

IWRM in fragile states – UNEP's experience from seven years of IWRM in Darfur, Sudan

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SUDAN A Snapshot

Capital

Khartoum

Population

• 44 Million

Area (in sq. km)

• 1,882,000

Language(s)

Arabic

Poverty rate

• 46.5%

Per capita GDP

• USD 816 (2018)

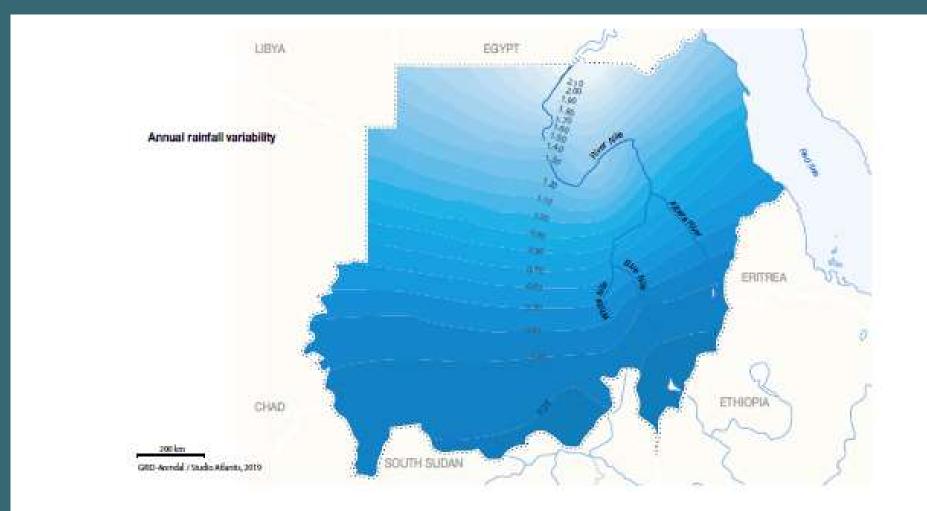
Human Development Index

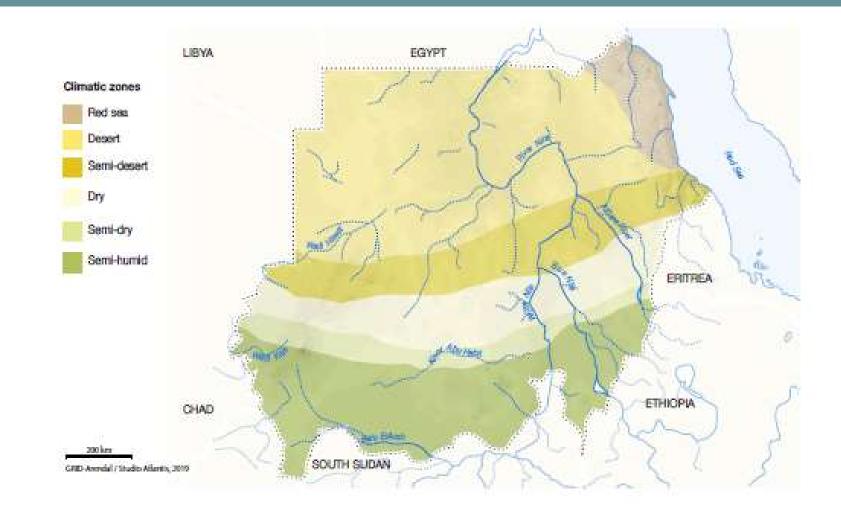
• Ranks 170/188

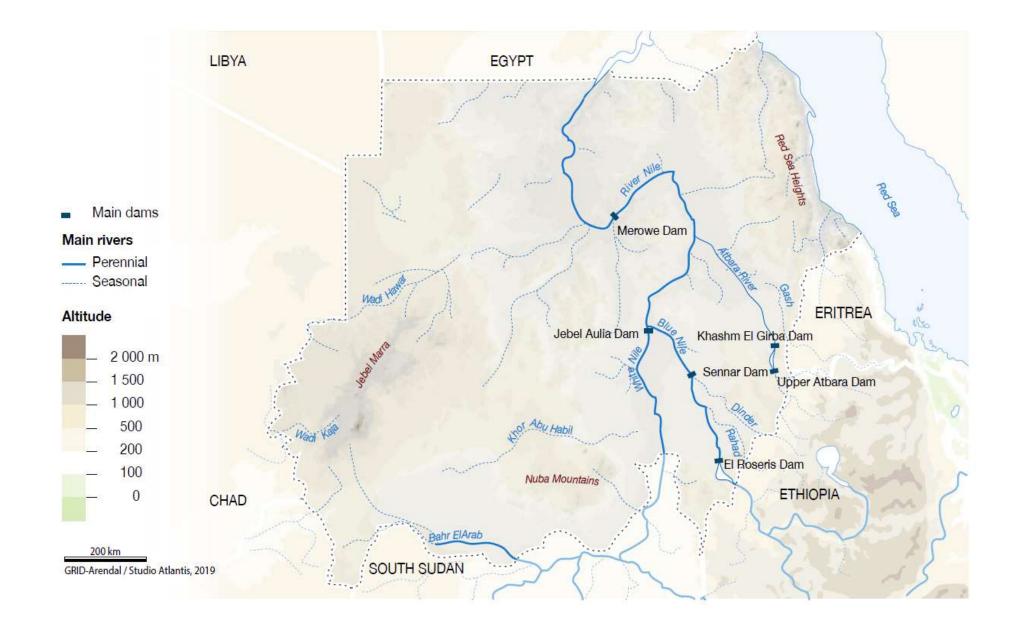


SUDAN The land

- Sudan, situated in Northeast Africa
- Total area of 1,882,000 sq km, third largest country in Africa
- River Nile traverses
 from South to North
- Red Sea covers about 750 kms of eastern coast

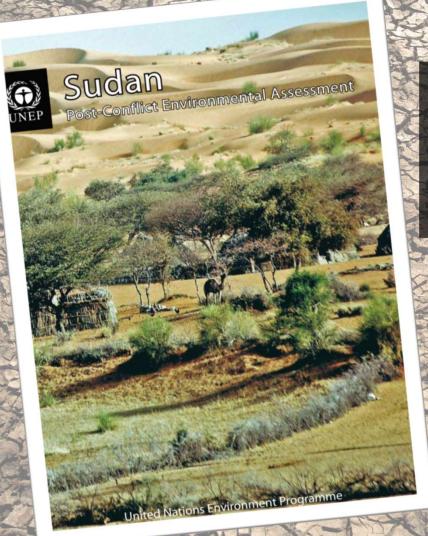






KEY ELEMENTS OF UN Environment SUDAN PROGRAMME





Since completing a major environmental assessment of Sudan in 2007, UN Environment has established an active country presence and developed a Sudan Integrated Environment Programme.

Thematic areas:

- Climate change
- Water
- Natural Resource
 Management

Themes of the Programme

- Natural resources management
- Livelihoods

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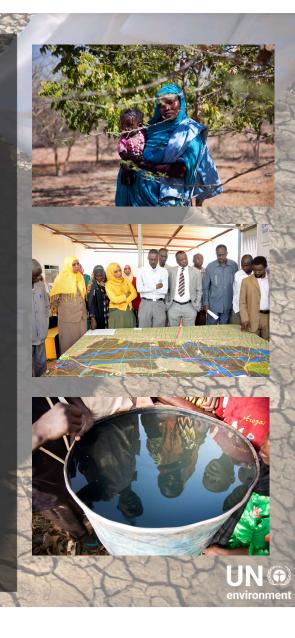
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- Climate change adaptation
- Environmental Governance
- Peacebuilding and conflict resolution
- Gender

Means of Interventions

- Community-based/participatory processes
- IWRM
- Environmental mainstreaming (humanitarian, development)
- Policy development (central and state levels)
- Scale-up of best practices



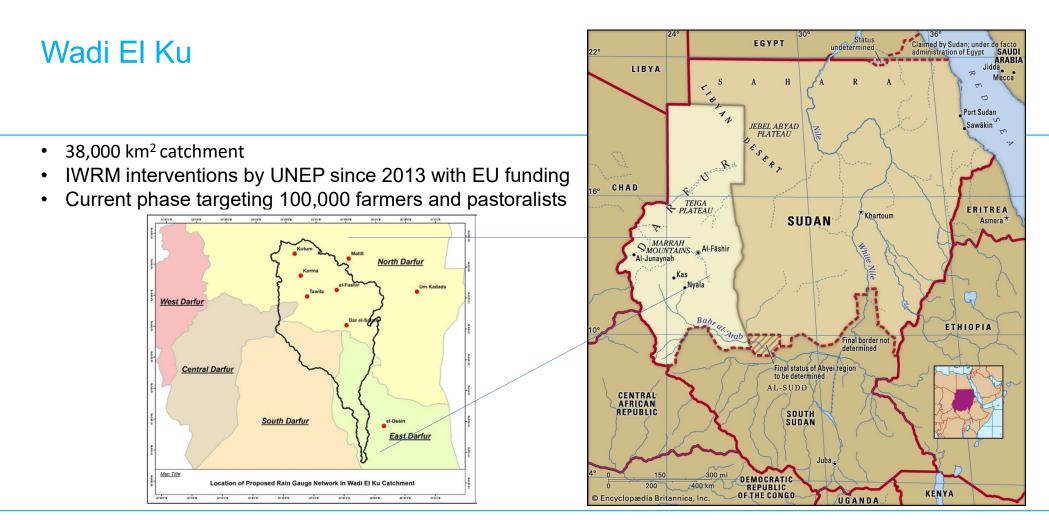
Sudan First State of Environment and Outlook Report 2020 Environment for Peace and Sustainable Development

The Sudan State of the Environment and Outlook Report 2020 is the first of its kind to comprehensively take stock of the condition of the country's environment and the trends affecting it.

> It assesses the biophysical, social and economic conditions in the country and presents them in an integrated way, ultimately pointing to pathways that will lead the country towards a future based on sustainable development.

https://www.unep.org/resources/report/su dan-first-state-environment-outlookreport-2020







A Harsh Environment

- Semi-desert
- Rainfall ~250 mm/y
- Evaporation ~ 1,800 mm/y
- ~1 billion m²/y water in Wadi El Ku
- ~5% of the water is used for production & consumption
- Erratic rainfall
 - Um Keddada Oct. 2019: 480 mm which is more than the sum of the previous five years.

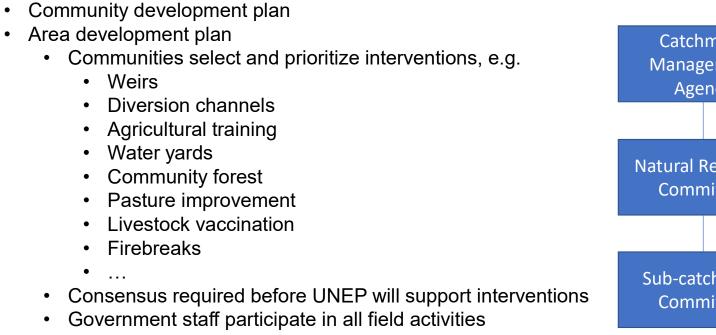


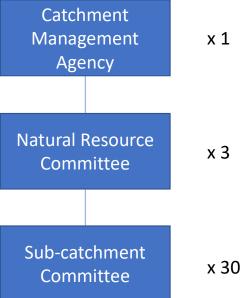
A Complex Socio-Political Situation

- Recovering from decades of war and genocide
- Multiple entities compete for control of resources, e.g.
 - government
 - ethnic groups
 - traditional leaders
 - rebel groups
 - "split" communities
- Land tenure is a root cause but complex and unlikely to be solved in the short term



IWRM - Planning and Conflict Resolution



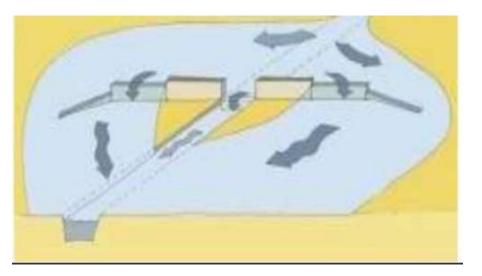






Weirs – How they Work

- Not for storing water but for spreading the water across the wadi floor both up- and down-stream
- Water is released downstream when the soil has been saturated.
- 1-3 harvests possible during the dry season







Weirs – Main Spillway



Korga Weir

- Construction finished in 2016
- Irrigate ~1,500 ha upstream and a similar area downstream
- 1,600 m long
- 86% of farmers in the locality reported increased production due to the weir
- Minor gullies filled after the first flooding
- Land disputes dropped significantly



Korga Weir – Breaches

- Low rainfall in 2017 led to tensions
- Different communities reached different conclusion about actions required
- Instead of seeking solutions and shared analysis through IWRM governance structures some communities decided to bypass them
- After two seasons without flooding from the weir all communities agreed it was better to collaborate and repair the weir
- In 2019 the weir was repaired insufficiently and was breached midseason
- In 2020 after proper repair a flash flood overtopped the weir, taking out a 60 m section







Seil Gedaim Weir

- Construction finished in 2016
- A few thousand farmers changed from semi-subsistence to commercial farming of high value horticultural crops
- Since 2019 contracts with vegetable markets in Khartoum
- Farmers
 - have extended the weir
 - dug diversion channel to nearby refugee camp
 - developed comprehensive inspection and maintenance procedures
 - built dikes to protect the weir against flash floods
- Provide training to other farmers who are involved in weir construction





Why does IWRM work in Darfur

- Water not contested to the same extend as land and other natural resources
- IWRM introduced as a condition for water interventions, (not a zero-sum game)
- Extensive participatory planning with all stakeholders
- Low friction governance system
- Polycentric approach
- All stakeholders are included in governance structures and gain from participation
 - Farmers & pastoralists gain access to government and acceptance of their right to self-determination
 - Government officials get access to farmers & pastoralists and gets their recognition
- Lack of one dominating institution?



Limitations of IWRM

- Difficult to implement if one actor with a different approach dominates (usually government)
- If certain actors have the ability and interest in ignoring the IWRM governance structures (e.g. gold miners in Wadi El Ku)





Observations

- Not tragedy of the commons:
 - strong environmental awareness
 - interest in environmental restoration
 - understanding that individual action is insufficient
- Convergence towards Elinor Orstom's design principles





UN CO environment programme

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