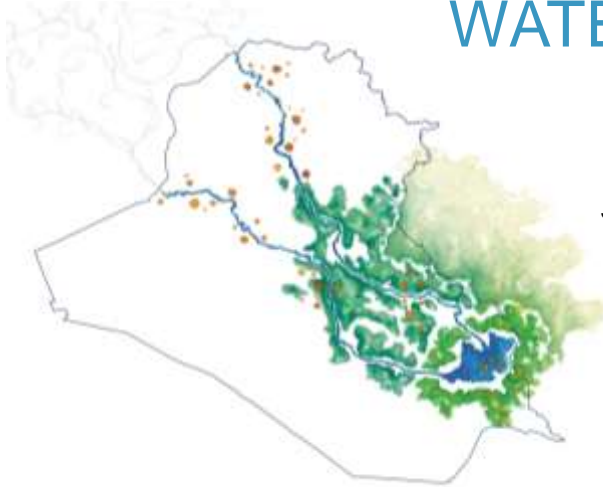




# REUSE OF DRAINAGE WATER IN IRAQ

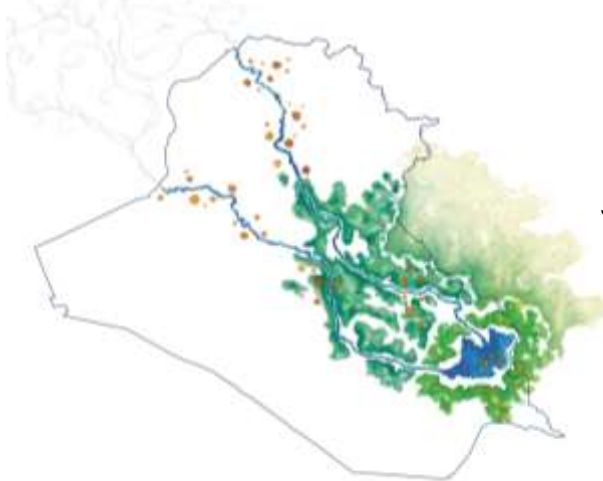


**Julien LECOLLINET**  
jlecollinet@gmail.com

WORKSHOP: FUTURE OF DRAINAGE UNDER ENVIRONMENTAL CHALLENGES AND EMERGING TECHNOLOGIES 1



# REUTILISATION DES EAUX DE DRAINAGE EN IRAQ



**Julien LECOLLINET**  
jlecollinet@gmail.com

WORKSHOP: FUTURE OF DRAINAGE UNDER ENVIRONMENTAL CHALLENGES AND EMERGING TECHNOLOGIES 2



# Presentation outlines

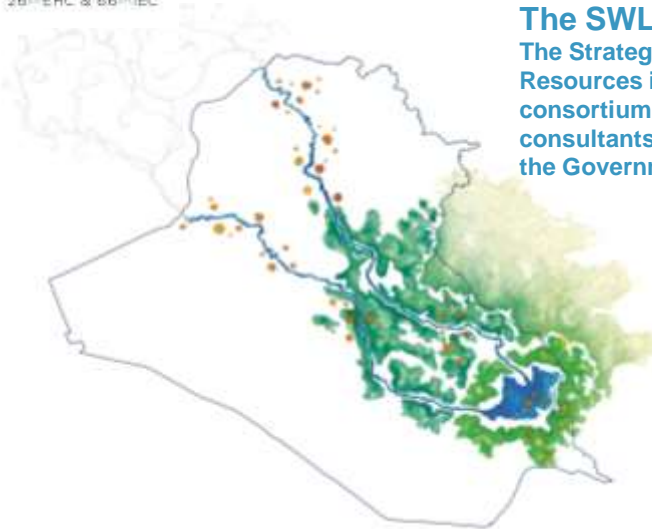
1. IRAQ'S WATER SITUATION
2. THE NEED FOR ACTION
3. THREE OPTIONS FOR DRAINAGE WATER REUSE
4. CONCLUSION

NAME OF THE SESSION OR THE WORKSHOP

3



## REUSE OF DRAINAGE WATER IN IRAQ



**The SWLRI Project:**  
The Strategy for Water and Land Resources in Iraq was realized by a consortium of International consultants from 2011 to 2014 for the Government of Iraq (GoI).

NAME OF THE SESSION OR THE WORKSHOP

4



## REUSE OF DRAINAGE WATER IN IRAQ

Iraq's Water-Food-Energy-Environment Nexus



The need for a delicate balance between competing water uses

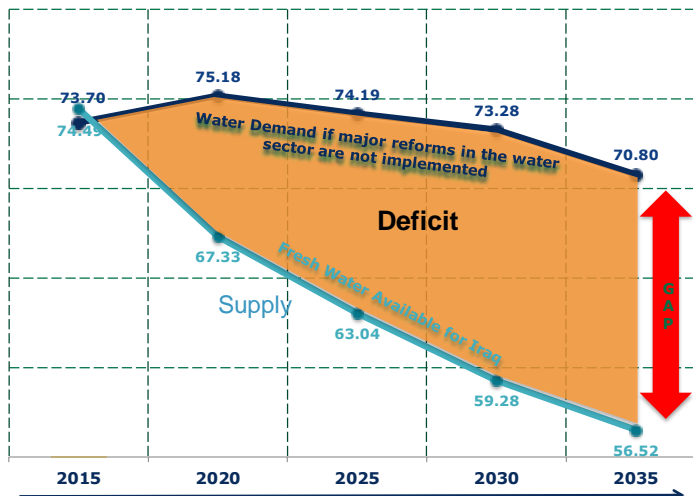
NAME OF THE SESSION OR THE WORKSHOP

5



## REUSE OF DRAINAGE WATER IN IRAQ

### A NEED FOR ACTION



NAME OF THE SESSION OR THE WORKSHOP

6



## REUSE OF DRAINAGE WATER IN IRAQ

### The Need for Urgent action for:

- feeding and providing energy for a growing population,
- combating drought and adapting to climate change,
- sustaining a healthy environment

➔ **The re-use of drainage waters was part of the strategy.**

NAME OF THE SESSION OR THE WORKSHOP

7



## REUSE OF DRAINAGE WATER IN IRAQ

- Present water use in irrigation in Iraq is approximately 50 BCM/year
- Inefficiency of the Irrigation System
- Large parts of the irrigation water goes back to the river or goes to the MOD
- The MOD Collects 3,8 MCM per year
- In 2035, a total of 4.6 BCM per year will be collected and made available for reuse



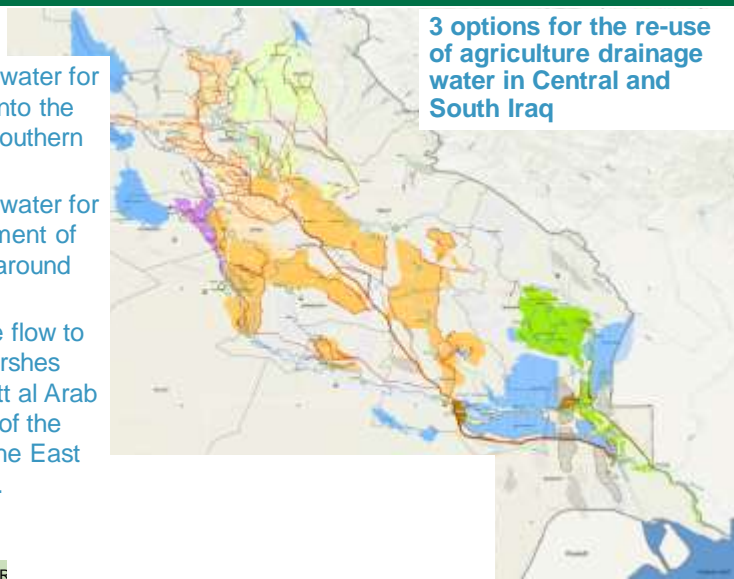
NAME OF THE SESSION OR THE WORKSHOP

8



## REUSE OF DRAINAGE WATER IN IRAQ

1. Provision of water for re-injection into the oil fields of southern Iraq;
2. Provision of water for the development of green belts around cities;
3. Augment the flow to Hammar Marshes and the Shatt al Arab (via the use of the water from the East Tigris Drain).



3 options for the re-use of agriculture drainage water in Central and South Iraq

NAME OF THE SESSION OR THE WORKSHOP



## REUSE OF DRAINAGE WATER IN IRAQ

### Option 1: Re-injection in the Oil fields



**1,5 Barrels of water to produce 1 barrel of crude oil**

In a water-scarce future Iraq, there is no justification to use freshwater to support oil production.

The country will have to rely heavily on the re-use of treated water to support the energy and industrial sectors.

The Strategy assumes that 69.2% or 1.227 BCM per year of the water needs for the oil industry will be provided by alternative sources of water. The cumulative need for the oil sector is 1.773 BCM/year (or 3.25% of the total available fresh water)

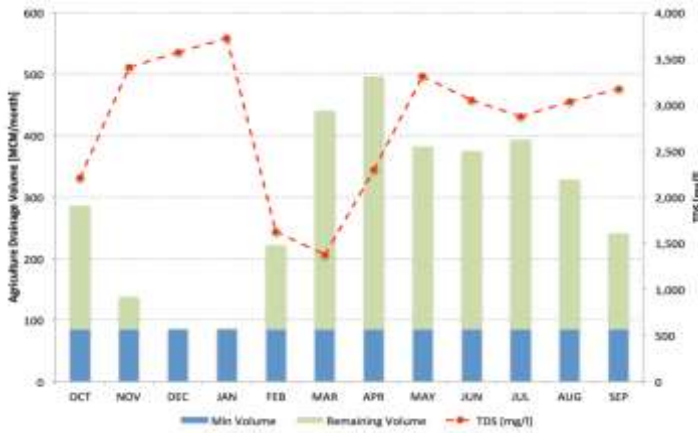
NAME OF THE SESSION OR THE WORKSHOP

10



## REUSE OF DRAINAGE WATER IN IRAQ

### Option 1: Re-injection in the Oil fields



*69.2% of the water needs of the Oil Industry in Central and South Iraq can be covered*

NAME OF THE SESSION OR THE WORKSHOP

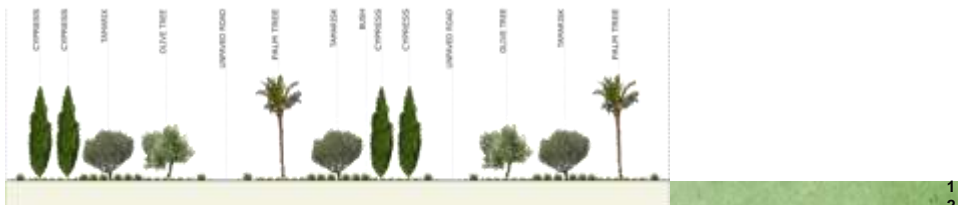


## REUSE OF DRAINAGE WATER IN IRAQ

### Option 2: Green belts around the cities

Green belts have been proposed for development around cities. The objectives are:

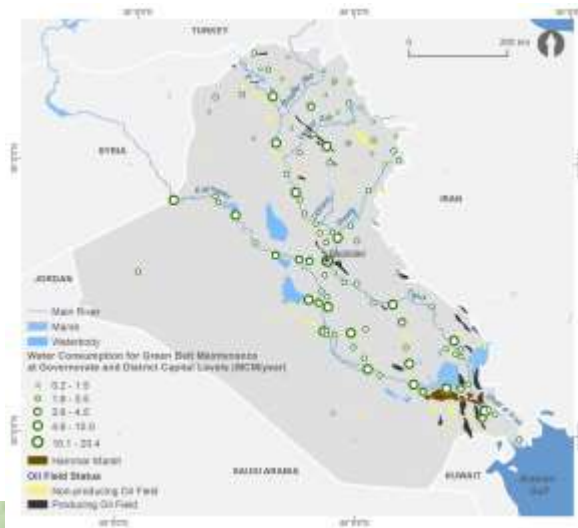
- to mitigate the effects of wind erosion, thereby preventing desertification and reducing other negative impacts of dust.
- To provide shelter and habitat for wildlife, supporting biodiversity,
- To create a space that can be used for as parks for recreation.



## REUSE OF DRAINAGE WATER IN IRAQ

### Option 2: Green belts around the cities

- 150m wide Green belt
- Selected species of salt tolerant tree varieties and bushes
- Drip irrigation in the first years
- The project covers the governorates and district capitals
- A total of 28,000 Ha are concerned
- A total water demand of 0,313 BCM / Year compared to the 9,3 BCM of drainage water generated



## REUSE OF DRAINAGE WATER IN IRAQ

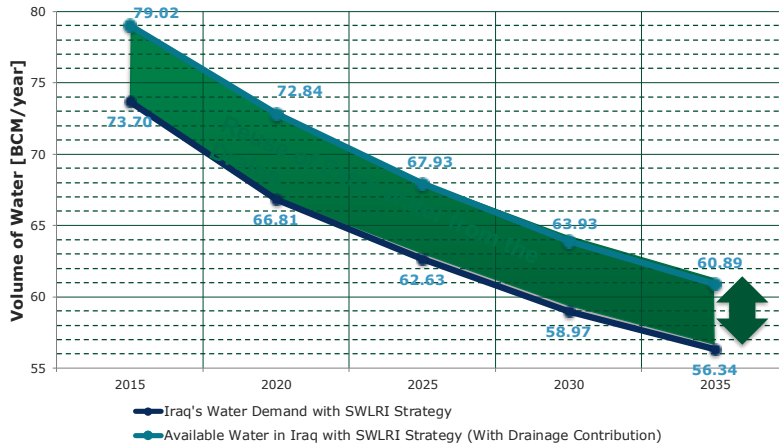
### Option 3: Supply the Hammar Marshes



Net from the re-use of water for **oil field re-injection** (0.550 BCM/y) and the proposed **green belts** program (0.313 BCM/y), the MOD will still provide an additional 2.611 BCM annually from the drainage of irrigation projects

## REUSE OF DRAINAGE WATER IN IRAQ

### STRATEGY IMPLEMENTATION: AN ALTERNATE FUTURE



NAME OF THE SESSION OR THE WORKSHOP

1  
5

## REUSE OF DRAINAGE WATER IN IRAQ

### CONCLUSION

- Water scarcity necessitates efficient use of water and identification of creative ways for reusing water.
- The re-use of drainage water greatly expand the ability of Iraq of meeting its objectives for 2035 and beyond
- Poor water quality and topographic constraints limits the reuse in agriculture
- The reuse of drainage water can sustain industrial and environmental needs

NAME OF THE SESSION OR THE WORKSHOP

1  
6





## REUSE OF DRAINAGE WATER IN IRAQ

---

**THANK YOU !**

**Julien LECOLLINET**

Chargé d'Affaires Hydraulique et Maitrise d'Oeuvre



+33 (0)5 62 51 71 65

+33 (0)6 33 08 75 89

Skype : julienlec

[j.lecollinet@cacg.fr](mailto:j.lecollinet@cacg.fr)

[www.cacg.fr](http://www.cacg.fr)