The Nubian Sandstone Aquifer

Cooperation
Cairo, Egypt, November 29, 2017

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Non-Renewable Groundwater
Petrified Trees = Old Water

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التعاون في خزان الحجر الرملي النوبي
Nubian Sandstone Aquifer Cooperation
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المياه غير المتجددة
الأشجار الصخوية = ماء قديم

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المشروع النهري الصناعي في ليبيا

النهر الصناعي العظيم

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Sustaining Tourism & Recreation
Swimming in Groundwater Springs in Egypt

Sustaining Agriculture
Siwa Oasis in the Western Desert of Egypt

Sustaining Ecosystems

Regional Strategy for the Utilization of the Nubian Sandstone Groundwater Aquifer

DEVELOPMENT OF A REGIONAL STRATEGY
Environmentally and socially sustainable utilization and management of a vast common property resource by:

- creating an enabling environment
- capacity-building of national institutions in 4 countries
- formulating a regional groundwater development plan
- integrating socio-economic dimensions

INSTITUTIONAL ARRANGEMENTS

RPSC

RTRC

Chad NC

NSAF Regional Programme (CEDARE)

Egypt NC

Libya NC

Sudan NC
Regional Transmissivity Map of the Nubian

USE OF AQUIFER NUMERICAL MODEL
- assess current regional impacts
- assess impacts of future expansion
- recommend strategies to minimize negative impacts (transboundary conflicts, optimize yields and drawdowns, protect groundwater quality)
- provide boundary conditions for local models

REGIONAL COOPERATION AGREEMENT
- regular monitoring of Nubian Aquifer through a regional network including:
  - annual abstraction for all production sites
  - EC measurements for each abstraction site (with complete chemical analysis after major changes)
  - aquifer water-level measurements at specified locations
- international sharing of data generated by the monitoring programme
Storing and documenting the different data, covering all fields relevant to the Nubian Sandstone Aquifer System.
Processing, analysis and display of basic data.
Preparing the input parameters which are needed for the modeling at different scales, and calibration of the groundwater model and comparison of the results of modeling with other data for planning and decision making.
Provide an easy link between the participating countries through a system ensuring the exchange and flow of information.

Yearly extraction in every extraction site, specifying geographical location and number of producing wells and springs in each site.
Representative Electrical Conductivity measurements (EC), taken once a year in each extraction site, followed by a complete chemical analysis if drastic changes in salinity is observed.
Water level measurements taken twice a year in the locations shown in the attached maps and tables. The proposed monitoring network is subject to changes upon the feedback of the National Coordinators of the concerned countries.

The Vision for the NSAS
To assure rational and equitable management of the NSAS for sustainable socio-economic development and the protection of biodiversity and land resources whilst ensuring no detrimental effects on the shared aquifer countries.
1. WATER & AVAILABILITY
GW Depletion in Aljawf, Libya

11-2001  6-2012

NSAS Development Patterns - EGYPT

Groundwater Extractions from the PIAS Development Areas in Egypt (1960-2020)

PNSAS Development Patterns - EGYPT

NSAS Development Patterns - LIBYA

Groundwater Extractions from the NAS Development Areas in Libya (1960 - 2020)
PNSAS Development Patterns - LIBYA

Figure (5.19) - Water Level Hydrographs of Observation Wells in Kharga Oasis

Cumulative Withdrawals From NSAS and PNSAS in Egypt (MCM)

Cumulative Withdrawals From NSAS and PNSAS in Libya (MCM)

Figure (5.20) - Water Level Hydrographs of Observation Wells in Delta Oasis

Total Cumulative Withdrawals From NSAS and PNSAS in Egypt and Libya (MCM)
WATER & QUALITY

WATER & ECOSYSTEMS

SDG 6.5.2 Alternative

- I-15-5: Ratio of Riparian Countries with Agreements to Riparian Countries: The number of riparian countries, with water Benefit Sharing and/or Water Cooperation bilateral and/or multilateral agreements with the concerned country, as a percentage of the number of countries that are riparians to existing transboundary aquifers or river basins shared with that country. (Riparian countries may be recounted as many times as the number of different transboundary aquifer/river basins they may be sharing with the concerned country)

Thank you for your attention