

GEF – IW Learn Workshop

29th Oct – 02nd Nov 2006 – UNEP - Kenya

“Africa’s freshwater vulnerability’s assessments – Results from Phase I and II”



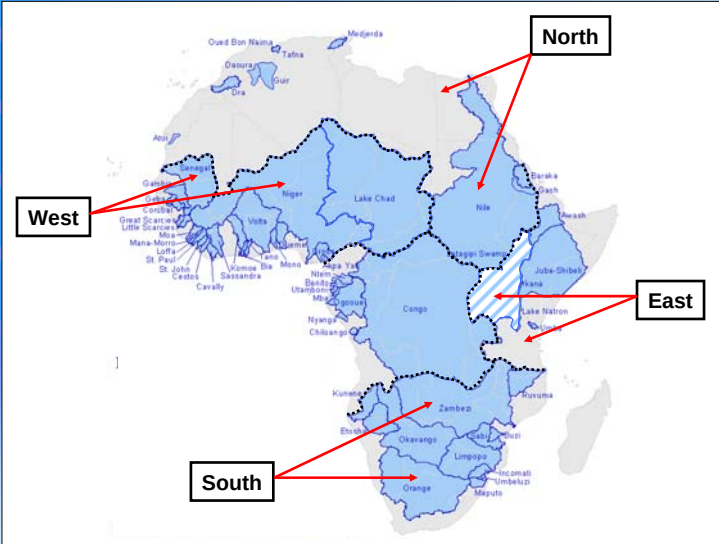


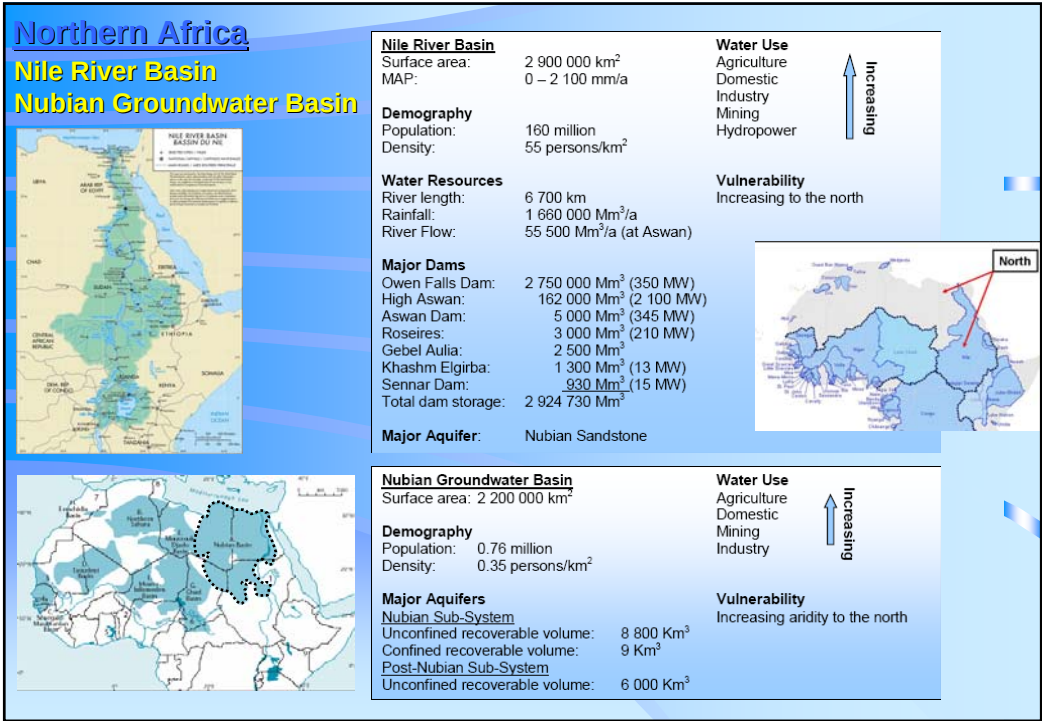


Phase I: Rapid Assessments of sub-regions and selected basins

▪ 4 sub-regions

▪ 8 river, lake, groundwater basins





Nile River and Nubian Groundwater Basins

Cluster	Vulnerability Indicator	Nile River Basin	Nubian Aquifer
Physiography	Aridity	~40% of the area	~95%
	Water Availability	Vulnerable	Stressed
	Storage and Supply Infrastructure	Well developed in Downstream course	Poor
Socio-Economy	Population Density	55 persons/km ² ; downstream increase; variable	0.35 persons/km ² ; variable
	Access to Safe Water	70%	75%
	Water Use	Agriculture ~80%	Agriculture ~90%
	Poverty	High	High
Management	Conflicts	Moderate	Moderate
	Sector reform	In progress	In progress
	Implementation and adaptive capacity	Reasonable	Moderate
	Data availability, gaps, and quality	Moderate	Moderate to bad

Vulnerable: high aridity, low water availability, high poverty and moderate management

Western Africa

Senegal and Niger River Basins



Senegal River Basin

Surface area: 483 000 km²
MAP: 550 mm/a

Demography
Population: 22 million
Density: 40 persons/km²

Water Resources
River length: 1 800 km
MAR: 21 800 Mm³/a

Major Aquifers: sedimentary

Water Use
Agriculture
Domestic
Hydropower

Increasing

Major Dams
Diama (limits seawater intrusion)
Manatali: 12 000 Mm³

Vulnerability: increasing

Niger River Basin

Surface area: 2 270 000 km²
MAP: 690 mm/a

Demography
Population: 106 million
Density: 31 persons/km²

Water Resources
River length: 4 200 km
MAR: 221 500 Mm³/a

Major Aquifers: sedimentary and basement

Water Use
Agriculture
Domestic
Hydropower

Increasing

Major Dams
Dadin Kowa: 2 765 Mm³
Selingue: 2 200 Mm³
Kanji: 1 500 Mm³
Goronyo: 1 100 Mm³

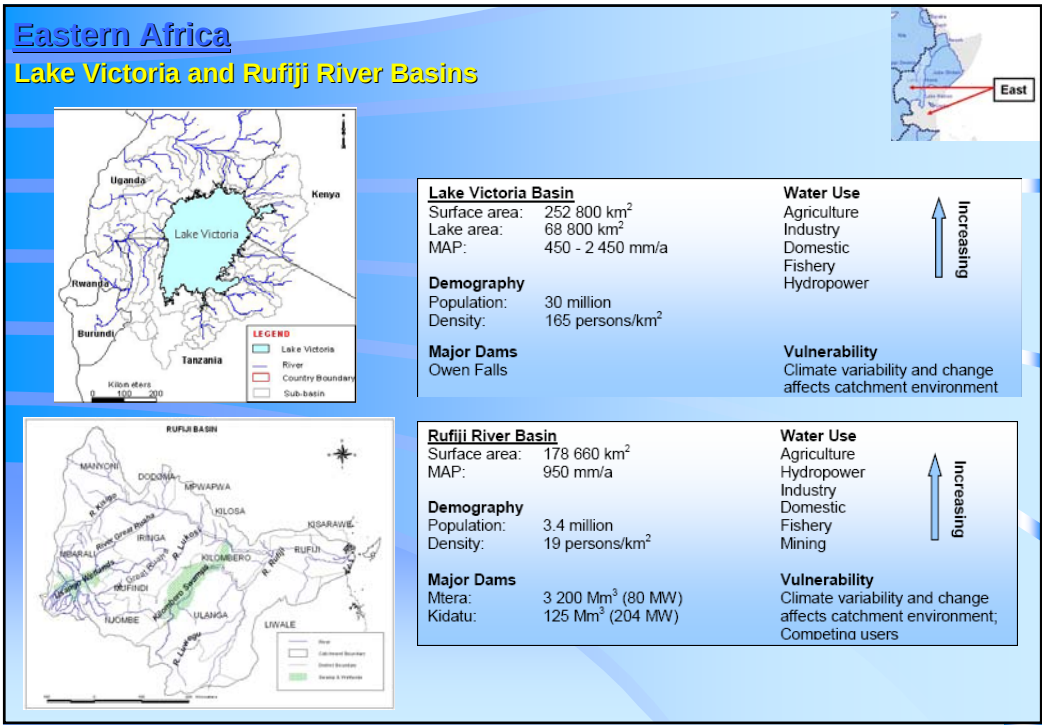
Vulnerability
Increasing all over the Basin

High aridity, low water availability, water scarcity

Senegal and Niger River Basins

Cluster	Vulnerability Indicator	Senegal River Basin	Niger River Basin
Physiography	Aridity	> 75% arid and semi-arid	50% arid and 50% semi-arid
	Water Availability	Stressed	Stressed
	Storage and Supply Infrastructure	Underdeveloped all over the river basin	Developed downstream (Nigeria)
Socio-Economy	Population Density	40 persons/km ²	31 persons/km ²
	Access to Safe Water	Variable	Variable
	Water Use	>60% for agriculture	50% for agriculture
	Poverty	High	High
Management	Conflicts	Moderate	No conflict
	Sector reform	In progress	Delayed
	Implementation and adaptive capacity	Moderate	Very low
	Data availability, gaps, and quality	Moderate (CILSS, OMVS)	Moderate (CILSS, NBA)

Vulnerable: high poverty, delayed sector reform, very low adaptive capacity

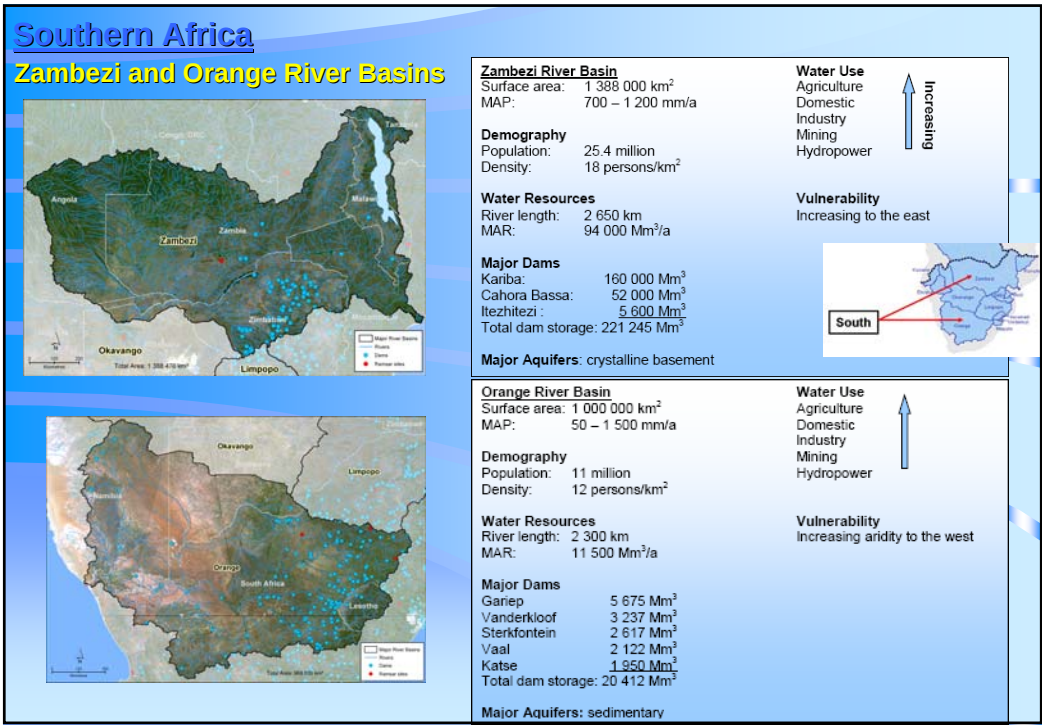


Lake Victoria and Rufiji River Basins

Water pollution

Cluster	Vulnerability Indicator	Lake Victoria Basin	Rufiji River Basin
Physiography	Aridity	Rf: 450 – 2450 mm/yr	Rf: 450 – 1550 mm/yr
	Water Availability	1,700-4,000 m ³ /person/yr	6,466 m ³ /person/yr
	Storage and Supply Infrastructure	No major dams	Major dams in place
Socio-Economy	Population Density	165 persons/km ²	19 persons/km ²
	Access to Safe Water	<40% of total population of Eastern Africa	
	Water Use	Less irrigation	Irrigation more developed
	Poverty	Higher level	Lower level
Management	Conflicts	Less conflicts	Irrigators vs. hydro-power generation
	Sector reform	Ongoing	Ongoing
	Implementation and adaptive capacity	Many stakeholders involved	Less stakeholders involved
	Data availability, gaps, and quality	More developed	Less developed

Increasing water demand, high poverty, health risks



High aridity, low water availability, water scarcity

Zambezi and Orange River Basins

Cluster	Vulnerability Indicator	Zambezi River Basin	Orange River Basin
Physiography	Aridity	<20% of the area	>50%
	Water Availability	Vulnerable	Stressed
	Storage and Supply Infrastructure	Well developed - middle course	Highly developed - upstream
Socio-Economy	Population Density	18 p/km ² ; downstream increase; variable	12 p/km ² ; upstream increase; variable
	Access to Safe Water	Urban ~70%, Rural ~45%, highly variable	Urban ~70%, Rural ~45%; variable
	Water Use	Agriculture ~80%	Agriculture ~60%
	Poverty	Higher	Lower
	Conflicts	Eastern Caprivi region	Lower Orange River
Management	Sector reform	In progress	Advanced
	Implementation and adaptive capacity	Moderate to bad	Reasonable
	Data availability, gaps, and quality	Moderate to bad	Reasonable

Vulnerable: inadequate access, management and poverty

Key Issues – 1

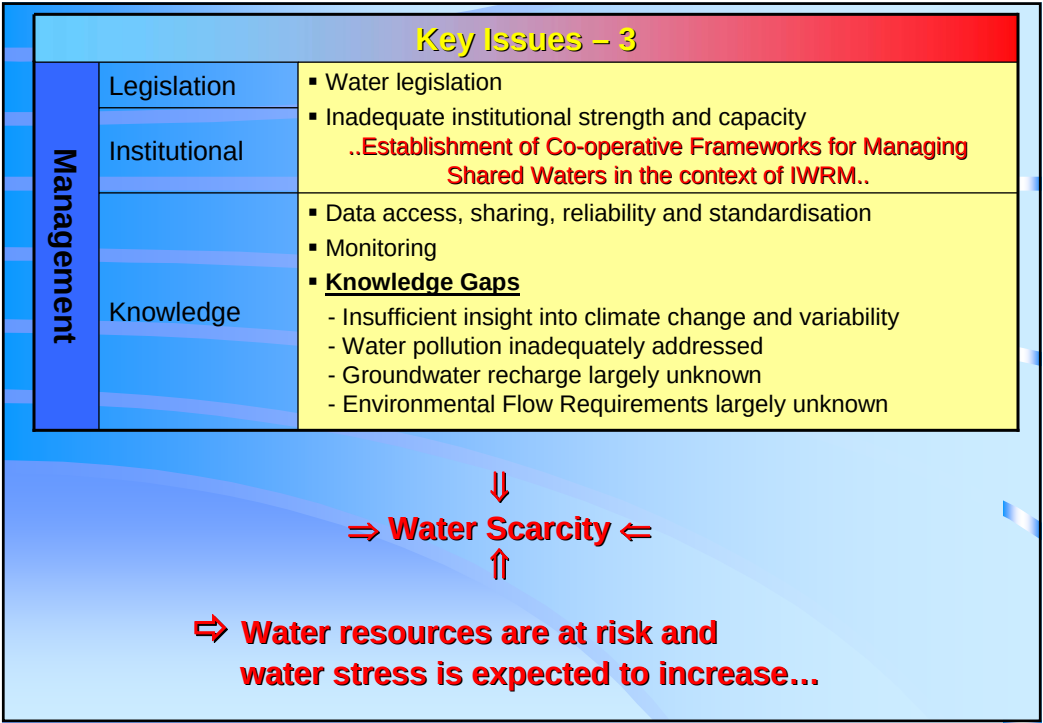
Physiography	Climate change & variability	- Increased frequency of droughts and floods - Small reduction in Rainfall ➡ Large reduction in river flow ...Persistent drought in the Sahel since 1970s... (includes largest part of Niger River Basin)
	Ecosystems	- Biodiversity - Desertification - Wetland degradation ...Deteriorating ecosystem integrity Lake Victoria Basin...
	Surface Water	Limited resources, unevenly distributed & over-exploited ...Nubian Sst Aquifer Basin: non-renewable water resource...
	Groundwater	Pollution ...Industrial & municipal effluent loading Orange River Basin...



Key Issues – 2

Socio-Economy	Demography	- High population growth rate in urban areas - Water related diseases and HIV/Aids ...Southern Africa has the highest incidence of HIV/AIDS... - Poor water and sanitation coverage and service delivery ...Inadequate access to clean water and sanitation in peri-urban and rural areas...
	Economy	- Agriculture most important economic activity <u>and</u> biggest water consumer (80%) - Competition for water ...High competition between irrigators and hydropower in Rufiji Basin...





Adaptation and Mitigation Options	
Institutional & Legislative Framework	- Water Sector Reforms - Managing (shared) waters and ecosystems - Communities' responses to water stress
Capacity Building	Capacity enhancement programmes
Data & Monitoring	- Data rescue - Standardized assessments - Monitoring for improved early warning systems and effective water management
Technologies	- Surface / groundwater storage and use - Rainwater harvesting - Improvement urban water supply - Investment in wastewater treatment - Improvements in agricultural techniques - Water Trade



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UNEP/DEWA/RS.05-2

Facing the Facts

ASSESSING THE VULNERABILITY
OF AFRICA'S WATER RESOURCES
TO ENVIRONMENTAL CHANGE



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Phase I in brief...

➤ Time frame: April 2003 – December 2005

➤ Budget (incl. coordination, workshops and publication costs):

➤ Successfully concluded with the publication on the assessments (peer reviewed)

➤ Provided a snapshot of key issues of the African Region in the context of the VWREC based on assessments of 8 major river, lake and groundwater basins in four sub-regions

➤ Capacity and competency development in vulnerability assessments of sub-regional research teams in carrying out rapid assessments

➤ Provided input to the AEO and GEO processes

➤ Provided a solid foundation for the preparatory phase of comprehensive assessment (Phase II)

Phase II

“Comprehensive Assessment of the Vulnerability of Water Resources to Environmental Change in Africa using the Basin Approach”

Preparatory Phase

Deliverables...

❑

Synthesis document of rapid assessments of major African river, lake and groundwater basins based on inputs from 5 sub-regional teams and including results from Phase I

❑

Framework for comprehensive assessment of a basin

❑

Guidelines and protocols for comprehensive assessment

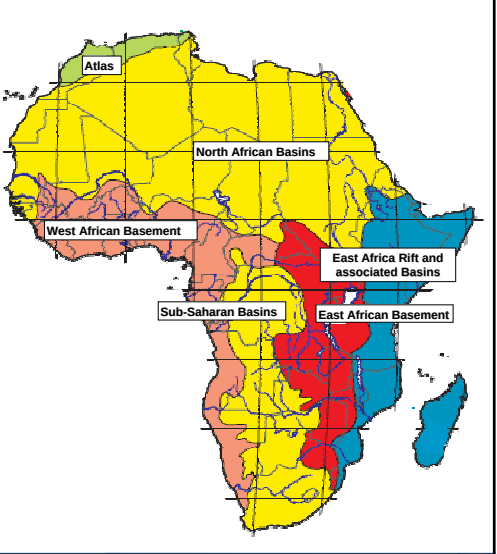
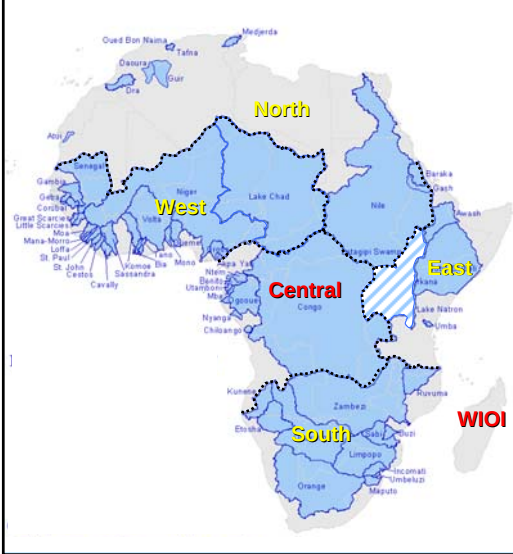
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Continuation of capacity and competency development in vulnerability assessments

Phase II: Rapid Assessments of additional sub-regions and basins

▪ 2 sub-regions

▪ 20 river, 9 lake and 9 groundwater basins



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Progress rapid assessments...

- Time frame: July 2005 - Present
- Budget : to be looked at with various donors, mainly Irish, but also Belgium Partners
- First draft contributions: promising but more work needed
- Continental coverage of major basins
- Groundwater features more prominently in the new assessments
- Expansion of African network of institutes and researchers
- Continuation of capacity and competency development

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Thank you for your attention