Addressing Flooding in Nigeria: Building Reservoirs, Drainages, and Supportive Facilities Across States

Nigeria's perennial flooding, a cataclysm exacerbated by climate change and human-induced factors, wreaks havoc on lives, livelihoods, and infrastructure across its 36 states and the Federal Capital Territory (FCT). States such as Kogi, Benue, Lagos (particularly Lekki), Kwara, and Katsina face recurrent inundations, with devastating impacts on agriculture, health, and economic stability. The Friends of Sustainability and Ecology Association (FOSEA) champions a multifaceted strategy to mitigate flooding through the construction of reservoirs, advanced drainage systems, and complementary facilities, aligning with Nigeria's Climate Change Act (CCA) 2021 and the Sustainable Development Goals (SDGs). This essay expounds on the imperative of these interventions, emphasizing their ecological, social, and economic benefits while addressing specific challenges in flood-prone states.

Flooding in Nigeria, driven by heavy rainfall, poor drainage, and dam overflows, has escalated in frequency and severity. The 2022 floods, the worst in a decade, displaced 1.4 million people, killed over 600, and inundated 332,327 hectares of farmland, with Kogi and Benue among the hardest hit. The Nigeria Hydrological Services Agency (NIHSA) predicts that 148 Local Government Areas (LGAs) across 31 states, including Kogi, Benue, Lagos, Kwara, and Katsina, face high flood risk in 2025. FOSEA's initiative to construct reservoirs and drainages aims to regulate water flow, reduce runoff, and protect vulnerable communities, fostering resilience against climate-induced deluges.

Reservoirs, as strategic water management infrastructure, are pivotal to flood control. In Kogi, located at the confluence of the Niger and Benue rivers, uncontrolled releases from dams like Lagdo in Cameroon exacerbate flooding. The unbuilt Dasin Hausa Dam in Adamawa, intended to contain Lagdo's overflow, underscores Nigeria's infrastructural deficits. FOSEA advocates for multipurpose reservoirs, such as the proposed Kashimbilla/Gamovo Dam in Taraba, to store excess water, generate hydropower, and support irrigation, thereby mitigating floods and enhancing food security. These reservoirs would regulate water releases, preventing downstream inundation in states like Kogi and Benue.

Drainage systems, woefully inadequate in Nigeria, are critical to managing urban flooding. In Lagos, particularly Lekki, poor drainage and unregulated construction on floodplains amplify flood risks, with 4,000 residents displaced in 2021. FOSEA's campaign promotes sustainable

urban drainage systems (SUDS), incorporating permeable surfaces and green infrastructure to enhance water absorption and reduce runoff. By retrofitting clogged drains and constructing new ones, FOSEA aims to alleviate flooding in urban centers like Lagos and the FCT, where impermeable surfaces exacerbate water accumulation.

Kwara and Katsina face unique flood challenges due to their geographical and climatic contexts. In Kwara, the 2025 Mokwa flood, triggered by Jebba Dam releases, devastated 10,000 hectares of paddy farms, highlighting the need for localized reservoirs to manage dam overflows. Katsina, in the arid northwest, experiences flash floods due to intense rainfall, as seen in 2021 when 100 millimeters fell in a single day. FOSEA's initiative includes region-specific drainage designs, such as deep channels in Katsina to handle flash floods and retention ponds in Kwara to capture excess water, ensuring tailored flood mitigation.

Complementary facilities, such as flood early warning systems (FEWS) and community-based response centers, are integral to FOSEA's strategy. The Federal Ministry of Environment's deployment of 307 web-based FEWS in states like Kogi, Kwara, and Lagos enhances preparedness. FOSEA collaborates with the National Emergency Management Agency (NEMA) to establish emergency operations centers (EOCs) in flood-prone LGAs, facilitating rapid evacuation and relief distribution. These facilities empower communities to respond proactively, reducing loss of life and property.

The ecological benefits of FOSEA's initiative are manifold. Reservoirs and green drainage systems, incorporating vegetation like moringa and neem, enhance carbon sequestration and biodiversity, aligning with SDG 15 (Life on Land). In Benue, where floods inundated 61,000 hectares of farmland in 2024, reforestation alongside reservoirs mitigates soil erosion and stabilizes riverbanks. FOSEA's green grooves initiative, implemented in collaboration with Nigerian senators, integrates tree planting into flood control, creating ecological buffers that absorb excess water and reduce runoff.

Economic impacts of flooding, particularly on agriculture, are profound, with 2025 floods destroying 107,000 hectares of farmland across states like Katsina and Kwara. Reservoirs support dry-season farming through irrigation, as seen in the Jebba reservoir's potential to stabilize agricultural yields. FOSEA's advocacy for waste-to-energy facilities near drainage systems reduces landfill pressure and generates revenue, aligning with Nigeria's circular economy goals. These interventions bolster economic resilience, particularly in rural areas where 74% of households were affected by 2022 floods.

Socially, flooding exacerbates displacement and health risks, with 1.2 million people affected in 2024 across 31 states. In Kogi's Ibaji LGA, 100% of communities were submerged in 2022, displacing tens of thousands. FOSEA's community training programs, inspired by NEWMAP's success in training 185,000 individuals, educate residents on drainage maintenance and flood preparedness. By fostering community ownership, FOSEA ensures sustainable management of new infrastructure, reducing reliance on inadequate municipal services.

Policy enforcement remains a formidable challenge. The lack of political will to implement flood risk management (FRM) strategies, as noted by flood risk analyst Ugonna Nkwunonwo, hinders progress. FOSEA engages with state governors to integrate FRM into urban planning, advocating for regulations that prohibit construction on floodplains, as seen in Lekki's unregulated developments. The CCA 2021 provides a framework for these efforts, mandating sustainable infrastructure to achieve Nigeria's 47% emissions reduction target by 2030.

Financing such ambitious projects requires innovative mechanisms. FOSEA's advocacy for green bonds, highlighted at the Africa's Green Economy Summit 2025, attracts investment for reservoir and drainage construction. The N17 billion disbursed post-2012 floods demonstrates the potential for federal funding, but FOSEA calls for sustained investment to cover all states. Public-private partnerships, as seen in Lagos' drainage projects, can further bridge funding gaps, ensuring scalability and maintenance of infrastructure.

The integration of technology enhances the efficacy of FOSEA's interventions. Geospatial tools, used in studies of the Niger-Benue basin, identify flood-prone areas with precision, guiding reservoir placement in Kogi and Benue. FOSEA promotes ICT-based applications for real-time flood monitoring, allowing residents to report drainage blockages, as suggested by Dyachia et al. (2017). These tools empower communities and authorities to respond swiftly, reducing flood impacts in urban areas like the FCT and Lagos.

Public awareness is critical to sustaining flood mitigation efforts. FOSEA's campaigns on FOSEA.COM.NG educate communities about the importance of clearing drains and supporting reservoir projects. In Katsina, where flash floods disrupt livelihoods, community workshops foster a culture of preparedness, drawing on NEMA's simulation exercises. By highlighting successful models like China's conservation measures, FOSEA inspires local action and global collaboration.

Challenges such as waste management and urbanization exacerbate flooding. In Lagos, clogged drains due to poor waste disposal amplify urban flooding. FOSEA's circular economy initiatives, including waste segregation and recycling, reduce drainage blockages, complementing infrastructure development. In the FCT, where 64% of households were affected by 2022 floods, community-led waste management ensures long-term drainage functionality.

In conclusion, FOSEA's initiative to build reservoirs, drainages, and supportive facilities across Nigeria's states is a clarion call to combat flooding's devastating impacts. By addressing the unique challenges of Kogi, Benue, Lagos, Kwara, Katsina, and the FCT, FOSEA fosters resilience through ecological, economic, and social interventions. Through policy advocacy, innovative financing, and community engagement, this initiative aligns with Nigeria's sustainability agenda, paving the way for a flood-resilient future. Sustained investment and stakeholder collaboration will be paramount to realizing this vision.

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