

Seventh Meeting of the Global Network of Basins
Working on Climate Change Adaptation

25-26 May 2023, Geneva.

NIGER BASIN AUTHORITY : Drought Management Initiatives

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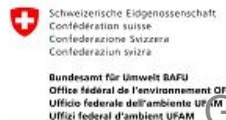
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5/26/2023



Ministry of Infrastructure
and Water Management

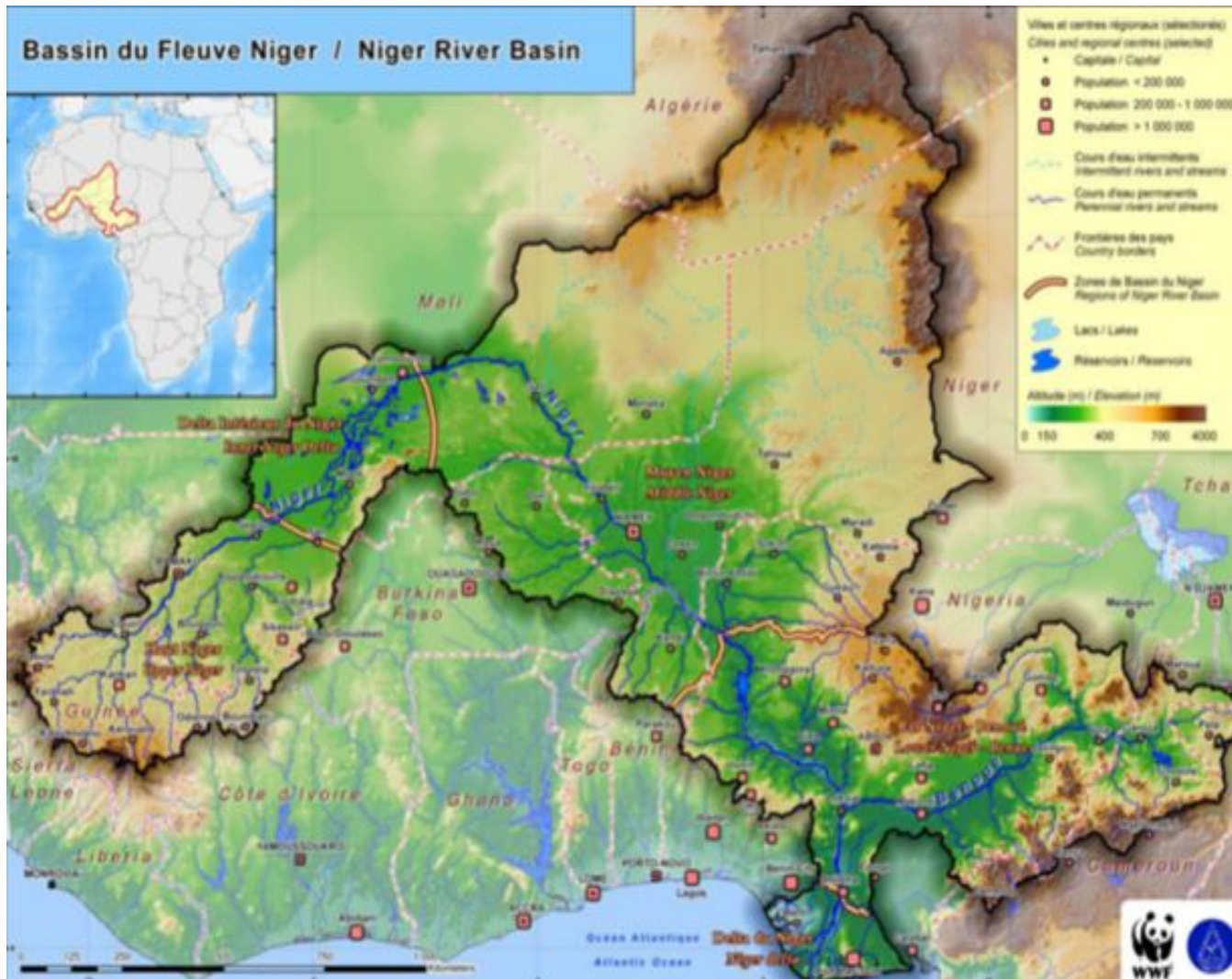


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BRIEF BACKGROUND OF NBA



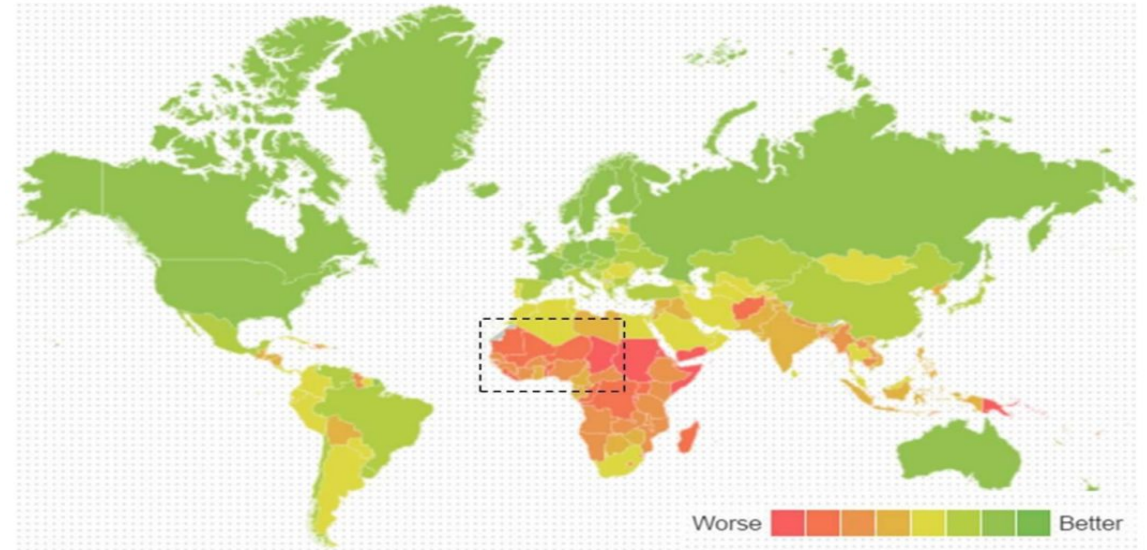
- 📍 In the heart of West Africa, covers 9 countries.
 - created in 1980
- 📏 Length of 4200 km:
 - 3rd in Africa
 - 9th in the world.
- 📏 Area = 2,100,000 km², active part of 1,500,000 km²
- 📍 Agricultural potential: around 2,500,000 ha of irrigable land, (20% is currently exploited)
- 📍 Hydropower potential 30,000 Gwh: 24% currently exploited
- 📍 About 3% annual population growth
- 📍 Temperature rising from 1°C to 3°C, & high rainfall variability with drought & flooding



CLIMATE CHANGE OUTLOOK

- The Basin suffers from a large Adaptation Deficit;
- national & local governments are not equipped / prepared to respond to ongoing climate-related events,
- poor development, poverty, political instability
- Over 70% of the population lives in areas where food security depends on unreliable rainfall , highly variable inter-annual & intra-annual river flows.
- The impacts of climate change increase the risk of natural disasters such as floods, droughts, degraded biodiversity & ecosystems.
- These impacts have a compounding effect that threatens food & energy security, economic development, & the preservation of the ecosystems in the Niger Basin..
- To adapt with climate change, NBA & its members countries, partners developed regional & national policies, **called Investment Plan for the strengthening of Resilience of Climate Change in the Niger Basin, 2015**
- **Regional Climate Change Adaptation Fund and Payment for Environmental Services mechanism, 2016**
- Climate Change investment plan, some initiatives, programmes and projects have been identified and implementing at regional, national and sub-national level.
- NB has been afflicted by droughts since the declining rains of the 1970s.

Figure 1-2 : Vulnerability index to climate change (ND-GAIN 2013)



GLOBAL WARMING THE DEBATE

SCIENTIFIC EVIDENCE

Are scientists convinced?

YES
97%
of climate scientists think global warming is significantly due to human activity

NO
3%
of climate scientists do not think global warming is significantly due to human activity



There's a consensus of scientists because there's a consensus of evidence

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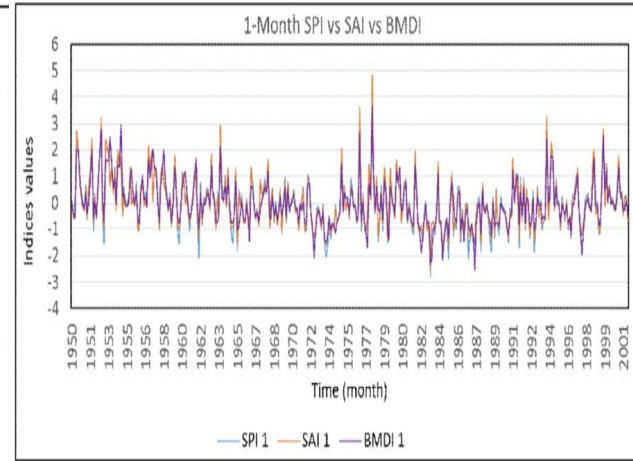
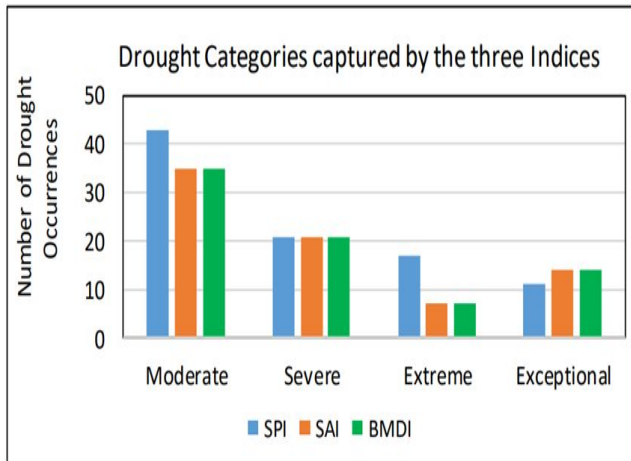
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Surveys have found that over 97% of actively publishing climate scientists are convinced humans are significantly changing global temperatures (Doran, 2009). Not only is there a vast difference in the number of convinced versus unconvinced scientists, there is also a considerable gap in expertise between the two groups (Anderegg 2010).



DROUGHTS AND IMPACTS ON HYDROLOGICAL EVOLUTION IN THE NIGER BASIN.

- Drought is one of the most destructive natural disasters. It has brought huge adverse effects to human social life, industrial, agricultural production & the ecological environment.
- Global warming & increasing human activities have resulted in the increased number & severity of droughts all over the Basin year by year. (Upper & Middle Niger sub-basins)
- The Basin currently experiencing: agricultural, meteorological, socio-economic & hydrological droughts causing a comprehensive effect on the water resources & associated ecosystems. Therefore, accurate monitoring, prevention & restoration is of great significance to realize **DROUGHT TO FOOD TRANSITION.**



Severe droughts are increasingly recurrent.

Severe Impacts on the Socio-economic of the Basin

- Slower economic growth and poverty*
- Food insecurity.*
- Low power generation*
- Increased need for drinking water*
- Water pollution*
- Environmental degradation*
- Increased surface water evaporation*



Frequency of drought intensities category captured by the various indices & Time series of 1, and 3- Months SAI, BMDI and SPI over the upper Niger basin

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ACTIONS TAKEN (ON-GOING) TO MITIGATE DROUGHT IN THE BASIN (CC Investment Plans)

The lack of timely drought monitoring systems, the difficulty in transferring advanced methodologies for the assessment of drought risk to the institutions responsible for water resources management at countries levels, as well as the complexity in defining simple and objective criteria to select and implement appropriate mitigation measures, represent the main limits to an efficient drought management policy at regional and national levels.

1. Knowledge: Collection and generation of climatic and hydrological information. Weather-forecasting tools and decision-making tools
2. Assessment of vulnerability, Communication and awareness-raising
3. Integration of climate change adaptation into the capabilities, bodies and management instruments of the national and regional institutions of the Basin
4. Measures targeting vulnerability to water stress
5. Measures targeting vulnerability to drought and flooding
6. Measures targeting vulnerability to soil degradation
7. Measures targeting vulnerability to degradation of the grazing land
8. Measures targeting vulnerability to degradation of the ecosystems
9. Measures targeting vulnerability to deterioration of the water quality and health
10. Measures targeting vulnerability linked to the rising water-level
11. Measures strengthening resilience (e.g. generation of jobs, revenues, etc

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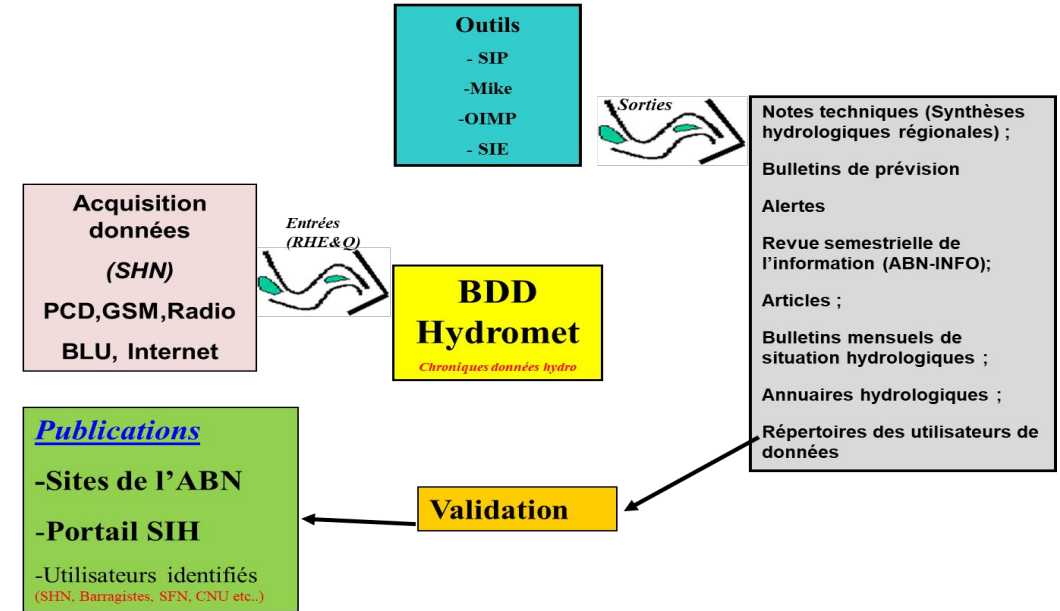
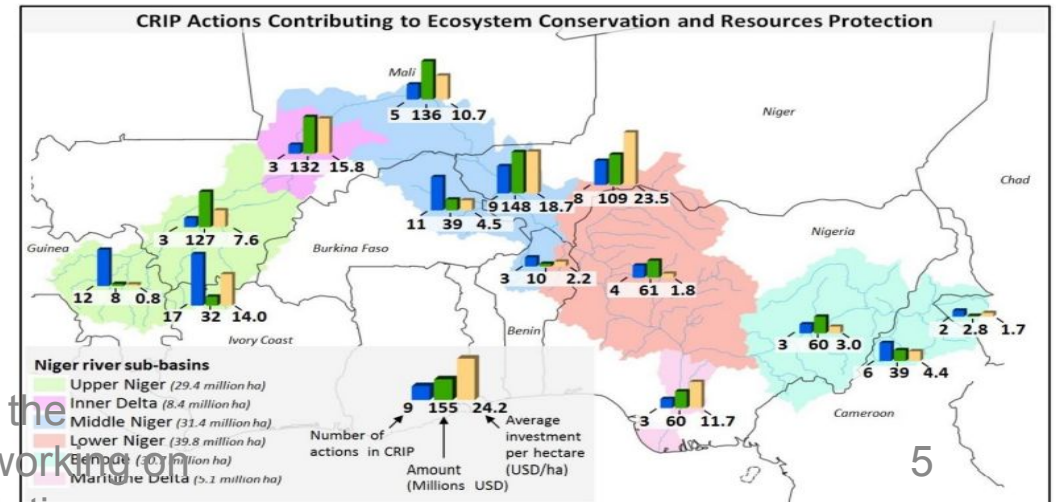


Figure 3-2: Distribution of the CRIP actions contributing to ecosystem conservation and resources protection in the Niger basin



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DROUGHT TO FOOD TRANSITION: SOME RESULTS FROM THE BASIN INITIATIVES

Fixing the dunes both (mechanically and biologically) reduces siltation of the river, helps agricultural activities, improves water quality, control water shortages and drought in the affected areas, improves navigability and reduces flooding etc

Recovery of degraded land



Fixing the dunes



vegetable gardens



A small dam in Fètèkou in Benin rehabilitated



LESSONS LEARNT (ON-GOING) ON DROUGHTS MANAGEMENT TECHS.

• Knowledge on Water Quantity and Quality

1. Monitoring, Forecast / prediction and Early warning system is imp. for Drought magt.; Realtime data collection & transmission is improved
2. Capacity building on drought management should be strengthened
3. IWRM Policy should developed and respected
4. Minimal Environmental flow is established and maintained
5. There is relationship between climate change and water resources (quantity & quality, Food and Energy and Ecosystems)
6. More cooperation and collaboration is needed between local communities/national / regional / intl. organizations
7. Participation of International organization is important for the remedial impacts of climate change



• Agriculture / Energy/ Navigation restoration

1. National and sub-national dialogue forum/ meeting is a big factor
2. Drought to Food: water, food, energy and ecosystems
3. Knowledge in water footprint and virtual water is necessary for Agro-efficiency, food security
4. Knowledge in water efficiency and water demands is important for crop yields & Hydropower magt.
5. Locals participation is necessary for climate change adaptation techniques
6. Women and youths organization contributed to climate change adaptation techniques
7. Climate -smart agriculture is a key (increases productivity, farmers profit, +ve impacts on the environment, research & breakthroughs in the tech/ universities)



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SOME OF THE BEST PRACTICES EMPLOYED TO MITIGATE THE IMPACTS OF DROUGHTS IN THE BASIN

- 1. The development of (3.11 billion USD) Investment Plan for the Strengthening of Resilience to Climate Change in the Niger Basin (2016-2024)**
- 2. The formulation of National Adaptation Programmes of Action (NAPA) & National Adaptation Plans (NAP)**
- 3. The setting of drought monitoring systems/ Early warning systems & forecast in the Basin**
- 4. The implementation of dunes fixation techs, agroforestry / forest restoration and management measures in the drought affected areas of the Basin.**
 - enhance the resilience of the populations to climate change, (PIDAACC, P-DREDGE, P-GIRE2, ITTAS)**
 - constitute mitigation measures by carbon sequestration in the plant biomass**
- 5. The construction (on-going) of 3 multi-purpose dams (Kandadji- Niamey, Fomi – Guinea, Toussa – Mali) are deemed to be an adaptation measure as the dam contributes to improving the availability of the water resource during low-water periods,**
 - the protection against flooding, water for drought seasons, and the improvement of the means of subsistence of the local populations (fishing, tourism).**
 - the hydroelectric component of the dam also constitutes a mitigation measure, contributing to energy generation without the emission of greenhouse gas (GHG).**
- 6. The introduction of Water, Energy, Food NEXUS approach in the Basin, path to a climate-resilient & resource-saving future for all.**
- 7. Satellite based water monitoring and flow forecasting system: (www.sath.abn.ne)**
 - increase the frequency and accuracy of water resources data,
 - very cost-effective solution to resolving real times data series scarcity issues
 - enhances the capability of the NBA member states in their water resources & environmental management functions.



Thank you!

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