# Gestion concertée du Système Aquifère transfrontalier du Sahara Septentrional-SASS(Algérie, Tunisie, Libye)

## Approche NEXUS- Interactions entre l'eau, l'alimentation, l'énergie et les écosystèmes

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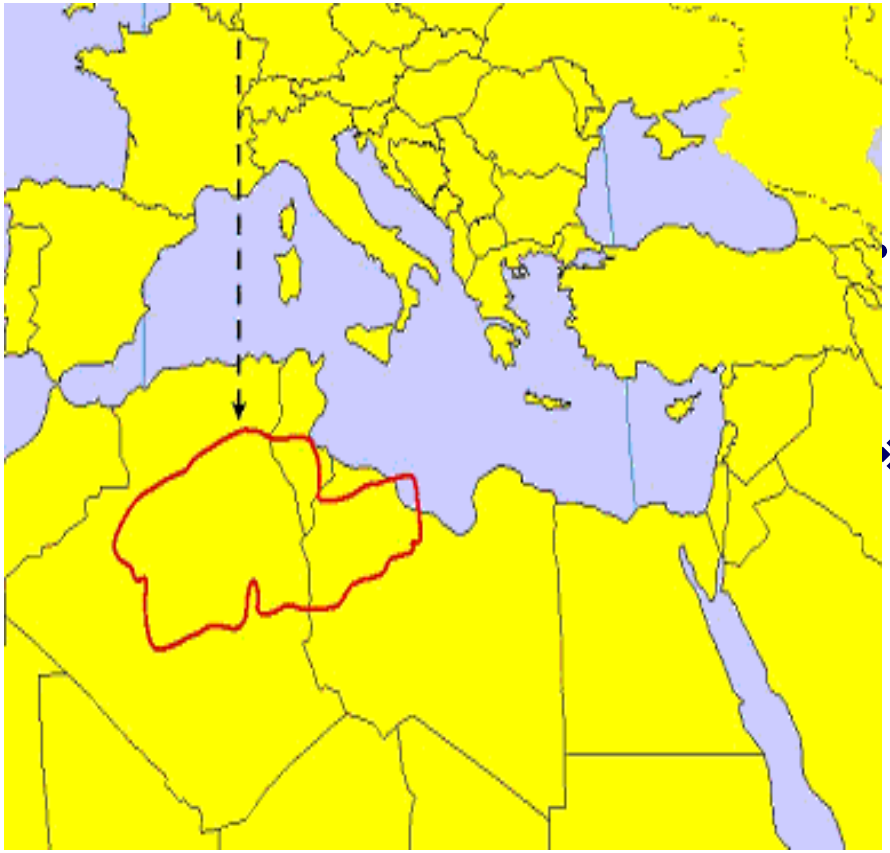
# **Projet:** Agir pour la coopération dans le secteur de l'eau en Méditerranée



- **Bassin transfrontalier** du Système Aquifère du Sahara Septentrional – SASS (Algérie, Tunisie, Libye)- 1 000 000 km2

- **Projet régional financé par l'Agence Suédoise** de Coopération Internationale au Développement

❖ **Mise en œuvre par:**
**--** Global Water Partnership Méditerranée (GWP-Med)
**--** Commission Economique des Nations unies pour l'Europe (UNECE)
**--** Observatoire du Sahara et du Sahel (OSS).

- Mécanisme de Concertation -SASS

**Durée** :4 ans

# Le développement et les risques associés de la zone du SASS

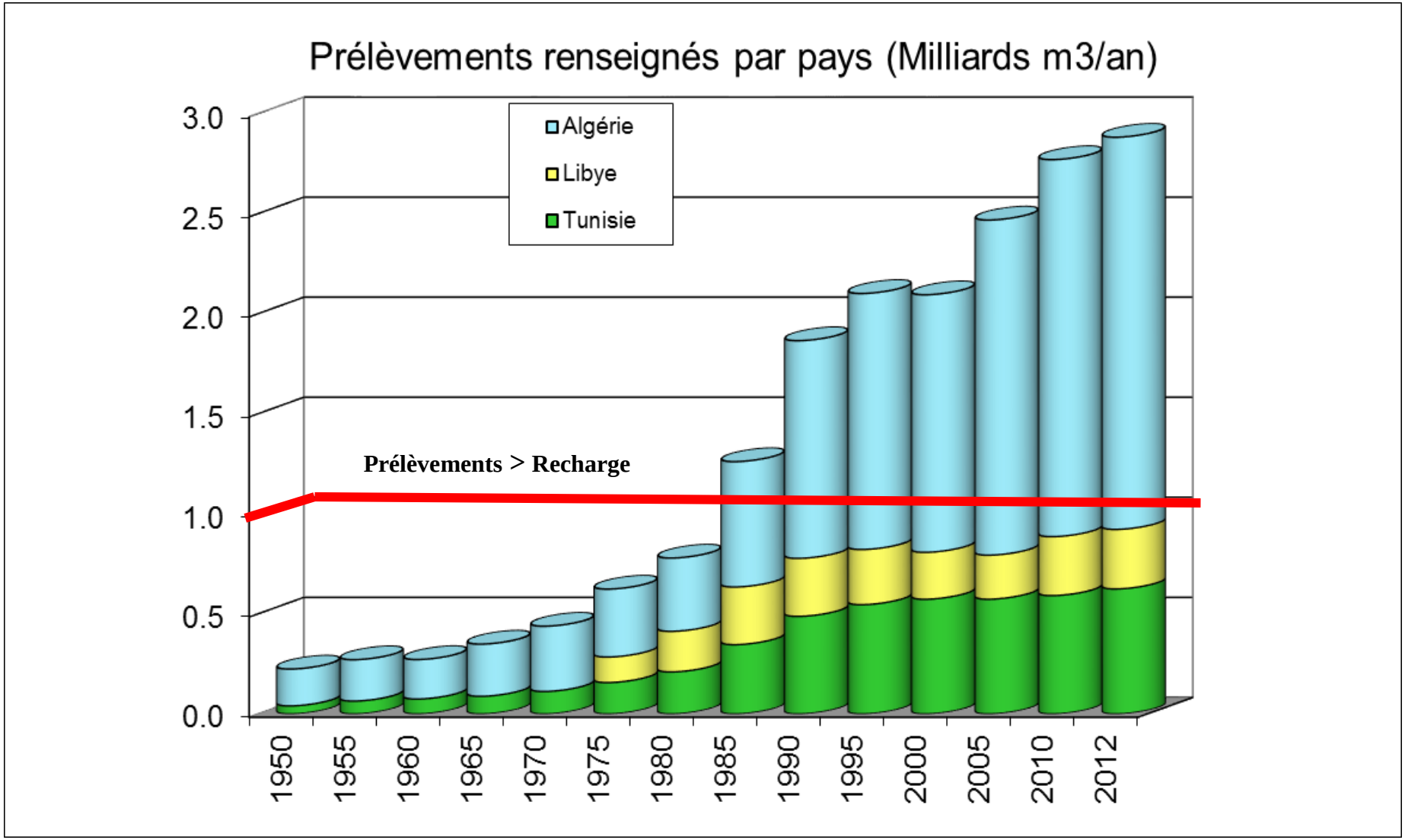
- 1- Forte sollicitation pour l'eau potable
- 2- Développement de l'agriculture
- 3- Zone pétrolifère
- 4- Protection des zones humides et de l'écosystème saharien.


**Cette exploitation se trouve aujourd'hui confrontée à de nombreux risques :**

- Salinisation des eaux
- Réduction de l'artésianisme
- Tarissement des exutoires
- Remontée des eaux des nappes phréatiques
- Interférences entre états.

**-La problématique du SASS est celle de la meilleure utilisation possible de ce réservoir d'eau dans une optique de durabilité, sachant qu'un certain nombre de problèmes se posent de plus en plus sérieusement.**

# Exploitation du SASS -Milliards m3/an




**Forte augmentation de l'exploitation**

# Evaluation Nexus du bassin aquifère du SASS: Eau- Alimentation- Energie- Ecosystèmes

- **Objectif: Renforcement de** la valorisation de l'eau, de l'alimentation et de l'énergie tout en préservant les écosystèmes par:

- **l'amélioration** des capacités et des connaissances sur les liens, avantages et compromis intersectoriels et transfrontaliers;

- **la coordination** renforcée et le renforcement des synergies entre les différents secteurs.

**Atelier de démarrage** : Tunis, 26 Janvier 2017

- Collecte de l'information: en cours
- Analyse bibliographique: en cours

**Premier Atelier Régional au niveau transfrontalier**

a été organisé les 18 et 19 Juillet à Alger,

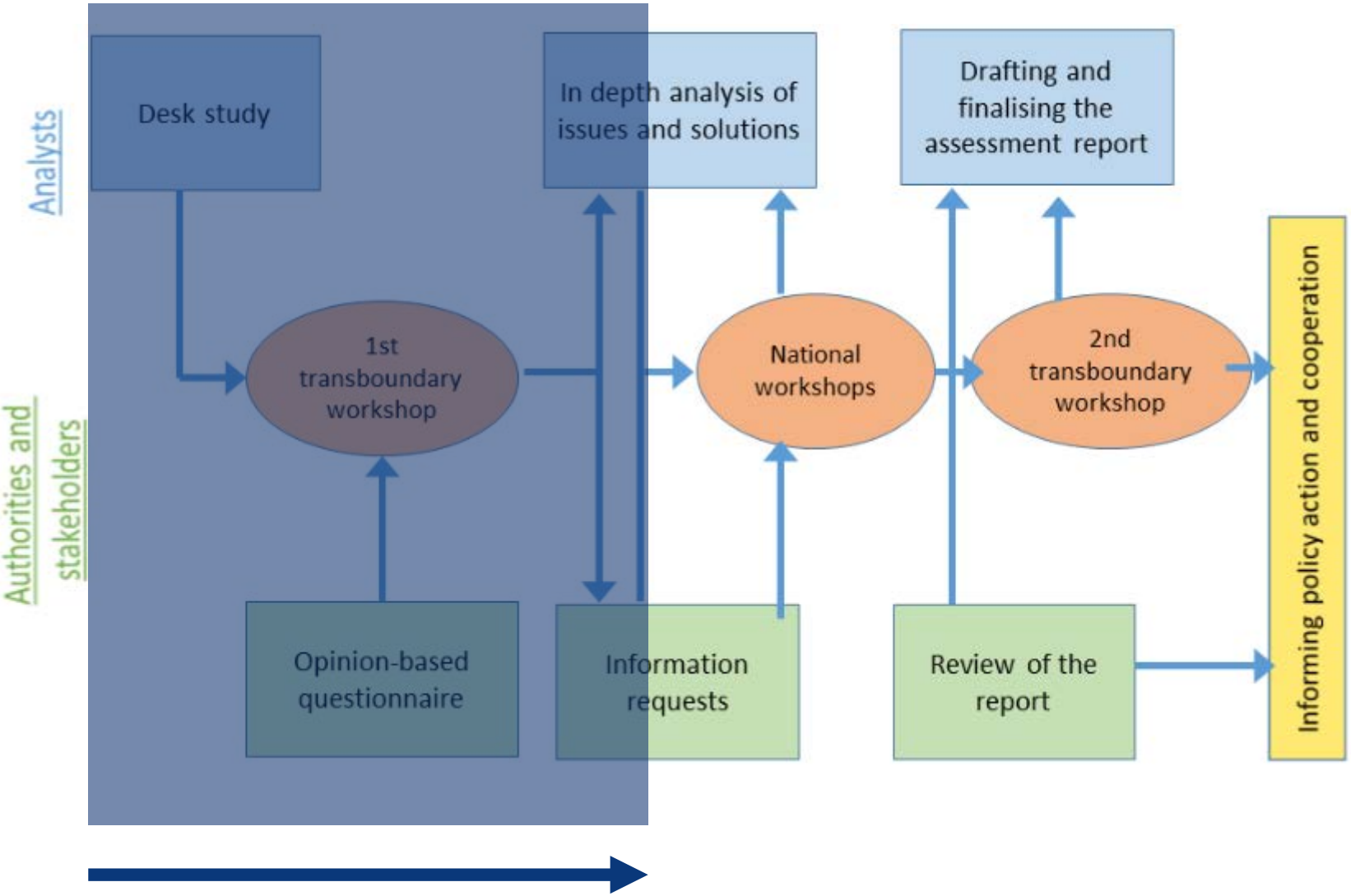
- **Participants:** Secteurs de l'eau, Energie, Agricultu Industrie, Collectivités locales, Société civile

# ETAPES PRINCIPALES DE L’EVALUATION NEXUS

- Évaluation NEXUS basée sur la méthodologie de l’UNECE;
- Étude de bureau;
- Conduite d'un processus de consultation pour soutenir l'identification des opportunités d'avantages intersectoriels et le développement d'options de développement alternatives;
- 2 ateliers transfrontaliers + ateliers nationaux;
- Evaluations techniques détaillées sur des questions / thèmes sélectionnés et identifiés comme prioritaires nécessitant une analyse plus approfondie avec les pays;

- **Ces travaux doivent introduire le développement d'une vision stratégique commune sur l'eau**

# Processus et flux d'information dans l'évaluation NEXUS du SASS



# Les inter relations NEXUS (1)

| | Water | Energy | Land/Agriculture | Ecosystem services |
|---|---|---|---|---|
| **Water** | | *Access to energy increased water extraction and transfer.<br>*Water for Enhanced Oil Recovery (EOR) systems. | * Degradation of water resources due to heavy exploitation for agricultural purposes.<br>*High water waste due to inefficient irrigation systems.<br>High dependency of agriculture on water | *Extreme phenomena (droughts, floods, and strong winds) affecting the hydrology and water uses. |
| **Energy** | *High water use increases pumping demand.<br>* Brackish water demineralization requires energy. | | * Inefficient irrigation systems contributes to water loss and in turn to increased pumping demand . | * The depletion of natural springs and the “foggara” system forced farmers to pump water from wells and boreholes. |

# Les inter relations NEXUS (2)

| | Water | Energy | Land/Agriculture | Ecosystem services |
|---|---|---|---|---|
| **Land/ Agric.** | *Soil salinization due to poor water quality, inappropriate irrigation techniques and/or insufficient drainage.<br>*Low water quality impacts agriculture production.<br>*Increased risk of saline intrusion in the Djeffara.. | *New drilling technologies increased the number of wells significantly.<br>* Land use for new power plants (e.g planned solar project in Rijm Matoug). | | *Extreme climate phenomena (i.e droughts) will have negative consequence on agriculture.<br>* State of the ecosystems and biodiversity affects productivity and resilience to climate change<br>*Degradation of natural spring reduces the available water for irrigation. |
| **Eco-system services** | *Degradation of the biodiversity due to aquifer overexploitation.<br>*Expansion of irrigation (including new areas), water use inefficiency or poor drainage may result in ground-water table increase &asphyxia<br>* Water quality degrading, pollution may provoke health impacts | * Pollutants and emissions form oil and gas industry and Electricity generation plants. | * Agricultural and land use practices aggravate land degradation (fragmentation of land, inappropriate fertilizer use etc.)<br>* Change in land use and vegetation cover affects desertification -> loss in habitat, alteration of ecosystem, reducing plant cover and carbon in soil | |

# Le rapport technique: son contenu

- A 1: Introduction
- A 2: Overview of the resources, their use and governance
- A 3: Nexus in the NWSAS
- A 4: Challenges (clusters of nexus issues) and selected solutions
- A 5: Benefits of cooperation
- A 6: Conclusions and recommendations

- B1: Geography, resources and climate
- B 2: Governance analysis
- B 3: Socioeconomic situation and the main resource used in the NWSAS

# Challenges areas (clusters of intersectoral issues) & specific challenges (4.1)

**Modernizing and increasing the value and viability of agriculture**

1. High irrigation water losses due to inefficient irrigation systems
2. Degradation of the groundwater resource affecting agriculture
3. Water and Soil salinization due to high use

**The proposed general direction of action (solutions):**

- Modernize and improve sustainability of agricultural infrastructure and production, and increase the value and viability of agriculture.
- Improve access to markets. Valorize ecosystem links by appropriate placement of agricultural activities so that they benefit from protection of natural vegetation and from natural land improvement and nutrients deriving from animal husbandry.
- Develop related capacities as well as review the relevant policy frameworks and financing arrangements.

# Challenges areas (clusters of intersectoral issues) & specific challenges (4.2)

## Slowing down depletion of the groundwater resource and rationalizing water use

1. Vulnerability and dependency of economic activities on groundwater resources
2. Increased risk of saline intrusion from chotts
3. Degradation of biodiversity due to aquifer overexploitation

## The proposed orientation for action:

Rationalizing water use and reducing gradually abstraction of groundwater from the aquifers by improve efficiency in different water uses, reducing waste (assessing techniques like managed aquifer recharge, water-efficient technology), strategically developing and exploring the potential of alternative water sources (including water reuse especially for purposes which do not require the highest quality, desalinization).

Control new abstraction from the aquifers, develop permitting and enforcement. Protect and manage sustainably the ecosystems for ensuring recharge and limiting land degradation.

# Challenges areas (clusters of intersectoral issues) & specific challenges (4.3)

**Sustainable energy for water management and economic development in the NWSAS**

1. Increasing pumping demand
2. Energy for demineralization units
3. Intermittent electricity supply in rural areas
4. Access to energy and new drilling technologies increased the number of wells

**The proposed orientation for action:**

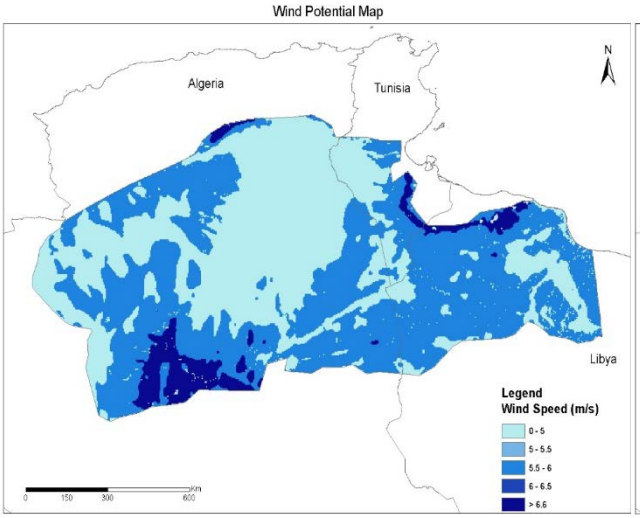
-Improving the energy efficiency as one of the pillars for reducing energy demand and releasing the stress on energy suppliers;

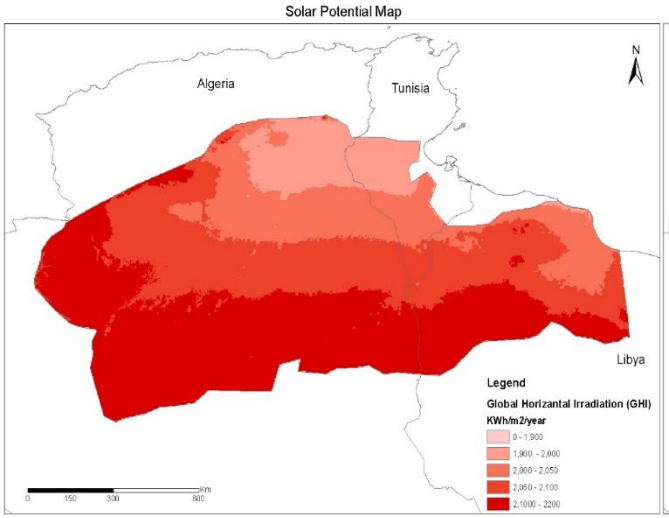
-Reducing energy bills, hence contribute to the well-being of the NWSAS population.

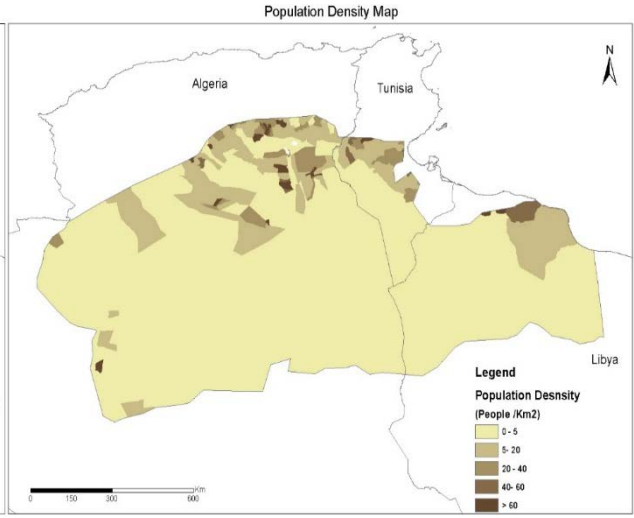
-Exploring the potential of such measures and related decisions will need to be based on an up-to-date and comprehensive data covering different sectors for evidence-based policy-making process. Identify potential constraints for beneficial use of treated wastewater and sustainable management of drainage waters.

-Explore good practices in treatment technology for wastewaters and drainage waters (also for potential energy benefits).

# Challenges areas (clusters of intersectoral issues) & specific challenges (4.3)




Energy for improve rural electrification

Energy for irrigation

Energy for demineralization

# شكــرا علــى حســن الاصغــاء

*Merci de votre attention*

*Thank you for your attention*