

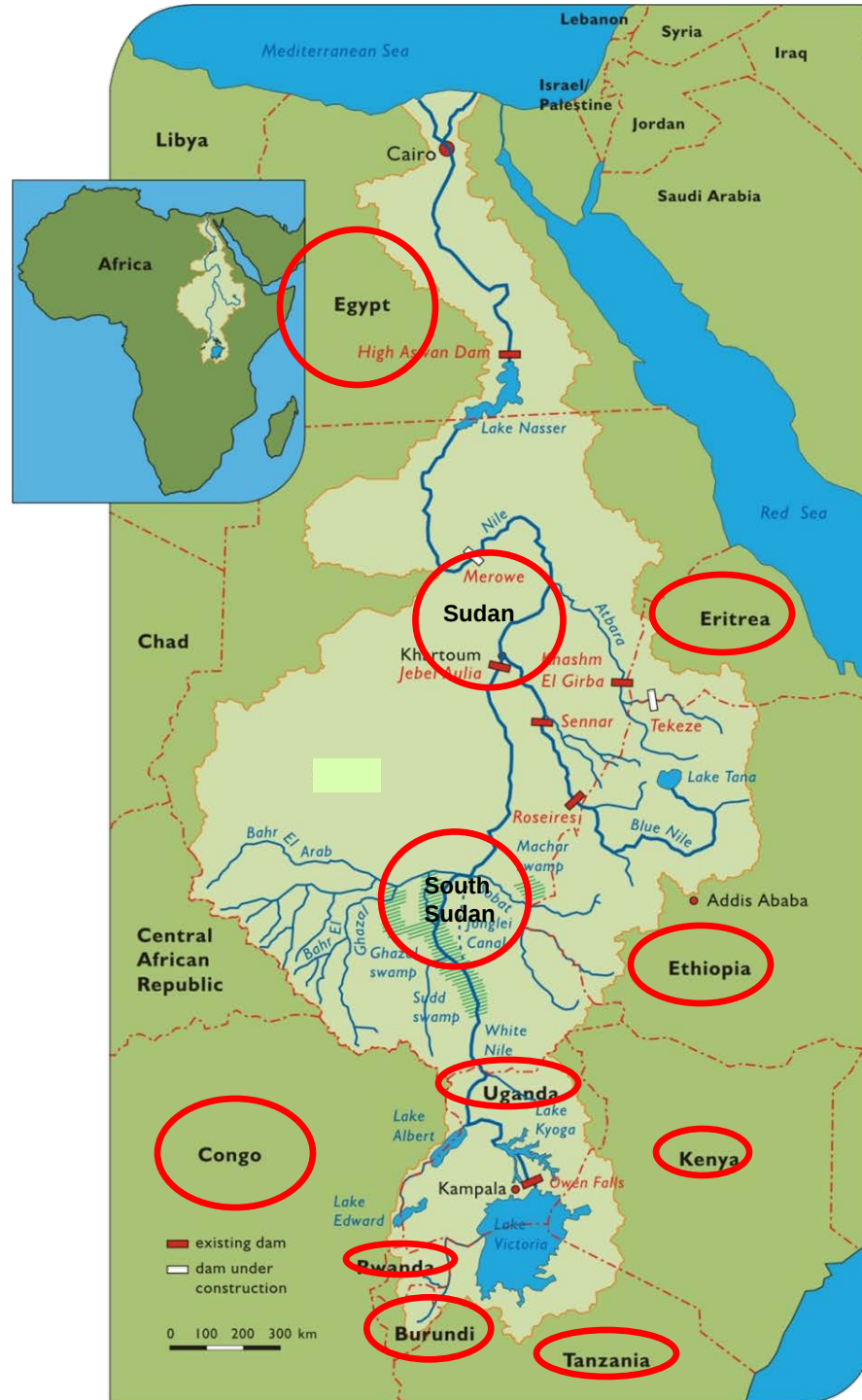


International Round Table
Conference on Wetlands
Teheran – 16-18 March 2014

Transboundary Water Resources Management in the Nile basin

Eelco van Beek
Deltares / UNESCO-IHE
Netherlands

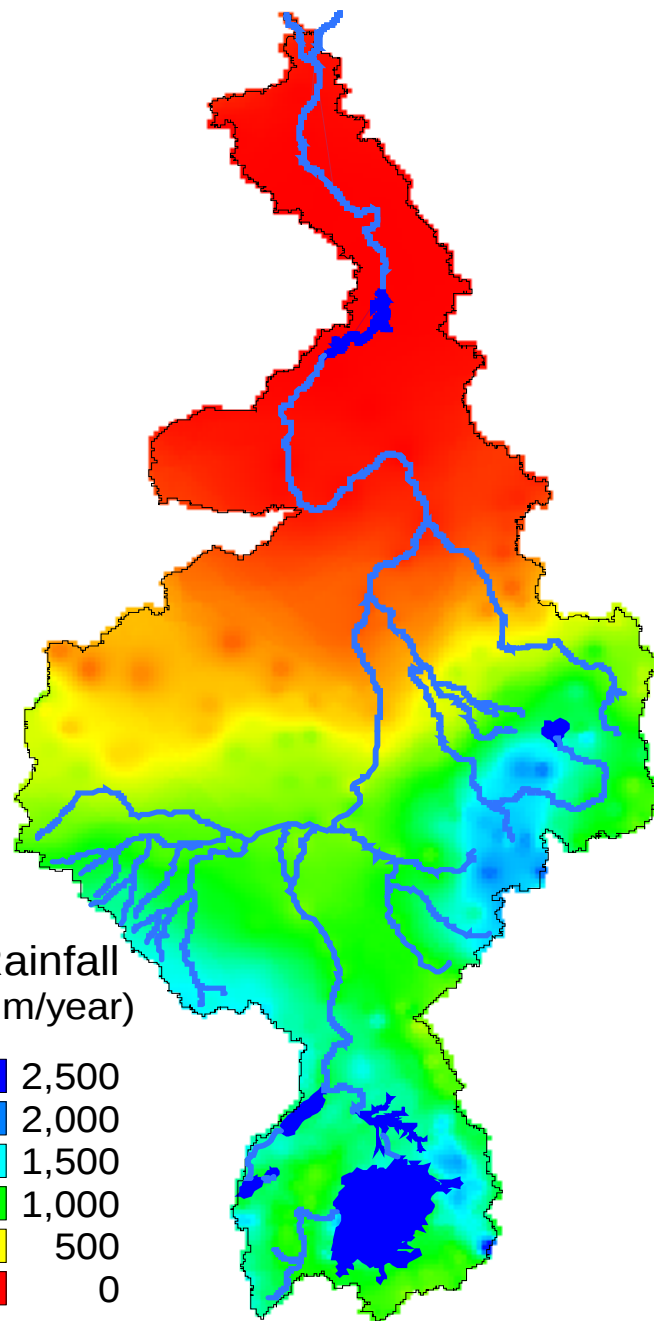
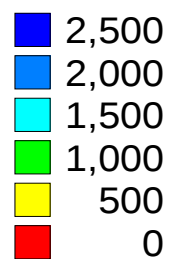




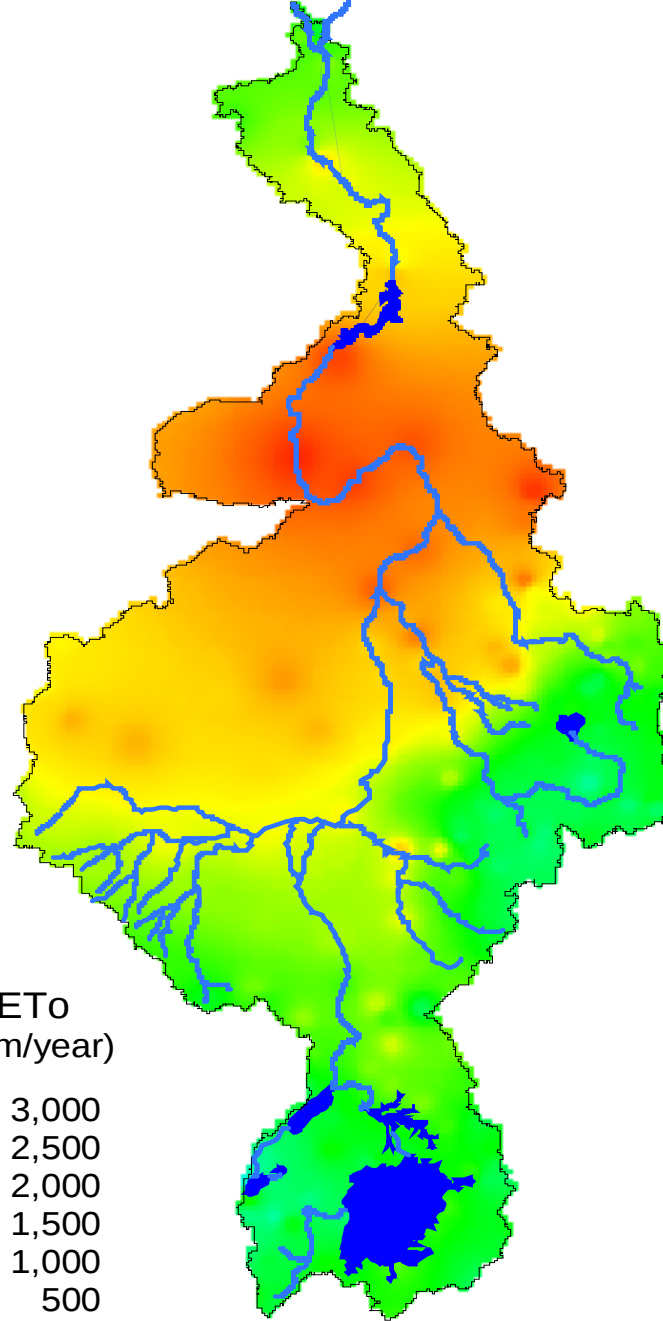
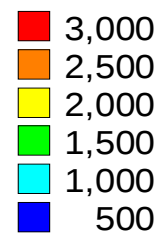
Nile Basin Countries

Burundi
DRC
Egypt
Eritrea
Ethiopia
Kenya
Rwanda
Sudan
South Sudan
Tanzania
Uganda

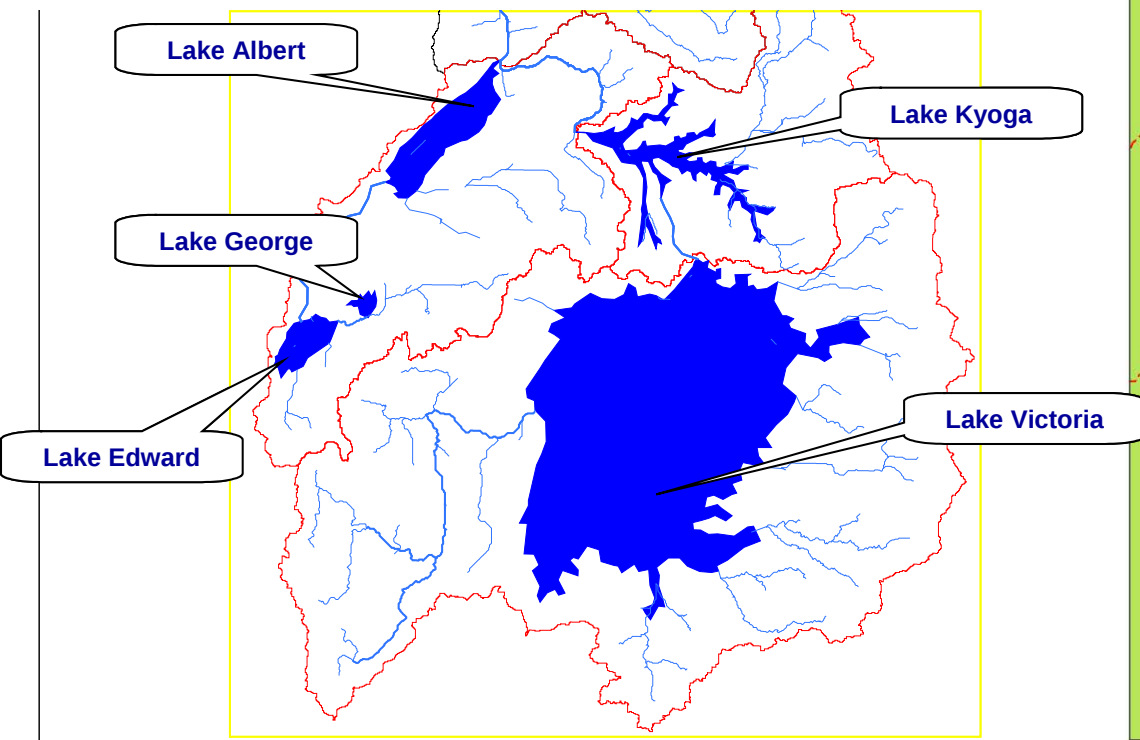
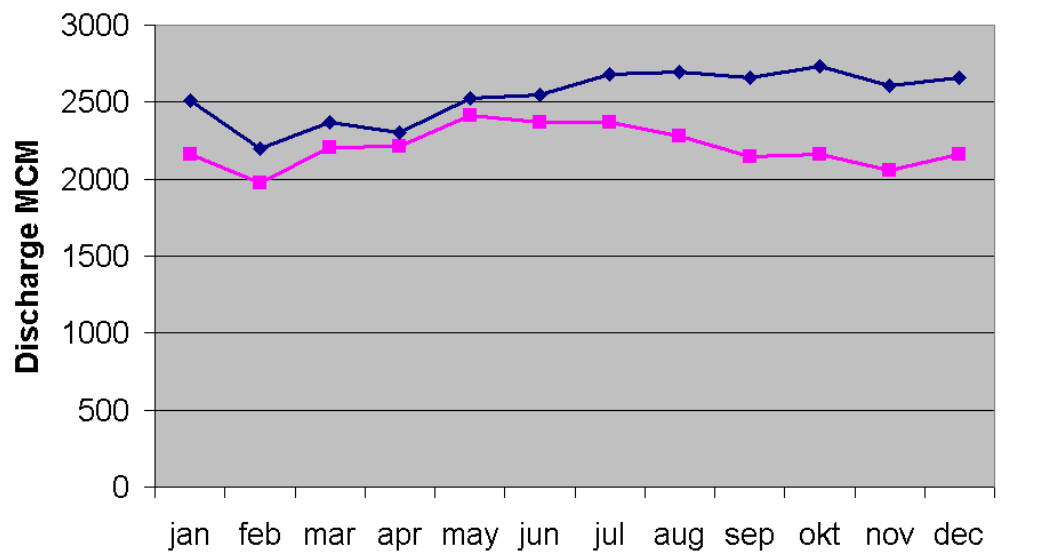
Rainfall
(mm/year)



ETo
(mm/year)

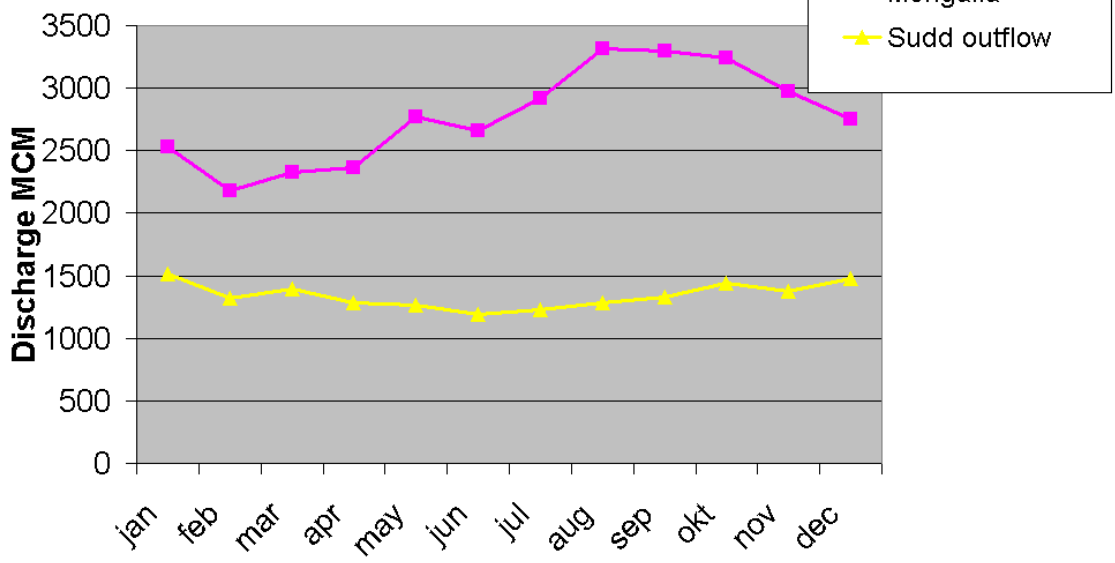


Outflow East African lakes

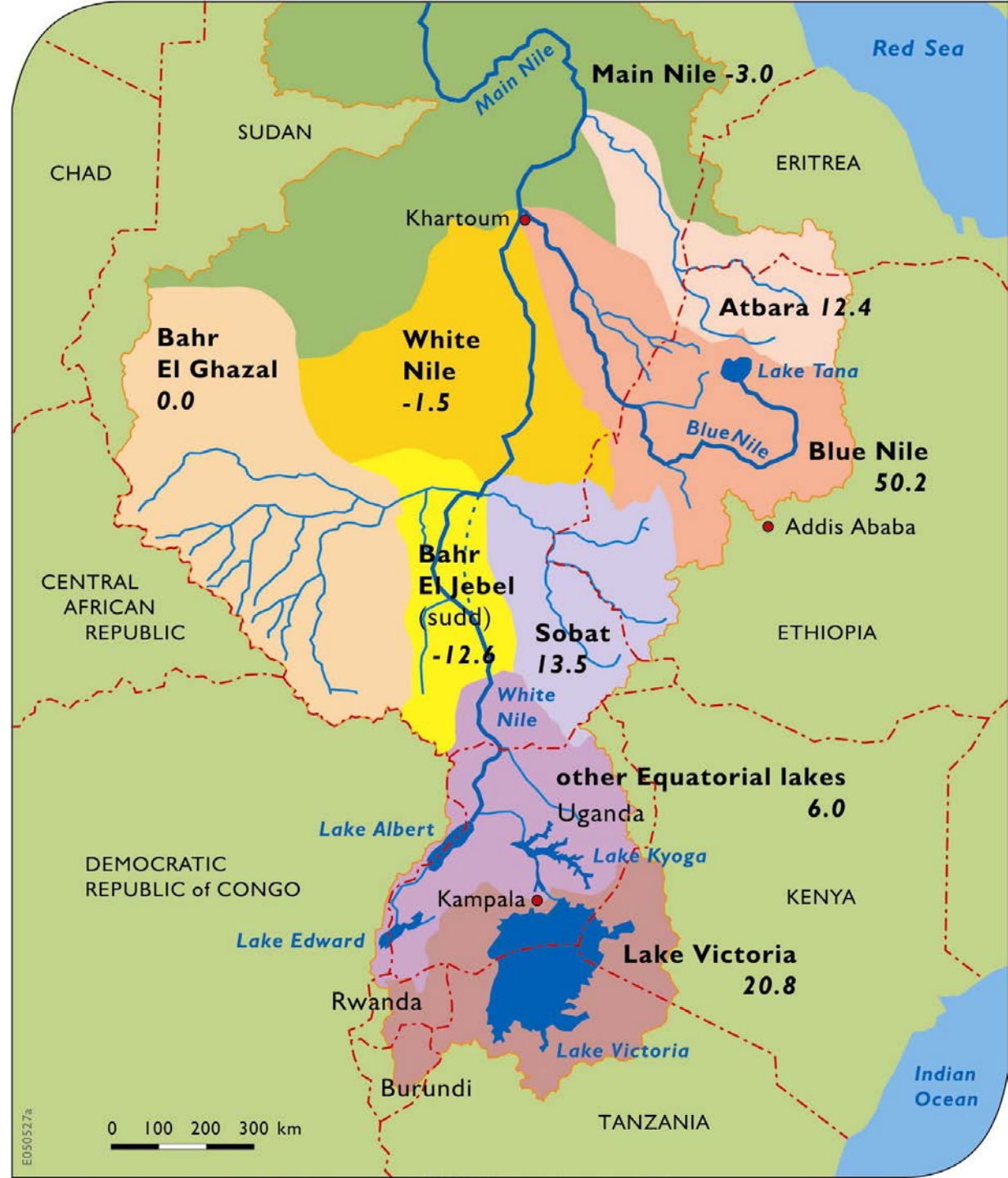


Sudd swamp

Sudd inflow and outflow



Water balance Nile d/s Egypt in BCM/yr

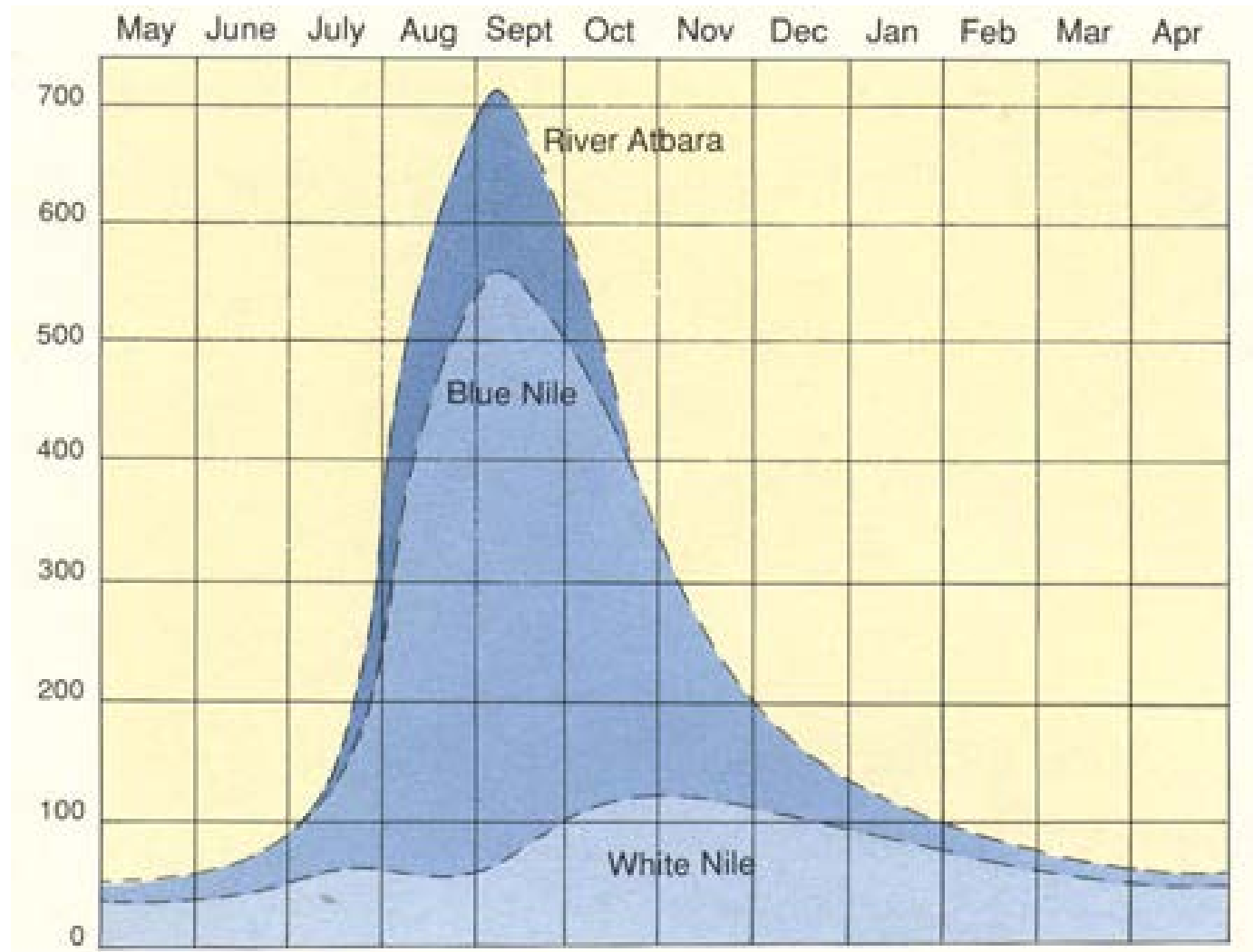


Eastern Nile

- **The main source of Egypt's water**
 - **Blue Nile (Abbay)**
 - **Atbara**
- **Very seasonal flow**
 - **flood protection is an issue**
- **Lake Nasser can accommodate this variation (including over-year storage)**



Flow in MCM/day into Lake Nasser





- **Egypt =**
 - Delta
 - Valley
 - Some oases
- **Only 7% of total area is inhabited**
- **Hardly any rainfall**
- **Fully dependent on Nile discharge (+ storage in Lake Nasser)**

Egypt: population growth scenario's



A changing world

changes in life styles

**Each 150 g. burger
requires 2400 liters of
water.**



As people become wealthier their diets change.

They consume more meat and dairy products.

They take more energy and water to produce than vegetable diets.

Prosperous people use more energy to maintain their lifestyle.

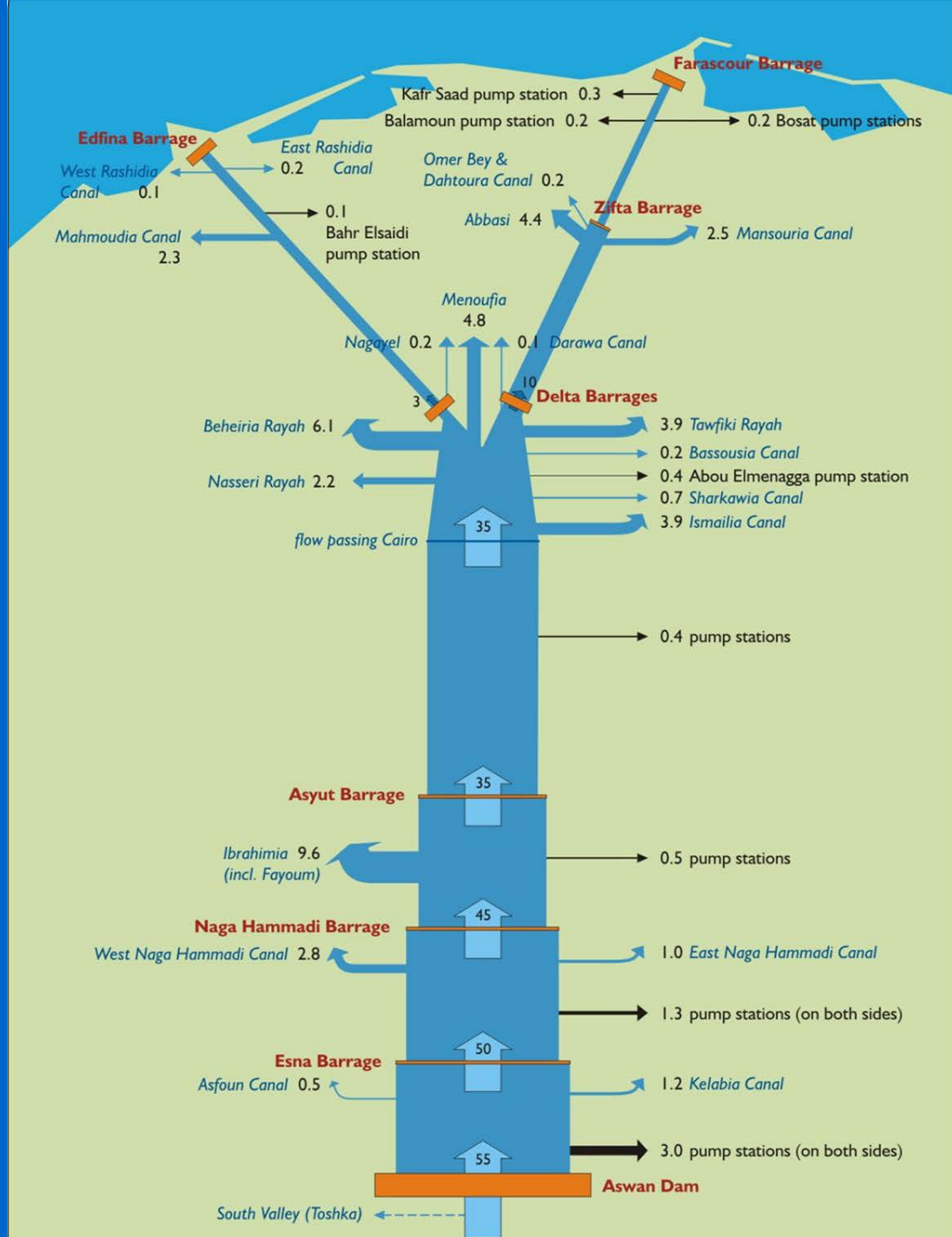
Horizontal expansion

- Increase irrigated agricultural area by 35%
- Supply remains the same (55.5 BCM)
- Water availability per area (feddan) will decrease
- Developments take place without considering the limitation of the supply



Distribution
of 55.5
BCM/yr in
Egypt

= 2000 m³/s

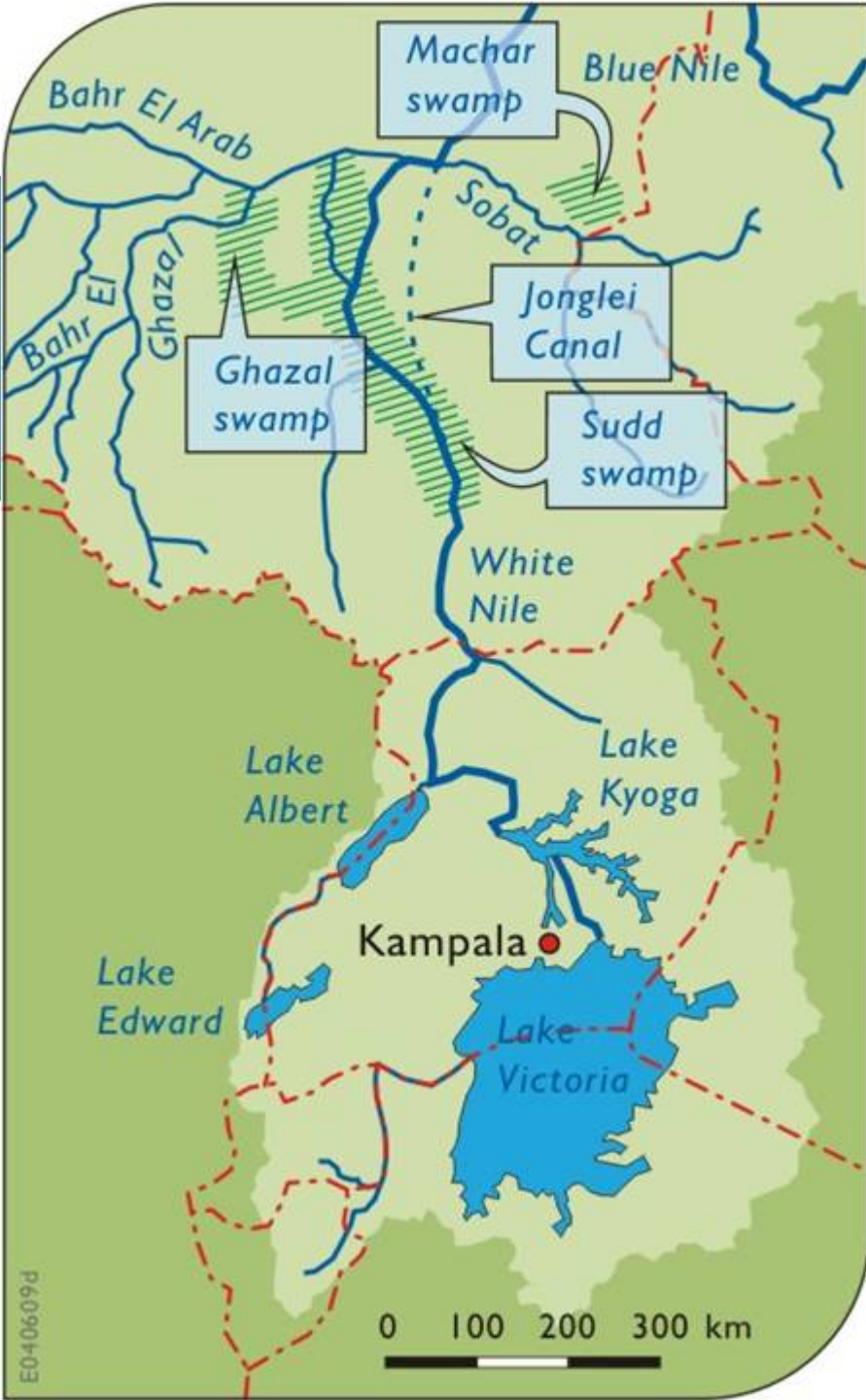


- Canal length 37,000 km
- Also used for drinking water supply

Drainage system

- Total length 29,000 km
- In most cases also used for sewage disposal





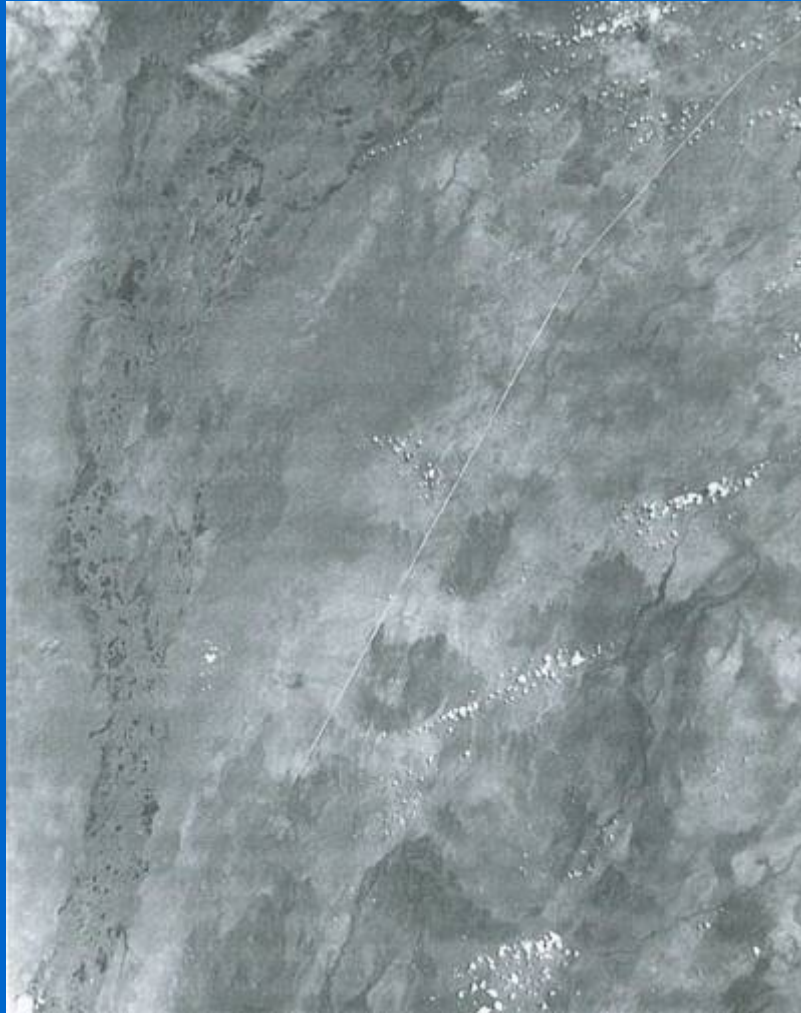
Solution: Egypt to get more water from Nile?

- **Jonglei canal?**
- **Reservoirs in Ethiopia?**
- **Climate change?**
- **But what about the (future) needs of Ethiopia and Sudan?**

Nile Basin Initiative



Jonglei canal impressions



Jonglei canal

- Length: 360 km (2/3 completed), capacity 20 Mm³/day
- Construction was announced in 1974, started in 1978 and stopped in 1983 because of civil war in South-Sudan
- Sensitive socio-political and environmental issue, also in Sudan
- Impacts
 - decrease of flooded area
 - decrease of yearly dynamics
 - loss and change of habitat
 - wetlands are important for livelihood local population (Dinka, Nuer and Shilluk)
 - restrict movements of people, cattle and wildlife across the canal (WWF: empty canal is wild trap)
- Much research has been done
 - most research is rather outdated (and assumed the construction of the Jonglei canal as starting condition)
 - main physical issue (hydrological performance of Sudd) is not well understood
 - global thinking about this kind of projects have changed

Potential developments along the Blue Nile



Renaissance Dam



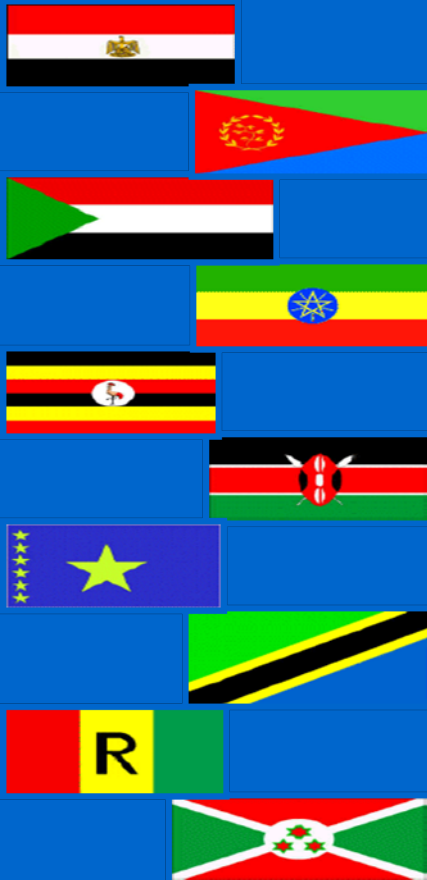
Agreements on the Nile

- **1929: Egypt and Great Britain** (repr. Sudan, Kenya, Tanzania and Uganda)
 - no works to be undertaken on the Nile, tributaries and lakes which would reduce the volume of the Nile water reaching Egypt
 - Egypt has the right of inspecting the implementation of projects
- **1959: Egypt and Sudan**
 - construction of High Aswan Dam (Lake Nasser) and Roseiras (Sudan)
 - allocation: 55.5 BCM to Egypt and 18.5 BCM to Sudan
 - additional water (by projects, climate change, etc.) to be shared equally between the two countries
- **1993: Egypt and Ethiopia**
 - both countries should not embark on any works on the Nile that could harm and effect other countries
 - consultation and cooperation between both countries for utilization of the Nile water to increase water flows and to reduce losses

International Co-operation on the Nile

- 1929 Nile Water Agreement
- 1959 Agreement for Full Utilization of the Nile Waters ('Lake Nasser' agreement)
 - only between Egypt and Sudan
- 1992 TECCONILE
- 1999 Nile Basin Initiative

NBI objectives



- To develop the water resources of the Nile Basin in a sustainable and equitable way to ensure prosperity, security and peace for all its peoples.
- To ensure efficient water management and the optimal use of the resources.
- To ensure cooperation and joint action between the riparian countries, seeking win-win gains.
- To target poverty eradication and promote economic integration.
- To ensure that the program results in a move from planning to action.

Shared Vision

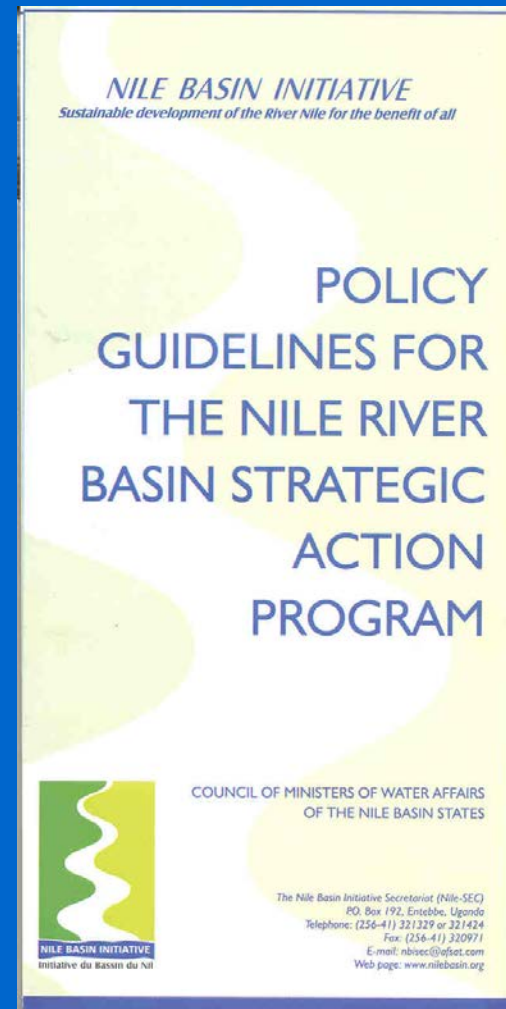
Shared Vision
Program

Subsidiary
Action Prog.

Action on the ground

Multi-track Strategy

Shared Vision: to achieve sustainable socio-economic development through equitable utilization of, and benefit from, the common Nile Basin water resources.



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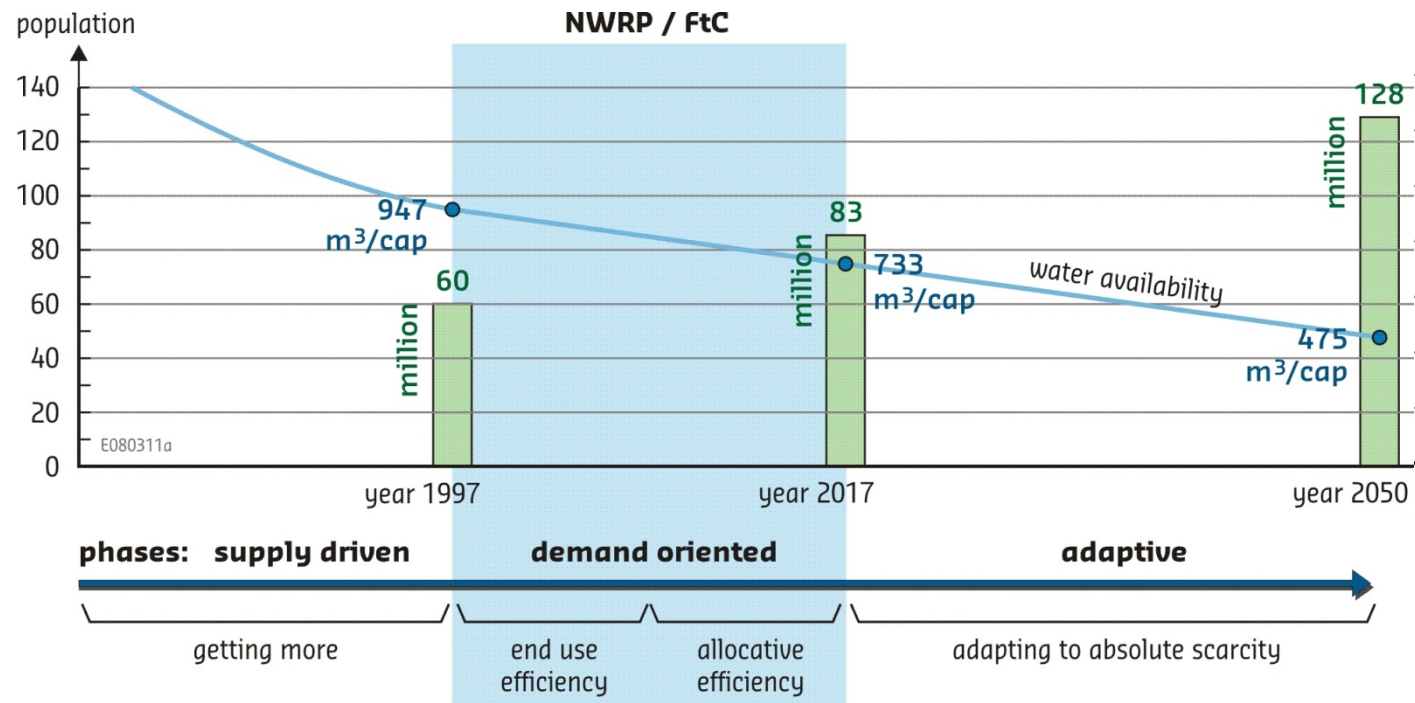
Lessons for Iran ?



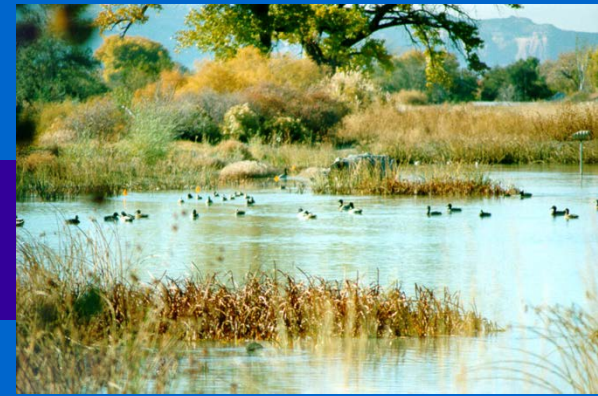
1. Change in perspectives needed on how to develop and manage the water system

Changing perspectives on water-management: example Egypt

modified after: Turton



Lessons for Iran ?



1. Change in perspectives needed on how to develop and manage the water system
 - only then it will become possible to deal with water shortage and make a serious start with sustainability
2. Interagency (nations, provinces) cooperation requires a lot of effort
 - joint vision on how to develop and manage the water system
 - actions on the ground (for which funding is required)
 - to get support of the stakeholders
 - external support (with money)
 - NBI – World Bank and many other donors
 - Iran – Central government?