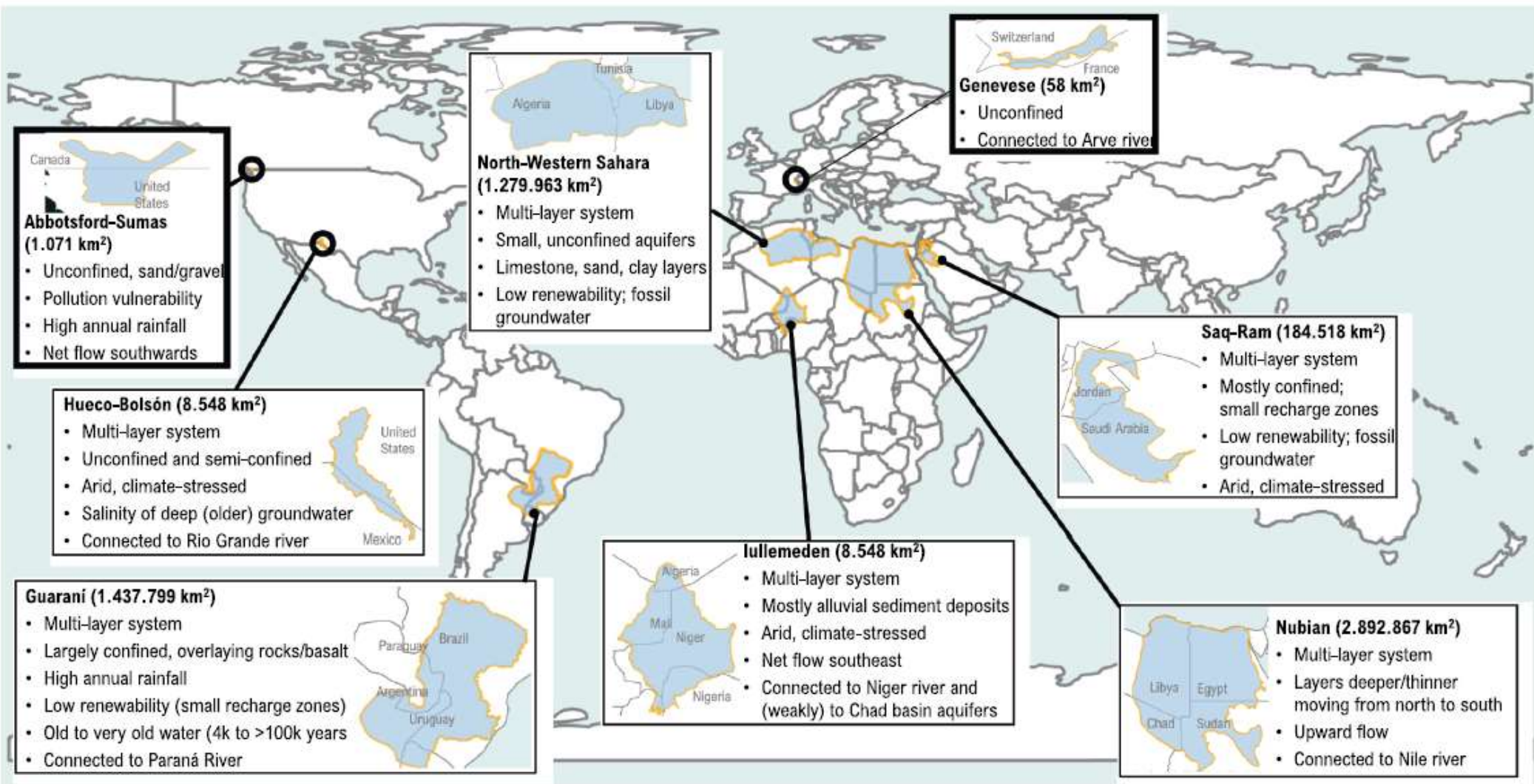


Figure 1. Geographical location and key attributes of the case studies based on the Transboundary Aquifers of the World Map (IGRAC, 2021)

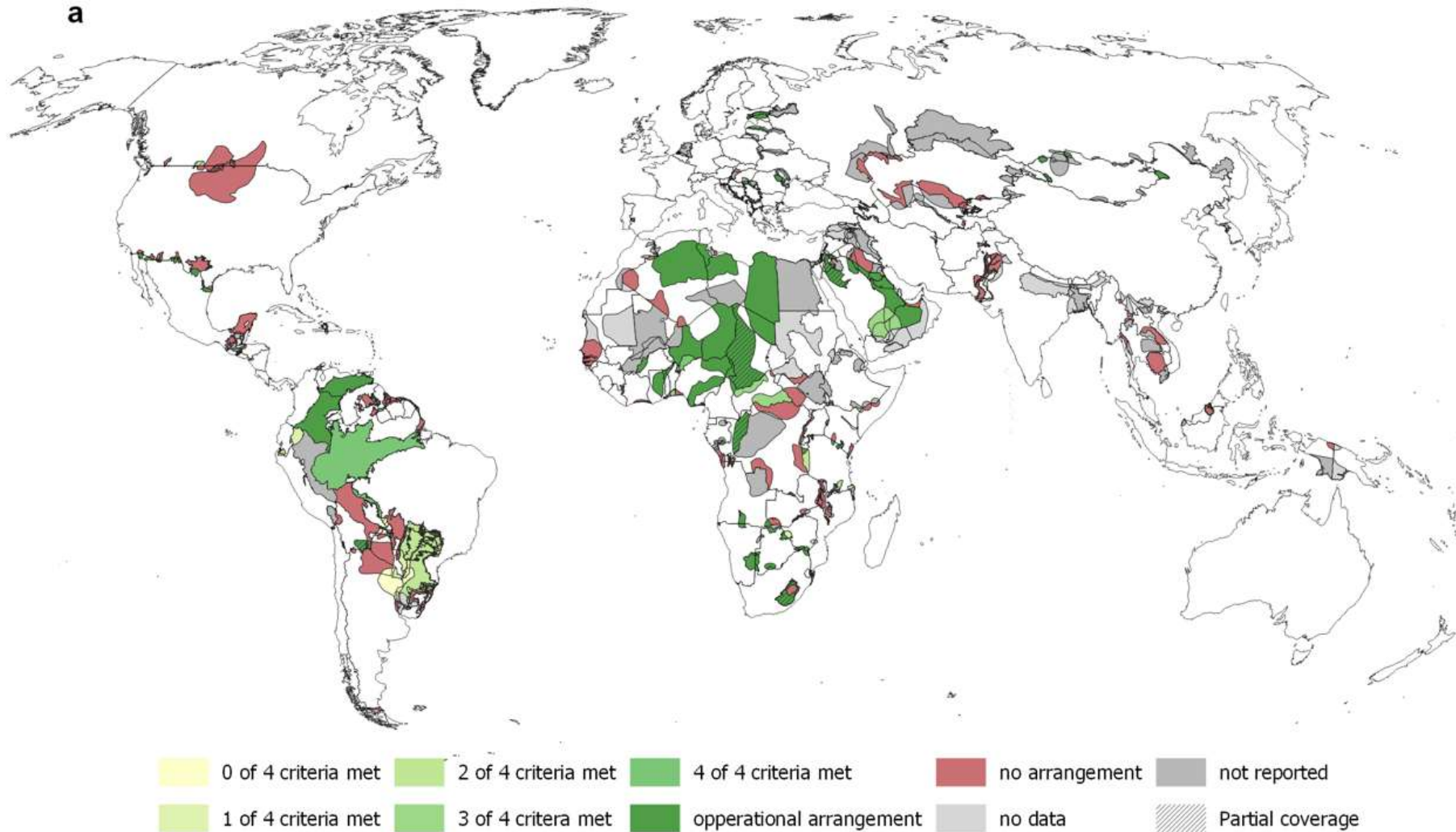
Maya Velis, Kirstin I. Conti & Frank Biermann (2022)
 DOI: 10.1080/02508060.2022.2038925

Agreements		
1	Genevois Aquifer Convention	France, Switzerland
2	Carboniferous Limestone Convention	Belgium, France
3	Nubian Sandstone Aquifer Waters Constitution	Chad, Egypt, Libya, Sudan
4	Northwestern Sahara Aquifer System Agreement	Algeria, Libya, Tunisia
5	Guarani Aquifer Agreement	Argentina, Brazil, Paraguay and Uruguay
6	Iullemeden MoU	Algeria, Benin, Burkina Faso, Mali, Mauritania, Niger, Nigeria
7	Al-Sag/Al-Disi Agreement	Jordan, Saudi Arabia

Arrangements		
1	Washington and British Columbia Memorandum of Agreement	Canada, USA
2	Juarez El Paso MoU	Mexico, USA
3	Salto Concordia MoU	Argentina, Uruguay
4	ORASECOM Stampriet resolution	Botswana, Namibia, South Africa
5	Ocotepeque – Citalá Sol	Honduras, El Salvador

- Several cooperation mechanisms are not efficient. Many stem from externally funded projects. When the project stops, so does the cooperation (Sindico, 2020).
- Apart from these prominent examples of cooperation mechanisms, several TBAs have been subject to project activities to advance TBA cooperation. There too, continuation of cooperation beyond projects is challenging.
- Insufficient cooperation results from low capacity and/or low political willingness.

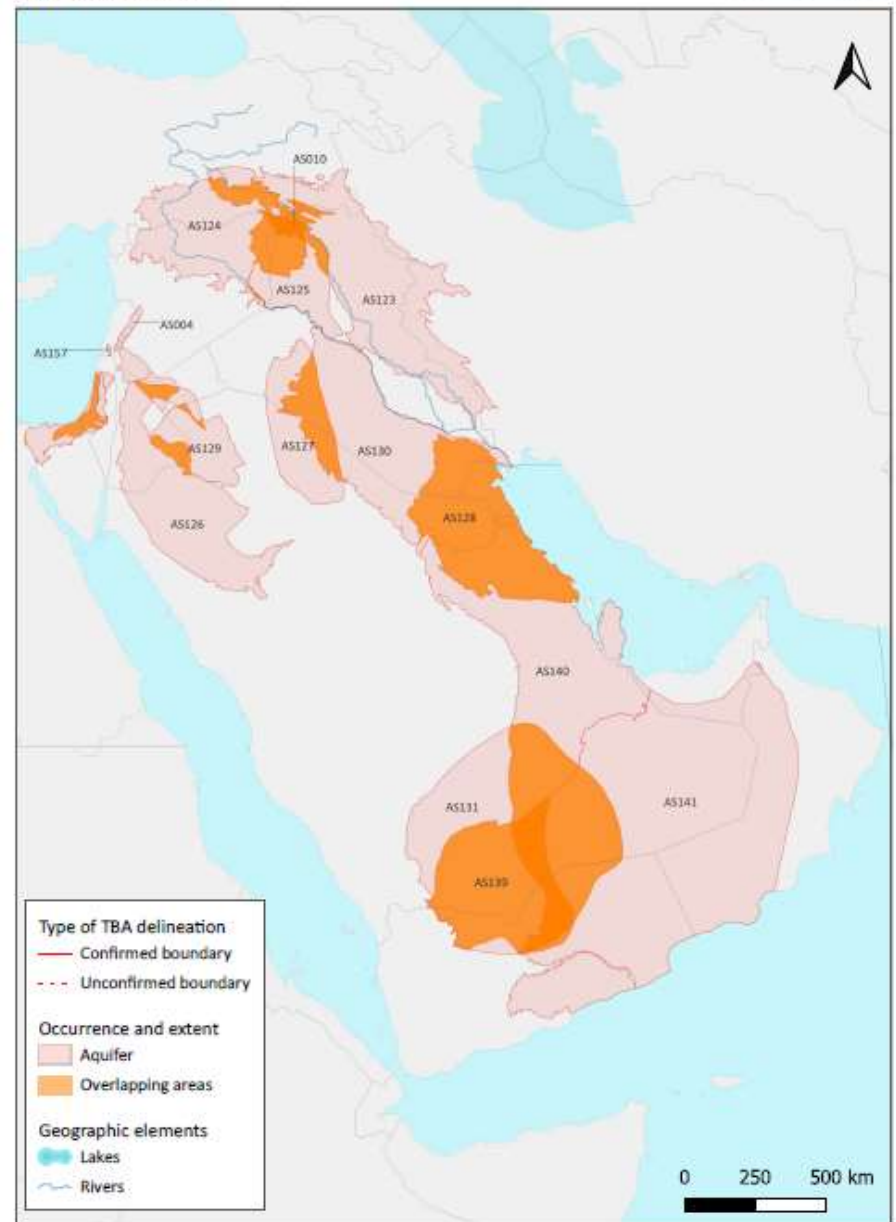
The situation in North Africa and the Middle East



Transboundary Aquifers of Africa



Transboundary Aquifers of the Middle East



Assess transboundary aquifers and the need for cooperation

Eg. INVENTORY OF SHARED WATER RESOURCES IN WESTERN ASIA

UN-ESCWA and BGR, 2013

https://www.unescwa.org/sites/default/files/pubs/pdf/e_escwa_sdpd_13_inventory_e.pdf

Table 1. Shared aquifer systems in Western Asia based on geological age

ERA	SHARED AQUIFER SYSTEM	CHAPTER	RIPARIAN COUNTRIES	ROCK TYPE	
Cenozoic	Umm er Radhuma-Dammam Aquifer System (North): Widyān-Salman	16	Iraq, Kuwait, Saudi Arabia	Fractured/karstic	Non-Renewable
	Umm er Radhuma-Dammam Aquifer System (Centre): Gulf	15	Bahrain, Qatar, Saudi Arabia	Fractured/karstic	
	Umm er Radhuma-Dammam Aquifer System (South): Rub' al Khali	14	Oman, Saudi Arabia, United Arab Emirates, Yemen	Fractured/karstic	
	Neogene Aquifer System (South-East), Dibdibba-Kuwait Group: Dibdibba Delta Basin	26	Iraq, Kuwait, Saudi Arabia	Fractured/karstic	
	Neogene Aquifer System (North-West), Upper and Lower Fars: Jezira Basin	25	Iraq, Syria	Mixed	
	Tawil-Quaternary Aquifer System: Wadi Sirhan Basin	17	Jordan, Saudi Arabia	Porous	Renewable
	Central Hammad Basin ^a	-	Jordan, Syria	Fractured/karstic	
	Basalt Aquifer System (South): Azraq-Dhuleil Basin	22	Jordan, Syria	Mixed	
	Basalt Aquifer System (West): Yarmouk Basin	21	Jordan, Syria	Mixed	
	Coastal Aquifer Basin	20	Egypt, Israel, Palestine	Porous	
	Eastern Aquifer Basin ^a	-	Israel, Palestine	Fractured/karstic	
	North-Eastern Aquifer Basin ^a	-	Israel, Palestine	Fractured/karstic	
	Jezira Tertiary Limestone Aquifer System	24	Syria, Turkey	Fractured/karstic	
	Western Galilee Basin ^a	-	Israel, Lebanon	Fractured/karstic	
	Taurus-Zagros ^b	23	Iran, Iraq, Turkey	Fractured/karstic	
Mesozoic	Anti-Lebanon ^a	18	Lebanon, Syria	Fractured/karstic	Non-Renewable
	Western Aquifer Basin	19	Egypt, Israel, Palestine	Fractured/karstic	
	Wasia-Biyadh-Aruma Aquifer System (North): Sakaka-Rutba	13	Iraq, Saudi Arabia	Porous	
	Wasia-Biyadh-Aruma Aquifer System (South): Tawila-Mahra/Cretaceous Sands	12	Saudi Arabia, Yemen	Porous	
	Ga'ara Aquifer System ^a	-	Iraq, Jordan, Saudi Arabia, Syria	Mixed	
Paleozoic	Saq-Ram Aquifer System (West)	10	Jordan, Saudi Arabia	Porous	Non-Renewable
	Wajid Aquifer System	11	Saudi Arabia, Yemen	Porous	

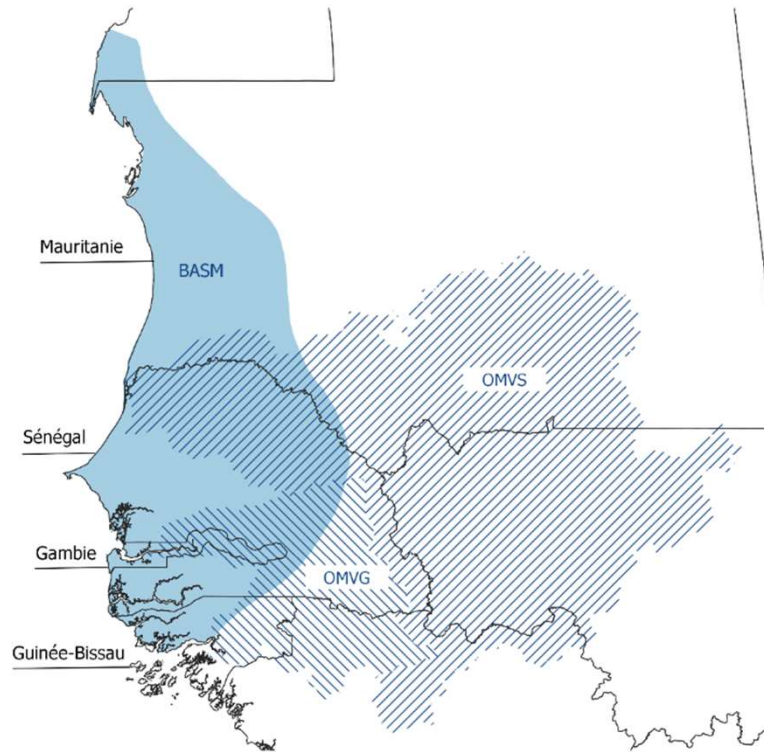
Source: Compiled by ESCWA-BGR.

(a) These aquifer systems are not covered in stand-alone chapters.

(b) Aquifers in faulted and folded tectonic areas have been classified as one group. However, in practice they may represent more than one aquifer system.

Secure political support

Eg. Regional Working Group of the Senegalo-Mauritanian Aquifer Basin



September 2021: Ministerial declaration on transboundary cooperation in the SMAB, strengthening the mandate of the Regional Working Group to :

- Ensure cooperation through data sharing
- Negotiate a legal and institutional framework of cooperation
- Coordinate activities and fundraising

Develop capacity

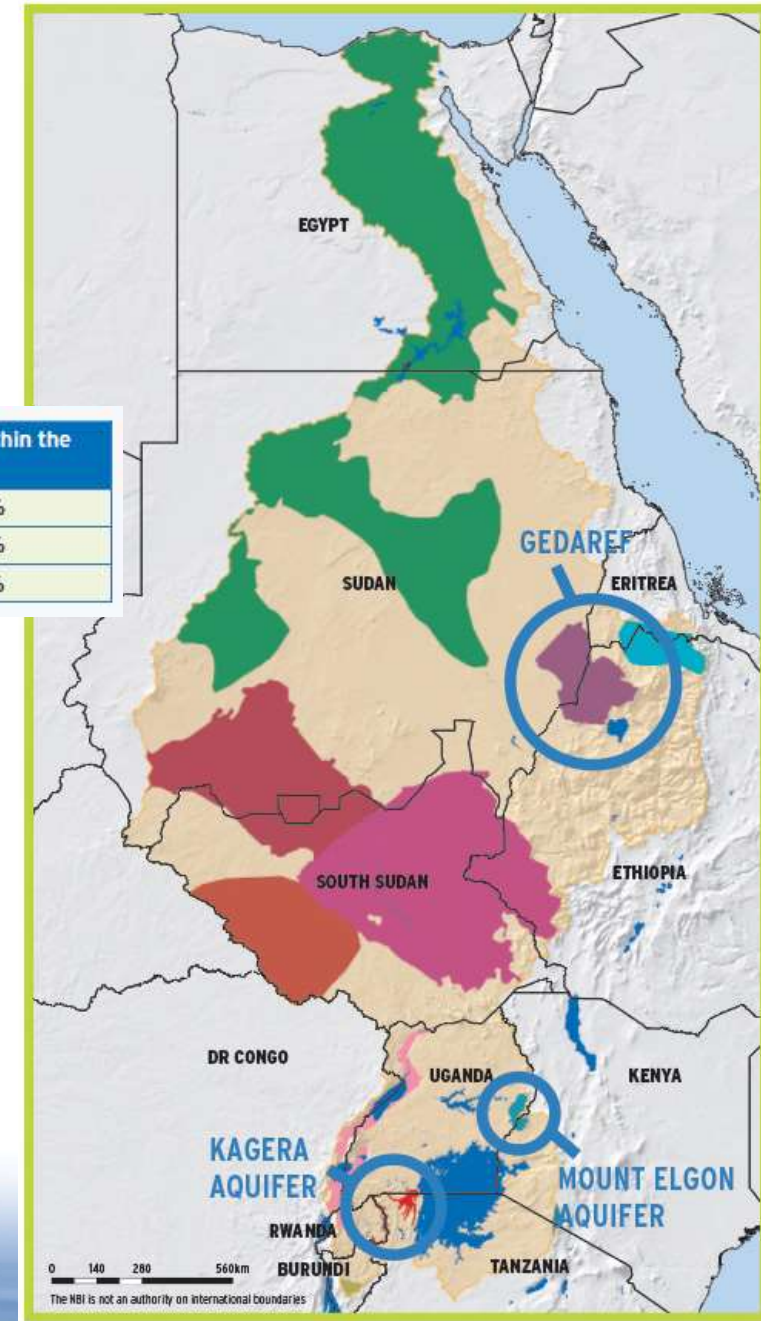
“Enhancing conjunctive management of surface and groundwater resources in selected transboundary aquifers: Case study for selected shared groundwater bodies in the Nile Basin.”

Aquifer name	Countries	Total aquifer area (km ²)	Aquifer area in the Nile Basin (km ²)	Total area within the Nile Basin
Gedaref-Adigrat	Ethiopia, Sudan	57,830	51,369	89%
Kagera Aquifer	Tanzania, Rwanda, Uganda	5,778	5,218	90%
Mount Elgon Aquifer	Uganda, Kenya	5,398	4,579	85%

EXECUTING AGENCY
NILE BASIN INITIATIVE

PROJECT DURATION
2020 - 2025

BUDGET
USD 5.3 MILLION (GLOBAL ENVIRONMENT FACILITY THROUGH UNDP)



https://nilebasin.org/images/docs/Groundwater/Ground_Water_Factsheet.pdf

Improving IWRM, Knowledge-based Management and Governance of the Niger Basin and the Iullemeden-Taoudeni/Tanezrouft Aquifer System | ITTAS



Duration of the project
5 years (2018-2023)

Total budget
4,300,000 USD

“The objective of the project is to improve knowledge-based management, governance and resource conservation of the Niger River Basin and the Iullemeden-Taoudéni/Tanezrouft Aquifers (NB-ITTAS), to support IWRM for the benefit of communities and the resilience of ecosystems”

<https://www.thegef.org/projects-operations/projects/5535>

<http://www.oss-online.org/en/water/ittas>

HORN OF AFRICA - GROUND WATER FOR RESILIENCE PROJECT

Funded by the World Bank (385M\$)

The project fosters cooperation with Ethiopia, Kenya, Somalia, and the Intergovernmental Authority on Development (IGAD). Djibouti and South Sudan have also expressed interest in joining the program in subsequent phases.

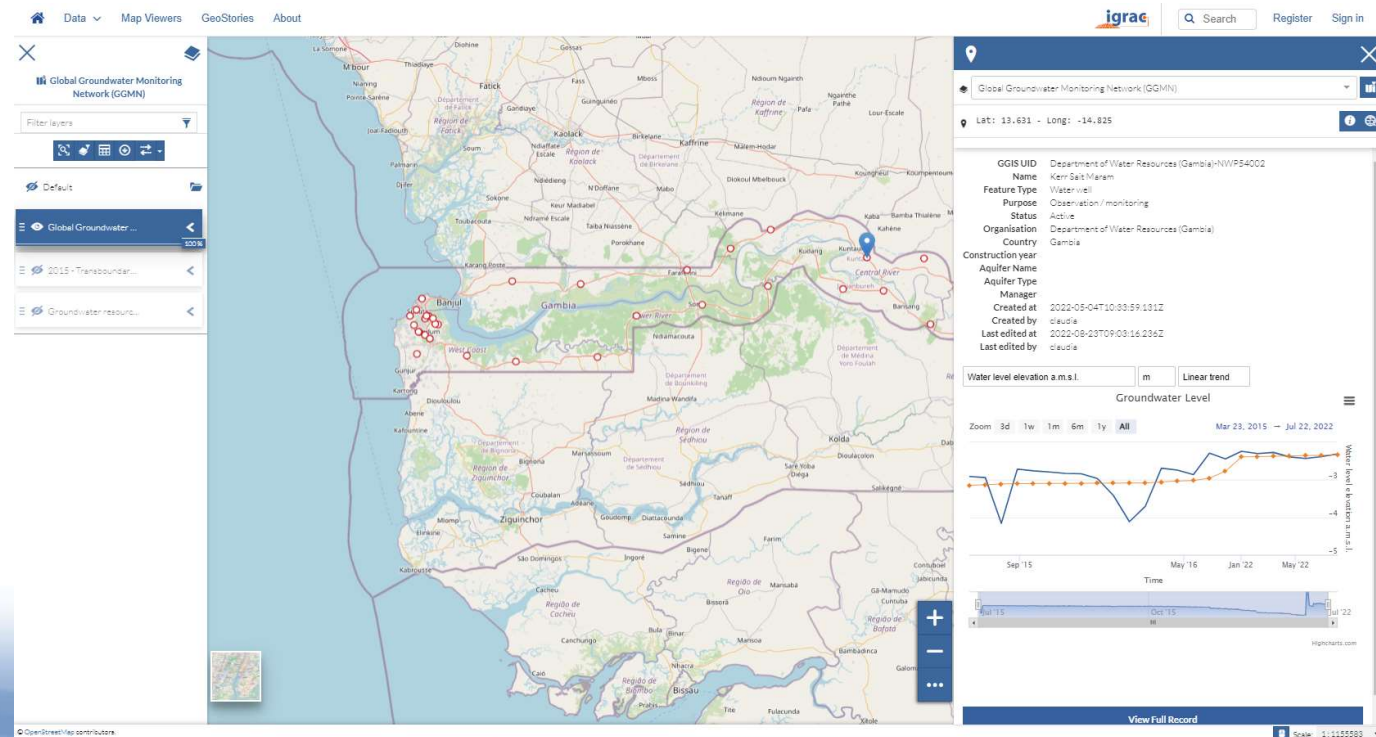
The project will specifically address the assessment and the management of groundwater resources in transboundary aquifers.

See <https://blogs.worldbank.org/water/invisible-bonds-resilience-building-horn-africas-borderlands>

Adopt open water data policies

- Open data doesn't necessarily require expensive IT infrastructure.
- On the other hand, not having to handle individual data requests is a significant time-saver for both data holding institutions and data users.
- Open data can be used by a wide range of users (e.g. research, consultancy and private sector, other governmental organizations, NGOs) and at different levels (e.g. national, sub-national and regional).
- Open data policies support transparency and participation of stakeholders in water management strategies.

<https://ggis.un-igrac.org/view/ggmn/>



Thank you for your attention!



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