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Water Security for Africa's Development in light of Climate Change

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Water Security for Africa's Development in light of Climate Change

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Climate Trends and Projections

- ❑ Most impacts of climate change appear in water-related phenomena, such as droughts, floods and sea level rise
- ❑ Climate change will add extra burden to the existing water challenges Africa is already facing
- ❑ Africa is likely to be significantly affected by climate change due to its low adaptive capacity



Climate Trends and Projections

Temperature

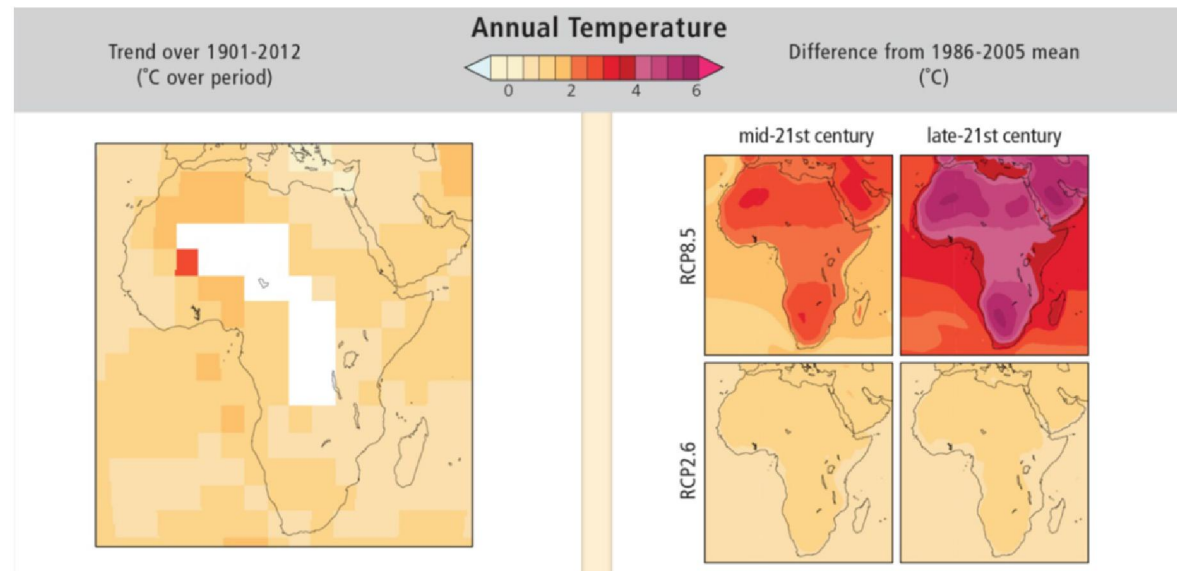
- ❑ Observed trend: Near surface temperatures have increased by 0.5°C or more during the last 50-100 years.
- ❑ Projection: Temperatures in Africa are projected to rise faster than the global average increase during the 21st Century.

Annual Precipitation

- ❑ Observed trend: Decrease in parts of the Sahel region. Increase in parts of eastern and southern Africa. Most areas of the African continent **lack sufficient observational data**.
- ❑ Projection: Exhibit higher spatial and seasonal dependence. Decreases over the Mediterranean region of northern Africa and southern Africa. Increases over areas of central and eastern Africa.



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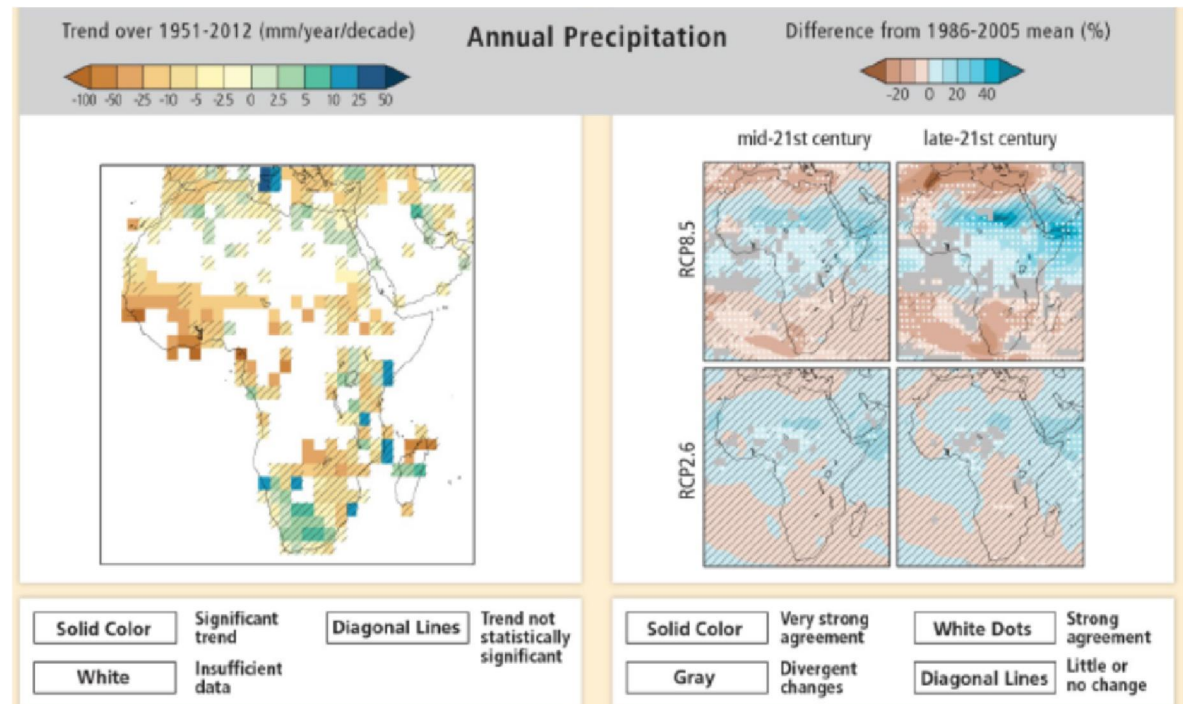
Climate Trends and Projections

Extreme Rainfall

- ❑ Eastern Africa: More extreme droughts and heavy rainfall during the last 30-60 years. Projected increase in the number of extreme wet days by the mid-20th Century.
- ❑ West Africa and the Sahel: Increase in the number of extreme rainfall days projected.
- ❑ Southern Africa: Projected to be at a high risk to severe droughts. Large uncertainties surround projected changes in tropical cyclone landfall.



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Climate Change Impacts

Water Resources

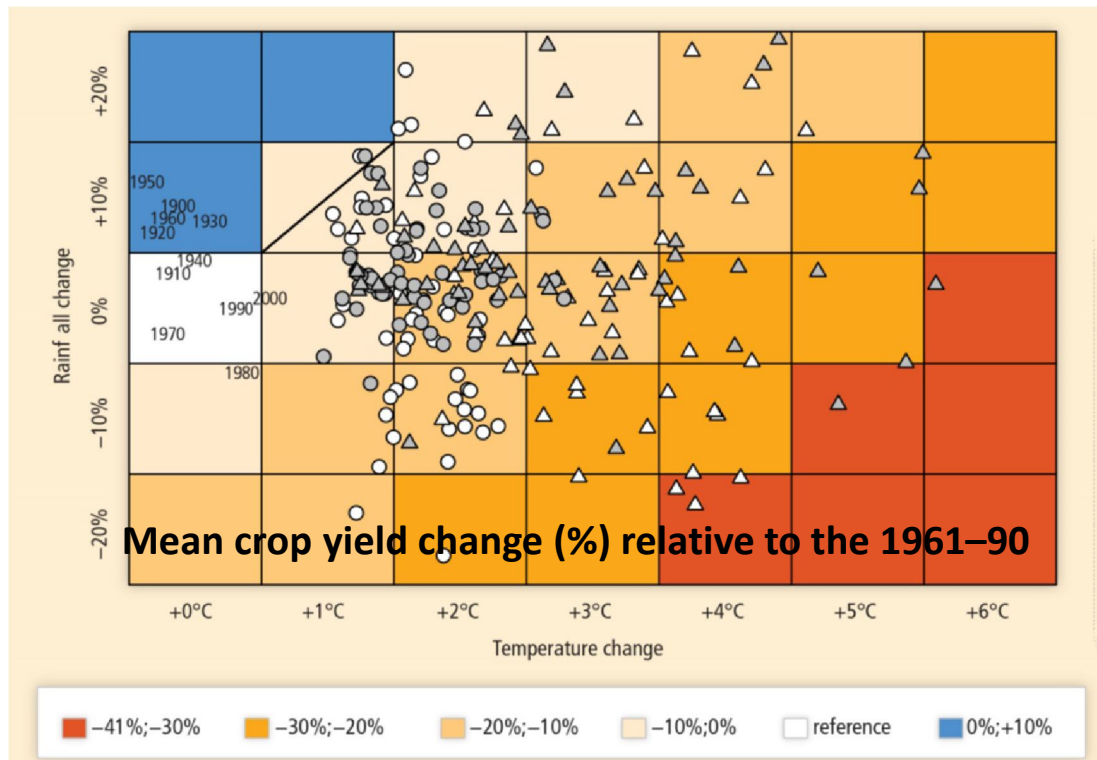
- ❑ CC in Africa will have an overall **modest effect relative to other drivers** - population growth, urbanization, agricultural growth, and land use change.
- ❑ Water-stressed regions that are projected to become drier - northern Africa and southern Africa.
- ❑ Reduced flows in the Blue Nile - climate change and water development for irrigation and hydropower.
- ❑ Coastal aquifers are vulnerable to climate change because of high rates of groundwater extraction and sea level rise.
- ❑ **Inadequate observational data** in Africa remains a systemic limitation with respect to fully estimating future freshwater availability.



Climate Change Impacts

Food Security

- ❑ More livestock dominated food production may occur as a result of reduced growing season length and increases in the failed seasons.
- ❑ Estimated yield losses at mid-century: 22% aggregated across SSA, and South Africa and Zimbabwe in excess of 30%.
- ❑ Provision of water for livestock production could become more difficult - cost of boreholes for livestock in Botswana will increase by 23% by 2050



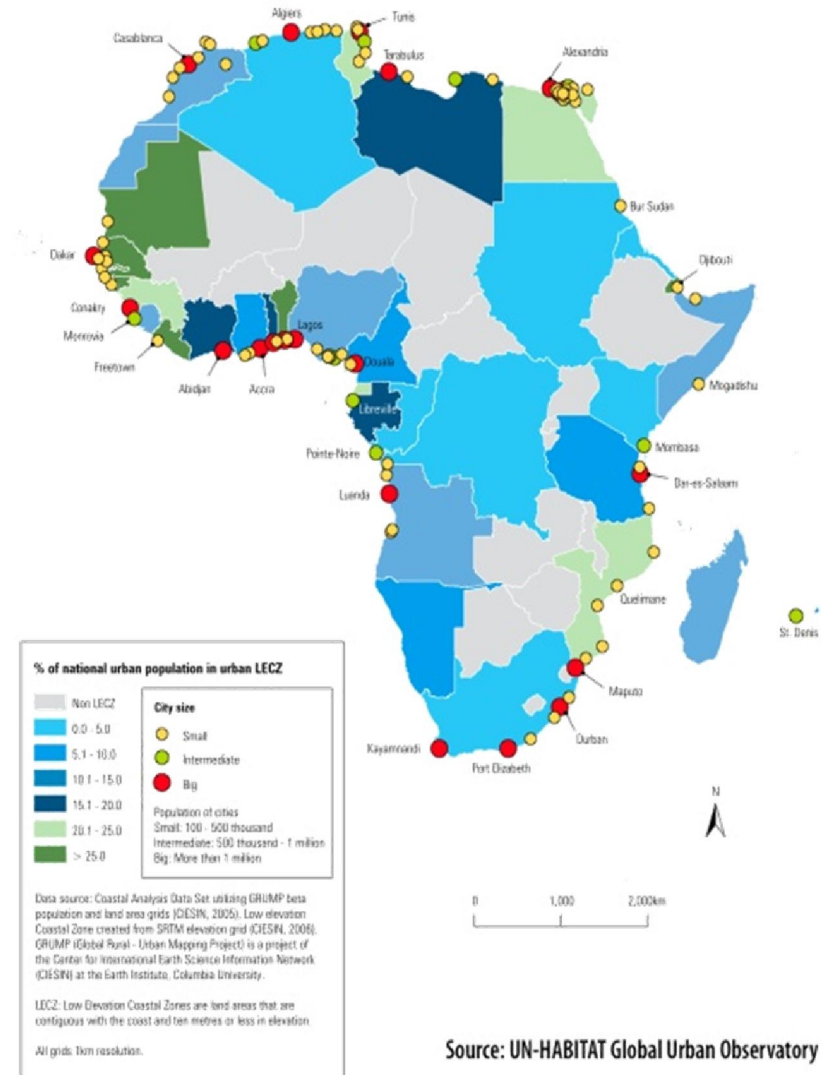
Climate Change Impacts

Cities

- ❑ The urban population in Africa is projected to triple by 2050. Many of Africa's evolving cities are unplanned.
- ❑ More than a quarter of population lives within 100 km of the coast.
- ❑ Urbanization in mega-deltas may lead to increased number of people vulnerable to coastal CC impacts - Alexandria, Benin City, Port Harcourt etc.
- ❑ Urban flood is a threat to cities and smaller urban centers.



AFRICAN CITIES AT RISK DUE TO SEA-LEVEL RISE



Bank's Climate Resilience Water Projects

Support for improved Water Resources Information Management:

- ☐ Data, information and knowledge are necessary for understanding climate change impacts, as well as planning and designing adaptation measures.

Support for better readiness of Water Resources Management:

- ☐ Develop strategies and action plans to manage and adapt to negative impacts based on good understanding of the climate change
- ☐ Regional cooperation provides the greatest opportunity for analyzing and understanding the problems and designing effective and efficient strategies

Investments in Infrastructure Development:

- ☐ In sufficient water and sanitation infrastructure is the major concern for Africa's water insecurity.



Bank's Climate Resilience Water Projects

Water Resources Information Management (example)

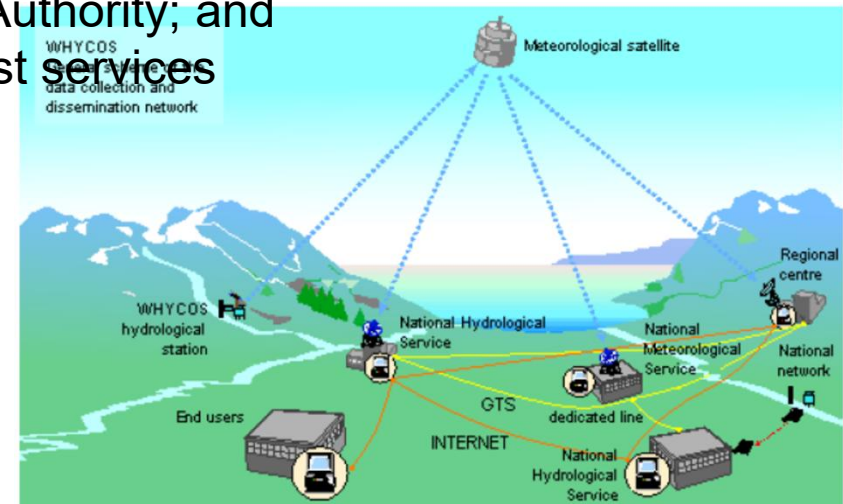
Niger Basin HYCOS Project: Niger Basin Authority (Benin, Burkina Faso, Cameroon, Chad, Cote d'Ivoire, Guinea, Mali, Niger and Nigeria)

Objective

- Promote effective management of the water resources in the Niger Basin through quality hydrological data and information

Outputs

- Modernization of water information system;
- Strengthening the national hydrological services;
- Capacity building of the Niger Basin Authority; and
- Strengthening the hydrological forecast services



Bank's Climate Resilience Water Projects

Water Resources Management (examples)

Project preparation interventions:

TWRM programs/projects:

- Niger River; Lake Chad; Congo River, Volta River, Kayanga-Geba River; Bugesera area of Burundi/Rwanda; Songwe River of Malawi/Tanzania; Limpopo River and Shire Zambezi River; OMVG; OMVS; etc

Regional programs/projects:

- IGAD; ECCAS; SADC; ECOWAS; AUC PIDA, and Lake Victoria



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Bank's Climate Resilience Water Projects

Water Resources Management (examples)

Detailed Plan of the Songwe River Basin Development Programme: Malawi and Tanzania

Objective

- Create a conducive environment for TWRM in the Songwe River Basin

Outputs

- Preparation of Shared Vision for 2050;
- Feasibility studies and detailed plans for investment projects including multi purpose dams, and flood control works; and
- Establishment and capacity development of river basin commission.



Songwe River Basin



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Bank's Climate Resilience Water Projects

Water Resources Management (examples)

Agriculture water management: Improved agricultural and land management practices to strengthen productivity and resilience

- Improving control and management of on-farm water resources (Botswana)
- Watershed protection (Kenya)
- Piloting more productive agriculture water technologies, such as rainwater harvesting for multiple purposes (Djibouti, Rwanda).
- Helping small-scale farmers adapt to climate change and ensure sustained agricultural-based livelihoods (Zambia, South Africa)



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Bank's Climate Resilience Water Projects

Infrastructure Development (examples)

Enhancing water storage capacity:

- Thwake multi-purpose water resources development (Kenya), Mahe water augmentation (Seychelles), small scale water storage in rural areas etc.

Urban water management:

- Upgrading urban drainage to cope with severe/frequent floods (Yaounde, Nakuru, Harar)
- Wastewater treatment for reuse (Tunisia)

Water Supply and Sanitation:

- Provision and protection of water for human, agriculture and ecosystem



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Projects with Climate-related Finance

Uganda WSSP

- Building resilience to CC in flood-prone areas
- Ensuring climate-resilient sanitation in flood-prone peri-urban areas
- Ensuring access to water for production in drought-prone areas
- KM and M&E

LDCF: USD 8.37 m (GEF CEO endorsed)

Cameroon PADY-II

- Strengthening institutional capacity to improve long term urban resilience to flood risks
- Improve readiness and adaptive capacity of the local communities
- Climate resilient interventions for flood control
- KM and M&E

SCCF: USD 7.032 m (GEF CEO endorsed)

Mauritania PNISER

- Capacity building for sustainable management of natural resource
- Reducing vulnerability to CC of rural water infrastructures and activities
- Diversify and strengthening livelihoods and source of incomes of the rural and agro-pastoral population
- KM and M&E

LDCF: USD 6.35 m (GEF CEO endorsed)

Sierra Leone RWSS

- Climate-resilient water supply and sanitation
- Building institutional framework for climate-resilient management of the sector
- Awareness on climate-resilient WASH practices
- Establishing collaborative research and monitoring
- KM and M&E

LDCF: USD 4.00 m (PIF cleared)

Zambia Transforming Rural Livelihoods –NRWSSP-II

- Groundwater Monitoring System for Climate Resilient Water Management
- Guideline for Sustainable Groundwater Extraction Technology
- Community Capacity Development on Multi-purpose Use of Groundwater

NDF: EUR 2.25 m (approved by NDF's board)

Central Africa Sub-program for WSS in Bangui and Four Prefectures

- Capacity development to facilitate integration of climate risks in WS and WRM
- Reduced vulnerability to climate change in the provision of drinking water supply
- KM and M&E

LDCF: USD 7.14 m (PIF cleared)



And a lot more...

Projects in AfDB's Pipeline

Water is at the heart of Africa's Adaptation Effort...

- Rural water supply & sanitation: *Nigeria, Eq. Guinea, Chad, Djibouti, Eritrea, Guinea, Uganda, Mozambique, Liberia, Cameroon, Rwanda*
- Urban water supply & wastewater management : *Angola, Botswana, Egypt, Gabon, Ghana, Lesotho, Mali, Mauritania, Mozambique, Namibia, Uganda, Zambia, Zimbabwe*
- Urban flood management: *Cote d'Ivoire, Togo, Tunisia*
- Groundwater management: *Namibia*
- Multi-purpose water development: *South Africa, Sudan*
- Transboundary water resources development: *Songwe River, Lesotho Highlands, SADC*

Need for additional financing to ensure sustainability in light of climate change



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Key Messages

- Stronger Infrastructure base is key for Africa's **adaptation and water security**.
- Quality information, knowledge base skills & technology and sector M&E are foundation for **efficient investment decision**.
- Long-term public finance to lead water resources development as economic returns accrue over the long term
- Need for additional resources targeting Africa to develop and implement **mitigation and adaptation**.
- Strong national institution is prerequisite. African countries need to be organized and prepared to **benefit from emerging opportunities**.
- CC is an opportunity for the water sector to **improve efficiency & effectiveness**.
- AfDB's water interventions already mainstreaming CC. AfDB is ready to **partner with countries to address CC challenges**.



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Thank you
Merci



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