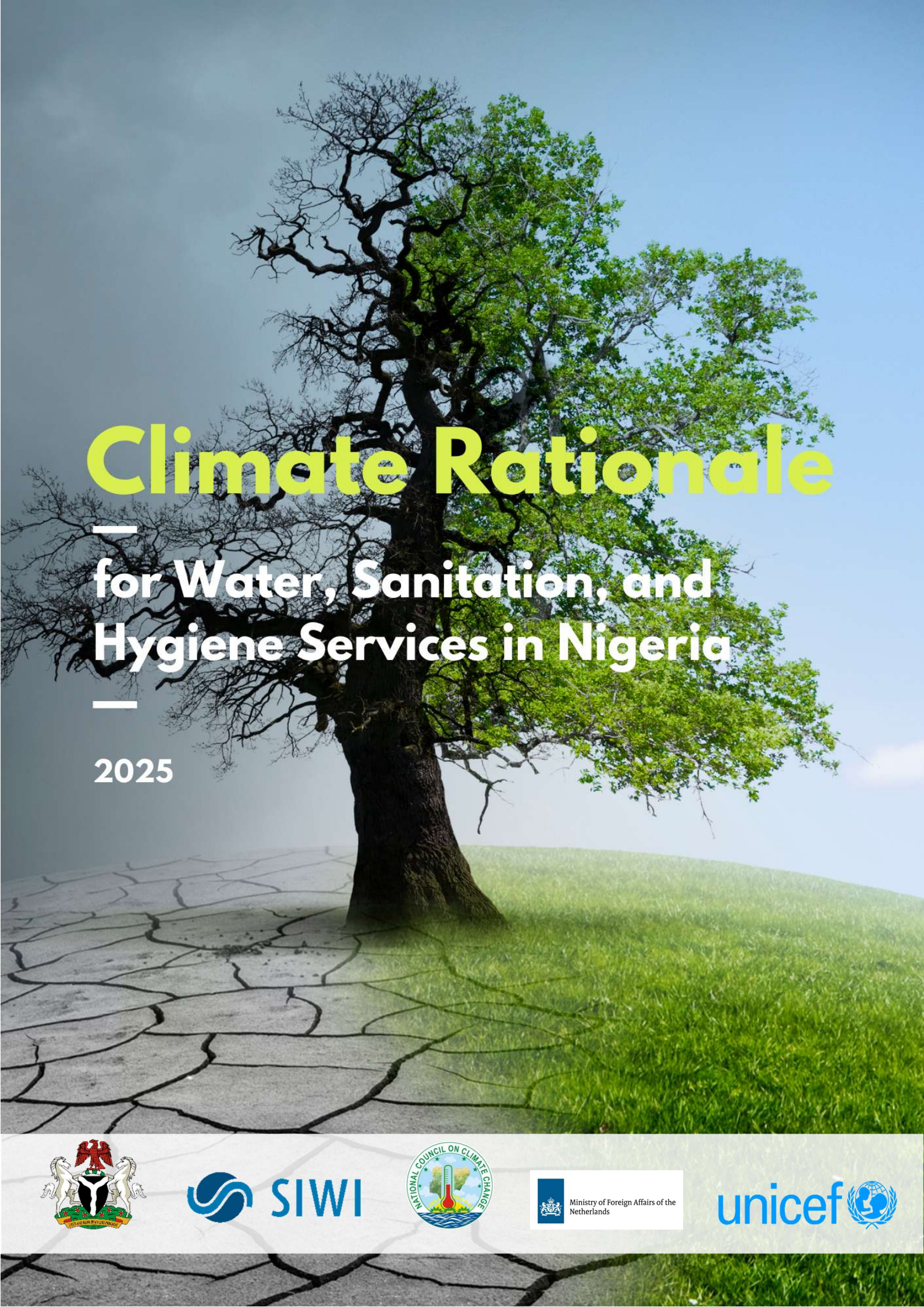


Climate Rationale

for Water, Sanitation, and Hygiene Services in Nigeria

2025

SIWI

NATIONAL COUNCIL ON CLIMATE CHANGE

Ministry of Foreign Affairs of the Netherlands

unicef

Climate Rationale

Nigeria is classified as one of the ten most vulnerable countries to climate change impacts. The country needs climate-resilient WASH services that maintain essential functions at all times.

RATIONALE

24% (45 million people)
of Nigeria's population live in areas of high climatic vulnerability

13%
have access to safely managed water supply

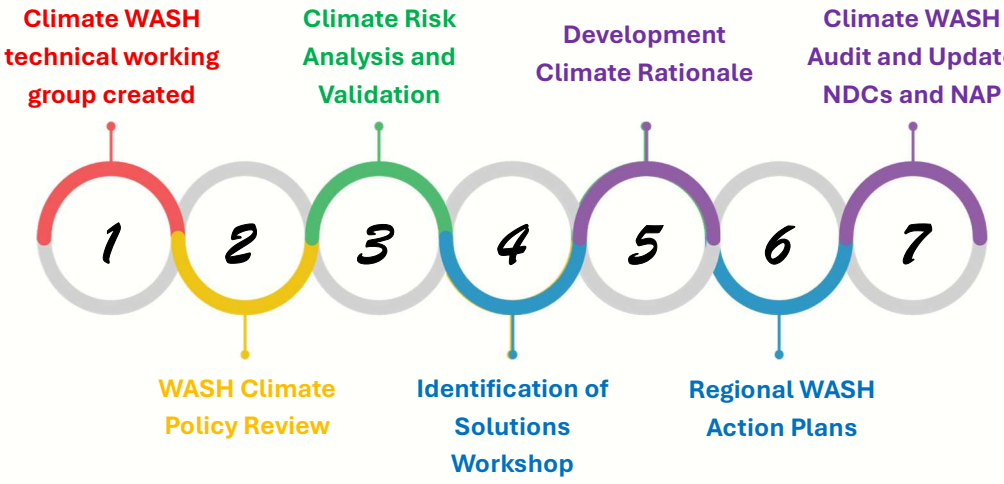
2nd Worst worldwide
Global CCRI ranking with at 8.5 scores. Children with High exposure and vulnerability

4%
access to basic sanitation services

1000 deaths/year
from unsafe water and poor sanitation

1 of 9
children under age 5 die annually from water-borne diseases

Timeline



Hazards

Description of Hazards

Flooding

The major risk areas for flooding events are along the banks, plains and deltas of the major rivers, with coastal areas also at risk due to ocean surges. However, due to the large quantities of fresh water in rivers, swamps, lakes and estuaries throughout the country, flood risk is high in many locations. This hazard might become more intense and frequent due to climate change. Flooding damages WASH infrastructure, contaminates water sources and disrupts service delivery, increasing the risk of waterborne disease outbreaks."

Drought

A deficiency of precipitation from the accepted or normal that, when a season or dry period is extended, is insufficient to meet demands. Drought events can lead to less water availability and therefore exacerbate water stress and scarcity. It also increases the demand on water services and thereby builds up more stress on WASH infrastructure. Central and southern areas experience a high risk from the impact of drought due to their higher water demand. Higher temperatures and changes in precipitation patterns might exacerbate this hazard in the future.

Heatwaves and Extreme heat

Heatwaves are events of higher temperatures than average during a longer period. The occurrence of heatwaves has a direct impact on soil moisture, land cover, livestock, water availability and WASH services.

Desertification

Desertification is associated with the degradation of lands in arid, semi-arid and sub-humid dry areas, and involves a gradual shift in vegetation from grasses, bushes and occasional trees to grass and bush and, in the final stages, extensive areas of sand. Desertification has long been a challenge in northern Nigeria specifically along the Sudano-Sahelian belt. It reduces groundwater recharge, dries up boreholes and forces communities to rely on unsafe water sources, undermining WASH service reliability.

Historical Trends and Projected Changes for the Main Hazards

1

Floods: The frequency of flooding caused by rainfall and storm surges has increased in the south (Cross River, Lagos, Delta), with a significant increasing trend in the northern region and high risk in the centre around the rivers. The duration and intensity of rainfall has increased in the last three decades, with projections indicating an increase leading to larger runoffs and flooding in many places. Climate change will increase the duration and intensity of flooding through heavy rainfall events.

2

Droughts: Droughts are becoming more frequent, increasing in duration, and becoming more severe due to rising temperatures. The northern region is most at risk, and previously less-prone areas are gradually becoming more susceptible. The changing rainfall patterns are leading to chronic failure of the long rains from March through May, exacerbating the situation and significantly increasing water scarcity. Historical drought is highest in the northeast and north central regions, while areas with low rainfall (rainfall anomalies) are observed in the northeast, and north-central regions.

3

Heatwaves and extreme heat: Historical patterns show an increasing frequency and duration of warm spells, especially in the Sahel region. Projections indicate that heatwaves will increase in spatial frequency and duration, with some areas experiencing 'super extreme heatwaves'. The geographical extent of heat waves is expanding, with the northern arid parts facing more heat. The warming of the environment is most significant between June and November each year.

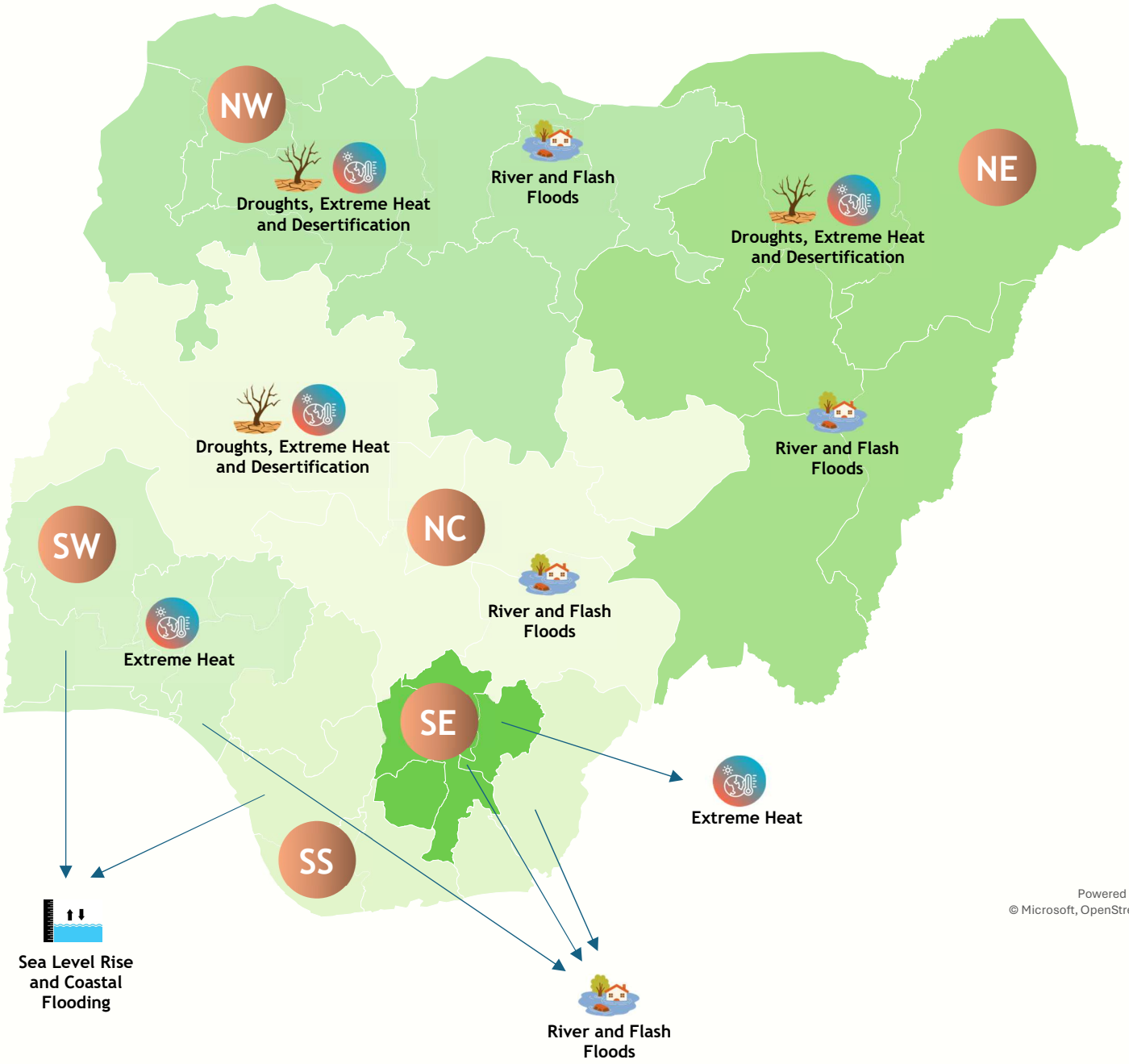
4

Desertification: The northern region is most at risk of extreme temperatures and reduced rainfall, leading to aridity and desertification. Areas less prone to drought are becoming more susceptible. The north central region also faces high exposure from aridity. Desertification is a slow, chronic challenge that contributes to drought, particularly felt during the hot and dry season of the North (October to March). Future projections suggest rainfall will be less predictable and any chronic failure of the long rains could exacerbate desertification.

5

Sea level rise and coastal flooding events are frequent and already impact millions of Nigerians every year. This phenomenon is expected to become more frequent and intense in the future due to rising sea levels. The duration of coastal flooding events may also increase, affecting more coastal areas, including important population centres like Lagos and Port Harcourt. The time of year when coastal flooding is most common may also change in the future due to possible seasonal changes in rainfall distribution.

Prioritized Climate Risk by Geo-Political Zone



Exposure

Geographic Exposure

Coastal areas: Sea-level rise and salinization threaten water resources

Northern regions: Desertification increases flood risk and water scarcity

Agricultural impact: Reduced yields and grassland capacity

Community Exposure

Vulnerable populations: Women, children, elderly, disabled disproportionately affected

Health impacts: Amplified rates of cholera and water-borne diseases

Coastal communities: 50+ million people (25% of population) live along coast, 67% in informal settlements

Displacement risk: 27-53 million people may need relocation with 0.5m sea level rise

Infrastructural Exposure

Flooding damage: Increased physical damage to water and sanitation infrastructure

Water scarcity: Existing shortages exacerbated, particularly in the north

Service costs: Increased operational and maintenance costs due to climate impacts

Groundwater depletion: Declining levels as desertification affects boreholes

Vulnerability

Systemic Vulnerability

Social Vulnerability

Systemic Vulnerability

Governance Challenges

Nigeria's governance structure is characterized by fragmented institutions and poor coordination between different levels of government, creating barriers to effective policy implementation and service delivery.

Financial Constraints

The WASH sector faces significant financial challenges, relying heavily on foreign aid while struggling with inadequate budget allocations from domestic sources.

Institutional Capacity Gaps

Institutional capacity is severely compromised, evidenced by the fact that 38% of water supply facilities were non-functional in 2021, highlighting widespread infrastructure failures and maintenance deficits.

Service Inequality

There are stark inequalities in access to services, with rural populations having only 6% access to safely managed water compared to 27% in urban areas, creating a substantial development gap that climate change threatens to widen further.

Social Vulnerability

Widespread Poverty

Nigeria faces extreme poverty challenges, **with 48% of the population living on less than $1.90 per day,** severely limiting their ability to access improved water and sanitation services or adapt to climate impacts.

Geographic Inequality

There are profound disparities in access based on wealth and location, **with the poorest households being 17 times less likely to have access to safe water compared to the richest households**, creating vast inequities across the country.

Gender-Based Impacts

Women and girls bear a disproportionate burden from climate and WASH challenges, being primarily responsible for water collection and facing greater risks during flooding events due to their home-based responsibilities and caregiving roles.

Child Vulnerability

Children face particularly severe exposure to climate hazards, with 75% living below the poverty line and experiencing high rates of water-borne diseases, making them especially vulnerable to the combined impacts of climate change and inadequate WASH services.

Response

Financing

- Update legal frameworks for climate-resilient WASH financing
- Develop Public-Private Partnerships
- Explore innovative financing (green bonds, carbon credits)
- Secure funding for maintenance and infrastructure upgrades

Data & Information

- Include climate-resilient WASH data in information platforms (NAWIS, WASHIMS)
- Develop climate screening frameworks for WASH infrastructure
- Generate status data on existing facilities
- Create unified water information management system

Capacity Building

- Conduct capacity needs assessment for climate-resilient WASH
- Develop special training packages on climate-resilient WASH
- Revitalize Centres of Excellence for training programs
- Build local community capacity including traditional knowledge

Innovation

- Develop climate-resilient design standards for WASH infrastructure
- Create Technical Working Groups for infrastructure norms
- Prioritize low-water technologies in northern regions
- Establish climate-resilient technology demonstration centers

Governance

- Integrate climate risk assessments into WASH programming
- Strengthen groundwater governance frameworks
- Establish functional climate change units at all government levels
- Improve multi-sectoral resilience planning

Strategic Implementation Plan

Immediate Objectives:

- Integrate WASH risks into upcoming NDC and NAP revisions
- Establish unified WASH information management systems
- Develop climate-resilient infrastructure standards
- Create state-level climate task forces

Medium Term Goals:

- Achieve climate-resilient WASH services in high-risk areas
- Strengthen groundwater governance frameworks
- Scale up innovative financing mechanisms
- Build comprehensive technical capacity across the sector

Long Term Vision:

- Transform Nigeria's WASH sector to be fully climate-resilient
- Ensure equitable access to climate-adapted WASH services
- Establish Nigeria as a regional leader in climate-resilient WASH practices
- Contribute to national climate adaptation and mitigation targets

2025