

SUMMARY BRIEF

Guyana's National Drainage and Irrigation Strategy 2030



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This brief presents a concise overview of the finalized National Drainage and Irrigation Strategy (NDIS) 2030, outlining its strategic context, vision, priorities, and implementation focus. The strategy strengthens national decision-making to support a more resilient, efficient, and sustainable drainage and irrigation (D&I) system in Guyana, capable of responding to escalating climate, social, and economic pressures.

As Guyana's lead institution for the operation, maintenance, and oversight of public drainage, irrigation, and flood control infrastructure, the National Drainage and Irrigation Authority (NDIA) plays a central role in ensuring efficient, equitable, and financially sustainable water management. In practice, the NDIA has increasingly assumed responsibility for both agricultural and residential drainage assets where institutional mandates overlap or remain unclear. This role is particularly critical in Guyana's low-lying and flood-prone coastal regions, where the effective functioning of canals, conservancies, pumps, sluices, and embankments underpins agricultural productivity, flood protection, and climate resilience. These growing responsibilities prompted the development of a strategic framework in 2017 and now necessitate a renewed long-term vision through NDIS 2030.

Strategic Context

The NDIA's strategic direction has evolved in response to expanding agricultural production, increasing climate variability, and heightened flood risk. The transition from the **NDIA Strategy 2017–2021** to the **Capital Works Strategy 2021–2025** marks a deliberate shift from institutional diagnosis and capacity-building toward implementation and the delivery of tangible infrastructure outcomes.

While the earlier strategy emphasized data development, system assessments, and institutional strengthening, the Capital Works Strategy prioritized targeted investments, improved operational performance, and enhanced infrastructure resilience. This evolution reflects a significant escalation in climate adaptation ambition, including upgraded design standards to address extreme rainfall and sea-level rise. Collectively, these shifts demonstrate NDIA's expanding mandate and underline the need for an updated, integrated strategy that consolidates governance, data systems, and infrastructure planning under a coherent long-term framework.

National Drainage Irrigation Strategy 2030 Vision

“Establish a resilient, inclusive, and climate-adaptive D&I System that reduces flooding, revitalizes agricultural lands, secures water access, and empowers all water and infrastructure users to ensure national food security.”

The NDIS 2030 vision promotes a collective, national approach to modernizing Guyana's D&I systems. It guides coordinated improvements in infrastructure, governance, and institutional capacity to enhance water management, agricultural productivity, flood risk reduction, and climate resilience. The strategy emphasizes integrated, data-driven, and participatory approaches aligned with national development priorities and international best practices.

Challenges and Opportunities for Drainage and Irrigation

Guyana's agricultural sector remains critical to food security and economic stability but is increasingly exposed to climate-related hazards, including flooding, droughts, salinity intrusion, heat stress, and infrastructure failure. Much of the country's productive farmland—particularly along the coast—depends on aging drainage and irrigation systems that are often under-maintained or damaged, heightening vulnerability for communities and farmers.

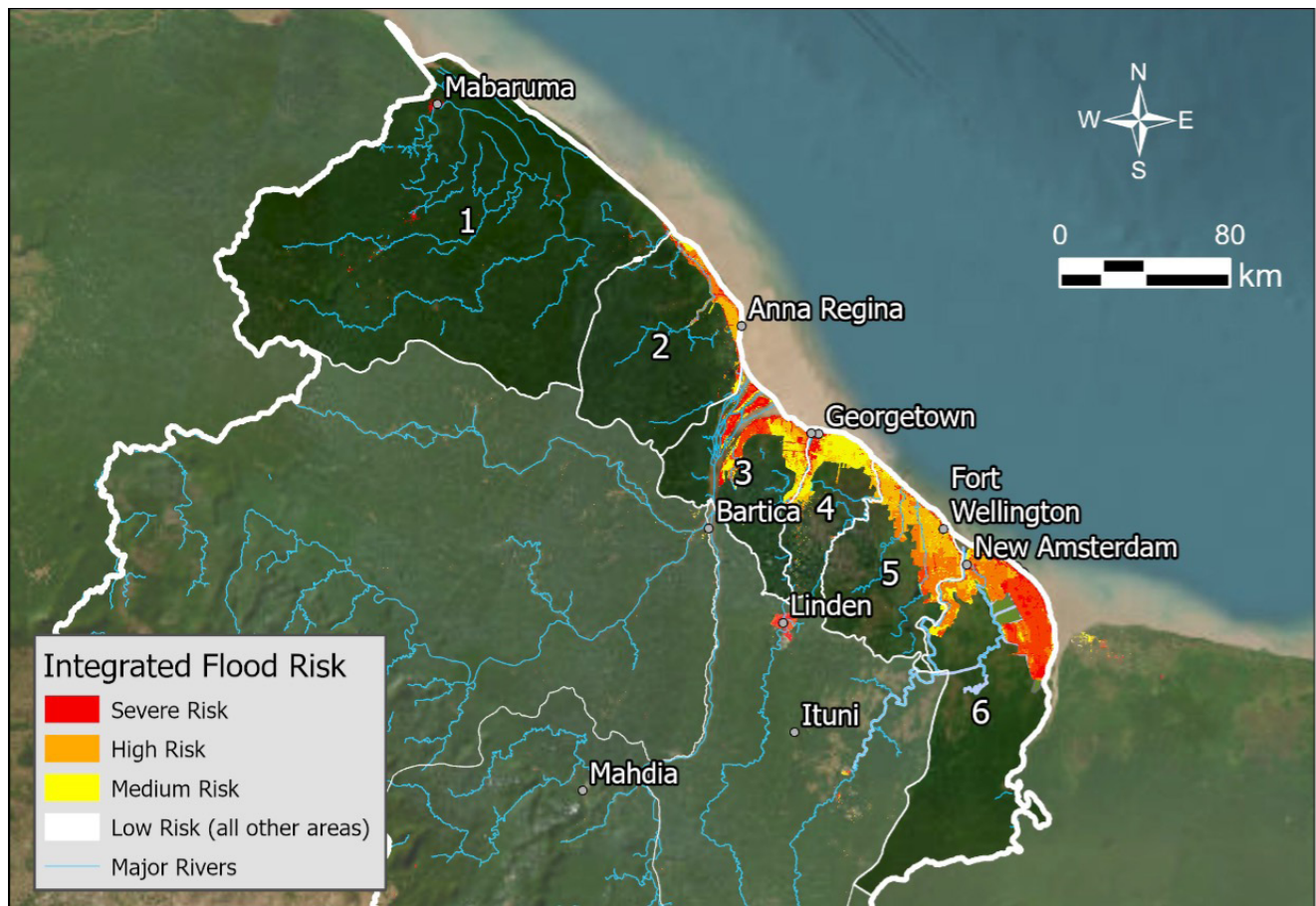


Figure 1. Integrated Flood Risk along the coastal region of Guyana

Climate change further intensifies these pressures through sea-level rise, more intense rainfall, and saline intrusion, while hinterland regions face distinct risks such as drought, wildfires, and limited water storage. These challenges disproportionately affect smallholder farmers, women-headed households, and marginalized communities. At the same time, constraints on land and water availability mean that future agricultural growth must focus on increased productivity, efficiency, and sustainability rather than geographic expansion. A modern, resilient D&I system—supported by robust data systems and nature-based solutions—is therefore essential.

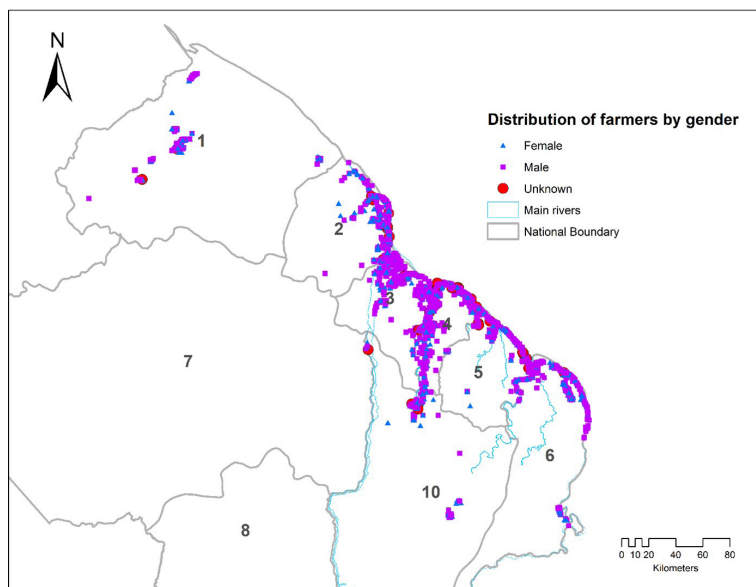


Figure 2. Distribution of farmers by gender along Guyana’s Coast

The National Drainage and Irrigation Strategy

The NDIS is firmly grounded in Guyana’s **National Adaptation Plan (NAP) 2025–2050**, which highlights significant vulnerabilities in water availability, quality, and management, despite the country’s perceived water abundance. Climate impacts, extractive activities, and agricultural practices continue to strain water resources, while persistent gaps in potable water and sanitation—particularly in rural coastal and hinterland regions—exacerbate flood and public health risks.

In response, Guyana has strengthened its climate adaptation framework through the NAP and NDIS, expanded drought resilience through groundwater development, improved inter-agency coordination among NDIA, the Guyana Water Incorporated (GWI), and the Civil Defence Commission (CDC), and invested in the rehabilitation of conservancies and irrigation networks. The NDIS directly addresses rising climate and social vulnerabilities by reducing flood exposure, strengthening drought resilience, and prioritizing equitable access to D&I services for smallholder farmers, women-headed households, and hinterland communities.

The strategy aligns closely with national development policies, including the **Low Carbon Development Strategy (LCDS) 2030**, the **NDIA Act**, the **National Gender and Social Inclusion Policy**, and the **National Agriculture Strategy**. It translates these frameworks into a unified, sector-specific approach centered on inclusive governance, data-driven decision-making, and climate-resilient infrastructure, including nature-based solutions (NbS). In doing so, the NDIS positions itself as a practical instrument for advancing sustainable agriculture, equitable water access, and long-term climate resilience.

NDIA Strategic Framework

The NDIS is built on three strategic pillars designed to strengthen governance, improve data systems, and deliver effective drainage and irrigation (D&I) services through the NDIA. The NDIS 2030 focuses on inclusive governance and national participation, enhanced data and data management for better decision-making, and sustainable infrastructure planning, maintenance, and financing, including Nature-based Solutions. Together, these pillars aim to reduce vulnerability, improve flood management in coastal regions, enhance collaboration and information sharing, and ensure equitable, resilient D&I services aligned with national development goals and international best practices.

NDIS 2030 - Summary Results Framework

“Resilient, Inclusive and Climate-Smart Drainage & Irrigation Systems”

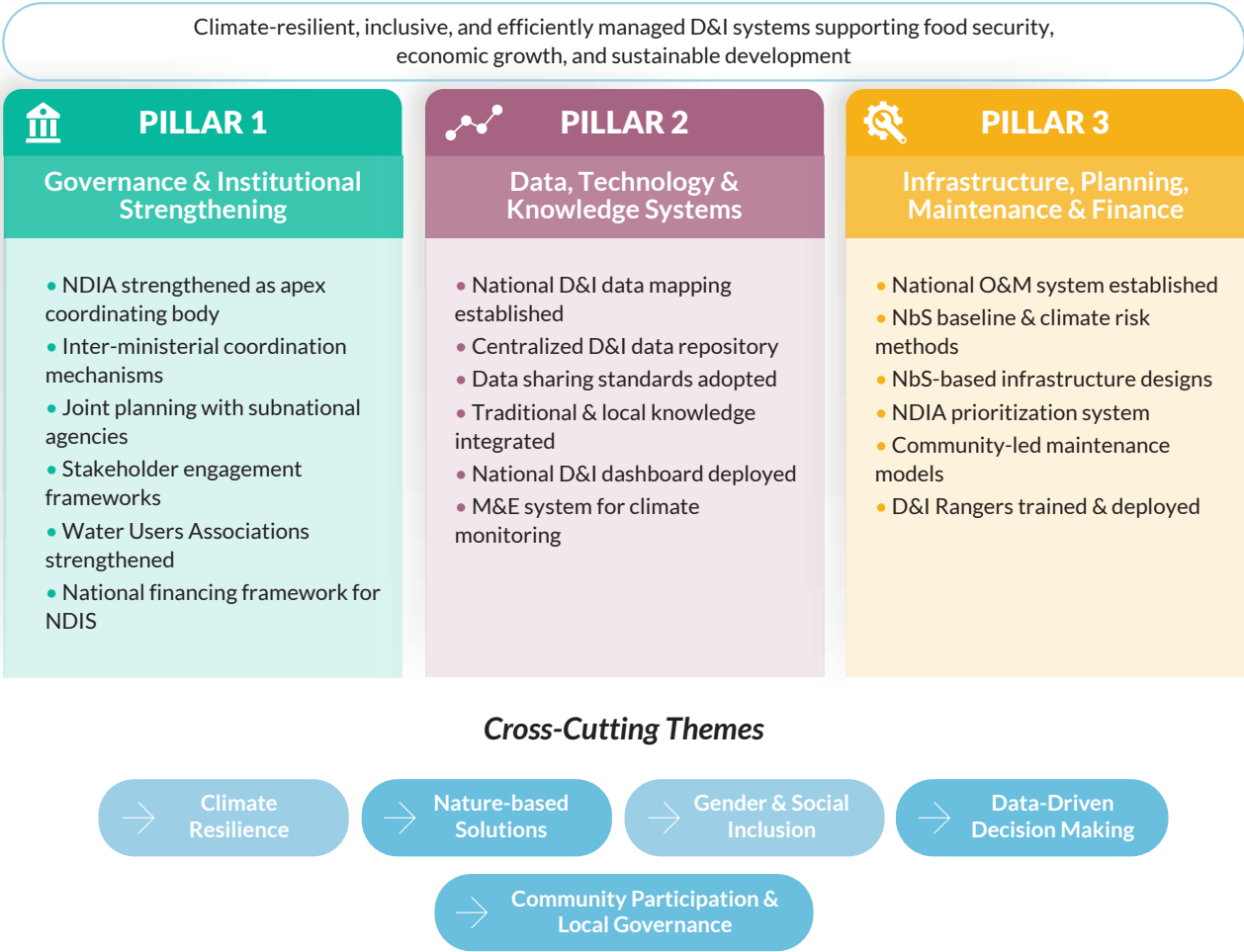


Figure 3. Strategic NDIS Summary Results framework

PILLAR 1

Governance and National Participation

Goal “Strengthen the governance of D&I systems in Guyana to enable data-driven, inclusive, and coordinated decision-making, ensuring the participation of women and Indigenous peoples while enhancing climate resilience across communities.”

Guyana’s drainage and irrigation (D&I) system faces growing climate risks while management responsibilities are fragmented across more than ten agencies, including NDIA, GWI, regulators, planners, and community groups. This fragmentation leads to overlapping mandates, delays, and uncoordinated planning. Pillar 1 addresses these challenges by promoting inclusive governance, strengthening stakeholder engagement, and aligning national decision-making and financing across ministries and water-dependent sectors. This pillar aims to improve coordination and strengthen water resource management as a foundation for resilience, equity, and sustainable development.

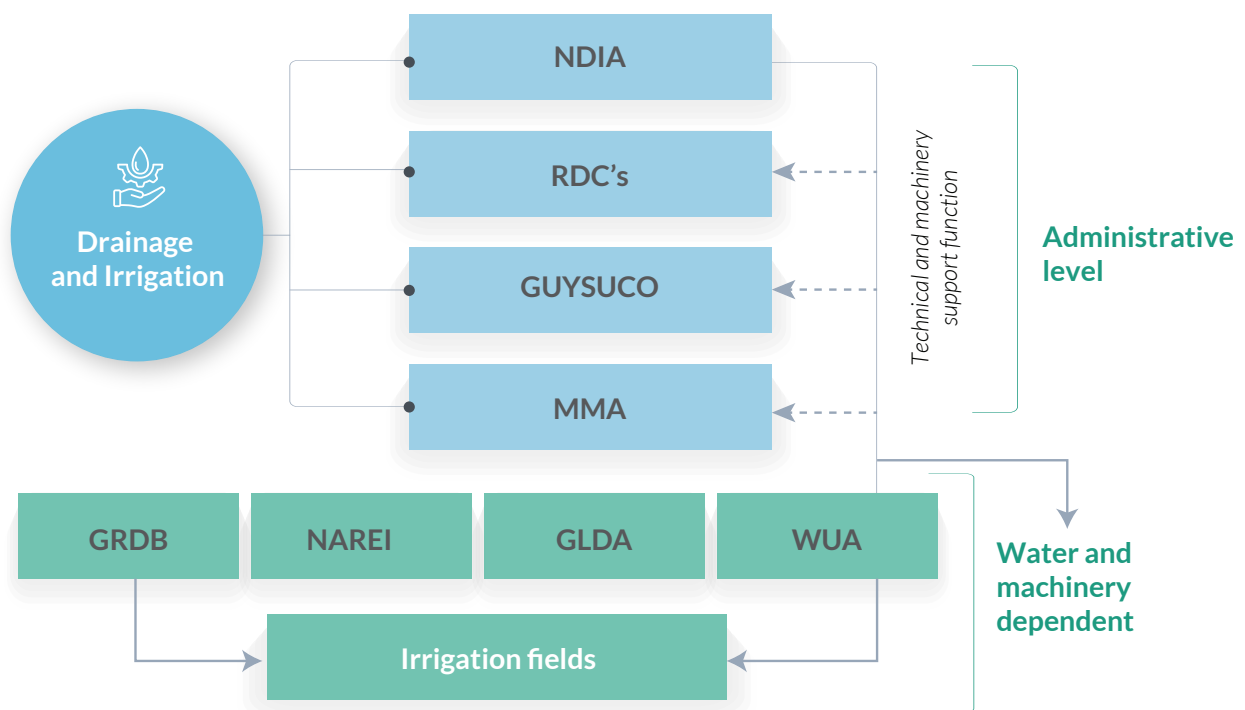


Figure 4: The current governance structure of the D&I sector

PILLAR 2

Data, Management, Technology and Knowledge

Goal *“Develop and operationalize an integrated D&I data and technology system that enables proactive and efficient water management, enhances agricultural productivity, and strengthens the sector’s capacity to respond to climate risks affecting diverse water users and vulnerable communities.”*

D&I planning in Guyana is constrained by fragmented data systems, limited access, and weak information sharing across agencies, reducing the effectiveness of integrated planning and climate-responsive decision-making. Pillar 2 addresses these gaps by strengthening NDIA’s internal data systems, improving inter-agency coordination through shared protocols and interoperable platforms, and promoting technological innovation and knowledge sharing. This pillar aims to establish integrated, standardized, and accessible data systems to support proactive water management and climate resilience. Initiatives like the Agricultural Information System (AIS) and emerging pump monitoring and flood-risk mapping technologies demonstrate a clear pathway forward. By consolidating datasets across agencies, strengthening human capacity, and adopting integrated digital platforms aligned with early-warning and asset-management systems, Guyana can improve resource allocation, climate resilience, and operational efficiency, creating a more adaptive, data-driven D&I system capable of responding to present and future climate risks.

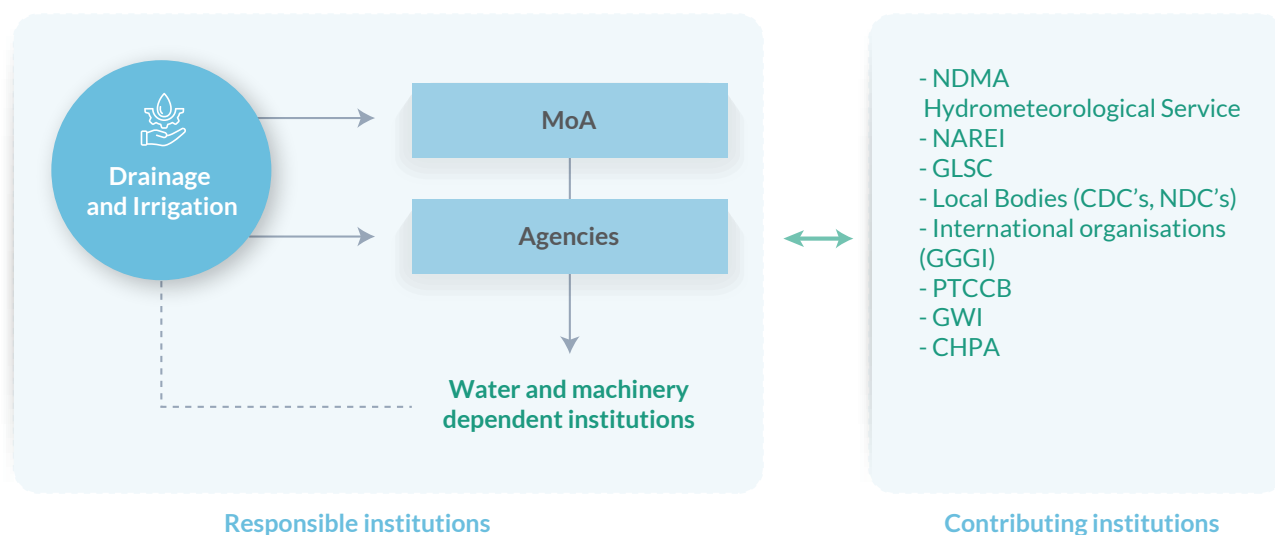


Figure 5: Inclusion of emerging institutions in the D&I interface

PILLAR 3

Infrastructure Planning, Maintenance, and Finance

Goal *“Ensure Guyana’s D&I infrastructure is modernized, resilient, and sustainably managed to address emerging climate risks while strengthening national food security and mainstreaming Nature-based Solutions (NbS) to deliver ecologically inclusive, cost-effective water management.”*

Pillar 3 focuses on strengthening the climate resilience of Guyana’s D&I infrastructure through modernization, improved maintenance, and sustainable financing of both engineered systems and nature-based solutions. Building on the governance reforms of Pillar 1 and the data advancements of Pillar 2, it prioritizes urgent rehabilitation, updated operational practices, and innovative financing. Together, these actions aim to reduce flood risks, protect agricultural productivity, and ensure long-term, resilient water resource management.

Strategic investment in Nature-based Solutions (NbS) can substantially strengthen Guyana’s traditional drainage and irrigation (D&I) infrastructure by reducing flood risks, enhancing ecosystem services, and supporting sustainable livelihoods in a cost-effective and climate-resilient manner. While past development has relied heavily on rigid grey infrastructure—often insufficient, costly to maintain, and disruptive—integrating NbS such as mangrove restoration, watershed reforestation, vegetated swales, wetlands, and retention ponds offers adaptable solutions that manage water more holistically, protect biodiversity, and build community resilience. Evidence from Guyana’s mangrove restoration shows flood-mitigation benefits, including significant wave energy reduction, easing pressure on sea defenses. Embedding NbS within national frameworks like the NDIS aligns with the LCDS 2030 by delivering co-benefits such as improved soil health, groundwater recharge, and carbon sequestration, while extending infrastructure lifespan and lowering maintenance costs. To fully realize this potential, Guyana must evolve D&I decision-making beyond value-driven, engineering-centric approaches toward structured, data-driven, and inclusive systems that account for ecosystem values, stakeholder input, and future climate risks, enabling more resilient, adaptive, and sustainable capital investments.

Nature-based Solution example: Ecosystem Service of Bioretention Areas

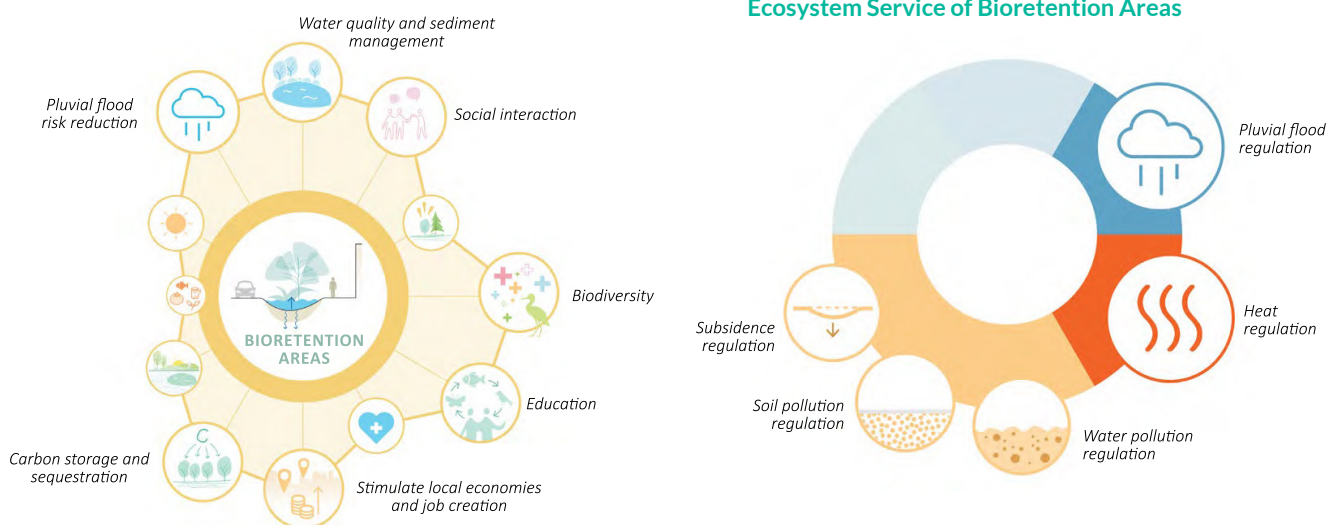


Figure 6: Overview of ecosystem services provided by bioretention ponds.

- ➔ **The National Drainage and Irrigation Strategy 2030 presents a unified, forward-looking framework to address Guyana's climate risks, food security needs, and equitable water access.** By integrating governance reform, data-driven decision-making, and resilient infrastructure development, the strategy directly tackles key challenges such as flooding, water stress, aging systems, and institutional fragmentation.
- ➔ **Its success depends on strong inter-agency coordination, inclusive participation, sustainable financing, and continued investment in data and capacity.** By reinforcing NDIA's leadership and embedding climate adaptation, gender equity, and nature-based solutions, the strategy enables a shift toward a proactive, resilient D&I system that supports long-term agricultural productivity, reduced flood risk, and sustainable national development.

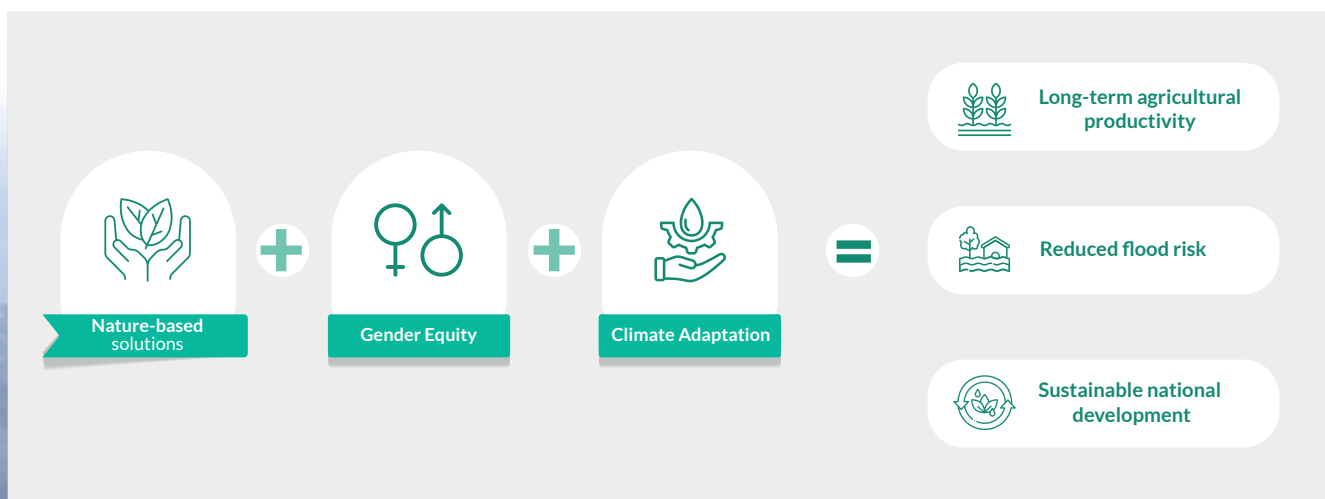


Image of an eroded seawall and ongoing work to serve as a breakwater, trap sediment, and move mudbanks to enable the natural regeneration of mangroves in Dantzig Mahaicony Berbice.





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