COUNTRY BRIEF

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The Gambia

Adaptation & Resilience Options for the Transport Sector

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Contributing Authors: This brief builds on national and investment-level climate analyses conducted by GCA under the Africa Adaptation Acceleration Program (AAAP). The work benefited from collaboration with the World Bank teams for The Gambia Infrastructure Project and CCDR, as well as insights shared by the Ministry of Transport Works & Infrastructure, the Ministry of Environment and Climate Change, NAWEC, the Department of Water Resources and the National Roads Authority.

CONTENTS

1. Sectorial Vulnerabilities
2. Building resilience in the Road Transport Sector
3. Building resilience in Maritime Transport
4. Scaling Nature-based Solutions for Climate-resilient Infrastructure
5. Institutional levers to bolster Economic Resilience

EXECUTIVE SUMMARY

- **The Gambia's transport system depends on few critical assets—the Port of Banjul (80% of imports), Banjul Airport, the Trans-Gambia Corridor, and a few road axis—making it highly vulnerable to climate disruptions**
- **By 2050, flooding could affect over 60% of roads and extreme heat 70% of inland routes.**
- **Floods already isolate 11% of people from markets and hospitals and 8% from schools– with rural LGAs disproportionally affected**
- **Investing less than 5% of road asset value in climate-resilient upgrades—drainage, bridges, maintenance, heat-resistant pavements— could cut climate risks by 50% and yield 3:1 economic returns.**
- **Mangrove and floodplain restoration provide US$3 billion in long-term asset protection for Port of Banjul and Senegambia Bridge**

The Global Center on Adaptation (GCA) is an international organization working to accelerate action on adapting to climate change and building resilient economies.

Under the African Adaptation Acceleration Program (AAAP), GCA supports The Gambia in embedding climate resilience into national planning and infrastructure investment projects –including The World Bank Gambia Infrastructure Project, The African Development Bank Banjul Port 4th Expansion and Senegambia Bridge Asset Recycling projects. Since 2024, GCA has partnered with IFIs, government institutions, and the National Roads Authority to assess climate risks to the transport sector, water resources, identify adaptation solutions, and strengthen local capacity though training activities.

1. SECTORIAL VULNERABILITIES

The Gambia's transport sector underpins national connectivity, trade, and access to services, yet it relies on a few highly critical assets. The Port of Banjul handles about 80 percent of national imports, including food and fuel essential for food and energy security, while Banjul International Airport serves as the country's only aviation hub. Inland, the South and North Bank roads and key urban axes form the main economic and social lifelines for communities, while the Trans-Gambia Corridor forms the country's principal north–south link, vital for domestic mobility, regional trade and Senegal's food supply chains.

Rural communities are particularly vulnerable to low infrastructure redundancy, limiting access to essential services and economic opportunities; with global assessments placing The Gambia among African countries with the lowest road network extent per capita (Koks, 2023). The South and North Bank roads, and connecting feeder roads, provide vital links for food transport, service access, and agricultural markets. Network analysis (GCA, 2025) shows that most critical roads are unpaved rural feeder roads (Figure 1).

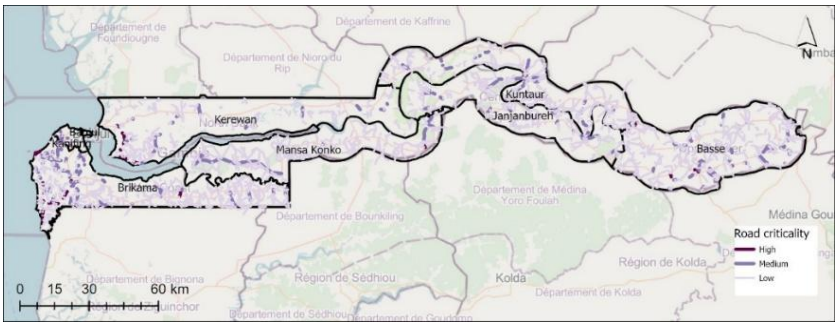


Figure 1. Road criticality for social (schools, markets, and hospitals), economic (between major markets, border crossings, and the Port of Banjul), and tourism connections (from hotels to the airport).

Climate change is set to amplify existing vulnerabilities and cascading socio-economic impacts, primarily driven by rising temperatures, more extreme rainfall patterns, and sea level rise. By 2050, coastal areas including The Greater Banjul Area are projected to face two additional weeks per year above 35 °C, while inland regions could experience extreme heat events every two years (up from once every 25 years) and up to 290 days above 40 °C under moderate scenarios. Flood risks will also intensify, with short, high-intensity rainfall events becoming 17–45% more frequent—especially in the middle river regions—and rising fluvial, tidal, and coastal flooding driven by sea-level rise of 0.25 m by 2050 and 0.42 m by 2070 threatening coastal infrastructure.

2. BUILDING RESILIENCE IN THE ROAD TRANSPORT SECTOR

The road transport sector is highly exposed to climate hazards, with impacts projected to intensify. Flooding will continue to be the dominant physical risk to The Gambia's road network, with coastal, pluvial and fluvial flooding representing more than 90% of total risks towards 2050 under all scenarios:

- **Pluvial flooding** currently affects 57 percent of roads, rising to 61 percent by 2050 under the SSP2-4.5 scenario, blocking roads during peak events and accelerating surface degradation.
- **Fluvial flooding** places around 5 percent of roads at very high direct risk near river crossings, with nearly half of the network potentially exposed by 2050. Bridges are particularly vulnerable: about 80 percent face flooding impacts, with scour and hydraulic forces threatening structural stability during extreme events (GCA, 2025).
- **Coastal flooding** exposure is projected to expand from 91 km of exposed roads today to 141 km by mid-century, equivalent to 1.6 percent of the national network.
- **Extreme heat** will emerge as a dominant hazard in the longer term. By 2050, more than 70 percent of inland roads are expected to face very high thermal stress, leading to faster asphalt deformation. By 2070 (SSP2-4.5), heat risks are projected to surpass floods as the primary risk, especially in the eastern regions.

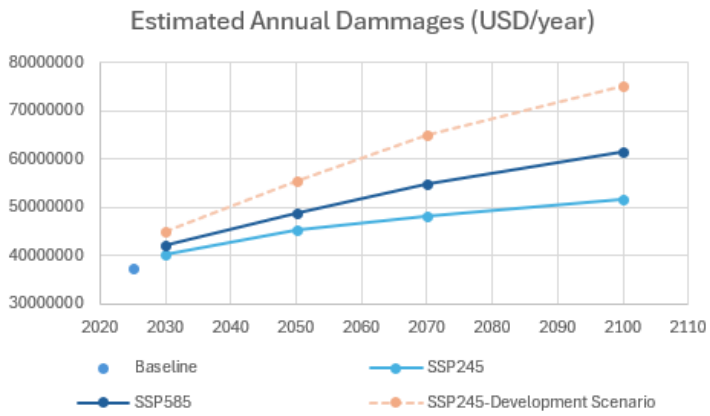
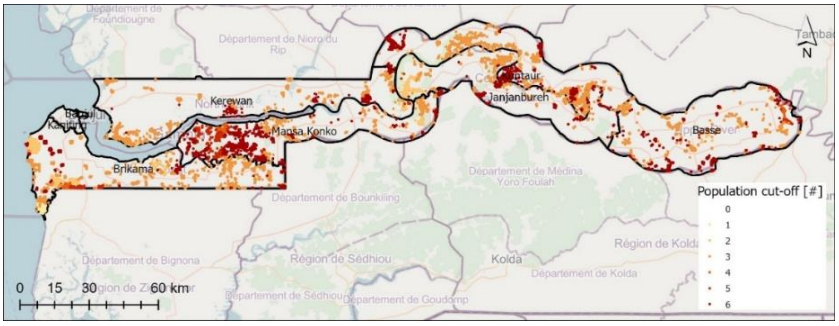


Figure 2. Evolution of climate risks to the road sector (in Estimated Annual Damages (USD/yr)), as estimated annual damages under SSP2-4.5 and SSP5-8.5 scenarios, and a road development scenario (all residential roads are paved)

Flood-driven transport disruptions have raising socio-economic consequences in The Gambia. During flood events, 11 percent of the population loses access to markets (≈261,000 people), 8 percent to schools, 11 percent to hospitals, and 8 percent become completely isolated from all of them under current climate conditions. Rural local government areas (LGA) such as Kuntaur, Mansa Konko, and Basse are disproportionally affected. Network analysis identified 3,252 km of critical roads for maintaining access during floods, including 320 km at high criticality–with Brikama alone hosting 704 km of these links. The cascading effects are significant: loss of rural access undermines incomes, food security, and delivery of services; trade disruptions constrain national imports and exports since rural areas supply most food and cash crops; and blocked routes to tourism hubs threaten one of The Gambia's key economic sectors.



LGA	Population cut-off [%]				Increased travel time [%]
	Markets	Schools	Hospital	All	
Banjul	0%	0%	0%	0%	0%
Kuntaur	32%	33%	33%	31%	6%
Janjanbureh	12%	11%	15%	9%	9%
Kanifing	0%	0%	0%	0%	0%
Mansa Konko	23%	23%	25%	22%	1%
Kerewan	9%	7%	9%	8%	9%
Basse	26%	22%	26%	23%	7%
Brikama	8%	3%	8%	3%	1%
Total	11%	8%	11%	8%	3%

Figure 3. Population cut-off (in thousands of people in the map, in % of total population in the table) from access to critical services due to flood events

Priority investments for impact-based adaptation

Targeted adaptation investments requiring less than 5% on additional financing could reduce up to 50% of climate risks to The Gambia's road network by mid-century—providing 3$ in benefits for each dollar invested— and securing development goals (GCA, 2025). Priority measures towards 2050 include:

- **Expanding and diversifying drainage infrastructure, including NbS solutions**, to increase capacity, reduce maintenance costs, and avoid maladaptation, particularly in the Greater Banjul Area. This requires both greater investment in drainage and tailored climate-resilient design guidelines that are context-specific.
- **Raising bridge design standards** to higher flood return periods (above RP50 for common bridges), with larger hydraulic openings and scour protection against stronger river discharges.
- **Expanding preventive maintenance capacity,** currently hampered by budget constraints, and including climate-resilient practices is vital, supported by establishing early-warning systems, and engaging communities in routine monitoring and debris clearance.
- **Incorporating heat-resistant modified binders** in critical roads over the longer term, a cost-effective measure to reduce asphalt deformation, particularly in eastern regions.

For the road sector alone, cost–benefit analysis of these measures suggests that resilience investments would require about 5 percent of asset value every 25 years. The present value of benefits is estimated at US$465 million, compared to costs of US$150 million—yielding a net present value of US$310 million and a benefit–cost ratio of 3. **At the project level, recent work of isolated urban and rural roads in The Gambia shows that most segments—even with current low traffic volumes—already present a strong economic case for adaptation, with measures such as drainage expansion proving highly cost-effective (Box 1).**

Box 1. Embedding Resilience into The World Bank Gambia Infrastructure Project

The World Bank is investing, via an IDA grant, in 150 km of urban and rural roads in The Gambia with a strong focus on climate resilience. From an initial pipeline of 500 km, a prioritization process—based on accessibility and technical feasibility and supported by climate analytics—is being used to identify vulnerable links and reinforce development objectives.

Further support from the Global Center on Adaptation in identifying and implementing adaptation measures is being embedded into project design to ensure long-term performance. Drainage improvements have been identified as essential interventions, aimed at reducing direct flood damage, protecting road surfaces, and maintaining connectivity during extreme events.

Cost–benefit analysis shows positive returns over the asset lifetime, with avoided damage and reduced disruption outweighing upfront costs. These priorities are now reflected in the Terms of Reference for technical feasibility studies, ensuring that resilience is not only a guiding principle but also a driver of implementation and sustainable road sector development.

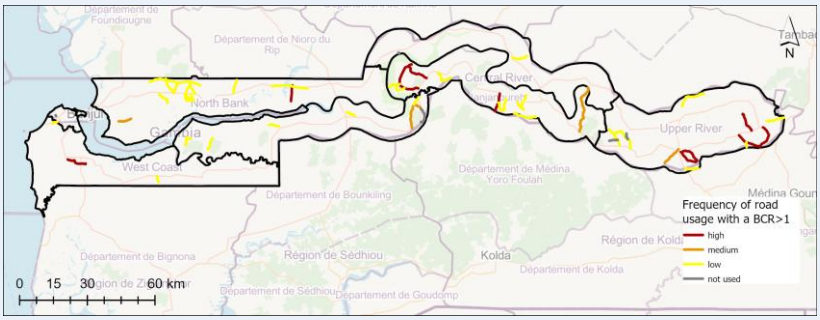


Figure 4. The World Bank The Gambia Infrastructure Project, road prioritization regarding climate resilience

Adaptation needs are also rising for the Senegambia Bridge, Banjul Airport, and the Port of Banjul, where indirect risks are driven by vulnerable access roads, despite relatively low projected direct impacts (GCA, 2025). Feeder roads north of the Senegambia Bridge are prone to recurrent flooding and deformation under extreme heat and heavy traffic, while airport–coastal connectors in the Greater Banjul Area are among the most exposed corridors, threatening connectivity to tourism hubs. At the Port of Banjul, sea-level rise will compound risks to road access, amplifying disruptions to trade and food security.

3. BUILDING RESILIENCE IN THE MARITIME TRANSPORT SECTOR

The Port of Banjul is highly exposed to climate risks, with downtime outweighing direct asset damage. Handling most national imports, the port is vital for food and fuel security but sits in a low-lying area where 30–40 percent of land-side assets are flood-prone. Sea level rise, storm surge, and extreme rainfall could cause up to 25 days of downtime annually by 2050, while ferry terminals already face around 3 percent recurring damage from wave action. Economic losses are driven primarily by operational disruptions—68 percent from land-side and 30 percent from marine activities—rather than physical destruction, which accounts for only 2 percent. Without adaptation, the port risks more than 45 disrupted days per year by mid-century, with knock-on impacts on trade, food distribution, and energy supply. These risks are compounded by ecological degradation, as the Tanbi Wetland Complex faces 10 percent annual damage under drought conditions, threatening to collapse within a decade and removing a critical natural buffer.

Targeted adaptation investments at the Port of Banjul, requiring 9% of additional finance, could yield high returns by reducing disruption and safeguarding trade flows, estimated at 30US$ million over the next 30 years. Priority measures include upgrading Bund Road, the port's sole access, with heat- and flood-resistant pavement; purchasing heat-resilient equipment and securing reliable power for reefers; and improving drainage across terminals. Structural defenses such as sea walls and terminal elevation would protect cranes and storage zones, reducing risks by US$2–6 million each. Worker-focused measures—cooling stations, shade, and potable water—would further strengthen resilience (risk reduction up to US$4.7 million). Together, these investments would reduce downtime, protect essential imports of food and fuel, and secure regional trade lifelines.

4. SCALING NATURE-BASED SOLUTIONS FOR CLIMATE RESILIENT INFRASTRUCTURE IN THE GAMBIA

Nature-based solutions (NbS) offer a cost-effective pathway to strengthen the climate resilience of Gambia's transport infrastructure, building on the country's existing expertise. The Gambia has already piloted large-scale NbS interventions, including through Green Climate Fund–supported projects.

Recent global analytics (Oxford, GCA, 2025) highlights significant opportunities for mangrove and floodplain restoration nationwide, suggesting that these interventions could deliver up to US$3 billion in long-term resilience benefits by 2100, with every dollar invested in adaptation yielding more than two dollars in avoided damages and broader socio-economic gains.

Mangrove ecosystems in The Gambia are particularly valuable in protecting high-risk transport assets. At the Port of Banjul, the Tanbi Wetland Complex acts as a key natural buffer against storm surges and tidal flooding. However, degradation of this wetland poses severe risks, undermining its capacity to protect cargo terminals, cranes, and access roads. Targeted restoration—through planting and monitoring of mangroves, combined with community awareness campaigns—has been estimated at a cost of €1.4 million, with potential risk reduction of €1.3–3.7 million, and unmonetized co-benefits for the environment and coastal communities (GCA, 2023). Along the Senegambia Bridge, mangrove belts provide critical natural defenses against flooding and erosion, reducing maintenance needs for the bridge and its feeder roads while ensuring the reliability of this strategic north–south corridor.

Scaling such ecosystem-based measures alongside hard infrastructure will be essential to secure transport assets and rural connectivity against intensifying climate hazards. But also on urban roads, at a smaller scale, investing in green-blue infrastructure and nature-based drainage systems could yield sustained benefits while reducing risks of mal-adaptation.

5. INSTITUTIONAL LEVERS TO BOLSTER ECONOMIC RESILIENCE

Institutional gaps continue to limit The Gambia's ability to mainstream climate resilience into the transport sector. While frameworks such as the NCCP, SPCR, and LTS 2050 provide a strong foundation, they often overlap and lack clear prioritization, measurable targets, or long-term national anchoring. Implementation has progressed more slowly than planned, with bodies like the National Climate Change Council and Inter-ministerial Climate Committee requiring further support to realize their full potential, and dedicated funds still to be fully operationalized. Capacity and data systems also need reinforcement, including stronger technical staffing, upgraded monitoring networks, and more consistent enforcement of land-use regulations. Financing remains heavily dependent on donor-driven projects, but growing interest in resilience provides an opportunity to strengthen country-led programs. Updating sectoral frameworks—such as the water policy and forthcoming Transport Bill—to explicitly include climate risks, combined with improved coordination and the strategic use of climate data, can help translate existing strategies into effective and actionable resilience measures.

Several institutional levers can accelerate climate adaptation in The Gambia's transport and infrastructure sectors, primarily:

- **Policy and legal reforms**: Fast-track approval of the Draft Water Bill (2020), enforce the National Land Policy (2025), and update sectoral frameworks to embed climate adaptation, including explicit provisions in the forthcoming Transport Bill.
- **Institutional strengthening**: Operationalize the National Climate Change Council, Inter-ministerial Climate Committee, and Climate Change Secretariat with adequate staffing and funding; establish a central coordination unit and database for adaptation finance; build sub-national capacity for implementation and enforcement.
- **Climate data and monitoring**: Rehabilitate tidal, rainfall, and river monitoring stations; develop a national open-access climate data repository to guide planning and accountability.
- **Financing and donor alignment**: Shift from fragmented, project-based approaches to coordinated, country-owned programs; capitalize a National Climate Fund with contributions from all ministries and leverage international finance; strengthen public finance management to improve donor trust.
- **Nature-based and social levers**: Expand mangrove restoration, ecosystem-based adaptation, and catchment management; integrate gender, youth, and community-based adaptation into legal frameworks; use transparency and accountability laws to strengthen participation in adaptation governance.

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