Improving Nigeria's Water Security through Nature

Top 10 Watersheds

July 2024

The Nature Conservancy

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Report Content

Introduction

This document presents a high-level, national opportunity assessment to identify priority watersheds in Nigeria for establishing a **Watershed Investment Program (WIP)**. WIPs are designed to bring together various water users, including water utilities, local governments, businesses and agriculture, to collectively invest in Nature-based Solutions (NbS) at-scale. This helps them protect and restore the upstream ecosystems they depend on.

This assessment was conducted by Nature for Water (N4W) – a technical assistance team set up to ideate, design, and establish WIPs, globally. N4W is a partnership organization between TNC, a global conservation NGO, and Pegasys, a management consultancy specializing in development and nature/climate finance. Since its establishment in 2022, N4W has supported over 35 current and prospective WIPs aiming to deploy NbS tailored to their specific context and water security challenges. Prior to establishing N4W, TNC has been developing and supporting WIPs across the world for over 25 years. TNC achieves impact in 79 countries directly or through partners, yet Nigeria represents a new territory for TNC and the WIP concept. Therefore, TNC's Africa Region leadership commissioned N4W to conduct this assessment, following interest by serval corporate donors to support watershed protection initiatives in Nigeria.

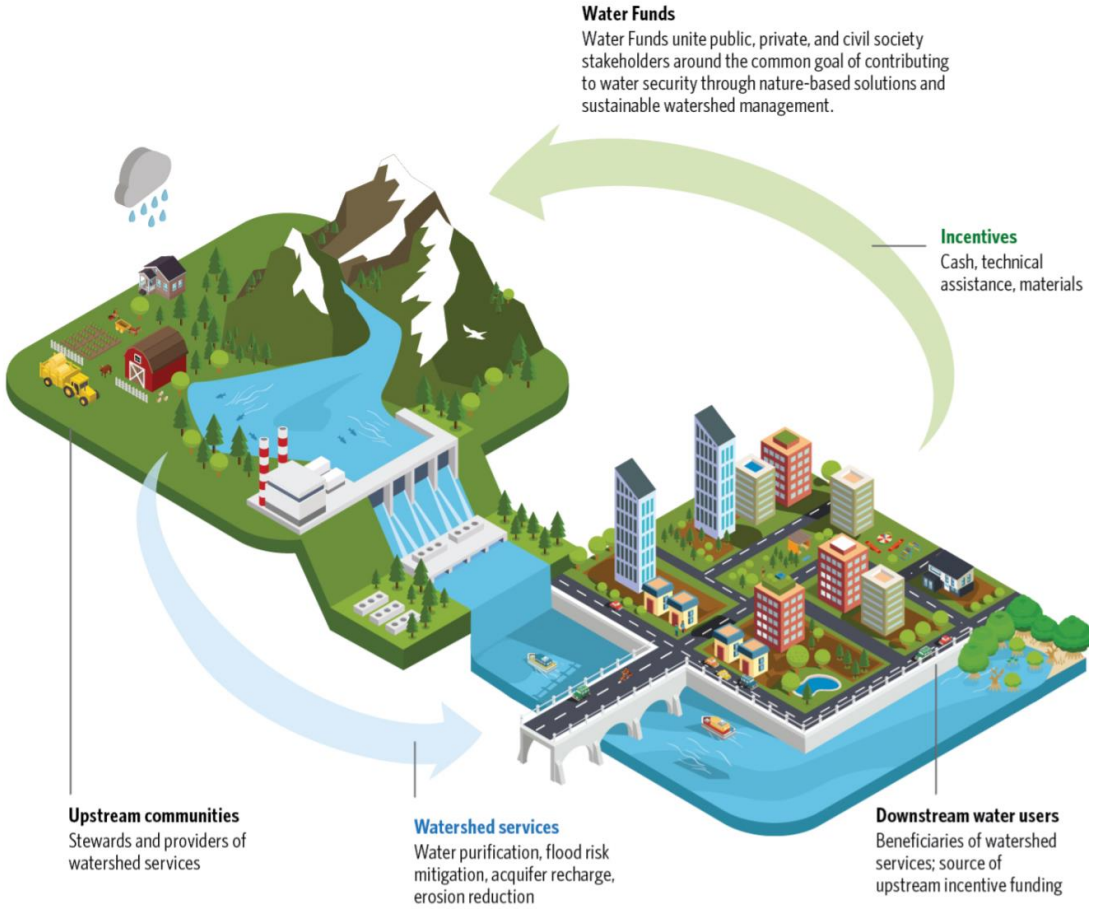
To inform where future funding and work should focus on in Nigeria, N4W conducted a Multi-Criteria Analysis (MCA). The MCA allows for the methodological comparison of different watersheds against a set of defined success criteria that constitute an enabling environment for establishing a WIP. The top 10 priority areas were examined in greater detail and are outlined in this document. Importantly, this high-level assessment should be followed by more detailed analyses focusing on the specific areas chosen, based on this assessment.

The Nature Conservancy | Nature for Water Local solutions. Global impact. | PEGASYS CHANGING LIVES CHANGING WORLDS

Introduction | **Water Security and NbS**

Water Security is defined as the "Availability of an acceptable quantity and quality of water for health, livelihoods, ecosystems and production, coupled with an acceptable level of water-related risks to people, environments and economies" [1]. Nigeria faces significant challenges in providing water security, and has experienced water scarcity, flooding, and quality degradation, driven by rapid population growth, agricultural and industrial expansion, and climate change.

Nature-based solutions (NbS), such as restoring riparian zones, improving agricultural practices, and afforestation, can provide practical solutions to water security challenges. NbS are actions to protect, sustainably manage and restore natural or modified ecosystems, which address societal challenges (e.g., climate change, food and water security or natural disasters) effectively and adaptively, while simultaneously providing human well-being and biodiversity benefits [2].



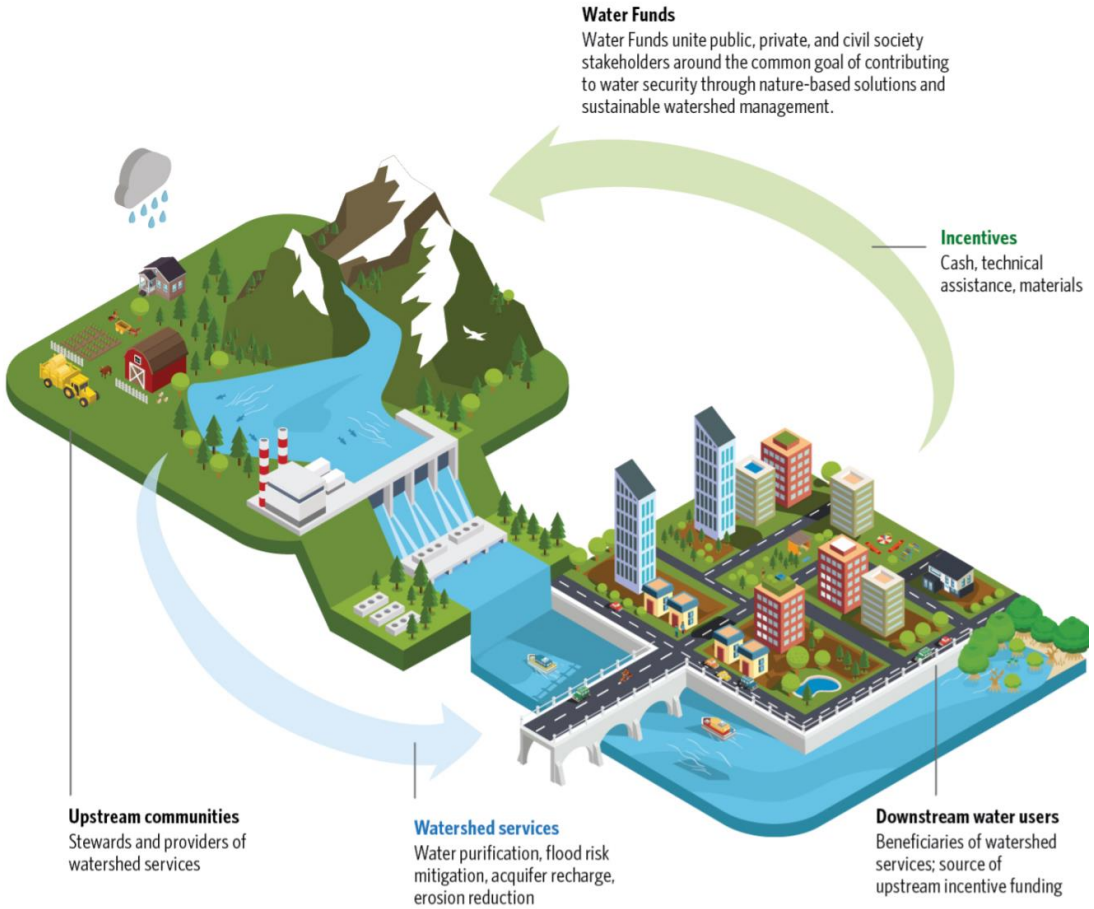
Sources: [1] Grey, D., & Sadoff, C. W. (2007). Sink or Swim? Water security for growth and development. IWA Publishing, Volume 9, Issue 6. [2] Cohen-Shacham, E., Walters, G., Janzen, C., & Maginnis, S. (2016). Nature-Based Solutions to Address Societal Challenges. Gland: International Union for Conservation of Nature.

Introduction | **WIP and NbS**

Outcomes from NbS can benefit downstream water users. For example, enhanced water quality can reduce water treatment costs and infrastructure maintenance, such as reduced chemical use, sediment dredging and/or equipment backwashing.

NbS usually need to be implemented at scale to deliver significant outcomes, requiring coordinated efforts across a watershed and substantial funding. This can be structured as a **Watershed Investment Program (WIP)**, a collective action mechanism for water security that unites stakeholders—water and power utilities, businesses, agriculture, and local governments—to invest in upstream ecosystem protection and restoration. WIPs serve as sustainable governance and funding mechanisms, often monetizing ecosystem services of NbS, for example, through water tariffs. WIPs can also attract donor funding, with many successful examples worldwide, especially in Africa.

The term **"Enabling Environment"** refers to the local context in which a WIP might be developed. Aspects of this context, such as stakeholder interests, certain catchment characteristics, and the potential for NbS to improve water security, can better "enable" the development and success of a WIP.



WIP Opportunity in Nigeria

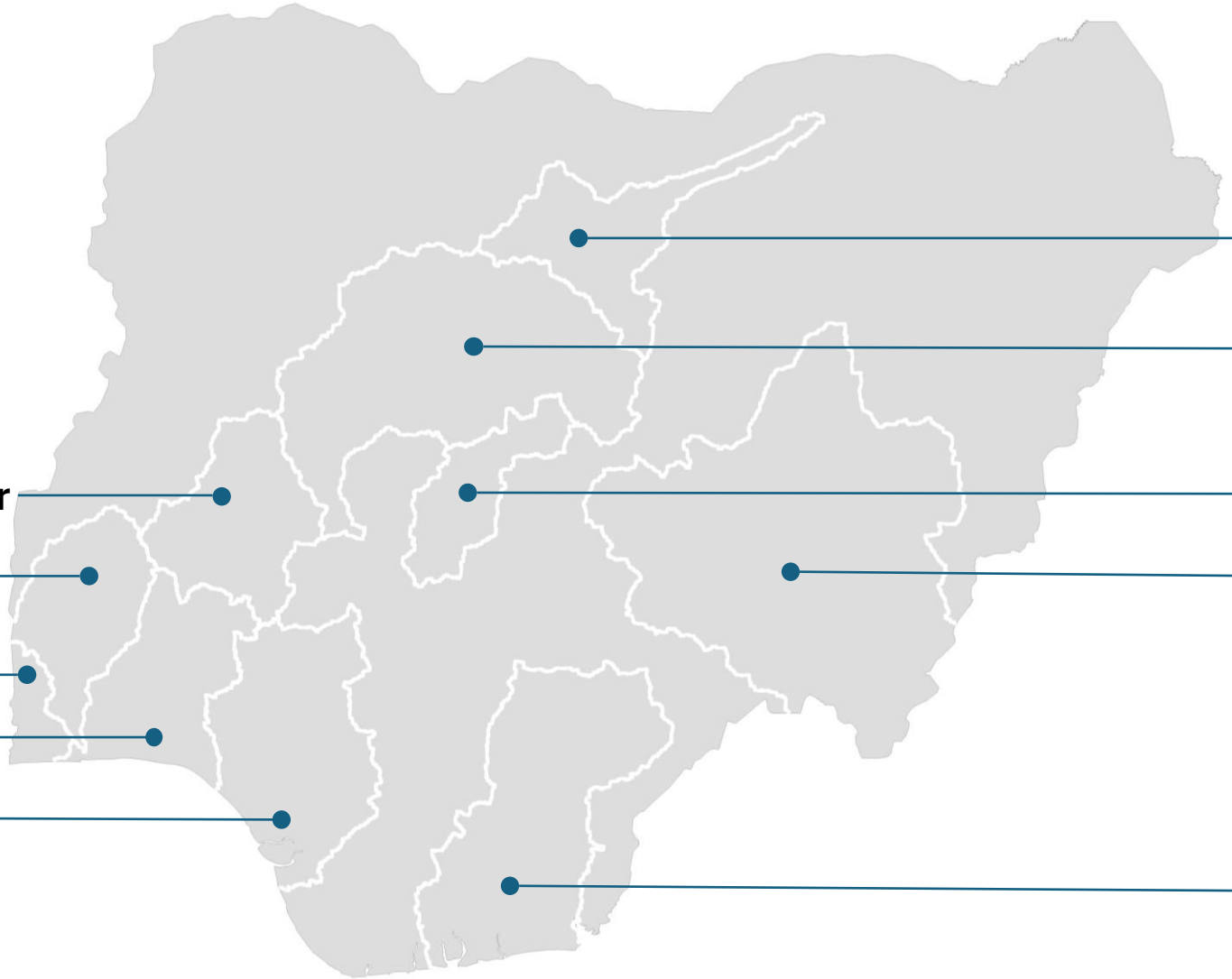
Top 10 watersheds to invest in NbS at-scale in Nigeria

The purpose of this assessment was to systematically evaluate and prioritize Nigeria's 54 watersheds in terms of their potential to host a WIP. To arrive at the top 10 watersheds for a WIP, a Multi-Criteria Analysis (MCA) was conducted. An MCA is a methodological approach to evaluate different options based on a set of defined criteria. It is a tool aimed at enabling informed decision-making. Crucially, an MCA should **inform** decisions, and **not make** decisions directly.

This section will first outline the broad methodological approach to the MCA and the comparative criteria used, and then present the results of the national opportunity assessment.

Results | **Top 10 Watersheds**

The opportunity assessment of 54 watersheds yielded the following top 10 priorities.



Priority #1: **Kano**

Priority #3: **Kaduna**

Priority #8 **Mid-Niger**

Priority #7: **Gurara**

Priority #6 **Ogun**

Priority #10: **Mid-Benue**

Priority #5 **Yewa**

Priority #4 **Osun**

Priority #2 **Osse**

Priority #9: **Cross Lower**

*The watershed boundaries, as defined by the UN's Food and Agriculture Organization, were used for this assessment. Please refer to the Appendix for a more detailed map.

Results | **Methodological Approach**

The following steps were taken to conduct the MCA

1 Define the watersheds

Exclusion of definite no-go watersheds

- Developed a set of pre-screening criteria to guide the exclusion of strategically low priority areas.

Definition of the scale at which we compare the watersheds

- Chose the FAO's basin definition as a consistent scale for comparison.

- Outcome: **A selection of watersheds (8-10) to be included in the analysis**

2 Define the criteria

Defined the criteria and methodology of how to derive them

- Criteria covered both qualitative and quantitative measures.
- Tested the criteria with one example to ensure suitability and make final adjustments.

- Outcome: **A targeted methodological framework**

3 Gather data on each criterion

Extensive data gathering exercise

- The criteria guided the research and gathering of data.
- Applied the defined criteria to derive the scores.
- Refined the criteria based on initial findings from the research (i.e. information available).

- Outcome: **Data library and scoring for each (sub)-criteria**

4 Aggregate and score the criteria

Evaluated the scores and drew conclusions

- Conducted quantitative analysis.
- Compared and evaluated the final scores.

- Outcome: **Final recommendations on opportunity areas**

Results | **Comparative Criteria Used**

The following criteria were used to assess the Enabling Environment for a WIP

Criteria	Why does it matter?	Sub-criteria	Data Sets Used
Water Security Challenges (WSC)	A successful WIP must be trying to address an evident need or challenge. This means clearly defining a water security challenge(s) to be addressed, and that these are understood by local stakeholders.	Water quality	Aqueduct
		Water resources/quantity	Aqueduct, G3P, WWF Water Risk Filter
		Flooding	Aqueduct Floods, WWF Water Risk Filter
		Climate Change	World Bank CKP - Precipitation / Temperature Anomaly RCP8.5, 2050 horizon
Strategic Watershed Characteristics	WIPs can be strengthened by watershed characteristics such as a significant downstream population where generated ecosystem services can be monetized with beneficiaries. Equally, the presence of water infrastructure can indicate opportunities for NbS to protect and improve existing investments.	Water Infrastructure	GrandD v1.1 - Total Reservoir Capacity
		Downstream population density	WorldPop 1km (2020-2021), Worldcover
		Ecosystem Value	IUCN database
Potential for NbS	The potential of NbS to generate impact depends on the nature of the water security challenge and the underlying drivers (e.g. prevalent land use, dominant agriculture or forestry management practices, etc.)	Ecosystem function baseline	WWF Water Risk Filter
		Agricultural systems	Worldcover
		Ecosystem degradation	Global Forest Watch, Trends.Earth
Co-benefits	A successful WIP not only improves the prevalent water security challenges, but it also generates various co-benefits, including biodiversity, carbon sequestration, benefits for local livelihoods, and food security.	Food Insecurity	Food Insecurity Hotspots Dataset (2009-2019)
		Biodiversity	WWF Biodiversity Risk Filter
		Carbon	WWF Biodiversity Risk Filter, Trends.Earth Soil Organic Carbon (2001-2020)
		Livelihoods	Multi-Dimensional Poverty Index (2019)
Stakeholder Landscape	The success of a WIP hinges on the stakeholder landscape. It requires organizations and individuals to take local leadership, local implementation partners with capacity and experience in NbS, and local funders to ensure financial sustainability.	Potential Local Leads Present	Stakeholder Mapping
		Potential Implementers Present	Stakeholder Mapping
		Potential Funders Present	Stakeholder Mapping

Each of the five criteria was weighted equally in the analysis. The analysis is relative, meaning watersheds are compared to each other, rather than an exogenous metric.

Results | **Top 10 Watersheds**

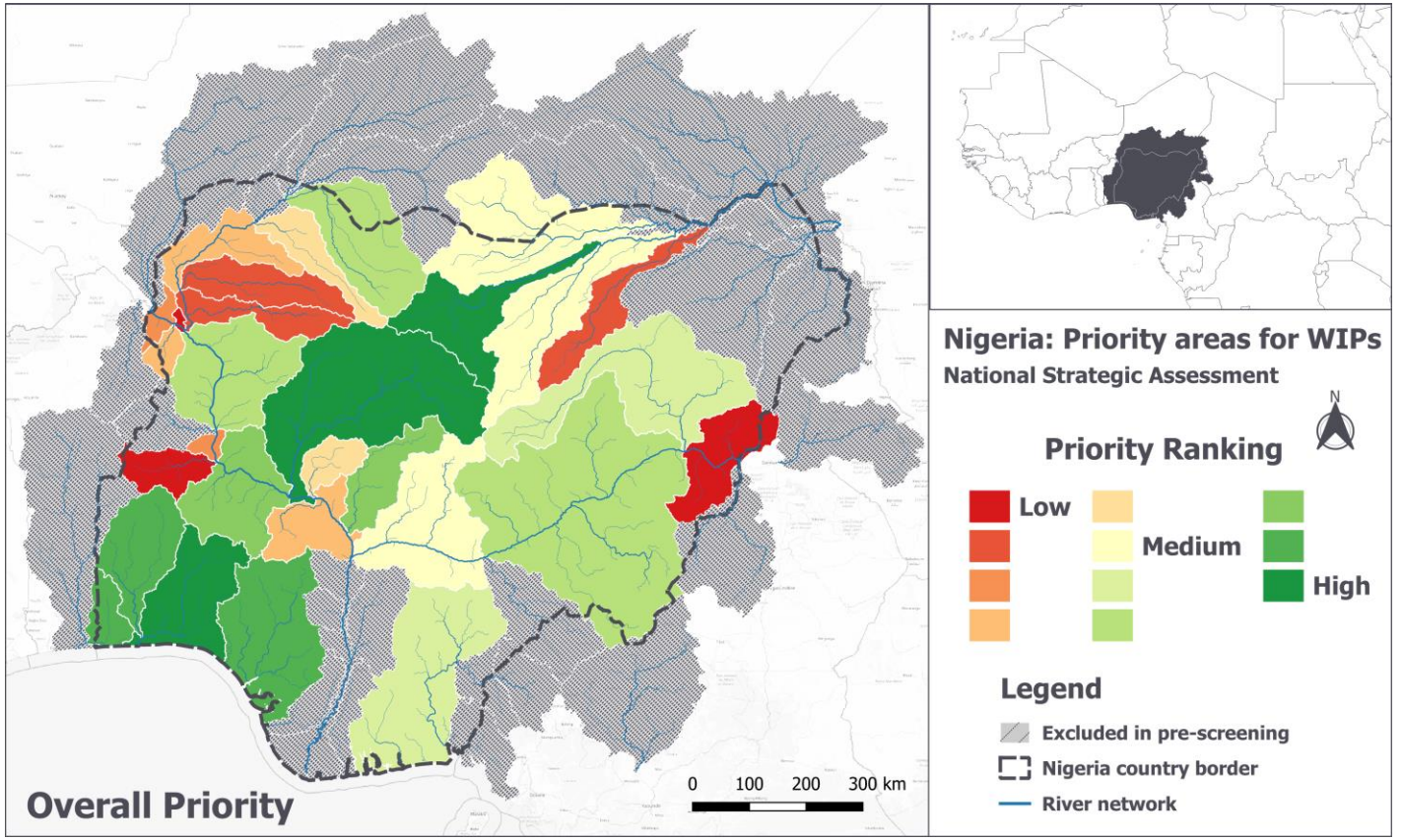
Overall priority ranking of the analyzed watersheds

The map displays the priority ranking of the analyzed watersheds, based on their potential for a successful WIP.

High priority watersheds appear to be those with large urban centers, notably Lagos, Abuja, and Kano. This can be attributed to the high potential for impact on large populations, and the presence of vital stakeholders, particularly potential funders, required to establish a successful WIP.

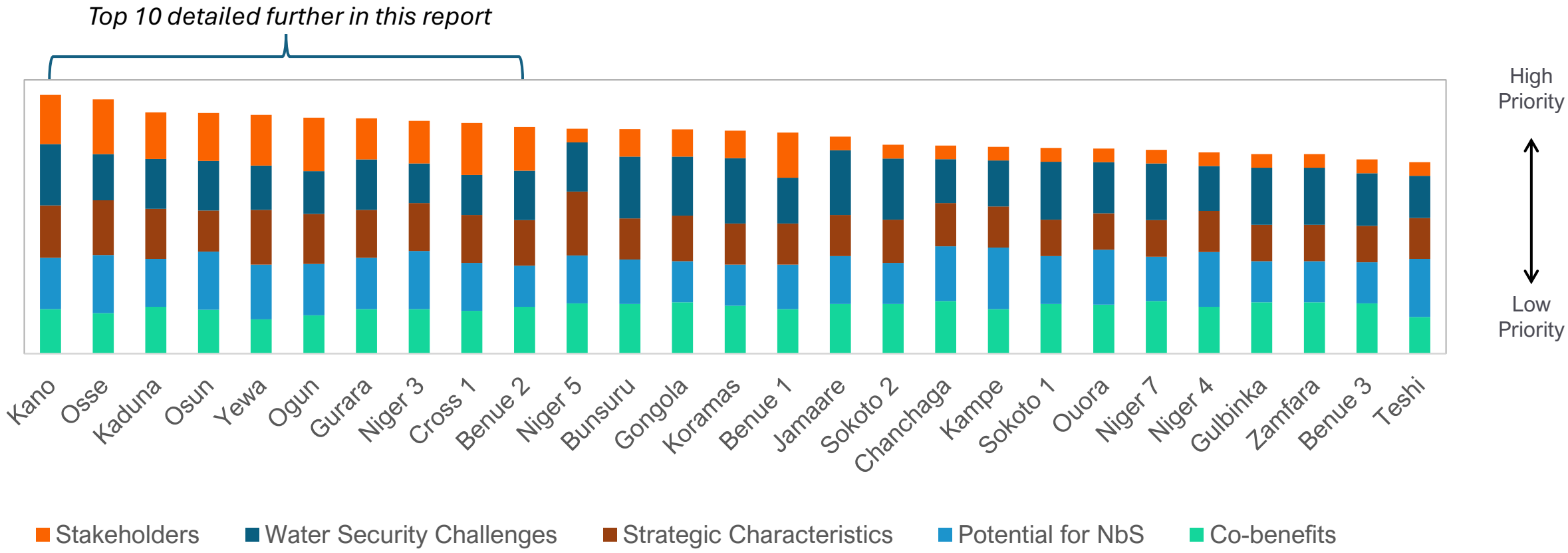
The greyed-out watersheds were excluded in a pre-screening exercise due to either (a) security concerns, or (b) watershed hydrology that would mean that the benefits generated by NbS investments inside Nigeria would drain outside the borders.

Importantly, many of the watersheds in Central and eastern Nigeria are tributaries to larger rivers which originate outside of the country. This has important implications for WIPs targeting water security of the main stem of the river.



Results | **Top 10 Watersheds**

Overall priority ranking, displaying the watersheds overall score and composite score per criteria



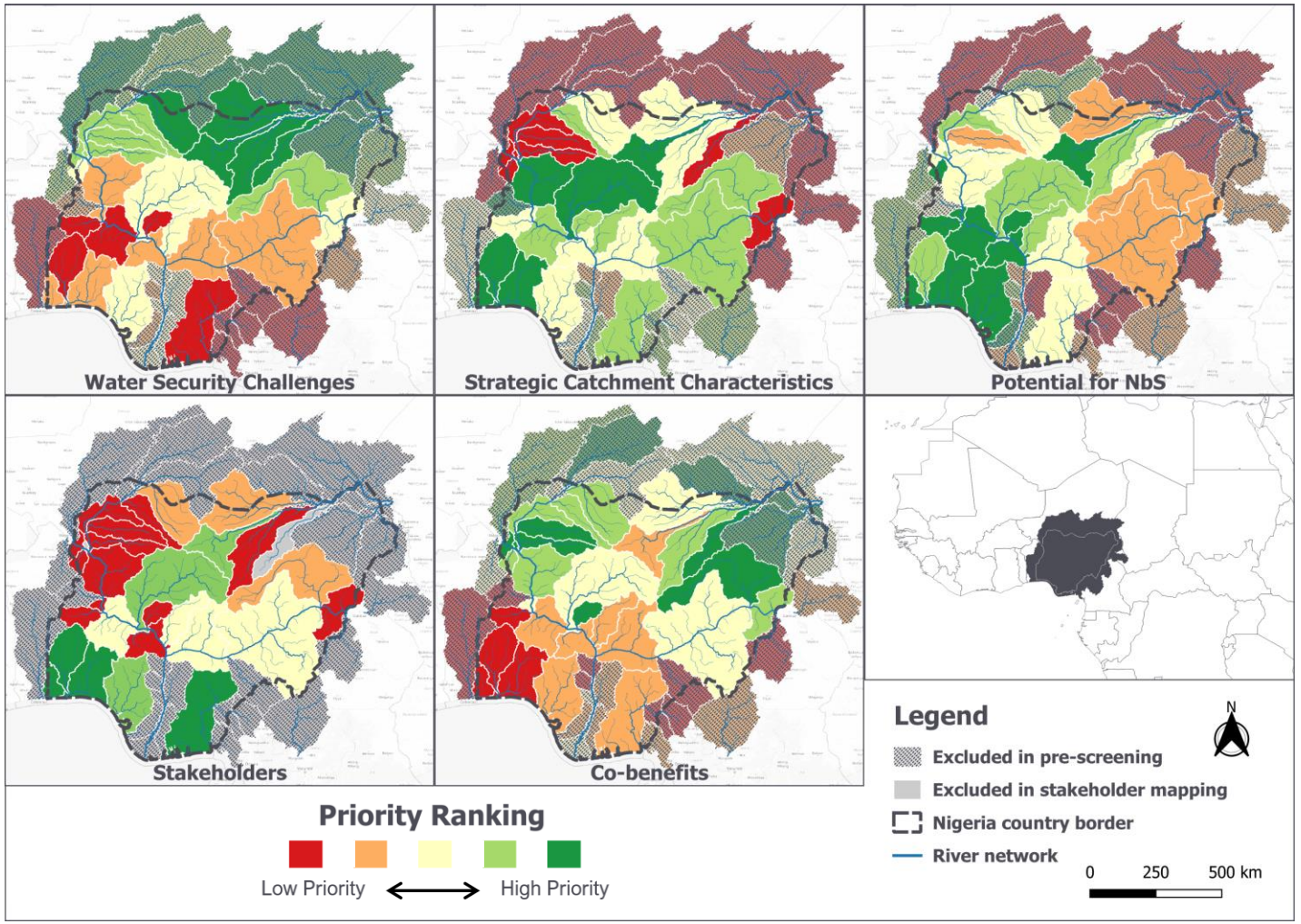
This graph shows the ranking of all watersheds analyzed, displaying their overall score and composite score per criteria. The results highlight that the Stakeholder Landscape is the most defining criterion due to its large variability - the presence of the right stakeholders is a fundamentally important factor in enabling a successful WIP.

Results | **Top 10 Watersheds**

Priority ranking in each criterion

The maps display the watersheds' relative priority ranking in each criterion. These **rankings are relative**, meaning a lower score in a criterion does not indicate the absence of the enabling conditions, rather that it is relatively lower compared to the other watersheds in Nigeria.

For example, the southern watersheds score relatively lower in the 'water security challenges' criterion, despite having serious challenges in real terms. Notably, water security issues across Nigeria are severe, driven by inadequate water supply and wastewater infrastructure, rapid population growth, urban expansion, and land use changes, leading to significant sanitation and public health challenges, as well as severe water quality and flooding issues. Nevertheless, the higher scores in the northern areas can be explained by the additional water shortages challenges caused by a drier climate.



Watershed Spotlights

Top 10 Watersheds in Nigeria to Invest in Nature to improve Water Security

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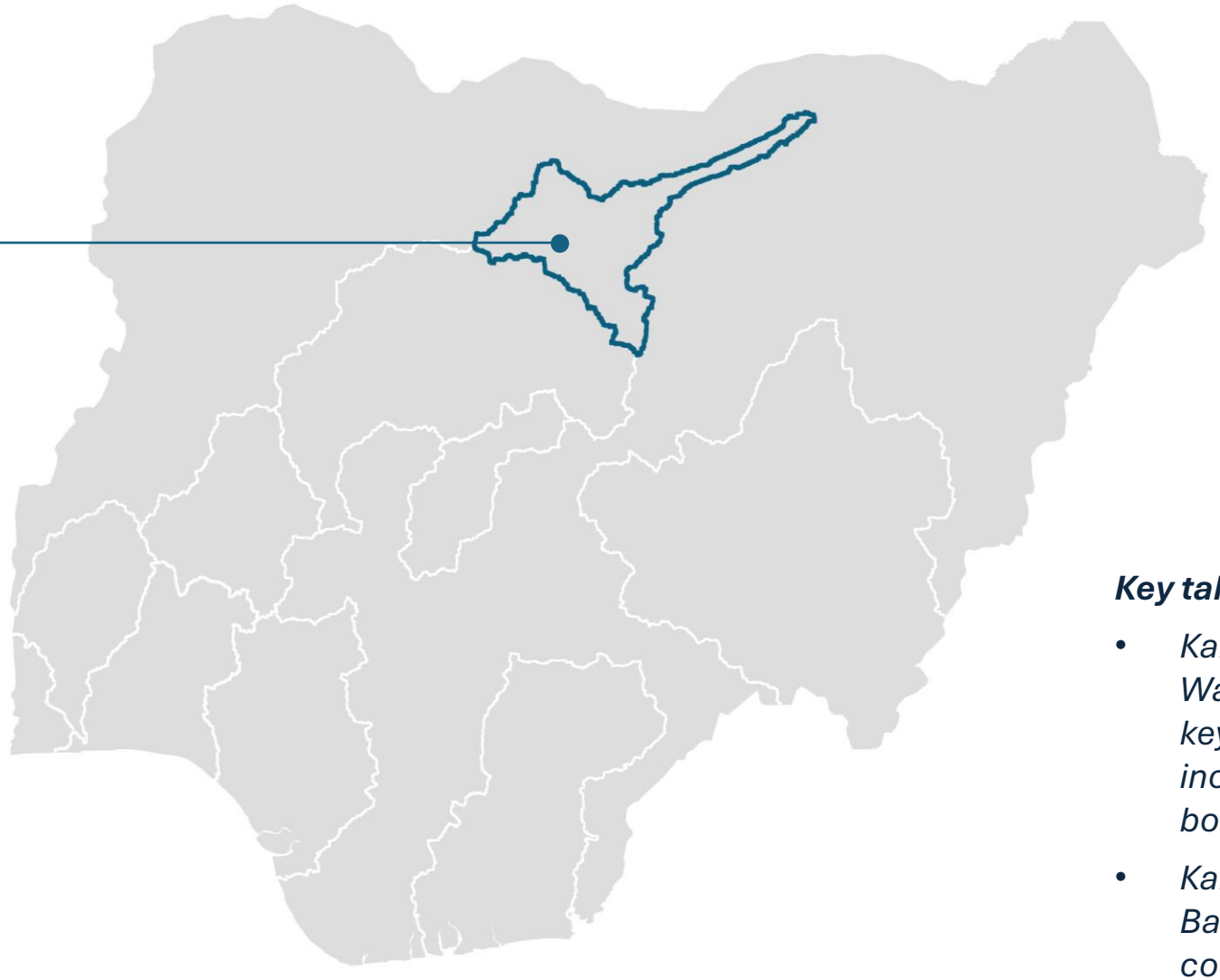
This section will present more detailed research on each of the top 10 watersheds, to provide an overview and help inform where future work and funding should focus on. Each watershed will be introduced by highlighting its unique characteristics and context, followed by an explanation of its scores across the different criteria. For each watershed, the water security challenges, the potential impact of large-scale NbS implementation, and other strategic considerations, will be outlined.

Watershed Spotlight | **Kano**

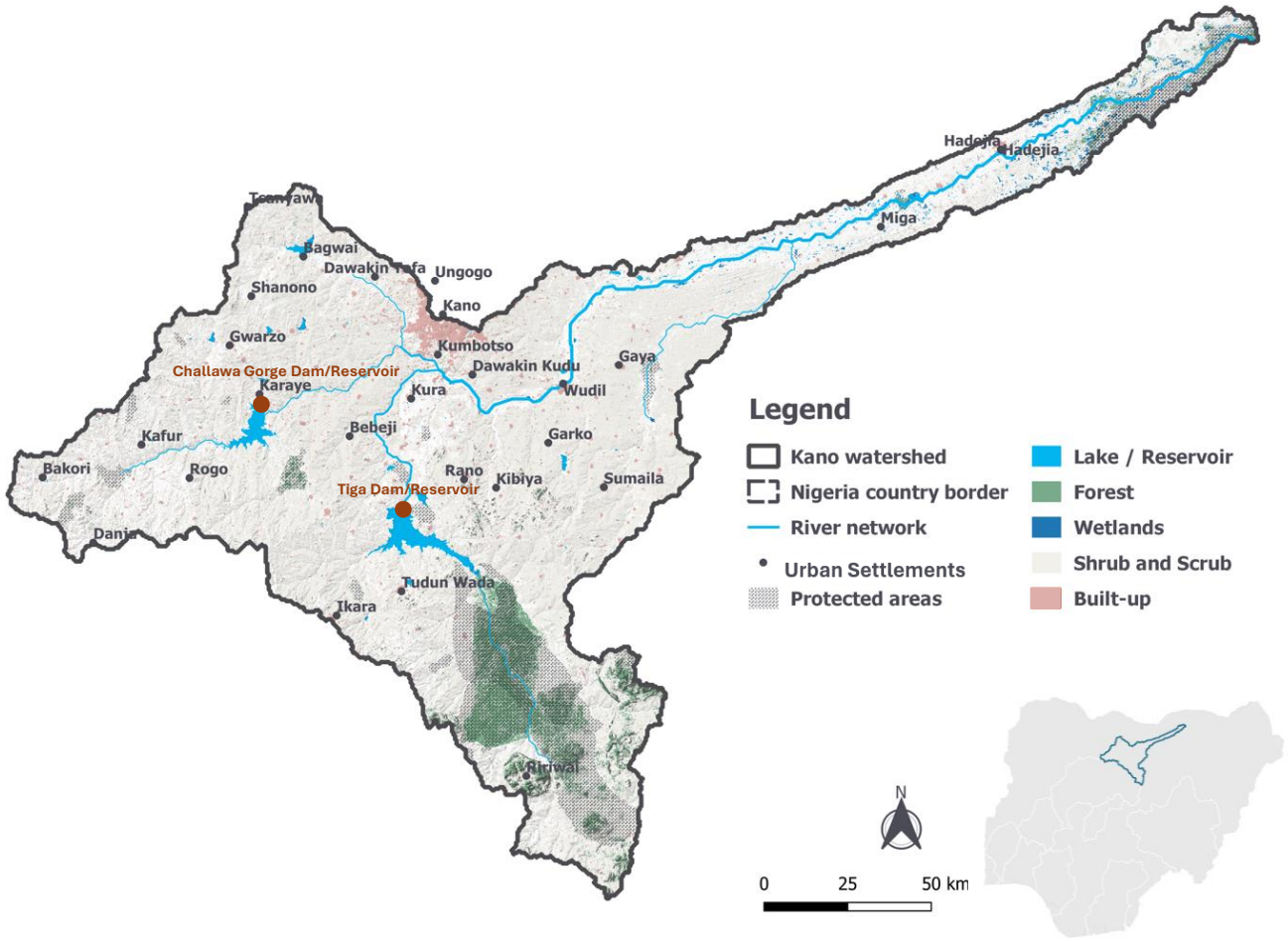
Priority #1: **Kano**



Key takeaways:

- *Kano is the most populous Watershed in Nigeria, with many key stakeholders present, including several NGOs and bottlers.*
- *Kano has an independent River Basin Committee to drive collective action.*

Watershed context



The Kano, in northern Nigeria, is the most populous watershed in the country. It's major river, the Hadejia, and its tributaries support Kano City, which has a population of over 9 million [1]. Kano State's population was estimated at 14.3 million in 2019 [2]. The watershed experiences a tropical savanna climate, drier than Nigeria's southern areas, and marked by distinct wet and dry seasons, and high temperatures year-round.

Outside the industrial urban centers, livelihoods depend heavily on farming, including large-scale irrigated production (Kano River Irrigation Project), fishing, and livestock herding. The watershed holds several large dams including the hydroelectricity Tiga Dam, and the Challawa Gorge Dam. The watershed is predominantly agricultural land, yet it has a few remaining protected forest areas in the south with diverse natural habitat [3].

Population growth, urban sprawl, and agricultural expansion, are key drivers of degradation, leading to frequent urban flooding, erosion, and groundwater depletion [3].

Sources: [1] Aman University of Kano: https://www.azmanuniversity.edu.ng/what-you-should-know-about-kano-city. [2] Nigerian Bureau of Statistics https://nigerianstat.gov.ng/download/1241121. [3] Biophysical mapping and land use attributes of Kano Ecosystems, North-western Nigeria. Bayero Journal of Pure and Applied Sciences. https://doi.org/10.4314/bajopas.v14i2.14;

Why is this area a priority?

Water Security Challenges: Kano's water security issues arise from poor water supply and sanitation infrastructure, a semi-arid climate, and water scarcity. Combined with rapid population growth, this appears likely to lead to severe challenges. The watershed also suffers degradation due to urban sprawl and agricultural expansion needed to support its large population.

Potential for NbS: High rates of land degradation and forest losses indicate a strong potential for NbS to have impact, potentially around improved land management practices and forest protection. Hence, there may be potential for NbS to deliver co-benefits, for example around food security, carbon sequestration, and rural livelihoods.

Other strategic considerations: Kano city hosts many environmental and water-mandated NGOs, as well as potential funders such as large bottlers. Kano is also one of Nigeria's only watersheds with an independent River Basin Committee, a collective action group of key stakeholders. The watershed also features several large reservoirs, including the Tiga Dam Reservoir and the Challawa Gorge Dam Reservoir, where NbS could add value.

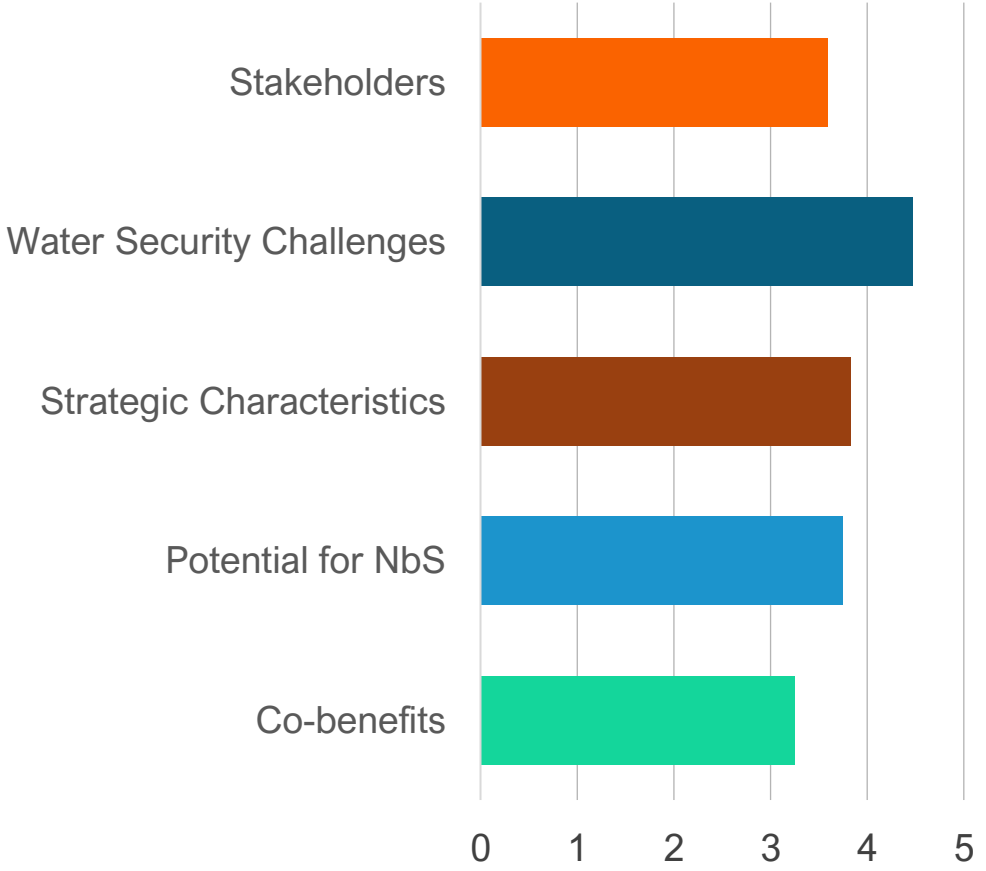


Figure: *Per-criteria scores for this watershed. Higher = better WIP opportunity.*

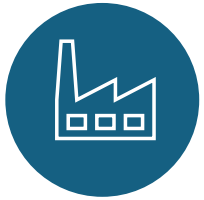
Suggested key stakeholders to engage

Public Sector

- Hadejia-Jama River Basin Development Authority
- Kano and Jigawa State Ministries (and to a lesser extent Bauchi, Kaduna, and Katsina State Ministries)
- Community Development Associations: Chiranci Gabas Arewada Bakinlabi, Dakata, Bayero

NGOs

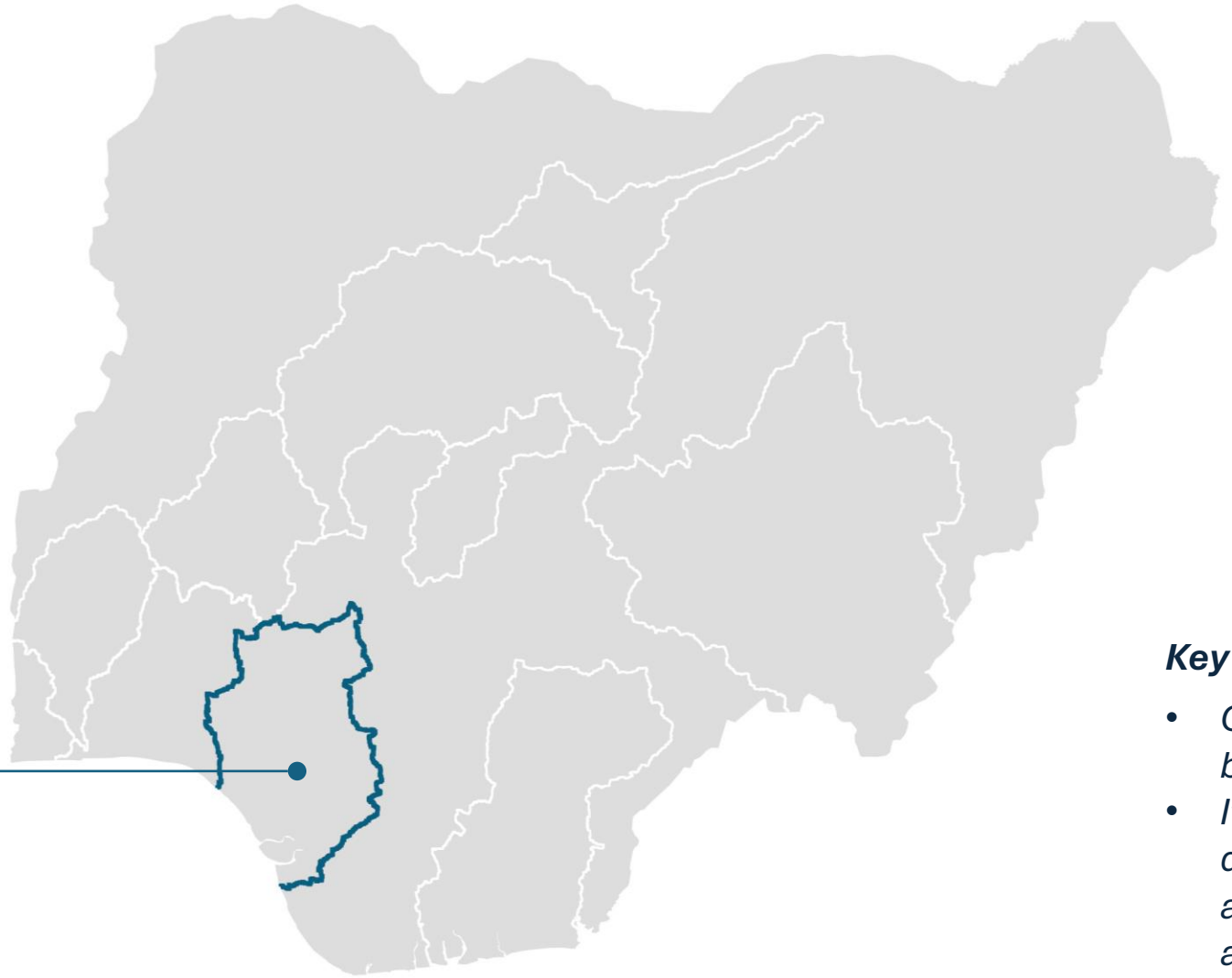
- Panacea Foundation
- Kano Network of NGOs
- Panacea Foundation
- African Community and Environmental Health Initiative



Private sector

- Nigeria Bottling Company
- Mamuda Foods and Beverages
- Seven-Up Bottling Company
- Rasa Industries Limited
- C-Way Nigeria Drinking Water Science & Technology Company Ltd
- Yankari Natural Water Company Ltd
- Dangote Farms

Watershed Spotlight | **Osse**



Priority #2: **Osse**

Key takeaways

- *Osse is a watershed dominated by sub-tropical rainforests.*
- *It experiences significant degradation driven by urban and agricultural expansion around its urban centers.*

Watershed context

Osse watershed is a central coastal basin in south Nigeria covering of approximately 38,521 km^2. It spans large portions of Ondo, Ekiti, Edo and Delta states as well as a small segment of Kogi state. Key urban areas within the watershed include Benin City (1.97 million), Warri (1.03 million), Akure (770 thousand) and Ado-Ekiti (560 thousand) [1].

Its southern coastal riverine areas consist primarily of mangrove swamps, whereas its central regions are predominantly covered by sub-tropical rainforests, and its northern areas are largely covered by savannah grassland [2,3]. Major rivers within the watershed include the Osse, Ossiomo, and Benin rivers.

Outside of the urban centers, livelihoods depend on activities such as fishing and small-scale subsistence farming and forestry. The watershed also contains key natural resources such as crude oil, bitumen, glass sand, kaolin, granites and limestone.

Sources: [1] Macrotrends https://www.macrotrends.net/global-metrics/cities/22007/lagos/population. [2] Olutumise, A.L., et al. (2021) https://ageconsearch.umn.edu/record/313623/files/Olutumise%20et%20al.pdf. [3] Britannica https://www.britannica.com/place/Edo-state-Nigeria.

Watershed context

Water Security Challenges: Osse has water security challenges stemming from limited water provisioning infrastructure and poor sanitation. Flooding also represents a key challenge; the variability of rain patterns increase the severity of floods, compounded by human settlements and development encroachment into floodplains, which increases exposure and vulnerability to flooding.

Potential for NbS: There is a high potential for NbS due to land degradation from population growth and increasing agricultural activity within the watershed. Co-benefits relating to food security could be achieved through NbS implementation.

Other strategic characteristics: The Osse watershed is a favorable option for a WIP due to a diverse stakeholder landscape with key public and private players that could potentially help fund a WIP, as well as NGOs and community-level organizations that could support implementation. Osse has a medium-sized downstream population in Benin city, although with 2 million people not as large as the likes of Lagos and Abuja. It holds the presence of water supply reservoirs and a wealth of forest and wetland ecosystems.

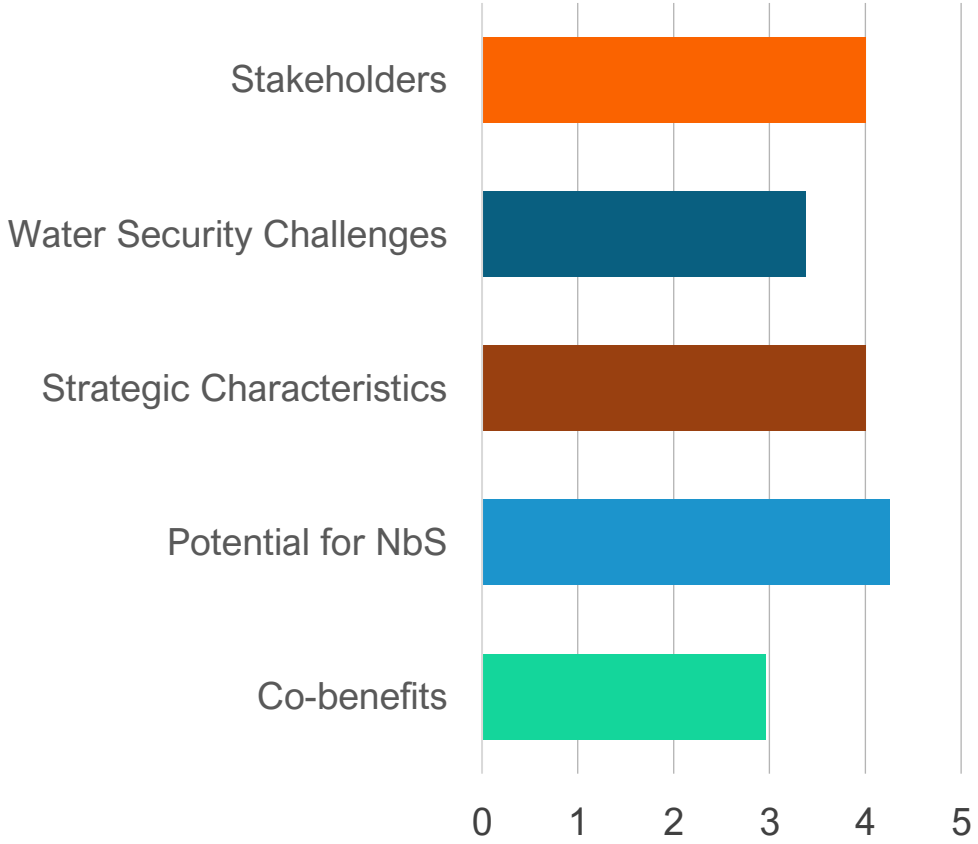


Figure: *Per-criteria scores for this watershed. Higher = better WIP opportunity.*

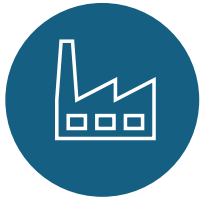
Suggested key stakeholders to engage

Public Sector

- Benin-Owena River Basin Development Authority
- Ondo, Ekiti, Edo, and Delta State Ministries
- Identified Community Development Associations: Edo South, Uhie, Amusigbo, Igbolu, Ndemili, Obiaruku, Ayetoro

NGOs

- Africa Nature Investors
- Friends of the Earth International
- Sustainable Environment Development Initiative
- Centre for Population and Environmental Development
- Eziodu Initiative for Sustainable Environmental Development (EISED)

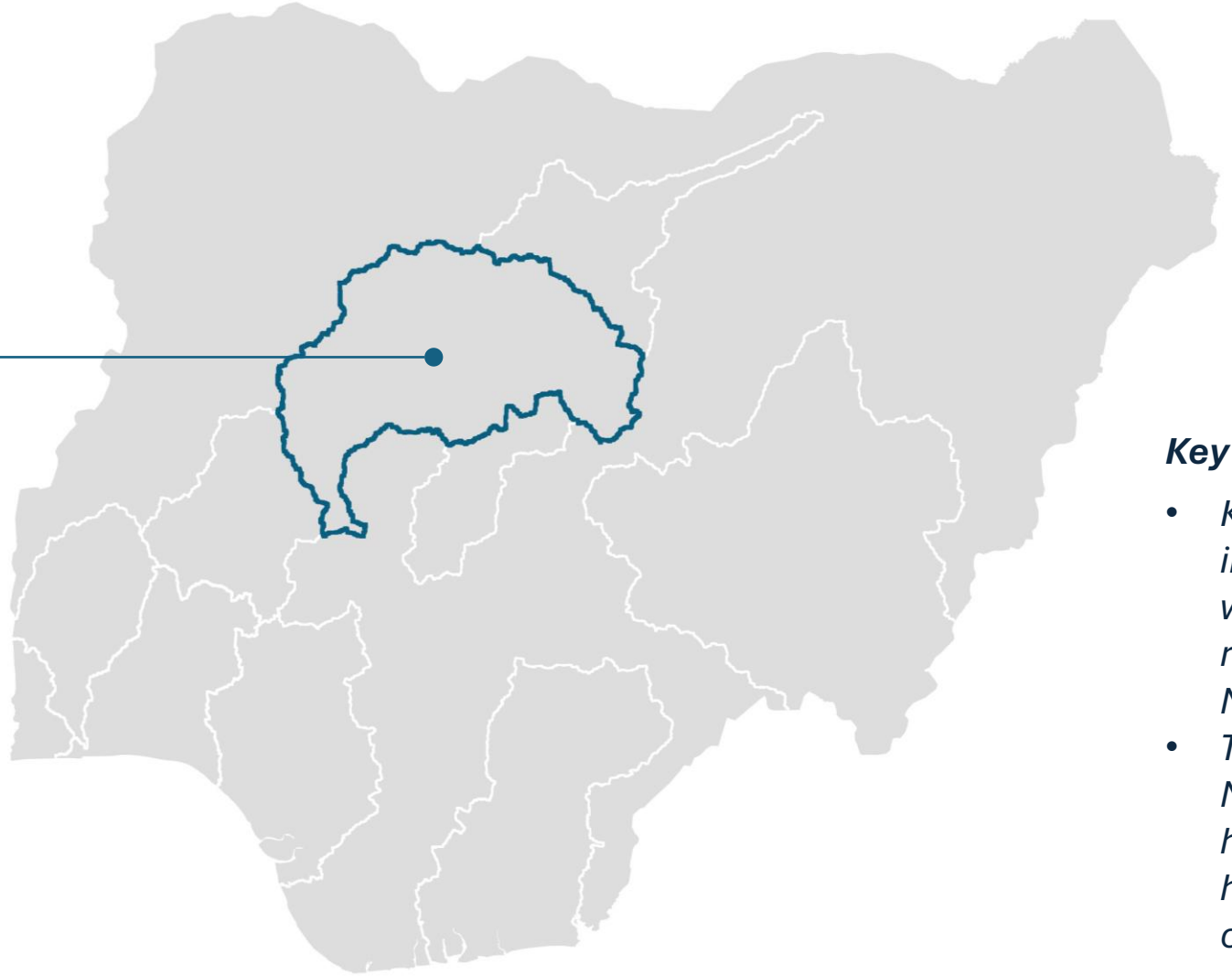


Private sector

- Coca Cola HBC
- Seven Up Bottling Company
- Nigerian Bottling Company
- Warri Bottling Company
- CWay Foods and Beverage Company
- Gossy Water
- Okomu Oil Palm Company
- SAO Agro
- Nigerian Gas Company LTD

Watershed Spotlight | **Kaduna**

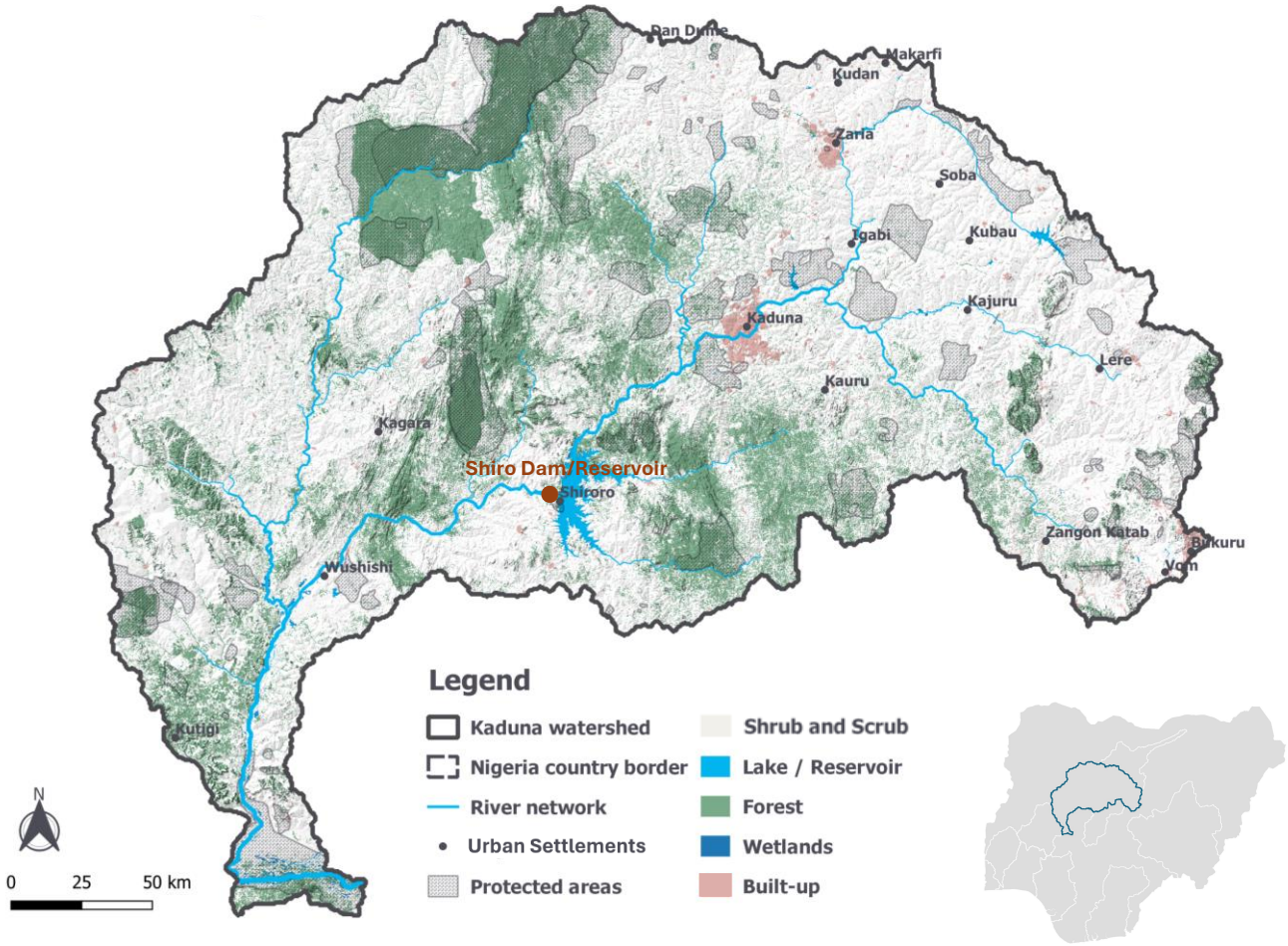
Priority #3: **Kaduna**



Key takeaways

- *Kaduna provides nationally important ecosystem services with numerous forests, major rivers and agricultural land, that NbS can help to protect.*
- *The watershed is important for Nigeria's energy supply as it holds the major hydroelectricity dam/reservoir, called Shiroro.*

Watershed context



The Kaduna watershed in central Nigeria covers approximately 65,878 km^2 across Kaduna and Niger states. The river originates from the Jos Plateau in the northeast and flows southwest, eventually joining the transboundary Niger River [1]. The region has a tropical savannah climate with distinct wet and dry seasons.

The watershed is crucial for food production, accounting for over half of Nigeria's maize production. It supports various other agricultural activities, holds large irrigation schemes, and is used for fishing and hydroelectricity generation at Shiroro Dam [1].

The watershed provides water for major urban centers, including Kaduna City with 1.2 million inhabitants, supporting both domestic and industrial water uses. It holds several forests and provides essential wildlife habitat. Key drivers of degradation include agricultural and urban expansion, overgrazing, soil erosion, and illegal mining activities [2].

Sources: [1] Ologunorisa, T. E., Durowoju, O. S., & Akinbobola, A. (2021). Hydroclimatology of the Kaduna River Basin. American Journal of Climate Change, 10(03), 353–369. [2] Daramola, J., Adepehin, E. J., Ekhwan, T. M., Choy, L. K., Mokhtar, J., & Tabiti, T. S. (2022). Impacts of Land-Use Change, Associated Land-Use Area and Runoff on Watershed Sediment Yield: Implications from the Kaduna Watershed. Water, 14(3), 325.

Watershed context

Water Security Challenges: Kaduna has significant water security challenges stemming from low precipitation and climate vulnerability, as well as poor water supply and sanitation infrastructure.

Potential for NbS: A high potential for NbS implementation exists as the watershed currently delivers many important water-related ecosystem services in the region. It is a crucial area for food production and therefore, NbS may also have the potential to deliver strong co-benefits relating to livelihoods and food security.

Other strategic characteristics: Kaduna watershed is a favorable option for a WIP due to the strength of stakeholders present, including numerous environmental NGOs such as Climate and Sustainable Development Network. It also holds favorable characteristics with a medium-sized downstream population in Kaduna city (1.2 million) that could enjoy and pay for the potential benefits generated by a WIP.

Furthermore, the watershed holds the Shiroro Dam, a large hydro-electricity generating reservoir where NbS could potentially add value, and numerous protected forest areas.

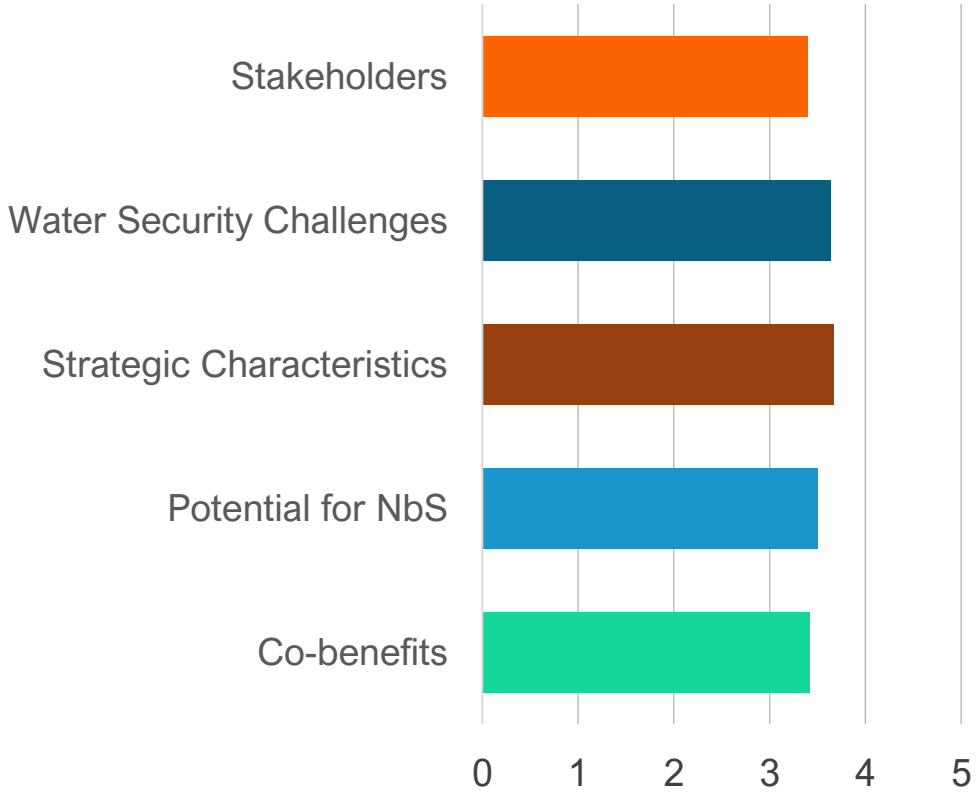


Figure: *Per-criteria scores for this watershed. Higher = better WIP opportunity.*

Suggested key stakeholders to engage

Public Sector

- Upper Niger River Basin Development Authority
- Kaduna and Niger State Ministries (and to a lesser extent Plateau, Katsina, and Zamfara State Ministries)
- Identified Community Development Associations: Rafinguza Residents, Southern Kaduna, Chikaji, Kontagora Emirate, Southern Kaduna etc.

NGOs

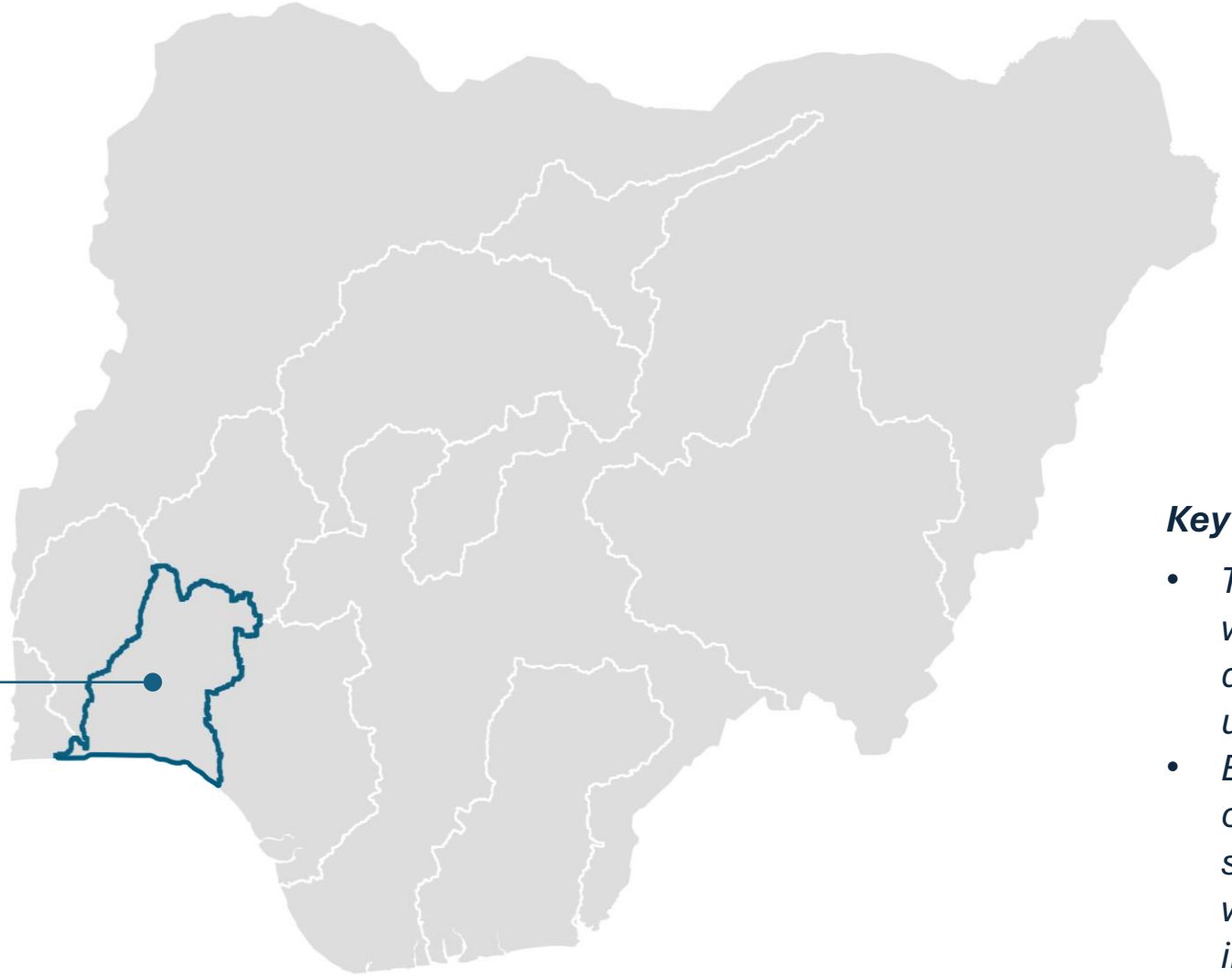
- Climate and Sustainable Development Network
- Women Environmental Program
- Centre for Water and Environment Development
- Savanna Conservation Nigeria

Private sector

- Nigeria Bottling Company
- Nigerian Breweries
- SevenUp Bottling Company
- DeliFrost Dairy Day

Watershed Spotlight | **Osun**

Priority #4: **Osun**



Key takeaways

- *The key challenge in the watershed is water quality deterioration caused by upstream mining activities.*
- *Endangered sites include the culturally significant Osogbo sacred grove and several forests with high biodiversity value, including Omo Forest Reserve.*

Watershed context

The Osun watershed in southwest Nigeria spans Lagos, Ogun, Osun, and Oyo states. It originates within Nigeria and flows south into the Lagos Lagoon. The Osun River is vital for water supply to several urban centers, including Ibadan with 5.2 million inhabitants [1] and Osogbo with approximately 800 thousand [2]. The watershed has limited cropland and is dominated by forests. It therefore holds significant biodiversity value, including protected areas like Osogbo Sacred Grove, a UNESCO World Heritage site, and Omo Biosphere Reserve.

Despite abundant water resources due to its sub-tropical climate, substantial wet season, and numerous reservoirs, the region faces serious water security challenges. Poor infrastructure leads to inadequate access to water, sanitation, waste disposal, and unsustainable groundwater abstraction via private boreholes [3]. Mining activities are the key driver of watershed degradation, which is evident from satellite imagery.

Sources: [1] World Population Hub, 2024: https://population-hub.com/en/ng/population-of-ibadan-2149.html [2] World Population Review, 2024: https://worldpopulationreview.com/world-cities/oshogbo-population [3] JICA. (2013). National Water Resources Masterplan. Retrieved from https://openjicareport.jica.go.jp/pdf/12146536.pdf

Watershed context

Water Security Challenge: Like all of Nigeria, Osun struggles with limited water provisioning and sanitation, yet of particular concern is the rapidly expanding sand mining activities along the riverbeds resulting in water quality deterioration (sediments and heavy metals).

Potential for NbS: Drivers of degradation include land use change, agricultural expansion, and particularly upstream mining activity within the watershed (both legal and artisanal). Protecting or better managing natural features could improve water quality, thereby reducing significant public health concerns in Osogbo related to heavy metal poisoning, and delivering co-benefits for cultural heritage, biodiversity, and food security.

Other strategic considerations: Osun benefits from a favorable stakeholder landscape, with active and reputable NGOs like IITA and NCF running NbS projects in the watershed. Potential funders downstream in Ibadan, a city with a large population, could benefit from water quality improvements generated by a potential WIP. While mining may pose regulatory challenges due to its economic importance, Ibadan (~5 million population) may benefit from simpler administrative processes compared to larger cities like Lagos (>15 million).

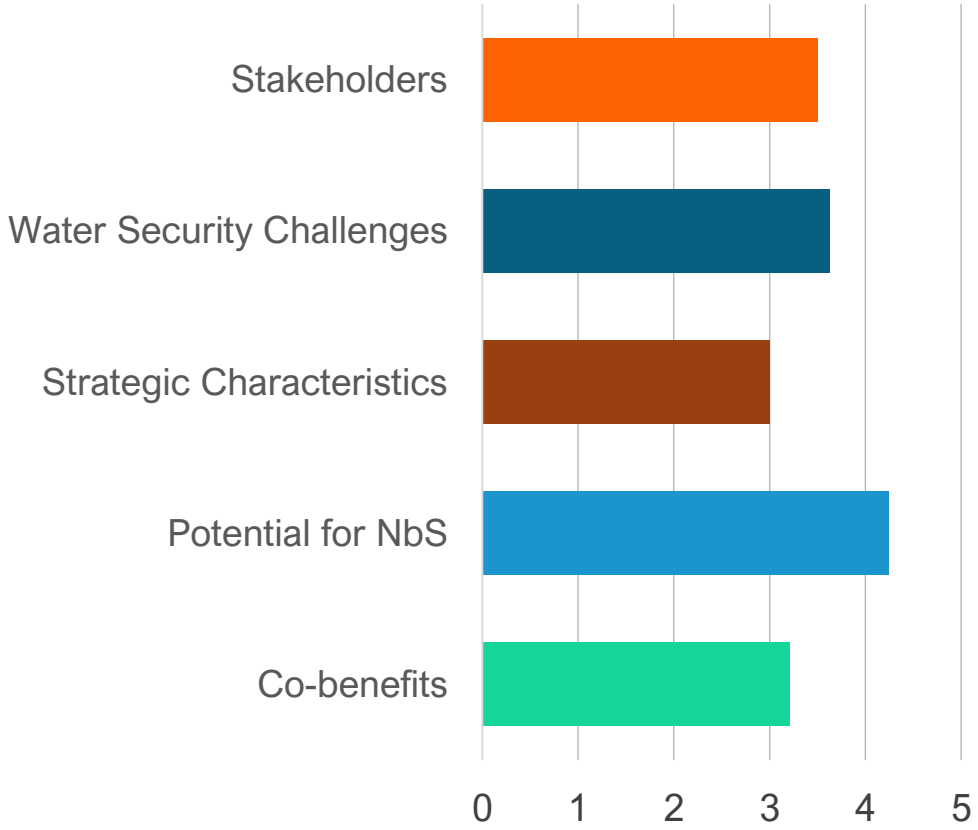


Figure: *Per-criteria scores for this watershed. Higher = better WIP opportunity.*

Suggested key stakeholders to engage

Public Sector

- Ogun-Osun River Basin Development Authority
- Ogun, Osun, and Oyo State Ministries
- Community Development Organisations: Isheri, Wawa, Berger, Ayetoro

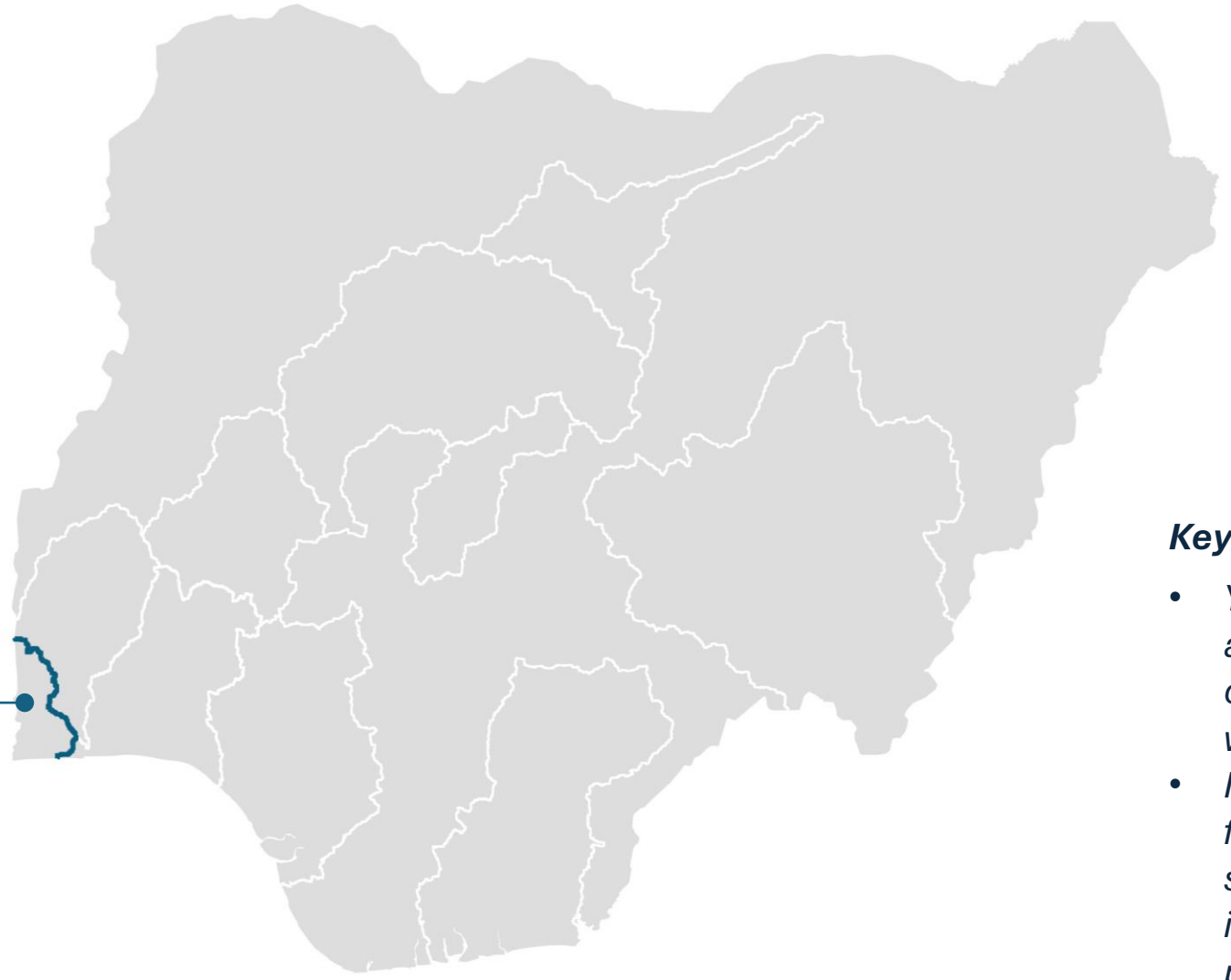
NGOs

- WaterAid
- Nigerian Conservation Foundation (NCF)
- International Institute for Tropical Agriculture (IITA)
- Water Initiatives Nigeria
- Heinrich Böll Foundation
- Eco Defenders Network
- UNESCO

Private sector

- Diageo (Nigerian Breweries)
- Coca Cola
- Coca-Co Hellenic Bottling Company
- International Breweries (AB InBev)
- Segilola mining

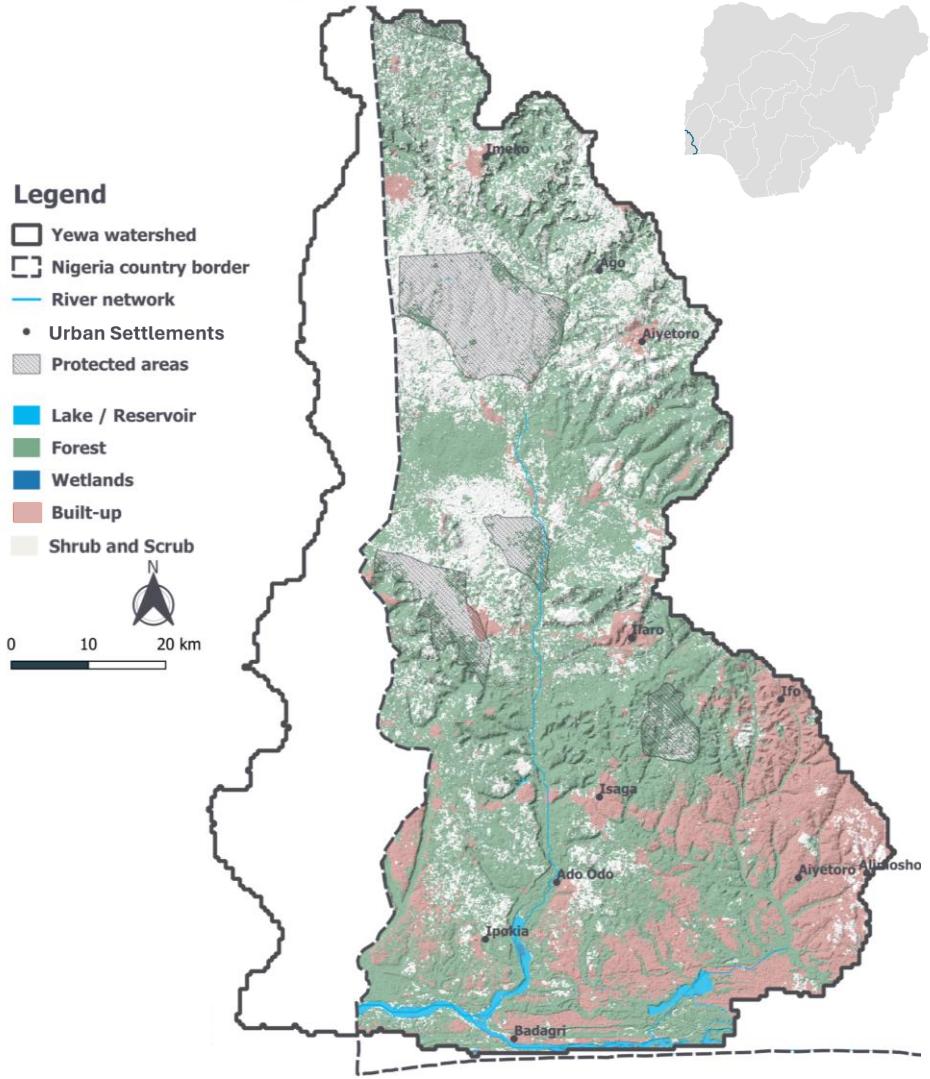
Watershed Spotlight | **Yewa**



Key takeaways

- *Yewa supports a population of around 8 million, largely concentrated in sprawling western areas of Lagos.*
- *It holds several protected forests which are home to key species of flora and fauna, including endangered primates.*

Watershed context



The Yewa is a transboundary watershed in the southwest of Nigeria, with a portion of its area contained in neighboring Benin. This is a relatively small watershed covering an area of around 7,000km^2 mostly consisting of tropical forest. The Yewa River rises in hills in the northeast, and flows south, before heading southwest to enter the Badagry Creek, feeding wetland and port areas in the east and west of both Nigeria and Benin.

The watershed covers an area including Lagos and Ogun states, with the full watershed supporting a population of around 8 million, largely concentrated in sprawling western areas of Lagos [1]. The river also supports key economic sectors including agriculture and fishing. It also supports industry in western Lagos, which extract river water for activities including manufacturing and food and beverage production.

Several protected tropical forest areas exist in the region. These are home to key species of flora and fauna, notably including endangered primates [2]. The sprawling expansion of Lagos is a key threat to these areas, driving significant land use change and deforestation for agriculture and firewood over recent years.

Sources: [1] Authors own analysis based on WorldPop data http://www.worldpop.org [2] https://link.springer.com/article/10.1007/s11756-021-00891-x

Why is the area a priority?

Water Security Challenges: Total water availability is high in the area due to relatively high levels of precipitation (around 1500mm/yr). Water security challenges stem from limited water provisioning infrastructure and poor sanitation. Studies show that the Yewa river suffers from extremely poor water quality resulting from sanitary waste from Lagos city [1].

Potential for NbS: Significant increasing trends of landscape degradation and deforestation in the region present an opportunity for a program of NbS focusing on ecosystem protection and restoration, alongside interventions within agricultural systems. Co-benefits relating to biodiversity outcomes and food security could also potentially be achieved through NbS implementation, particularly if working with agricultural systems.

Strategic characteristics: Yewa watershed has a positive stakeholder landscape due to a favorable mixture of government, private and NGO stakeholders in the region, many of whom are located in Lagos. Strategic characteristics include large and growing downstream populations and industries which could represent beneficiaries for a potential WIP.

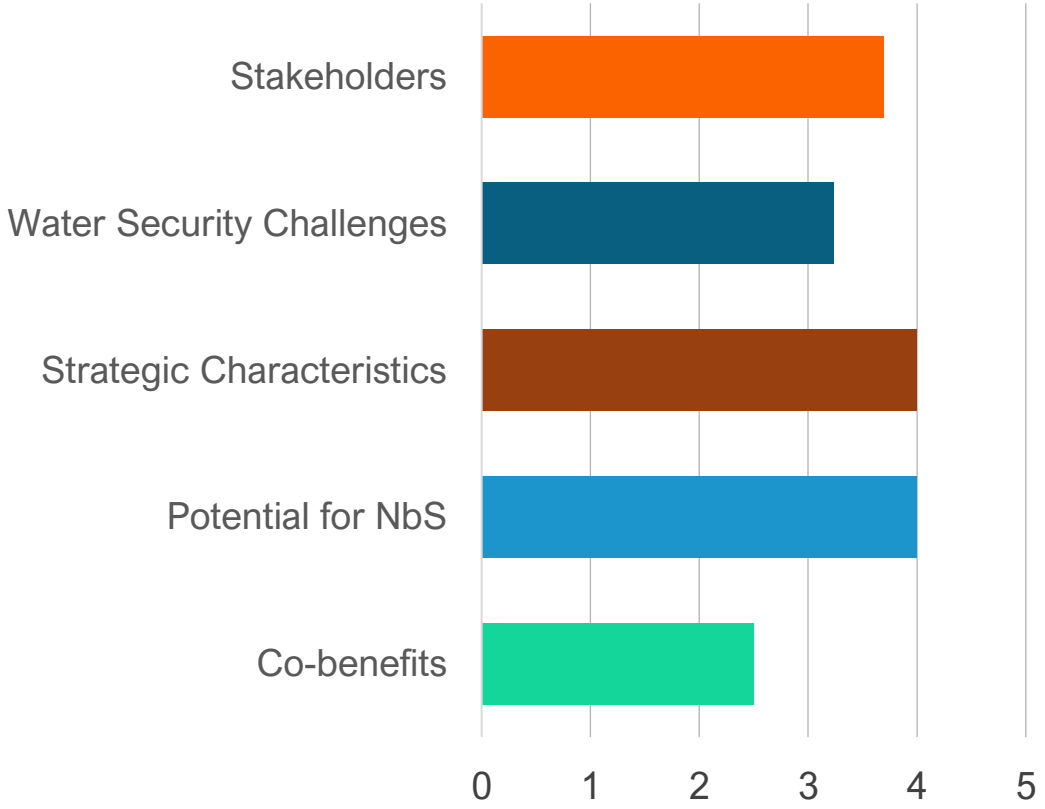


Figure: *Per-criteria scores for this watershed. Higher = better WIP opportunity.*

Suggested key stakeholders to engage

Public Sector

- Ogun-Osun River Basin
- Ogun and Lagos state government ministires
- Identified Community Development Associations: Ajido, Igbesa, Ikese, Tiwadire

NGOs

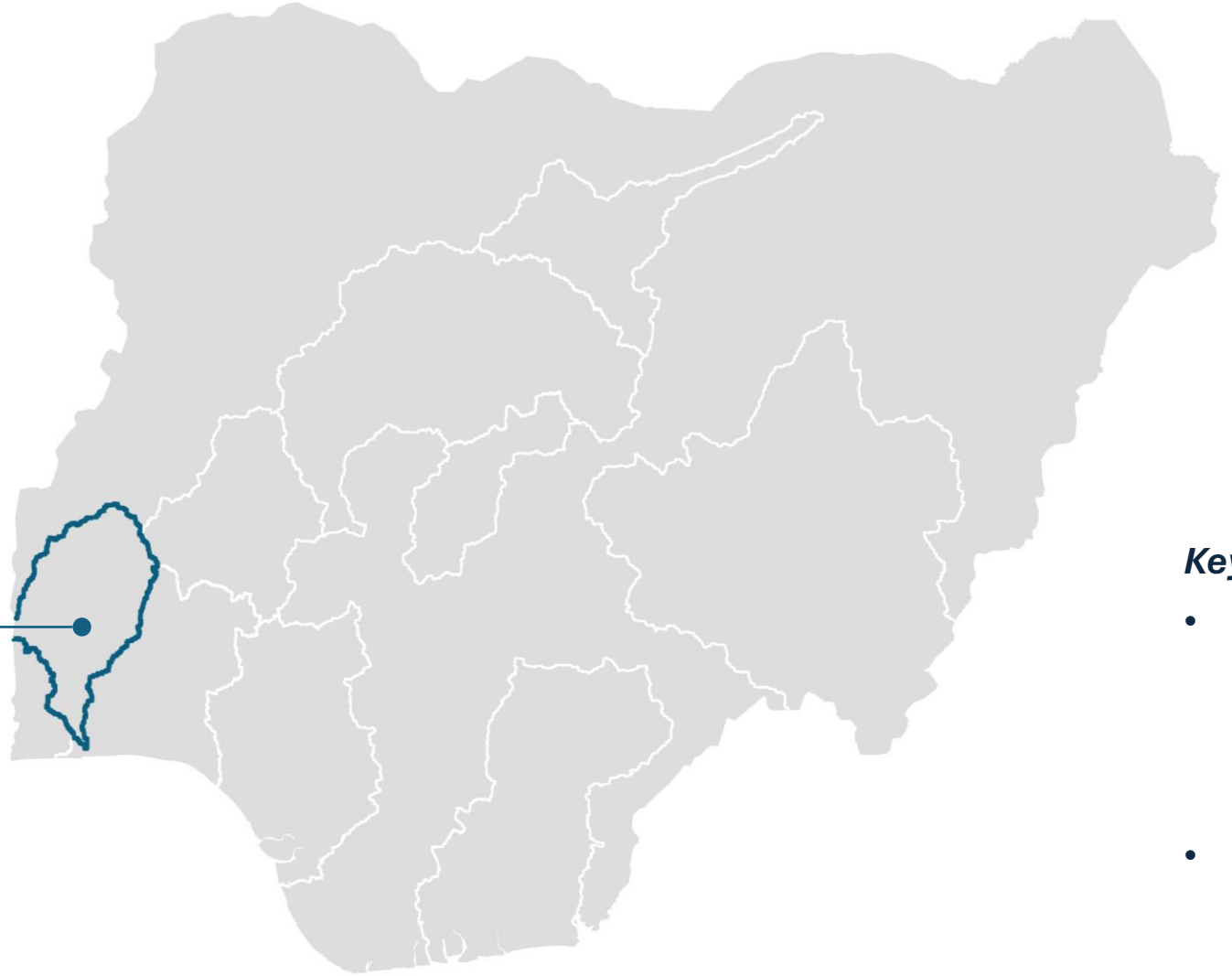
- Green Janitors Sustainable Initiatives
- Nigerian Conservation Foundation

Private sector

- Nigeria Breweries
- Viju Industries
- Obasanjo Farms Limited
- Nestle Nigeria

Watershed Spotlight | **Ogun**

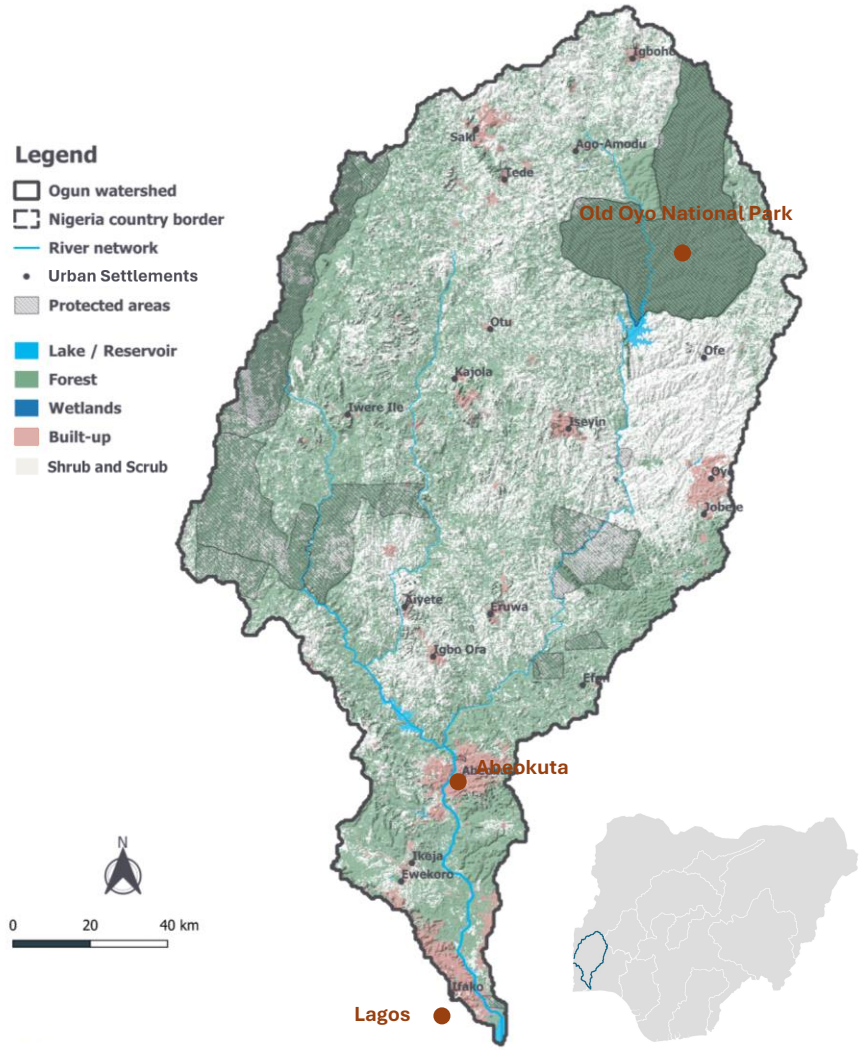
Priority #6: **Ogun**



Key takeaways

- *Ogun watershed supports a population of around 6 million, largely concentrated in cities including Abeokuta and part of Lagos.*
- *It holds several protected areas including Oyo National Park.*

Watershed context



The Ogun watershed is located in southwestern Nigeria, covering an area of around 25,000km^2 mostly consisting of tropical forest. The Ogun River rises in the Igaran hills in the north and flows south to Lagos Lagoon. Major tributaries include the Ofiki and Opeki Rivers [1].

Ogun watershed covers an area including Lagos, Ogun and Oyo states, with the full watershed supporting a population of around 6 million, largely concentrated in cities including Abeokuta and part of Lagos [2].

Water resources from the river support key economic sectors including rice- and grain-producing agriculture, and mining. Some industries in Lagos City, outside of the watershed's hydrological boundary, nevertheless still extract from the river and the aquifers fed by its watershed for activities including manufacturing and food and beverage production.

The region contains several key areas of conservation, including the Old Oyo National Park, a large protected area in the north of the watershed. This and other protected areas are home to several endemic bird and primate species including the Ibadan Malimbe [3].

Sources: [1] JICA. (2013). National Water Resources Masterplan. Retrieved from https://openjicareport.jica.go.jp/pdf/12146536.pdf [2] Authors own analysis based on WorldPop data http://www.worldpop.org/ [3] Toyobo, A. E., Raheem, W. M., & Oyeleye, O. I. (2014). Conservation Strategies of Wildlife Resources in the Old Oyo National Park, Nigeria. International Journal of Advanced Scientific and Technical Research, 4(4), 526-537.

Why is the area a priority?

Water Security Challenges: Total water availability is high in the area due to relatively high levels of precipitation (around 1000mm/yr). Water security challenges stem from limited water provisioning infrastructure and poor sanitation – for example, only around 10% of households in Abeokuta and Lagos are connected to public water supply. Flooding also represents a key challenge, with communities in the northeast of Lagos experiencing flooding from the Ogun River.

Potential for NbS: Significant land degradation driven by population growth and increasing agricultural activity exists within the watershed. This includes deforestation and encroachment on floodplains and wetlands, possibly presenting opportunities for NbS in agricultural areas and habitat protection or restoration. NbS could also provide co-benefits relating to biodiversity conservation and food security.

Strategic characteristics: The Ogun watershed has a positive stakeholder landscape due to a favorable mix of governmental, private, and NGO stakeholders. Strategic characteristics include numerous water supply reservoirs, such as the Ikere Gorge and Ishere dams. It also supports significant downstream populations in Lagos and Abeokuta. This demographic advantage can aid fundraising efforts, but the large size of Lagos could lead to stakeholder complexities and bureaucratic hurdles.

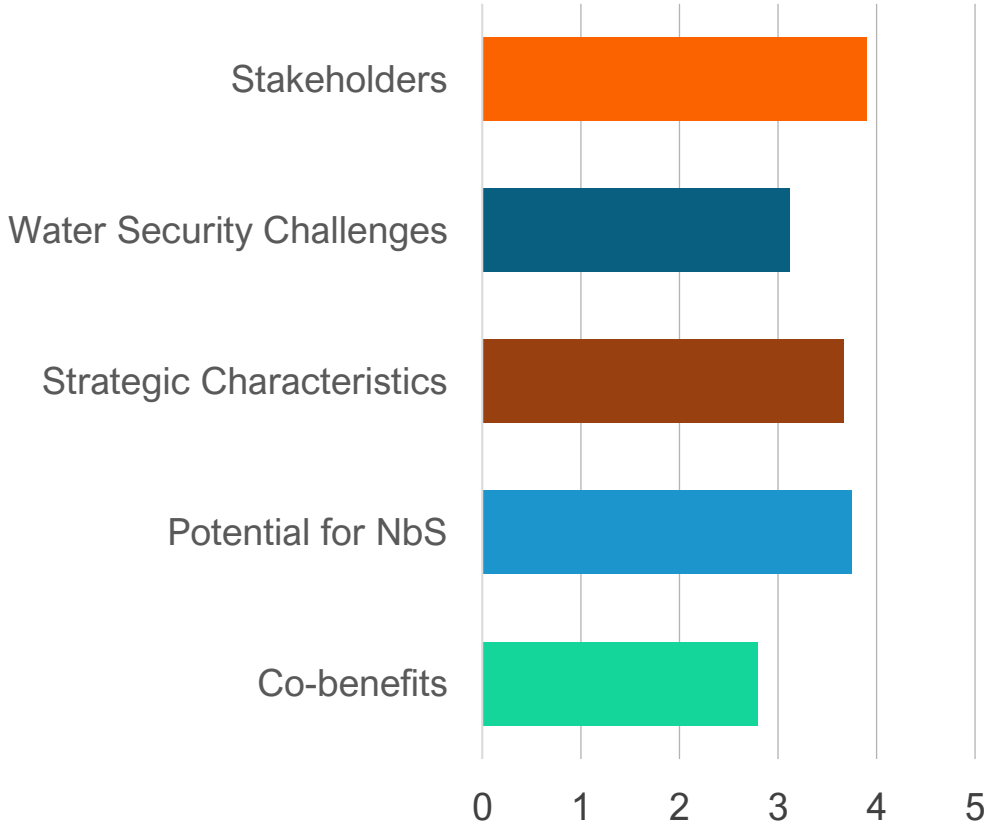


Figure: *Per-criteria scores for this watershed. Higher = better WIP opportunity.*

Suggested key stakeholders to engage

Public Sector

- Ogun-Osun River Basin Authority
- Ogun and Oyo state ministries
- Lagos State Water Corporation
- Ifelajulo and Isheri Community Development Organisations

NGOs

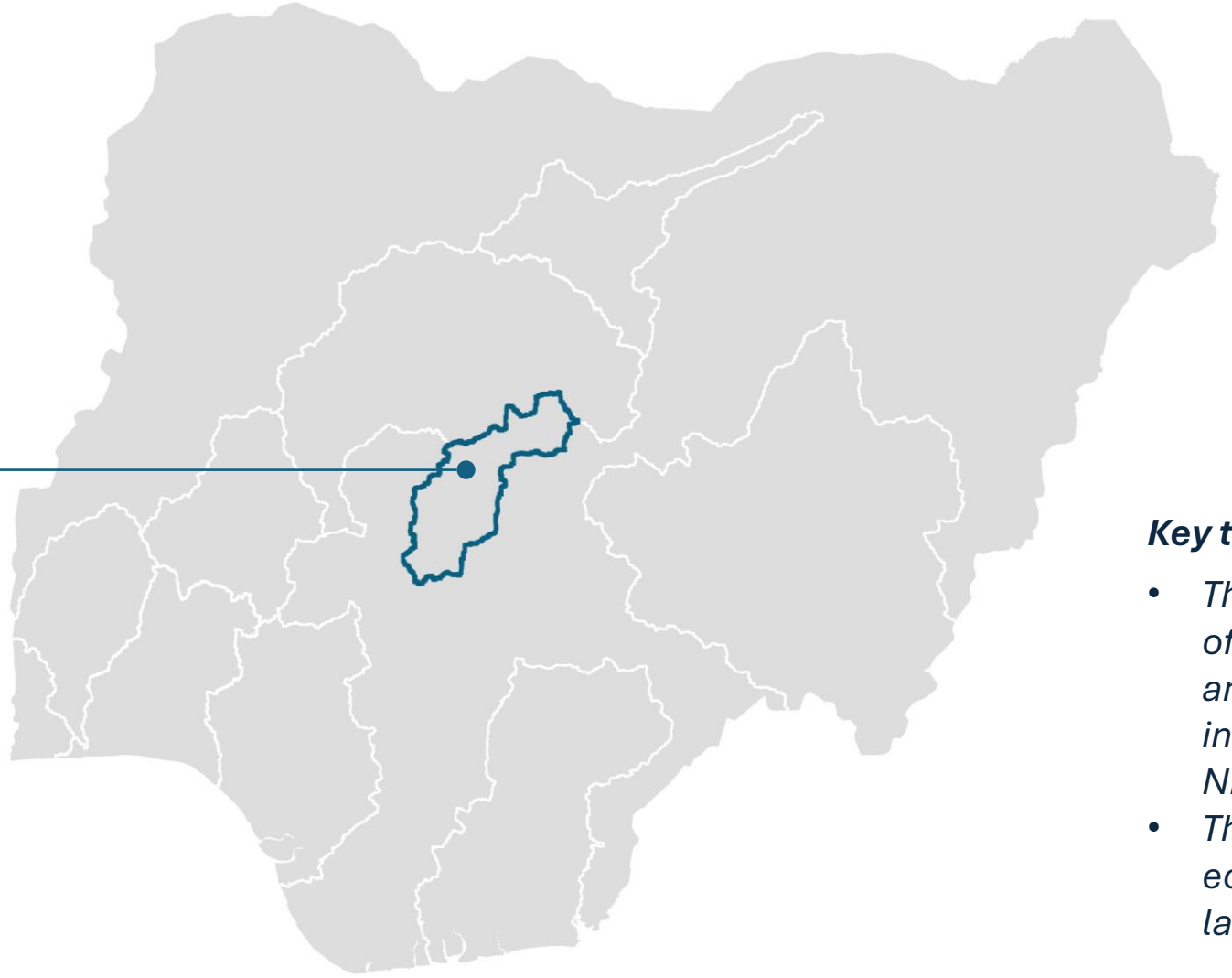
- Oyo, International Institute for Tropical Agriculture (IITA)
- Initiative for Biodiversity Conservation in Sub-Saharan Africa
- Nigeria Conservation Organization (NCF)
- Heinrich Böll Foundation

Private sector

- The Coca Cola Company
- Coca Cola Hellenic
- Reckitt
- Heineken
- PepsiCo
- CWAY Foods and Beverage Company Limited
- Euro Global Foods and Distilleries Limited
- Nigerian Distilleries Limited
- Nestle Nigeria
- Sweetco Foods
- Yale Foods

Watershed Spotlight | **Gurara**

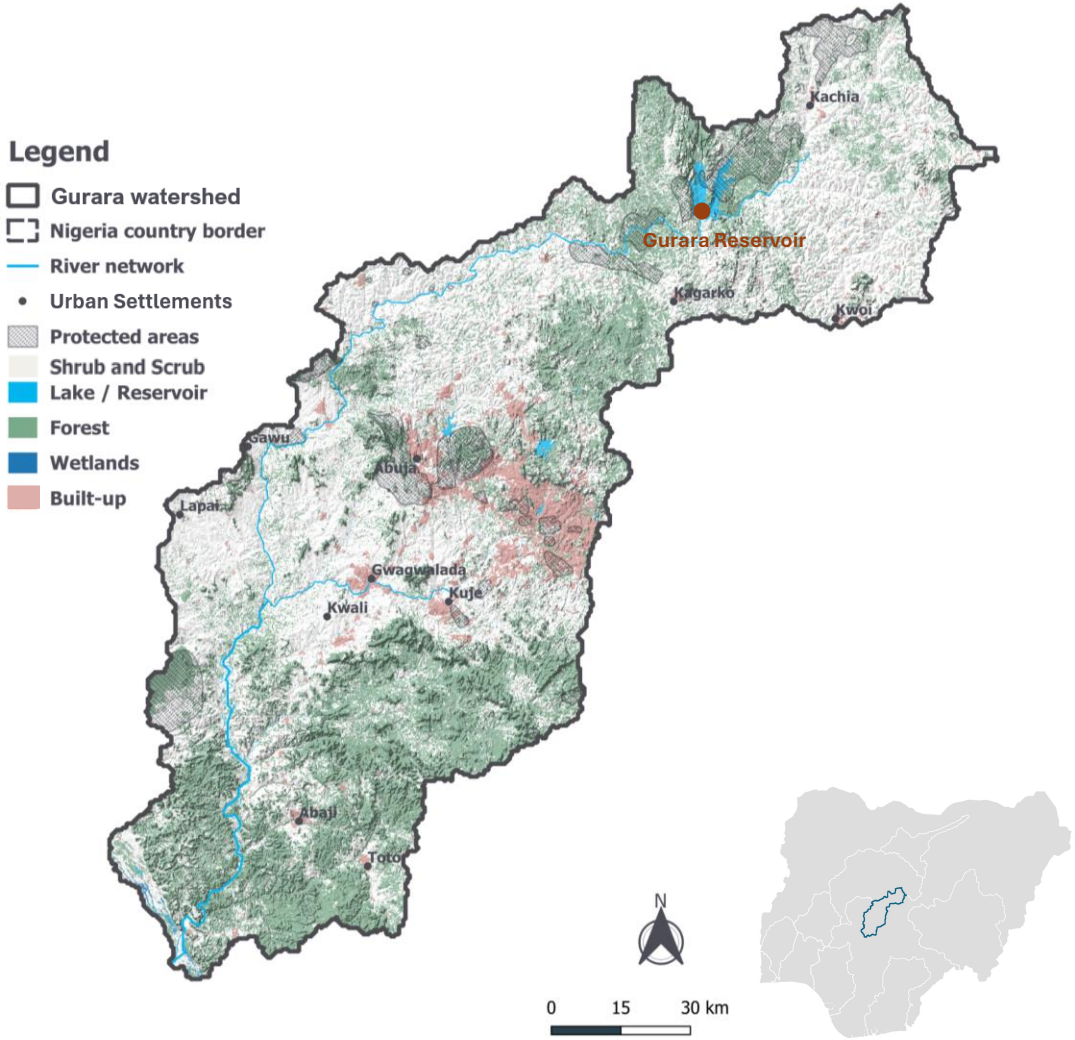
Priority #7: **Gurara**



Key takeaways

- *The Gurara watershed consists of tropical savannah, forests, and a large built-up area including the city of Abuja, Nigeria's capital.*
- *The watershed provides strong ecosystem services, supporting large populations and industry.*

Watershed context



The Gurara watershed in central Nigeria covers an area of around 15,286 km^2, across the Abuja Federal Capital Territory and Kaduna State. It consists predominantly of tropical savannah, forests, and large urban areas particularly around Abuja, Nigeria's capital with roughly 4 million people [1]. Other urban centers include Kwali, Kuje, and Gwagwalada.

The Gurara River rises in hills in the north, and flows southwest, eventually joining with the Niger. The river is home to the Gurara Reservoir and Gurara Waterfalls, major tourist attractions in Nigeria. Usuma river and Usuma Lower Dam are also important water resources within the watershed [2].

Agriculture is an important economic activity within the watershed as well as manufacturing, energy generation, mining, construction and tourism [2].

Sources: [1] World Population Review https://worldpopulationreview.com/world-cities/abuja-population. [2] Nigeria Investment Promotion Commission https://www.nipc.gov.ng/nigeria-states/fct-2/.

Watershed context

Water Security Challenges: Gurara has significant water security challenges stemming from relatively low precipitation, a high exposure to climate change, dependence on groundwater, and poor sanitation infrastructure. Flooding also represents a key challenge, particularly for communities in Abuja.

Potential for NbS: Significant land degradation exists within the watershed driven by urban sprawl around Abuja and increasing agricultural activity to support growing populations. This includes deforestation and encroachment on floodplains and wetlands, presenting opportunities for NbS in agricultural areas alongside habitat protection – especially in riparian and floodplain areas. NbS could provide co-benefits relating to biodiversity conservation and food security and could be tied in with a growing eco-tourism sector in the region.

Strategic characteristics: Gurara watershed is a favorable option for a WIP due to the strength of stakeholders present in the country's capital territory. Strategic characteristics include the existence of significant water infrastructure in the form of the upstream Gurara Reservoirs, used for both water supply and hydroelectricity, and an inter-basin transfer to support large populations (including Abuja) in the mid watershed. Delivering a successful WIP in Nigeria's capital region could be a powerful motivator and example for other parts of the country to seek to develop their own WIPs, however, the large size of Abuja, similar to Lagos, may lead to stakeholder complexities and bureaucratic hurdles.

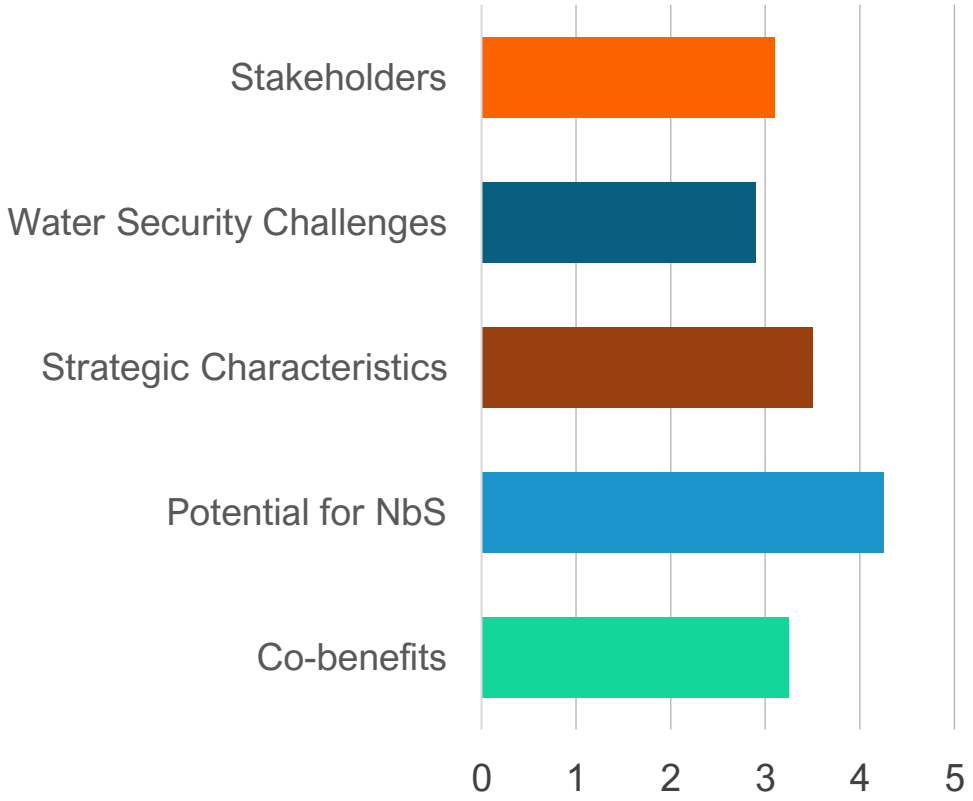


Figure: *Per-criteria scores for this watershed. Higher = better WIP opportunity.*

Suggested key stakeholders to engage

Public Sector

- Federal Capital Territory Water Board
- Lower Benue River Basin Development Authority
- Identified Community Development Associations: Lugbe, Lunguda

NGOs

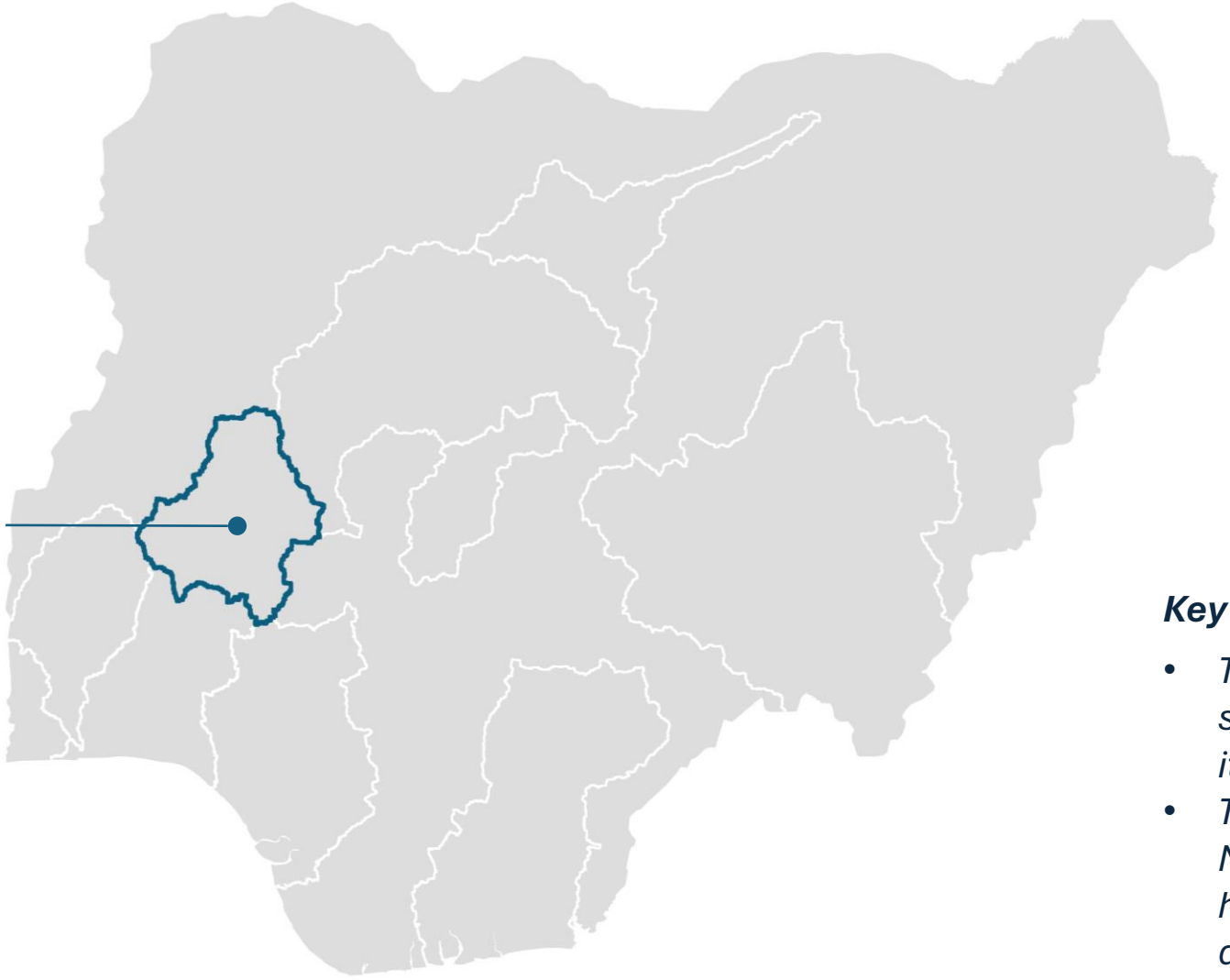
- Nigeria Conservation Foundation
- Women Environmental Program
- Green Habitat Initiative
- Climate and Sustainable Development Network
- Sustainability & Conservation Education for Rural Areas
- Ecolife Conservation Initiative, Water Action Hub
- WaterAid Nigeria
- Human and Environmental Development Agenda
- UNICEF

Private sector

- Coca Cola HBC
- Nigerian Breweries
- Almas Table Water
- Seven-Up Bottling Company
- Nestle Water
- Sayed Farms Limited

Watershed Spotlight | **Mid-Niger (Niger 3)**

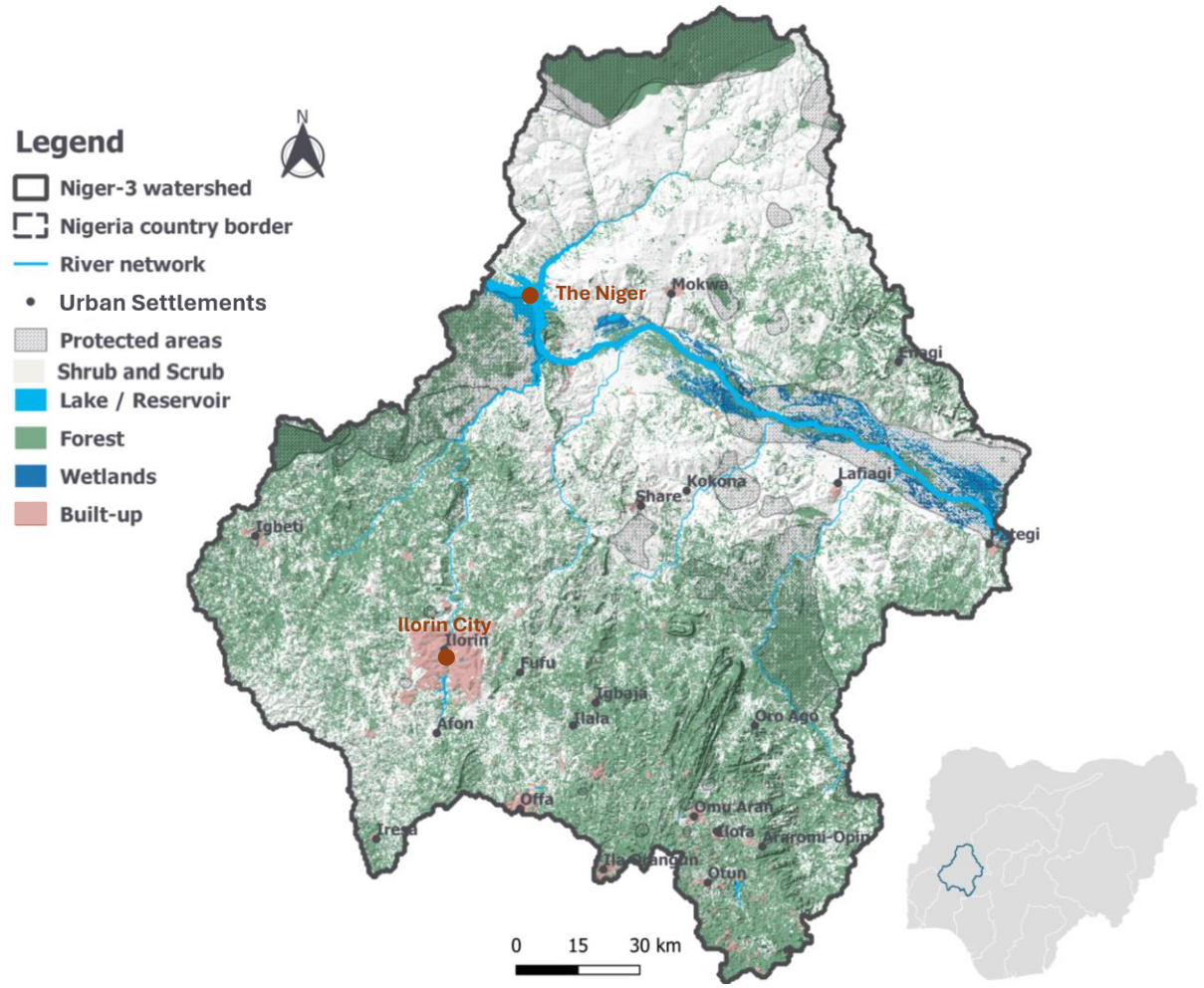
Priority #8: **Mid-Niger**



Key takeaways

- *The Mid-Niger watershed holds strong biodiversity value due to its extensive forests.*
- *There is significant potential for NbS to deliver benefits due to high rates of watershed degradation.*

Watershed context



Mid-Niger is a watershed in central/western Nigeria, falling across Kwara and Niger states. The watershed holds major tributaries to the Niger, which flows through the area. It is characterized by a tropical climate with distinct wet and dry seasons, receiving substantial rainfall between 6-8 months of the year [1]. The Niger channel is wide and surrounded by wetlands in many areas.

Its landcover is a mix of forests, savanna, agricultural, and urban areas. Its forested areas are still extensive, particularly gallery forests along riverbanks, providing important habitats for biodiversity. However, deforestation for charcoal production and other uses is driving the retreat of these areas [1].

Ilorin is its largest city with a population of 1 million people [2]. Economically, the watershed relies heavily on agriculture, increasing the population's vulnerability to growing climate variability and associated erratic rainfall patterns.

[1] Kwara State Government, n.a. https://acresal.gov.ng/?page_id=1217 [2] World Population Review https://worldpopulationreview.com/world-cities/ilorin-population.

Watershed context

Water Security Challenges: The watershed's major water security challenges stem from limited water provisioning and poor sanitation infrastructure. While water resources are abundant and water quality is relatively good due to lower population density, issues such as land degradation, soil erosion, and farmer encroachment on water bodies due to poor irrigation systems persist. Additionally, erratic rainfall patterns caused by climate change pose challenges for the agricultural watershed.

Potential for NbS: Due to significant land degradation, there is potential for NbS to address water-related issues and provide co-benefits for livelihoods and food security.

Other strategic characteristics: The stakeholder landscape is favorable. However, the watershed falls under two River Basin Development Authorities (RBDAs). Choosing an intervention area under one RBDA is advisable to reduce stakeholder complexities. Technically, a WIP should focus on a tributary, such as the Oro River flowing through Lafiagi, or rivers feeding Ilorin City, as NbS may not bring meaningful benefits on the major transboundary Niger when deployed in one small section only. Other strategic advantages include several reservoirs, significant agricultural activity, and floodplain wetland ecosystems, where NbS could add value.

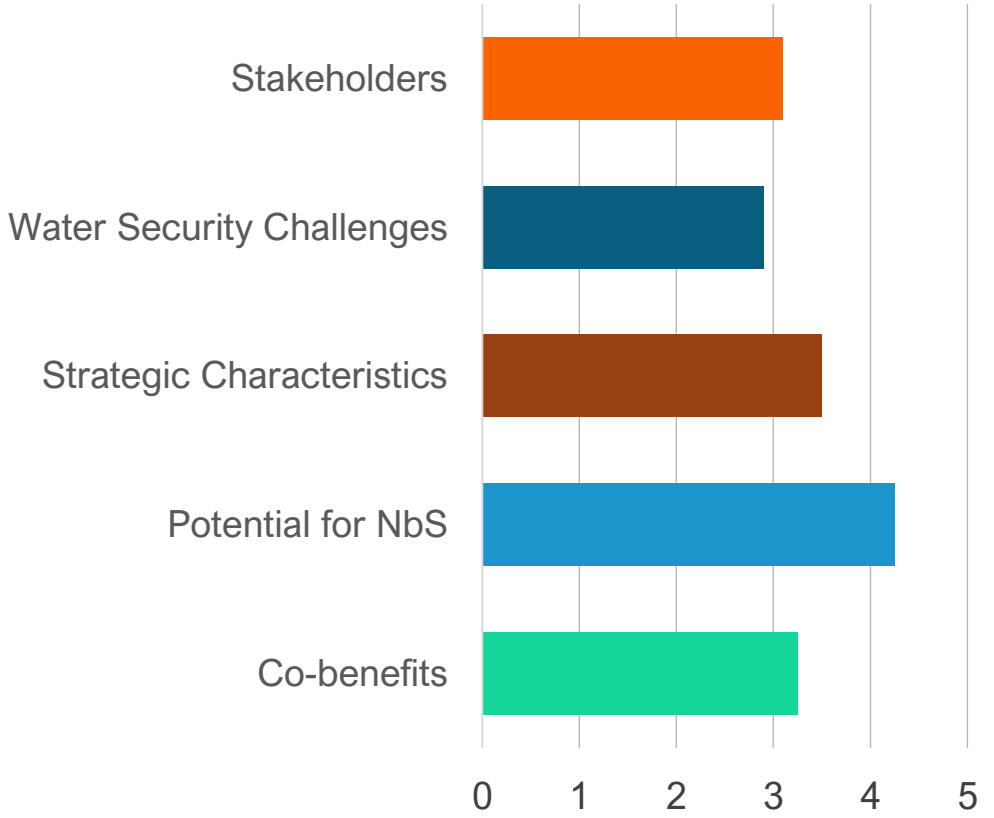


Figure: *Per-criteria scores for this watershed. Higher = better WIP opportunity.*

Suggested key stakeholders to engage

Public Sector

- Lower Niger River Basin Development Authority
- Upper Niger River Basin Development Authority
- Kwara and Niger State Ministries
- Identified Community Development Associations: Balogun-Ajikobi, Ifesowapo, and Labajaoja

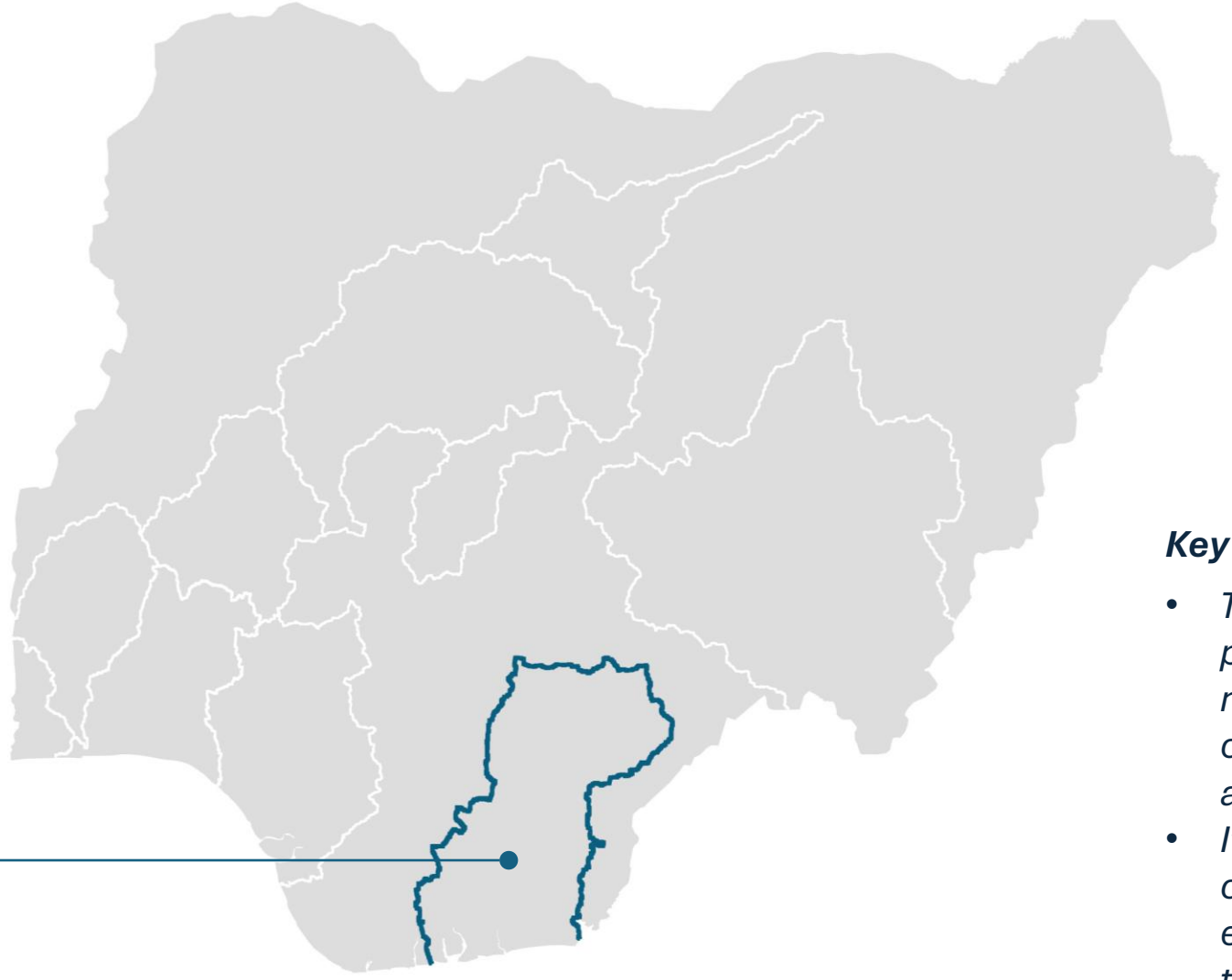
NGOs

- Green Globe Initiatives
- Green Globe Initiatives
- The Grassroots Aid Initiative
- Olive Community Development Initiative

Private sector

- SevenUp Bottling Company Kainji Hydro-Power Dam
- BUA Sugar Company
- Shonga Farms Limited

Watershed Spotlight | **Cross Lower (Cross 1)**



Priority #9: **Cross**

Key takeaways

- *The watershed supports a population of around 30 million, largely concentrated in coastal cities including Calabar and Uyo.*
- *Its tropical rainforest is home to one of the worlds most endangered primate species: the Cross River Gorilla.*

Watershed context

The Cross Lower watershed represents a downstream sub-watershed of the larger Cross River, with an area of around 50,000km^2, most of this made up of tropical rainforest. The Cross River originates in the Cameroonian highlands, before flowing into southeast Nigeria and terminating in a significant area of inland delta.

This watershed covers an area including Cross River, Benue, Ebonyi, Abia, Rivers and Akwa Ibom states, with the full watershed supporting a population of around 30 million, largely concentrated in coastal cities including Calabar and Uyo [1].

Key economic sectors in the region include rice, oil, cocoa and timber production, alongside the presence of river and seaports [2]. Calabar is host to Nigeria's third largest seaport.

The Cross River Forest, a global biodiversity hotspot, supports a large proportion of the state's population. This tropical rainforest is home to one of the worlds most endangered primate species: the Cross River Gorilla [3]. Habitat destruction and over-exploitation threaten native species, while climate change and invasive species further impact forest communities.

Sources: [1] Authors own analysis based on WorldPop data http://www.worldpop.org/ ; [2] Nigeria Governors' Forum. (2024). Public Finance Database. Retrieved July 3, 2024, from https://www.publicfinance.ngf.org.ng/nigeria-state-budget/cross-river-state-public-finance-database/; [3] Cross River State: Climate Action through Forest Protection. (n.d.). https://www.cdp.net/en/articles/states-and-regions/cross-river-state-climate-action-through-forest-protection

Why is the area a priority

Water Security Challenges: The watershed is endowed with plentiful water resources due to high levels of precipitation (around 2000 mm/year) and extensive river and wetland systems. Challenges largely stem from poor water supply and sanitation infrastructure – it is estimated that 49% of the region's population lacks basic water supply services, and 65% lack basic sanitation services [4]. Furthermore, the region has a high exposure to climate change in the form of increasing intensity of precipitation and erosion-inducing runoff.

Potential for NbS: Significant deforestation of globally-important tropical rainforest and mangrove areas driven by urbanization and agricultural expansion may present opportunities for a WIP focused on forest protection. This could achieve co-benefits relating to carbon sequestration and the green economy.

Strategic characteristics: Several governmental stakeholders exist, alongside conservation organizations focused on the protection of tropical rainforests in the area. This being a coastal watershed means that there are no downstream users to consider. Also, the watershed falls across several states, rendering coordination more complex.

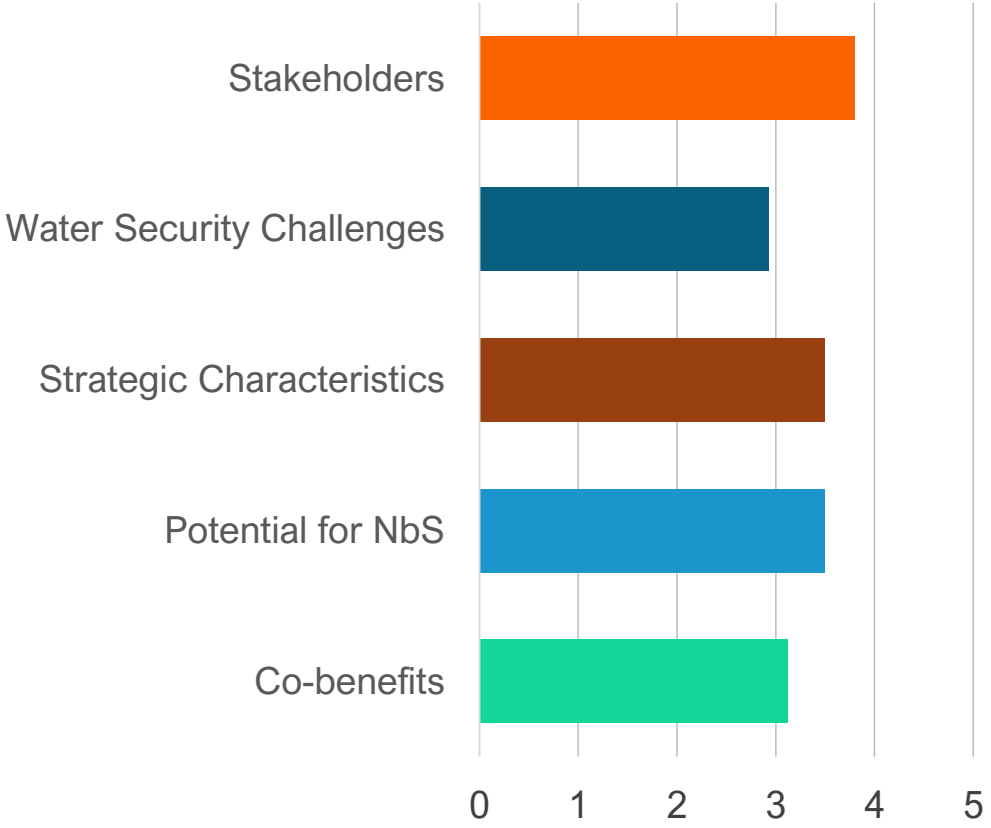


Figure: *Per-criteria scores for this watershed. Higher = better WIP opportunity.*

Sources: : [4] https://www.unicef.org/nigeria/media/5951/file/2021%20WASHNORM%20Report%20.pdf

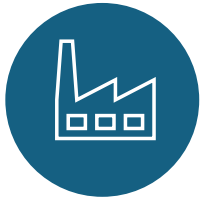
Suggested key stakeholders to engage

Public Sector

- Cross River Basin Development Authority
- Niger Delta River Basin Development Authority
- Anambra/Imo River Basin Development Authority
- Benue, Cross River, Ebonyi, Enugu, Imo, Akwa Ibom, and River state ministries
- Identified Community Development Organisations: Mkpa-Eto, Dangong, Rukpokwe, Ukeme, Owai, Umuode-Enugu , Onyen-Okpom, Ngodo Town.

NGOs

- Obudu Conservation Centre
- Foundation For Environmental Rights
- Advocacy & Development
- Biodiversity Preservation Centre
- Non-Governmental Organization Coalition for Environment
- Ammuzuta
- Umubu Organization

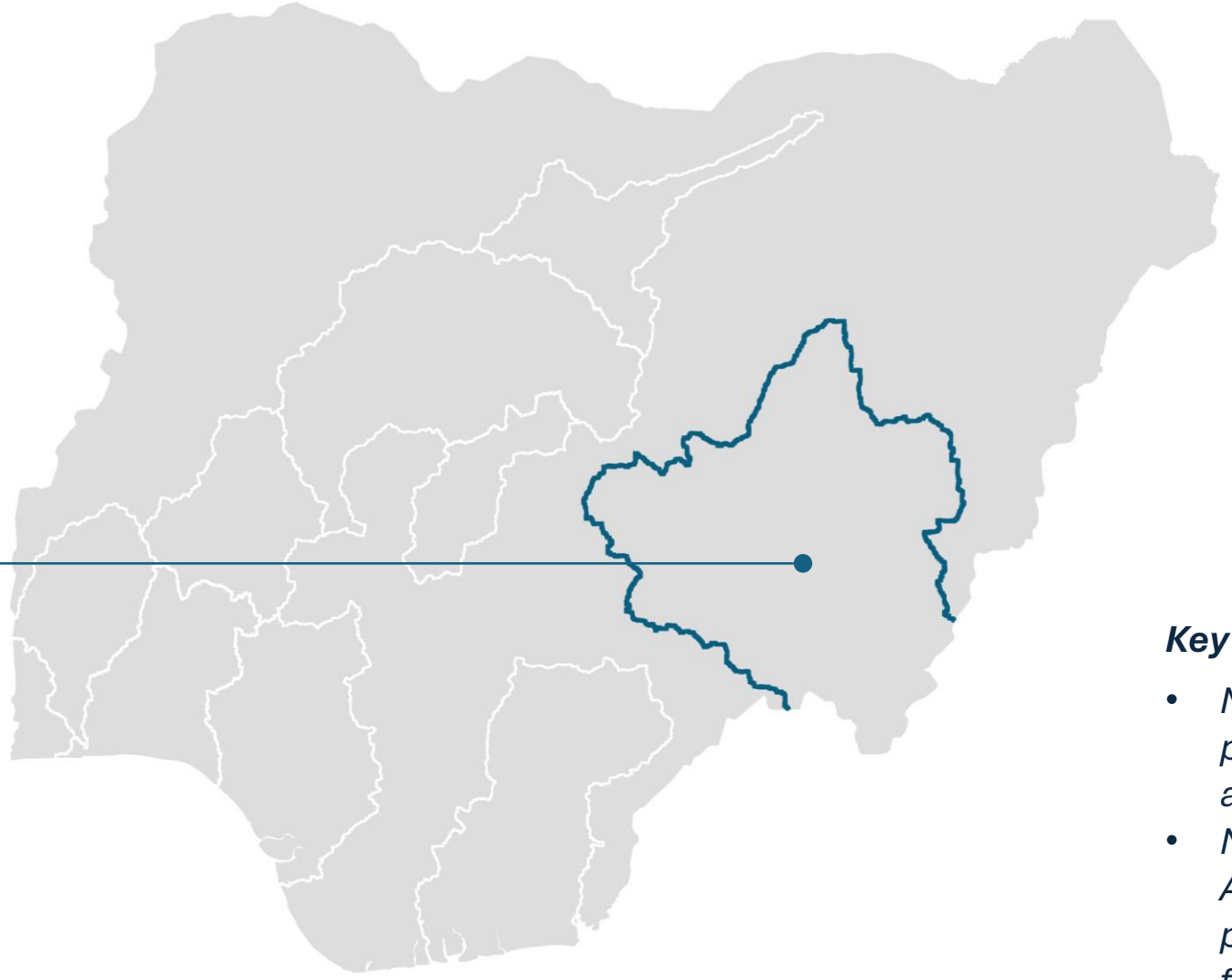


Private sector

- Aquacare Premium Bottled Water, Falcon Bottling Company
- Nigerian Breweries PLC
- Nigeria Bottling Company
- Seven-Up Bottling Company
- CWay Nigeria Drinking Water Science & Technology Company Limited
- Emerald Food & Beverage Company Limited
- Songhai Farms

Watershed Spotlight | **Mid Benue (Benue 2)**

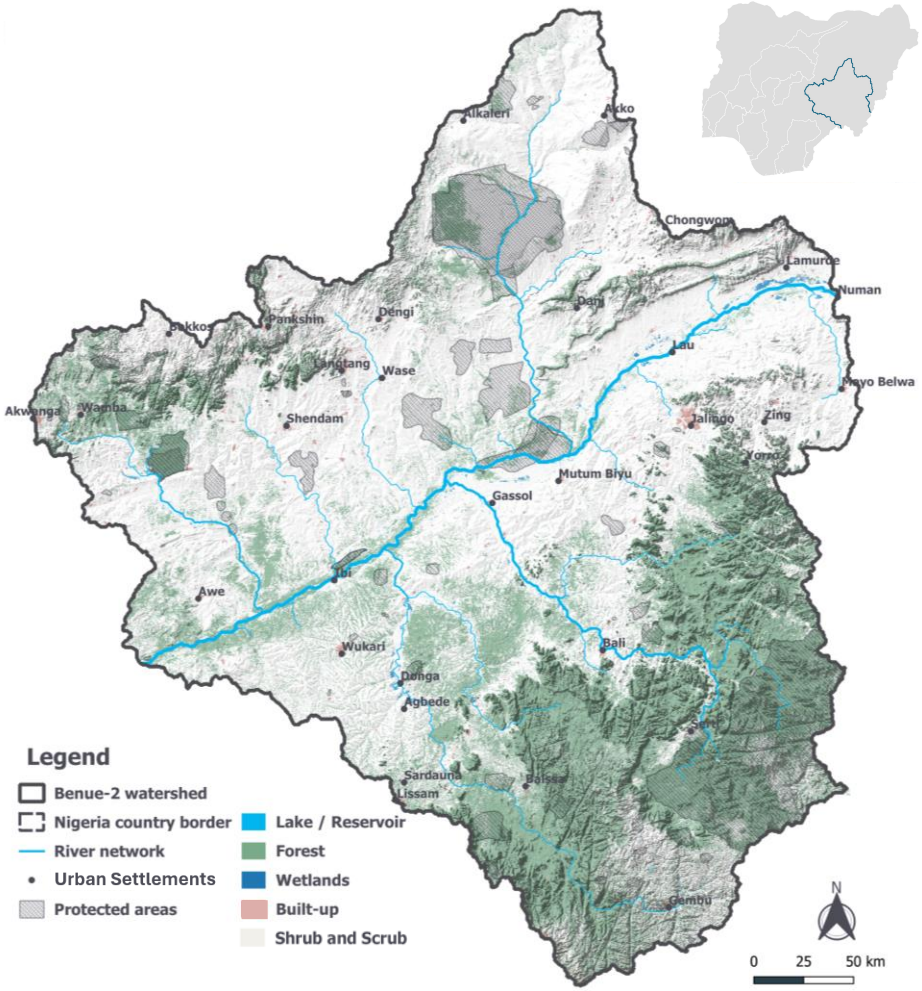
Priority #10:
Mid Benue



Key takeaways

- *Mid Bendue has a low population density and strong agricultural sector.*
- *NbS opportunities around Agricultural Best Management practices are therefore favorable.*

Watershed context



The Mid Benue watershed represents a sub-watershed of the larger Benue in eastern Nigeria, with an area of around 150,000km^2, spanning tropical forest and mountain areas. The Benue River originates from the Adamawa Plateau in northern Cameroon and flows southwest to converge with the Niger River at Lokoja [1]. This area supports numerous tributaries to the main river channel including the rivers Pai, Wase, Donga and Taraba, originating in hilly areas to the north and south.

The Mid Benue watershed covers an area including Taraba and Plateau states, supporting a population of around 8.5 million [2]. Population density is relatively low in this area, with Jalingo (160 thousand people) being the only city of considerable size [3].

This is a highly diverse watershed, supporting mountain, savanna, and forest ecosystems. The area is highly agricultural due to its extensive fertile floodplain areas, and renowned as Nigeria's Food Basket due to its abundant produce, including yams, rice, beans, cassava, potatoes, maize, soybeans, sorghum, millet, and cocoyam [4]. Other key industries include fishing and sand dredging. The river is also an important transport route.

Sources: [1] Odiji, C. A., Aderoju, O. M., Eta, J. B., Shehu, I., Mai-Bukar, A., & Onuoha, H. (2021). Morphometric analysis and prioritization of upper Benue River watershed, Northern Nigeria. Applied Water Science, 11(2). https://doi.org/10.1007/s13201-021-01364-x; [2] Authors own analysis based on WorldPop data http://www.worldpop.org/ . [3] Mark, J., Mark, A., Ojeh, V.,N., Olajire, O. (2023), Assessment of Residential Water Demand and Spatial Distribution in Cities in the West African Sahel: Jalingo, Taraba State, Nigeria in Perspective. DOI [4] Ministry of Finance and Economic Planning. (n.d.). Link

Why is this area a priority?

Water Security Challenges: Total water availability is high in the area due to high levels of precipitation (around 1000mm/yr) and the presence of the Benue River. However, large proportions of the population still lack access to safe drinking water and sanitation services. Flooding of the main Benue River and its tributaries is another key issue for communities located in riparian or floodplain areas. It is also likely that climate change will present a substantial challenge, with changes in precipitation impacting water availability for the agricultural sector.

Potential for NbS: The extent of agricultural areas within the watershed may present an opportunity to implement Agricultural Best Management Practices to realize water-related benefits, as well as co-benefits for livelihoods and food security. This could be paired with investment in the protection and restoration of upland areas within the watershed, with a focus on improving the health of tributaries of the Benue.

Strategic characteristics: The Mid Benue watershed appears to be a favorable option for a WIP due to the presence of engaged public sector actors, and significant private sector and NGO presence in the area. Strategic characteristics include the existence of substantial agricultural areas which could benefit from NbS implementation.

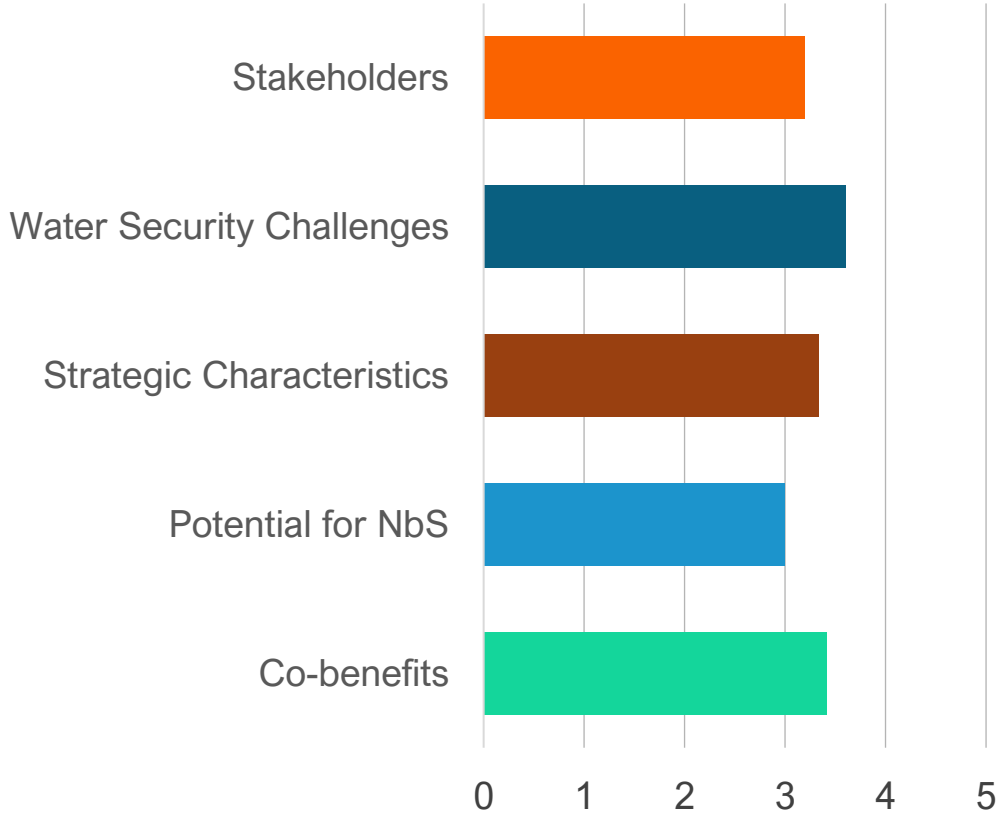


Figure: *Per-criteria scores for this watershed. Higher = better WIP opportunity.*

Suggested key stakeholders to engage

Public Sector

- Upper Benue River Basin Development Authority
- Taraba, Plateau, and Nasarawa State Ministries
- Local Community Development Organisations (non were specifically identified yet)

NGOs

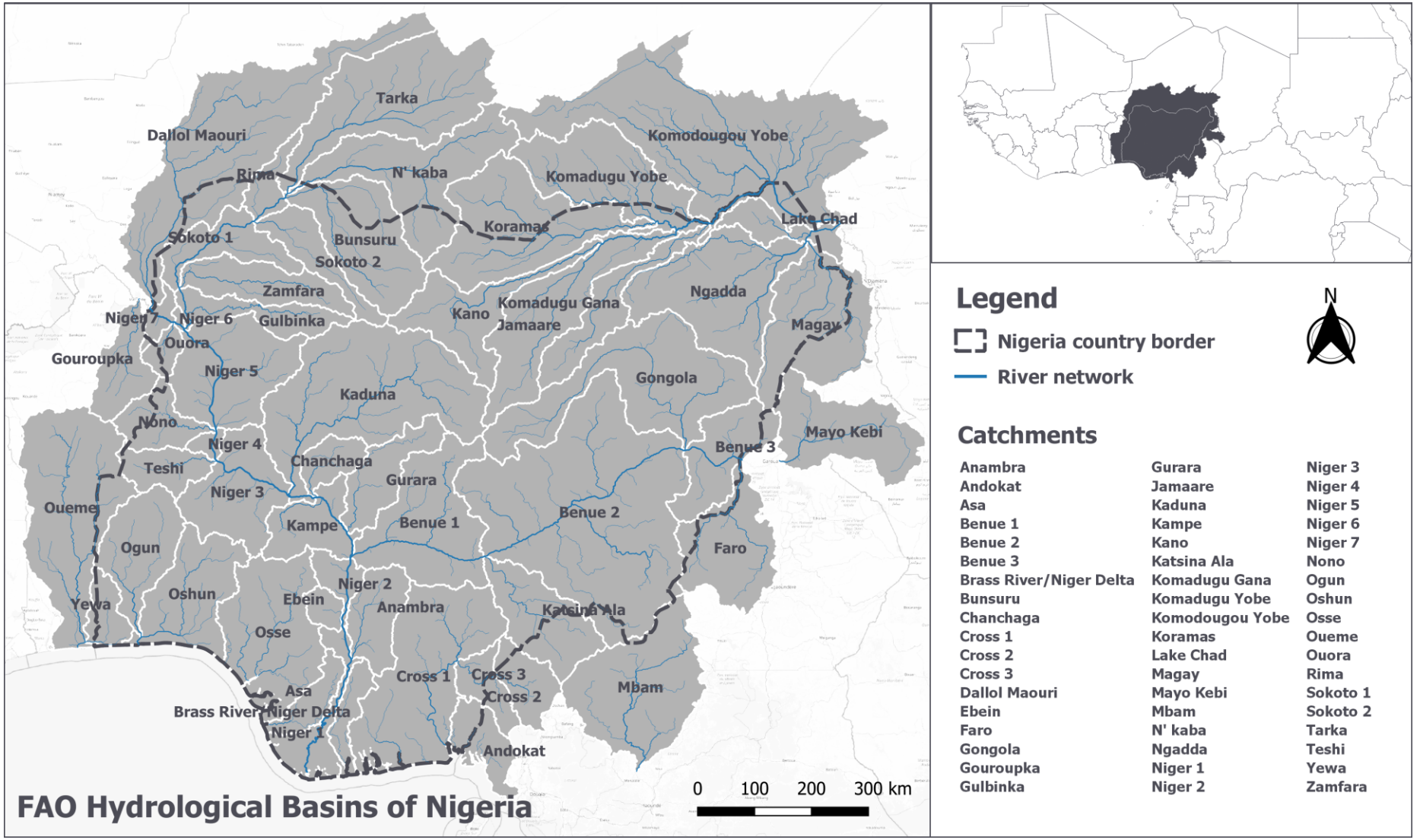
- Environmental and Climate Change Amelioration Initiatives
- The Society for Water and Sanitation
- Angel Support Foundation
- The Taraba Youth Progressives Association

Private sector

- Mambila Beverages Nigeria Limited (Taraba)
- Nigerian Bottling Company (Plateau)
- Benue Brewery Limited
- Jos International Breweries PLC
- Nagari Fresh Farms (Nasarawa)
- Grand Cereals Limited (Plateau)
- Olams Farm (Nasarawa)
- Pandagric Food (Nasarawa)

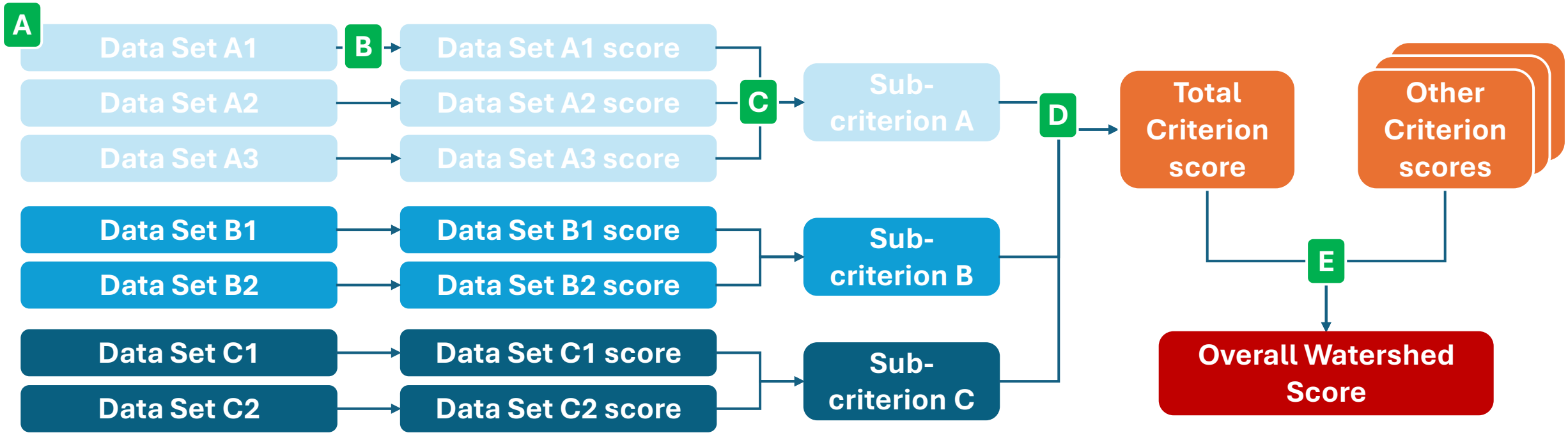
Appendix

Appendix | **Hydrological Basins of Nigeria**



 *The watershed boundaries, as defined by the UN's Food and Agriculture Organisation, were used for this assessment.

Appendix | **Methodology**



A: Collect & summarise data

Collected and then averaged or summed datasets, to generate an appropriate value per watershed for each dataset.

B: Standardise datasets

Standardised datasets to score each watershed relative to the others, per dataset. Minimum value = 1, maximum = 5, other values decided on distribution between min. and max.

C: Averages per sub-criterion

Averaged dataset scores into sub-criteria scores per watershed, applying an equal weighting. Each watershed was given a score of 1-5.

D: Averages per criterion

Averaged Sub-criterion scores into Total Criterion scores, giving each criteria equal weighting. Each watershed was received a score of 1-5, per criterion.

E: Overall scores to rank watersheds

Averaged Criterion scores, giving each an equal weighting. Each watershed was received a score of 1-5, overall.

Appendix | **Methodology – Datasets and Categories**

Dataset	Sub-criteria	Criteria	Total Priority
Aqueduct - Baseline Water Stress - Overall Score	Water Resources	Water Security Challenges	Total Priority Score
Aqueduct - Drought Risk - Overall Score			
Aqueduct - Groundwater Table Decline - Overall Score			
WWF Water Risk Filter - Water Scarcity			
Aqueduct - Untreated Connected Wastewater - Overall Score	Water Quality		
Aqueduct - Unimproved/No Sanitation - Overall Score			
WWF Water Risk Filter - Water Quality			
Aqueduct - Riverine Flood Risk - Overall Score	Flood Risk		
WWF Water Risk Filter - Flood risk			
World Bank CKP - Precipitation Anomaly RCP8.5, 2050 horizon	Climate Change		
World Bank CKP - Temperature Anomaly RCP8.5, 2050 horizon			
GrandD v1.1 - Total Reservoir Capacity	Water Infrastructure	Strategic Watershed Characteristics	
Worldpop - Population Density	Downstream Population		
Worldcover - Area within watershed covered by Urban land use			
IUCN? - % area coverage of protected land within each region based on IUCN database.	Ecosystem Value		
WWF Water Risk Filter - Ecosystem Services Status	Ecosystem Function Baseline	Potential for NbS Implementation	
Worldcover - Area within watershed covered by Crop	Agricultural Systems		
Global Forest Watch - Area coverage of more than 30% loss over the past 22 years (2000-2022)	Ecosystem Degradation		
TrendsEarth - Land degrading between 2001 and 2020			
? - Food Insecurity risk (original scaling between 1 and 4, averaged for 18 years).	Food Security	Co-Benefit Potential	
? - Multi-dimensional Poverty Index for 2022	Livelihoods		
WWF Water Risk Filter - Biodiversity Importance	Biodiversity		
TrendsEarth - Soil Organic Carbon degrading between 2001 and 2020	Carbon		
Worldcover - Area within watershed covered by Trees			
Worldcover - Area within watershed covered by Wetland			
Qualitative Interviews	Stakeholders	Stakeholders	

Appendix | **Methodology – Datasets Summaries and Priorities**

Dataset	Summary Statistic Used	Standardisation Method (High – Low Priority)
Aqueduct - Baseline Water Stress - Overall Score	Average	High value = High Priority
Aqueduct - Drought Risk - Overall Score	Average	High value = High Priority
Aqueduct - Groundwater Table Decline - Overall Score	Average	High value = High Priority
WWF Water Risk Filter - Water Scarcity	Average	High value = High Priority
Aqueduct - Untreated Connected Wastewater - Overall Score	Average	High value = High Priority
Aqueduct - Unimproved/No Sanitation - Overall Score	Average	High value = High Priority
WWF Water Risk Filter - Water Quality	Average	High value = High Priority
Aqueduct - Riverine Flood Risk - Overall Score	Average	High value = High Priority
WWF Water Risk Filter - Flood risk	Average	High value = High Priority
World Bank CKP - Precipitation Anomaly RCP8.5, 2050 horizon	Average	High value = Low Priority
World Bank CKP - Temperature Anomaly RCP8.5, 2050 horizon	Average	High value = High Priority
GrandD v1.1 - Total Reservoir Capacity	Sum	High value = High Priority
Worldpop - Population Density	Average	High value = High Priority
Worldcover - Area within watershed covered by Urban land use	Sum Area	High value = High Priority
IUCN? - % area coverage of protected land within each region based on IUCN database.	Sum Area	High value = High Priority
WWF Water Risk Filter - Ecosystem Services Status	Average	High value = High Priority
Worldcover - Area within watershed covered by Crop	Sum Area	High value = High Priority
Global Forest Watch - Area coverage of more than 30% loss over the past 22 years (2000-2022)	Sum Area	High value = High Priority
TrendsEarth - Land degrading between 2001 and 2020	Sum Area	High value = High Priority
? - Food Insecurity risk (original scaling between 1 and 4, averaged for 18 years).	Average	High value = High Priority
? - Multi-dimensional Poverty Index for 2022	Average	High value = High Priority
WWF Water Risk Filter - Biodiversity Importance	Average	High value = High Priority
TrendsEarth - Soil Organic Carbon degrading between 2001 and 2020	Sum Area	High value = High Priority
Worldcover - Area within watershed covered by Trees	Sum Area	High value = High Priority
Worldcover - Area within watershed covered by Wetland	Sum Area	High value = High Priority
Qualitative Interviews	N/A	N/A

Appendix | **Methodology - Stakeholder Data Deep Dive**

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Stakeholders were mapped across Nigeria

Each watershed was screened for potential local lead organizations that could host the program and drive the initiative locally in the long-term, potential implementation partners, and potential funders.

Each watershed was then given a score from 1-3 based on the quality and quantity of stakeholders identified (1= few and low quality/unsuitable stakeholders present and 3 = numerous and good quality/suitable stakeholders present). The 1-3 score was chosen not to make the qualitative evaluation too complex. All the watersheds that received a 3 were then ranked in order of priority and given a score on a scale from 1-5 using expert judgement, to make the Stakeholder scores comparable with the other criteria.