WATER CONVENTION

Drought Management in the Cubango Okavango River Basin

Mpaphi Casper Bonyongo, PhD
Botswana/OKACOM

OKACOM
The Permanent Okavango River Basin Water Commission
Comissão Permanente das Águas da Bacia Hidrográfica do Rio Okavango

International Network of Basin Organizations

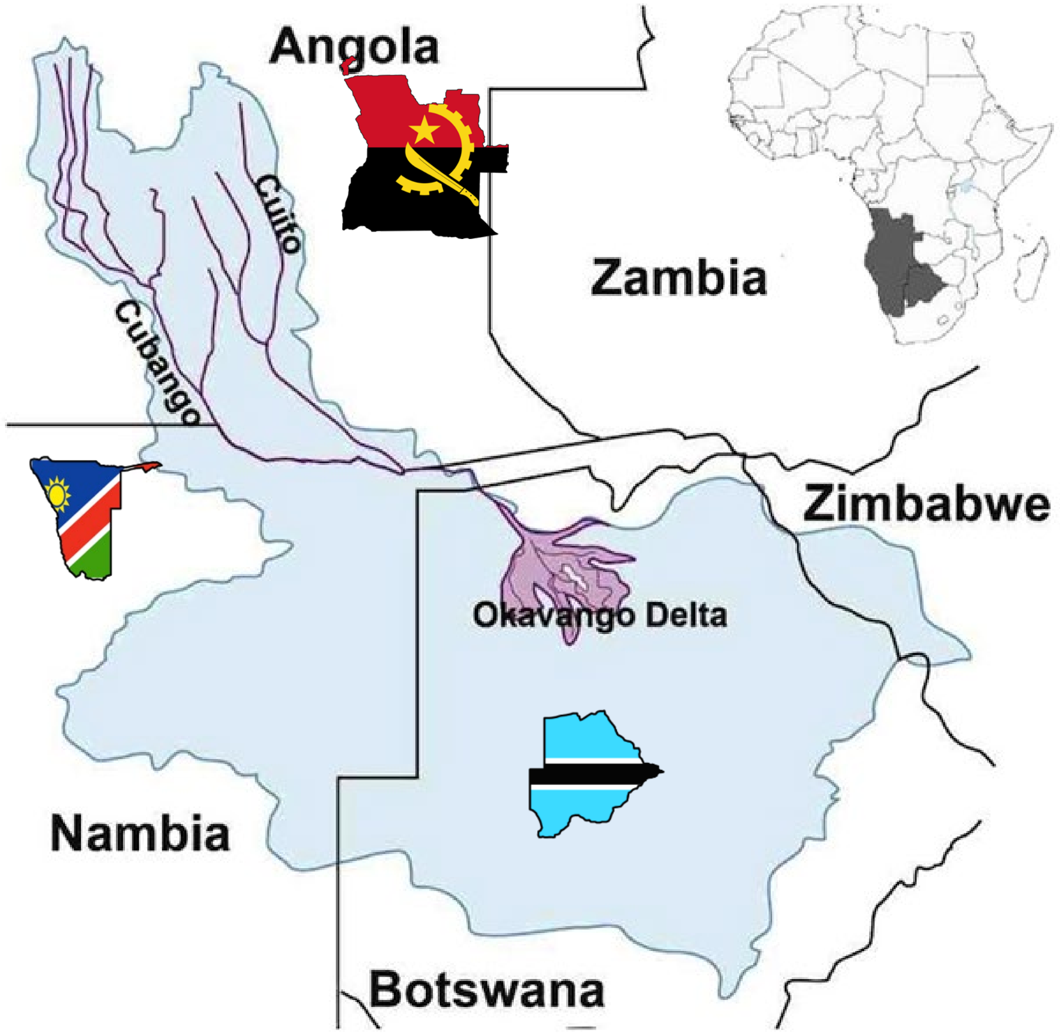
Ministry of Infrastructure and Water Management

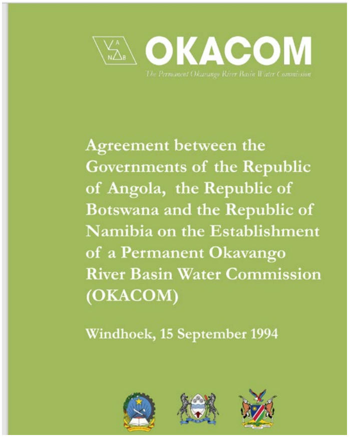
Schweizerische Eidgenossenschaft
Confédération suisse
Confederazione Svizzera
Confederaziun svizra

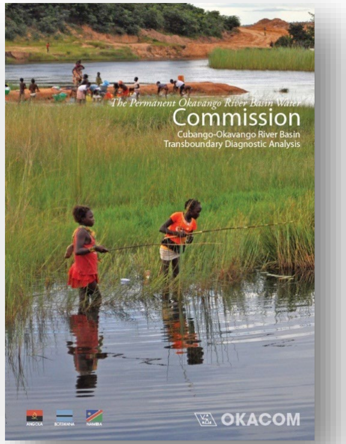
Bundesamt für Umwelt BAFU
Office fédéral de l'environnement OFEV
Ufficio federale dell'ambiente UFAM
Uffizi federal d'ambient UFAM

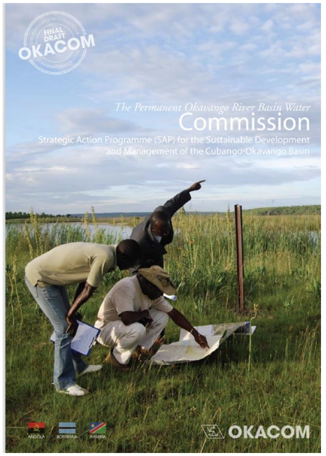
UNECE

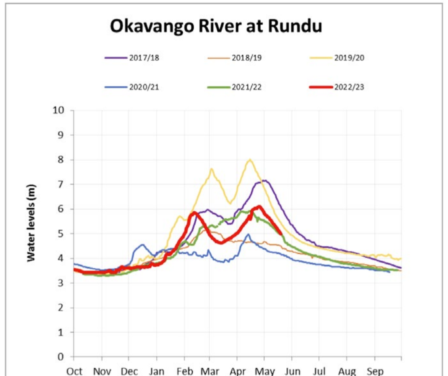
The Cubango Okavango River Basin



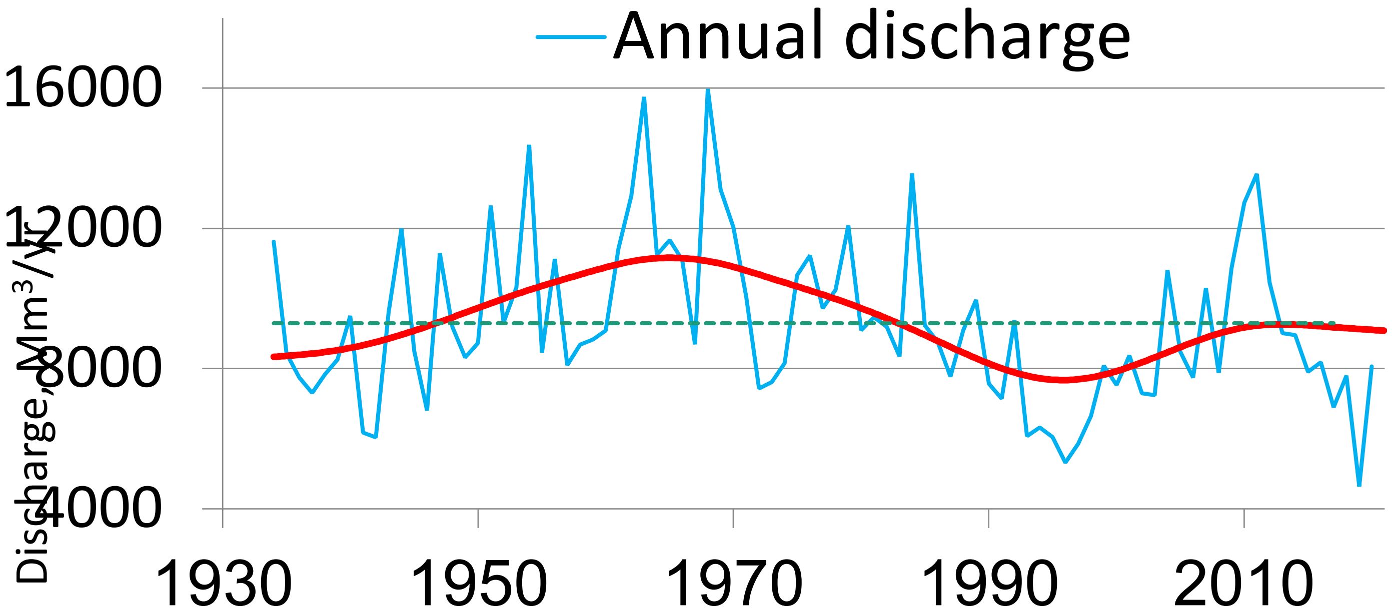




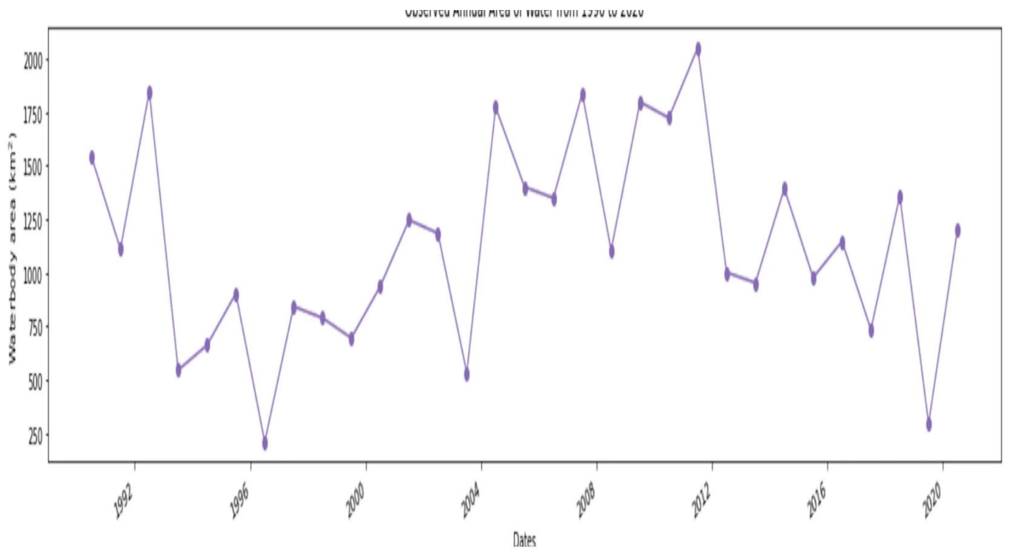




Drought
Meteorological Drought
Agricultural Drought
Hydrological Drought
Socio-economic Drought



Annual discharge
Discharge, Mm³/yr
16000
12000
8000
4000
1930
1950
1970
1990
2010

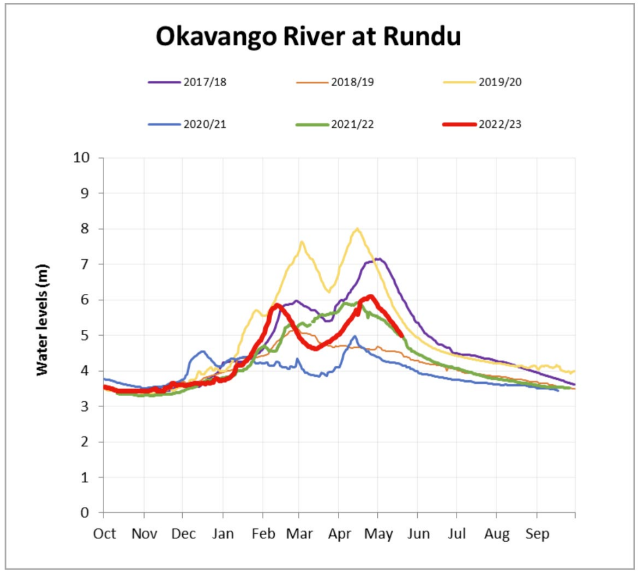


Waterbody area (km²)
2000
1750
1500
1250
1000
750
500
250
1992
1996
2000
2004
2008
2012
2016
2020
Dates

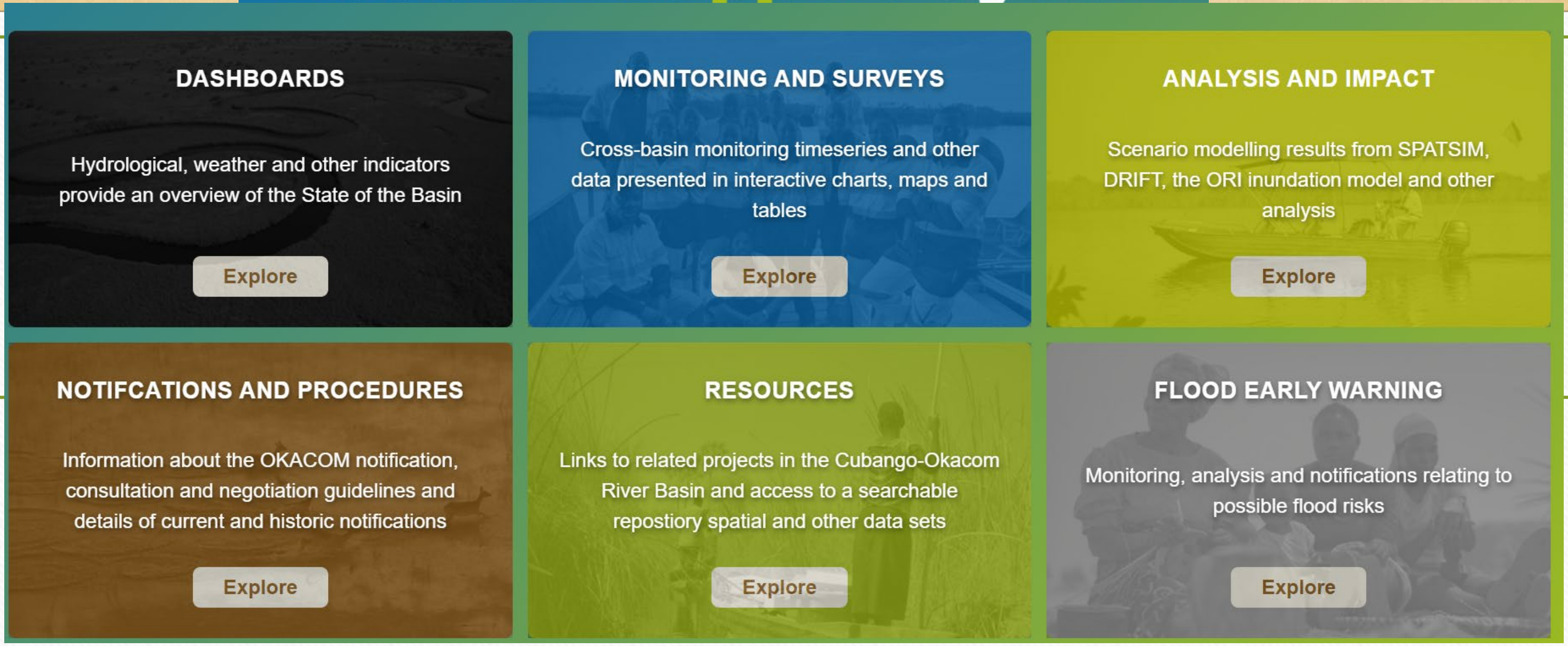
SPECIAL

Integration of drought management into transboundary agreements

- Not directly integrated in the transboundary agreements but addressed indirectly through application and implementation of instruments such as
  - Environmental Flows Assessment
  - Water Allocation Strategy
  - Water Demand Forecasting
  - Flood Early Warning Systems
  - Integrated Water Resources Management principles
  - OKACOM Decision Support Systems
  - Strategic Environmental Assessment
  - **OKACOM notification, consultation and negotiation Guidelines**
  - Multi-Sectoral Investment Opportunity Analysis



Decision Support System



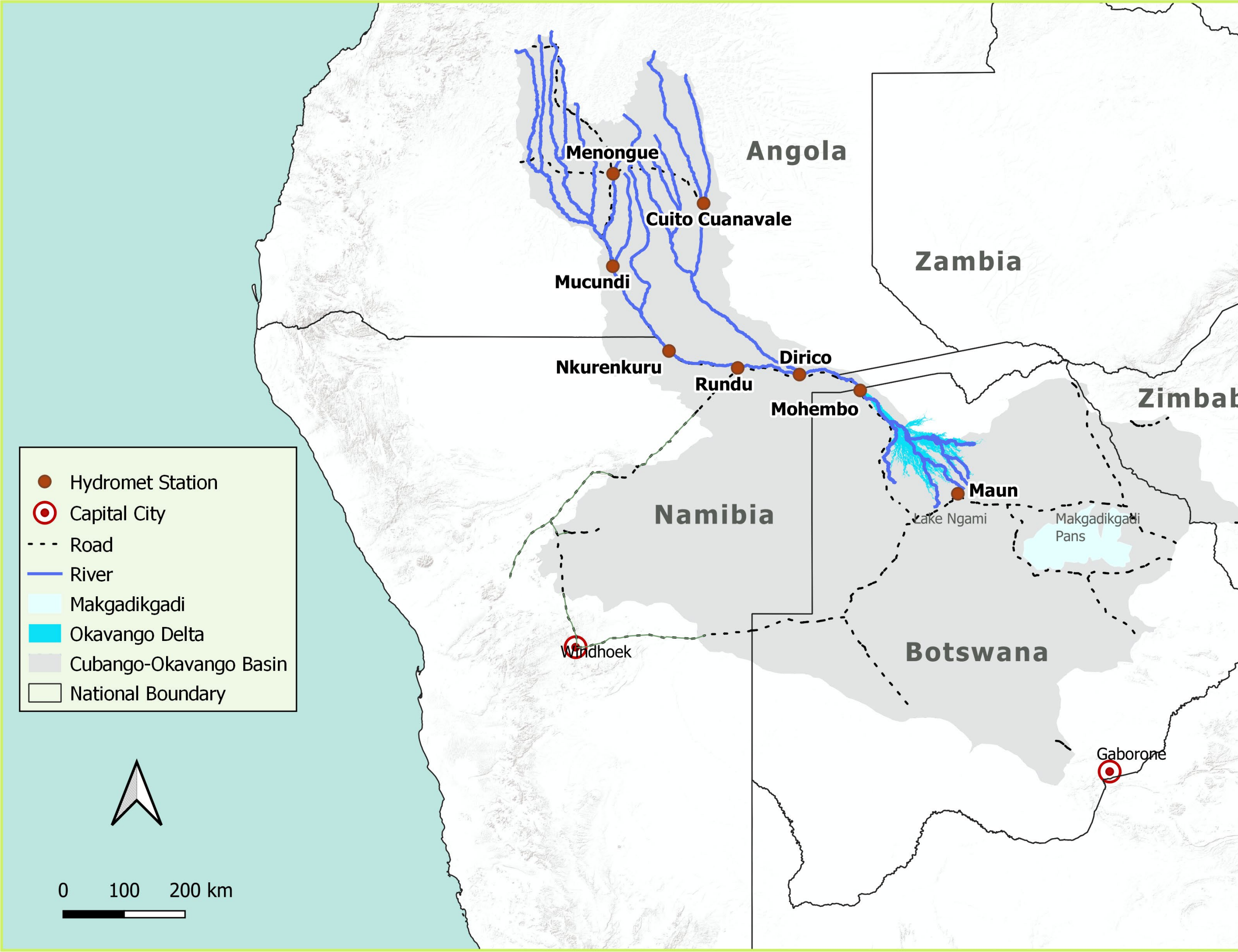
The FEWS also makes use of the global soil moisture products, rainfall and predicted stream flow to predict dryness (which is communicated as drought risk)

The magnitude of predicted stream flow is computed into a flood inundation risk on a scale 1-10 (10 being the highest risk)

Flood early warning systems uses is designed to use rainfall (forecasted and recorded) and catchment response characteristics based on the rational method to generate stream

Activities of the join bodies as well as river basin management plans and transboundary adaptation strategies in your basin

- *National annual drought assessment for both agricultural and hydrological drought*
- *Data, Information and Knowledge sharing*
- *Demonstration of climate resilient livelihoods in particular climate smart agriculture – Conservation Agriculture and Climate Smart Horticulture*
- *Supporting and encouraging alternative livelihoods - fisheries*
- *Implementation of the 20-year Strategic Action Programme*



Demonstration Climate Smart Agriculture – Horticulture

- **<u>Botswana</u>**

  - 19 (11 males, 8 females) farmers
  - All the demonstration farmers have reported an increase in production
  - **<u>All farmers embraced new hybrid seeds, new crops and new management practices.</u>**

  - **Farmers Learnt that**
    - Climate-smart horticulture farming practices improved productivity and profitability, by enhancing production
    - Using hybrid seeds resulted in shorter growing periods, increased yields and improved crop quality

  - **Management skills**
    - Cropping plans in response markets and climatic conditions
    - Problem identification
    - Crop selection

  - **Technical skills**
    - Importance of records Keeping
    - Marketing and negotiation skills
    - Pest management skills
    - Soil fertility management
    - Maintain and trouble shoot the irrigation system

Demonstration Climate Smart Agriculture – Conservation Agriculture

- 30 CA individual CA demonstration fields each measuring 0.25ha have been fenced
- Farmer planted late. First crop failed.
- All 30 farmers received farming inputs (seed, fertilizer and implements)
- **Demonstration of Conservation Agriculture was not very successful**

Main Challenges

- Inadequate institutional capacity
- Nationalistic approach to drought assessments
- Reluctance to share data despite the existing data sharing protocol
- Over reliance and donor funded projects
- Low sustainability or uptake of projects beyond project life span
- Inadequate communication of national and regional forecasts

Lessons Learnt

- Climate Smart Agriculture enhances resilience of dry land farmers
- Climate Smart Agricultural practices offers great opportunity for adaptation to climate variability
- Uptake of Climate Smart Agriculture remains relatively low despite successful demonstrations
- Conservation Agriculture is a very labor-intensive approach hence the low uptake

Thank you
(please include your contact information)

Email address: casper.bonyongo@okacom.org

Website: www.okacom.org

Twitter: