



Inventory of Shared Water Resources in Western Asia

Overview, Key Findings and
Outlook

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Introduction I



The Inventory is...

the first UN-led effort to take stock of the region's shared surface and groundwater resources in a comprehensive, systematic and standardized manner.

Key Themes:

- hydrology, hydrogeology
- water resources development and use,
- agreements and cross-border management efforts.

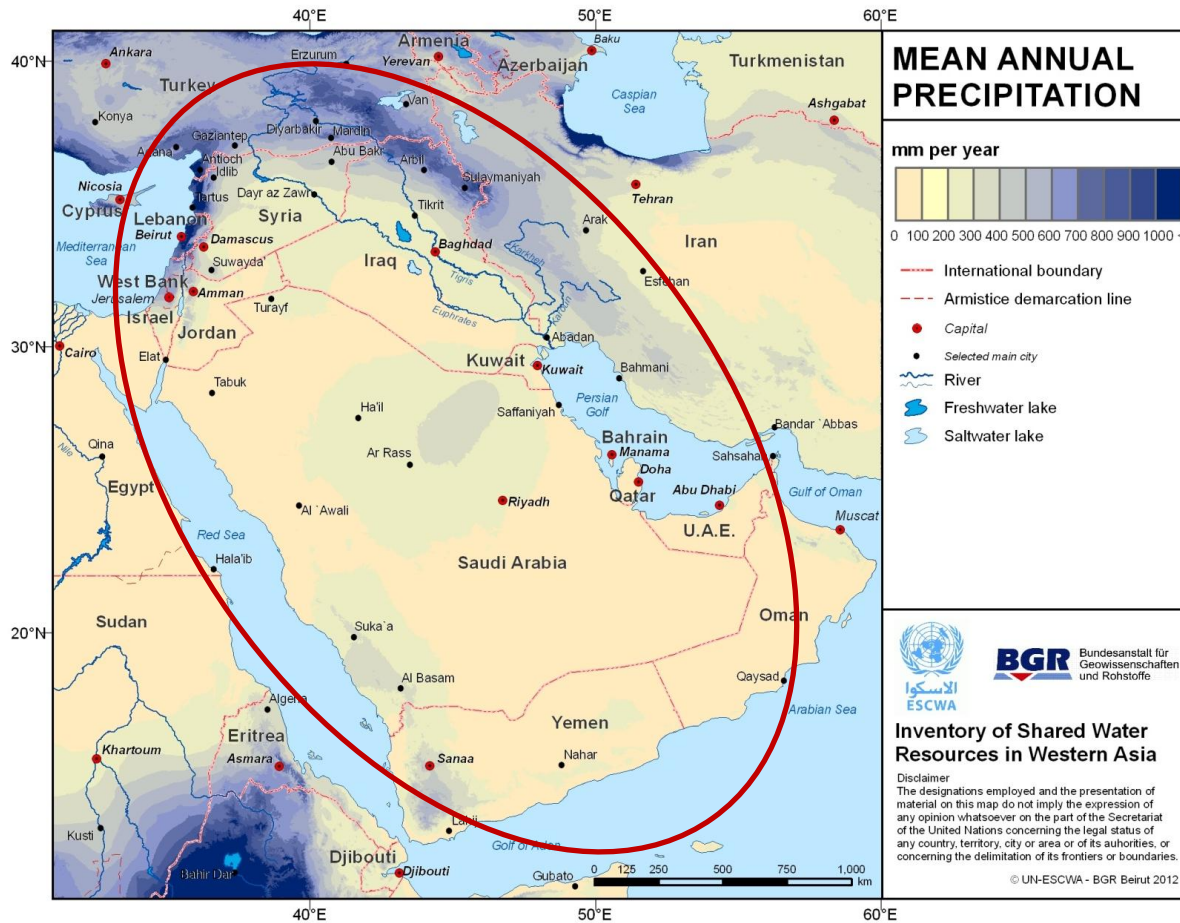
Objectives:

- **Identify**, and document the state of, shared water resources and their use
- Improve the **knowledge base** and facilitate information access
- Create awareness and stimulate **informed dialogue** within and between riparian countries
- Support **regional processes** towards improved dialogue and cooperation over shared water resources

Euphrates River – Syrian Arab Republic



Introduction II

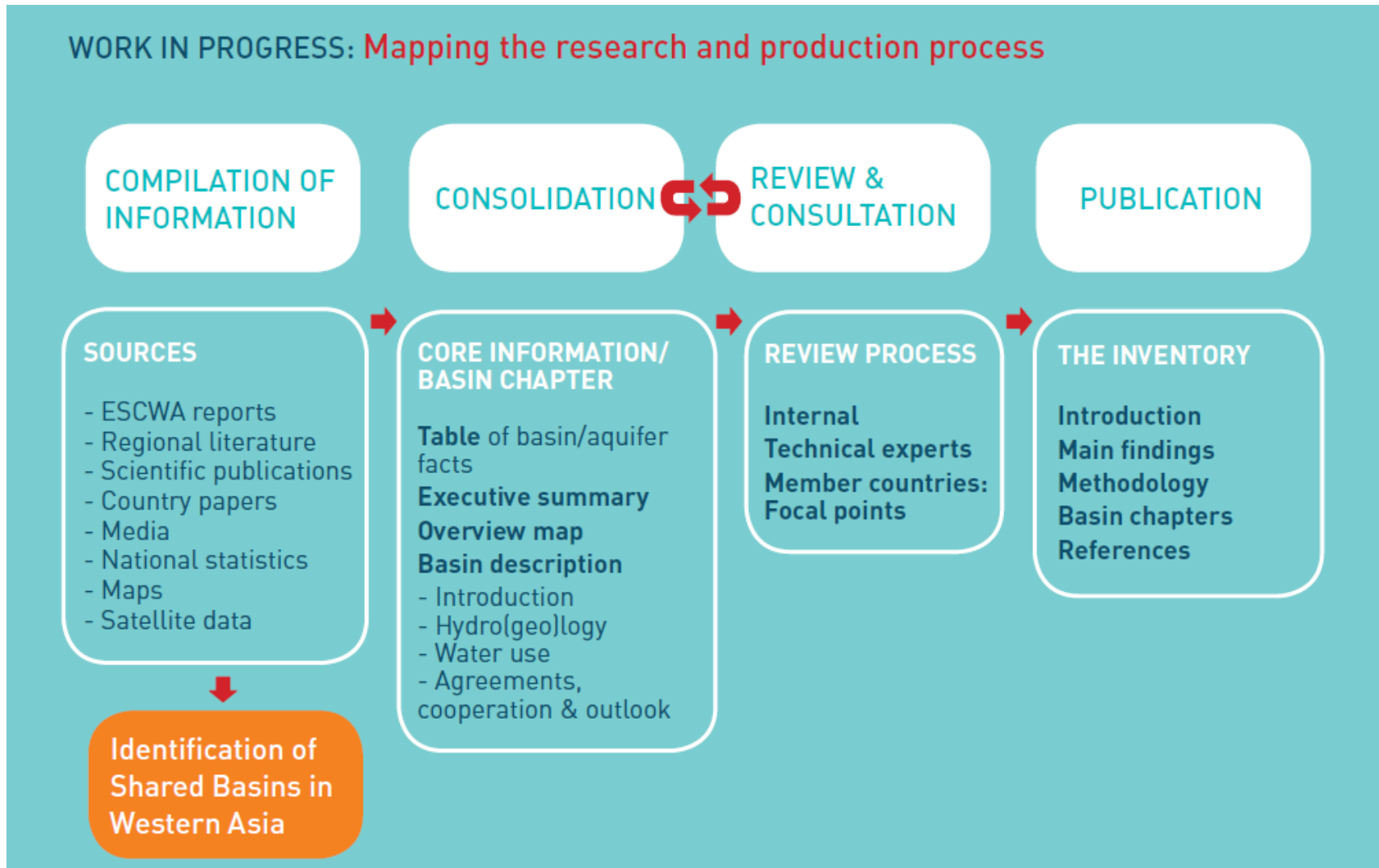


Geographical Scope: covers all identified surface and groundwater resources shared between Arab Countries of Western Asia. Also covers water resources shared with Iran, Israel and Turkey.

- Arabian Peninsula
- Mashrek
- Mesopotamia

Work Process

WORK IN PROGRESS: Mapping the research and production process



Timeline and Consultation

2008 Dec	Committee on Water Resources, 8 th Session	Build national capacities on IWRM and shared waters; update assessment of legal and institutional tools for shared water management.
2009 Jun	Start of Work	Literature research, pre-screening, compilation of core information, hydrogeological interpretation.
2011 Mar	Committee on Water Resources, 9 th Session	Recommendation to nominate focal points to support the finalization of the Inventory, and consider its outcomes.
2011 Apr-Sep	Nomination of focal points	Bahrain, Egypt, Iraq, Jordan, <i>Kuwait</i> , Lebanon, Oman, Palestine, Qatar, Saudi Arabia, Sudan, Syria, UAE, Yemen.
2011 May	Expert Consultation	Review of concept, hydrogeological interpretation and identified shared aquifer systems by regional and international experts.
2011 Oct-Nov	Circulation of Basin fact sheets and questionnaires	Information package for each shared basin/ aquifer system with overview maps, tables, available data and literature list; request to review and complement core information.

Timeline and Consultation II

2011 Nov-Dec	Regional Consultative Meeting	Discussion of findings and further steps, including submission of requested data. Participation: Egypt, Iraq, Lebanon, Oman, Saudi Arabia, Sudan, Syria, Yemen.
2011 Dec -	Follow-up and informal consultations	Follow-up on data submission and clarification of content; via email, missions and back-to-back meetings, i.e. with Jordan, Lebanon, Palestine, Saudi Arabia, Syria.
2012 May-Dec	Chapter review	Circulation of completed draft basin chapters to focal points of riparian countries. In parallel, review of chapters by selected experts.
2013 Feb-Mar	Final review	Circulation of complete Inventory in layout for final review and comments.
2013 Mar	Committee on Water Resources, 10 th session	Final report on preparation of Inventory and discussion of findings.
2013 Apr	Publication	Print and web publication of final Inventory.

Overview: Shared River Basins

- Jordan River
- Orontes River
- Euphrates-Tigris-Shatt Al Arab
- El Kabir River
- Qweik River



Surface Water Overview

- International boundary
- - - Armistice demarcation line
- Capital city
- ~ River
- ▭ River basin boundary
- 🟦 Freshwater lake
- 🟩 Saltwater lake



Inventory of Shared Water Resources in Western Asia

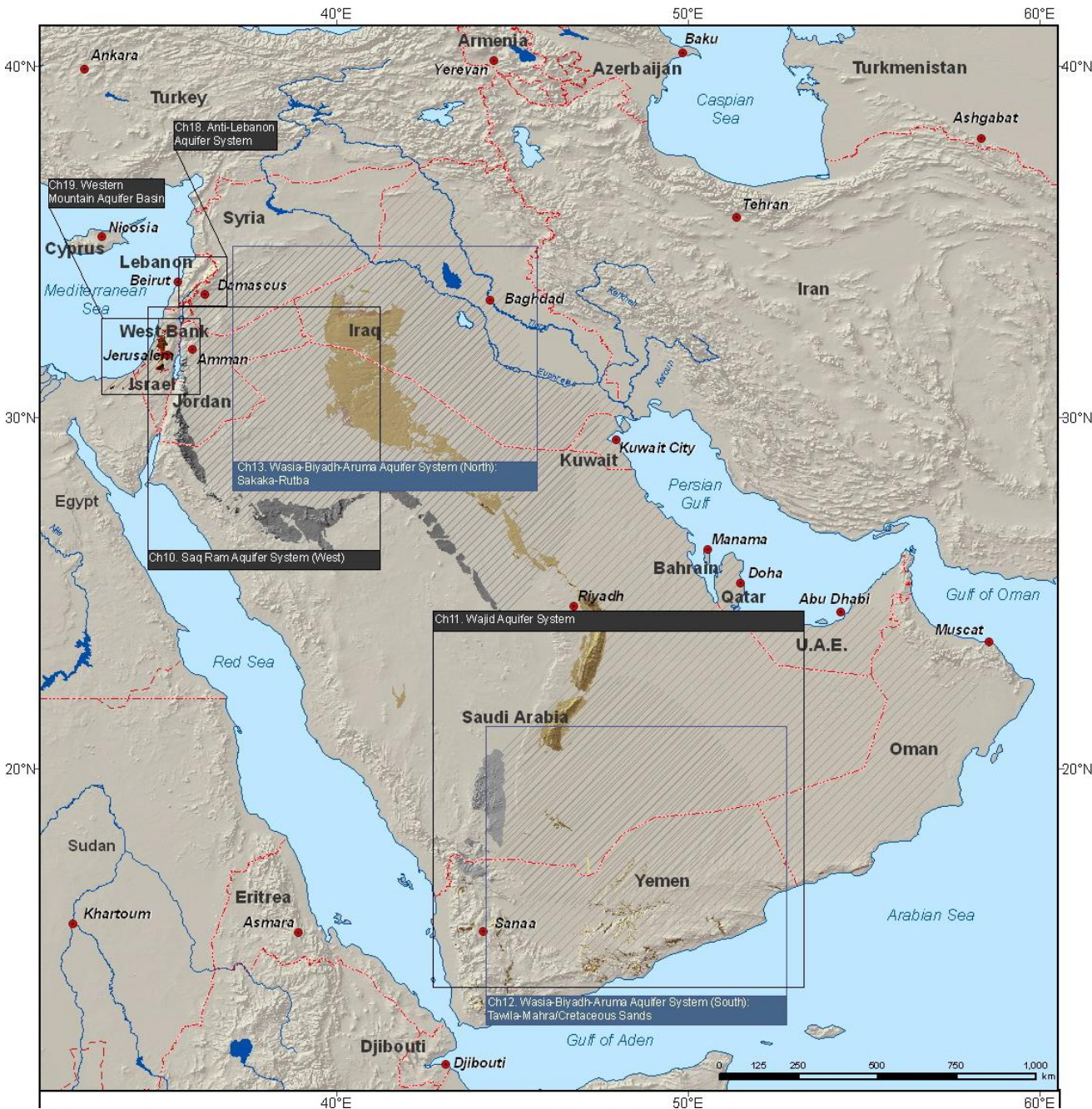
Disclaimer
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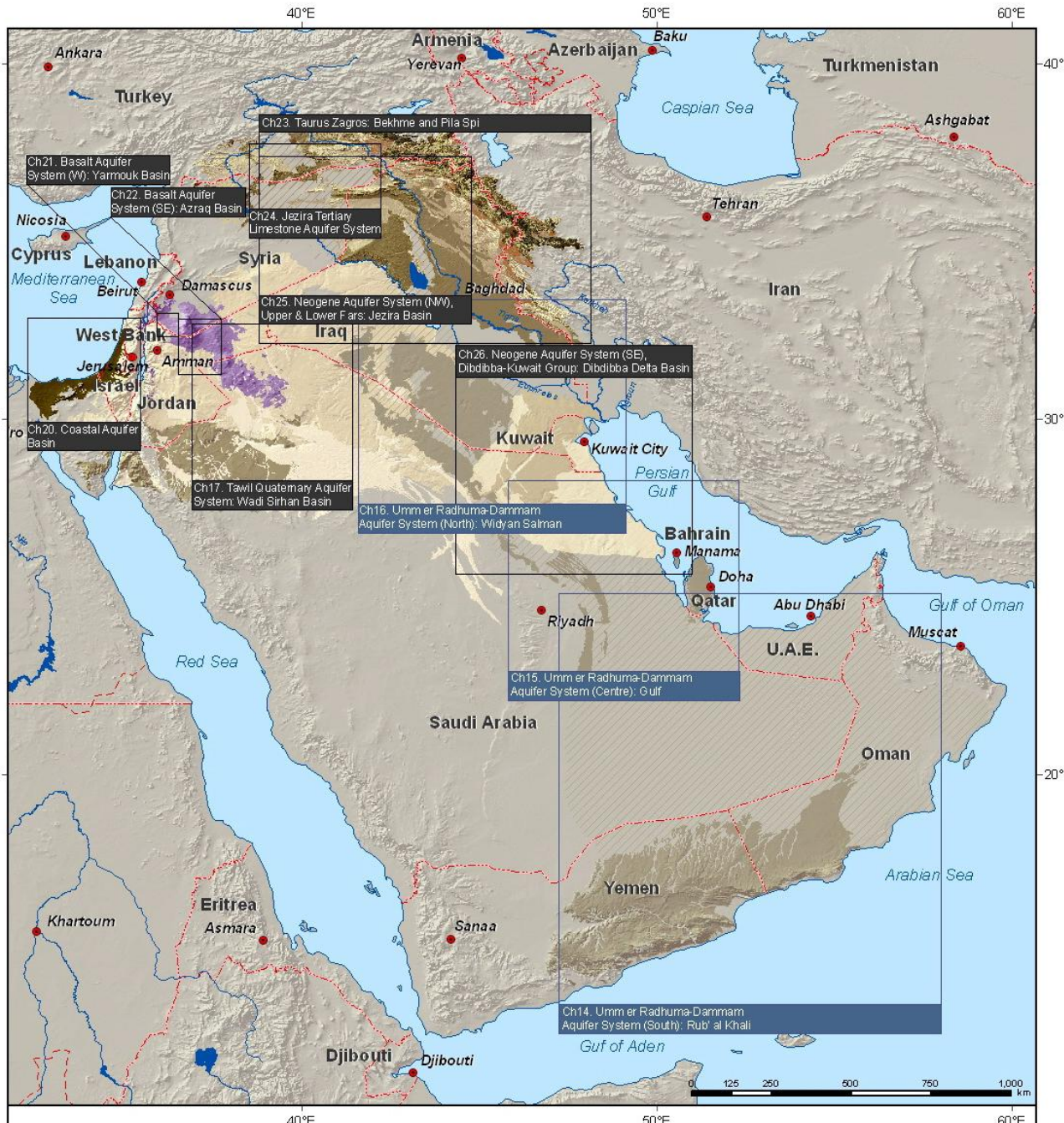
Overview: Shared River Basins in the Inventory

	SHARED RIVER		COUNTRIES	MAIN SHARED TRIBUTARIES
MESOPOTAMIA	Euphrates-Tigris-Shatt al Arab Basin	Euphrates River	Iraq, Jordan, Saudi Arabia, Syria, Turkey	Sajur River Jallab/Balikh River Khabour River
		Tigris River	Iran, Iraq, Syria, Turkey	Feesh Khabour River Greater Zab River Lesser Zab River Diyala River
		Shatt al Arab	Iran, Iraq	Karun River Karkheh River
MASHREK	Jordan River		Israel, Jordan, Lebanon, Palestine, Syria	Hasbani River Banias River Yarmouk River
	Orontes River		Lebanon, Syria, Turkey	Afrin River Karasu River
	Nahr el Kabir		Lebanon, Syria	-
	Qweik River		Syria, Turkey	-

Overview: Shared Aquifer Systems Mesozoic and Paleozoic Era



Overview: Shared Aquifer Systems Cenozoic Era



Overview: Shared aquifer systems in the Inventory

Shared Aquifer Systems		ESCWA member countries												Non-ESCWA			
		BH	EG	IQ	JO	KW	LB	OM	PS	QA	SA	SY	AE	YE	IR	IL	TR
ARABIAN PENINSULA	Saq Ram (West)				●						●						
	Wajid										●			●			
	Wasia Biyadh Aruma (South): Tawila-Mahra / Cretaceous Sands										●			●			
	Wasia Biyadh Aruma (North): Sakaka-Rutba			●							●						
	U er R' Dammam (South): Rub' El Khali							●			●		●	●			
	U er R' Dammam (Center): Gulf	●								●	●						
	U er R' Dammam (North): Widyan-Salman			●		●					●						
	Tawil-Quaternary: Wadi Sirhan Basin				●						●						
MASHREK	Anti-Lebanon						●					●					
	Western Aquifer Basin		●						●							●	
	Coastal Aquifer Basin		●						●							●	
	Basalt (W): Yarmouk Basin				●							●					
	Basalt (SE): Azraq Basin				●							●					
MESOPOTAMIA	Taurus-Zagros			●											●		●
	Jezira Tertiary Limestone											●					●
	Neogene (NW) - Upper and Lower Fars: Jezira Basin			●								●					
	Neogene (SE) Dibdibba – Kuwait Group			●		●						●					

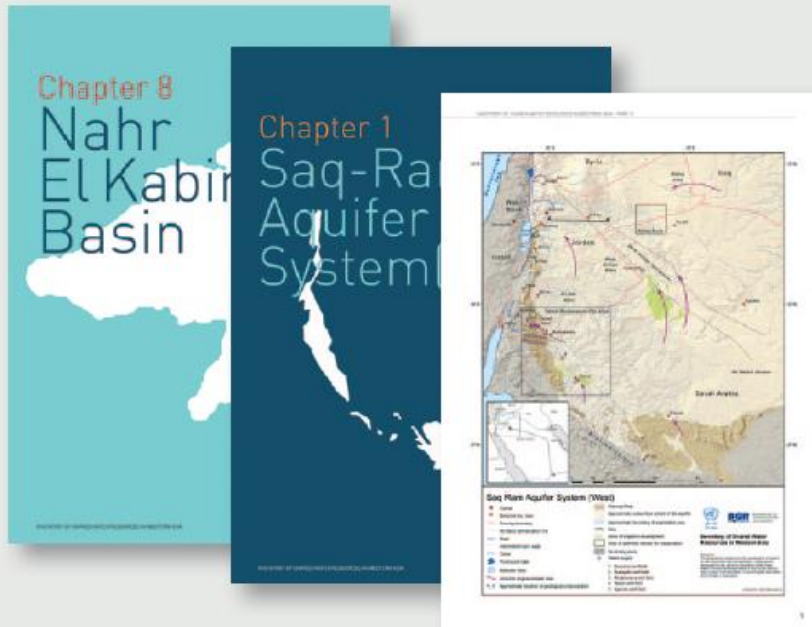
Overview: Shared Aquifer Systems without basin chapter

NAME	LITHOLOGY	COUNTRIES
Eastern Aquifer Basin	Limestone	Israel, Palestine
Ga'ara Aquifer System	Sandstones/carbonates	Iraq, Jordan, Saudi Arabia, Syria
Hammad Basin	Basalt, carbonates and marl	Jordan, Syria
North-Eastern Aquifer Basin	Predominantly limestone	Israel, Palestine
Wasia-Biyadh-Aruma Aquifer System (Centre): Gulf	Sandstones/carbonates	Bahrain, Qatar, Saudi Arabia, United Arab Emirates
Western Galilee Basin	Limestone and dolomite	Israel, Lebanon

Criteria:

- ◆ Limited size / Scale of Inventory
- ◆ Limited shared portion
- ◆ Limited exploitability (i.e. depth, salinity, oil-bearing, facies change)

Inventory Features



- ◆ A total of 23 shared aquifer systems and 6 shared river basins were identified.
- ◆ 9 chapters on shared surface waters and 17 chapters on shared aquifer systems, each following a standardized structure and methodology.
- ◆ 624 pages of detailed information with 60 new maps and over 200 figures, tables and boxes.

Chapter Features

GROUNDWATER CHAPTER

INTRODUCTION

Location
Area
Climate
Population
Other aquifers in the area
Information sources



HYDROGEOLOGY

Aquifer configuration
Stratigraphy
Aquifer thickness
Aquifer type
Aquifer parameters



Recharge
Flow regime
Storage
Discharge
Water quality
Exploitability



SURFACE WATER CHAPTER

GEOGRAPHY

River course
Climate
Population



HYDROLOGICAL CHARACTERISTICS

Annual discharge variability
Flow regime
Groundwater linkages



Chapter Features II

GROUNDWATER CHAPTER

GROUNDWATER USE



Abstraction and use
Quality issues
Sustainability issues

AGREEMENTS, COOPERATION & OUTLOOK



List of agreements
Cooperation between riparian
countries
Outlook

NOTES



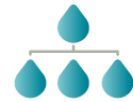
BIBLIOGRAPHY



SURFACE WATER CHAPTER

WATER RESOURCES MANAGEMENT

Development and use
Water quality &
environmental issues



AGREEMENTS, COOPERATION & OUTLOOK

List of agreements
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Outlook



NOTES



BIBLIOGRAPHY



10 Key Findings

- 1. There are more shared water resources in Western Asia than generally assumed.**
- 2. Water quantity and allocation dominate the discourse on shared water resources in this water-scarce region.**
- 3. Water quality is rapidly deteriorating, a fact that is largely neglected.**
- 4. The lack of accurate data hampers joint water resources management.**
- 5. Cooperation over shared water exists, but is never basin-wide.**
- 6. There is not a single agreement on shared groundwater resources.**
- 7. The region's groundwater is largely non-renewable and aquifers are rapidly being depleted.**
- 8. Groundwater plays an important role in surface water basins, a link which is often overlooked.**
- 9. A new thinking is required to deal with large regional aquifer systems from a shared perspective.**
- 10. It is already too late to save some shared waters.**

Wrap-up

Conclusions

- Descriptive, scientific baseline for further dialogue on shared surface and groundwater resources is available.
- Inter-active consultative process with countries has enhanced the value of the product.
- The process itself has created awareness and stimulated dialogue.

Discussion

- How do you see the overall benefits of the 'Inventory' *product*?
- What can we learn from the 'Inventory' *process*?
- Where do you see opportunities in the *use and application* of this 'Inventory'?
- How could we build on the Inventory? Updates? Expansion to other Arab States?



VISIT OUR WEBSITE
www.waterinventory.org

Thank you for your attention!

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