Legal Aspects of the North-Western Sahara Aquifer System

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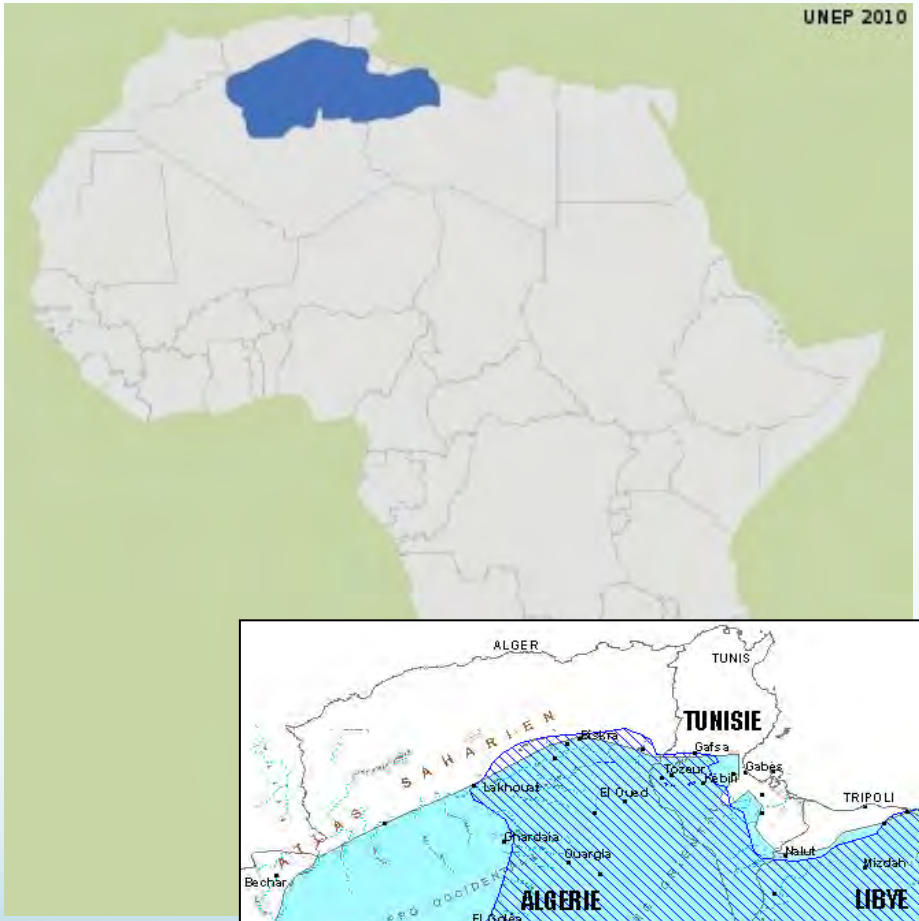
The North-Western Sahara Aquifer System (SASS)

Système Aquifère du Sahara Septentrional (SASS)

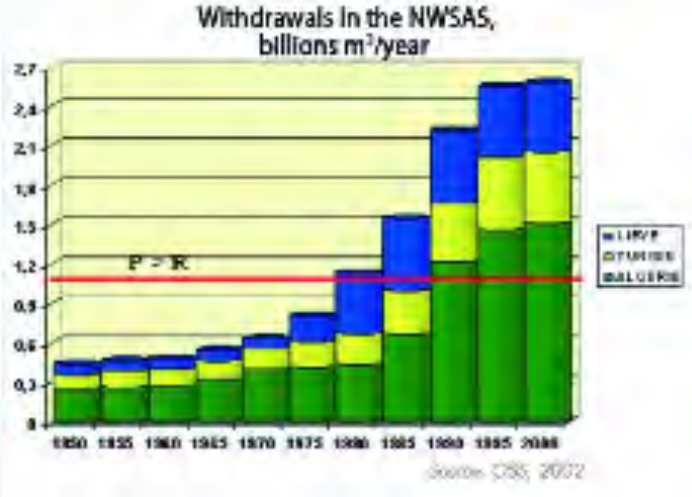
Facts

- shared by Algeria, Libya and Tunisia
- arid to Saharan climate
- area: 1.03 million km^2
  - Algeria: 700,000 km^2
  - Libya: 250,000 km^2
  - Tunisia: 80,000 km^2



Availability and Use

- only permanent source of water for about 5 million people
- 60000 km^3 in reserve, of which 1 280 km^3 exploitable
- negligible recharge (recharge rate: 1 km3/y)
- about 8000 points of abstraction
- 1950 – 2000 increase in abstraction from 0,6 billion m^3/y to 2,5 billion m^3/y, now 3 billion m^3/y
- since 1980s abstraction exceeds recharge ⟹ drawdown of non-renewable stock



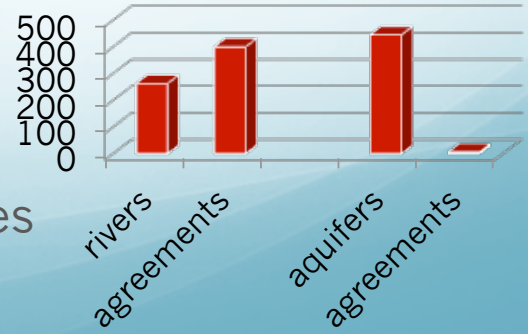
- Large increase in use ⟹ stress on the resource
  - saltwater intrusion and salinization
  - loss artesian pressure
  - depletion of natural outlets
  - lowering of water table

Aquifer Agreements and Institutions

- 1977/2007 Genevese A. (Swiss and French local authorities)
- 1992/2000 Nubian Sandstone Aquifer System
  (Egypt, Libya, Chad, Sudan)
- 2002 SASS
  (Algeria, Libya, Tunisia)
- 2009 Iullemeden Aquifer System
  (Niger, Nigeria, Mali)
- 2010 Guaraní Aquifer System
  (Argentina, Brazil, Paraguay, Uruguay)

In sum: written agreements exclusively on aquifers exist for only 5 (!) of 445 transboundary quifers/groundwater basins
only 3 of them are actually implemented

- but: cooperation in more cases
- sometimes under mixed surface-groundwater treaties



Cooperation Activities

- SASS I project (1999 – 2002)
  - establishment of a common database and information system
  - development of a hydrogeological model
  - consultation mechanism (CM, ⟹ procès verbal, 2002)
- SASS II project (2002 – 2006)
  - use of spatial observation to improve knowledge and management of the SASS
  - permanent consultation mechanism
    (⟹ Ministerial Declaration, 2005)
- SASS III project (2007 – 2013)
  - development of operational recommendations for the sustainable management of the SASS, including recommendations for agriculture/irrigation, a socio-economic study, establishment of a Geographic Information System
  - CM becomes operational

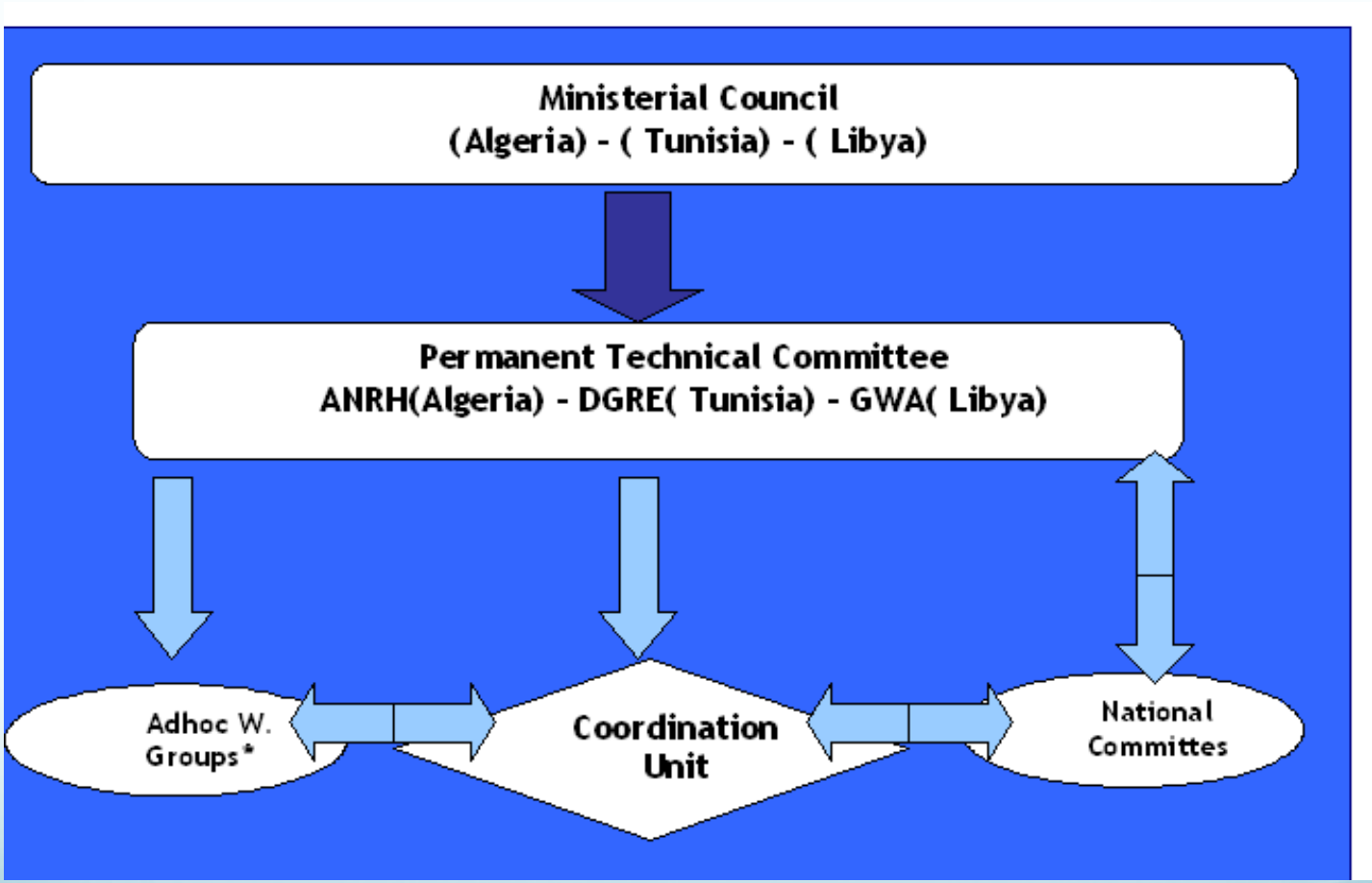
Setting up of the CM Timeline

- 2002 procès verbal: agreement on a preliminary consultation mechanism
  - technical level
  - structure
    - steering committee
    - coordination unit
    - ad hoc scientific committee
  - objective: coordinate, promote and facilitate the rational management of the SASS water resources
  - function (inter alia): manage the hydrological database and simulation model developed under the SASS I project

- 2005 Ministerial Declaration: setting up of a permanent consultation mechanism
- 2007 Agreement on the structure, operation and funding modalities
- 2008 Establishment of the Coordination Unit at OSS appointment of first coordinator

OSS

Structure of the CM

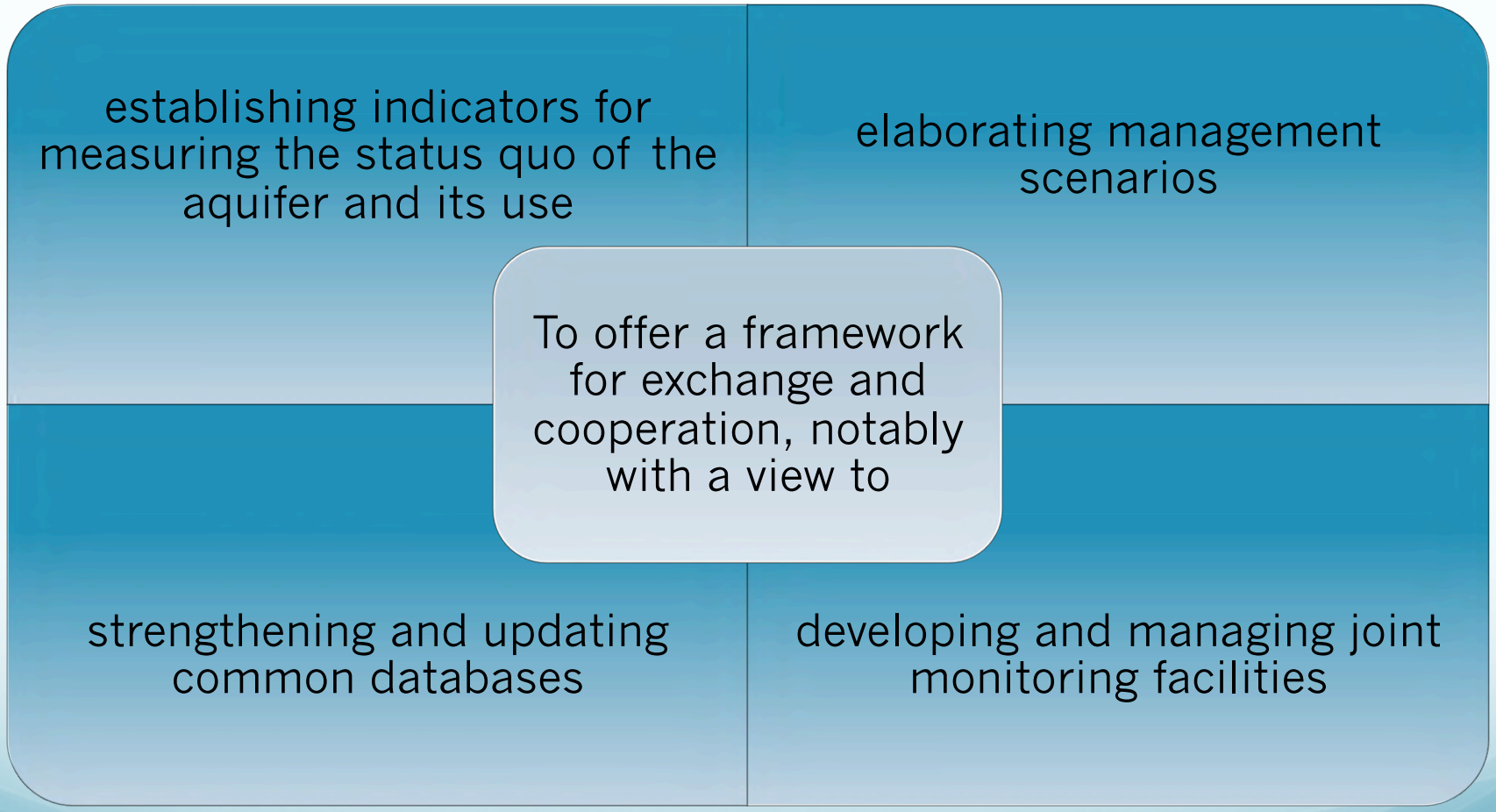


Diallou, 2008

Objective CM

- to strengthen the means and the capacity of the three countries to produce decision-making tools with a view to assuring jointly and in a spirit of equity the sustainable use of the shared resources of the SASS
- to profit from the achievements of the SASS projects

Functions of CM



Programme of Activities

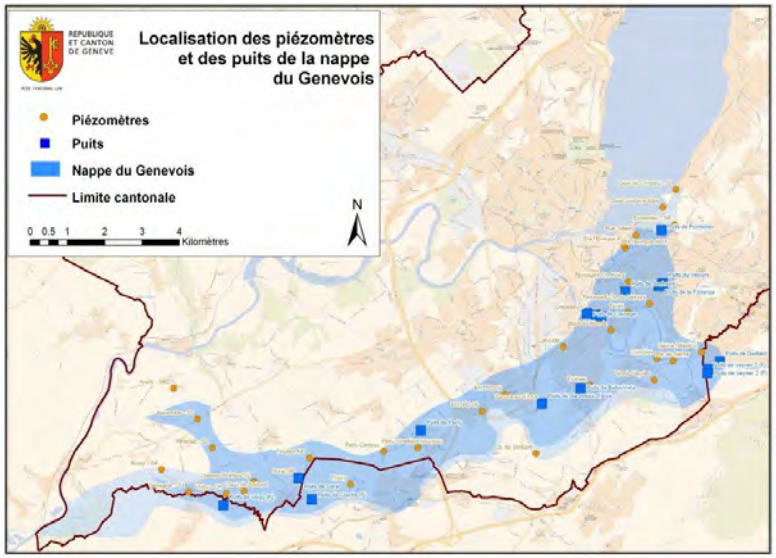
- joint studies and research
- the definition of data exchange protocols
- the updating of aquifer models
- the dissemination of indicators about the resource and its use
- the identification of vulnerable and risk-prone zones
- training, publicity and sensitization activities
- publication of an annual report

The SASS CM and the ILC Draft Articles

-	+

• no mention of principles of int. water law, equitable utilization, no harm (Art. 4 – 6)
• no substantive obligations
• no procedural obligations (planned activities, Art. 15)
• No protection of ecosystems (Art. 10)
• No protection of recharge and discharge zones (Art. 11)
• No pollution control measures (Art. 12)
• No management plan, no joint management mechanism (Art. 14)
	• Example of a joint mechanism of cooperation (Art. 7 II)
	• Exemplary case of regular exchange of data and information (Art. 8)
	  • exchange (Art. 8 I)
	  • collection and generation of more data and information (Art 8 II)
	  • Collection and processing of data and information in a manner that facilitates their use by the other aquifer states
	• Identification of recharge and discharge zones (Art. 11)
	• Joint monitoring based on an agreed conceptual model and using agreed and harmonized standards (Art. 13)

Other Aquifer Institutions



Genevese Aquifer

- Swiss and French local authorities
- small, local aquifer: 19 km x 1- 3 km
- 1977 Agreement between local authorities, replaced by 2007 Convention
- construction and operation of a recharge installation by the Swiss, the sharing of construction and operational costs (installation is owned by the Swiss, Swiss responsible for construction and operation)
- creates a management commission that proposes yearly aquifer utilization programmes to ensure that abstraction is matched by recharge
- limits French abstraction to 5 million m^3 per year of which 2 million m^3 are free of charge

Joint management of the shared aquifer – very pragmatic approach

Other Aquifer Institutions

- Nubian Sandstone Aquifer System (Egypt, Libya, Chad, Sudan)
  - 1992 Joint Authority for the Study and Development of the NSAS
  - 2000 agreement on monitoring and exchange of groundwater information and agreement on monitoring and data sharing

- Iullemeden Aquifer System
  2009 MoU (Niger, Nigeria, Mali): Consultation Mechanism partly modelled upon SASS, not yet in force

- Guaraní Aquifer System (Argentina, Brazil, Paraguay, Uruguay)
  2010 Agreement, not yet in force
  Commission to "coordinate cooperation"

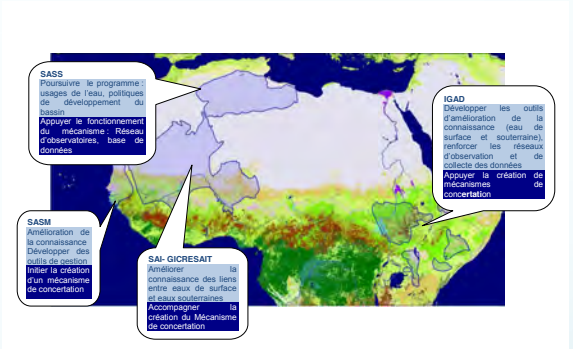
- plus institutions that deal with surface and groundwater (e.g. International Boundary and Water Commission US – Mexico, Colorado River)

Drivers of Success

- deterioration of the resource: need for cooperation
- scientific and technical activities creating trust and an appreciation of the SASS as a shared resource
- external support (framework, expertise and timeframe)
- existence of OSS, a trusted and functional regional institution, to provide a home for the CM
- an evolutionary approach starting with a simple structure with a limited technical mandate
- need for such a structure to continue to use the databases and joint model developed under the SASS projects

Concluding Remarks

- Although functions and mandate are limited, the SASS *Consultation* Mechanism is a success
  - pioneering experience/countries were feeling their way in the dark
  - data and information exchange is working, technical side strong, cooperation actually takes place – in a context where sharing of data and information is often a sensitive issue and water a political topic
  - served already as a model for the Iullemeden, discussed are also consultation mechanisms for other aquifers (OSS: Senegalese-Mauritanian aquifer system in cooperation with OMVS and for aquifers in Northern and Western Africa in the IGAD countries)



- *But* increasing pressures upon the SASS will require the development of solutions and dealing with socio-economic issues in addition to scientific and hydrogeological issues ⟹ will the CM become equipped to tackle these issues?

- In the longer run a more formal legal agreement? One with a broader mandate? Or end of projects = end of activities?

Thank you!

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